Environment Waikato Technical Report 2005/22

Waikato Regional Land Transport Strategy

Transport Baseline Report

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1 Introduction

A new Regional Land Transport Strategy (RLTS) is being developed for the Waikato region under the lead of Environment Waikato. There are four main stages to the review process as outlined in Figure 1. Stage 2, the identification of key land transport issues confronting the region, is a very important component of the strategy development process, as the subsequent development and evaluation of strategic options and resulting preferred strategy rests on the findings of Stage 2. In other words, the strategy must ultimately respond to the key land transport issues in the Waikato region.

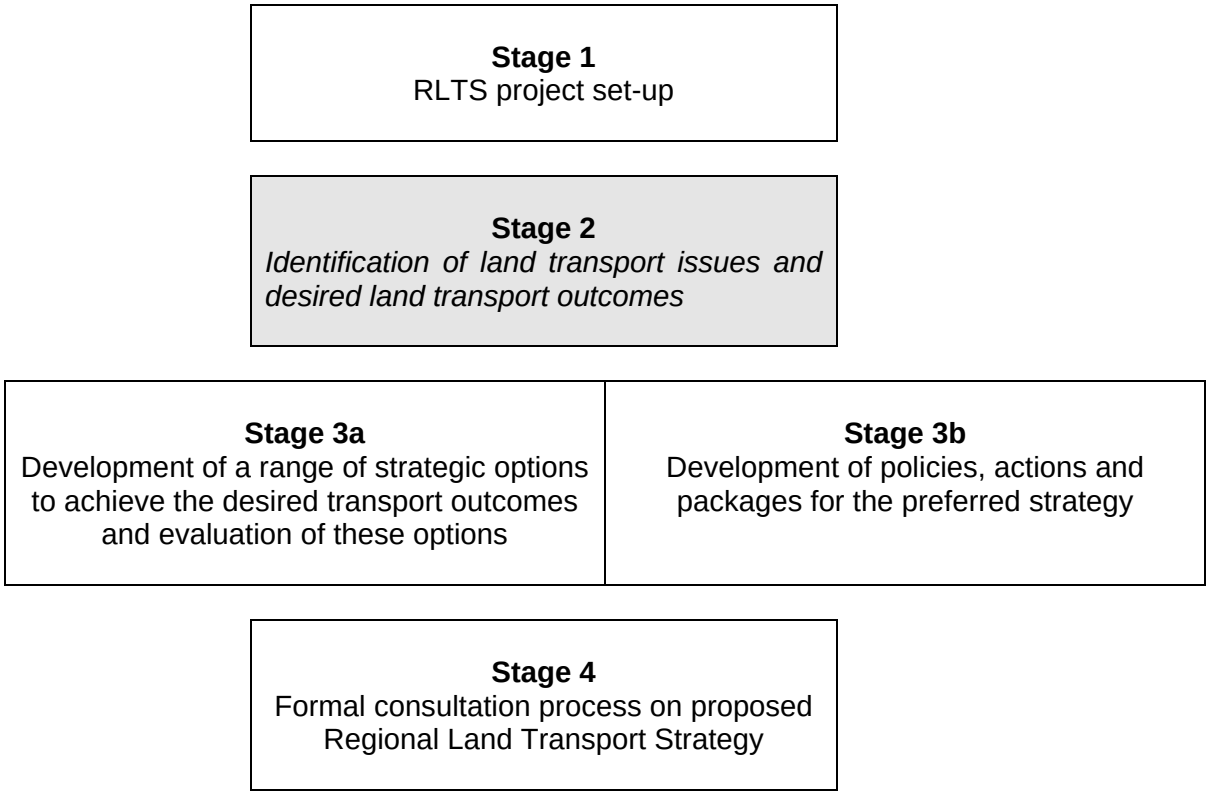


Figure 1: Staging of the RLTS development

1.1 Identification of key issues

Key regional land transport issues have been identified in two main ways:

- through key stakeholder consultation
- through information gathering methods to provide both quantitative and qualitative evidence to support and supplement the issues identified through the consultation process.

Six information streams have contributed to the identification of key land transport issues as outlined in Figure 2 overleaf.

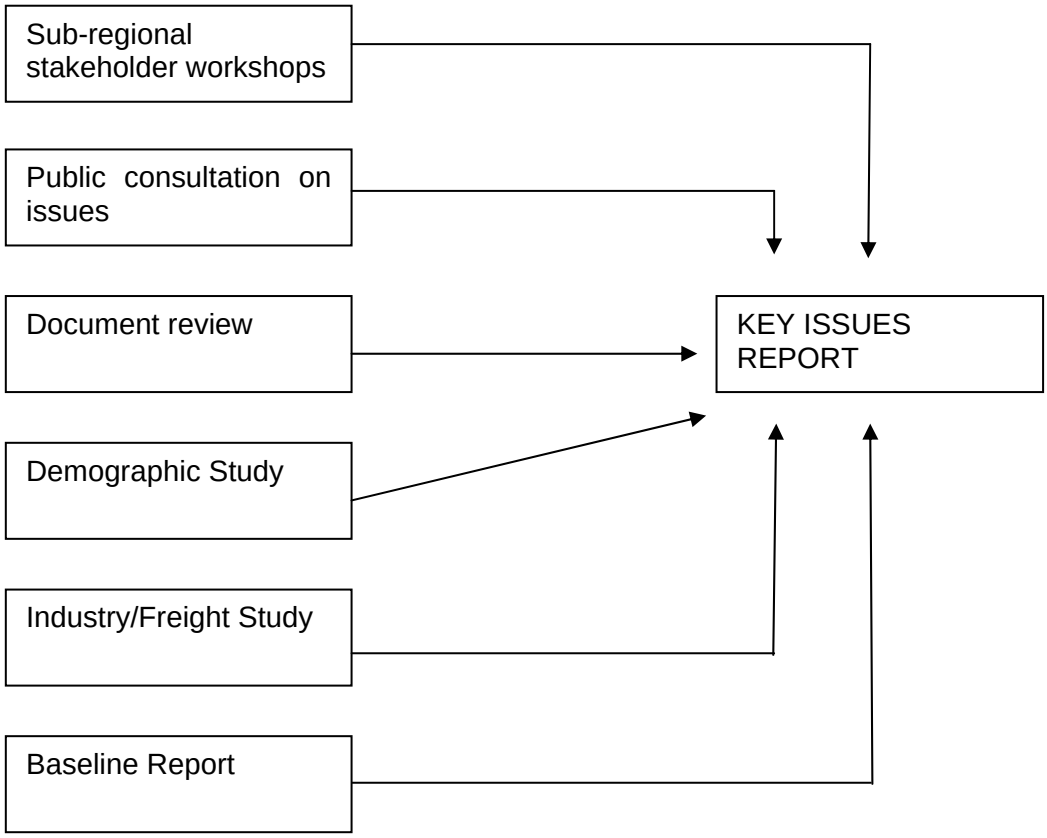


Figure 2: Information streams for key issues report

1.2 Purpose of the Baseline Report

The purpose of the Baseline Report is to profile the existing statistical information basis held by various authorities. This will provide a quantitative evidence based report, upon which issues identified in the Key Issues Report can be evaluated.

The report specifically covers the information available on:

- the networks available on an inter-regional and intra-regional levels
- road, rail and air safety
- current network capacity problems (traffic congestion and levels of service).

The Baseline Report is not designed to investigate issues that have arisen out of consultation, nor to investigate or comment on qualitative or perception issues (such as personal security) that have emerged from other processes such as long-term council community planning. This report does not go into detail on demographic issues or regional industry sector issues as these are comprehensively covered in two reports (highlighted in Figure 2 above) entitled:

- Demographic Changes and Transport Needs in the Waikato Region
- Waikato Regional Industry Transport Study.

1.3 Information sources

Information collated as part of this report has been collected from regional databases held by the organisations shown in Table 1 below. Table 1 also shows that this report draws upon a wide range of transport statistics collected across the modes. No inference is made in terms of the reason for each trip, other than journey to work statistics, which form a major part of commuter transport within urban centres.

Table 1: Organisational databases in the Waikato region

Organisation	Statistic	Relevance
Land Transport New Zealand	Crash statistics	Indication of regional black spots Indication of exposure to crash risk (crash rate) Contributing factors in crashes Identify sub-regional issues
Transit New Zealand Local authorities Statistics New Zealand	Traffic composition	Indication of the use of transport network by mode
	Traffic growth	Indication of increasing demand for transport
Ontrack New Zealand	Rail safety statistics	Indication of rail safety issues
Environment Waikato	Passenger transport patronage trend	Indication of demand for passenger transport services
	Total Mobility patronage trend	Indication of demand for Total Mobility services
Hamilton Airport	Air passenger trends (domestic and international)	Indication of demand for air travel
Statistics New Zealand	Journey to work (Census)	Indication of the mode chosen when travelling to work
	NZ travel survey	Indication of the reasons for travel in a sample of households

The results from these information sources with relevance to the Waikato region and sub-regional highlights are provided in the following sections of this report.

1.4 Structure of this report

The Baseline Report describes baseline traffic information for the Waikato region. Specific chapters of this report consider the following:

Section 2: Transport profile of the Waikato region
This chapter considers the inter- and intra-regional routes travelling through and within the Waikato.

Section 3: Regional transport safety
This chapter considers the historical safety statistics surrounding the various transport modes within the region.

Section 4: Transport congestion
This chapter considers the growth in transport demand in light of its effect on congestion, particularly along major transport routes.

Each section describes regional and sub-regional issues consistent with the five sub-regions established for the development of the RLTS. These sub-regions are identified in Figure 3 overleaf and include:

- part of Franklin district
- Thames-Coromandel, Matamata-Piako and Hauraki districts
- Waikato district, Waipa district and Hamilton city
- Otorohanga and Waitomo districts
- South Waikato, Taupo and part of Rotorua districts.

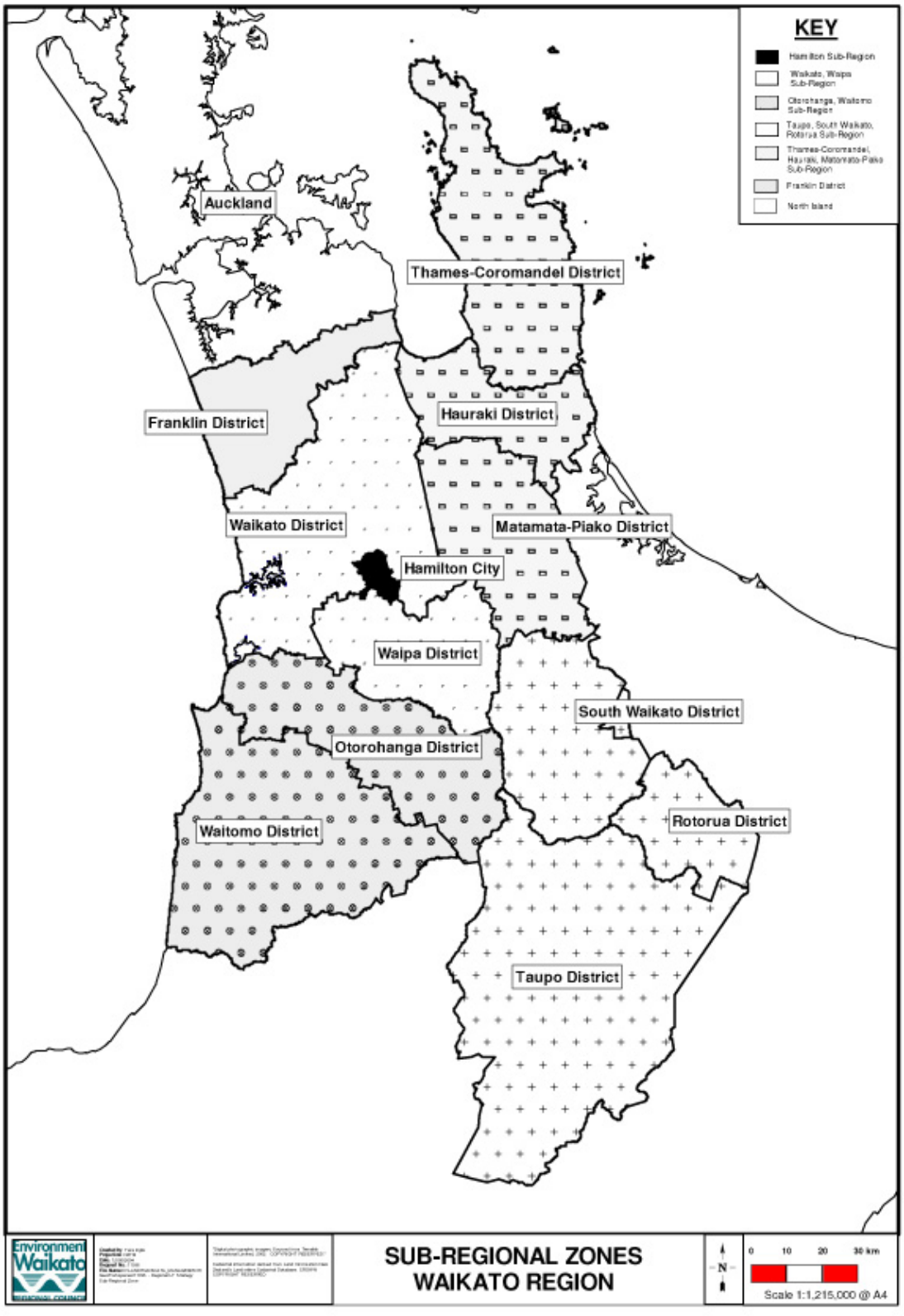


Figure 3: Map of the Waikato region showing the sub-regions that have been identified for the purpose of the RLTS development process

2 Transport profile of the Waikato region

The transport system of the Waikato region comprises road, rail, coastal barging, air transport, pedestrian and cycling networks and passenger transport services.

Section two of this report profiles the current location of networks within the Waikato region by each mode. The modal networks are broadly split into inter-regional and intra-regional networks indicating those networks of wider significance to the nation.

2.1 The Waikato region

The Waikato region is the fourth largest region in New Zealand, covering most of the central North Island and encompassing 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 – Lake Taupo (606 square kilometres) and the Waikato River. The Waikato River, at 425 km 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.

Above average population growth in the central and upper North Island continues to provide pressure points on the region's transport network. The central/northern sector of the North Island (comprising the Waikato, Auckland and Bay of Plenty regions) together make up:

- 46 per cent of the New Zealand population
- 24 per cent of the New Zealand roading network
- 41 per cent of the Land Transport New Zealand roading programme.

2.2 Modes of transport

There are two primary sources of information on travel choice at a regional level:

- the New Zealand Travel Survey 1997/98
- the New Zealand Census.

2.2.1 New Zealand Travel Survey

The New Zealand Travel Survey was completed in 1997/98. It surveyed approximately 14,000 New Zealanders on their travel habits, 1,600 of which were based in the Waikato region. The outcomes of this survey have been considered in the Demographic Report prepared as part of the RLTS Key Issues Report.

2.2.2 New Zealand Census

Journey to work data from the census is a useful way to keep track of the long-term changes in travel characteristics within a city or region. It is a useful baseline tool as it is a 100 per cent survey of residents down to a small scale (meshblock) at neighbourhood level. It can be used as a barometer to highlight any radical shifts in patterns and point to the type of further investigation which may be useful in monitoring and fine-tuning the transport system in the region, or urban area.

The graph in Figure 4 shows the changes in responses to the same questions over 10 years. The data shows an increasing trend in the use of private motor vehicles as the main mode of transport to work with a decline in the cycling and walking modes.

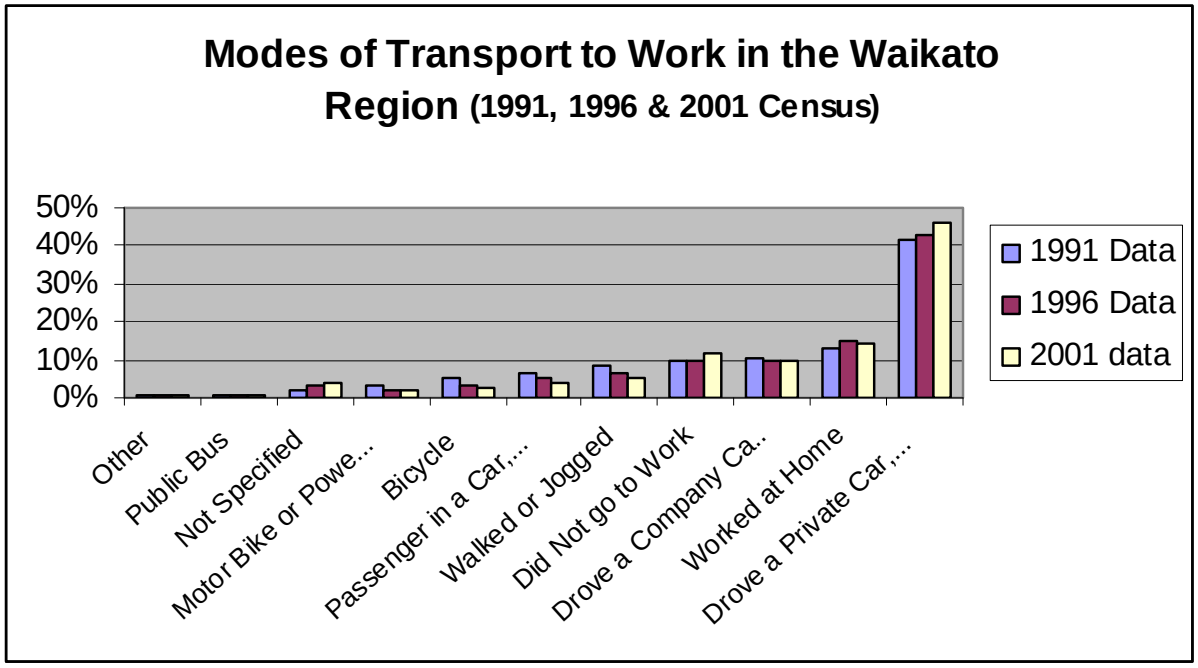


Figure 4: Graph showing modes of transport to work in the Waikato region for 1991, 1996 and 2001 Census data

From the 2001 Census figures, the following is observed for the Waikato region:[1]

- In the Waikato region, 46 per cent of respondents to the Census survey indicated that they drove a private car to work (two per cent less than the national figure) and 14 per cent went as passengers or drove company motor vehicles.
- Around 56 per cent were the driver of a vehicle
- Mean car occupancy was around one to one. That is for every 10 cars driven only one person apart from the drivers, travelled to work.
- Public bus was the least used mode apart from motorcycles/other and trains.
- Waikato region has a higher proportion of people who worked at home than the national average.
- Seven per cent of respondents cycled and walked or jogged to work and only one per cent took public transport to work, with those people being in Hamilton city and Waikato district.
- There were differences in responses between the rural and urban districts, most notably in the area of working at home, with only five per cent in Hamilton city compared to 32 per cent in Otorohanga district.

The Waikato region is heavily reliant on the private motor vehicle as a means of getting to and from paid employment.

[1] Source: Regional Summary Reference Report 2001 Census Table 17 Main Means of Travel to Work – Statistics New Zealand

2.3 The road network

The Waikato region has over 10,000 km of roads, accounting for 11 per cent of the total road length in the country. The region contains 16 per cent of the national state highway network (1,600 km). By virtue of its central location between the population centres of Auckland and Tauranga, the Waikato region carries a high proportion of through-traffic, particularly inter-regional freight traffic to and from the Ports of Auckland and Port of Tauranga. The Waikato region accounts for around 10 per cent of New Zealand's population, but the region's share of total road based freight traffic in terms of tonne kilometres is around 20 per cent.

Table 2: Roading physical statistics as at 30 June 2004[2]

	Waikato region	New Zealand	% of NZ
Sealed state highways	1,729.6	10,798.4	16.02%
Unsealed state highways	6.9	38.7	17.83%
Total state highways	**1,736.5**	**10,837.1**	**16.02%**
Sealed urban local roads	1,664.3	16,166.3	10.29%
Unsealed urban local roads	21.6	401.3	7.28%
Total urban local roads	**1,685.9**	**16,567.6**	**10.18%**
Sealed rural local roads	4,829.6	32,538.7	14.84%
Unsealed rural local roads	1,998.8	32,751.5	6.10%
Total rural local roads	**6,828.4**	**65,290.2**	**10.46%**
Total all sealed roads	8,223.5	59,503.4	13.82%
Total all unsealed roads	2,027.3	33,256.6	6.10%
Total all roads	**10,250.8**	**92,760.0**	**11.05%**
State highway bridges – two lane	466	4005	11.64%
State highway bridges – one lane	19	180	10.56%
Local roads bridges – two lane	990	6046	16.37%
Local road bridges – one lane	595	7450	7.99%

[2] Source; Transfund New Zealand Roading Statistics 2002/04

Table 3: Roading expenditure for year ending 30 June 2003 (000s)

	Waikato region	New Zealand	% of NZ
State highways			
Structural maintenance	27,742.6	169,616.7	16.36%
Corridor maintenance	11,364.3	72,979.6	15.57%
Professional services	6,275.3	43,255.4	14.50%
Preventative maintenance	1,228.9	6,713.8	18.30%
Emergency works	1,884.2	26,452.2	7.12%
Pavement smoothing	2,279.5	4,576.9	49.80%
Minor safety	5,131.5	26,425.9	19.42%
Bridge reconstruction	104.7	7,240.8	1.45%
Construction and regional development	30,021.0	250,935.3	11.96%
Property	9,507.2	64,810.3	14.67%
Walking and cycling	271.7	1,323.7	20.52%
Total state highway expenditure	**$95,810.9**	**$684,622.5**	**14.00%**
Local roads			
Structural maintenance	42,644.7	368,604.2	11.57%
Corridor maintenance	10,286.5	102,463.2	10.04%
Professional services	6,336.4	53,111.2	11.93%
Preventative maintenance	437.9	5,949.6	13.59%
Emergency works	4,661.9	59,184.4	7.88%
Pavement smoothing	4,828.5	28,908.9	16.70%
Minor safety	3,597.9	29,446.9	12.22%
Bridge reconstruction	98.2	4,635.5	2.12%
Construction	5,782.2	71,852.6	8.05%
Total local roads expenditure	**$78,674.2**	**$724,156.5**	**10.95%**
TOTAL REGIONAL EXPENDITURE	**$174,485.1**	**$1,408,779**	**12.34%**

2.3.1 Traffic volumes

Waikato roads are generally busy. The region has the second highest traffic volume in the country at 4,749,000 vehicle kilometres travelled – a 17 per cent increase since 1999. The breakdown of the vehicle kilometres per district is shown in Figure 5.

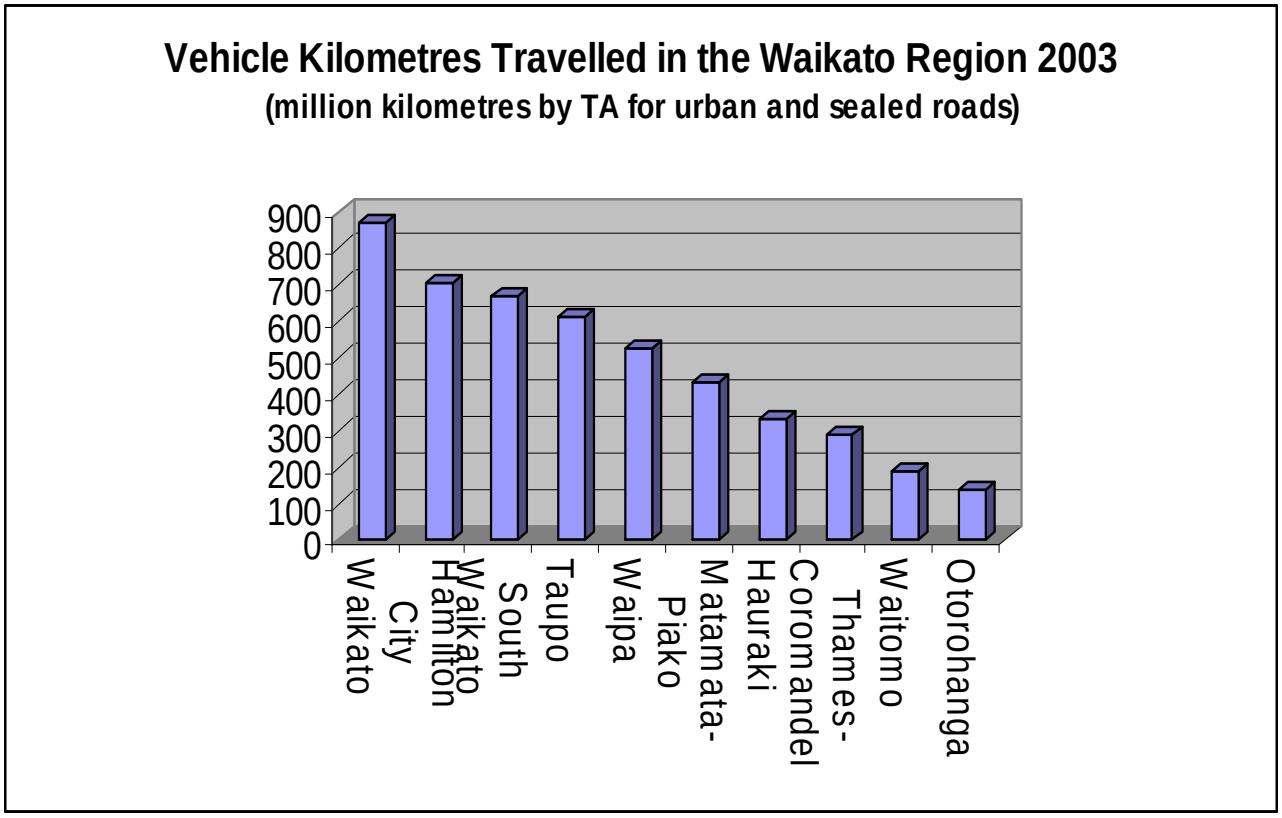


Figure 5: Graph of vehicle kilometres travelled in Waikato region 2003

2.3.2 Heavy transport

Figure 6 shows that number of heavy vehicles travelling within the Waikato region is second only to Auckland.

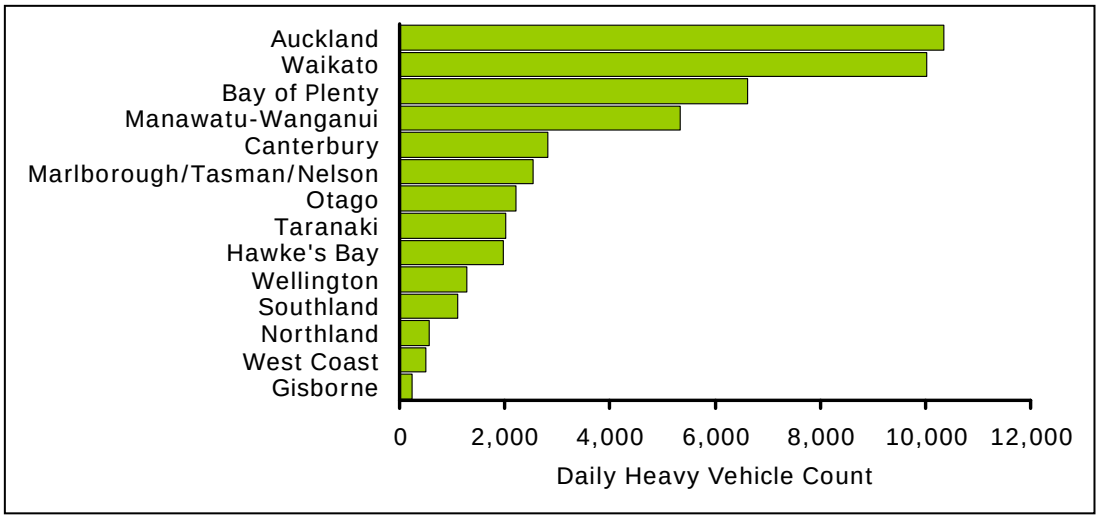


Figure 6: Comparison of percentage of heavy vehicles travelling within regions

The volume of heavy commercial vehicles has been growing by an average of around 5 per cent per year. However key routes within the Waikato region have a growth rate exceeding 10 per cent. These include:

- SH1 near Tokoroa – 21 per cent
- SH2 Mangatawhiri – 12.5 per cent
- SH29 Kaimai – 10.1 per cent.

Other routes with high heavy vehicle growth rates include SH27 Kaihere (9.5 per cent) and SH3 from Te Kuiti (8.6 per cent). These growth rates highlight the increasing reliance on large road based transport of commodities through, and within, the Waikato

region. They also highlight the key transport routes, particularly north/south routes and links between Auckland and Tauranga. This emphasises the role of the Waikato region as both a freight generator and a through corridor for freight.

A key issue for the region is accommodating anticipated growth in freight volumes, which have been, and are expected to be, expanding at a faster rate than overall economic growth.

Currently rail has a 17–19 per cent mode share of inter-regional freight between the Waikato and Auckland region and a 20–23 per cent mode share between the Waikato and the Bay of Plenty region, showing a reasonably even split between rail freight to the Ports of Auckland and the Port of Tauranga.

2.3.3 Inter-regional routes

The major inter-regional routes through the Waikato region are the state highways and rail network, illustrated in Figure 6 overleaf. These include:

- State Highway 1
  The major north-south arterial that links Auckland with the Waikato and regions further south.
- State Highway 2
  This route links Auckland with the Bay of Plenty across the top of the region through Waikato and Hauraki districts.
- State Highway 25
  Provides a link between Auckland through to Coromandel Peninsular.
- State Highways 27, 24 and 29
  This route provides an alternative link between Auckland, Waikato and the Bay of Plenty.
- State Highway 5 and 30
  Links the Waikato to southern Bay of Plenty.
- State Highway 3
  This route runs from Hamilton to the Taranaki regional boundary and is the only direct link between the Waikato and Taranaki regions.
- State Highways 4, 41, 46 and 47
  Link the Waikato and Manuwatu/Wanganui region.

The rail network is covered more fully in section 2.5 below.

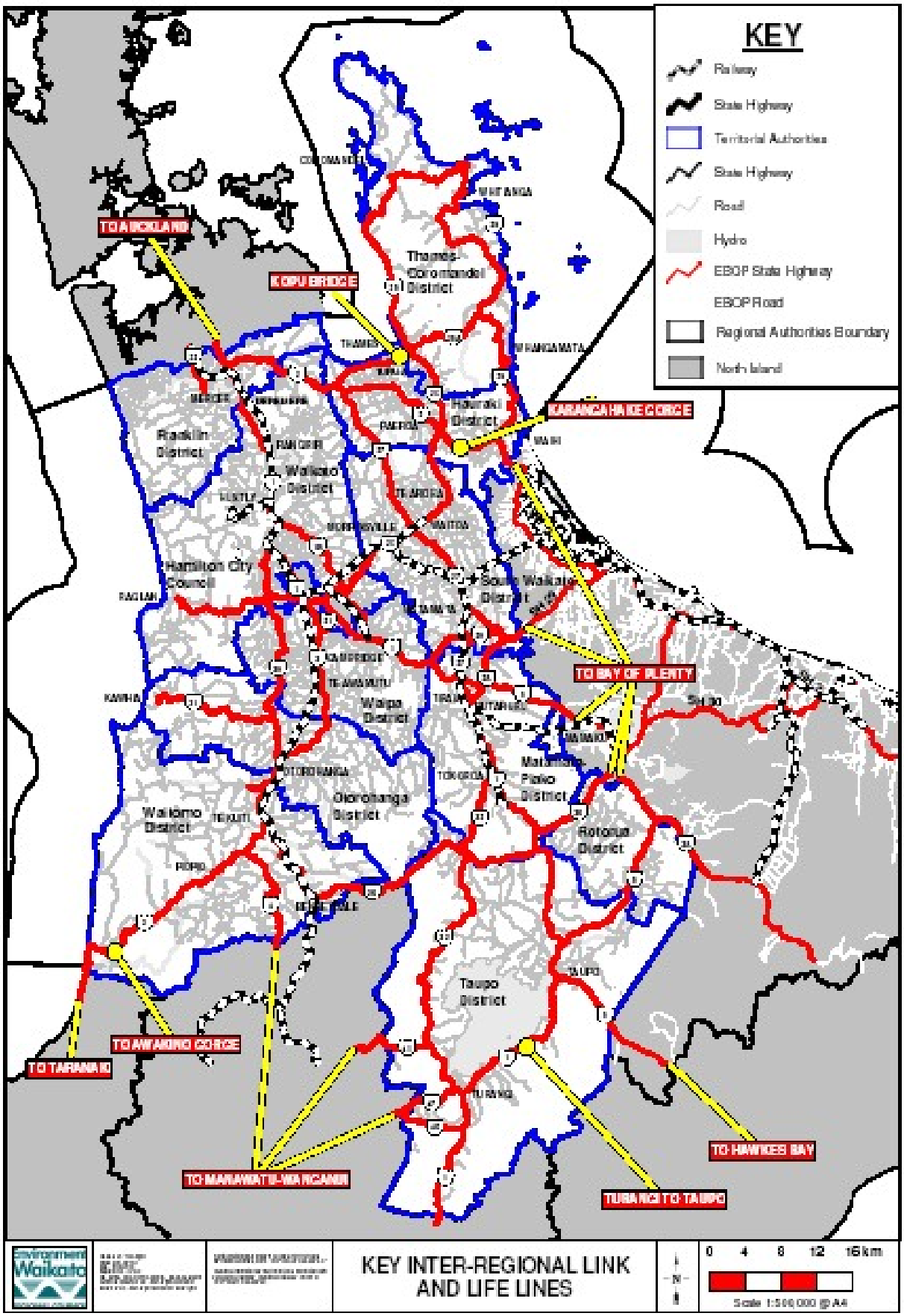


Figure 7: Key inter-regional link and lifelines

Table 4 highlights the average daily vehicles that pass into or out of the Waikato region via these routes, the growth rate on these routes and the volume of heavy commercial vehicles.

Table 4: Inter-regional state highway vehicle characteristics at the regional boundary

State highway	Average daily traffic[3]	Growth rate (%)[4]	% HCV
SH1 Auckland	17010	2.9%	11%
SH1 Wanganui	3300	1.1%	13%
SH2 (SH1 intersection)	13640	1.0%	12%
SH2 (BOP)	7240	5.7%	11%
SH25 (Kopu)	8530	5.4%	Est 7–12%
SH29 (BOP)	8930	6.2%	12%
SH5 (BOP)	5300	3.1%	11%
SH3 (Taranaki)	2070	2.4%	17%
SH4 Wanganui	1980	4.2%	15%

Table 4 shows SH1 and SH2 carry the highest volumes of traffic into and out of the region between the major population centres of Auckland and Bay of Plenty.

The average national growth rate for the state highway network is approximately 3 per cent. Those routes with higher vehicle growth rates (SH29, 2, 25 and 4) link to pressures from population and industry, with the exception of SH4.

The average national percentage for heavy commercial vehicles is approximately 9 per cent. State highways in the Waikato region carry a high percentage of HCVs compared to other parts of New Zealand. Those routes with a particularly higher percentage (SH3, 4) typically have a lower total vehicle volume, thus emphasising their heavy vehicle volume, though it does highlight their important function as inter-regional freight routes.

Figure 8 overleaf illustrates the annual average daily traffic count (AADT) for the inter-regional routes.

[3] Expressed as Annual Average Daily Traffic (AADT) for 2004
[4] Growth from 2000 – 2004. Source – Transit New Zealand

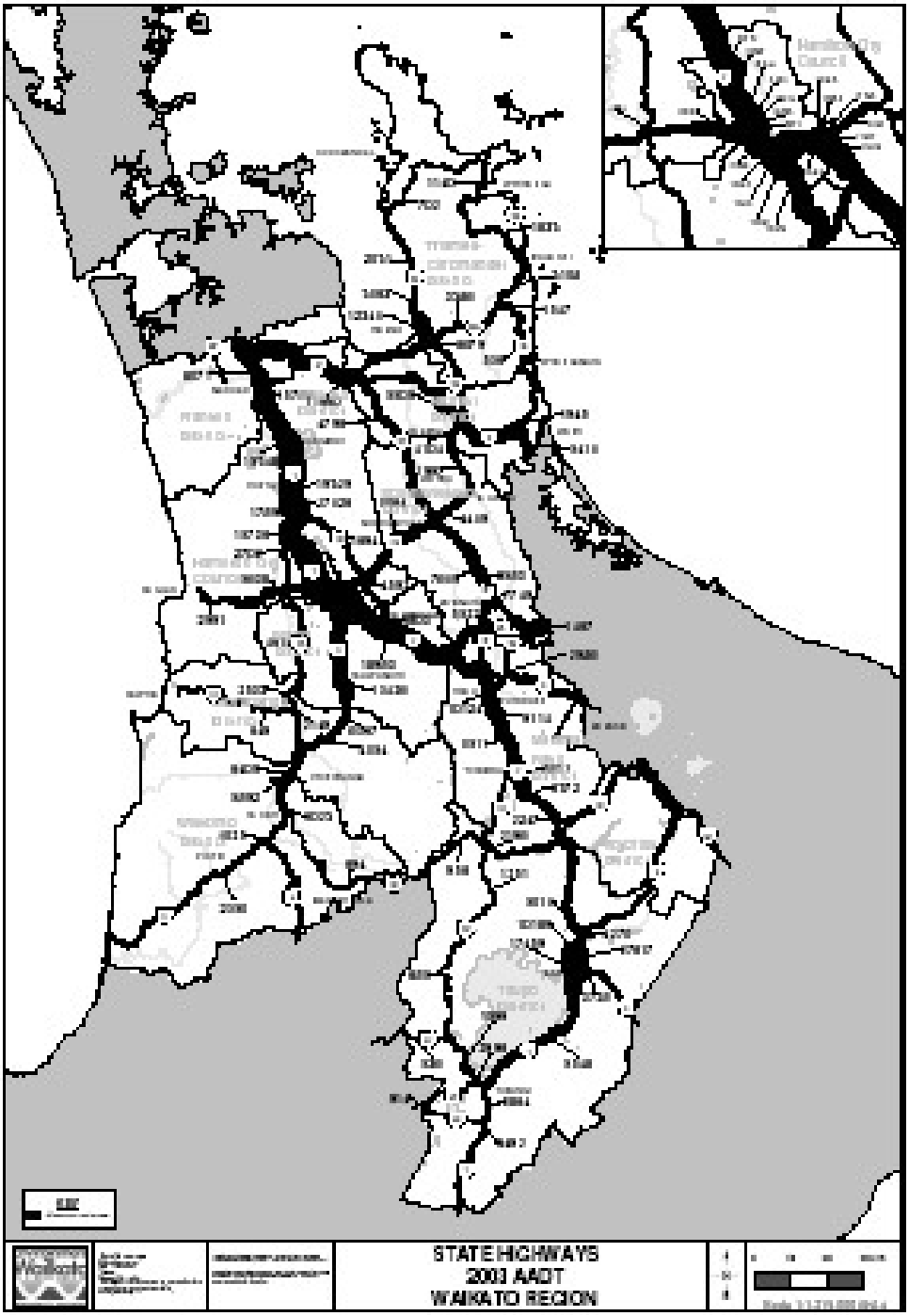


Figure 8: Map of the Waikato region showing 2003 AADT on state highways

2.3.4 Intra-regional routes

The remainder of the state highway and local road network service transport demands within the Waikato region.

Many of these local roads experience high and regular use by heavy commercial vehicles as some sectors of the regional economy (dairy, agriculture and forestry) are reliant on road transport.

2.4 Strategic roading projects

Strategic roading projects for the Waikato region are identified in Transit New Zealand's 10-year State Highway programme for 2005/06. The following have been recognised by the RLTC as the key regional road transport projects for the Waikato region:

- SH2 Mangatawhiri deviation
- SH1 Avalon Drive bypass
- SH1 East Taupo arterial
- SH25 Kopu Bridge replacement
- SH1 Church to Avalon Dr four-laning
- SH1 Te Rapa bypass
- SH1 Rangiriri bypass
- SH1 Ngaruawahia bypass.

These projects reflect the important nature of the state highway network to the region.

2.5 Rail

There are 460 km of rail lines in the Waikato region, as illustrated in *Figure 9: Map of rail lines in the region* overleaf. Key lines include the North Island main trunk line between Auckland and Wellington and the east coast main trunk line from Hamilton to the Bay of Plenty region, supported by a feeder network of 160 km.

This network is distributed over six lines:

- part of the North Island main trunk line, which traverses the centre of the region and is the primary north south rail link
- part of the east coast main trunk line, which links the Waikato region with the Ports of Tauranga and Bay of Plenty region through the Kaimai Tunnel
- the Kinleith branch (65 km), which provides a direct rail link to the Kinleith Pulp and Paper mill in Tokoroa
- the Cambridge branch (20 km), which presently stops at Fonterra's Hautapu dairy factory
- the Rotowaro branch (9 km), which links the North Island main trunk line with the Huntly coal mines and power station
- the Waitoa industrial line (11 km), which presently services Fonterra's Waitoa dairy factory.

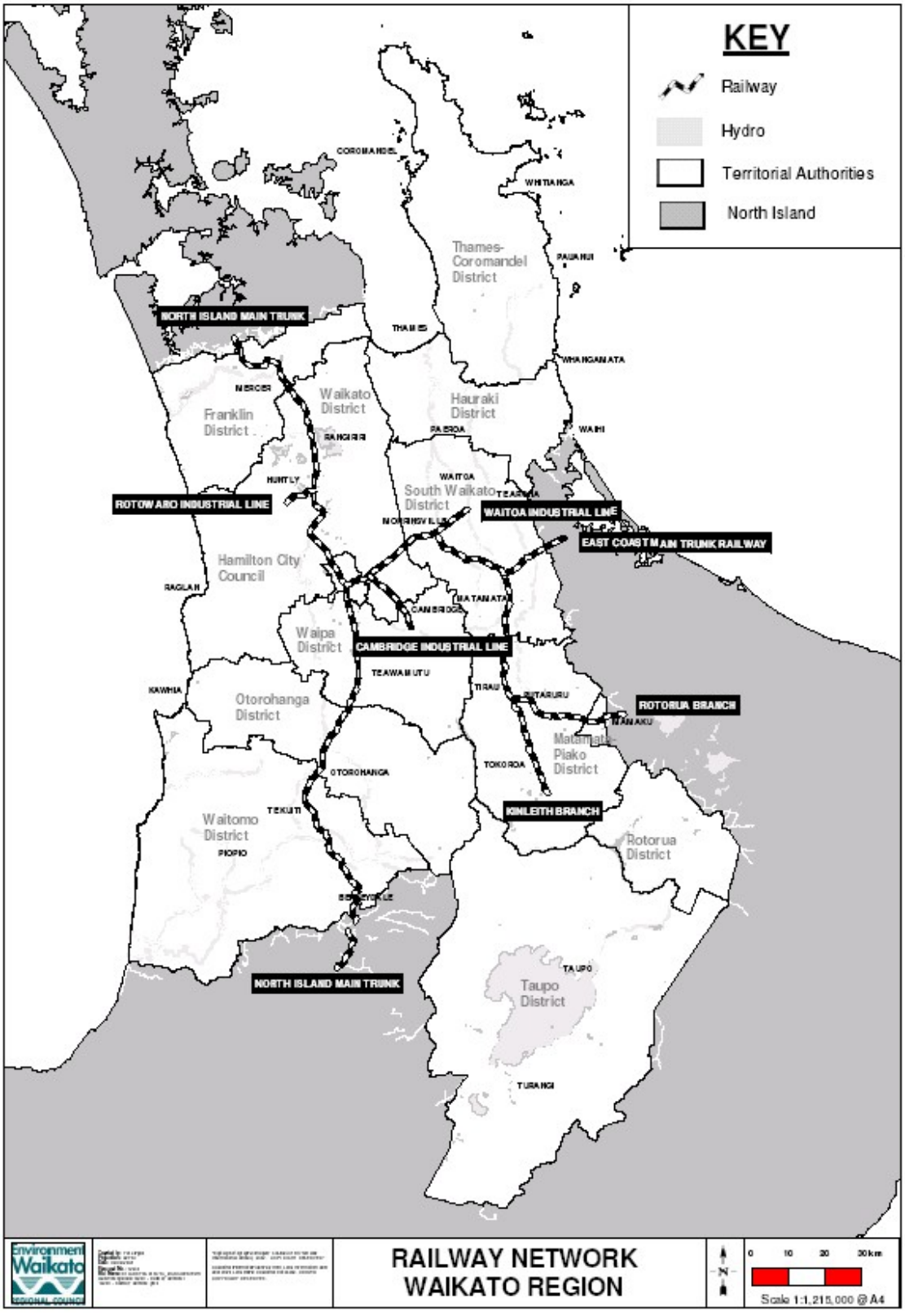


Figure 9: Map of rail lines in the region

2.6 National Rail Strategy

The government has recently announced the National Rail Strategy to 2015 (NZRS). The NZRS sets out the government's rail policy objectives and priorities for action over the next 10 years, and outlines key initiatives to achieve these outcomes. There are two key areas of action the strategy focuses on:

- rail freight, especially in the areas of bulk and container freight
- passenger rail services in urban areas.

The NZRS recognises that parts of the rail network are under-utilised and there are fewer capacity constraints when compared to roads.

2.6.1 Rail freight

Rail has between 17 and 23 per cent share of the overall freight transport market, between Auckland, Waikato and Bay of Plenty. This market share is high when compared to other regions. Major commodities include:

- containers to and from the Ports of Auckland and Port of Tauranga
- coal to Glenbrook and Huntly power station
- dairy products. 5

A partnership between Fonterra and Toll Rail has seen the recent development of an inland port facility in Crawford Street, Hamilton. Rail is expected to carry around 500,000 tonnes of dry export dairy products per year to export facilities at either the Port of Auckland or the Ports of Tauranga. However this will only account for approximately 40 per cent of the capacity of the inland port facility and there is potential for other products (particularly those bound for export) to be handled through the inland port facility.

The Industry Report prepared to identify key issues for industry, highlights the potential for increased rail modal share within the Waikato region.

2.6.2 Passenger rail

The only passenger rail services presently being offered are inter-regional services that link the major urban centres such as Auckland and Wellington. The NZRS does however recognise the role that rail may play in urban passenger transport within the wider Hamilton urban area, and this is being investigated in the Hamilton Alternative to Roads Study being undertaken presently.

2.7 Coastal barging

A subsidised service barging 40,000 tonnes of aggregate per year (increasing to around 200,000 tonnes) from Kopu in the Coromandel to Henderson (Auckland) has recently commenced in May 2005.

The Coromandel Freight (Alternative to Roading) Transportation Study is investigating the alternatives to SH25 for the movement of freight from the west coast of the Coromandel Peninsula. One of the options being investigated is coastal barging for the major freight generators such as forestry or aquaculture.

2.8 Waikato regional airport

The Waikato regional airport is located 13 km south of Hamilton city, within 15–20 minutes travelling by car from the city. The airport occupies a site of 262 hectares.

[5] Waikato Regional Industry Transport Study

Hamilton Airport provides domestic and limited international passenger connections but does not currently provide freight services. There are currently proposals to extend the runway, which will permit the operation of larger aircraft with greater freight capacity. There are also proposals to develop commercial and industrial activities around the airport.

The airport operates seven days a week with a 24 hour operation and no curfews, and services approximately 330,000 passengers a year. Table 5 shows the number of aircraft movements annually at Hamilton Airport. Movements are fairly constant between five and six per cent of the national total, with smaller aircraft making up most of the movements.

The sealed runway is 1960 m long with an additional 240 m grass runway end safety area. There are also grass runways of 660 m and 790 m.

Figure 10: Map of Hamilton Airport showing links to SH3 and SH1 (overleaf) shows the location of the airport with respect to SH1 and SH3.

Table 5: Annual aircraft movements at Hamilton Airport

Year	IFR	VFR	International	Total	National total	% of national movements
2004	22,905.00	36,127.00	1,165.00	60,197.00	1,004,161.00	5.99%
2003	20,025.00	36,293.00	1,109.00	57,427.00	1,008,131.00	5.70%
2002	18,974.00	30,905.00	1,136.00	51,015.00	977,097.00	5.22%
2001	19,684.00	31,712.00	1,155.00	52,551.00	980,219.00	5.36%
2000	19,182.00	33,748.00	1,117.00	54,047.00	1,020,291.00	5.30%
1999	17,762.00	43,314.00	666.00	61,742.00	1,021,669.00	6.04%
1998	16,751.00	36,314.00	667.00	53,732.00	980,669.00	5.48%
1997	18,653.00	34,013.00	758.00	53,424.00	1,002,224.00	5.33%
1996	17,008.00	37,241.00	1,056.00	55,305.00	996,244.00	5.55%

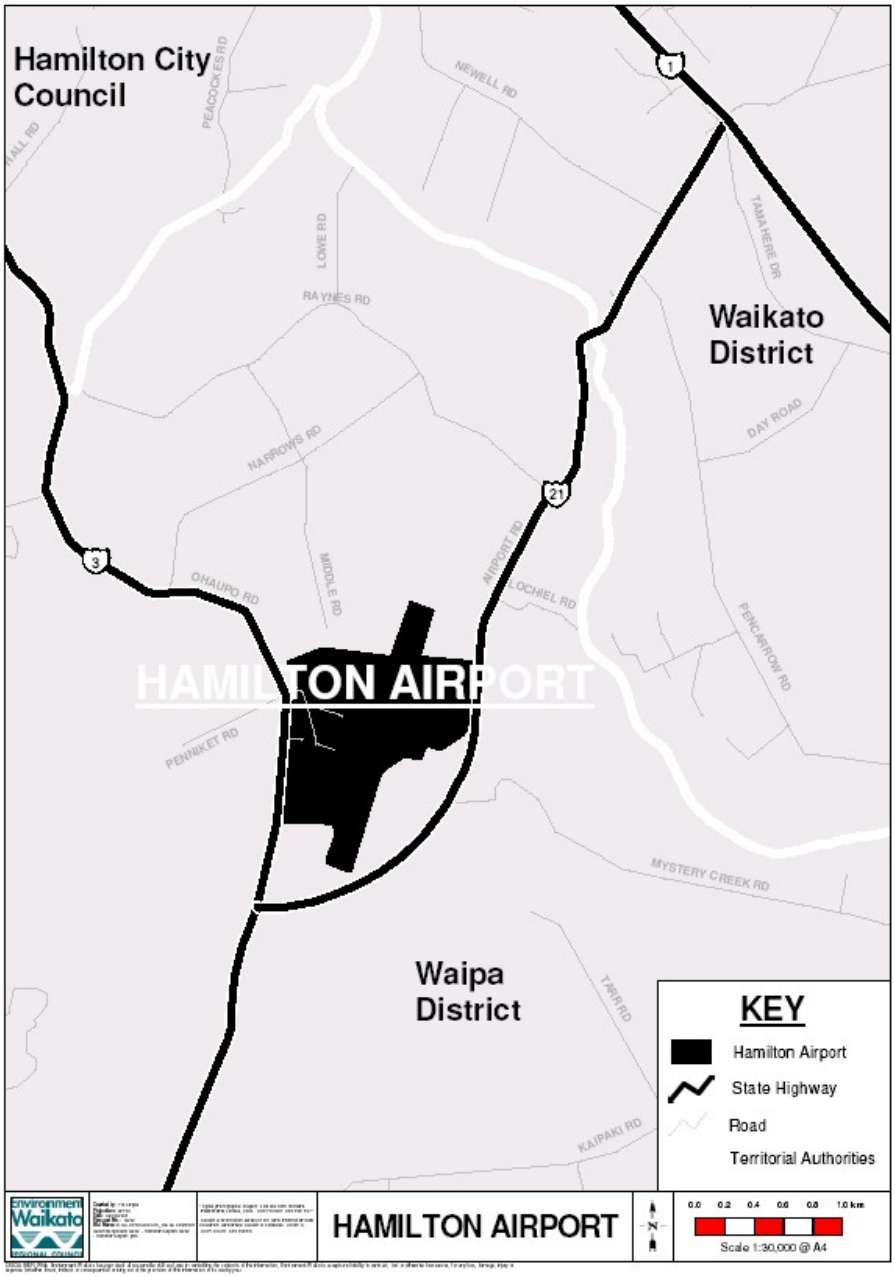


Figure 10: Map of Hamilton Airport showing links to SH3 and SH1

2.9 Pedestrian and cycling networks

Cycling and walking have much to offer in comparison with motor vehicles. They are a low cost transport option with increased health potential. They also reduce congestion on the road and produce low or zero pollutants.

The Operative Regional Land Transport Strategy recognises the benefits of cycling and encourages road controlling authorities to provide suitable on- and off-road facilities for cyclists.

2.9.1 Cycling and walking mode share trends

The 2001 census (journey to work) data for commuters resident in Hamilton city shows that 71 per cent of the resident population travel to work in a private motor vehicle. Walking and cycling together account for seven per cent and passenger transport two per cent.[6]

[6] Hamilton Journey to Work 2001 – A report prepared for Environment Waikato by Graeme Belliss Transport Planning April 2004

The census is limited, in that the journey to work statistics do not pick up the largest user group of cycling and walking – school age children. Figures 11 and 12 below summarise the information gathered in the New Zealand Travel Survey, which shows the high number of cycling and walking trips in the 10–25 age groups.

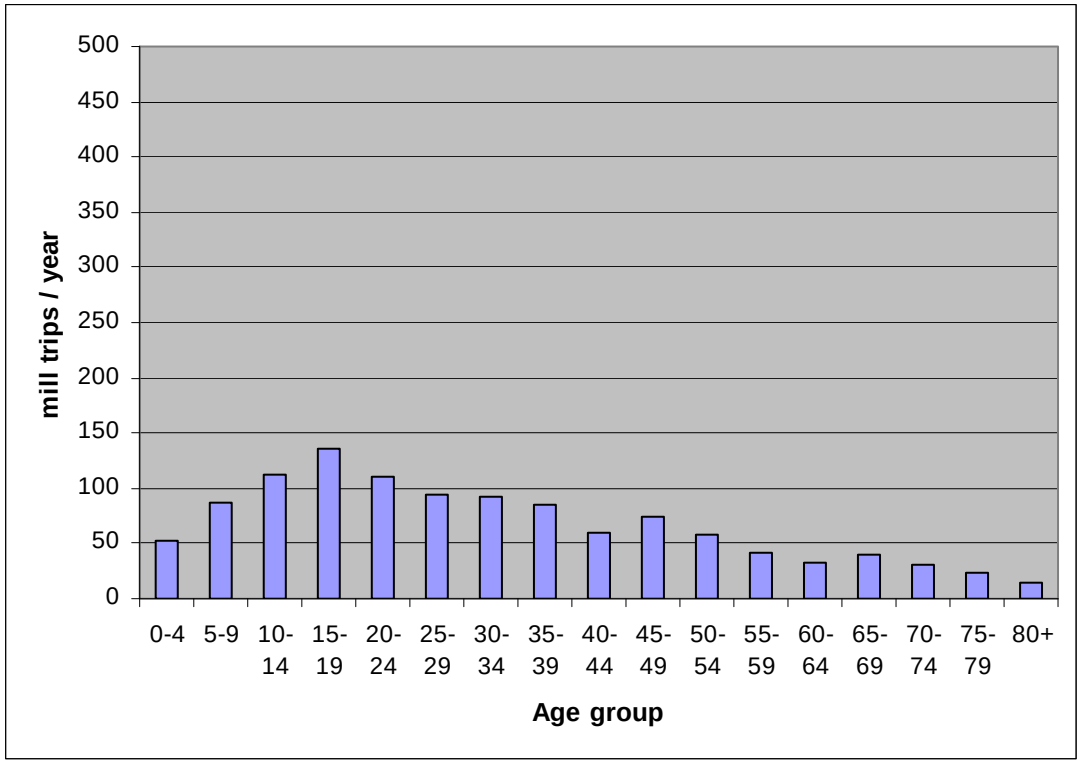


Figure 11: NZTS number of walking trips by age group

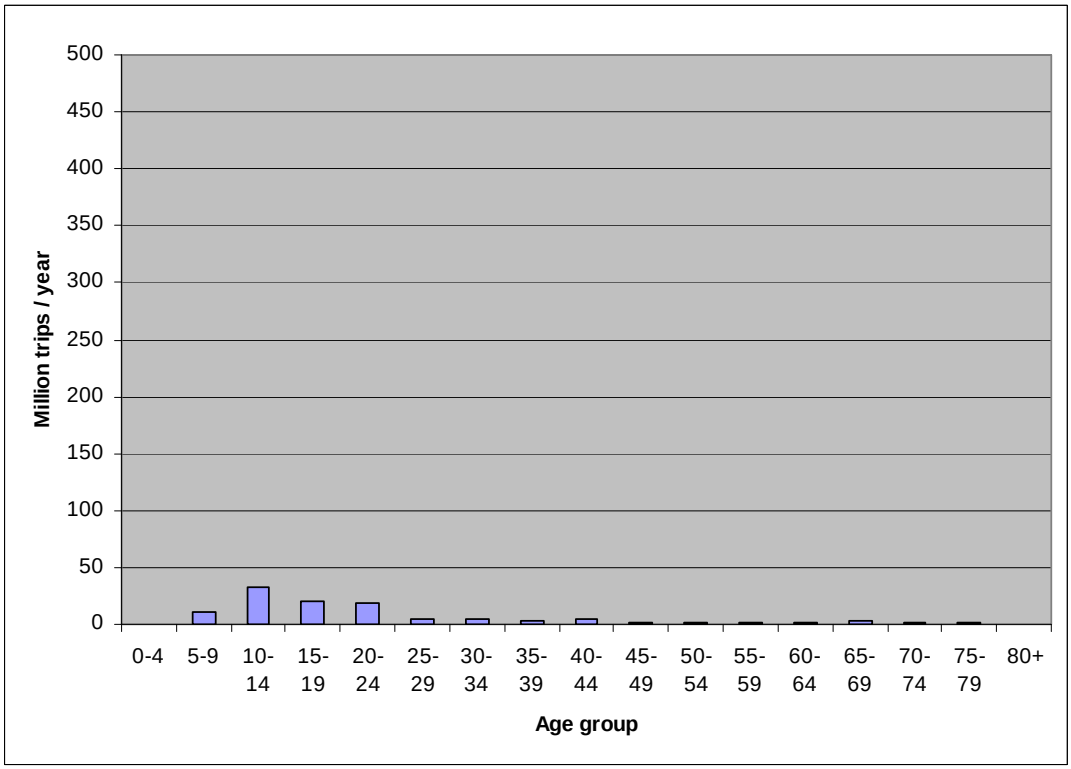


Figure 12: NZTS number of cycling trips by age group

The Hamilton Journey to Work 2001 Report notes:

> "The proportion of cyclists commuting to work has declined sharply from 10 per cent in 1986 to less than five per cent in 2001. This reduction is consistent with trends throughout the country over the same period."

2.9.2 Cycling and walking strategies

Environment Waikato is in stage two of developing a regional cycling and walking strategy. This stage involves mapping the cycling and walking routes in the region. It concentrates on inter-regional routes, with the detail of local networks contained in the territorial authority strategies.

Table 6 lists the walking and cycling strategies that exist in the Waikato region. These documents are in different stages of development as at May 2005.

Table 6: Cycling and walking strategies in the Waikato region

Strategy	Organisation	Stage of development
Cycling and Walking Strategy for the Waikato region – April 2004	Environment Waikato	Workshop proceedings and discussion paper
Cycle Strategy for Taupo Town Cycling and Walking Strategy	Taupo District Council	May 2001 – under review In development – 2005
Rotorua Cycleway Policy and Action Plans	Rotorua District Council	Operative
Waikato District Walkway Strategy	Waikato District Council	Operative
Walkways and Cycleways of Hamilton	Hamilton City Council	Operative
Draft Pedestrian Strategy	Otorohanga District Council	Under development
Waipa District Walking Strategy	Waipa District Council	Operative
Peninsula Peds and Pedals – Thames Coromandel District Walking and Cycling Strategy	Thames Coromandel District Council	Under development

2.9.3 Cycling and walking initiatives

Various cycling and walking initiatives have been trialled across the region, aimed at improving the accessibility and safety of walking and cycling. These initiatives have been undertaken in response to cycling and walking strategies being adopted by various territorial authorities. Initiatives have included expanding dedicated cycling and walking networks and improving signage and support facilities (bike parks).

Cycle and pedestrian counts on key routes are starting to be collected by local authorities to monitor the implementation of their cycling and walking strategies. These counts have highlighted a general increase in the number of people cycling on those routes where dedicated facilities have been provided, however trends cannot be drawn due to the lack of available data.

Project Energize
Project Energize is a recently launched initiative that involves 65 Waikato schools. It is a 2 year project which aims to improve the health and nutrition of young people. The project includes active transport as a means of increasing fitness levels.

Walking school buses
Walking school buses have been developed as a means of allowing children to walk to school in a group, or 'bus', which has a 'driver' at the head of the group and parental

helpers guiding the remaining children. They have an added benefit in reducing the number of vehicle trips within an area and decreasing localised congestion at school gates.

There are currently three walking school buses attached to the following Hamilton schools:

- Hukanui Primary
- Pukete Primary
- Hamilton West Primary.

There is the potential for more walking school buses to be established throughout the region. Hillcrest Normal and Vardon School are likely to have a walking school bus by the end of 2005.

2.10 Passenger transport services

The Waikato region has the fourth largest passenger transport service in New Zealand, carrying 1.9 million passenger trips per year. Environment Waikato contracts external providers to operate bus services. Currently, there are 18 services and four Night Rider services in Hamilton city and nine rural services connecting Hamilton with Huntly, Paeroa, Te Awamutu, Cambridge and Raglan. Services also operate within Taupo and Huntly. Commercial operators outside of the control of Environment Waikato also provide services to major rural centres in the Waikato region.

2.10.1 Bus patronage

Table 7: Comparison of bus patronage

	YTD 2003/04	YTD 2004/05	Difference	Change
Hamilton city	1,383,614	1,446,962	63,348	4.58%
Rural services	155,343	148,565	-6,778	-4.36%
YTD total patronage	1,538,957	1,595,527	56,570	3.68%

Over the past four years, there have been major improvements in service levels and infrastructure provision (for example, 30 minute services and integrated ticketing). Environment Waikato is currently re-tendering passenger transport services and routes are being extended to provide for new subdivisions in Hamilton city. In addition, the provision of a real-time information service is currently being trialled through a pilot programme on selected city routes, the purpose of which is to provide a more accessible and efficient city passenger transport service.

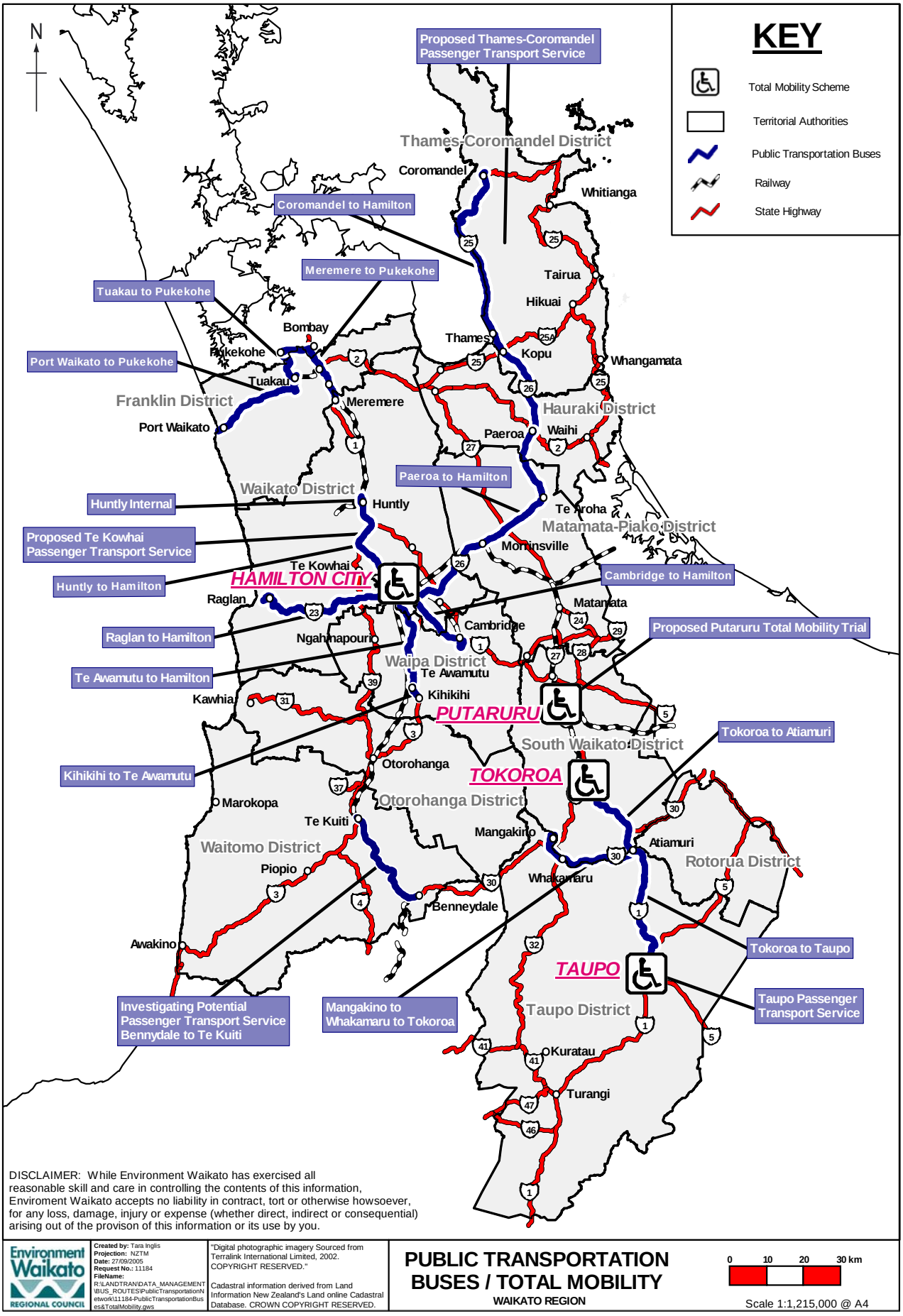


Figure 13: Map of bus services and Total Mobility schemes in the Waikato region

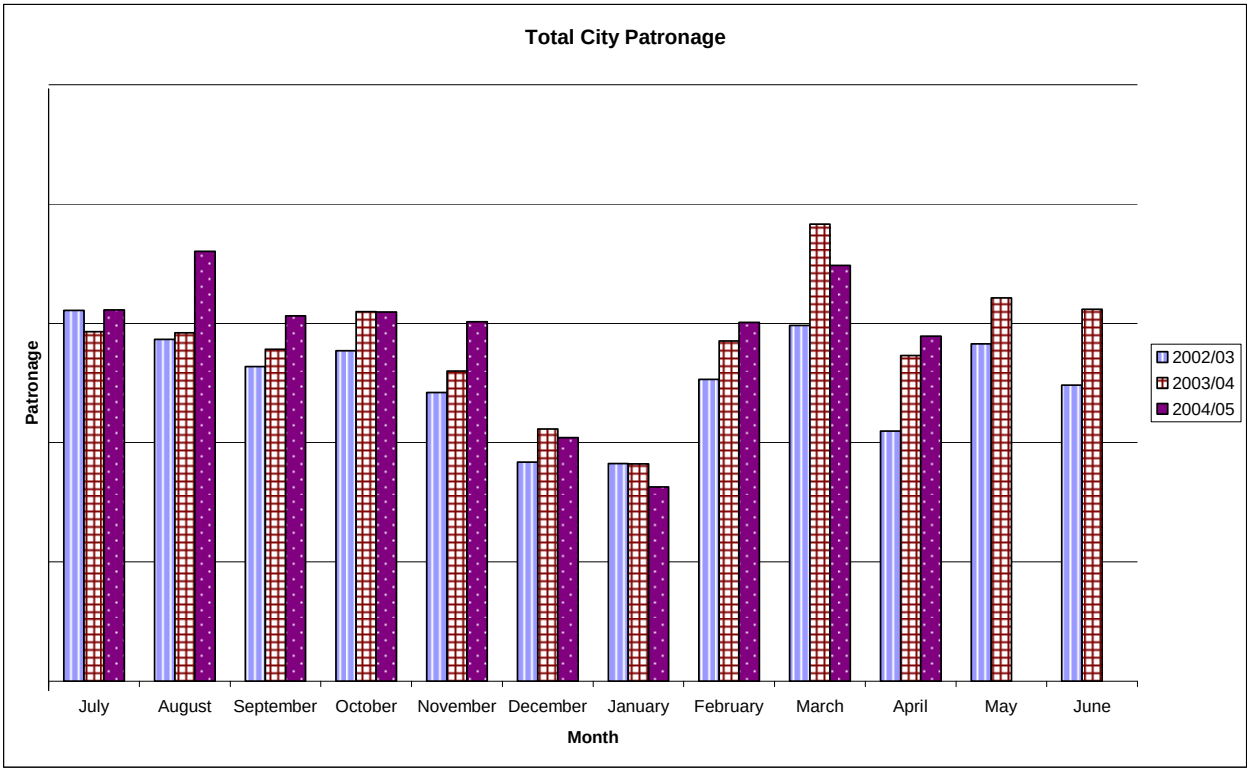


Figure 14: Comparison of total patronage on bus services in Hamilton city 2002 to 2005

Patronage on Hamilton city buses is growing over time. The comparison over the last three years shows fluctuations in patronage monthly with an increase over time.

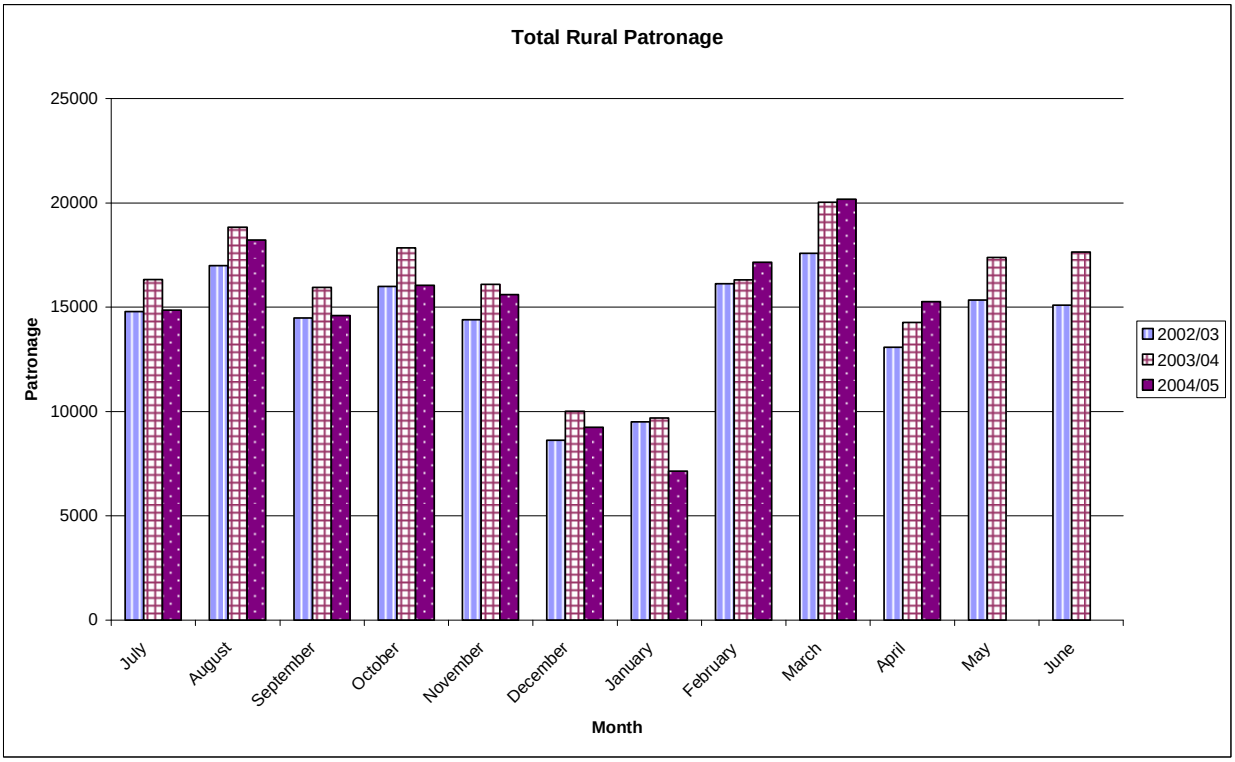


Figure 15: Comparison of total patronage on rural bus services in the Waikato region 2002 to 2005

Rural services have not experienced the same rate of growth as city services, but patronage has improved over 2003.

2.10.2 New passenger transport initiatives

New passenger transport services in the region include:

- A new bus service started in Taupo in July 2004 and is showing continued growth.
- A new late night service commenced in Hamilton city in March 2004, patronage has grown slightly over April but the service is not performing well overall.
- In a collaborative inter-agency exercise with community, health and local government agencies, a workers service has begun in May 2005, between Tokoroa and Taupo via Mangakino and Atiamuri.
- A shuttle service in Hamilton city plans to link major carparks and shopping precincts within the CBD.

2.10.3 Total Mobility

Total Mobility is a subsidised taxi-van or shuttle based door-to-door transport service for people with impairments that mean they can no longer access public transport. The scheme is managed through regional councils. Currently, Environment Waikato administers Total Mobility schemes in Hamilton city and Tokoroa and Taupo townships (see Figure 15). In total, there are around 1,600 registered users of Total Mobility; with around 1,100 users in Hamilton city, 300 in Taupo and 200 in Tokoroa. Environment Waikato is experiencing growth in the number of applications for the schemes.

The government is currently reviewing the Total Mobility scheme as part of its commitment to the *New Zealand Disability Strategy*. The purpose of the review is to improve the consistency and quality of the scheme and to cater for an increasingly ageing population (as illustrated in the Demographic Report).

3 Road safety in the Waikato region

Section three of this report details regional road safety issues within the Waikato. It profiles the Waikato region in comparison to national road safety initiatives and compares our current road safety record with the rest of the country. Regional road safety is analysed using reported road crashes between 2000 and 2004 to highlight regional blackspots, and highlights crash density and crash risk across the regional state highway network.

Whilst this section is predominantly about road safety, commentary is also provided on rail and air traffic safety.

3.1 National road safety record

Figure 15 overleaf highlights the density and risk of crashes across regional council boundaries on the basis of injury crashes between 2000 and 2004. Figure 15 shows that the Waikato region:

- has a lower crash density compared to Auckland and Bay of Plenty
- has a higher crash density compared to Taranaki and Manawatu/Wanganui
- has a lower, or similar, crash risk compared to Bay of Plenty, Taranaki and Manawatu/Wanganui
- has a higher crash risk that Auckland – despite the high number of crashes on Auckland roads, the distance travelled by Aucklanders, and the higher volume of vehicles on the roads.

3.2 National road safety initiatives

Road safety comes under the purview of Land Transport New Zealand who administer the national road safety strategy, *Road Safety to 2010.* The purpose of this strategy is to provide direction for road safety in New Zealand and describes the road safety results the government wants to achieve by 2010. The key targets are no more than 300 death or 4500 hospitalisations by 2010.

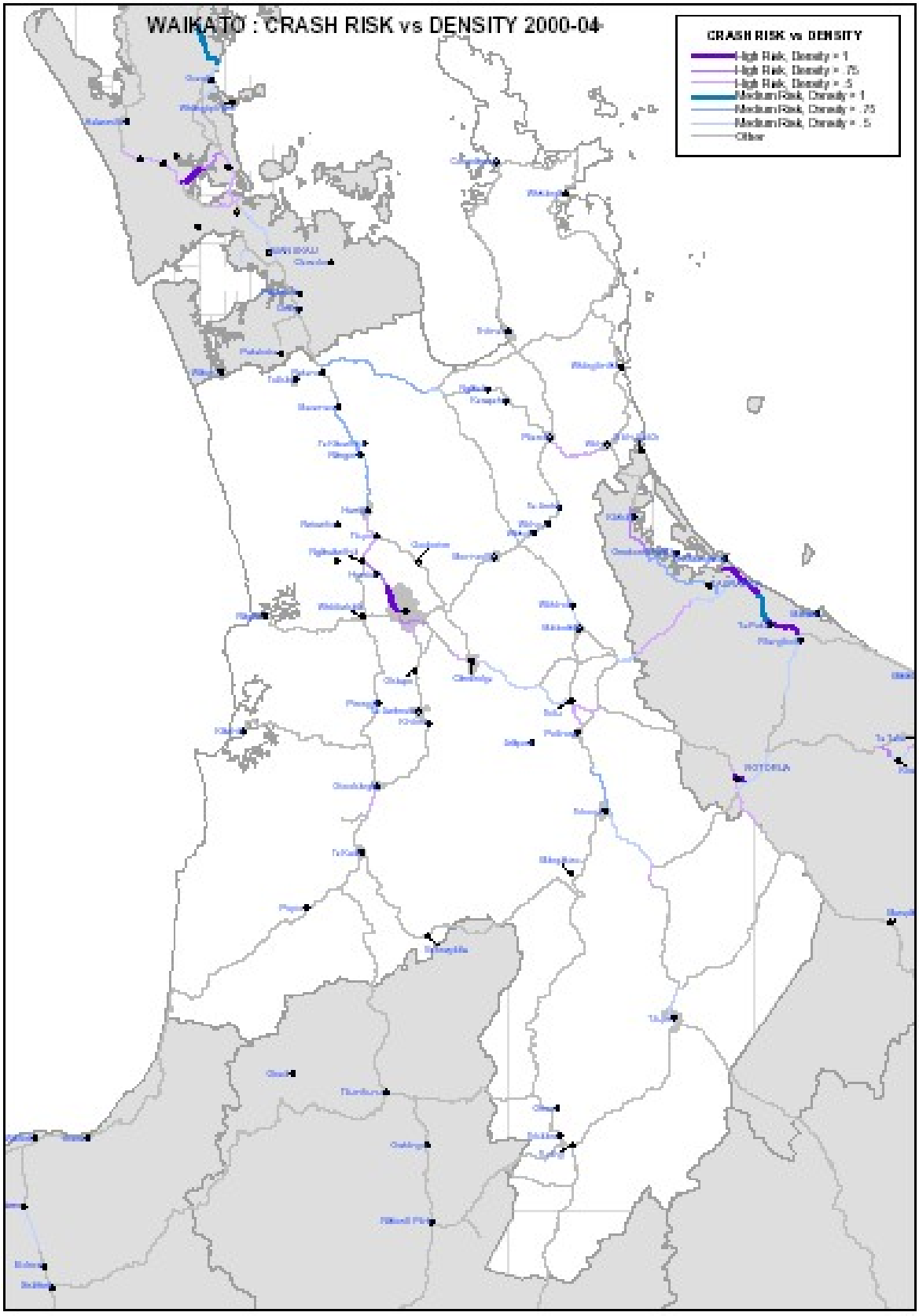


Figure 16 Crash density and crash risk

3.2.1 Ministry of Transport regional outcomes for 2010

Table 8 shows the regional outcomes that could be expected if the national goal of no more than 300 deaths is achieved.

These targets must be treated as indicative only, as they assume the same proportional improvement across the regions as the current range of policies and enforcement effort are projected to provide. Clearly any major policy, resource

allocation or enforcement effort could have quite large regional effects. Also, as calculated values have been rounded to the nearest 10, the regional values do not necessarily add to the national goals.

A recent paper for the National Road Safety Working Group (NRSWG) showed that in the absence of any new safety initiatives or resource input it is unlikely that the goal of no more than 300 road deaths in 2010 will be achieved. With the current situation the estimated number of deaths in 2010 will be about 390. There will be a similar 'gap' at a regional level.

Table 8: Ministry of Transport 2010 regional road safety outcomes

Region	Deaths plus hospitalised	Deaths plus hospitalised for over one day	Deaths plus hospitalised for over three days
Northland	340	150	100
Auckland	1640	690	490
Waikato	**570**	**330**	**250**
Bay of Plenty	380	210	130
Gisborne	50	30	20
Hawkes Bay	190	110	70
Taranaki	100	60	40
Manawatu/Wanganui	300	190	130
Wellington	240	150	90
Nelson Marlborough	110	60	40
West coast	70	30	20
Canterbury	530	300	210
Otago	190	110	80
Southland	110	70	40

Table 9 shows where the regions are expected to be in 2010 if there are no additional interventions/resources. The difference between the values in this table and that above represent a 'gap' that must be closed if the 2010 goals are to be achieved.

Table 9: 2010 projected road safety targets

Region	Deaths plus hospitalised	Deaths plus hospitalised for over one day	Deaths plus hospitalised for over three days
Northland	441	194	120
Auckland	2129	871	616
Waikato	**737**	**412**	**311**
Bay of Plenty	493	271	157
Gisborne	70	40	29
Hawkes Bay	242	133	91
Taranaki	124	74	48
Manawatu/Wanganui	390	237	159
Wellington	312	192	117
Nelson Marlborough	145	81	54
West coast	85	40	20
Canterbury	690	373	258
Otago	241	141	94
Southland	142	89	53

3.3 Regional road safety record

The Waikato does not have a good road safety record, and progress towards meeting the Road Safety 2010 target with a significant increase in road deaths between 2003 and 2004, as indicated by Table 11 below.

Table 10: Waikato regional road safety record 2003–2004

	Oct 03 – Sept 04	Jan 04 – Dec 04
Deaths (last 12 months)	71	87
Deaths (average last three years)	69	78
Serious injuries	301	300
All injuries	1556	1531
Hospitalised casualties (all)	728	699
Hospitalised casualties (>1 day)	356	370
Reporting rate (estimated % of all serious injuries)	68%	74%
Serious injury and fatal crashes	280	292
Serious and fatal alcohol crashes (%)	20%	21%
Open road crashes	659	646
Open road alcohol crashes	12%	12%
Open road speed crashes	20%	22%
Urban crashes	461	443
Urban alcohol crashes	14%	13%
Seatbelts not worn	6%	6%
Rear seatbelts not worn	19%	15%
Child restraints not worn (2003)	10%	10%
Cycle helmets not worn	9%	9%
Social cost ($M)	474	461
Risk (cents/VKT)	4.6	10

This data is consistent with Land Transport New Zealand's analysis of crash factors for the Waikato, which highlights 84 per cent of all crashes involve behaviour or driver error as being the primary cause of the crash. Figures 16, 17 and 18 overleaf show the location of crashes involving speed, alcohol or fatigue between 2000 and 2004.

Figure 18 highlights speed related crashes, and shows:

- a high incidence of crashes in Hamilton city
- a cluster of speed related crashes on SH2 around Mangatawhiri
- a cluster of speed related crashes in the Karangahake Gorge (SH2), Thames Coast Road (SH25) and SH23 Raglan deviation
- crashes on rural 'rat runs' across the Hauraki Plains and routes such as between Taupo and Rotorua.

Figure 19 highlights crashes involving alcohol, and shows:

- clustering of crashes around urban centres
- an increased incidence of crashes on SH1 between Hamilton and Huntly
- an increased incidence of rural crashes north and east of Hamilton towards Hauraki district.

Figure 20 highlights fatigue related crashes, and shows:

- crashes located primarily along the state highway corridor
- a high incidence of crashes along SH1, SH2, SH3 and SH27
- a high likelihood that these crashes involve arterial or through traffic using main arterial networks.

3.3.1 Crash statistics by mode

Figure 17 shows groupings of road casualties by mode of transport. This shows, for example, that between 1999 and 2003, six per cent of road casualties were motorcyclists. When this is overlaid with Statistics New Zealand figures for mode of transport, where between two and three per cent of respondents indicated that they used a motorcycle as a means of transport to work, it can show that motorcyclists may be over-represented in the casualties compared with the number of motorcyclists on the road.

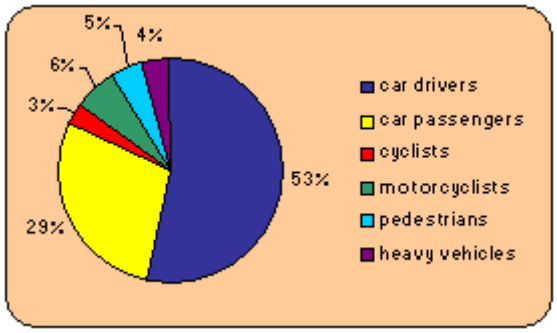


Figure 17: Waikato region road casualties grouped by user type for 1999 to 2003

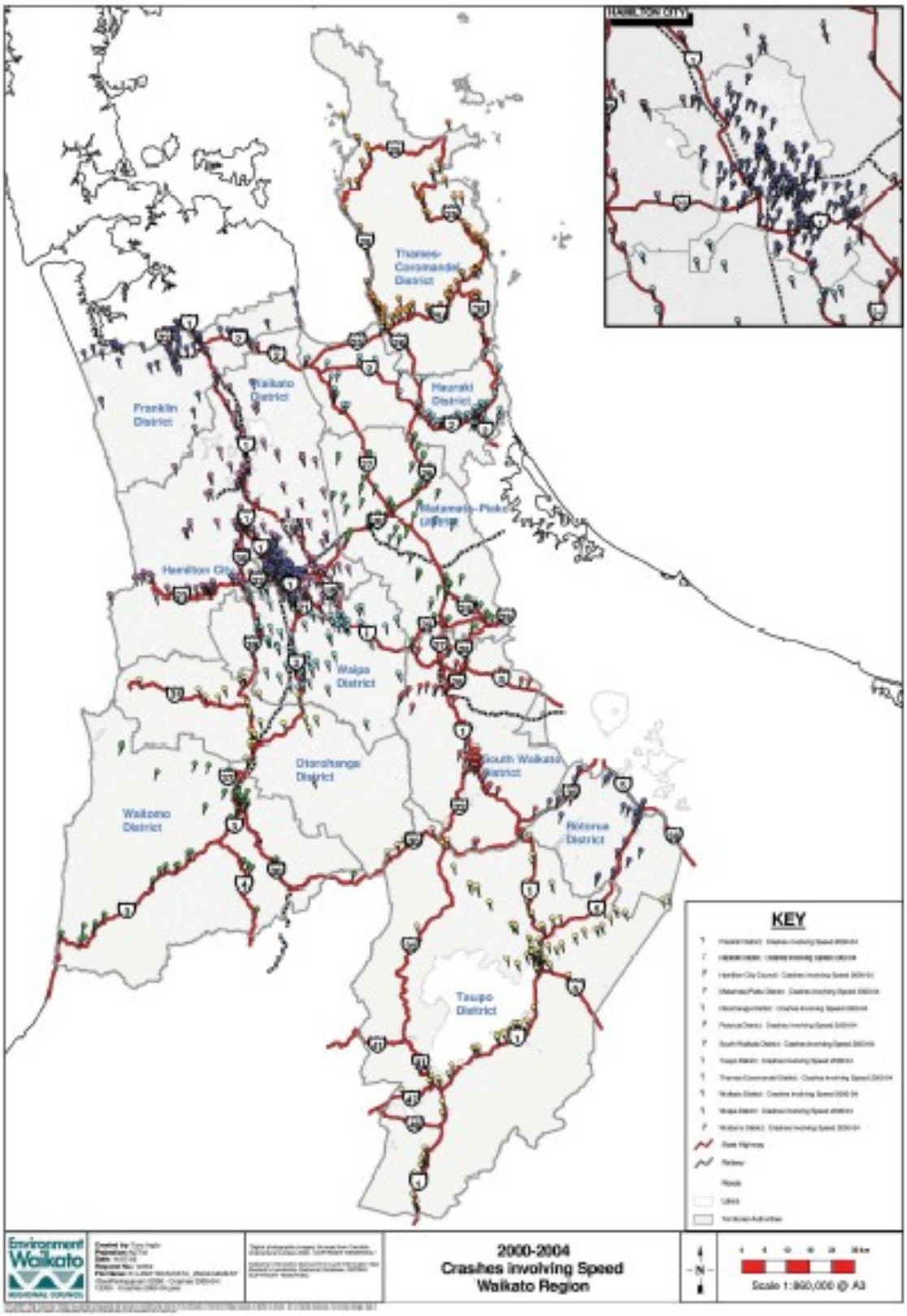


Figure 18: Speed related accidents in Waikato region

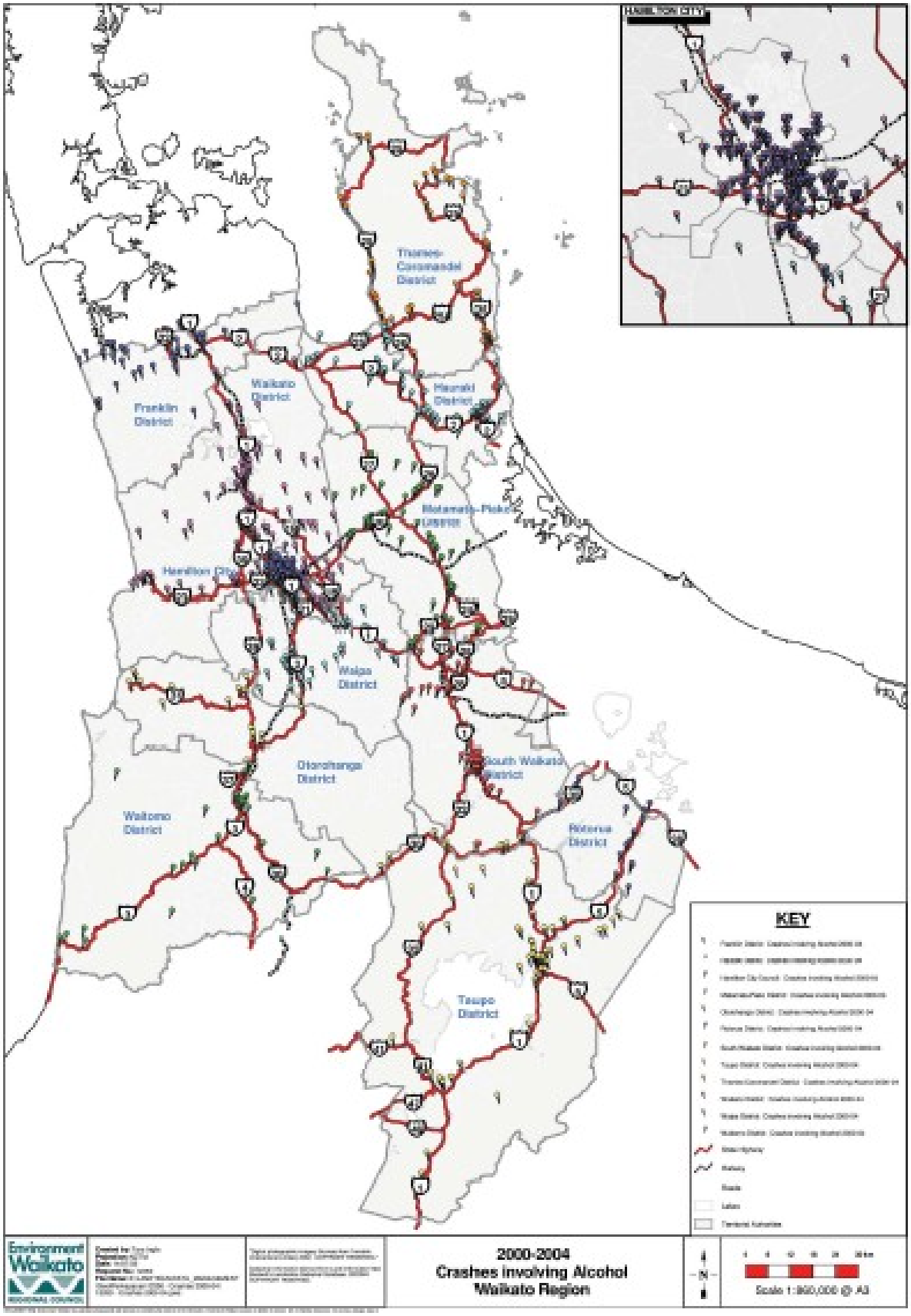


Figure 19: Alcohol related accidents in Waikato region

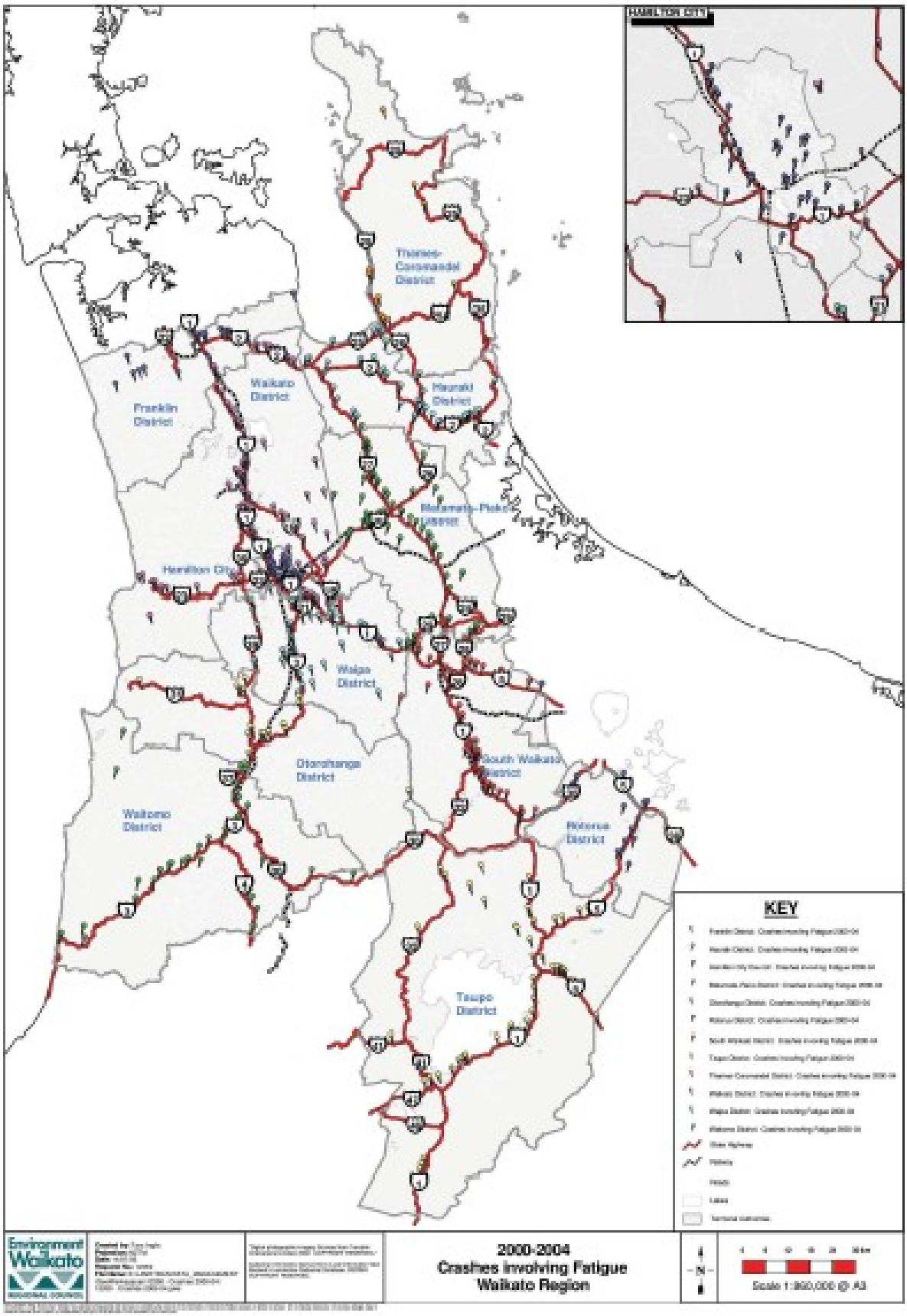


Figure 20: Fatigue related accidents in Waikato region

3.3.2 State highway crash risk and density

Figures 21 and 22 overleaf highlight the crash density and risk on the state highway network for the Waikato and Bay of Plenty Police districts. These figures are based upon fatal and serious injury crashes between 2000 and 2004. Crash density is a measure of the total number of fatal and serious injury crashes on sections of the network. Crash risk attempts to normalise the crash densities by factoring in the volume of traffic on each portion of the network to enable a comparison to be made.

Figures 21 and 22 show that:

- there is at least one fatal or serious injury crash per kilometre of SH1 in northern Hamilton and between Rangiriri and Meremere
- SH1 and 2 have the highest density of crashes in the Waikato region.

Figures 21 and 22 also show that:

- the highest risk of fatal or serious injury crash occurring is on SH1 in northern Hamilton
- SH1 has the overall risk of a fatal or serious injury crash occurring
- there are isolated areas of medium risk along the length of SH2 and 3.

It should be noted that this assessment of risk does not consider the local road network where, because of typically lower engineering standards and some of these routes being used as rat runs, there may be higher risk of fatal or serious injury crash occurring.

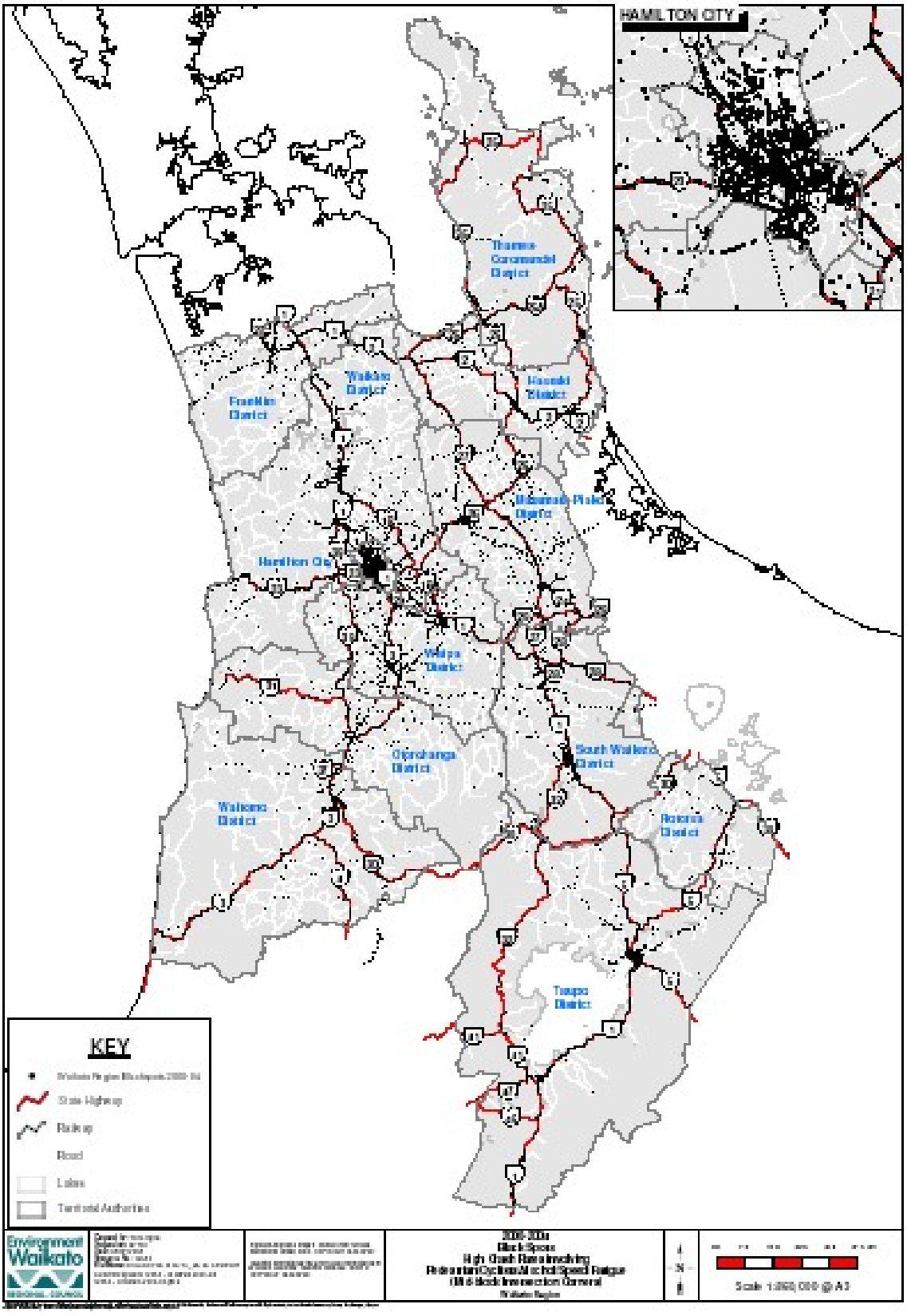


Figure 21: Waikato crash density 2000–2004

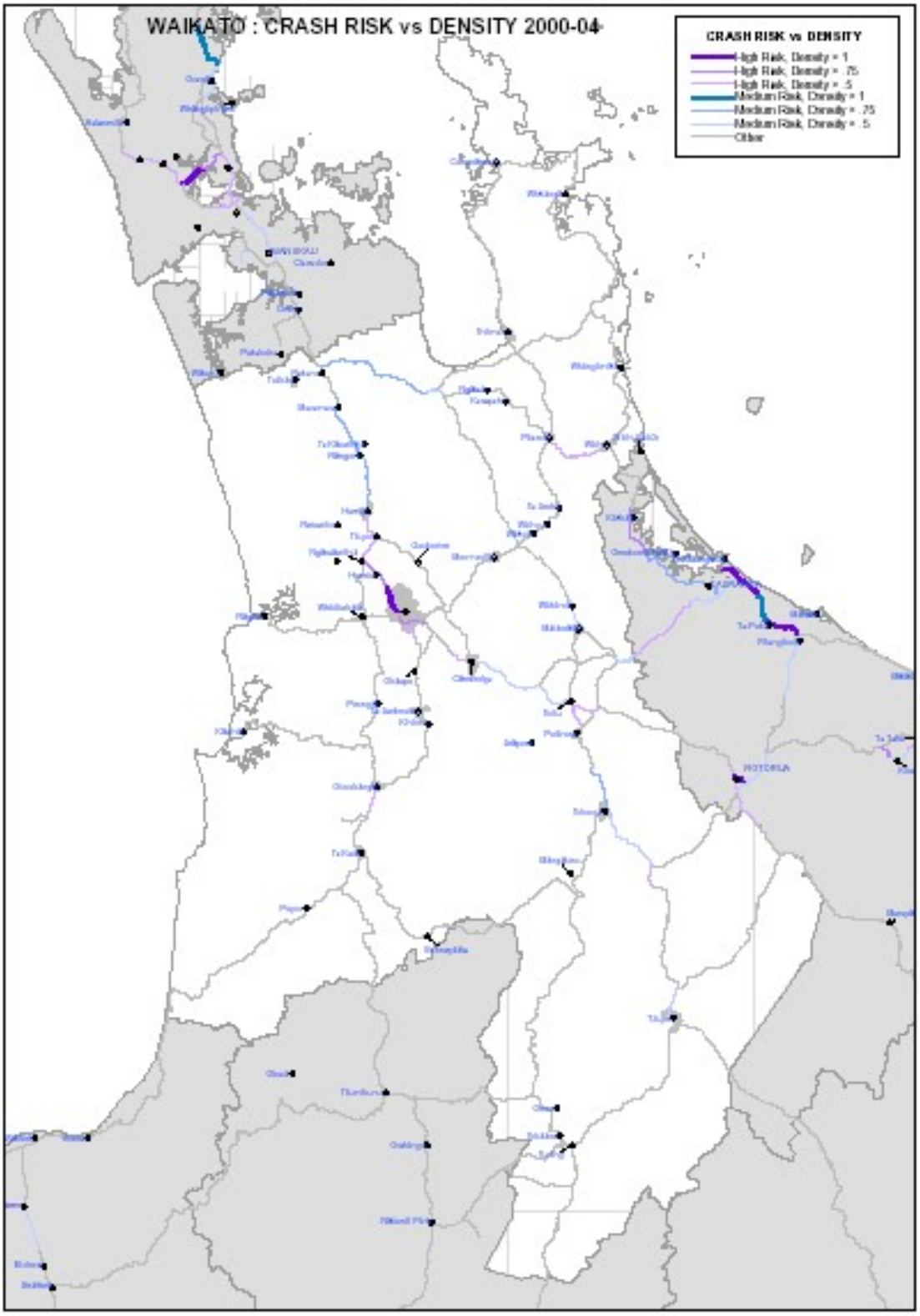


Figure 22: Waikato crash risk v density 2000–2004

3.4 Road safety at the sub-regional level

Table 11 (overleaf) lists a number of Ministry of Transport road safety performance measures which are available at local authority level, in general relating to the previous 12 months. This table indicates that:

- Hamilton city has the highest percentage of intersection related crashes
- the highest percentage of speed related crashes occur in rural areas
- the highest percentage of pedestrian and cycling crashes occur in Hamilton city
- a relatively even percentage of alcohol related crashes occur across the region, but slightly higher in some rural areas.

The following analysis broadly examines current road safety issues within the RLTS sub-regions and individual territorial authorities.

Table 11: Road safety performance measures by sub-region, January–December 2004 and January–March 2005

	Popn. (000s) 2004	Reported injury and fatal crashes		Intersections % crashes failed to stop or give way	Drink-driving % driver alcohol crashes	Speeding % crashes with excessive speed	Pedestrian % crashes with peds	Cyclists % crashes with cyclists	Safety belts % unrest-rained (front seat)
		last 12 mths	ave last 3 yrs						
Th/Coro, Mat/Piako, Hauraki [7] -									
March 05	74	235	222	15%	11%	22%	4%	1%	6%
Dec 04		228	201	18%	14%	21%	3%	2%	6%
W'kato, Waipa, Ot'hnga, W'tomo									
March 05	103	400	401	16%	14%	21%	4%	3%	6%
Dec 04		408	365	16%	13%	19%	2%	3%	6%
Hamilton									
March 05	129	274	289	39%	10%	11%	13%	12%	4%
Dec 04		296	273	35%	11%	13%	14%	9%	4%
Sth Waikato,Taupo									
March 05	57	180	195	17%	14%	19%	3%	3%	6%
Dec 04		189	178	16%	11%	17%	5%	4%	6%

[7] Sourced from "Road Safety Progress" March 2005, December 2004 – Research and Statistics, Ministry of Transport.

3.4.1 South Waikato and Taupo sub-region

This area includes South Waikato and Taupo districts.

2003 Road trauma

Deaths	27
Serious injuries	85
Minor casualties	229
Fatal crashes	20
Serious injury crashes	49
Minor injury crashes	131
Non-injury crashes	375

Contributing factors

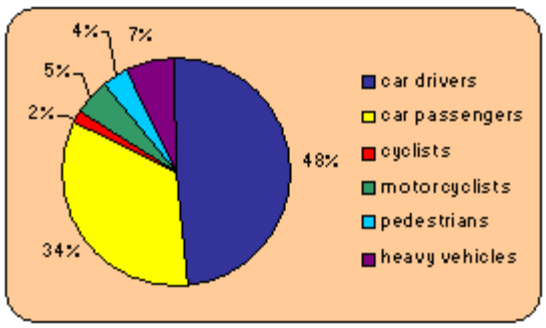
- **Poor observation** – was a factor in 25 per cent of injury crashes in 2003. There were 189 injury crashes relating to poor observation reported in the last five years.
- **Speed** – was factor in 20 per cent of injury crashes in 2003. There were 180 speed-related injury crashes reported in the last five years.
- **Drink-driving** – alcohol was a factor in 16 per cent of injury crashes in 2003 with 134 alcohol-related injury crashes reported in the last five years.
- **Restraints and helmets** – not using seatbelts and not wearing of cycle helmets are higher in the Waikato region than for New Zealand as a whole.

Key crash locations

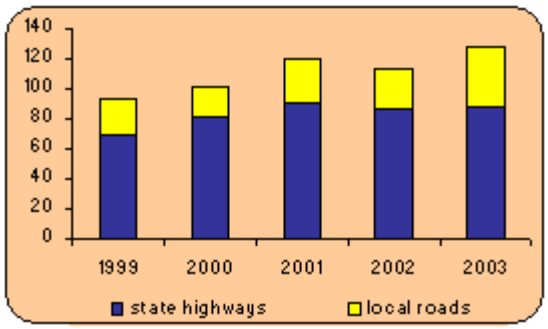
The following table provides a breakdown of the key locations at which poor observation crashes occurred during the 1999–2003 period:

South Waikato district	• SH 5 and SH 1 intersection • SH 5 and SH 28 intersection • SH 5 (2,000m east of Waiohotu Road).
Taupo district	• SH 1 and Arahori Street intersection • SH 1 and SH 5 intersection • SH 1 and Poihipi Road intersection.

Road casualties 1999–2003 user type



Estimated social cost of crashes* ($ million)



* The estimated social cost includes loss of life or life quality (estimated by the amount New Zealanders are prepared to pay to reduce their risk of fatal or non-fatal injury), loss of output due to injuries, medical and rehabilitation costs, legal and court costs, and property damage. These costs are expressed at June 2002 prices.

3.4.2 Western Waikato area

This area includes the districts of Waikato, Waipa, Otorohanga and Waitomo.

2003 Road trauma

Deaths	30
Serious injuries	117
Minor casualties	492
Fatal crashes	27
Serious injury crashes	86
Minor injury crashes	307
Non-injury crashes	641

Contributing factors

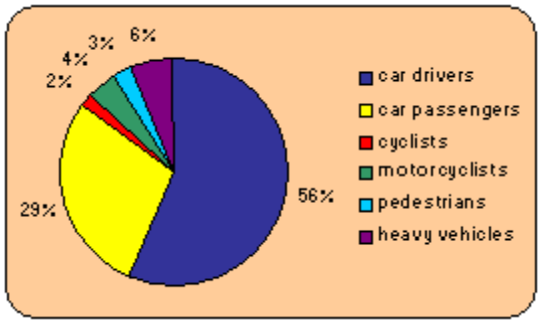
- **Poor observation** – was a factor in 31 per cent of injury crashes in 2003, with 531 injury crashes relating to poor observation reported in the last five years.
- **Speed** – was a factor in 20 per cent of injury crashes in 2003, with 337 injury crashes relating to poor observation reported in the last five years.
- **Road factors** – contributed to 15 per cent of injury crashes in 2003, with 307 injury crashes relating to poor observation reported in the last five years.
- **Restraints and helmets** – not using seatbelts and not wearing of cycle helmets are higher in the Waikato region than for New Zealand as a whole.

Waikato district	• SH 1 and Hautapu Road intersection • SH 1 and Newcastle Street intersection • Ruakura Road and Nottingham Drive intersection.
Waipa district	• Golf and Park Roads intersection • Cambridge and Golf Roads intersection • Arawata and George Streets intersection.
Otorohanga district	• Pokuru Rd (1,350m south of Morgan Road) • SH 3 and Kawa Road intersection.
Waitomo district	• SH 3 and SH37 intersection • SH 3 and King Street intersection • SH 30 and Beros Road intersection.

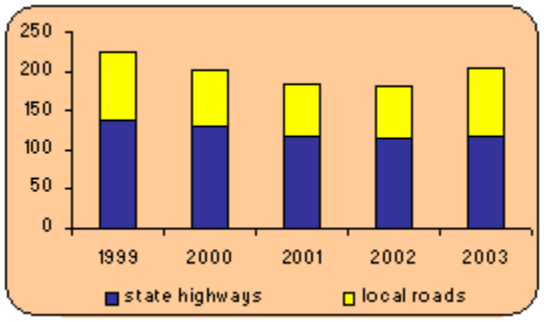
Key crash locations

The western Waikato area is made up of a number of territorial local authorities. The following table provides a breakdown of the key locations at which poor observation crashes occurred during the 1999–2003 period:

Road casualties 1999–2003 user type



Estimated social cost of crashes* ($ million)



* The estimated social cost includes loss of life or life quality (estimated by the amount New Zealanders are prepared to pay to reduce their risk of fatal or non-fatal injury), loss of output due to injuries, medical and rehabilitation costs, legal and court costs, and property damage. These costs are expressed at June 2002 prices.

3.5 Eastern Waikato area

This area includes the districts of Thames-Coromandel, Hauraki and Matamata-Piako.

2003 Road trauma

Deaths	14
Serious injuries	70
Minor casualties	224
Fatal crashes	13
Serious injury crashes	57
Minor injury crashes	156
Non-injury crashes	435

Contributing factors

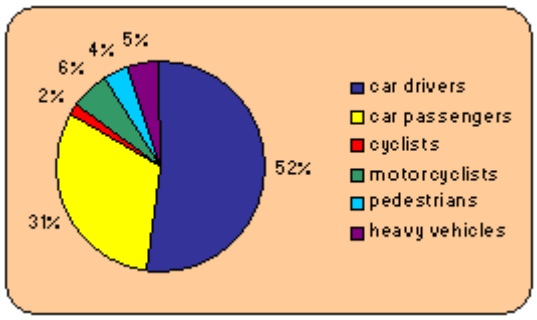
- **Poor observation** – was a factor in 33 per cent of injury crashes in 2003, with 275 injury crashes relating to poor observation reported in the last five years.
- **Speed** – was a factor in 23 per cent of injury crashes in 2003, with 201 injury crashes relating to poor observation reported in the last five years.
- **Drink-driving** – alcohol was a factor in 18 per cent of injury crashes in 2003 with 175 alcohol-related injury crashes reported in the last five years.
- **Restraints and helmets** – not using seatbelts and not wearing of cycle helmets are higher in the Waikato region than for New Zealand as a whole.

Key crash locations

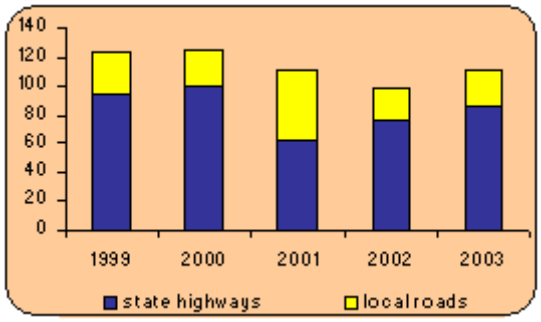
The eastern Waikato area is made up of a number of territorial authorities. The following provides a breakdown of the key locations at which poor observation crashes occurred during the 1999–2003 period:

Thames-Coromandel district	• SH 25 and Dickson Street intersection • SH 26 and SH 25 intersection • SH 25 (700 m south of Totara Valley Road).
Hauraki district	• SH 25 and Hauraki Road intersection • SH 2 and SH 25 intersection • SH 2 and Waihi Beach Road intersection.
Matamata-Piako district	• SH 27 and Paeroa Tahuna Road intersection • SH 29 and SH 27 intersection • SH 26 and SH 27 intersection.

Road casualties user type 1999–2003



Estimated social cost of crashes* ($ million)



* The estimated social cost includes loss of life or life quality (estimated by the amount New Zealanders are prepared to pay to reduce their risk of fatal or non-fatal injury), loss of output due to injuries, medical and rehabilitation costs, legal and court costs, and property damage. These costs are expressed at June 2002 prices.

3.5.1 Hamilton area

This area includes Hamilton city.

2003 road trauma for Hamilton area

Deaths	8
Serious injuries	45
Minor casualties	320
Fatal crashes	8
Serious injury crashes	44
Minor injury crashes	256
Non-injury crashes	856

Contributing factors

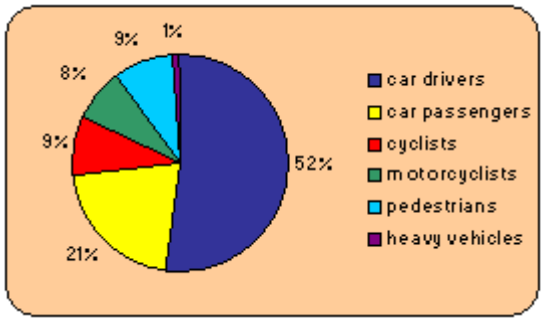
- **Poor observation** – was a factor in 52 per cent of injury crashes in 2003, with 649 injury crashes relating to poor observation reported in the last five years.
- **Failure to give way** – intersection crashes make up 47 per cent of all crashes in the area in 2003.
- **Speed** – was a factor in 13 per cent of injury crashes in 2003, with 153 injury crashes relating to poor observation reported in the last five years.
- **Restraints and helmets** – not using seatbelts and not wearing of cycle helmets are higher in the Waikato region than for New Zealand as a whole

Key crash locations

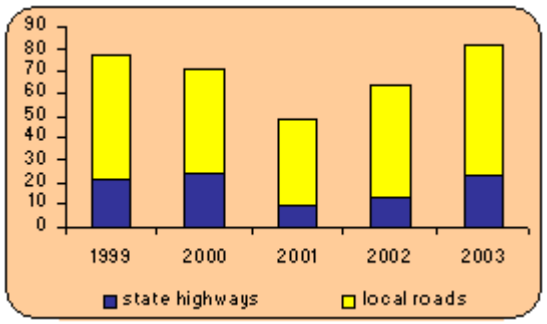
The following provides a breakdown of the key locations at which poor observation and failure to give way crashes occurred during the 1999–2003 period:

Cause of crash		
Poor observation	**Failure to give way**	**Increasing incidence**
Victoria and Mill Streets intersection	Victoria Street and Mill Street intersection	**Abbotsford and Willoughby Streets intersection**
SH1 and Grey Street intersection	Five Cross Roads intersection	**SH1 and SH26 intersection**
Cobham Drive and Tristram Street intersection	Te Aroha Street and Peachgrove Road intersection	**Victoria Street and Marlborough Place intersection**
Victoria Street and Marlborough Place intersection	SH1 and Ellicott Road intersection	**Killarney Road and Colombo Street intersection**
	SH1 and Ohaupo Road intersection	
	Ulster Street and Maeroa Road intersection	
	Abbotsford and Willoughby Streets intersection	
	Tristram and London Streets intersection	

Road casualties – user type 1999–2003



Estimated social cost of crashes ($ million)



* The estimated social cost includes loss of life or life quality (estimated by the amount New Zealanders are prepared to pay to reduce their risk of fatal or non-fatal injury), loss of output due to injuries, medical and rehabilitation costs, legal and court costs, and property damage. These costs are expressed at June 2002 prices.

3.6 Cycle safety

Personal security is an issue of concern because it is identified as a major barrier to the uptake of walking and cycling.

At a regional level cyclists account for three per cent of road casualties with only two per cent using this as a means of transport to work.

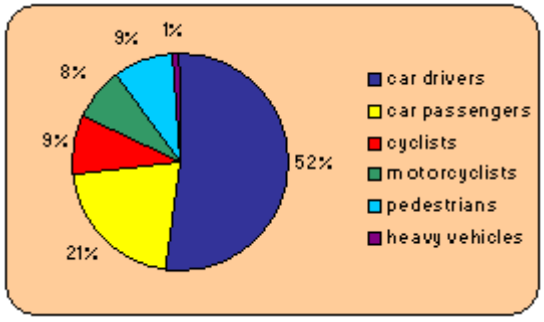


Figure 23: Graph of road casualties for Hamilton by user type 1999–2003

A comparison of the graphs shown in Figure 23 and Figure 24 showing the percentage of road causalities by user type, indicates that there are more casualties in the urban areas of Hamilton compared to the region as a whole

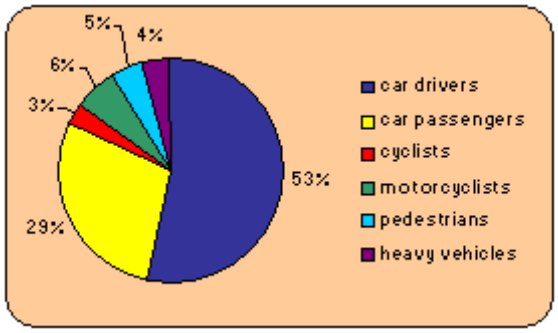


Figure 24: Graph of road casualties for the Waikato region by user type 1999–2003

Figure 23 overleaf highlights the location of crashes involving pedestrians and cyclists and shows:

- a higher incidence of crashes in urban centres
- Hamilton is the main location of cycling and pedestrian crashes.

3.7 Rail safety

The *National Rail Strategy to 2014* (NZRS) recognises the importance of improving rail safety and personal security issues. When considering safety, the NZRS primary focus is to achieve international best practice. This will be achieved through a Rail Safety Strategy, which the Ministry of Transport aims to have in place by the end of 2005. Key focuses will be level crossings and rail trespass.

During 2000–2004 there were 61 reported crashes at rail crossings in the Waikato region out of a total of 544 reported crashes nation wide[8]. Huntly has experienced a number of rail crossing crashes in recent years. With increasing freight movements by rail projected, level crossing accidents could increase in the region.

Between 1995 and 2005 other incidents have included:

- 53 incidents of obstructions being placed, or falling onto the rail track
- 22 incidents of trespassers on the rail corridor being struck
- 19 incidents of stock being struck while on the rail corridor.

These incidents have contributed to seven fatalities during that period. The most common cause of fatalities was trespassers being struck by trains.

These incidents are recorded through an event logging system which is operated by ONTRACK (and its predecessor organisations). The reporting rate for these incidents is close to 100 per cent when loss of life, or significant damage or delay is caused to train operations. For minor incidents the reporting rate is somewhat variable, especially in the early part of the reporting period.

3.8 Air safety

The Civil Aviation Authority (CAA) is responsible for establishing civil aviation safety and security standards, and monitors adherence to those standards. The CAA carries out accident and incident investigations and collates this material to establish an industry-wide safety picture.

A report[9] prepared for CAA in 2003 compared aircraft safety records between New Zealand and the United States, United Kingdom and Australia. It noted that New Zealand accident and fatality rates for large aircraft are higher than those for the USA and Australia, but lower than those for the UK. The rates for smaller aircraft and helicopters are higher than all three nations.

When comparing Australia and New Zealand air crash trends between 1990 and 2002, the report highlighted decreasing crash trends for High Capacity Air Transport (HCAT, Aircraft with 38 seats or more) and Low Capacity Air Transport (LCAT, Aircraft with 37 seats and fewer). This is illustrated in Figures 25 and 26 below.

[8] LTSA, CAS system.
[9] Campbell, M; Nov 2003. Accident Rate Comparisons. NZ with UK, USA and Australia, 1990 – 2002.

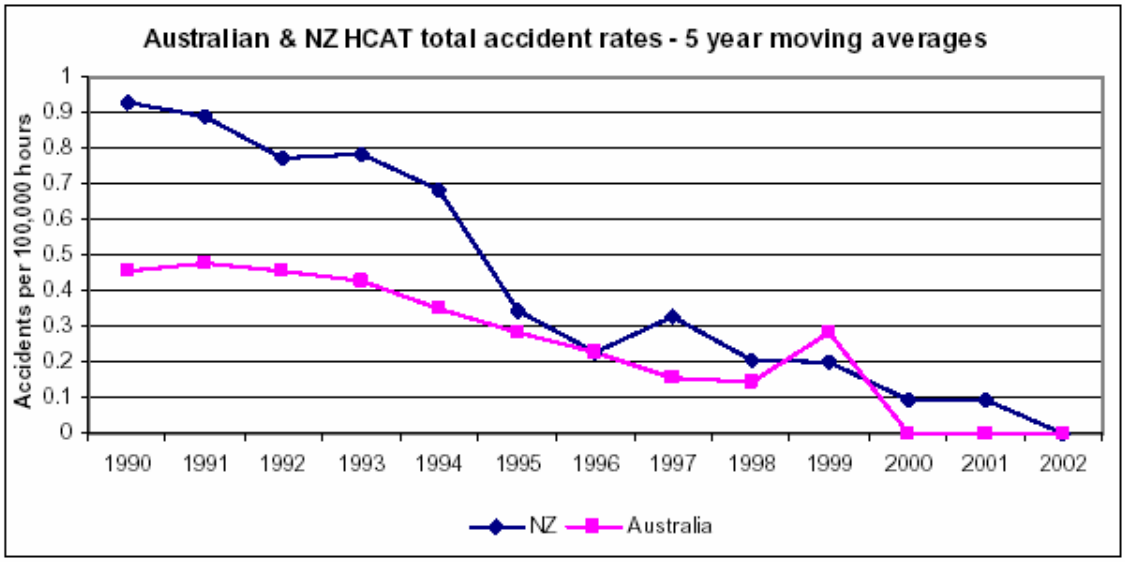


Figure 25: Comparison between Australian and New Zealand HCAT accidents rates

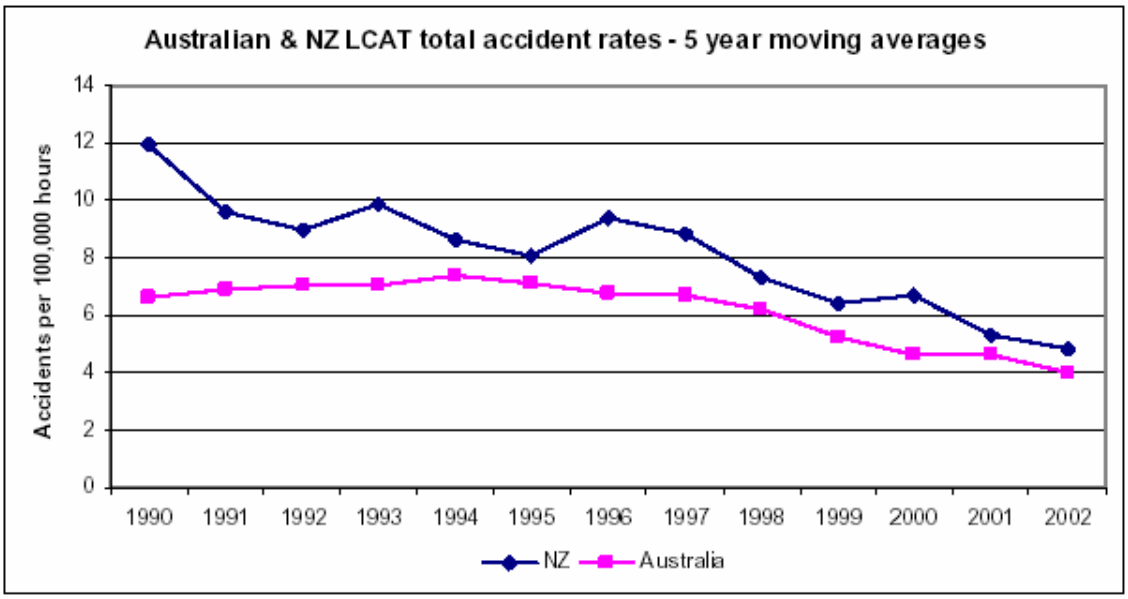


Figure 26: Comparison between Australian and New Zealand LCAT accidents rates

These figures demonstrate the continuing improvements in air safety.

3.9 Navigational safety

Environment Waikato is responsible for managing navigation safety on all coastal and inland waterways within the Waikato region except:

- Lake Taupo
- Taharoa Harbour.

The Environment Waikato Navigation Safety Bylaw 2002 covers such matters as lifejackets, moorings and reporting collisions. Site specific schedules apply in certain areas. The schedules include zones (for example for moorings and personal water craft), ski and access lanes and areas for recreation activities.

4 Traffic congestion

Changing land use and industry patterns lead to changes in demand for transport. Population growth is a common driver of transport demand. Current land use patterns that accommodate growth in greenfields on the outskirts of existing urban centres enforce a reliance on private motor vehicles, which leads to increasing numbers of vehicles on roads. One outcome of higher traffic volumes is congestion typified by traffic jams at intersections and decreased travel time. Congestion has an adverse impact on the economy, people's ability to access the transport system and on public health.

4.1 Urban road congestion

Congestion is a growing problem in and around major urban centres within New Zealand, and is also occurring in Hamilton city particularly during commuter peak times.

Traffic growth rates in Hamilton city vary across the network, however the total vehicle kilometres travelled has been growing at a faster rate (average 4 per cent, 1999–2004) than the population growth rate (average 1.56 per cent, 1991–2001) and this is partly due to the lower real cost of private vehicles since import tariffs were removed on second hand vehicles in the early 1990's. This has lead to an increasing number of cars per household, as is evidenced in New Zealand Census data for the Waikato region which shows a 16 per cent rise in the number of vehicles per household between 1991 and 2001. The highest per cent increases were in Taupo and Waikato, which recorded a 20 per cent increase.

Projections provided in the Demographic Report show a range of possible scenarios for demographic growth and car ownership. Under a high/high scenario of population growth and car ownership Hamilton city can expect approximately 100,000 motor vehicles by 2016, compared with 68,000 in 2001. Isolated portions of the current road arterial network would not be able to operate

Growing commuter traffic between the satellite towns and Hamilton is also contributing towards congestion in the city, particularly on SH1 in Hillcrest. The Demographic Report examines commuter flows in the Waikato region. The largest inflow into Hamilton is from Waikato district (5,031 workers) and Waipa district (3,894) where Cambridge contributes 1,131 commuters. Waikato district, Waipa district and Hamilton city form a triangle of inter-district commuting flows which by 2016 may be in aggregate in excess of 15,000 persons.

Areas of significant urban congestion within the region are:

- the Hillcrest/Morrinsville Road intersection in Hamilton city
- Te Rapa bypass
- bridge crossings in Hamilton, particularly during peak traffic periods.
- congestion around the school gate.

4.2 Rural road congestion

Congestion is also a growing problem on some strategic routes (such as SH1) where the capacity of these routes is not sufficient to cater for the current vehicle growth rates, particularly where there is a high percentage of heavy vehicles.

The major capacity improvement proposed for the Waikato region is the four-laning of SH1 between Auckland and Cambridge. Other site specific improvements being undertaken to improve capacity in rural areas include realignments, passing lanes and slow vehicle bays.

The East Waikato Integrated Transport Study highlights the following specific state highway corridors where significant capacity improvements should be considered over the next 15 years in Thames, Hauraki and Matamata Piako:

- SH2 Karangahake Gorge
- SH25 improved passing lanes required in many locations, specifically highlights Tairua Hill
- SH26 – passing lanes have been identified by Transit New Zealand
- SH27 – Kaihere Hill and south, improve passing opportunities.

The remainder of the region also has specific sites on rural state highways that will require capacity improvements over the next 10 years, and these are identified in the Transit New Zealand 10 year forecast 2005/06.

References

Airways New Zealand website – http://www.airways.co.nz.

Campbell, M; Nov 2003. *Accident Rate Comparisons. NZ with UK, USA and Australia, 1990 – 2002*. Report published by the Civil Aviation Authority.

Beca Infrastructure Ltd, 2005. *Waikato Regional Industry Transport Study.* A report prepared for the Waikato Regional Land Transport Strategy.

Civil Aviation Website – http://www.caa.govt.nz.

Hamilton International Airport website – http://www.hamiltonairport.co.nz.

Land Transport Safety Authority. *Road Safety to 2010.*

Ministry of Transport. *Getting There – on foot by cycle – A draft strategy to increase walking and cycling in New Zealand transport*, October 2003.

Ministry of Transport. *Road Safety Progress March 2005*, December 2004 – Research and Statistics.

New Zealand Office for Disability Issues. *New Zealand Disability Strategy, 2001.*

Statistics New Zealand. Regional Summary Reference Report 2001 Census Table 17 Main Means of Travel to Work.

Transit New Zealand. *Stare Highway Traffic Volumes – 2004*, May 2005.

University of Waikato. Population Studies Centre, 2005. *Demographic Change and Transport Needs in the Waikato Region.* A report prepared for the Waikato Regional Land Transport Strategy.

Warwick Walbran Consulting Ltd. *Coromandel Freight (ATR) Transportation Study – Stage One Report* prepared for Environment Waikato by, May 2005.