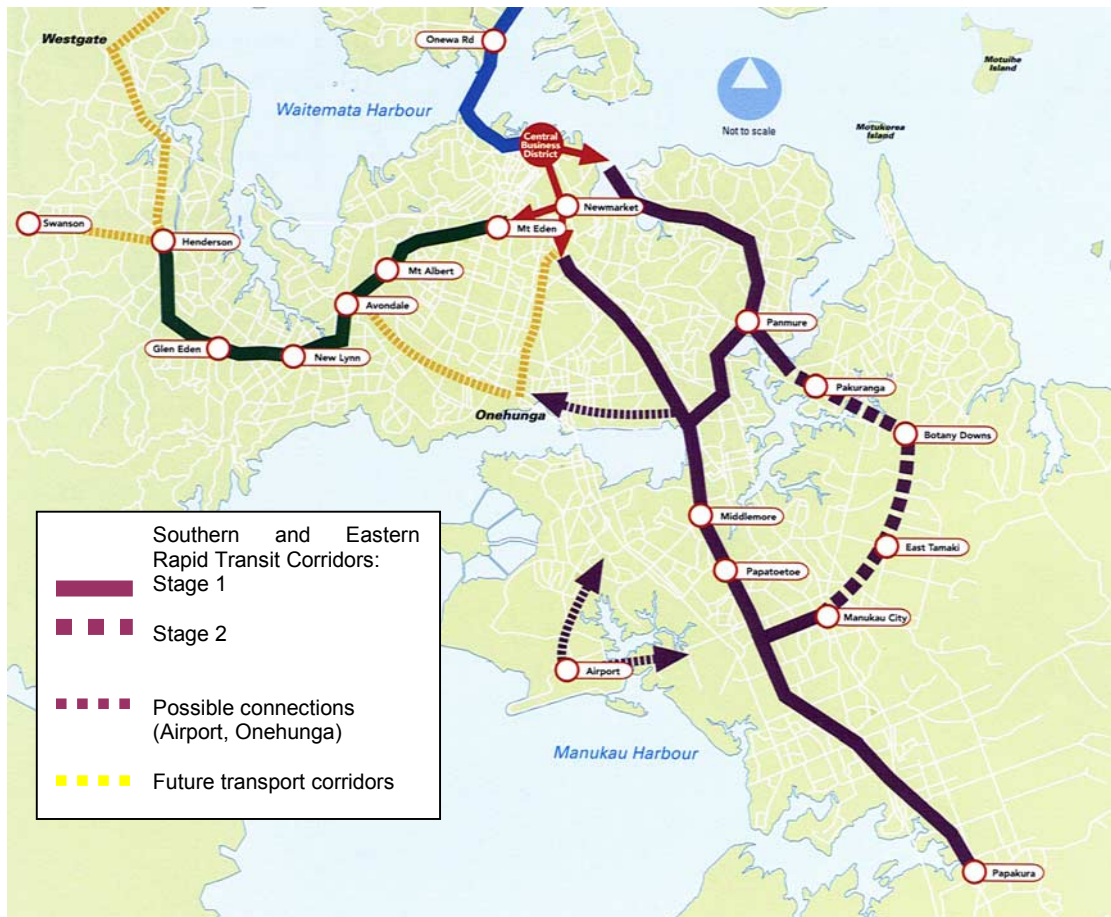


Chapter 1. Counties Manukau Environment

Introduction

Counties Manukau has been and remains one of the fastest growing areas in New Zealand. Road links provide access to places where people live work and play. The map below, and the quote beneath it, set the scene for this section of the document.

Map 1 - The proposed rapid transit network for Counties Manukau.



Source: Auckland Regional Land Transport Strategy, 1999.

“In the south, growth would be focused on two broad corridors, the southern rapid transit corridor and motorway, and further east in a band along the current urban edge. Forty-four percent of growth could be by intensification, ie. in centres and corridors within the existing urban area. There would also be some more intensive development as centres in the green-field areas. The south will eventually have two sub-regional centres at Manukau City and Papakura. There would also be many smaller town centres, such as at Pakuranga, East Tamaki, Botany Downs, Mangere, Wiri, Manurewa, Papatoetoe and in the green-field areas. The green-field areas of East Tamaki, Takanini and Hingaia could accommodate around 83,000 people (56% of growth in the south), along with further growth of Pukekohe, Waiuku and Tuakau as significant rural settlements. The south could be home to around 600,000 people by 2050, which is nearly double the 1996 population of 325,000.”¹

¹ Auckland Regional Growth Forum. *A vision for managing growth in the Auckland Region. Auckland Regional Growth Strategy: 2050.* Auckland Regional Council, Nov 1999, page 33.

Population

New Zealand's last quinquennial census was in 1996. The population of interest to South Auckland Health includes the territorial local authorities of Franklin, Papakura and Manukau. Otahuhu is officially in Auckland City and the residents allocated to Central Auckland District Health Board, however they have been included in this analysis as traditionally most Otahuhu residents use the services of South Auckland Health. Throughout the document references to the Counties Manukau population therefore includes the residents of Otahuhu unless otherwise specified.

Statistics New Zealand now formally recognition of the impact of census underenumeration². This is factored into the census count and is termed “usually resident” or just “resident” population³. The resident population takes the census night figures, subtracts overseas visitors, adds residents elsewhere in New Zealand on census night, adds an estimate for those temporarily overseas at the time of the census, and then adds an estimate of the census undercount. The resident population is often only calculated at the Territorial Local Authority Level, then is extrapolated for smaller population groups.

The Counties Manukau resident population at 30 June 1996 was **366,600**. The resident population is the most appropriate one to use for health planning purposes, is the standard population used by Statistics NZ, and will be used throughout this document.

Table 1. Resident population estimates, Counties Manukau, 1996-2000⁴.

Cities/Districts	Estimated Population at 30 June			Annual change June 1999-June 2000	
	1996	1999	2000	Number	Percent
Otahuhu (part Auckland city)	12,700	13,100	13,200	100	0.8
Manukau	264,200	281,900	286,800	4,900	1.7
Papakura	40,800	41,900	42,300	400	1.0
Franklin	48,900	52,200	53,200	1,000	1.9
Total	366,600	389,100	395,500	6,400	1.6
Total excluding Otahuhu	354,000	376,000	382,300	6,300	1.7

For the year 2000 the estimated Counties Manukau population is **396,000**, or **382,000** excluding Otahuhu. The census in 2001 will be the next reference point for population estimates. Age, gender, and ethnicity are the most commonly used demographic variables. The population pyramids overleaf display the essential differences between the respective ethnic populations in Counties Manukau. Further demographic information follows. More detailed subgroup population figures are available from the authors. Other widely available sources of census data include www.stats.govt.nz, *The changing face of Manukau*⁵ and *Supermap*.⁶

² Statistics NZ. *A report on the 1996 post enumeration survey*. Wellington, 1998.

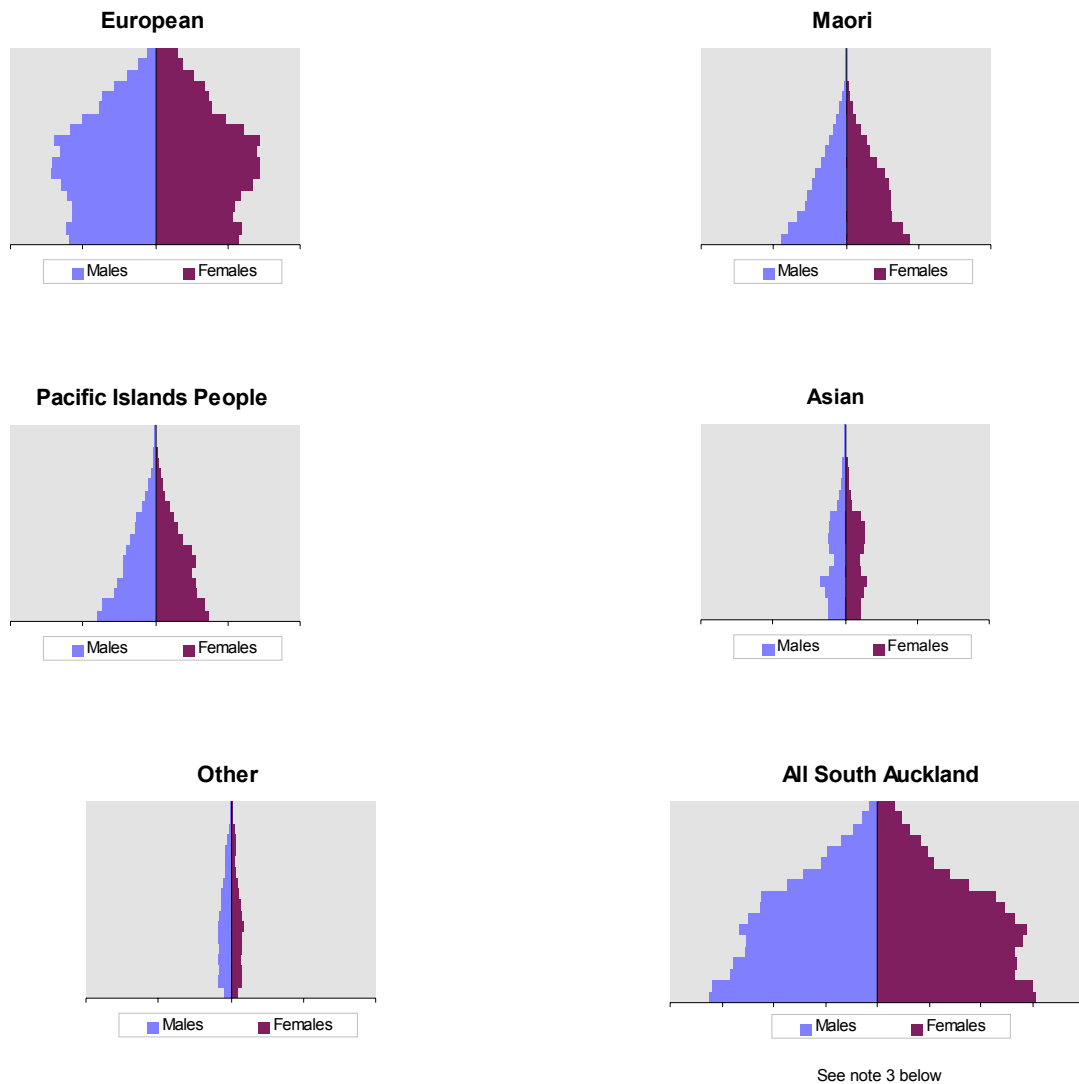
³ Compare with “census night” population. This counts all people who were in eg. Counties Manukau on census night, including those visitors who do not live here. It does not include those residents who were away on census night. For Counties Manukau including Otahuhu in Census96 this was 354,000, excluding Otahuhu 341,700.

⁴ Statistics NZ. *Subnational Population Estimates (As at 30 June 2000)* - Hot Off The Press. www.stats.govt.nz

⁵ *The changing face of Manukau*. Manukau City Council, 1999.

⁶ A Statistics NZ computerised database and mapping facility that extracts and presents census-related data.

Figure 1. Population pyramids - Census96



See note 3 below

Notes

- 1 All pyramids present cohort populations in five year age bands to age 85+ years. Numerical data appears overleaf.
- 2 Scale represents 5000 people per unit in all graphs. Excludes Otahuhu.
- 3 Note that the pyramid base has been doubled in the final graph, to accommodate cohorts over 10 000 people.

These population pyramids portray the essential demographic differences between the ethnic populations of Counties Manukau. Note:

- The different shape of the typically tall European chart as compared to the typically pyramid-shaped charts of Maori and Pacific people. This is a direct reflection of the comparative youthfulness of the latter populations. The Asian and Other pyramids show the effects of recent immigration, with relatively fewer young or old people, and more in the working age groups.
- The relative similarity in numbers of European, Maori and Pacific children to age 10 - respectively 23 800, 16 900 and 14 700 people (roughly 1.5 : 1 : 1). Compare this with the 20 to 39 age set - 25 100, 10 900 and 9 800 people (roughly 2.5 : 1 : 1). The next 20 year period will see a major change in the ethnic balance of young families in Counties Manukau as these children age.

- This shift will be far less apparent in the 60 plus age group. Currently numbers of European, Maori and Pacific people in this cohort are respectively 31,200, 2,000 and 2,600 people (roughly 15 : 1 : 1). Compare this with the current distribution within the 40 to 60 age set - 49 600, 8 700 and 8 700 people (roughly 6 : 1 : 1).
- Counties Manukau overall has a much younger age structure than the rest of New Zealand.

Population growth

Counties Manukau has been one of the most rapidly growing areas in New Zealand since Manukau City was formed in 1965. Future projections of population size and composition are a key driver for health planning. Statistics New Zealand's medium population projections have been used to prepare the following table. The assumptions used, with appropriate adjustments for the post-enumeration survey, are footnoted.

Table 2. Projected Counties Manukau population by age group, 1996 - 2021

(Projected cumulative percentage change over 1996 base population)

Age	1996	2001	2006	2011	2016	2021
0-14	95,800	104,500 9%	105,900 11%	104,900 9%	104,300 9%	107,200 12%
15-44	170,400	177,500 4%	185,600 9%	193,100 13%	198,100 16%	200,800 18%
45-64	69,600	83,000 19%	96,400 38%	108,600 56%	119,400 71%	129,500 86%
65+	30,800	35,300 14%	41,600 35%	49,900 62%	61,600 100%	73,300 138%
Total	366,600	399,800 9%	429,000 17%	456,500 25%	483,400 32%	510,800 39%

Source: Statistics New Zealand, 1998

Notes: Based on 1996 resident population (includes Otahuhu). Medium fertility, migration and mortality assumed.

These projections show -

- A slowing of Counties Manukau's growth in numbers of children, from a present 2% per annum to a projected 0 - 1% per annum. In effect this age group is projected to be relatively stable from say 2005 to 2020, accompanied by a slowing in the growth in numbers of young adults 15-44 years old.
- The size of the 45-64 year mature adult age group is growing strongly. It is expected to nearly double by 2021 from 1996 levels.
- A marked increase in numbers of elderly people. The rate is increasing from a present 3% increase per annum to a projected 6% increase per annum. In effect, this age group is projected to more than double over the next 20 years. *Note especially that the elderly are relatively high users of both health and disability support services.*

Uncertainties relate to migration patterns and projected fertility patterns. If New Zealand enters a recession a net exodus might occur. Changes in immigration policies might see more or fewer immigrants, or retirement patterns may well change (eg. moving to Bay of Islands or Tauranga, or returning permanently to home country). Such dynamics are inherently impossible to predict - one just assumes past experience as a guide. Maori and Pacific populations are currently undergoing the demographic change that occurred among Pakeha around 20 years ago, with decreasing fertility and later

child bearing. Depending on the assumptions used differing population sizes will be arrived at. For example 1998 Northern HFA projections assumed a higher fertility, suggesting a Counties-Manukau population of over 120 000 0-14 year olds by 2021, compared to 107 000 here. The Statistics New Zealand model is considered to provide the best estimate for current planning purposes.

Population by area

In planning for population growth the Auckland Regional Council has considered potential for growth in both urban and rural areas within the territorial local authorities of the South.⁷ It is proposed that “growth will be focused on two broad corridors, the southern rapid transit corridor and motorway, and further east in a band along the current urban edge.” The Council considers that just under 50% of growth is likely to be by way of infill in existing urban areas. The following table sits comfortably with these views.

Table 3. Projected Counties Manukau population by catchment zone, 1996 to 2021

(Projected cumulative percentage change over 1996 base population)

	1996	2001	2006	2010	2016	2021
Howick Pakuranga	76,000	81,200 7%	84,000 11%	85,800 13%	87,800 16%	89,300 18%
Beachlands Maraetai	9 200	10,300 12%	11,400 24%	12,700 38%	14,100 53%	15,100 64%
Otara	30,000	38,300 28%	48,300 61%	58,300 94%	67,100 124%	73,100 144%
Mangere Papatoetoe Otahuhu	94,900	99,000 4%	101,100 7%	103,300 9%	107,500 13%	111,600 18%
Manukau Manurewa	68,800	76,800 12%	82,700 20%	88,700 29%	95,400 39%	101,000 47%
Takanini Papakura	34,800	37,000 6%	38,100 9%	40,300 16%	42,900 23%	48,600 40%
South Rural	52,900	55,400 5%	57,900 9%	61,800 17%	66,800 26%	72,100 36%
Total CM	366,600	398,000 9%	423,500 16%	450,900 23%	481,600 31%	510,800 39%

Notes

- 1 Based on 1996 resident population from Statistics New Zealand, as modified by Manukau City Council planning assumptions (carried out in 1998), including "greenfield" site expansions - resulting in slightly differing totals compared with the age-based projections at Table 2.
- 2 Medium fertility, migration and mortality assumed.
- 3 The catchment zones referred to in Table 3 are Counties Manukau sub-areas. The sub-areas are referred to throughout the document and are shown in Map 2.

The area of the largest increase is Otara, more than doubling from 30,000 to over 70,000 people by 2021 (the East Tamaki area, between Otara and Howick, is one of the major growth points for Manukau City over the next 20 years, and is included in the Otara catchment). Other major growth points are a variety of infill areas in the Manukau, Manurewa and Takanini localities, and the Hingaia area east of Papakura (included here in South Rural). Increases in "lifestyle" blocks and the like are projected for Beachlands, Maraetai, Clevedon and the Franklin District. The sub-areas are shown overleaf in Map 2.

⁷ Auckland Regional Growth Forum. *A vision for managing growth in the Auckland Region. Auckland Regional Growth Strategy: 2050.* Auckland Regional Council, Nov 1999.

MAP TWO HERE

Ethnicity

Statistics New Zealand has provided ethnicity-specific population projections using Census96 resident populations at territorial local authority level (Table 4). Throughout this document ethnicity is defined culturally – the ethnic group belonged to or identified with (ie not bloodlines, nationality or citizenship). The standard Statistics NZ method has been used for multiple selections – if any of the groups selected were Maori then is assigned to Maori, if no Maori and any group selected is Pacific then is assigned to Pacific, etc until European/Pakeha is reached.

Table 4. Projected Counties Manukau population by ethnicity, 1996 to 2021

(Projected cumulative percentage change over 1996 base population)

	1996	2001	2006	2011	2016	2021
Maori	65,300	72,000 10%	77,900 19%	83,200 27%	89,100 36%	95,400 46%
Pacific	62,400	71,700 15%	80,200 29%	85,300 37%	93,200 49%	101,600 63%
Other	239,000	256,100 7%	270,900 13%	288,000 21%	301,100 26%	313,700 31%
Total	366,600	399,800 9%	429,000 17%	456,500 25%	483,400 32%	510,800 39%

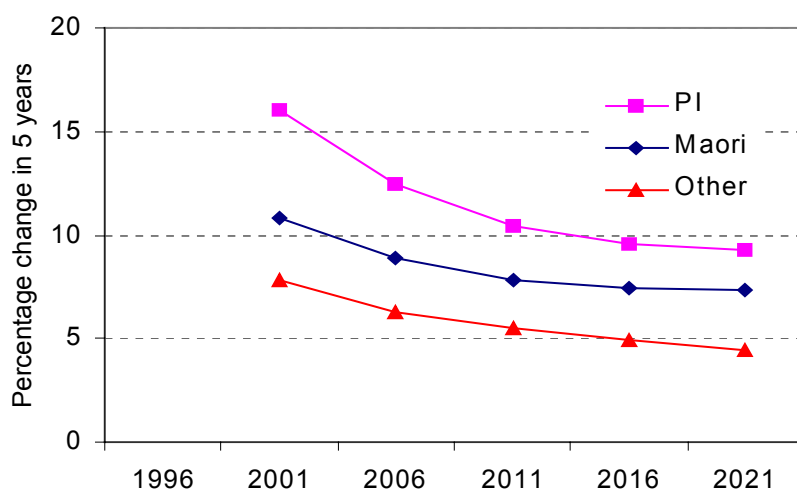
Source: HFA 1999 based on Statistics New Zealand projections.

Notes: Medium fertility, migration and mortality assumed. Otahuhu included.

It is difficult to calculate ethnic-specific projections, particularly in trying to assess ethnic-specific migration patterns but also because of varying definitions and changes in self-assignment of ethnicity over time.

Maori and Pacific peoples have higher rates of growth than the European and Other group (Table 4). They can therefore be expected to contribute more to population growth as will be increasingly apparent in both the child and young adult age groups. The Maori and Pacific rate difference is projected to decrease over the next 20 years (Figure 2). More detail about fertility rates is covered in Chapter 9 Women's Health.

**Figure 2. Percentage change in ethnic group population by 5 year periods
Counties Manukau 1996-2021**



Source: Statistics New Zealand, 1999

Counties Manukau's Maori people today

The relative youth of Counties Manukau's present Maori population is reflected in their population pyramid (Figure 1). At the last census (1996) around 65 000 or 12% of New Zealand's 523 000 usually resident Maori lived in Counties Manukau. Most if not all New Zealand tribes would be represented in the Counties Manukau population.

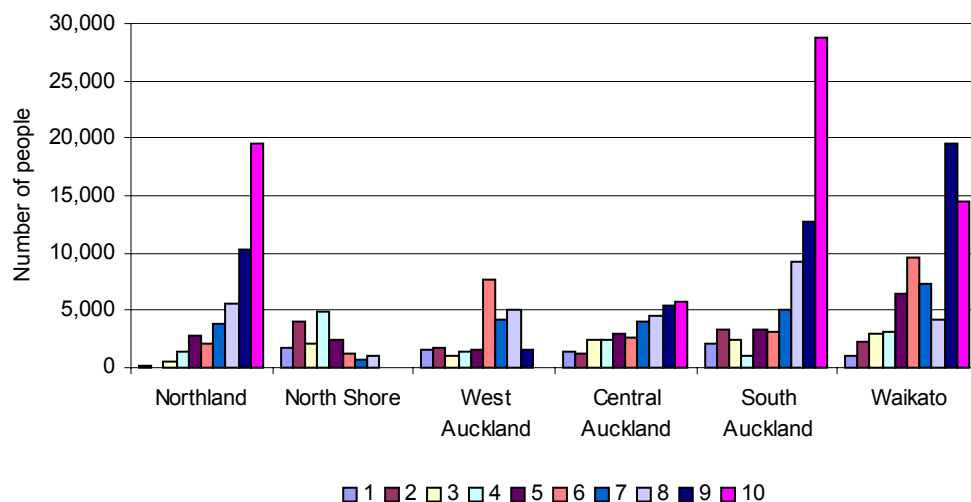
Some key population figures relating to Maori in Counties Manukau:

- Maori make up about 17% of the total Counties Manukau population.
- Young people are over-represented (Figure 1). Under 25 year olds make up 58% of the Counties Manukau Maori population, compared with all New Zealand 36%.
- Older (over 65) are under-represented, making up 2% of the Counties Manukau Maori population compared with the New Zealand average of 12% (Figure 5).
- Relatively few live in the areas of Howick Pakuranga (5%) and Beachlands Maraetai (7%). Maori are over-represented in the less affluent areas of Manukau Manurewa (26%), Otara (25%) and Takanini Papakura (24%) but equitably represented in Mangere Papatoetoe Otahuhu (19%) and South Rural (16%).
- The total fertility rate for a New Zealand resident Maori woman stands at 2.6 expected children, compared with Pacific women at 3.3 children and for the remaining 'Other' 1.8. Maori are approaching the dominantly European cohort in regards to size of family.

Very high rates of smoking are observed among Maori women (47% current smokers overall, and well over 50% at younger ages). Maori men (40% overall) are not far behind. Further detail on smoking is given in a later section.

Socio-economic factors are explored in detail in Chapter 3. Suffice to note here that high numbers of Maori people in Counties Manukau live in relatively deprived areas (eg deciles 9 and 10 in figure 3). Conversely few Maori live in the relatively least deprived areas (eg deciles 1-4).

Figure 3. Maori population by NZDep96 level of deprivation, 2000



Source: HFA population projections, 1999. 1 = least deprived to 10 = most deprived. NZDep96 = New Zealand Deprivation index 1996 described in detail in Chapter 3

Map 3 on the facing page shows the distribution of Maori in Counties Manukau.

MAP THREE HERE

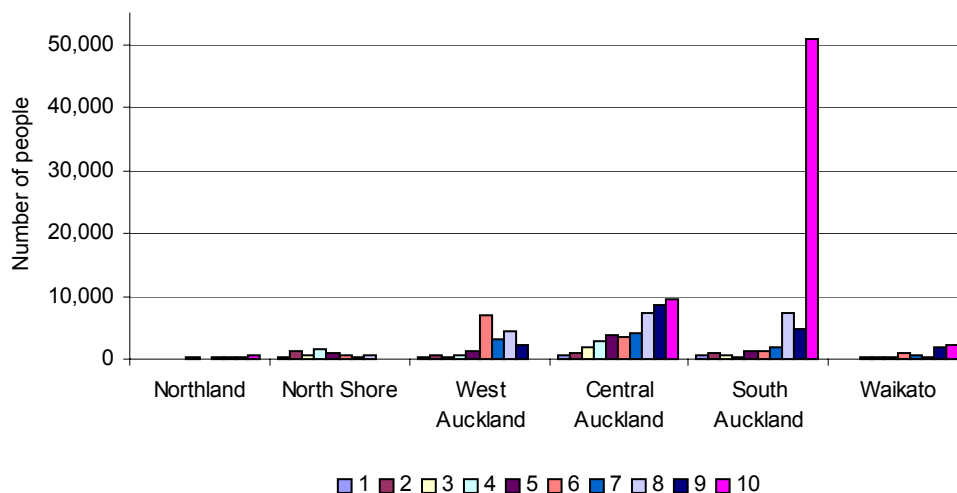
Counties Manukau's Pacific people today

The age and gender mix of Counties Manukau's present Pacific population is reflected in the population pyramid presented earlier in this section (Figure 1). At the last census around 62 000 or 27% of New Zealand's 227,000 usually resident Pacific people lived in Counties Manukau. About half these people were Samoan (27 900 or 51% of those with specific ethnicity known), with Cook Islanders (11 300 or 21%) and Tongans (8 800 or 16%) being the next largest groups. These proportions are very similar to those for all New Zealand. Some key population dynamics relating to Pacific people -

- The vast majority of Pacific people in New Zealand live in urban areas. They are a diverse group of people but spread has been far from homogeneous.
- Migration to New Zealand was encouraged by New Zealand's post-war growth in secondary industry, with many Pacific people settling in Counties Manukau. At Census96 about 50% of Counties Manukau's Pacific people resided in Mangere, Papatoetoe or Otahuhu, 27% in Otara and 17% in Manukau or Manurewa.
- Pacific people living in New Zealand represent over 20 different Polynesian, Melanesian and Micronesian cultures, speaking an even greater number of languages.
- At Census96 nearly 60% of New Zealand's resident Pacific people had been born in New Zealand. The median age of this group was 11.4 years, whereas those born overseas had a median age of 35.6 years.
- Young people are over-represented - under 25 year olds make up 55% of the CM Pacific population, compared with the New Zealand average 36% (see Figure 5).
- Older (over 65) are under-represented, making up 3% of the Pacific population compared with the New Zealand average of 12%.
- Total fertility rates for New Zealand resident Pacific women stands at 3.3 expected children, higher than that for Maori (2.6) and for the remaining 'Other' population (1.8).

Socio-economic factors are explored in detail in Chapter 3. Suffice to note here that high numbers of Pacific people in Counties Manukau live in relatively deprived areas (eg deciles 9 and 10 in Figure 4). Very few live in the least deprived areas (deciles 1-4).

Figure 4. Pacific population by NZDep96 level of deprivation, 2000



Source: HFA population projections, 1999. 1 = least deprived to 10 = most deprived. NZDep96 = New Zealand Deprivation index 1996 described in detail in Chapter 3

Map 4 facing shows the distribution of Pacific people in urban Counties Manukau.

MAP FOUR HERE

Counties Manukau's Asian people today

The age and gender mix of Counties Manukau's present Asian population is reflected in the population pyramid presented earlier in this section (Figure 1).

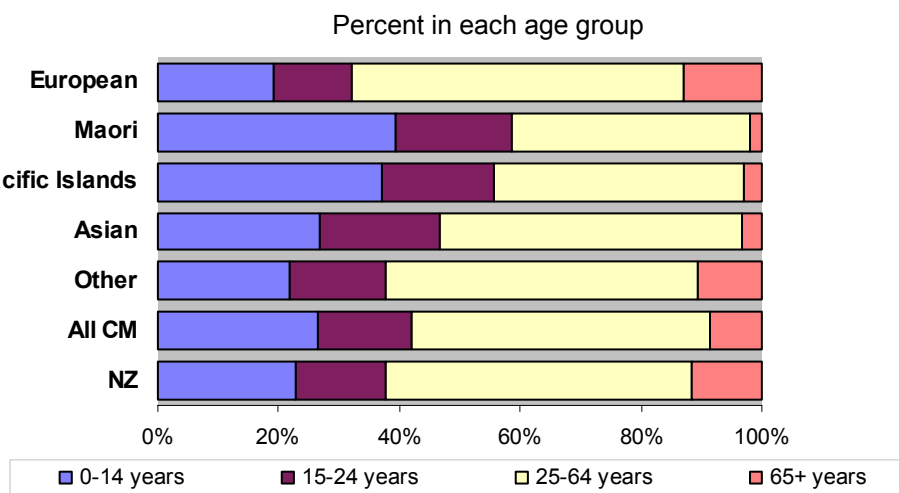
At the last census around 27 000 or 20% of New Zealand's 160 000 usually resident Asian people lived in Counties Manukau. The Asian population has been New Zealand's fastest growing population. It has almost doubled in the five years preceding 1996, with immigration policies being the dominant driver.

Some key population dynamics relating to Asian people⁸ -

- New Zealand's Asian population is extremely diverse culturally. Over 20 separate nationalities have been identified for census purposes.⁹ Undoubtedly the number of first languages spoken would be far greater.
- At Census96 the majority of people calling themselves Asian were of Chinese or Indian extraction (68%). Chinese (13 500 or 50% of total) and Indians (7 200 or 26%) are over-represented in the Counties Manukau Asian population. Khmers (1 100) and Vietnamese (2 800) are also over-represented. Koreans and Filipino were the next largest groups of Asian peoples in Counties Manukau, totalling just on 1 600 and 800 respectively.

Counties Manukau's Asian population is relatively youthful, with 47% of the cohort being under 25 years of age (Figure 5), compared with 36% for the all New Zealand population. Only 3.3% of the Asian population were aged over 65, compared with 12% nationally.

Figure 5. Age composition of Counties Manukau's ethnic groups compared with all Counties Manukau and all New Zealand 1996



Source: Census96 usually resident data

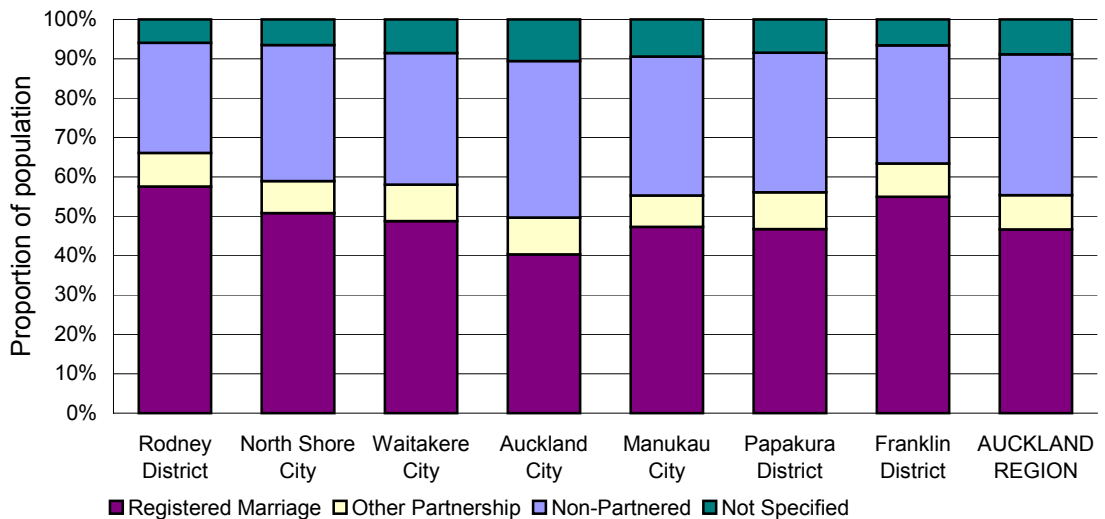
⁸ Walker R et al *New Zealand's Asian Population - Views on Health and Health Services*. Auckland: Health Funding Authority, 1998.

⁹ *NZ Standard Classification of Ethnicity 1993*, Statistics NZ.

Family structure

Family structures have changed markedly in the region over the last generation.¹⁰ There has been a trend toward delayed marriage, with the average age at marriage increasing from 24.8 years in 1991 to 26.2 years in 1996. The divorce rate has increased with around 30% of all marriages ending this way. In 1996 18% of families in the region had one parent. For two parent families it is now common for both parents to be in full-time employment (31% of families).

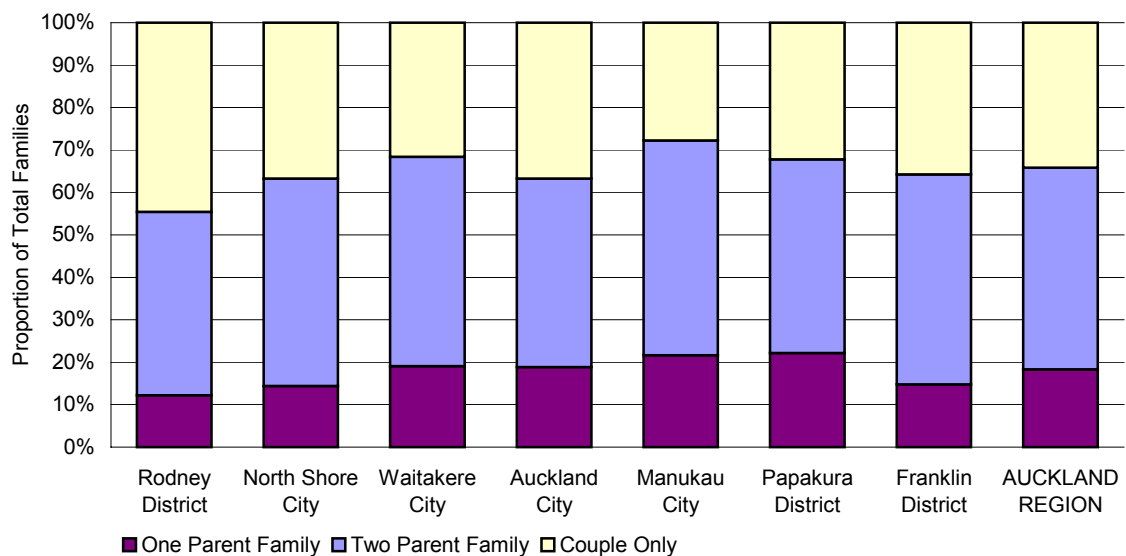
Figure 6. Social marital status by territorial authority, age 16+, Auckland region, 1996



Source ARC¹⁰

In 1996, 45% of families consisted of two parents with children, a decline from 53% in 1986. The proportion of families consisting of couples only and one-parent families have increased in this period (Figure 7).

Figure 7. Family type by territorial authority, Auckland region, 1996.

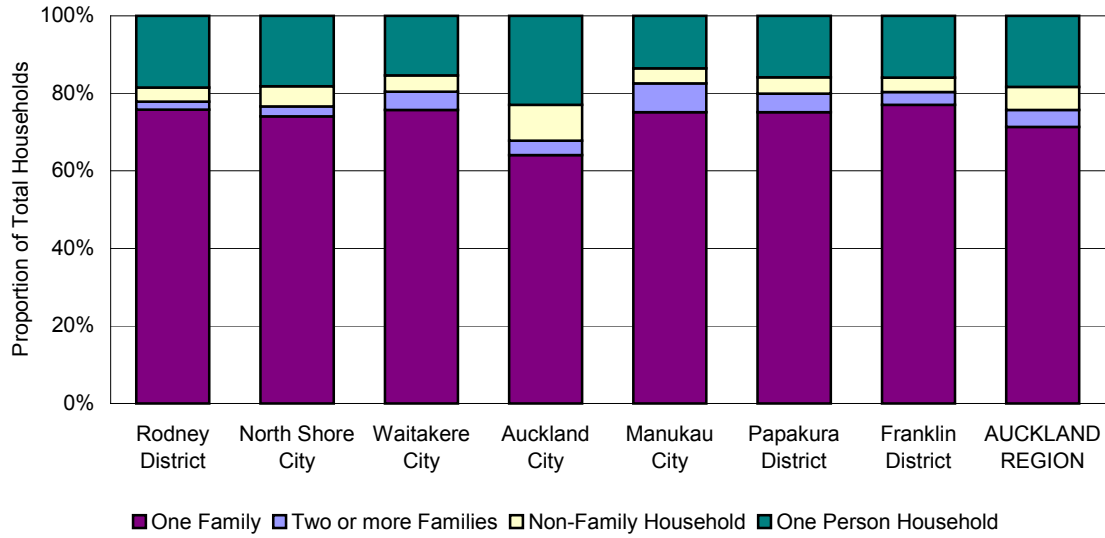


Source ARC¹⁰

¹⁰ Auckland Regional Council. *Auckland profile. A demographic profile of the Auckland region.* 2000

Manukau residents are more likely to live in a household with two or more families (Figure 8). This is particularly so for the Pacific population.

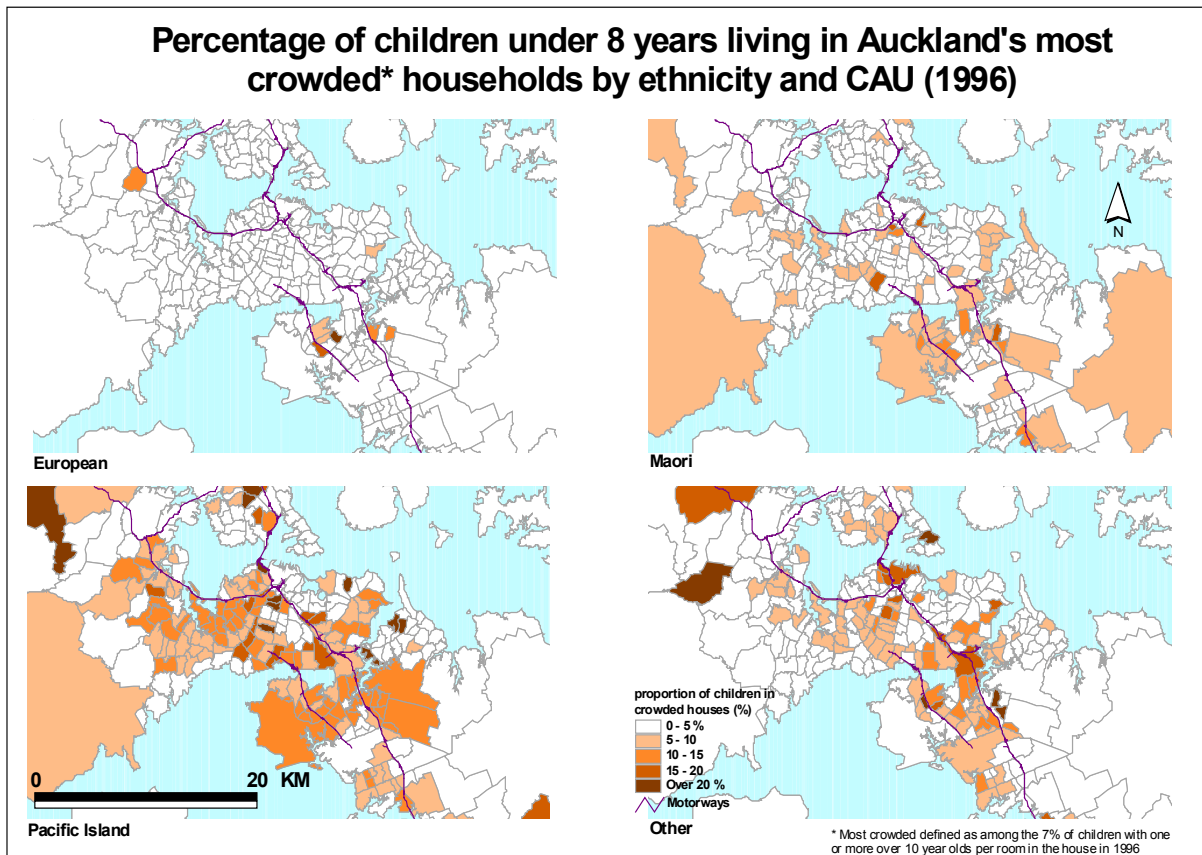
Figure 8. Household structure by TLA, 1996.



Source ARC ¹⁰

The link between overcrowding and health status is well recognised. A striking local example is the clear relationship between childhood meningococcal disease and overcrowding (see Map 11 Chapter 10). Map 5 shows the proportion of children living in the most overcrowded households in the region by ethnicity.

Map 5



Copyright - Auckland Public Health Service - October 2000

Source: Public Health Protection, Auckland Health Care Services Limited.

Built Environment

The built environment refers to the human-made features of the environment such as housing, roads, public open space, shopping centres, and commercial, educational and healthcare facilities. In short it includes all buildings, structures, infrastructure and areas that provide a place for people to live, work and play.

The built environment has a very significant impact on the quality of life experienced by residents of the region. The form and layout of this environment impact upon population growth, demand for access to services and the social infrastructure, proximity to employment and feelings of safety.¹¹ Details on housing in the Counties Manukau are shown in Table 5. Otara and Mangere have very high rates of rental housing, while Howick Pakuranga and Clevedon have very low rates. The overcrowding rates noted in Map 5 are also shown here with the very high average occupancy in Otara and Mangere.

Table 5. Community profiles by amalgamated wards, 1996.

	Mangere	Papatoetoe Manurewa	Pakuranga Howick	Otara	Clevedon Hunua	
Median age of dwelling yrs	26	29	35	23	34	
Dwellings	10,161	28,835	25,030	7,078	5,738	
% of dwellings rented	36%	27%	14%	43%	14%	
Avg. rooms per dwelling	5.8	5.8	6.7	5.7	6.6	
Avg. people per household	4.1	3.2	3.0	4.5	2.9	
	Pahure- hure Drury	Ardmore Red Hill	Awhitu Waiuku	Patumahoe Pukekohe	Auckland Region	New Zealand
Median age of dwelling yrs	33	28	33	32	32	32
Dwellings	6,860	5,919	4,765	6,520	356,648	1,283,992
% of dwellings rented	22%	32%	18%	23%	27%	25%
Avg. rooms per dwelling	6.2	5.9	6.2	6.2	6.0	6.0
Avg. people per household	2.9	3.2	2.9	3.0	2.9	2.8

Source ARC

Natural Environment

Water quality in Manukau

Urban streams

Urban streams are generally of low quality as a result of earthworks, sewerage leaks, surface runoff from landfills and roads, and illegal waste disposal and stormwater connections.¹⁵

Rural streams

From the little information that is known, the quality of rural streams is variable. Major impacts such as urbanisation, deforestation and agriculture have occurred over many years.

Marine waters

Urban development has resulted in significant pollution in the Manukau Harbour and Tamaki Estuary. Following periods of heavy rain, the water quality at swimming beaches and shellfish beds exceed safety limits for bacterial contamination.¹⁵ Outbreaks of food poisoning have been associated with shellfish collection from the Manukau.

¹¹ Manukau City Monitoring Team *The changing face of Manukau – A Report on the Social, Economic and Environmental conditions in Manukau City. Update for 2000.* Report prepared by Manukau City Council. 2000

Groundwater

Little is known about the quality of groundwater in Manukau.

Drinking water grading

The public health drinking water grading system

The information in this section on the water grading system is based on the *Register of Community Drinking-Water Supplies in New Zealand* produced by the ESR Water Group (2000).¹²

The Ministry of Health grading provides an assessment of its confidence in the public health safety of each drinking-water supply serving a community of over 500 people.

The grading has two letters. The first letter (capital) represents the source and treatment grading, while the second letter (lower case) grades the water in the distribution zone itself. Gradings containing “C” or “c” indicate marginal quality, while lower gradings show that quality or risk management is unsatisfactory. An ungraded supply is indicated by “u”.

Source and treatment grading

Assessment based upon source and treatment factors:

- A1 Completely satisfactory, negligible level of risk, demonstrably high quality
- A Completely satisfactory, very low level of risk
- B Satisfactory, low level of risk
- C Marginal, moderate level of risk, may be acceptable in some small communities
- D Unsatisfactory, high level of risk
- E Completely unsatisfactory, very high level of risk.

Distribution zone grading

Assessment based upon reticulation condition, management, and actual water quality:

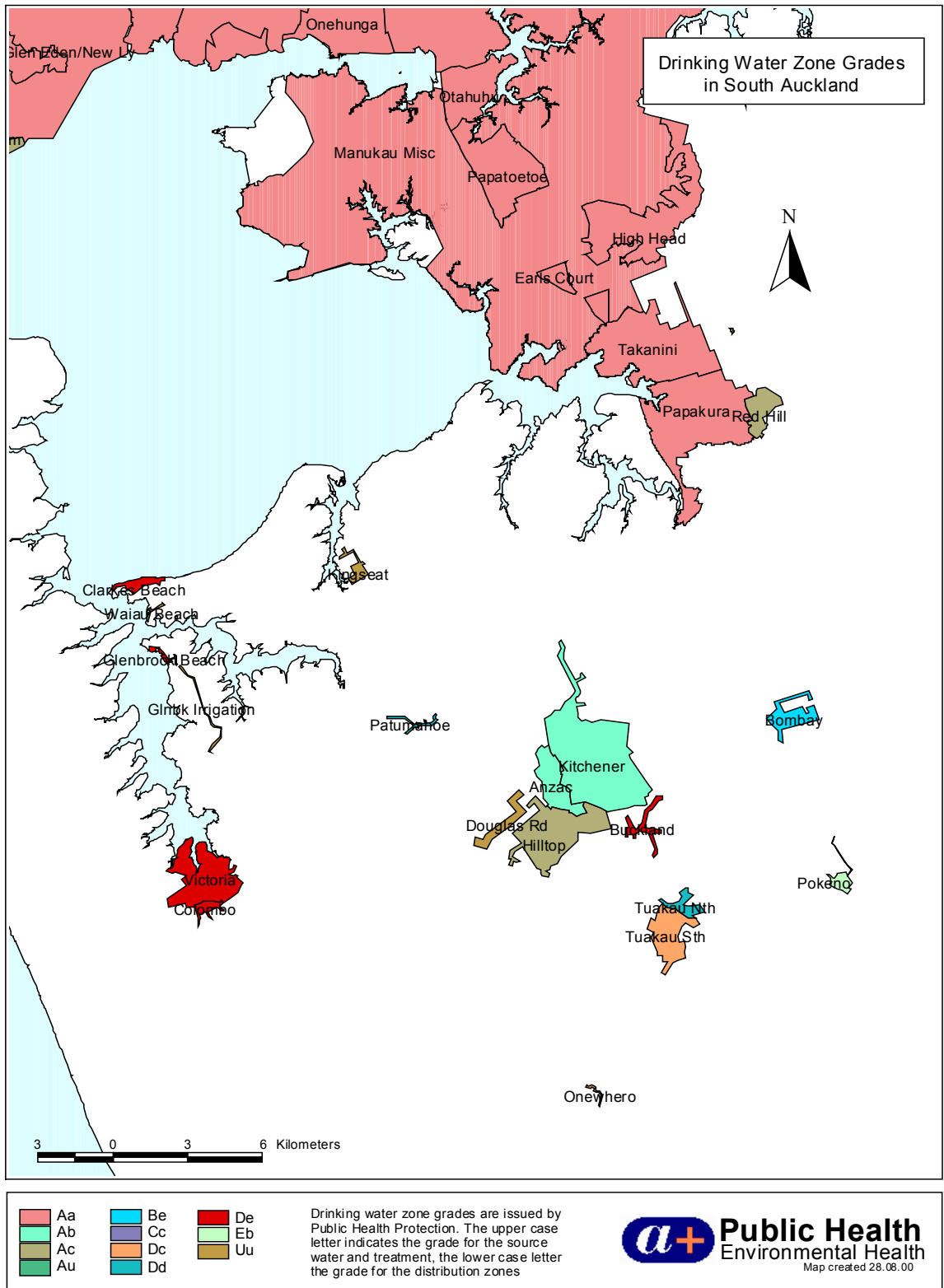
- a Completely satisfactory, negligible level of risk, demonstrably high quality
- b Satisfactory, low level of risk
- c Marginal, moderate level of risk, may be acceptable in some small communities
- d Unsatisfactory, high level of risk
- e Completely unsatisfactory, very high level of risk.

Water grading for Counties Manukau

Map 6 shows the drinking water grading zones for Counties Manukau. With the exception of Red Hill the urban area of Counties Manukau has an Aa rating. Lower grades have been assigned to several rural drinking water zones, including Waiuku, Tuakau and Bombay. No specific health consequences of this have been noted to date.

¹² ESR Water Group for the Ministry of Health. *Register of Community Drinking-Water Supplies in New Zealand*. 2000.

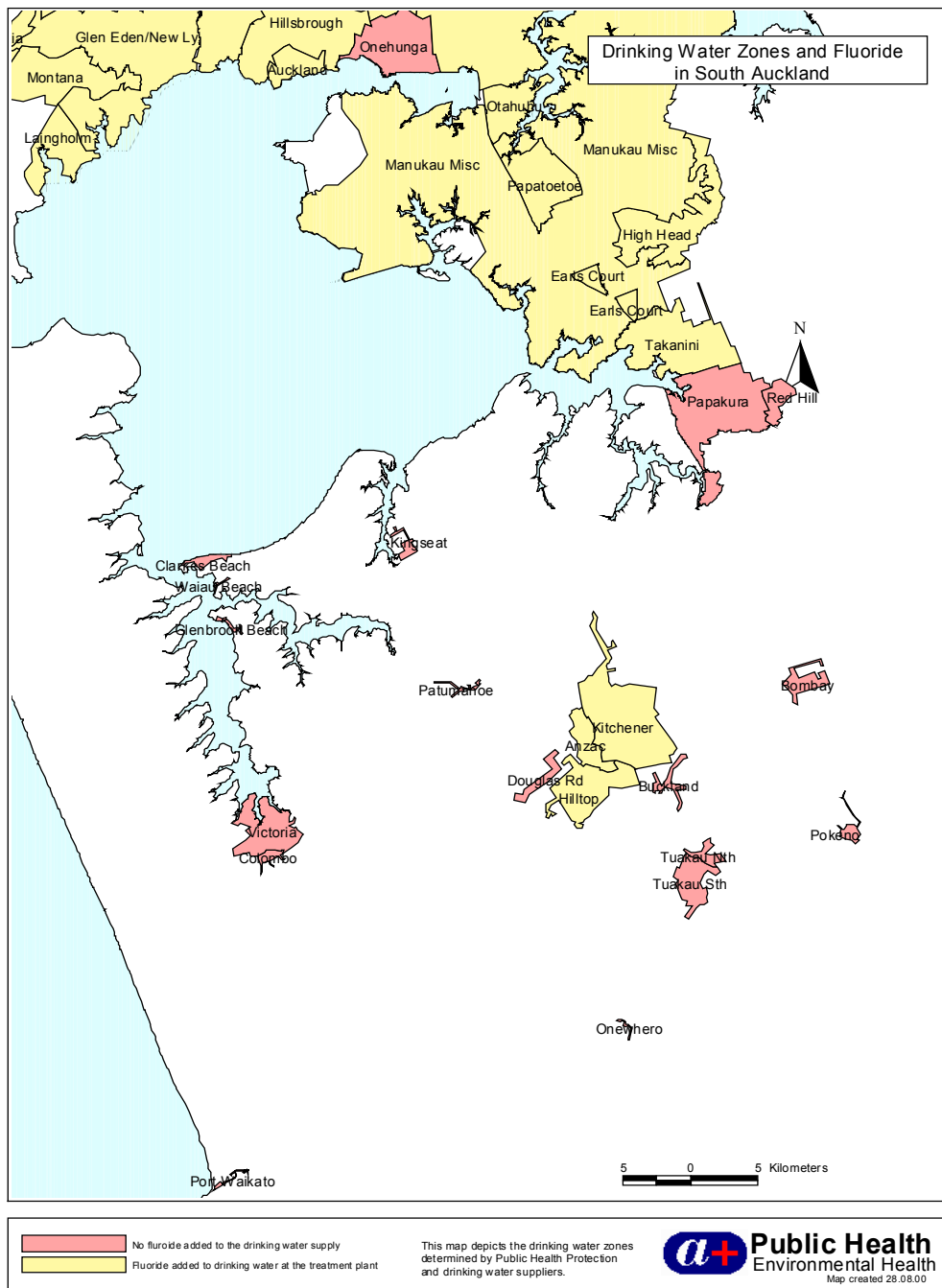
Map 6: Drinking water zone grades in Counties Manukau.



Water fluoridation

For communities receiving reticulated water fluoridation is the most effective and efficient way of preventing dental caries.¹³ It is estimated that in New Zealand, a lifetime of drinking fluoridated water prevents between 2.4 and 12.0 decayed, missing or filled teeth per person. Those most at risk of dental caries, Maori and lower socioeconomic groups benefit the most from drinking fluoridated water. In 1998 only 56% of New Zealanders receiving reticulated water had their water fluoridated. This compares to the target of 70% for the year 2000 set in 1998. Levels of fluoride are kept below 1 part per million to avoid tooth discolouration in some individuals.¹⁴ All of urban Counties Manukau with the exception of Papakura has fluoridated drinking water. No rural drinking water supplies are fluoridated (Map 7).

Map 7: Drinking water zones and fluoride in Counties Manukau.



¹³ Ministry of Health. *Progress on health outcome targets. The state of the public health in New Zealand.* 1998.

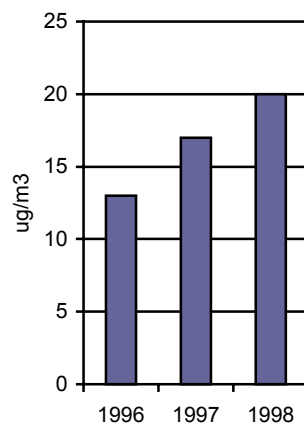
¹⁴ McDonagh MS, Whiting PF, Wilson PM et al. Systematic review of water fluoridation. *BMJ* 2000; 321:855-859.

Air quality

With increasing urbanisation Manukau City's air quality has deteriorated. Important sources of emissions come from motor vehicles, domestic heating, industry and trade, and backyard or open burning. Vehicles produce 77% of total emissions by volume.¹⁵ While particulate air pollution in Manukau is currently at acceptable levels it is rising and requires attention (Figure 9).¹⁶ Currently there are no controls on vehicle emissions in New Zealand. Possible solutions to the problem of emissions from vehicles are to improve public transport, use alternatives modes of transport such as walking, and to reduce emissions from vehicles. No specific health consequences have been noted to date in Counties Manukau, although some make links with the relatively high rates of respiratory disease locally (Chapter 7).

There are significant light and heavy industry sites in Counties Manukau. Some of these have caused problem with chemical and particulate emissions in the past.

Figure 9. Annual level of particulate matter less than 10 microns (PM₁₀) in Manukau.¹⁶



Source: Manukau City Council
1

Waste

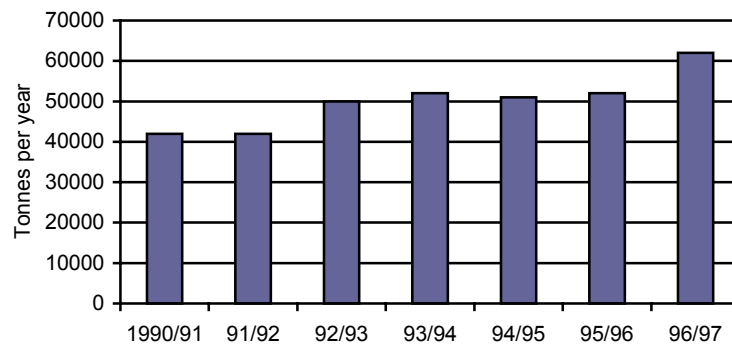
Each household in Manukau produces 1kg of solid waste per person per day.¹⁵ Including waste generated by businesses, this amounts to 200,000 tonnes of solid waste per year. This is one of the highest levels of waste generation per capita in the world.¹⁵ The amount of waste produced is increasing by 10% per year (Figure 10).

Problems associated with waste disposal and treatment include ¹⁵:

- increasing waste production
- generation and disposal of hazardous waste
- efficient resource use
- cost, both environmental and financial
- waste disposal methods
- lack of disposal sites
- concerns by the community about waste disposal issues

¹⁵ Manukau City Council. *State of the environment report. He paanui mo te aahua o te taiao mo naianei.* 1999.

¹⁶ Manukau City Monitoring Team *The changing face of Manukau – A Report on the Social, Economic and Environmental conditions in Manukau City.* Manukau City Council. 1999.

Figure 10. Annual kerbside household refuse, Manukau City. ¹⁶

Source: Manukau City Council

Counties Manukau hosts the largest sewerage plant in New Zealand, serving large parts of metropolitan Auckland. Problems of midges, odours and harbour water quality have led to significant upgrading work at the Mangere effluent plant.

International airport

New Zealand's largest airport is situated in Mangere. Biological hazards such as the salt marsh mosquito and fire ants recently in the news have highlighted the health risks associated with airports. Imported disease remains an ever-present potential problem. Air crashes are a potential major health problem, while more mundane aircraft noise and fumes, and traffic issues are day to day issues for the health of Counties Manukau people.

Summary

Nearly 400,000 people live in the Counties Manukau area. The environment of Counties Manukau is varied including both rural and urban populations. There are marked differences in socio-economic status with extremes of poverty and wealth both being represented in this relatively small geographical area. The structure of the population is changing with increases predicted in all age groups but the highest percentage increase being predicted amongst older people. About 12% of New Zealand's usually resident Maori population and 25% of New Zealand's usually resident Pacific population live in Counties Manukau. The Maori and Pacific populations have a very young age structure - over half are aged under 25 years. The number of Maori and Pacific peoples, although remaining a minority, are projected to increase at a higher rate than other ethnic groups. Maori and Pacific people are very over-represented in areas of relative deprivation - this is further explored in Chapter 3. Air quality and waste disposal are environmental concerns in the area but water quality is generally high apart from some supplies in rural areas.