

Transport Baseline Data And Regional Overview

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Prepared by:

Land Transport Programme
Environment Waikato
PO Box 4010
Hamilton East

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1.0 Introduction

This Transport Baseline Data report is the first step in the review of the Waikato Regional Land Transport Strategy. Its purpose is to set the scene for the review and it will be followed during the course of 2000 and 2001 by a Transport Issues Paper and Transport Options Report before a Draft Regional Land Transport Strategy is produced.

This report begins by presenting a picture of the region and its people. This is followed by an examination of the regional economy and a profile of industry and agriculture.

The report then provides an overview of the transport sector and then look at some of key areas affecting the transport sector such as environmental matters and the roles of the modes.

The report then lists some of the key strategic transport projects that are current in the region at present. At the end of the report is a summary of possible transport indicators that could be incorporated into the final Strategy.

In the appendix of the report is a summary of various transportation studies that have been done as part of the implementation of the Regional Land Transport Strategy since the first Strategy was produced in 1993.

It is intended that this Transport Baseline Data report will provide the general background that is needed to identify the key transport issues facing the region at present. The report will be distributed to all transport parties in the region for comment and feedback on issues.

2.0 The Waikato Region

2.1 Physical

The Waikato Region is the fourth largest region in New Zealand covering most of the Central North Island with an area of 25,598 square kilometres. The northern border is shared with the Auckland Region at the summit of the Bombay Hills, whilst to the east the Waikato region includes the Coromandel Peninsula and the Kaimai Hills. The western border is defined by the Tasman Sea whilst on the southern border Waikato incorporates Lake Taupo and the beginning of the volcanic plateau.

The natural and physical resources of the region are varied and economically significant to the entire country. The region includes two of the country's largest water masses being Lake Taupo (606 square kilometres) and the Waikato River. The Waikato river, at 425 kilometres in length, is the longest river in New Zealand and flows in a northerly direction from Lake Taupo to the Tasman Sea at the Waikato Heads.

[New Map of region to be provided by Jimmy Heta for insertion here]

2.2 Political

Governance within the region comprises regional government, territorial local government and central government agencies.

Regional Government

The Waikato Regional Council (Environment Waikato)¹ was established in 1989 and currently has 14 elected representatives from 10 constituencies within the region. The Council operates 7 standing committees and 3 subcommittees.

One of these committees is the Regional Land Transport Committee which is constituted under section 178 of the Land Transport Act 1998. Under this section every regional council must establish a land transport committee for its region which must consist of persons appointed by the regional council. The council may appoint any persons whom it considers to be suitable, including (but not limited to) representatives of all or any of the following:

- (a) The Transit NZ Authority;
- (b) The Transfund NZ Board;
- (c) Transit New Zealand;
- (d) The Commissioner of Police;
- (e) The regional council;
- (f) The territorial authorities in the region;
- (g) Commercial road users;
- (h) Private road users;
- (i) Railway operators;
- (j) Public transport users;
- (k) Representatives of cycle users and pedestrians;
- (l) Passenger service operators.

¹ Environment Waikato is the brand name adopted by the Waikato Regional Council

The functions of each regional land transport committee are to prepare for approval by the relevant regional council, the regional land transport strategy prepared under section 175 of the Land Transport Act 1998, and the regional programme prepared under section 42F of the Transit New Zealand Act 1989 for its region.

Territorial Local Government (District/City Councils)

The region includes 12 territorial local authorities, four of which (Franklin, Taupo, Rotorua and Waitomo) are also included in other regions. Each District/City council is governed by elected councillors. District/City councils are road controlling authorities responsible for the local roading network².

Government Agencies

Transit New Zealand

Transit New Zealand, a Crown entity, is the state highway operator. It is also responsible for the management, maintenance, and further development of the state highway network and reports to the Transit New Zealand Authority. This is an independent authority appointed by the government which operates much like a company board, directing overall policy and funding allocation.

Each year Transit New Zealand is required to prepare an annual work programme for the state highways and submit this to Transfund New Zealand for approval. Transit New Zealand Region 3 covers the Waikato and Bay of Plenty local government regions. The Regional office is based in Hamilton.

Transfund New Zealand

Transfund's objective is to allocate road-user funds from the National Road Account to achieve a safer and more efficient roading system. This account is made up of proceeds from a portion of the Fuel Excise Tax, road-user charges and motor vehicle registration funds. It is a Crown entity which develops the National Roding Programme (NRP), which proposes activities and allocates funds for roading, passenger transport, and efficient alternatives to roading, and reviews the activities of road controlling authorities.

The Transfund New Zealand region covers the Waikato and Bay of Plenty local government regions. The regional office is based in Hamilton.

Land Transport Safety Authority

The Land Transport Safety Authority, a stand-alone Crown entity, establishes safety standards for land transport infrastructure, vehicles and the people who use them, and monitors compliance with those standards. It also prepares the annual New Zealand Road Safety Programme and manages motor vehicle registration and licensing.

The Land Transport Safety Authority region covers the Waikato and Bay of Plenty regions. The regional office is based in Hamilton.

New Zealand Police

² Refer also to section 5.2 Land Transport Structures

The Waikato Police District covers all of the Waikato region except for the Franklin, South Waikato and Taupo Districts. The Waikato Police District office is based in Hamilton. The Districts of South Waikato and Taupo are administered by the Rotorua Police District and the Franklin District is administered through the South Auckland Police District.

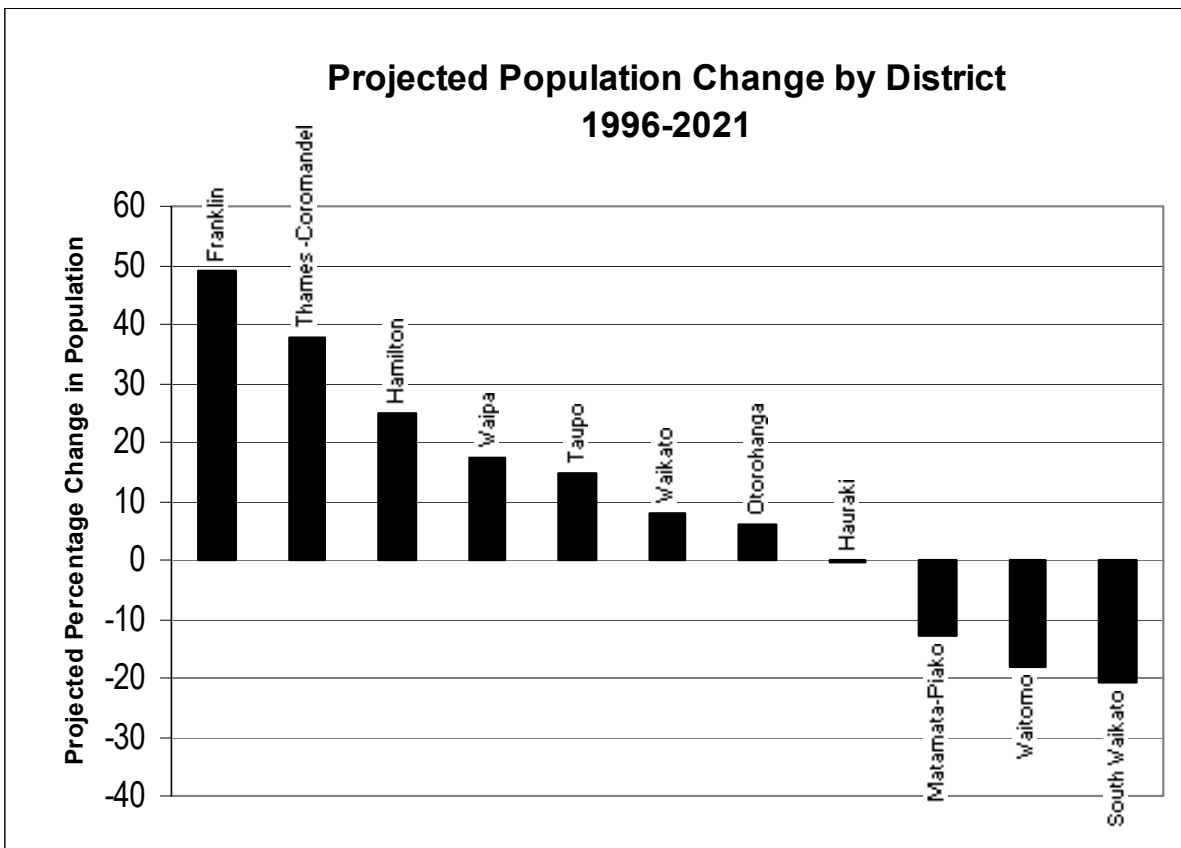
3.0 The Waikato People

3.1 Population

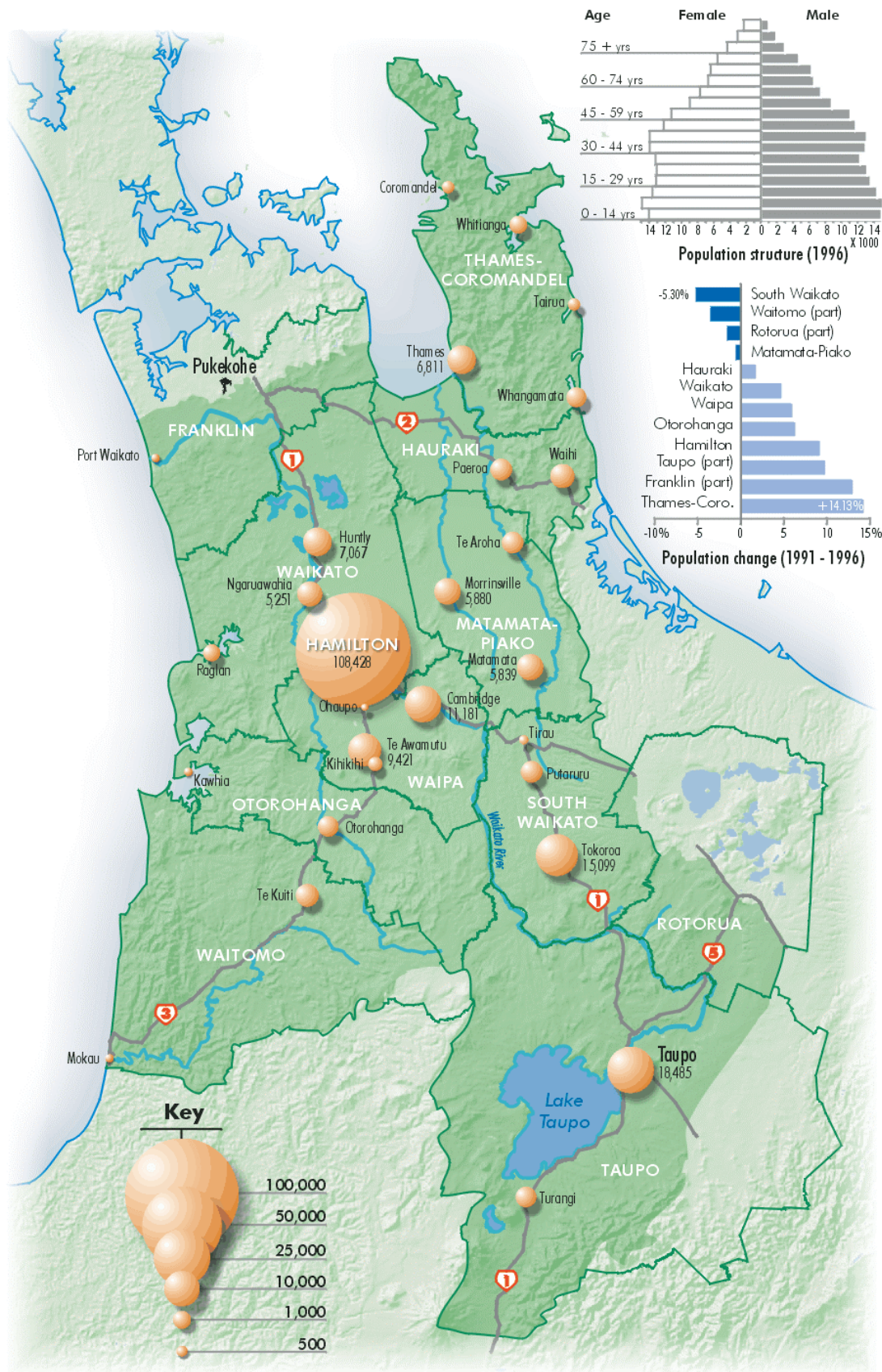
The Waikato region has the fourth-largest population in New Zealand. At the last census in March 1996 the regional population was 350,124.

Population growth in the region has been steady over the last ten years with the population increasing 9.3 percent between 1986 and 1996. Current population projections suggest the population will grow a further 13.5 percent by the year ended 2021 to reach a total of 406,500 people³. Population growth will be unevenly distributed throughout the region with the two northern districts of Franklin and Thames Coromandel showing the greatest growth but the south and west of the region are expected to lose population. The increase in population of Thames Coromandel is due to its popularity as a place to retire while the increase in Franklin District is due to its proximity to the rapidly expanding Auckland urban area. Other growth areas within the region include Hamilton City, Waipa District (Te Awamutu) and Taupo.

Population density is close to the average at 13.7 people per square kilometre compared to 13.1 nationally.



³ These projections are based on estimates calculated from June 1996. Statistics New Zealand.



Relief image supplied by Terralink NZ Limited; copyright reserved.
 Population and demographic data taken from 1996 Census database, Statistics New Zealand; copyright reserved

3.2 Migration

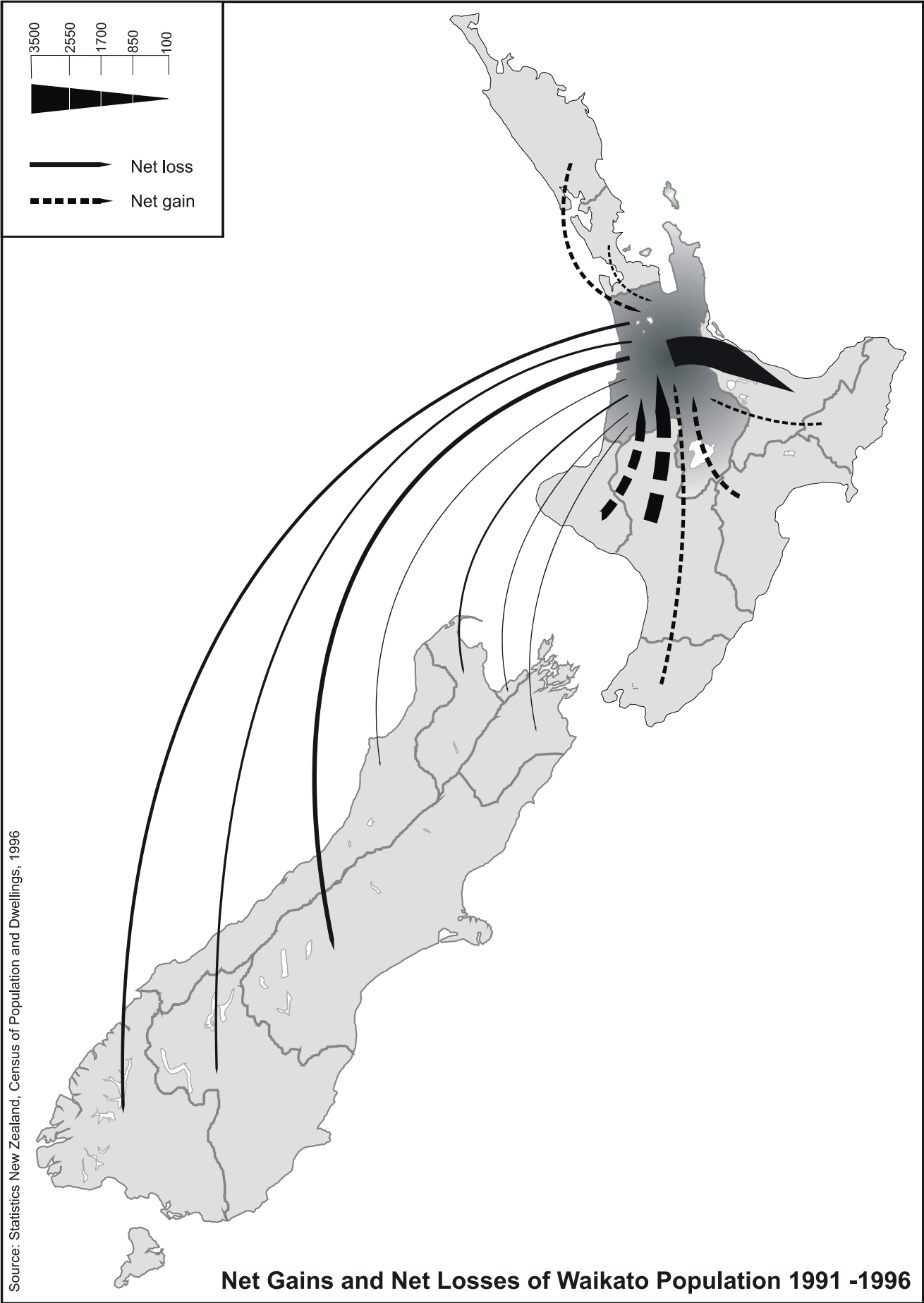
The Waikato Region has experienced steady growth over the last 10 years. There have however, been losses to the Bay of Plenty (11,049 between 1991 and 1996). The largest group migrating were aged between 25 –39 years (3,018), compared with a total of 1,677 people aged 60 years and over. This reflects the change in lifestyle that people are seeking either career wise or for retirement. [Refer Map on next page](#)

The most noticeable increases in the Waikato Region were between 1991 – 1996. These net increase were experienced from Taranaki (1,032 people) and Manawatu-Wanganui Region (1,524 people).

The Waikato Region has also experienced small by significant losses to the South Island, in particular Canterbury (552 people) and Southland (339 people).

Within the Waikato Region the projected (2021) population is likely to grow within three main Districts. These are Hamilton City Council, Waipa District and Taupo District. This directly reflects the increase in the Regions population centres Hamilton (41%), Te Awamutu (34%) and Taupo (33%) to the year 2021.

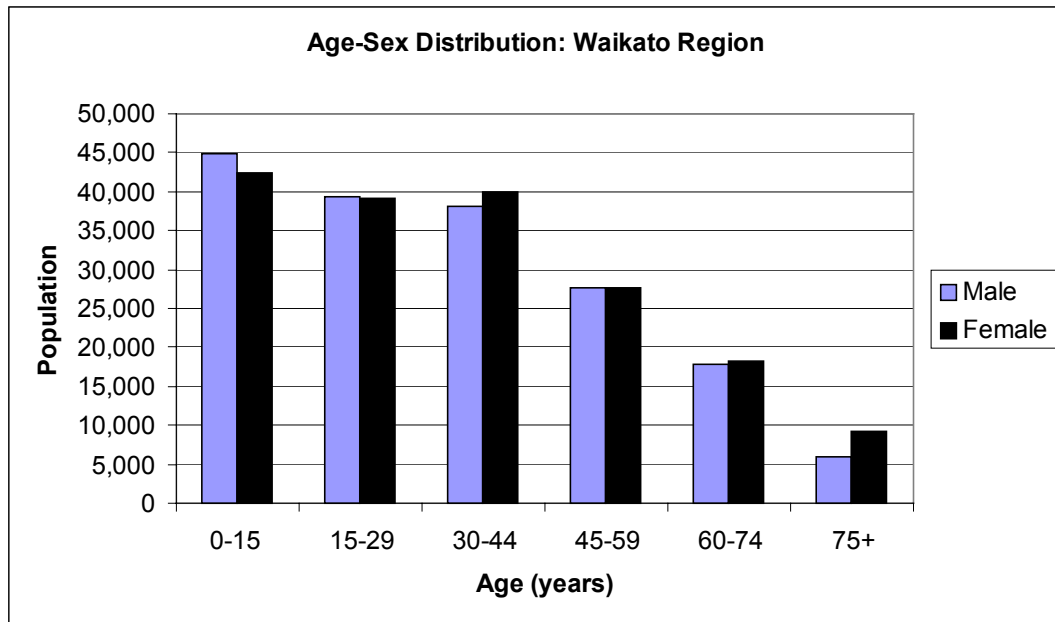
Projected Households for Territorial Authority Areas								
	1996	2001	2006	2011	2016	2021	Number	%
Thames Coromandel	9800	11000	11900	12900	13800	14700	4900	50
Hauraki	6100	6300	6500	6700	6900	7000	800	13
Waikato	12800	13600	14300	15000	15500	16000	3200	25
Matamata Piako	10600	10600	10700	10700	10600	10400	-200	-2
Hamilton	38200	41900	44900	47900	50800	53700	15500	41
Waipa	13400	14400	15300	16200	17100	17900	4600	34
Otorohanga	3000	3200	3300	3500	3600	3700	600	21
South Waikato	8400	8000	7900	7800	7600	7300	-1100	-13
Waitomo	3400	3300	3200	3200	3200	3100	-300	-10
Taupo	10700	11600	12300	13000	13600	14200	3500	33



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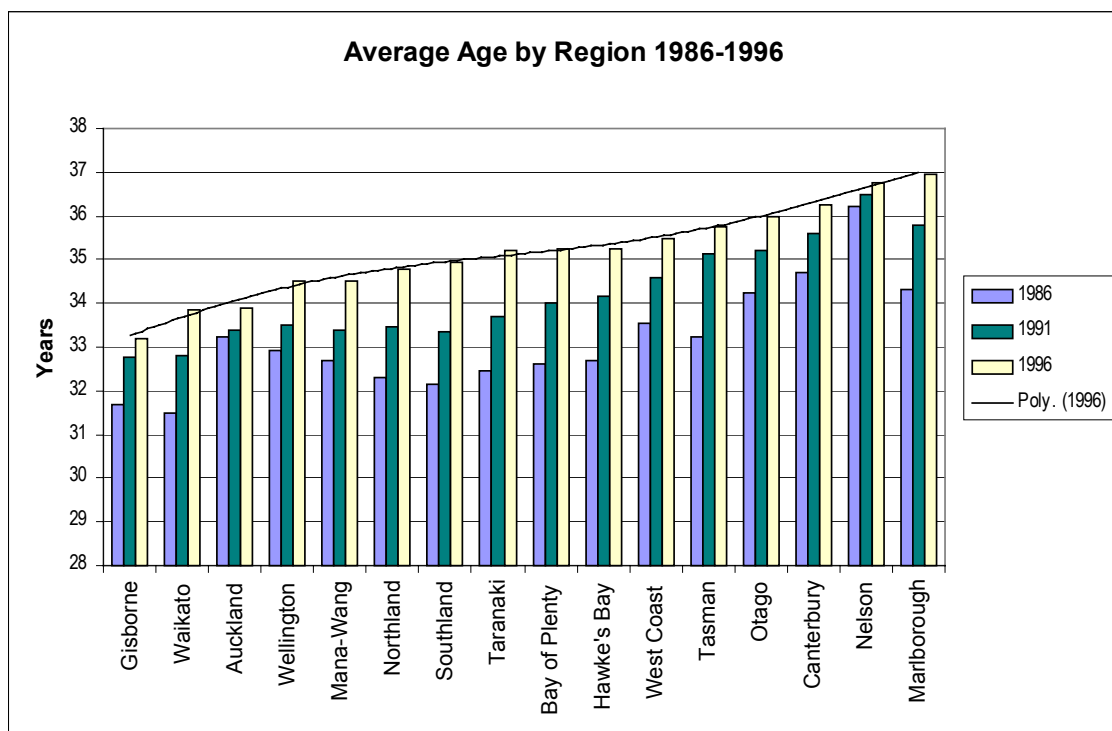
3.3 Age Structure

The population of the Waikato region is relatively youthful compared to the rest of the country.



This graph shows the high number of young people in the Waikato Region.

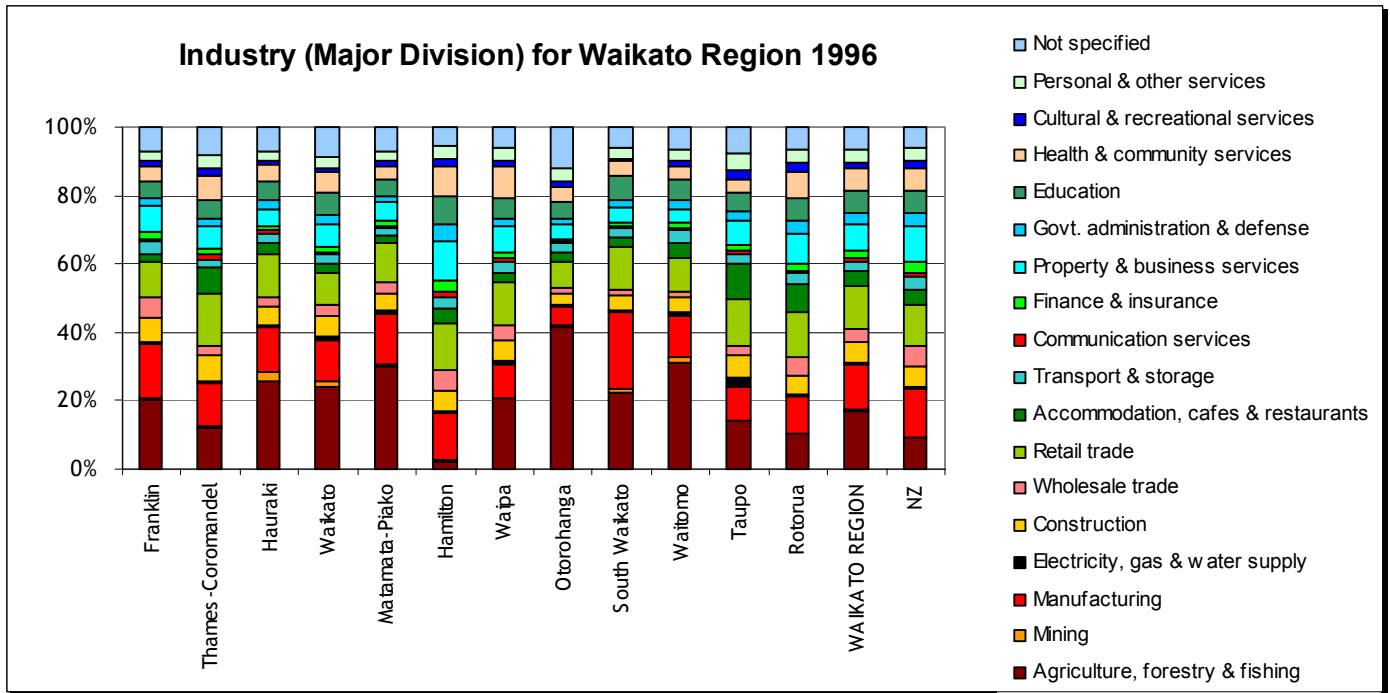
Compared to other regions in New Zealand, Waikato has a relatively low average age. The median age is 31.9 years, the second lowest in the country, over a year below the national figure of 33.0 years. This graph shows how rapidly New Zealand's population is ageing. Auckland and Nelson have the slowest ageing populations.



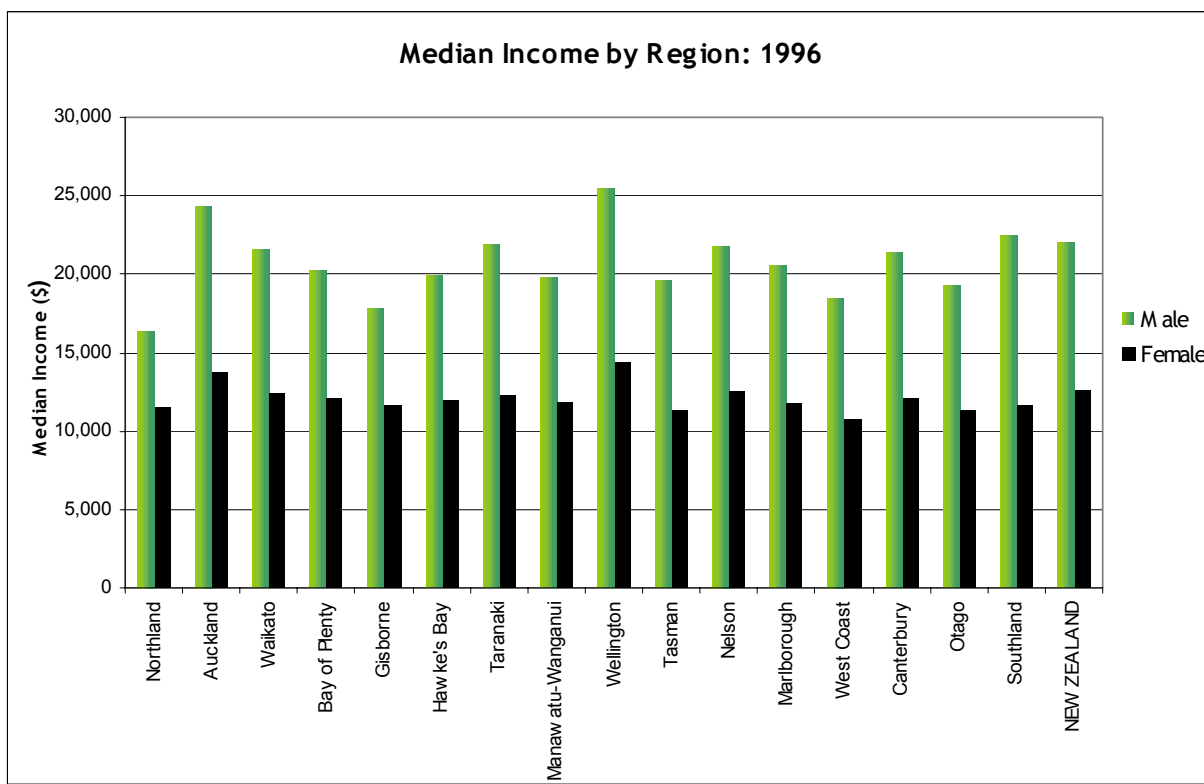
3.4 Work, Income & Wealth

Waikato is a region with a strong emphasis on agriculture and this is reflected on statistics on employment and education. Of those people employed in the Waikato Region, 26,223 worked in the agriculture, forestry and fishing industries, more than in any other region in the country.

Other major employers were manufacturing and retail trade.



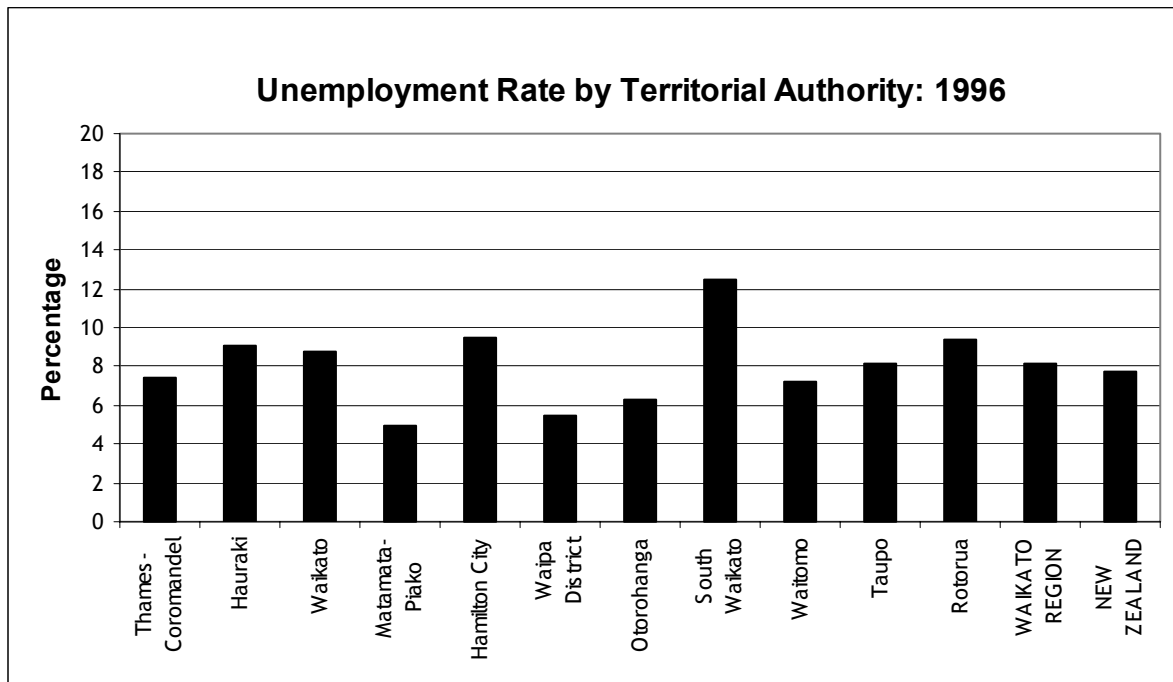
In the Waikato Region, annual median personal incomes for the year ended 31 March 1996 approximated the national median (as did median household incomes).



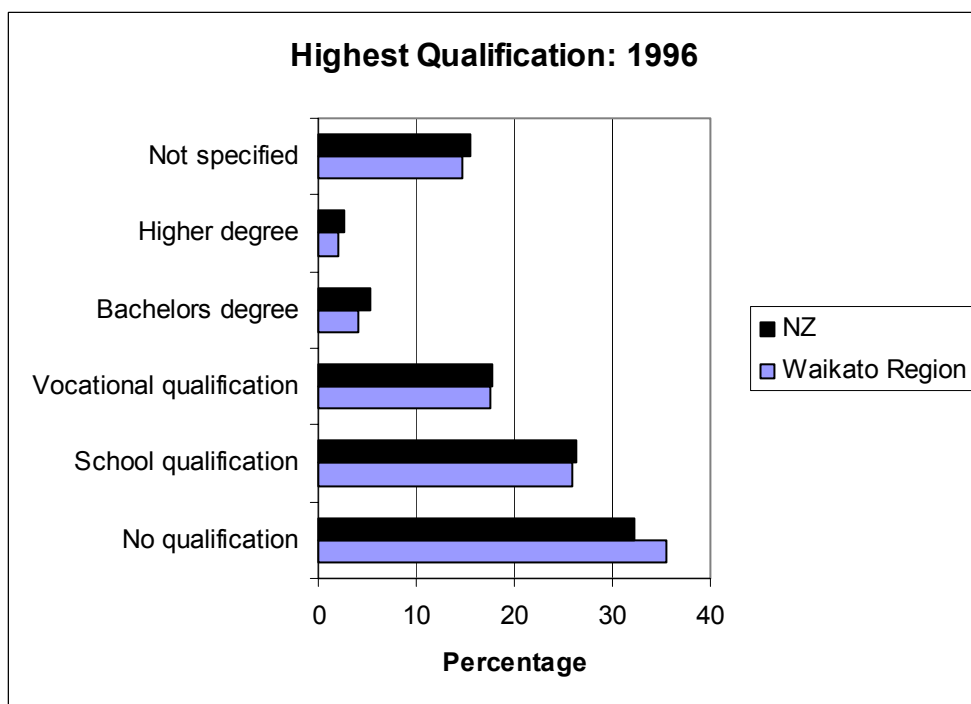
As at census night 1996, 8.1% of the population of the Waikato Region was unemployed. This was slightly higher than the national average of 7.7%. This is partly caused by the large numbers of young adults in the region who generally have higher unemployment rates.

Within the Waikato Region, South Waikato District had the highest level of unemployment at 12.5% and Matamata Piako District had the lowest level of unemployment at 4.9%.

Maori unemployment was three times that of non-Maori (19.9% of the working age population compared with 5.8% nationally).



36% of the adult population of the Waikato Region has no formal qualification, compared to 32% for New Zealand. The percentage of adults with a University education is lower than the national average with 4% holding a Bachelors degree. The level of university qualifications is much higher in Hamilton compared to the rest of the territorial authorities in the Waikato Region, as Waikato University is located in Hamilton City.



34% of people in the Waikato Region have two motor vehicles per household.

Number of Motor Vehicles per Household: 1996 Census

Number of motor vehicles	Waikato Region	New Zealand
None	10.9%	12.0%
1	44.0%	42.8%
2	33.7%	33.4%
3+	11.4%	11.7%

3.5 Ethnicity

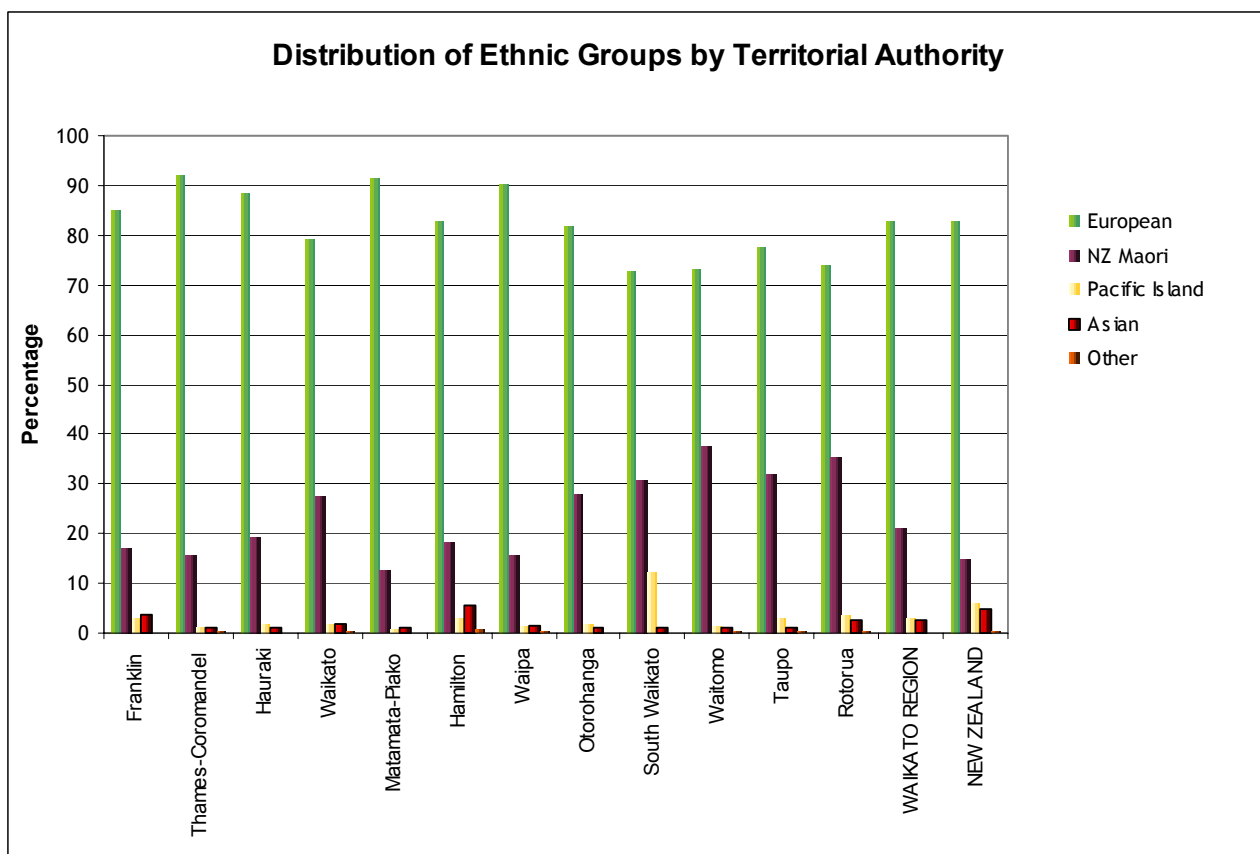
83% of people in the Waikato Region identify themselves with the European ethnic group.

Over a fifth of all people in the Waikato Region identify themselves with the Maori ethnic group (21%) and this is considerably higher than the national average of 15%.

Population estimates indicate that the Maori population in the region will grow steadily from an estimated 74,800 at June 1996, to 105,300 at June 2021. This represents an increase of 41%.

Other ethnic groups in the Waikato Region are under-represented compared to national figures. Pacific Islands peoples represent 2.8% of the population (compared to 5.8%) while Asian peoples represent 2.7% of the population (compared to 5.0%).

This is typical of the majority of regions within the North Island which are less urbanised and have not attracted overseas migrants.



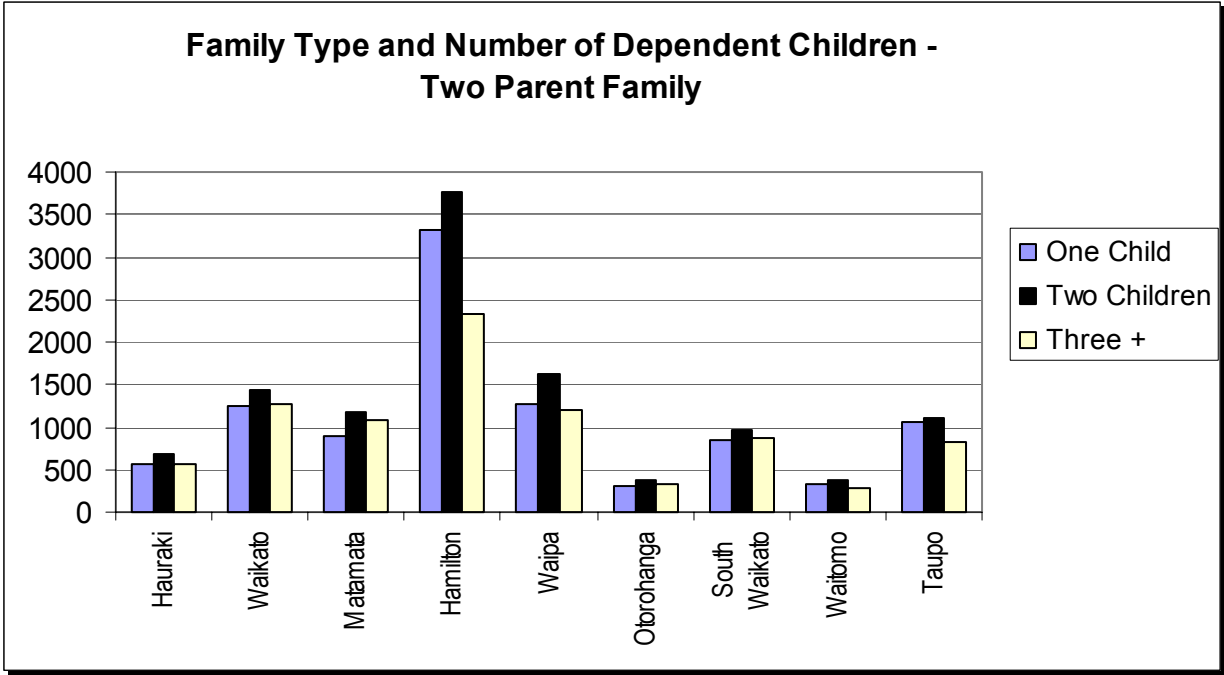
Note: Because people can identify with more than one ethnic group, percentages across Ethnic groups will add up to more than 100%.

3.6 Family Structure

The Social Marital Status recognises all non-registered permanent relationships.

The majority of the families in the Waikato Region are one-family households (66.7% compared to 64.9% for New Zealand).

Families in the region are larger than the New Zealand average with more families having three or more children.

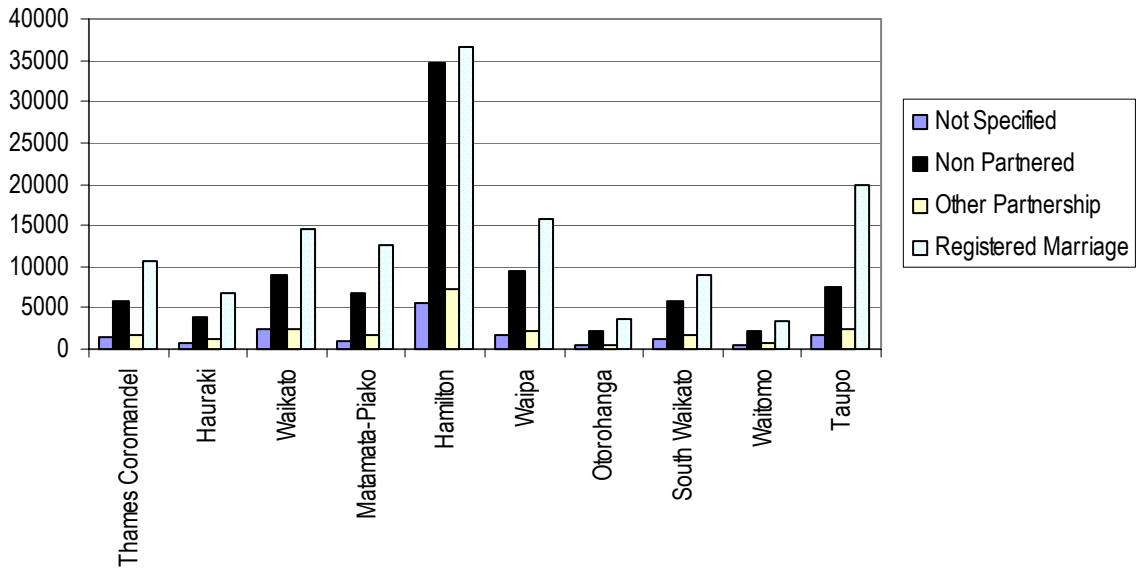


One parent families within the Waikato Region are more likely to have one child and live within Hamilton City. Two parent families on average will have two children and are more likely to be located within the territorial authorities throughout the Waikato Region. These results are consistent with statistics for the Waikato Region as a whole for two parent families.

There is a high proportion of single people relatively to married people within Hamilton City itself. These figures will be influenced by the relatively young population of the Waikato Region and the fact that Hamilton City has a university. University populations tend younger, non partnered and transient.

The total number of marriages has been declining, with just 21,038 marriages in 1997, compared to 27,200 in 1971. Many couples are choosing to live together either as a substitute for, or prelude to, formal marriage.

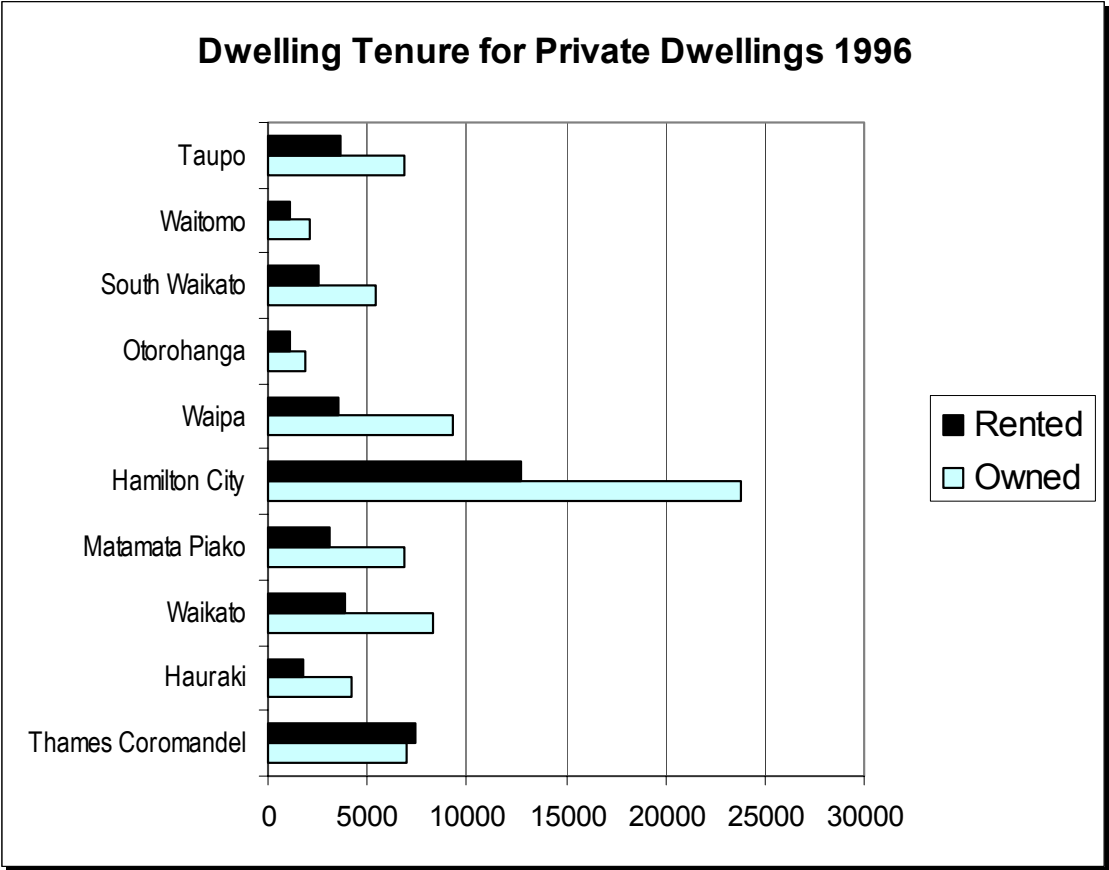
Social Marital Status by Territorial Authority



3.7 Dwellings

Waikato had the second lowest home ownership rate in the country. Of the 121,656 private dwellings in the region, 79,377 (67%) were owned. Of the remaining dwellings, 20.6% were provided rent-free. This is higher in predominantly rural territorial authorities such as Otorohanga District (42.6%) and Matamata-Piako District (37.7) in contrast to Hamilton City (5.7%). This is reflected in the fact that many farmers provided rent free accommodation on their farms.

The number of building consent applications issues by the territorial authorities within the Waikato Region are strong. Increases in the number of application have increased markedly over the period 1991 – 1997. The increase at 60.1% for new dwellings, was higher than the New Zealand average of 51.8%, and was the fourth highest percentage increase nationally.



4.0 Regional Economy

4.1 Overview

The regional economy is strongly linked to the Region's natural resources with an emphasis on agriculture, energy production, forestry, construction, mineral extraction and tourism.

Environment Waikato has developed an economic model of the region to describe, analyse and forecast the regional economic characteristics, limitations and patterns. The region's natural resources and climatic conditions support many primary producing economic sectors including agriculture, forestry, energy development and mining. The type and location of major industries are shown in Figure (see SOE figure 12)

[Map of industries from SOE to be inserted – See Jimmy Heta]

The table below summarises the main economic sectors and their regional contribution to GDP and regional employment.

Sector	GDP (Waikato Region) (\$ million)	Employment (% of regional workforce)	Comment
Manufacturing, Trade and Services	3,336	40%	Most business units and employees are involved in wholesale, retail trade and business services
Agriculture/Horticulture (incl. Processing)	1,400	22%	Nearly two-thirds of the Regions land area is used for agricultural production.
Forestry (incl. Logging and timber processing)	1,051	5%	Plantation forests cover approximately 12 percent of the region representing about a quarter of NZs plantation forest
Energy	412	<1%	The Waikato region is an important energy producer and energy corridor. Four geothermal and one thermal power stations deliver approximately three quarters of the North island generating capacity.
Tourism/Recreation	370	12%	The region is a popular tourist destination. Almost 10% of the guest nights spent by international and domestic visitors in commercial establishments are in the Waikato region
Transportation	338	3%	The regions intensive network of roads (10,000km the third highest in New Zealand),

			has the second highest traffic volume in NZ (four billion vehicle kms per year)
Mining	103	<1%	Waikato is the largest coal-producing region (54.5% of NZ total). Gold mining is also significant in the Waihi/Coromandel area.
Other	2868	16%	The region has a strong health sector. Government sectors (central and local) comprise fees and rates. The University of Waikato and a number of research and scientific institutes contribute to the significant education and research sector.
Total	9,884	100	
Total NZ	97,469		
Waikato %	10.1%		

Source: *Waikato State of the Environment Report 1998.*

As shown above the Waikato Region contributes about 10% of the New Zealand economy with a Gross Domestic product (GDP) of \$9.9 billion and an employment level of 136,000 (9.3% of the national workforce). These combined with other economic statistics makes the Waikato the fourth best performing regional economy for the year ended June 1989.

The average income (before tax) of full-time employed persons in the Waikato region is about \$40,000 (national average \$38,000). The average expenditure of a typical Waikato household is \$33,000 per year or \$630 per week for the year ended March 1997.

Figure xxx shows that the average Waikato household spends its money evenly between housing, transport, food, household costs and other goods and services.

Average Household Expenditure for Year Ended March 1997

Item	Waikato Annual Expenditure (\$)	Waikato Percent of expenditure	New Zealand Annual Expenditure (\$)	New Zealand Percent of expenditure
Food	5,184	15.8	5,431	16.4
Housing	6,931	21.1	6,719	20.3
Household operation	4,541	13.8	4,546	13.7
Apparel	1,127	3.4	1,246	3.8
Transportation	6,129	18.6	6,033	18.2
Other goods	3,954	12.0	3,814	11.5
Other Services	5,012	15.2	5,355	16.2
Total	32,878	100.0	33,145	100.0

Source: *Statistics New Zealand, Regional Household Expenditure Database*

4.2 Regional Economic Trends

Gross Domestic Product (GDP) recorded in the Waikato region between 1991 and 1997 shows a real annual growth of 4.3% compared with a national growth in GDP of 2.8% during the same period. This strong economic growth is mainly due to manufacturing, trade, business and household services sectors while agriculture (except for dairying which shows strong growth) forestry and energy have experienced lower or negative growth.

The Auckland region comprises 31% of the New Zealand economy and combined with Waikato they comprise the most important part of the New Zealand economy. Demographic analysis of the last 1996 census suggest this trend in importance of the top half of New Zealand will continue unabated. The future of the Waikato region will be significantly impacted by growth in the Auckland region. For example manufacturing industry may increasingly locate in the Waikato rather than Auckland where the cost of doing business could significantly increase in the future. Development of Hamilton airport for increased freight and tourism will be particularly important as will the completion of the 4 lane Auckland-Hamilton expressway

The Waikato region maintains strong links with both the Auckland and Bay of Plenty regions through use of both ports and airports in both regions. Being adjacent to NZ's largest domestic market is also an important advantage for Waikato manufacturing sectors.

Employment (real annual growth of 2.5% for the period 1991 to 1997) has generally lagged behind GDP, particularly in the manufacturing, energy and forestry sectors. This trend may reflect the impact of changes in central government policy, restructuring of industries, new technology, and the introduction of the Employment Contract Act 1991.

5.0 Industry and Agriculture Profile

5.1 Energy

The Waikato Region is the powerhouse of the North island supplying most of the North islands generation capacity. There are eight hydropower stations on the Waikato River. Together they have a generating capacity of 1,133 megawatts, nearly three-quarters of the total North Island capacity. The region also has two geothermal power stations and one thermal power station. The thermal power station at Huntly uses natural gas and coal. The Waikato Region is the largest coal-producing region in the country and in 1994 the Region produced 1.3 million tonnes of sub-bituminous coal which accounted for 43% of total New Zealand coal production. Production figures for 1993 show that total coal production in the region was worth \$83.44 million. The Huntly coalfields produce more than 10,000 tonnes of coal per day and it is estimated these reserves total approximately 30 million tonnes. There are 17 operating mines in the Waikato region.

5.2 Agriculture

Farming is a very important part of the region's economy with over two thirds of the region's land (17,555 square kilometres) devoted to agricultural production. The region is the most significant dairying region in New Zealand.

There are 11,428 farms in the region at 30 June 1997 with an average farm size of 154 hectares, well below the New Zealand average of 251 hectares. A total of 56.9% of land in the region is occupied by grazing, arable or fodder use.

Dairy and Beef Cattle farming in the Waikato, Year Ended June 1996

Area	Dairy Cattle	No of farms with dairy cattle	Beef Cattle	No of farms with beef cattle
Waikato	1,553,004	6,643	771,586	5,453
Total North Island	3,512,770	16,149	3,665,127	23,913
Total New Zealand	4,165,098	19,193	4,852,179	34,789
Waikato as % of New Zealand	37.3%	34.6%	15.9%	15.7%

Source: Statistics New Zealand, Agriculture Statistics.

5.3 Horticulture

Horticulture is not nearly as significant in the Waikato Region as in the Bay of Plenty but a total of 2,406 hectares is devoted to growing fruit (at June 1996) with most of this in the Waikato District. The area planted in grapes is reasonably small with 90 hectares of grape vines planted in 1997. The region is most renowned for its production of red wine.

5.4 Forestry

The Waikato region forms part of the largest area of forestry in the country. Most forestry in the region is situated on the volcanic plateau but the Coromandel Peninsula and Hauraki Plains are also significant forestry areas. In the Central North Island the yellow-brown pumice soils are very suitable for forestry although they require fertiliser for optimum tree growth. The climate in the region is most suitable for radiata pine so very few other exotic timber are planted except for some Douglas Fir. Timber from the Waikato region is exported through the Ports of Tauranga in the Bay of Plenty.

Area Planted in Production Forestry in Waikato, 1997

TLA	Area (ha)	Standing Volume (000m ²)	Percent in Radiata Pine	Percent in Douglas Fir	Percent in Hardwood
Franklin District	6,689	753	93.6	0.0	2.9
Thames Coromandel District	24,950	6,774	96.2	0.0	1.5
Hauraki District	2,866	396	98.0	0.0	1.7
Waikato District	11,541	1,026	97.0	0.0	1.8
Matamata-Piako District	1,367	267	94.8	0.0	4.9
Hamilton City	72	7	100.0	0.0	0.0
Waipa District	1,026	183	83.6	109.0	11.3
Otorohanga District	4,172	1,383	91.8	3.3	3.7
South Waikato District	80,460	24,572	91.8	1.8	6.2
Waitomo District	20,234	4,784	93.8	5.0	0.6
Taupo District	195,883	53,776	92.0	4.3	2.5
Total Region	349,260	93,921			
NZ Total	1,630,000	329,000			
Waikato % of NZ	21.4%	28.5%			

Source: *New Zealand's Forest Growing and Wood Processing Sector, Ministry of Forestry, June 1997.*

5.5 Retail Trade

Economic indicators suggest the Waikato Region, despite a slightly above average unemployment rate, is prospering. Retail trade in the region for 1996 and 1997 was the fourth highest in the country averaging an annual turnover of \$3,589 million for these two years.

5.6 Building

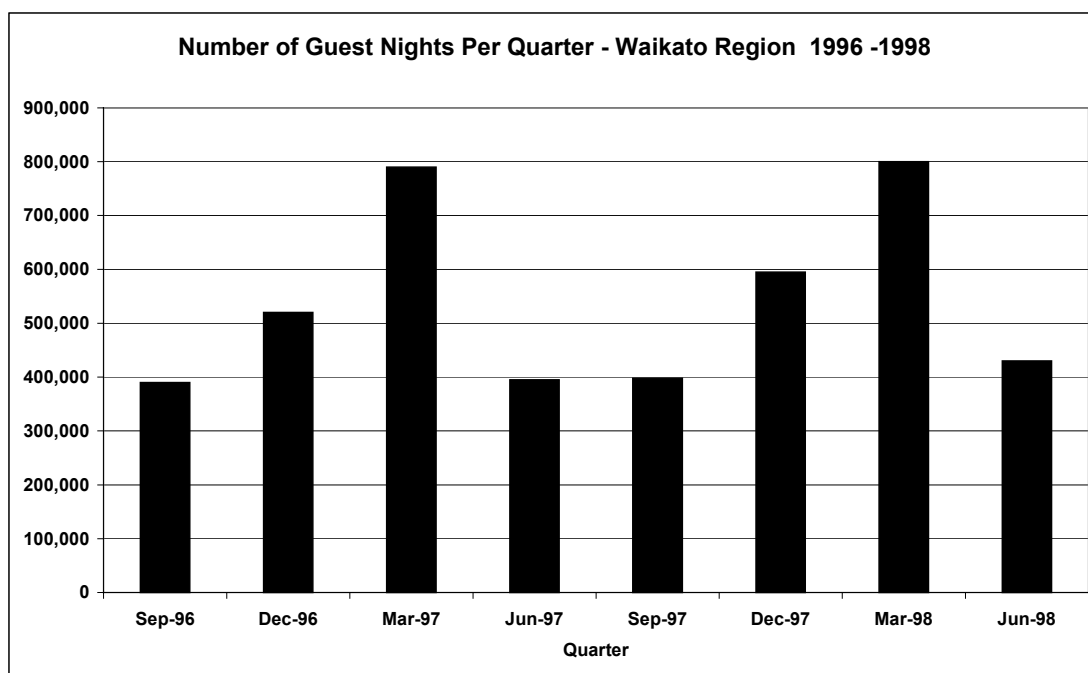
Building consents are relatively strong in the region and shares this buoyancy with Auckland and Bay of Plenty. There has been a sharp increase in the numbers of building consents issued in Waikato between 1991 and 1997. This increase was higher than the New Zealand average and was the fourth highest percentage increase nationally.

The median house prices for the region rose to \$165,000 in November 1999, from both the \$157,000 recorded in October 1999 and \$155,000 recorded in November 1998. The regional median is slightly lower than the national median of \$172,000 however there is variation in median values across the region with Thames-Coromandel and Hamilton City having higher house prices than the regional average.

5.7 Tourism

The popularity of the region is shown in the number of guest nights, averaging almost a tenth of the total guest nights in New Zealand per quarter from September 1996 to June 1998. Between December 1996 and December 1997 the number of guests in the Waikato region increased by 9.4 percent compared to a 1.5% increase nationally.

Guest Nights (per Quarter) in the Waikato Region September 1996 to March 1998



Source: *Statistics New Zealand, Accommodation Guide*

6.0 Transport Profile of the Waikato Region

6.1 Overview

The Waikato region has an intensive network of roads. It comprises over 10,000 kilometres of roads, the third highest of any region, accounting for 11.0 percent of the total road length in the country (see table xxxxx below). It has the greatest length of state highways nationally, 1,600 kms, reflecting the importance of the region as a link between the upper and lower North Island. In addition there are 1,600kms of urban roads and 7,000kms of rural roads (refer table xxxxx below).

Although the central transport routes are generally of a high standard the region also has some rough roads. Most roads (75.4 percent) are sealed but areas such as the Coromandel Peninsula have a number of rough, unsealed roads that are often subject to slips and washouts.

The Waikato roads are busy since the region has the second highest traffic volume in the country at 3,949 million vehicle kilometres per year. This traffic volume is related to the proximity of the Auckland region, which has the largest population in the country. Indeed the traffic network is closely linked with the needs of the Auckland region, as well as the local Waikato residents. Traffic growth has been steady within a range of 2 - 5% per annum. The heavy vehicle content on strategic roads is high and ranges from 12 to 16 percent.

Above average traffic and population growth in the central and upper North Island continue to provide pressure points on the roading network across the region. The central/northern sector of the North island comprising the Waikato/Auckland/BOP regions together make up:

- 46% of the NZ population.
- 24% of the NZ roading network.
- 41% of the Transfund Roding Programme.

Roading Physical Statistics as at 30 June 1999

	Waikato Region	New Zealand	% of NZ
Sealed State Highways	1615.6	10,540.0	15.33%
Unsealed State Highways	12.9	64.9	19.88%
Total State Highways	1628.5	10,604.9	15.36%
Sealed Urban Local Roads	1,567.9	15,519.6	10.10%
Unsealed Urban Local Roads	29.9	442.4	6.76%
Total Urban Local Roads	1,597.8	15,962.0	10.01%
Sealed Rural Local Roads	4,653.7	30,967.5	15.03%
Unsealed Rural Local Roads	2,310.1	34,540.4	6.69%
Total Rural Local Roads	6,963.8	65,507.9	10.63%
Total All Sealed Roads	7,837.2	57,027.1	13.74%
Total All Unsealed Roads	2,353.1	35,048.0	6.71%
Total All Roads	10,190.3	92,075.1	11.07%
State Highway Bridges – 2 lane	408	3492	11.68%
State Highway Bridges – 1 lane	22	202	10.89%

Local Roads Bridges – 2 lane	898	5587	16.07%
State Highway Bridges – 1 lane	565	7491	7.54%

Source: Transfund New Zealand Roading Statistics 1999

Roading Expenditure for Year Ending 30 June 1999 (000s)

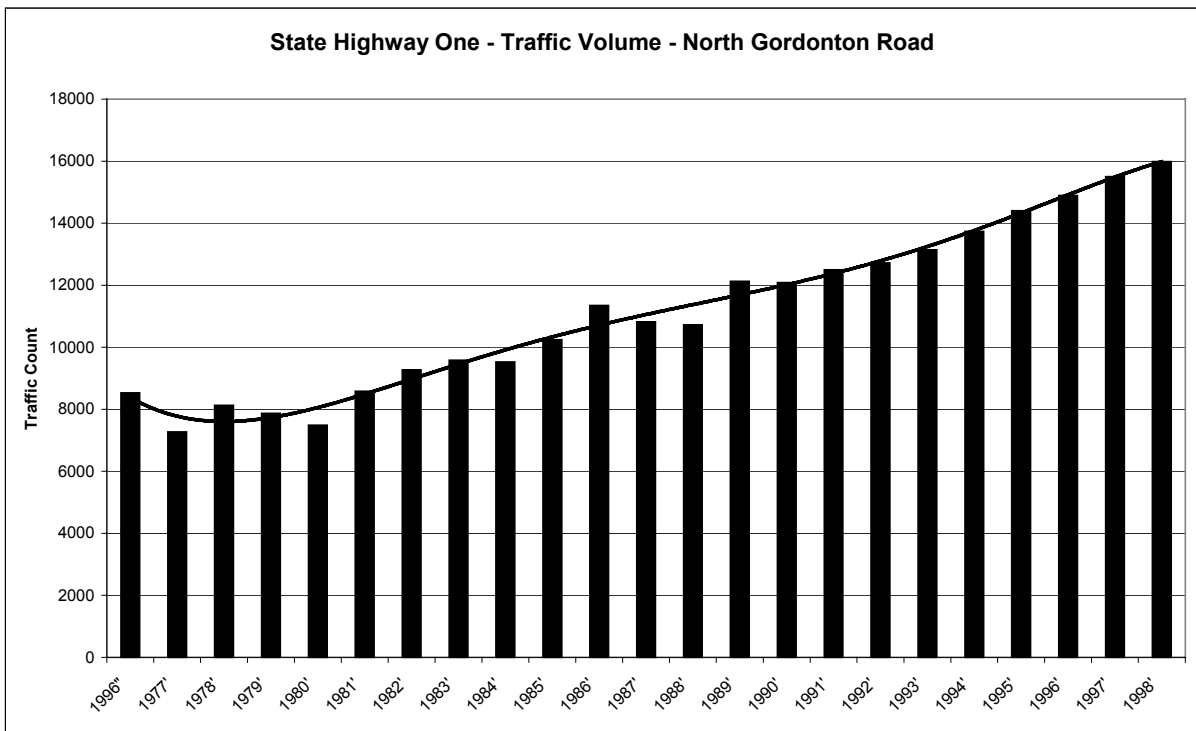
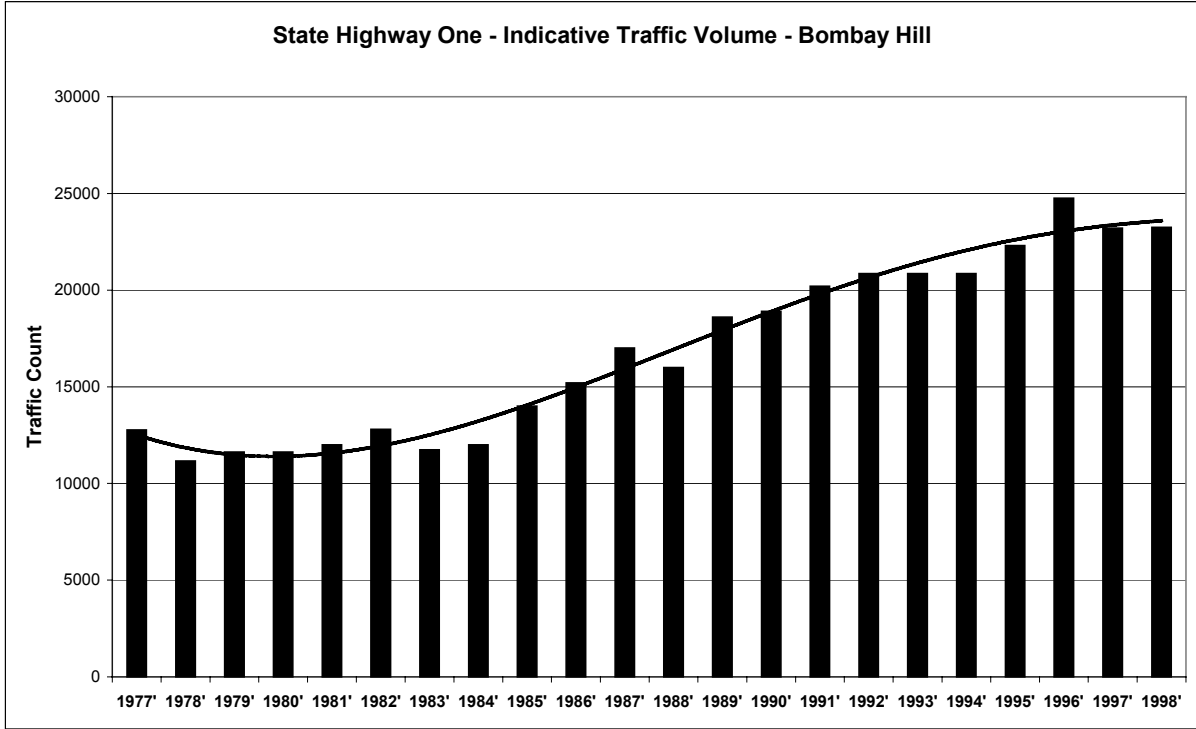
	Waikato Region	New Zealand	% of NZ
State Highways			
Routine Maintenance	19734.2	132881.0	14.85%
Safety Maintenance	4432.3	32823.0	13.50%
Reseals	7445.2	50083.1	14.87%
Preventative maintenance	102.9	1496.0	6.88%
Emergency Works	13676.8	34507.1	39.63%
Rehabilitation	7312.2	10952.0	66.77%
Minor Safety	871.7	5537.0	15.74%
Bridge Reconstruction	397.8	6587.1	6.04%
Construction	11459.7	188984	6.06%
Property	7948.7	45660	17.41%
Total SH Expenditure	73381.5	515684.2	14.23%
Local Roads			
Routine Maintenance	17552.9	145868.1	12.03%
Safety Maintenance	3141.1	29741.1	10.56%
Reseals	3753.1	35643.1	10.53%
Preventative maintenance	35.6	788	4.52%
Emergency Works	1024.8	18544.0	5.53%
Rehabilitation	4196.1	17402.1	24.11%
Minor Safety	551.3	5033.0	10.95%
Bridge Reconstruction	58.1	2262.0	2.57%
Construction	2305	42608	5.41%
Total LR Expenditure	32617.9	297889.4	10.95%

Source: Transfund New Zealand Roading Statistics 1999.

Traffic Volumes:

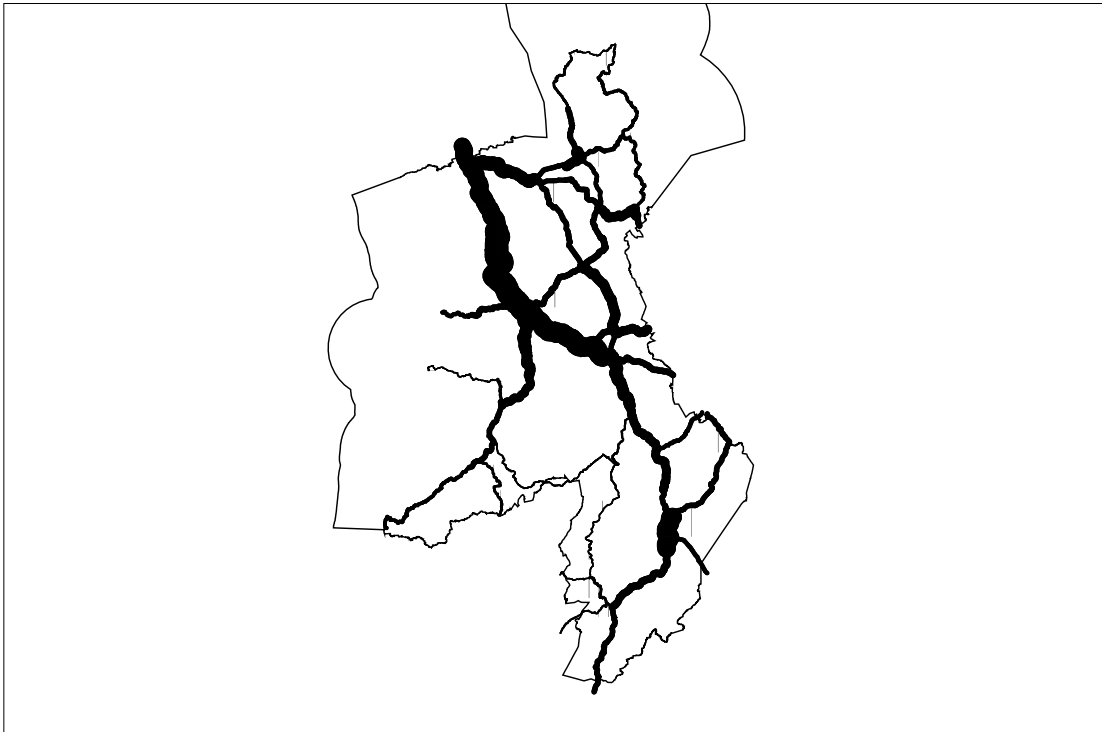
Traffic volumes in the region are growing at a high rate. This is illustrated by the State Highway One traffic count graphs below.

Traffic Growth SH 1



Source: State Highway Traffic Volumes 1975-1997. Transit NZ Hamilton

State Highway Traffic Volumes



Source: Transit New Zealand Traffic Counts 1975-1997

Car registrations provide an important input about the prosperity of a region as well as giving an insight into car ownership patterns. A total of 11,815 new or ex-overseas vehicles were registered in Waikato in 1997, 33.7 vehicle per 1000 people. This was approximately half the proportion registered in Auckland but higher than most other regions.

The region provides important arterial links for the transport of goods between the Ports of Auckland, Napier and Tauranga/Mount Maunganui.

Seven major rail routes carry passengers and freight. Many small airfields serve the region and national carriers operate at airfield in Taupo and Hamilton. International services operate out of Hamilton airport.

[Map of Rail Lines in the region from Jimmy Heta]

6.2 Land Transport Administrative Structure

Land Transport is administered by a number of organisations in the region. A summary of the role of these organisations is provided for each transport function:

Roading:

Transit New Zealand

Road controlling authority responsible for the state highway network.

District/City Councils(Territorial local authorities)

Road controlling authorities responsible for the local roading network (all public roads other than state highways).

Transfund New Zealand

Funding authority which distributes central government funds for roading and undertakes audits of road controlling authorities.

Regional Councils

Planning authority responsible for preparing Regional Land Transport Strategies.

Land Transport Authority

Regulatory authority responsible for the safe operation of the roading system and development of land transport rules.

Passenger Transport

Regional Councils

Responsible for planning and contracting of passenger transport services within a region. Also registers commercial passenger transport services.

Transfund New Zealand

Funding authority which distributes central government funds for passenger transport and undertakes audits of tendering authorities.

Land Transport Safety Authority

Regulatory authority which issues passenger transport licenses and ensures industry compliance with land transport legislation.

Bus Contractors

Supply bus services commercially or under contract to regional councils.

District/City Councils

Provide bus stops, shelters and other passenger transport infrastructure.

Rail

Tranz Rail is a commercial organisation providing rail freight and passenger transport services throughout New Zealand. The company is owned by a private consortium comprising Wisconsin Central Transportation Corporation, Berkshire Partners and Fay, Richwhite and Company. The consortium plays a key role in New Zealand's increasingly competitive transport market, operating rail, trucking and shipping services throughout its national network. In the 1998-99 financial year it carried 12.9 million tonnes an average distance of approximately 300 km.

At 30 June 1998 Tranz Rail's track and rolling stock included 380 diesel, electric and shunting locomotives, 6,382 freight wagons, 328 passenger carriages and commuter units, three rail ferries and plant and support equipment.

Tranz Rail operates a railway network extending over 3,913 km.

Land Transport Safety Authority
Responsible for ensuring the safe operation of the rail system,

Cycling

District/City Councils
Road controlling authorities who are responsible for providing cycle lanes, cycleways within their areas.

Regional Councils
Planning authority required to address all transport modes in the Regional Land Transport Strategy

Cycle Advocate Groups
Volunteer groups who provide advice to road controlling authorities on cycling matters.

Freight Transport

Commercial Road Transport Operators
Freight is transported on heavy vehicles owned by commercial companies.

Tranz Rail
Freight is transport on rail by Tranz Rail Limited.

Land Transport Safety Authority
Responsible for the regulation of the industry

NZ Road Transport Association
Industry organisation which advocates on behalf of the heavy transport industry. Membership is voluntary.

New Zealand Police
Responsible for enforcement of land transport legislation including overweight vehicles.

7.0: Transport Matters

7.1 Industry/Sector Matters

Forestry⁴

Key issues facing the forestry sector are the pending increase in harvesting volumes. An example of this is in Otorohanga District where harvesting of forest at Kawhia is having an enormous impact on SH 31 with rapid deterioration of the pavement.

Dairy Industry

⁴ Refer Study Summary in Appendix One

Milk transport results in approx. 19 million kilometres of tanker movements, representing 80% of all road transport associated with the dairy industry. Roothing is the vital link in the milk supply chain and vital for industry competitiveness.

Processed products are transported by road and rail with road accounting for the majority. Major destinations for dairy products are the Ports of Auckland and Tauranga. Approx. 2 million kilometres of road transport is associated with product transportation.

By-products, including cream and whey, account for 2.1 million kilometres of road transport. 166,000 tonne of coal is transported from 3 Glencoal sites to 4 NZDG sites. This equals 782,200 kilometres of truck transport.

In total 24 million kilometres of heavy road transport has been associated with the dairy industry (or 8%) of the total heavy vehicle kms driven in the Waikato region.

Transport issues facing the industry are rationalisation of processing plants and greater distances of cartage between sites. A good quality rooding network is essential to the future competitiveness of the dairy industry and arterial routes need to be managed and maintained accordingly, including right-of-way at intersections.

Aggregates

Refer Appendix One

7.2 Environmental Issues

7.2.1 Air Quality

The current Regional Land Transport Strategy has identified motor vehicle exhaust emissions as an environmental concern. In 1996/97 Environment Waikato undertook a petrol vehicle exhaust emissions campaign and in 1998/99 undertook a further programme to test diesel vehicle exhaust emissions.

The results from both programmes were disturbing and a summary of these studies can be found in Appendix One. A recommendation arising from both programmes was that central government needs to develop national controls so that any regulation can be applied consistently across the country.

In December 1998 the Ministry of Transport released the final report on the Vehicle Fleet Emissions Control Strategy and called for submissions by 12 March 1999. Environment Waikato hosted a Workshop on the Strategy and also made a submission to the Ministry.

In 1999 the Ministry of Transport released a further report called '*Vehicle Fleet Emissions Control Strategy – Summary of Submissions*'. This report provides a summary and analysis of the submissions received on the *VFECS – Final Report* and sets out the combinations of measures the Government has decided to proceed with to manage the impacts of vehicle exhaust emissions on local air quality in New Zealand. Briefly these measures include:

For Air Quality

- Review and develop air quality guidelines
- Ensure the Environmental Performance Indicators approach is implemented
- Develop consistent methods to monitor local air quality.

To improve Individual vehicle performance

- Formalise a system of progressive emission standards for vehicles entering the fleet

- Review the fuel specification
- Introduce guidelines for identifying excessively smoky vehicles
- Encourage improved maintenance of vehicles

To improve Traffic Conditions

- Promote the use of Environmental Capacity Analysis to measure the effect of different management techniques, such as bus lanes, traffic calming and congestion pricing, on traffic emission from busy roads.

The Ministry of Transport is currently working on the implementation of these measures.

7.2.3 Water Quality

Land transport can contribute to water pollution and degradation in a number of ways including runoff from paved and sealed areas such as roads, carparks and service areas. The current Regional Land Transport Strategy includes a number of means to reduce the impacts of land transport on water quality. At present water quality scientists and resource officers are looking at ways to more accurately determine the pollutants off roads and come up with new measures to reduce the adverse effects of these pollutants.

7.2.3 Noise

Noise from transport sources is generally the most significant source of noise in the region. In normal traffic flows the engine and exhaust system are the most serious sources of vehicle noise with deceleration, braking and acceleration being a significant element in urban noise. Noise can have adverse effects ranging from decreasing peace and amenity to disturbed sleep patterns, speech interruptions, stress, interference with activities and in some cases may cause hearing problems. Transit New Zealand has prepared draft guidelines for the management of road noise for new roading developments. Some territorial local authorities have included provisions for traffic noise in their District Plans.

In recent times noise from “boom boxes” in cars has arisen as an issue of environmental concern. The Land Transport Safety Authority is addressing this matter through its Rule process.

7.2.4 Debris and Spillages

Debris and spillages covers such things as roadside litter, effluent discharges from stock trucks and campervans and any other material or substance that may have fallen or been discharged from vehicles or trains.

Stock truck effluent has been a key issue in the Waikato region and a number of initiatives are being undertaken to address the issue. Environment Waikato is undertaking a series of site investigations around the region to determine the most suitable places for effluent disposal facilities. To date the Taupo, Matamata-Piako, Hauraki and Otorohanga Districts have put funding aside for the construction of facilities in their districts. A case is also being made to Transfund New Zealand to contribute funding toward these facilities.

At the national level the National Stock Effluent Group has produced a Code of Practice for the minimisation of stock effluent on roads. In addition the Group has developed a model to determine the best network of sites across the South island.

Environment Waikato is also investigating the possible use of infringement notices in cases of the dumping of effluent from stock truck tanks in public areas such as lay-bys, rest areas,

gateways, near waterway, or in bus stop areas. These notices act as instant fines and are effective in cases where clear evidence can be collected.

7.2.5 Hazardous Substances

Due to its location the Waikato Region experiences a significant number of hazardous substance transport movements both within and through the region. Land transport of hazardous substances may involve anything from small quantities of chemicals to large tanker loads of bulk materials such as petrol and LPG. EW has undertaken a Hazardous Substance Transport Study and the results of this study are contained in Appendix one.

7.3 Transport Modes

7.3.1 Public Passenger Transport

Public transport funding has been capped by Transfund New Zealand for a number of years. In late 1999 Environment Waikato, along with Auckland, Wellington and Canterbury regional councils made a submission to the incoming Minister of Transport on reforming the basis of public passenger transport funding. In particular Environment Waikato supports:

- Increased subsidy levels for public transport initially from 40% to 50% and provide Regional Councils with more flexible mechanisms to raise revenue for public passenger transport.
- That central government make a commitment to fully fund Total Mobility and social services in the future, with an immediate increase from the current 40% to 75% subsidy level.
- Relaxation of the “alternatives to roading” by lowering the Efficiency Ratio (ER) for passenger transport projects
- In the medium term review current legislation and move to a best transport solutions rather than minimum price outcomes.

Hamilton Transport Centre (ATR)

Environment Waikato is to make an application to Transfund NZ for an Alternative to Roading project to upgrade/replace the Hamilton Transport Centre. The existing Hamilton Transport centre is in poor condition and consistently scores badly in public polls and surveys. The Hamilton Integrated Transport Strategy has identified the Centre as a key project for improving transport within Hamilton. It is estimated that the upgrade will cost some \$8million (net land cost \$5M and capital improvements \$3M) less costs associated with national and inter-regional services. It is anticipated that a new centre might be completed within the medium term.

7.3.2 Total Mobility

It is estimated that 10% of the population in New Zealand are people with disabilities. Of that 10%, “more than 5% are people whose disability does not allow them to use public transport⁵”

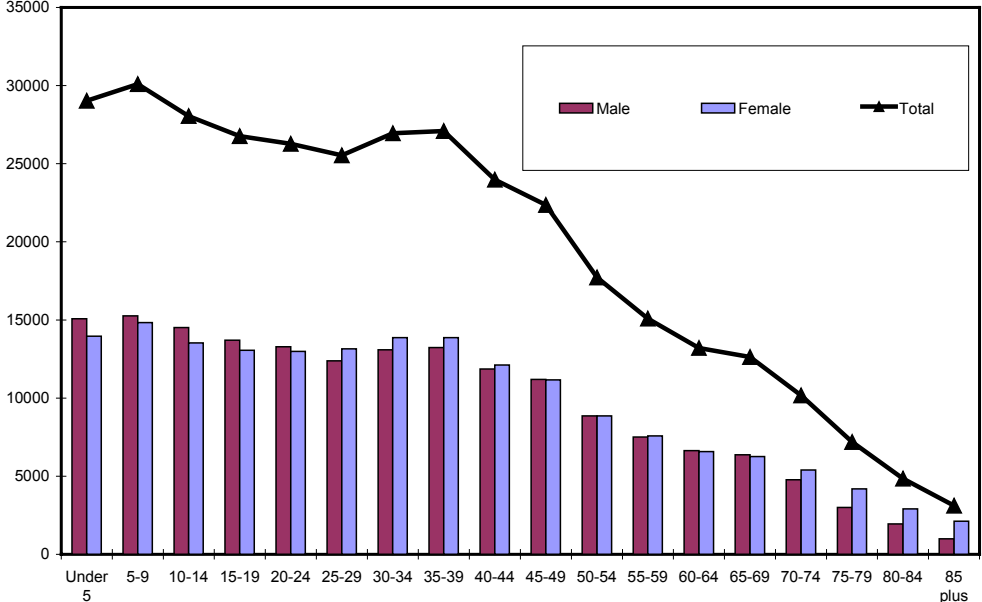
⁵ (Paul Curry, cited in the 1982 Total Mobility report by Synergy Applied Research).

Eligibility to use Total Mobility (T.M) is based on a person’s ability to use public transport ie. If their disability precludes them from using the bus system they may qualify to use TM. Applying these figures to the Waikato Region means that of the 350,121 (1996 Census Data) people who usually reside in the Waikato Region, at least 17,500 may be eligible to use TM.

At present Environment Waikato operates TM Schemes in Hamilton, Taupo, Tokoroa, and a once a week service between Matamata and Hamilton. Environment Waikato currently delivers T.M services to approximately 960 people in the region – less than 1% of the total population. More than 50% of these current users are over 65 years old.

With an ageing population and the shift to community care as opposed to institutional care, it is highly unlikely that the demand for TM services will abate. It is more probable that the demand will increase. While TM is not promoted, awareness in the community is increasing, and people with disabilities are becoming more involved in the communities in which they live. The population distribution from the 1996 Census clearly indicates the percentage of people between 30 and 40 is higher than other age groups, which would suggest that in 2010 there will be a significantly higher demand for TM. Refer graph below.

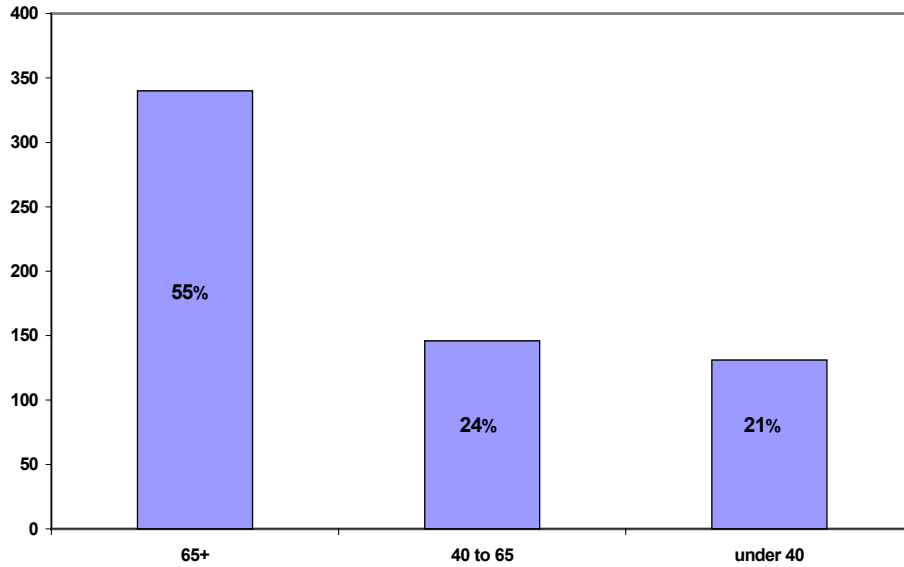
Waikato Population by Age Group



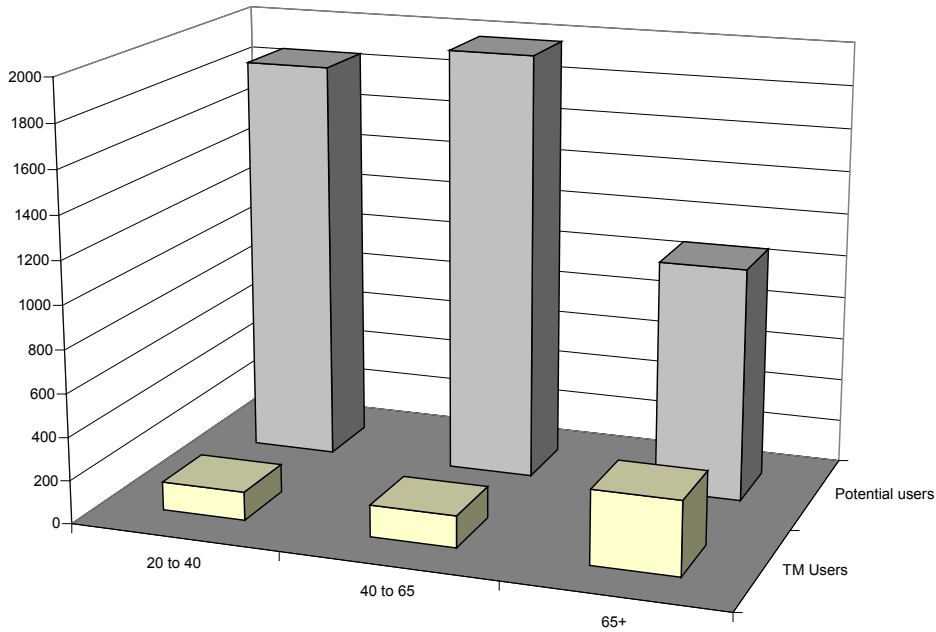
In Hamilton (population 108,432) there are currently 617 Total Mobility users – again less than 1% of the population. Of the total 55% are aged over 65, 424 (69%) are women, and only 87 (14%) of the 617 use wheelchairs, while 190 (31%) use walking sticks or frames.

Of the 424 over 65 year olds, only 74 (17%) indicated that they could use a super low floor bus. The problem with the current bus system is not necessarily just the step height – it is also the distance from their homes, and being unable to carry their groceries from the supermarket to the bus stop, and then from the bus stop to their home.

**Hamilton Total Mobility Users
by Age Group**



The following graph demonstrates clearly the gap between the potential users (using a conservative figure of 4.5% of the Hamilton population) and the current users of the TM scheme. There is no reason to suggest the demand for these services will diminish, in fact there is every reason to believe they will increase as the population ages.



7.3.3 Private Motor vehicle

Issues include congestion, parking, operating costs etc

7.3.4 Rail Passenger Transport

During the recent review of the Regional Passenger Transport Plan the issue of the rail commuter service between Hamilton and Auckland arose. This service has been subject to earlier investigations and a summary of that study is included in Appendix One. This service is not currently deemed commercial but is subject to ongoing scrutiny by Tranz Rail.

7.3.5 Cycling

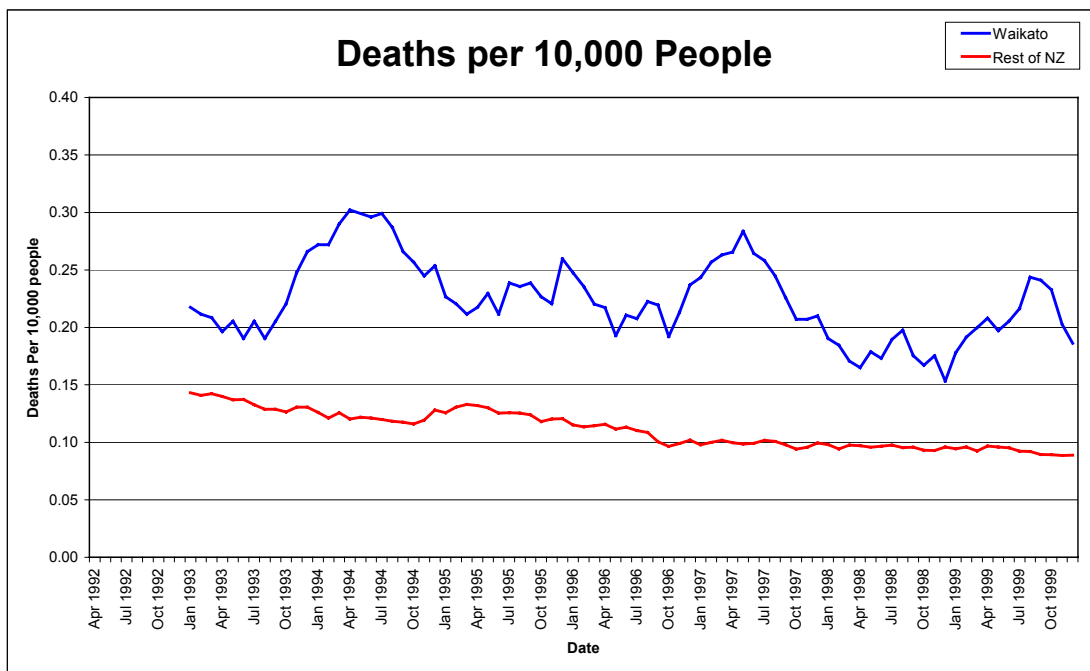
Cycling has much to offer in comparison with motor vehicles. It is a low cost transport option with increased health potential. It also reduces congestion on the road and produce fewer pollutants. The Current Strategy recognises the benefits of cycling and encourages road controlling authorities to provide suitable on-road and off-road facilities for cyclists.

Hamilton City Council is developing a Cycling Strategy.

7.4 Safety

Using any statistically comparison, the Waikato Regional has for many years suffered from a very poor road safety crash record. In part this is due to the region being highly trafficked but of greater significance is the above average traffic growth, a high proportion of heavy vehicles on regional roads and a concentration of traffic on higher speed rural and state highway roads.

Recent statistics show that over the past 7 years this region has experienced nearly twice the national rate of fatalities per 10,000 population when compared with the rest of New Zealand. While the trend is downward the social cost in 1998 in the Waikato Region was \$358M.



8.0 Strategic Transport Projects

The Waikato region has a number of high priority transport projects. The following information has been provided by Transit New Zealand on current state highway projects (Dated 10 February 2000):

STATE HIGHWAY ONE

SH 1 Expressway Mercer to Cambridge

The planning, design and construction of an Expressway for SH 1 between Mercer and Cambridge is broken down into the following sections:

Section	Length (Km)	Cost \$M	B/C	Designation Lodged	Designation Approval	Design Complete	Construction Complete
Mercer to Whangamarino Bridge	2.5	15-20	<1	Lodged	Change	2000	2003?
Whangamarino Bridge to Long Swamp	9.5	24-26	4-5	Lodged	Done	2000	2003
Long Swamp to Rangiriri	11.6	30-32	1-2	Lodged	Done	2010+	2010+
Rangiriri to Te Onetea	4	6-8	1-2	Lodged	Done	2010+	2010+
Ohinewai Bypass	5	10-12	4-6	Lodged	Appealed	2000	2003
Huntly Bypass	14	75-85	1-2	Feb 00	July 01	2010+	2010+
Taupiri to Horotiu	11	30-35	4-6	Lodged	Dec 00	2002	2005
Horotiu to Tamahere	20	70-80	1-2	Feb 00	July 01	2010+	2010+
Tamahere to Cambridge	4	8-10	1-2	Feb 00?	July 01?	2010+	2010+
Cambridge Bypass	11	30-35	2-3	Done	Done	2010+	2010+
TOTAL	92.6	298-343					

Source: *Transit New Zealand, February 2000*

RLTC has approached Transfund NZ to seek priority funding for all the individual sections of work on the SH 1 Expressway project due to its very strategic importance to the Waikato Region. The total cost of the project lies between \$300M and \$350M. The RLTC would like to see the project considered as one strategic project and the construction period reduced from 25 years to something like 15 years. Delays in implementing an expressway are showing in the fatal crash record and the increase in crash severity along the SH 1 route.

Commentary on the individual sections of the highway are given below:

1. Mercer - Longswamp

The length of highway involved is 12 kilometres and the indicative construction cost is \$48M. This is the section with the highest crash rate and therefore the highest priority for reconstruction.

Planning issues have been resolved and the designation has been confirmed.

Substantial progress has been made with design, but significant geotechnical risks were identified within the northern Mercer to Whangamarino section. Reconsideration was given to other possible options as part of the risk management of the project and agreement was given by the Authority to alter the alignment to reduce the short and long-term risk. The designation now requires an alteration to match with the changes in detail and alignment. That alteration to designation has been lodged with Franklin District Council.

Progress has been and will continue to be dependent on the working relationship with Tranz Rail due to the direct impacts on the rail from the roading improvements where the two lie side by side. At this point it is not a high risk.

Land purchase is largely unaffected by the changes and progress is being made in acquiring the property for the project to programme. The land purchase requirements are likely to dictate when construction will commence. It has become necessary to consider initiating the compulsory purchase provisions of the Public Works Act with a few landowners in order to avoid major delays to the start of construction.

2. Longswamp – Rangiriri

The length of highway involved is 12 kilometres and the indicative construction cost is \$32M.

All appeals are resolved and therefore the designation is deemed to be in place. The first few kilometres of the northern part of this designation are required for the Mercer to Longswamp section of four laning to be built. Necessary land purchase is being pursued. The remainder of this section has a low benefit/cost ratio (BCR) of the order of between 1 and 2 due to there being three lanes (alternating passing lanes) for the majority of the length.

3. Rangiriri - Ohinewai

The length of highway involved is 4 kilometres and the indicative construction cost is \$8M.

The designation has been confirmed for this section following resolution of all appeals. Transfund has been requested to consider funding construction of this section in conjunction with the Ohinewai Bypass. No response has yet been received. Funding for design of this section will be requested following Transfund's response. Property acquisition is in progress.

3. Ohinewai Bypass

The length of highway involved is 5 kilometres and the indicative construction cost is \$16M.

Seven appeals were lodged with the Environment Court in response to Transit confirming the designation. These dealt mainly with property issues. As part of the development process, several of the properties have already been purchased and an ongoing active property acquisition strategy is in place. The potential exists for land purchase negotiations to delay the start of construction and is considered high in a couple of cases. The use of compulsory acquisition under the Public Works Act is being considered. Preparations are underway to commence the design. This section, together with the Rangiriri to Ohinewai section, is being considered for a design/build contract starting 2000/2001.

4. Huntly Bypass

The length of highway involved is 14 kilometres and the indicative construction cost is \$100M.

A decision was made on the preferred route from Transit's perspective in April 1999. Discussions are being held with key stakeholders including Waikato District Council to modify the route. The Assessment of Environmental Effects and Maori consultation have yet to be

completed. It is expected that the Notice of Requirement to designate a route will be lodged in April/May this year.

5. Taupiri – Horotiu

The length of highway involved is 11 kilometres and the indicative construction cost is \$55M. Traffic surveys indicate that currently 75% of the traffic headed southbound on SH1 south of Huntly has a destination in Hamilton and therefore this link is justified whatever the choice of route bypassing Hamilton.

The Notice of Requirement to designate for the route was lodged for public notification in June and Waikato District Council received 60 submissions. A hearing was held in November and a favourable decision by Council has just been received. Transit is considering the recommendations and should confirm the designation shortly. The BCR is between 3 and 4 so it is intended to commence design next year, subject to Transfund approval. A start will be made on active property acquisition when the designation is in place.

There has been public concern that considerable effort and cost is being put into work in Taupiri for what is seen to be a “temporary” connection from the current SH1 to this expressway link. Apart from the fact that the Huntly bypass will be one of the last sections built because of the cost, in the long term this section of road will continue to be the main route from Huntly South and West to Hamilton. It will therefore continue to play an important role carrying significant traffic and warrants achieving a high standard at day one, as this will provide long-term safety benefits.

6. Hamilton Bypass – Cambridge

The remaining length to be resolved is the section from Taupiri to Cambridge, bypassing Hamilton to the east. Given that the Taupiri to Horotiu section is already justified, this remaining length can depart from that section at any point between Taupiri and Horotiu. Modelling of future traffic volumes indicates that the greatest traffic attraction to the expressway is achieved when the expressway is closest to Hamilton, and therefore it is also the option with the earliest start date. Given a Taupiri to Horotiu link in place, the shortest and most economic length to complete the section to Cambridge, with the highest traffic attraction, would depart at Horotiu. The length of highway involved for this option is 24 kilometres and the indicative construction cost is \$102M.

At the southern end, the Tamahere and Matangi (railway route) options are in the process of being fully evaluated for comparison. Once a preferred route has been selected (April/May), the aim is to lodge a Notice of Requirement for designation soon after. This section has a low BCR of the order of between 1 and 2.

7. Hamilton City Traffic Study

The identification of the eastern bypass of Hamilton as the long term option for dealing with State highway traffic has not meant that Transit can rest on its laurels. That project is likely to be some time off, whereas the Taupiri to Horotiu link is likely to be a shorter term project. This will change the traffic patterns at the north end of Hamilton and the effects need to be addressed. It also means that the current congestion problems within Hamilton City will have to be separately addressed and a number of projects have been initiated to investigate options. As part of the project to develop four laning between Church Road and Avalon roundabout, Transit will also consider the possible need and timing for that four laning to be extended to the Horotiu tie-in for the expressway. A feasibility study was also initiated to consider the section of SH1 between Avalon roundabout and Kahikatea Drive: the most heavily congested section of State highway in the City. As a result of that investigation, feasible interim options have been identified for the upgrading of the existing SH1 on the

western side of Hamilton City between Rotokauri and Killarney Roads to relieve current congestion problems being experienced. A contract has been let for full investigation procedures to be initiated to develop options for improvements in that corridor. Other investigations have also considered the remaining highway lengths. The southern part of the City, which includes the start of SH3, is being considered in depth, because it is significantly affected by options for urban expansion in the Peacockes Road area. The City growth model in that area will influence the options and timing. On other sections the immediate needs appear to be intersection upgrades based on capacity and/or safety reasons.

8. Huntly Internal Bypass Extension

Due to the length of time likely before the Huntly Bypass is built, interim works have been considered to reduce current congestion problems within Huntly Township. The level of redevelopment of the highway has been resolved and agreed with the Council and community.

A hearing to designate for the interim internal improvements was held in November and the Council decision is expected in February/March.

Funds have been requested for design and will be requested for construction when that is complete and planning and property purchase matters are resolved.

9. Taupo Northern Access

Transit NZ is currently working together with the Taupo District Council investigating an eastern bypass of Taupo from Wairakei to south of the Taupo. Investigation work is well underway, the Council for a significant length has acquired land and work is underway to pursue designation of the route.

This project will benefit State highway traffic by providing a shorter, less congested route and assist the Taupo community by removing 24 hour long heavy haul vehicles and through traffic from the built-up area, reducing noise and congestion. The Taupo District Council is strongly committed to its construction and will form a partnership with Transit to achieve this. Such a bypass provides more overall benefits than an upgrade of the northern access to the town. The Taupo District Council has other local roading improvements in mind to overcome local traffic problems from Acacia Bay. They do not favour an upgrade of the northern access at this time. Council is considering options for a new bridge constructed over the Waikato River adjacent to the Control Gates Bridge.

10. Hallet's Bay – Mission Bay

Cultural issues significantly influence option selection. Detailed consultation with iwi is taking some time and has become the critical path. Progress is likely to be slow for some time. An extension of the project to the north has been considered but is not favoured.

11. Tauranga – Taupo Realignment

Design has been progressed and is practically complete. Land purchase is an issue because the affected property is in multiple ownership. This is not a critical issue at present because the project does not meet funding criteria and therefore construction funding has yet to be requested.

12. Desert Road

The Waikato Stream realignment continues to make slow progress as Transit works through National Park issues with the Department of Conservation. Currently under discussion are issues of areas for disposal of surplus fill and land acquisition related to removal of land from

the national park. Also required is specific legislation enacted by Parliament in order for the project to proceed. The earliest likely start of construction is not until next summer.

The use of CMA on the Desert Road has still only been fairly limited after the two recent mild winters. CMA has been used to some extent with proper monitoring and current indications are that it does the job with no indication of environmental effects. It still awaits testing to the full extent.

Extension of coverage by advanced electronic warning signage is still under investigation.

STATE HIGHWAY 2:

13. Pendergrast Road – Maramarua Golf Course through Mangatawhiri Township

Contract preparation for the \$1.3M first stage of realigning Pendergrast Curve is practically complete and Transit is looking for a start to construction work this summer, subject to confirmation of funding.

The final assessment report and lodging of designation is expected in March/April on the major alignment. Some last minute changes to the scheme alignment were made due to land purchase issues, in order to reduce opposition later in the process.

STATE HIGHWAY 3:

14. Greenwood Street – Chinaman's Hill

This project is on hold, pending the outcome of a more extensive study of southern access to the City. The Study is considering wider issues but will also provide better understanding of the need for and priority of this project. The Study is due to be completed this year.

15. Chinaman's Hill Realignment

Design work is practically complete and the economic evaluation is under formal review in order to seek approval of construction funding. Land purchase is likely to become the critical factor as a number of affected owners have refrained from finalising purchase agreements ahead of Transit demonstrating certainty of construction proceeding. In the meantime, Transit has implemented interim minor safety works as a consequence of a spate of recent serious crashes.

16. Awakino Dropout Realignment

Construction work is on programme with the bridge approaches in place and structural work on the bridges themselves to commence this month. The project is a 0.6 km realignment costing \$3.2M and due for completion in December 2000.

17. Mokau Bridge

The contract was let to McConnell Smith prior to Christmas to replace the single lane structure with a two-lane bridge. The contractor is now on-site and completion is programmed for December 2001.

STATE HIGHWAY 25:

18. Kopu Bridge Replacement

Transit will continue to attempt to reach a negotiated settlement to the appeal by the local Iwi, but may end up going to the Environment Court to resolve the issue. The advice Transit has received is that the appeal against the consent to carry out investigation drilling is to be called to the Environment Court in March. All work is on hold until the drilling is complete because the results will affect all subsequent outcomes. It is intended that completion of investigations, analysis and preparation of the documentation for designation will be completed within six months of receipt of the final Court decision. It is expected that the designation will also have a high risk of appeals.

19. Whangapoua Hill Seal Extension

There has been a hiccup in progressing the 3.6 km Te Rerenga contract on the eastern side of the Whangapoua Hill with the discovery of an unknown historical site affected by the works, but resolution is expected shortly and the contract is still due for completion by the end of May. Consents have been issued for the remainder of the project and the contract is expected to be tendered this month for a construction start in April on this 6.4 km section. Completion is expected early 2002. This will be the last section of this project to be constructed and will complete the sealing work from Whitianga to Coromandel started in 1992.

20. Kuaotunu Hill Seal Extension

Final seal was laid on the road prior to Christmas, five months early and under budget. There are some minor works and a tidy-up required to complete the contract and this should be complete by early March.

21. Kaimarama Realignment

This \$1M realignment of a 1.4 km section of SH25 just south of the 309 Road intersection is currently out to tender.

22. Tairua Hill South Realignment

The consent documentation is expected to be lodged in March. Land entry agreements are being pursued. This is a fundable project and funds will be requested as soon as planning and land purchase issues are cleared. This is expected to be October/November this year.

23. Oturu – Swampy Realignment

The contract is 90% complete. Load and width restrictions that applied to this section of SH25 have been removed with replacement of the two one-lane bridges being complete.

24. Peterson's-Duggan's Realignment

This is a realignment to reconfigure the SH25/SH25A intersection and replace the two small one-lane bridges just north of the intersection on SH25. The designation has already been approved and land entry agreements for construction are under negotiation. It is intended to tender the works in March subject to confirmation of funding.

STATE HIGHWAY 27:

25. Kaihere Hill Realignment

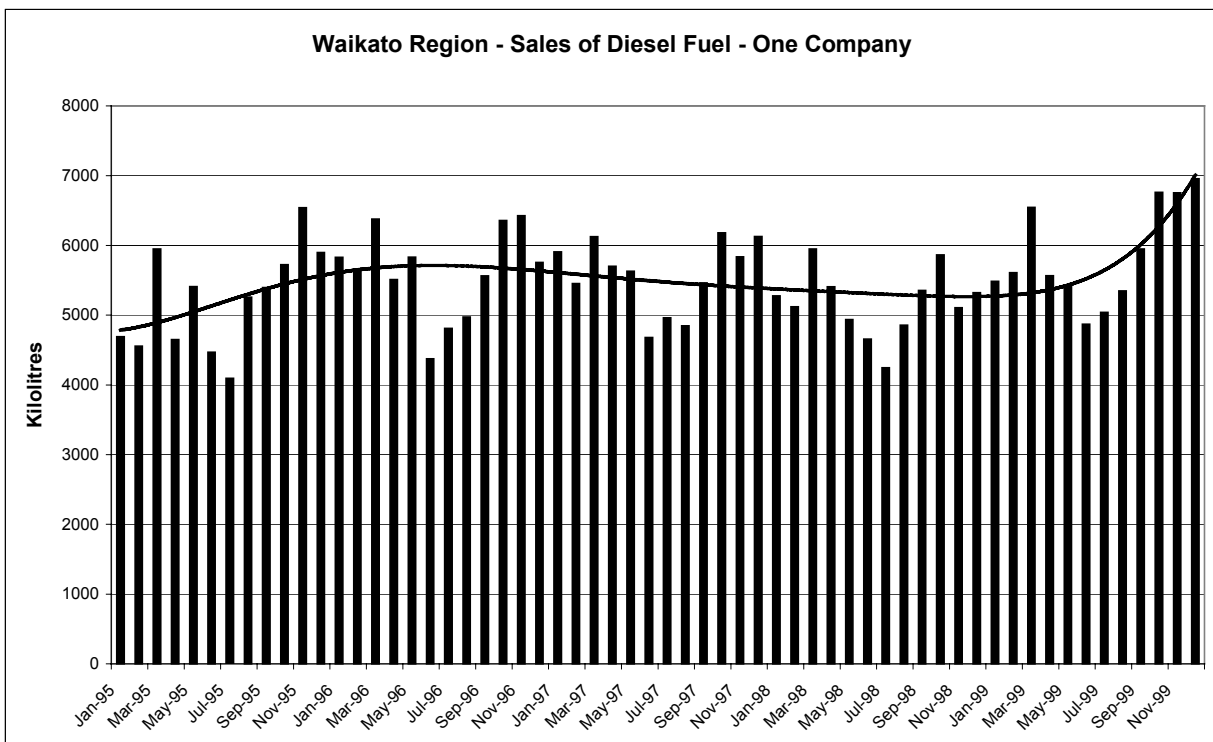
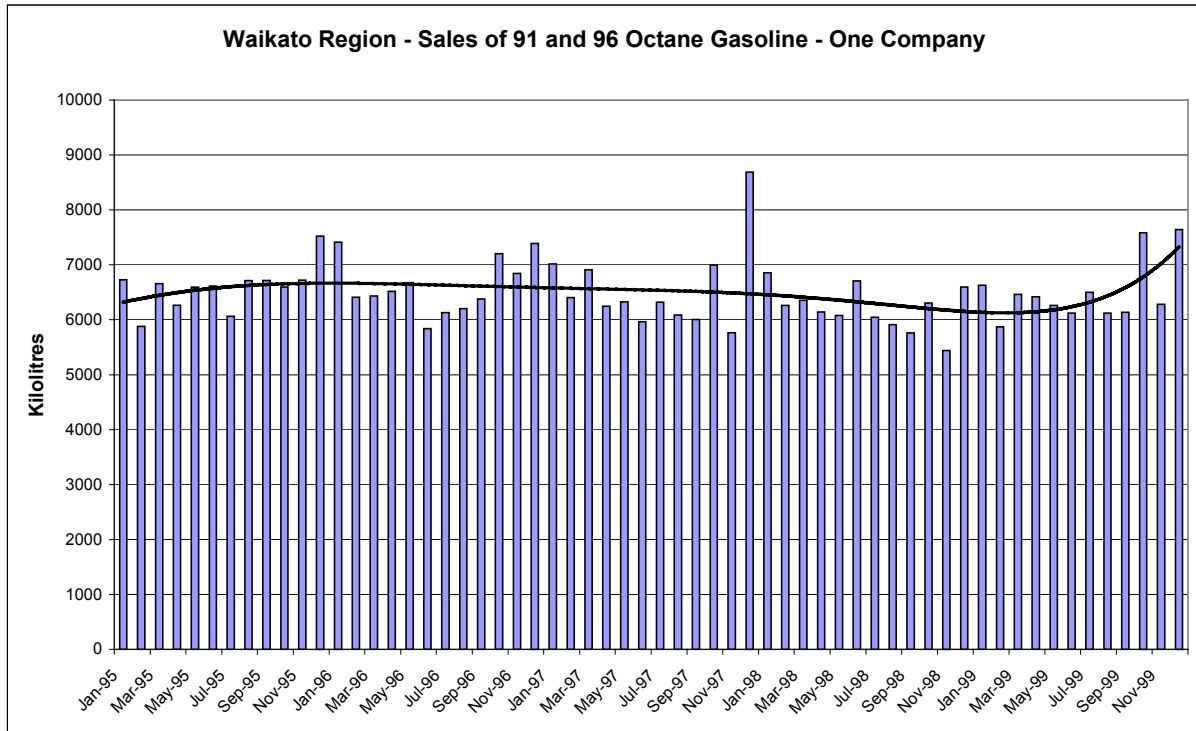
Documentation for the designation of this 2.1 km length of crash prone highway is currently under development and it is intended to lodge the documents by May with an expected start for construction around Christmas.

9.0 Transport Indicators

It is proposed to introduce a range of Transport Indicators into the Regional Land Transport Strategy. These indicators will be drawn from a number of sources and may include:

Regional Petrol/Diesel Consumption:

Trends in fuel consumption provide a good indication of transport usage. The following graphs show Petrol and Diesel fuel sales for the Waikato region for the 1995 to 1999 calendar years from figures supplied by one company. All companies have been asked to supply fuel sale data and when these become available an aggregated table and charts will be provided.



Other possible transport indicators to be included within the Strategy include:

	Indicator
	General
G1	Congestion - Changes in levels of road congestion over time
	Vehicle Fleet Characteristics
V1	Vehicle Fleet composition
V2	Vehicle Occupancy
	Journey to Work
J1	Usual Mode of Transport for the Journey to Work,
J2	Length of journey to work
	Freight
F1	Total Vehicle-Kilometres for road vehicles
F2	Total freight tonnes-km
	Land Use
L1	Overall Urban Density
L2	Transport Infrastructure area
	Vehicle Running
VR1	Car Running Costs
VR2	Vehicle, Travel, times (Peak and Off peak periods)
	Fuel Consumption
FC1	Fuel sales
FC2	Fuel Use per population
	Walking and Cycling
W1	Walking and cycling counts
	Safety
S1	Fatals, Serious Injuries, Minor Injuries per population
	Passenger Transport
PT1	Bus travel times
PT2	Total network hours
PT3	Total network vehicle kilometres
PT4	Total network average trip length
PT5	Total network passenger hours
PT6	Total network passenger kilometres
PT7	Passenger Transport Fares
PT8	Passenger Transport occupancy
PT9	Passenger Transport travel times
	Environmental
E1	Air Quality Car emissions
E2	Ambient air quality (CO, NOX, HC, particulate)
E3	Emission inventory of transport sector
E4	Dust emissions
E5	Water Quality, sediment
E6	Noise. Residential population exposed to outdoor traffic noise

10.0 References:

Environment Waikato, *soe report*, sept 1998

Environment Waikato

Appendix One: Findings of Regional Transport Studies

Regional Heavy Transport Study for the Waikato Region

Prepared by Environment Waikato with the assistance of Bloxam Burnett and Olliver
November 1996

Study Purpose:

- To build a better understanding of heavy vehicle movements through and within the Waikato region.
- To predict major changes on the patterns of heavy vehicle movements for the future
- To build an understanding of the nature of the heavy transport industry in the region
- To identify the major issues or concerns of heavy vehicle operators in the region about the roading network

Study Conclusions:

- The heavy transport industry operating in the Waikato Region is a diverse sector comprising a limited number of bulk products such as milk products, timber and aggregates as well as a wide range of general transport operations.
- Data on heavy vehicle numbers on the SH network is comprehensive and accessible but data on local roads is less comprehensive.
- Milk tanker movements are likely to continue to be concentrated around a few key sites in Central and South Waikato.
- Forestry in the region appears to be reaching a mature sustainable level meaning changes in transport patterns associated with it are unlikely. Ongoing commercial decision as to mode (road vs. rail) choice will affect transport patterns and are difficult to predict
- Data on heavy vehicle numbers on SHs show strong growth around the edges of the region such as SH2/25 from Thames to Pokeno, SH 3 south of TeKuiti and SH5 and SH 30 to BOP
- Most transport operators have experienced problems with transport in the region with many being localised issues such as road maintenance, intersection design etc. Several broader issues include safety concerns with a lack of passing opportunities and access through urban areas.
- Questionnaire responses indicated strong support for bypasses of urban areas with preference for roading funds to be channelled to just a few strategic routes

Study Recommendations:

- That TLAs be encouraged to collate information on heavy vehicle movement in their areas to provide data comparable to that collected by Transit NZ
- That methods of improving accident reporting to provide a consistent comparable level of reporting throughout the region be investigated.
- That a regional arterial roading strategy that meets the needs of the heavy transport sector be developed in consultation with TLAs, Transit NZ and major industry sectors
- That a regional heavy transport model be developed and updated in consultation with TLAs, Transit NZ and major industry sectors to assist in predicting the impacts of changes in heavy vehicle transport patterns.

Regional Hazardous Substances Transport Study for the Waikato Region

Prepared by Environment Waikato with the assistance of Worley Consultants

June 1997

Study Purpose:

- To assemble relevant information on the types and quantities of hazardous substances being transported within and through the Waikato region by road and rail, as well as transport incidents involving hazardous substances.
- To identify the most relevant transport routes presently used in the region for various categories of hazardous substances.
- To present the current state of contingency planning of the relevant statutory organisations and industry.
- To develop recommendation for initiatives for Environment Waikato to take to minimise the risk of adverse effects of hazardous substances transport incidents in the region.

Study Findings:

- The strategic location of the Waikato region, as well as the nature of many of the industries in it results in a significant number on hazardous substances transport movements within the region.
- Classes 3 (Flammable liquids), 5 (oxidising substances, organic peroxides) and 8 (Corrosive substances) represent the largest quantities of hazardous substances transported within the region with Class 8 dominating 2/3 of the total transit through the region.
- Most common mode of transporting hazardous substances is by road with 85% of companies possessing their own heavy transport vehicles.
- There is a lack of specifically documented preferred and/or alternative routes. Most organisations state they travel on SHs and main arterial roads as often as practicable.
- From a safety perspective rail transportation of hazardous substances appears to be the safest mode because it is segregated from other traffic. Only small quantities of hazardous substances are currently being transported by rail.
- The NZ Fire Service Central Register in Wellington is the most comprehensive source of data on hazardous substances transport incidents in the region.
- Inadequate load security is the major cause of incidents involving hazardous substances accounting for almost 40% of the total.
- Emergency response procedures for the transportation of hazardous substances through and within the region are relatively comprehensive.

Study Recommendations:

Physical Works

- Road safety audits should be undertaken to determine the suitability of preferred hazardous substances transport routes.
- Encourage Transfund NZ to include an assessment of the transport of hazardous substances in the project evaluation method.

Planning Requirements

- Encourage TLAs to address hazardous substances transport planning at a district level including appropriate provision in District Plans which would allow for resource consent conditions being placed on sites requiring a significant number of hazardous substances transport movements.

Other Initiatives

- Preparation of a specific register of hazardous substances transport incidents, ideally undertaken by the Fire Service
- Review current enforcement methods (rules and penalties) for insecure hazardous substances loads.
- Undertake more detailed studies for certain parts of the region to address concern about the transportation of specific hazardous substances through and within areas.
- Develop a simple inter-agency hazardous substances spill response plan to provide information on response capacity, notification and recording procedures.
- Encourage TLAs to develop a list of hazardous substances resources available.
- Promote environmental education to advocate the safe transport of hazardous substances.
- Encourage the Hazardous Substances Technical Liaison Committee to take a more proactive role in establishing closer working partnerships between emergency response services and other key players
- Encourage the LTSA to include an additional box in the Traffic Crash Report Form to record the involvement of hazardous substances in traffic incidents.

Report on the Transport of Milk and Dairy Products in the Waikato Region

Prepared by Environment Waikato with the assistance of Opus International Consultants
June 1997

Study Purpose:

- To quantify the bulk product movement associated with the dairy industry in the Waikato.
- To identify the transport modes and corridors being used for the movement of these goods.
- To identify weaknesses in the existing transport infrastructure.
- To provide information and data to input into a regional heavy vehicle transport model.
- To provide information to regional and district councils regarding corridors used, potential changes and weaknesses.

Study Conclusions:

- The NZDG centred in the Waikato region is NZs eighth largest corporate in terms of revenue processing 48% of NZs milk supply and representing 10% on NZs exports.
- Milk is supplied to Waikato plants from as far north as Warkworth to as far south as Rangataiki.
- NZDG and Tatua have 5,800 suppliers (Waikato region) and process an extensive range of domestic and export consumer products
- Milk supply within the region is continuing to grow at approx. 4% per annum with higher growth in the southern part of the region.
- Milk transport results in approx. 19 million kilometres of tanker movements, representing 80% of all road transport associated with the dairy industry.
- Roothing is the vital link in the milk supply chain and vital for industry competitiveness.
- Processed products are transported by road and rail with road accounting for the majority.
- Destinations include Ports of Auckland and Tauranga.
- Approx. 2 million kilometres of road transport is associated with product transportation.
- By-products, including cream and whey, account for 2.1 Million kilometres of road transport.
- 166,000 tonne of coal is transported from 3 Glencoal sites to 4 NZDG sites. This equals 782,200 kilometres of truck transport.
- In total 24 million kilometres of heavy road transport has been associated with the dairy industry (or 8%) of the total heavy vehicle kms driven in the Waikato region.
- The report also lists areas of rooding that are of concern to the dairy industry e.g. substandard intersections, narrow roads etc.

Study Recommendations:

- A good quality rooding network is essential to the future competitiveness on the Dairy group.
- The findings of the report are to be made available to road controlling authorities for road planning purposes
- The development of a regional rooding hierarchy that recognises the importance and needs of the dairy industry. Arterial routes need to be managed and maintained accordingly, including right-of-way at intersections.
- The report should be updated in approx. 3 to 5 years to take account of NZDG progress towards centralisation of processing facilities and the effect on the transport network.
- The origin and destination matrix data be utilised in the establishment of any future regional heavy transport model.

Taupo Forestry Transport Options Study

Prepared by Environment Waikato, Environment BOP, Taupo District Council and Tranz Rail with the assistance of Woodward-Clyde
September 1998

Study Purpose:

- To determine the forestry traffic generated in Taupo vicinity, now and in the future.
- To determine potential routes which will reduce the use of public roads in Taupo township and generally within the BOP and Waikato regions.
- To determine the potential of success of an Alternative to Roothing (ATR) application to Transfund.

Study Objectives:

- Ascertain the current and future harvesting and processing volumes of forestry products from the Lake Taupo and Rotoaira Forests and their likely destination within NZ and the transport routes use.
- To quantify Fletcher Challenge and Carter Holt Harvey production with impacts on State Highway/Local roads around Taupo Township.
- Identify opportunities for using alternative routes and modes of transport which reduce the use of public roads in and around the Taupo Township and generally within the Waikato and BOP regions by heavy forestry transport.
- Investigate the financial and economic viability of the alternative routes and modes of transport identified and determine whether an ATR application to Transfund is unlikely to attract financial assistance.

Study Conclusions:

- All of the options considered for ATR funding have efficiency ratios (ERS) much less than 4 which is the current threshold level for consideration of ATR funding.
- A railway extension from Murupara to Taupo, that does not serve a centralised tree log processing facility, will have minimal effect on future forestry generated traffic flows on SH 1 through Taupo.
- A rail extension from Murupara to the intersection of Taupo Off-Highway and High Level roads servicing a tree log processing yard has an ER of less than 1 however this option reduces forestry generated traffic flows on SH 1 through Taupo
- A rail extension from a centralised tree-processing yard near the intersection of Taupo Off-highway and High Level, roads, into the Taupo industrial area significantly increase costs with little additional benefits, and ER significantly less than 1
- Upgrading the off-highway road link joining Lake Taupo Forest and Justice Dept forest to high Level Road is commercially viable. And cannot be supported for an ATR.
- An incentive could be offered to encourage north bound forestry trucks which currently use SH1 to access Taupo processing plants to use the off-highway network to access these plants and has an EF of 1.5
- The establishment and use of the off-highway link joining Lake Taupo Forest and Justice Department Forest to forests north of SH5 will significantly reduce forestry generated traffic flows on parts of SH1.
- The Stage 1 Taupo Bypass proposal is effective at reducing traffic flows on SH1 through Taupo.
- The combined option of Stage 1 Taupo Bypass and the Off-Highway link joining Lake Taupo Forest and Justice Dept Forest to forests north of SH5 is the most effective option at reducing forestry generated traffic on SH1 through Taupo.
- With no infrastructure changes the potential exists for an increase in forestry generated traffic of 20% on SH1 through central part of Taupo.

Study Recommendations:

- Rail. Tranz Rail and Fletcher Challenge Forest need to check the opportunities for a line extending south from the Murupara railhead.
- Off-highway Link joining Lake Taupo Forest and Justice Department Forest to forest north of SH5. The upgrade and use of this link will be the subject of negotiation between the forest and land owning companies concerned.
- Stage 1 Taupo Bypass is an effective measure at removing forestry generated traffic from SH1 (sections 2 and 3).

Regional Aggregate Transportation Study

Prepared by Environment Waikato, with the assistance of George Cunningham (Aggregate Association)

June 1995

Study Purpose:

The purpose of the Study was to identify aggregate sources and demand and assess the transport options and implications of an expanding industry in the Waikato region. Four key outcomes were expected:

- Identify and map current sources of aggregate including types and quality (includes limestone and sand)
- Identify current and projected demand (20 years ahead) for aggregate (Auckland, Waikato and BOP regions)
- Assess the likely effects of increased transportation of aggregate on the roading infrastructure and wider environment.
- Investigate alternative (to road) modes of land transport (river/sea barge and rail) to determine whether these options can be better utilised.

Study Conclusions:

- The consumption of aggregate can be based on an average of 7 tonnes per head per annum. In 1993 the annual regional consumption was 2.38 million tonnes. By 2005 consumption is estimated to increase to 2.61 million tonnes.
- The amount of aggregate exported out of the region will increase significantly from 1.8 million tonnes in 1993. By 2005 Auckland will be drawing heavily from Franklin District (incr. of 1.25-1.5 million tonnes) most of which will emerge out onto SH 1 between Mercer and the Bombay Hills.
- It is also probable that the Tauranga and Rotorua markets will be relying more heavily on the central zone of the Waikato region as a source of quality aggregate with the key transport route being SH29 across the Kaimai ranges.
- The potential for adverse effects from the haulage of aggregate varies across the region. Seven zones were identified of which three are important for the future.
- In the Northern zone (Franklin District) it is clear that the volume of quarry/pit traffic will increase steadily, starting about 2000.
- The Hamilton zone consumes about 700,000 tonnes per annum and it is estimated this demand will increase by 13% by 2005. Main quarries will be ending their resource lives and no replacement sources have been identified.
- The southern zone covers Otorohanga to PioPio. Significant numbers of heavy trucks use the section of SH3 between Te Kuiti and Te Awamutu. The demand for aggregates is stable and is not expected to increase markedly in the short term.
- The use of rail transport is currently a remote option in hauling aggregate to the Auckland market. Both rail and barging are not considered future options for the rest of the region.

Study Recommendations:

- Establish databases on quarry locations and their annual production.
- Request district/city councils to prepare five year plans on future aggregate consumption.
- Monitor all new resource consent applications for quarries and establish proposed transport routes and traffic volumes.
- Liaise with neighbouring regional councils over future aggregate demand from Waikato sources.
- Establish projected traffic volumes in other heavy vehicle user industries (e.g. forestry and milk production)
- Establish a heavy vehicle users liaison network.

Regional Stock Truck Effluent Control Study

Prepared by Environment Waikato, with the assistance of the Regional Stock Effluent Control Working Party.

May 1994

Study Purpose:

The purpose of the Study was to identify and recommend practical measures that minimise effluent spillages from stock trucks and which result in safer and cleaner roads. Five key outcomes were identified:

- Identify the regional magnitude of the problem.
- Develop an educational/awareness programme for farmers and livestock agents.
- Investigate potential sites for disposal facilities.
- Identify planning requirements.
- Provide costing of systems

Study Conclusions:

- The study determined the magnitude of the stock truck effluent spillage problem in the region and recommends practical measures that minimise spillages and which result in safer and cleaner roads.
- The spillage problem is likely to escalate due to increases in same day kills, the size of herds and stock trucks and the number of meat processing works.
- Half of the carriers have holding tanks fitted but there are few places to legally dump the contents.
- Meat and saleyards do not have adequate facilities and police are 'handcuffed' by existing legislation.
- Six key stock truck routes were identified.
- Few farmers stand stock for the required time of 4 hours.
- Survey results identified 19 disposal facilities sites with 2 trial sites proposed in SWDC.
- There is a clear willingness from the industry to solve the problem with detailed consultation needed with key organisations.
- Each section of the livestock industry has a role to play in reducing this problem.

Study Recommendations:

A three pronged approach was recommended

- That an education programme be initiated for farmers and those in the cattle procurement and processing business highlighting the need for stock to be held off pasture for at least 4 hours prior to trucking.
- That stock truck effluent disposal facilities be trialled and if successful a network of facilities be established throughout the region.
- That investigations by Tranz Rail into carrying stock by rail be supported.
- That the LTSA investigate the mandatory fitting of holding tanks on trucks.
- Encourage central government to review Section 70 of the Transport Act to enforce illegal dumping.
- Consider ways in which a regional rule can be applied to enforce the measures in the Waikato region.

Report on the Diesel Vehicle Exhaust Emission Testing Programme

Prepared by Environment Waikato, with the assistance of the Energy and Fuels Research unit of Auckland Uniservices Limited.

October 1999

Study Purpose:

The purpose of the programme was to:

- Increase public awareness of the nature of harmful effects of diesel emissions.
- Increase the possibility of vehicle owners tuning their vehicles to reduce emissions.
- Establish an emissions database on in-service diesel vehicles.
- Provide an analysis of data with comparisons between age of vehicle, type of vehicle and other factors
- Improve air quality
- Provide links with other areas of Environment Waikato e.g. ambient air monitoring programme – particulate levels.

Study Conclusions:

- The results of the programme show that there is a large proportion of excessively high smoke emitters in the vehicle fleet tested in the Waikato region. It seems likely that this finding would be similar in other parts of NZ
- Even if a higher pass/fail criteria were used a large impact could be made on the perception of dirty diesel vehicles.
- Results show that cars were much worse than trucks in terms of high smoke emissions with other types of vehicles lying in between the extremes. Older vehicles emit higher smoke levels than newer vehicles.
- Used Japanese imports performed significantly worse than NZ new vehicles.
- NZ diesel cars are high smoke emitters when compared to other countries smoke emission limits.
- NZ diesel fuel allows up to 6 times the sulphur content of other OECD countries and this is a contributing factor in high smoke emissions.
- Most of the desired benefits of the programme have been achieved

Study Recommendations:

- Recommended that WOF testing of vehicles be introduced based on moderate smoke level standards. The level could be progressively tightened in the future as fleet emission performance improves.
- Recommended that all imported vehicles should be subject to an emissions test and have to meet an acceptable standard relative to the applicable standards at the time of production of the vehicle.
- Recommend that central government take responsibility for the implementation of a regulated programme to improve diesel emissions. This should start with representatives of interested Ministry's (i.e. Transport, Health and Environment) establishing an active working group to guide the process. This working group would look at a review of diesel fuel specifications, introduction of guidelines for identifying excessive smoky vehicles encourage the improved maintenance of vehicles.

Journey to Work Report – Hamilton. Based on the 1996 Census Data

Prepared by Environment Waikato, with the assistance of Graeme Belliss Transport Planning.

June 1998

Study Purpose:

The report examines data available from the 5 yearly census of populations and dwellings. The last three census surveys are presented, 1986, 1991 and 1996. The Journey to Work data from the census is a useful way to keep track of the long-term changes in travel characteristics within city. The study can be used to highlight any radical changes in patterns and points to further investigation which may be useful in monitoring and fine-tuning the transport system in Hamilton and the public transport system in particular.

Study Conclusions:

- One of the largest changes to occur in Hamilton between 1986 and 1996 is the number of respondents who stated they travelled to work. In 1986 there were 37,500 trips reported, by 1996 this number had fallen to 30,500.
- The number of people driving to work remained fairly static (24,954 in 1986, 22,947 in 1991 and 22,000 in 1996).
- Between 1986 and 1996 the proportion of trips to work on public transport dropped from 5.5% to 1.6%
- Trips on motorcycles and cycles has declined. With cyclists it had declined from 10% in 1986 to 7% in 1996.
- There has been an increase in working from home from 3% in 1986 to 7% in 1996.

Transportation Model for the Waikato Region. Phase One: Development of the Model.

Prepared by Environment Waikato, with the assistance of Opus International Consultants Ltd.

June 1998

Study Purpose:

The Regional Land Transport Strategy aims to enable the development of a regional transportation model with a "heavy transport component... to assist in predicting the impacts of changes in heavy vehicle transport patterns". Opus International Consultants were commissioned by Environment Waikato in 1997 to develop a Regional Heavy Commercial Vehicle (HCV) Transportation model. It was agreed between the parties that the basis for this model be SH 1 Four-laning (TNZ REC 20) project model. The HCV matrices would be developed from data supplied by Environment Waikato. The extended model was required to cover the SH and major local road network within the Waikato region and key nodes in the BOP region.

Study Conclusions:

The network coding is now complete and covers a significant portion of the state highway and major road network within the Waikato and Bay of plenty regions. The second phase of the project will concentrate on finalising the actual trip matrix and the number of individual commodities to be included. In some instances the commodity data is limited and therefore will not be sufficient to enable the creation of individual commodity matrices but rather amalgamate them into an HCV matrix.

Report on the Hamilton City Petrol Vehicle Exhaust Emission Testing Programme

Prepared by Environment Waikato.

February 1997

Programme Purpose:

Within the Waikato region, and in particular Hamilton City, the extent of the degradation of air quality related to motor vehicle pollution is not well understood. In addition there was little information available to determine how many of Hamilton motor vehicles would pass a standard emission test. The purpose of the exhaust emission testing programme was to:

- Educate the motoring public of the harmful nature of exhaust emissions.
- Develop an extensive emissions database for analytical purposes
- To monitor ambient levels of nitrogen oxides and carbon monoxide in Hamilton City to determine transport related pollutant concentration.

Programme Findings:

- A total of 7,600 petrol fuelled motor vehicles were tested during the programme which ran from the beginning of May 1996 to 22 December 1996.
- The programme tested vehicles in three age categories with different test standards applied to each age category. The study found that 47.3% of pre-1982 vehicles failed the carbon monoxide (CO) test, 30.5% of 1982 to 1990 vehicles failed and 22.5% of post-1990 vehicles failed. Overall 31.6% of all vehicles tested failed the carbon monoxide test.
- The other test was for hydrocarbons (HC) and here it was found that 10.0% of pre-1982 vehicles failed the HC test, 11.7% of 1982 to 1990 vehicles failed and 4.1% of post-1990 vehicles failed. Overall 10.2% of all vehicles tested failed the hydrocarbons test.
- The Hamilton results compare remarkably well against the results obtained in the Canterbury Regional Council exhaust emissions testing programme which suggests that there may be some consistency of vehicle emissions for different age categories at a national level.
- If the Hamilton project had adopted the USA limits of CO at 1.2% and HC at 220ppm then 60.6% of all vehicles tested would have failed the CO test and 45.1% of all vehicles tested would have failed the HC test.
- A survey of motor vehicle owners who received an emissions test found that 89% of respondents agree that vehicles are a major source of air pollution in Hamilton, 89% agree that free emission testing should be provided permanently and 88% agree that exhaust testing should be part of the WoF test.
- Monitoring of ambient levels of nitrogen oxides (NOX) in conjunction with wind speed at a site in Anglesea Street, Hamilton found that the 1-Hour average concentrations of nitrogen dioxide were less than 26% of the MfE Ambient Air Guideline level, even during periods affected by the highest peaks arising from local motor vehicle emissions. Nitrogen dioxide 24-hour averages were less than 52% of the MfE Ambient Air Guideline level.
- Monitoring of ambient levels of carbon monoxide (CO) found that CO 1-hour averages were less than 23% of the MfE Ambient Air Guideline level; and the 8-hour averages were less than 50%.
- Survey of carbon monoxide (CO) concentrations at various sites adjacent to major traffic corridors in Hamilton found that it is unlikely that with the traffic flows currently observed in Hamilton that exceedance levels will be reached on a regular basis anywhere in Hamilton. Peak conditions, when they occur, are only likely to occur happen when the wind speed drops to very still conditions.
- It is unlikely that physiological effects as a result of CO exposure will be experienced by healthy individuals except perhaps in extremely calm conditions.

Project Recommendations

- That a programme for testing exhaust emissions from diesel fuelled motor vehicles be implemented in Hamilton City.
- That consistent standards for exhaust emissions be promoted for use within New Zealand based on those used in the Hamilton and Canterbury emissions projects.
- That the findings of this project be presented to Central Government.
- That an education programme be developed to change public attitudes to motor vehicle exhaust emissions.
- That air quality monitoring be continued along main traffic corridors in Hamilton City, and other parts of the region as part of the Regional Air Monitoring Programme.
- That the policies contained in the Regional Land Transport Strategy be amended in the 1996/97 Review to reflect the outcomes of this study.
- That the Motor Industry Association be supported in their initiatives to ensure that all new petrol powered vehicles entering New Zealand after 1 January 1997 will comply with one or more of the recognised international emissions standards.

Hamilton - Auckland Commuter Train Feasibility Assessment

Prepared by Environment Waikato, in consultation with Tranz Rail, with the assistance of Symonds Travers Morgan (New Zealand) Ltd.

July 1996

Study Purpose:

The purpose of the Study was to assess the feasibility of a daily return commuter rail service between Hamilton and Auckland. The study was to involve assessing the likely demand for this service, determining the service options in consultation with Tranz Rail, and assessing the financial profitability of the service.

Study Findings:

- From surveys undertaken and consultation the estimated daily passengers (ranges) for the Hamilton-Auckland commuter rail train, from each catchment area is shown below:

Hamilton	19-24
Huntly	2-3
Cambridge	0-1
Pukekohe	65-82
<u>Papakura</u>	<u>43-55</u>
Total	129-165

- The Hamilton-Auckland commuter rail service should be designed around the needs of its main regular users. This will clearly be people commuting to work, the majority of whom will be from Pukekohe and Papkura.
- Using ticket fares based on the Capital Connection the estimated annual revenue from the Hamilton-Auckland commuter train is \$435,000 - \$562,000
- Depending on the type of rolling stock used by Tranz Rail the train may return a small profit or could lose money.
- There would therefore be a financial risk in providing a Hamilton to Auckland commuter train with only small profits expected at best.

Study Recommendations:

The study recommended that the report be used as the basis for discussion with Tranz Rail and the Auckland Regional Council to explore the options outlined for a Hamilton to Auckland commuter train service.

References:

Environment Waikato, Strategic Plan 1998-2008