



# TRANSPORTATION PROFILE STATEMENT

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# 1. INTRODUCTION

## 1.1. Purpose and Scope

Waipa District Council has commissioned Beca to complete the Waipa District Growth Strategy. This project is significant for the Waipa District. It will help Council identify a vision and goals for the district and a strategy and framework to achieve this over the next 40 years.

The purpose of this report is to help build the 'Base Case' for the Waipa District, which is a deliverable for the District Growth Strategy. It will help outline the current provision of transportation service and identify any gaps in service. Development of the 'transportation base case' will help provide input to growth options and will be applicable in the initial development of issues for the District Plan Review.

The report follows a standard format and identifies the following:

- = Current profile (snapshot of district transportation system)
- = Trends and growth
- = Management considerations
- = Strategic opportunities and constraints – levels of service, costs and benefits, efficiency. From discussion with Council staff and existing reports a critique of the level of service provided by the district transportation system has been recorded. Key issues facing the State highway network have been recorded after consultation with Transit New Zealand. Constraints and challenges faced on managing demand versus supply have been highlighted with key constraints identified for particular demand areas (e.g. Cambridge and Te Awamutu).
- = Conclusions and recommendations

The report has been based on information including:

- = Council roading asset management plans
- = Discussions with Council roading staff and Transit NZ
- = RAMM data
- = Land Transport NZ statistics and reports.

## 2. CURRENT PROFILE

### 2.1. Waipa District

Waipa District is located in the Waikato Region and has a land area of about 1,470km<sup>2</sup>, lying at the heart of the Waikato. Waipa is situated between Hamilton City to the north and Otorohanga District to the south. Other neighbours include Waikato, Matamata-Piako and South Waikato Districts.

Waipa District boasts a rich agricultural base that is dominated by dairy farming but also features sheep and beef, thoroughbred horse studs, deer farming and fruit production. The main urban populations are centred in the towns of Te Awamutu, Cambridge and the smaller settlements of Ohaupo, Kihikihi and Pirongia.

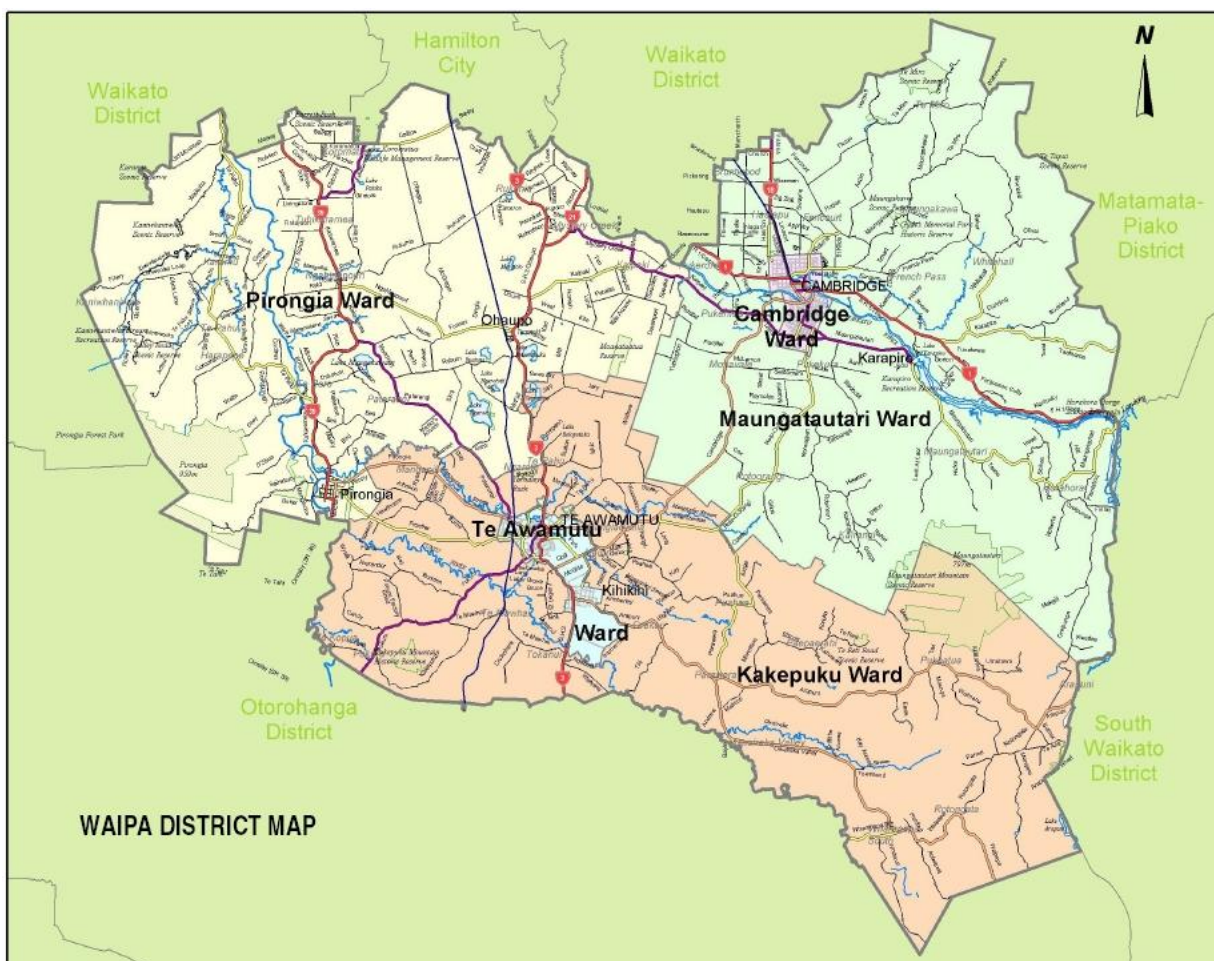


Figure 1 Waipa District Map

### 2.2. Transportation Infrastructure

Transportation within the Waipa District is dominated by travel by road. The Waipa District's roading network provides access and communication links to and within the region. Roads service agricultural, forestry and tourism industries to name a few, as well as maintaining access to rural communities and large numbers of individual households. Arterial roads within the District are of a high standard and even the minor rural roads are nearly all sealed.

Personal travel is mainly by car, with walking, cycling and passenger transport making up less than 10% of trips. There is no rail passenger transport other than tourist trips. The main Trunk Railway

crosses the District and the Hamilton Airport is location at the northern end of the District. Work and freight travel is dominated by road transport, with a small amount of freight transported by rail and by air.

The general “shape” of Waipa District in transport terms is dominated by the urban areas, Cambridge and Te Awamutu, and their relationships with the state highways joining or bypassing them. The key transportation statistics for the Waipa District are summarised in Table 1 and compared to regional and national statistics. Forms of transportation are discussed in more detail below.

	Waipa District	Waikato Region	National	Waipa as % of region	Waikato as % of nation
Population <sup>D</sup>	42,100	384,800	4,098,900	11%	9%
Land area (km <sup>2</sup> ) <sup>D</sup>	1,473	25,598	275,446	6%	9%
Imports (gross tonne) <sup>1 D</sup>		6,526,000	-		10%
Exports (gross tonne) <sup>1 D</sup>		13,081,000	-		18%
Gross domestic product (GDP) (\$) <sup>M</sup>		13,167,000,000	148,551,000,000		9%
Total Waipa District expenditure on land transport (\$) <sup>TJ</sup>	9,152,000	81,851,000	873,924,000	11%	9%
Passenger transport – bus boardings <sup>J</sup>		1,973,000	86,666,000		2%
Passenger transport – rail boardings <sup>J</sup>		-	14,255,000		0%
Passenger transport – ferry boardings <sup>J</sup>		-	4,082,000		0%
Motor vehicles <sup>D</sup>	30,459	257,079	2,790,610	12%	9%
VKT (km) <sup>VJ</sup>	231,000,000	4,831,000,000	38,874,000,000	5%	12%
Is congestion and issue?	No				
Social cost (\$) <sup>D</sup>	54,400,000	498,200,000	3,554,000,000	11%	14%
Deliveries of petrol and diesel (litres) <sup>D</sup>			6,075,000,000		
Energy use by transport (petrol + diesel) (MJ <sup>2</sup> ) [in 2004] <sup>D</sup>			186,800,000,000		
CO <sub>2</sub> emissions from land transport (tonnes) [in 2004] <sup>D</sup>			12,505,000		
Local roads – all urban (km) <sup>J</sup>	162	1,717	16,820	9%	10%
Local roads – sealed urban (km) <sup>J</sup>	159	1,698	16,423	9%	10%
Local roads – all rural (km) <sup>J</sup>	889	6,834	65,434	13%	10%
Local roads – sealed rural (km) <sup>J</sup>	804	4,870	32,819	17%	15%
State Highway – all (km) <sup>4J</sup>		1,729	10,894		16%
State Highway – sealed (km) <sup>4J</sup>		1,729	10,838		16%
State Highway – motorway (km) <sup>J</sup>		-	172		0%

<sup>1</sup> indicative only – based on 2002 data. This includes both inter-national and inter-regional freight movement.

<sup>2</sup> 1MJ = 1 mega-joule = 10<sup>6</sup> joules

<sup>D</sup> indicates year ending Dec; <sup>J</sup> indicates year ending June; <sup>M</sup> indicates year ending March.

<sup>T</sup> Total expenditure covers local and national contributions to territorial authority expenditure. Regional Council and Transit NZ costs are excluded.

<sup>V</sup> TA VKT = local roads. Regional and national VKT includes local roads and state highways.

**Table 1 Waipa Transport Statistics. Source: Land Transport at a glance – Waipa District (1SSN 1177-3723)**

### 2.2.1. ROADING INFRASTRUCTURE

The road links in the Waipa District consist of two major road networks; the state highway network and the local road network as described below.

#### State Highway Network

The District is crossed by five state highways, linking the urban centres:

- = SH1 links Hamilton and Cambridge
- = SH3 links Hamilton and Te Awamutu
- = SH1B links Cambridge to Taupiri
- = SH39 cuts north-south through the Pirongia ward on the western side of the District
- = SH21 links SH3 and SH1 to the Hamilton International Airport.

#### Local Road Network

Waipa's key road network assets are summarised as follows:

- = 1,057km of roads (92% sealed approximately)
- = 189 bridges and 76 stock underpasses – 3 bridges have weight restrictions, 35 bridges are listed as single lane.
- = 187km of footpaths
- = 2,385 street lights
- = Numerous road signs and marker posts

A summary of the traffic volumes and district road types is shown in the table below.

Average Annual Daily Traffic (AADT)	Arterials (km)	Collectors (km)	Local (km)	Totals (km)	% of total road network
< 100	0	0	302.5	302.5	30%
100-500	3.2	59.3	367.6	430.1	40%
500-2000	92.2	72.0	88.2	252.4	25%
2000-4000	43.0	7.7	6.3	57.0	6%
4000-10000	6.9	0.8	0	7.7	1%
10000-20000	5.1	0	0	5.1	1%
Total	150.4	139.8	764.6	1054.8	

**Table 2 Traffic volumes and road hierarchies**

A key aspect of the above data is the lack of high volume roads. This traffic is essentially carried by the state highway network with the general exception of main streets in Te Awamutu and Cambridge.

### 2.2.2. CAR PARKING FACILITIES

Car parking is mainly provided for through on-street facilities and roadside parking. Cambridge and Te Awamutu have off-street public car parks (Hally's Lane and Churchill Street respectively). Recent works in Te Awamutu at Teasdale Street, Bank Street and Vaile Street have increased the number of spaces available. There is no comprehensive parking data or a parking strategy available but a recent investigation in Te Awamutu suggests that parking availability in the town centres (spaces/sq m floor area) is consistent with similar towns. Although community satisfaction surveys consistently show over 25% as not very happy with parking in Te Awamutu and Cambridge, other towns such as Hamilton and Rotorua receive higher levels of dissatisfaction.

### 2.2.3. WALKING , CYCLING AND BRIDLE PATHS

There is a walking strategy which includes an infrastructure objective for all urban roads to have footpaths on at least one side. A cycle strategy is currently being prepared (Opus 2008). There are recreational walkway facilities such as Pioneer Walkway in Te Awamutu, but these tend to be discrete network elements. The topic of bridlepaths has been raised in consultation for projects such as the Cambridge Bypass but there is currently no infrastructure.

Recent road rehabilitation projects appear to be using a minimum cross section that leaves little room for pedestrian, cycle or bridlepath facilities. This may make facilities difficult to retrofit in the future. As rural residential development extends, semi-rural footpath facilities are likely to become increasingly of concern, especially around destinations such as schools and halls.

### 2.2.4. PASSENGER TRANSPORT

Passenger transport in the Waipa district is somewhat limited and predominately targeted towards the two main urban areas, Cambridge and Te Awamutu. Passenger transport infrastructure generally comprises small bus stops and marked bus bays. Ticket sales are from agents such as Stuart Law in Te Awamutu and the information centre at Cambridge, as well as Environment Waikato. Improved passenger facilities were identified as a desirable project for the Te Awamutu town centre.

There is a regular commuter service between Te Awamutu and Hamilton, Cambridge/ Leamington and Hamilton, and Te Awamutu and Kihikihi. There are also ad-hoc private passenger transport providers, mainly servicing the tourist sector, travelling the State Highways. Further to this, school bus services are common throughout the district.

Environment Waikato is currently reviewing the Te Awamutu to Hamilton and Cambridge to Hamilton services and these will be significantly enhanced in terms of service level and quality in 2009.

Waikato's Regional Passenger Transport Plan 2007-2010 highlights several key services to be investigated, including: Kihikihi to Te Awamutu to Hamilton (for community access requirements), and Te Awamutu to Hamilton services (for service level improvement investigations as a result of increasing patronage). In addition, Cambridge and Hamilton's International Airport are identified as potential park and ride sites. Extensions of the Hamilton urban services to the airport are identified for investigation in the Regional Passenger Transport Plan.

### 2.2.5. RAIL TRANSPORT

There are no commuter rail services operating within the district. The North Island Main Trunk Rail travels through Waipa District between Otorohanga and Hamilton, passing through Te Awamutu and Ohaupo.

The Overlander passenger train service (Auckland to Wellington) travels the line 7 days a week in peak season (summer), and 3 days a week in off-peak season (winter). The service no longer stops in Te Awamutu, but has stops at Otorohanga and Hamilton.

### 2.2.6. FREIGHT TRANSPORT

Freight transport is dominated by road transport. There is a railway station at Te Awamutu, and an industrial siding at the dairy factory in Hautapu, (3.5km north of Cambridge) used to distribute some milk product. Otherwise rail freight in Waipa passes through the District.

## 2.2.7. AIR TRANSPORT

Hamilton International Airport is the fourth busiest airport in New Zealand and provides the greater Waikato Region with direct international flights to Australia and a range of domestic flights. It is located off SH21, between Hamilton and Te Awamutu.

Domestic airlines that operate to and from Hamilton Airport are Air New Zealand, Origin Pacific and Sun Air. Air New Zealand also runs regular flights to three Australian ports; Sydney, Brisbane and the Gold Coast.

## 2.3. Existing Levels of Service

### 2.3.1. COMMUNITY SATISFACTION SURVEY – 2007 RESULTS

Each year Council measures community satisfaction with a number of Council provided facilities and services as well as a range of 'quality of life' issues in the District. The survey is undertaken by an independent research company, the National Research Bureau (NRB).

The survey involves a statistically representative sample of 400 telephone interviews of residents in proportion to the relative population of each of the District's five Wards. The survey is conducted in June each year.

Key transportation statistics from the survey are as follows:

Top rated facilities and services within the District in 2007:

- = Maintenance of roads - 83% very/fairly satisfied (78% in 2006)
- = Safety of roads - 80% very/fairly satisfied (78% in 2006)

Areas of concern about services/facilities were:

- = Parking in Te Awamutu and Cambridge 26% not very satisfied (26% in 2006);
- = Maintenance of footpaths 19% not very satisfied (15% in 2006);
- = Safety of roads 19% not very satisfied (21% in 2006); and
- = Maintenance of roads 17% not very satisfied (21% in 2006).

## 2.4. Transportation Works

### 2.4.1. MAINTENANCE AND RENEWAL WORKS

The Waipa District Council Draft Annual Plan (2008/09) signals a budget of \$11.021M capital expenditure for Transport Management. This can be compared with a budget of \$8,817M included in the 2007/08 annual plan.

=	Drainage Renewals	\$200,000
=	Pavement Rehab	\$2,971,634
=	Structures Component Renewal	\$210,000
=	Traffic Services Renewals	\$47,250
=	Assoc Improvements	\$500,000
=	Minor Improvements	\$676,000
=	Unsealed Road Metalling	\$100,000
=	Sealed Road Resurfacing	\$1,877,000
=	Bridge Renewals	\$50,000
=	Walking and Cycling	\$280,000
=	Vested Assets	\$1,258,000



=	Footpath Renewals	\$60,375
=	Seal Extensions	\$1,590,000
=	New Footpaths	\$15,000
=	Maungatautari Reserve Access Development	\$223,260
=	Minor Community Works	\$35,000
=	Car Park Improvements	\$46,680
=	Major Improvements	\$880,360

Discussions with Council roading staff have indicated that network improvement works are generally completed in conjunction with renewal works driven by asset failure. This is a cost effective way of completing network upgrades and is likely to drive the prioritisation of major upgrades into the future.

#### 2.4.2. KEY PROJECTS 2008/09

The key transportation projects planned for the Waipa District include:

- = Minor Safety Improvements – intersections, installation of stock underpasses and improvements to hazard identification and mitigation.
- = Seal extensions of around 5.3km are programmed.
- = Bridge strengthening – Ngaroto Road
- = Commencement of works associated with the Heart of Te Awamutu project.
- = Footpath and kerb and channel extensions are expected to continue across the District.

#### 2.4.3. FUTURE INFRASTRUCTURE PROPOSALS

Waipa District Council and Transit New Zealand (TNZ) have three major infrastructure proposals that are likely to have a significant effect on transportation in the Waipa District: The projects are described below.

##### **Cambridge Bypass**

Project Owner: Transit New Zealand

Project Description: 11km bypass from Discombe Rd/SH1 intersection to SH1 just south of the Cambridge Golf Course.

Project Status: Corridor designated but alteration to designation will be required. Design commenced in early 2007.

Issues for District: Severance of local communities, changing traffic patterns on local roads, Hautapu Industrial Estate has been planned assuming interchange on SH1B which the Cambridge Traffic Study indicates is required (TNZ have indicated Waipa DC should be funding 100% of this structure)

Construction Date: 5-10 years away (TNZ 10 year forecast)

##### **Southern Links**

Project Owner: Transit New Zealand

Project Description: SH1, from Kahikatea Drive in Hamilton City to Tamahere in the south; and SH3, from Lorne St in Hamilton City to Hamilton International Airport.

Project Status: Investigation phase committed 2007/08 - start expected in first half of 2008.

Issues for District: Severance of local communities, changing traffic patterns on local roads, changes in access arrangements.

Construction Date: Not programmed (TNZ 10 year forecast)

#### **Te Awamutu Western Arterial**

Project Owner: Waipa District Council

Project Description: 4.6km section of new road extending from the intersection of Paterangi Road and Alexandra Street through to the intersection of State Highway 3 and St Leger Road/Golf Road.

Project Status: The corridor for the Western Arterial was designated in 2006. Council are continuing to purchase land along the route as it becomes available.

Issues for District: The benefits of the project are unlikely to justify funding from central government so the road would be wholly funded by Council. Potential to extend to the south to increase attractiveness of route.

Construction Date: Not programmed in LTCCP

There are also smaller infrastructure projects such as renewals, streetscapes and intersection alterations that may have minor effects on the transportation network.

#### 2.4.4. CAMBRIDGE AREA TRAFFIC STUDY

In response to ongoing concerns about congestion and safety issues on the local and state highway road network in the Cambridge area, Council commissioned a study to:

- = Identify the traffic impacts of the Cambridge Bypass;
- = Identify any minor network improvements;
- = Establish the need for a full interchange on the Bypass at Hautapu;
- = Determine whether a third bridge across the Waikato River is required; and
- = Investigate and recommend a road network infrastructure strategy.

The findings of the study have informed Council and Transit NZ in regards to future roading network planning and management in and around Cambridge. The following recommendations came out of the study:

- = Construct the Cambridge Bypass with the Victoria Road interchange prior to 2016.
- = Review the operation of the State Highway One and Shakespeare Street intersection once the timing of the Cambridge Bypass construction is confirmed.
- = Defer the proposed upgrade of Victoria Street between Hamilton Road and Queen Street, until after the Cambridge Bypass and interchange are constructed.
- = Implement traffic management to balance cross-river traffic flows on the Victoria and Fergusson Bridges (a third Bridge is not required in the next 20 years).
- = Redesign the Albert Street and Queen Street intersection to improve safety.
- = Consult with Transit New Zealand on the outcomes of this study.

#### 2.4.5. WAIKATO REGIONAL TRANSPORTATION MODEL

Environment Waikato is leading a joint project involving Transit NZ, Hamilton City and other Waikato District Councils including Waipa DC to develop a regional traffic model. The model is currently being built and is due for completion in 2009.

When completed, the model will enable analysts to identify the likely network deficiencies and allow Waipa DC to plan their response. Sections of the network are likely to be extended to be a 4 stage model (which takes into account the decision of which mode to use and can therefore consider passenger transport). Cambridge and Te Awamutu are understood to be included in that part of the model. When available, the model should be available to identify the transportation effects of different land use scenarios and network changes.

### **3. TRENDS AND GROWTH**

#### **3.1. Population Growth and Changing Land Use**

Waipa District has a resident population of 42,500 (2006 Census). Population growth projections for Waipa to 2026 suggest growth of approximately 0.79% per annum. The increasing number of elderly residents is changing the nature of demand for transport. Demand for responsive passenger transport options such as shuttle buses, is likely to increase, and the need for detailing in renewal and construction, and improved maintenance, to meet the needs of the mobility impaired and users of mobility scooters.

Rural residential areas, and areas in and around Cambridge, appear to be the most likely location for growth based on current trends. Rural residential areas are located in Te Miro, Ngahinapouri, Rukuhia, Ohaupo, Pirongia, Fencourt and Karapiro. There are two rural residential areas at Karapiro – the Lake View Drive area and the Lake Karapiro Rural Residential Area (illustrated on Planning Map 29A of the Waipa District Plan).

#### **3.2. Traffic Growth**

Traffic growth on the roads in Waipa District is taken to be approximately 2-3% annually (Land Transport NZ Economic Evaluation Manual, 2007- refer Table 3).

Increasing population and changing land use will have an impact upon the rural arterial network. The pattern of development is likely to be low density and rural residential in nature. This means that the number of trips generated by this development will be less concentrated than for more intense development. The impact of this growth will be most strongly felt on the rural arterials that link the areas experiencing the highest growth and the urban areas, for example, Pirongia Road, Cambridge Road and Tuhikaramea Road.

Changes in land use will result in higher traffic volumes. In some areas not currently well served for arterial roads there may be a need for the road network to be modified either by reclassifying the appropriate road to arterial, applying arterial engineering and planning standards as required. An example of this is the lack of an arterial link to the east of Cambridge, which has been subject to subdivision and increasing pressure for further subdivision. Thornton Road is a road that could be developed as an arterial in the future.

State highway projects such as the SH1 Cambridge Bypass and the Southern Links will also impact on the district roading network. For the Cambridge Bypass, increased pressure will come on some local roads as other connections are severed (for example St Kilda Rd, which is presently a low volume local road).

The arterial network and local road connections across the district should be reviewed for changes in arterial demand likely to result from State Highway bypasses and urban growth.

#### **3.3. Land Transport New Zealand Statistics**

In 2005, Waipa spent approximately \$9M on land transport including approximately \$8M on roading maintenance and \$1M on replacement and improvement. This does not include expenditure by Transit NZ or Waikato Regional Council on state highways or passenger transport.

The 2005 social cost of crashes for Waipa District Council was approximately \$55M, dominated by rural road crashes. Waipa DC roads appear to be performing at a satisfactory level for road safety in comparison to similar local authorities.

The road condition<sup>1</sup> (smooth travel exposure, surface condition, pavement condition and roughness) is generally consistent with or better than the condition for New Zealand territorial authorities. The relative surface condition performance of Waipa District roads was lower in 2006 and 2007 than 2005. While this is not indicative of a trend yet, it is an area that should be monitored into the future. Design criteria and methodologies applied for road renewals, seal extensions and improvement projects should be reviewed to ensure that they are appropriate.

### 3.4. Evaluation of Future Level of Service

#### 3.4.1. METHODOLOGY

Waipa District Council supplied road and traffic data from their Road Asset Maintenance Management (RAMM) database for all roads in Waipa District.

The data was sorted by road hierarchy, into three categories: arterial (primary and secondary), collector, and local/other. The data for each road included: name, length, location, width, estimated AADT (for each section of road; defined by route position), and pavement and surfacing details.

The current road capacity is taken from Austroads Part 2: Roadway Capacity Table 3.9. It is 7,900 vehicles per day for a Level of Service of C and 13,500 vehicles per day for Level of Service D. We have assumed that LOS C is an acceptable average over a 24-hour period in order to compare to existing and future AADT figures. Similarly, LOS D is acceptable for peak times.

Waipa District Council supplied a separate set of data giving the latest AADT estimate and counts (10 October 2007). A comparison between the estimated AADT and counted AADT gave a growth rate for each section of road. The calculated growth rates were widely variable and not a reliable, most likely due to poor estimates, and old count information.

We used the traffic growth rates published in the Land Transport NZ Economic Evaluation Manual (EEM1) to predict AADT for future years. The growth rates are shown in the table below.

Region	Urban		Rural	
	Arterial % growth	Other % growth	Strategic % growth	Other % growth
Waikato	2	1	3	2.5

**Table 3** From EEM, Table A2.5 Annual percentage arithmetic growth for period 0-25 years.

Comparing the existing capacity to the future AADT showed when the traffic flow would exceed the road capacity.

#### Assumptions

We have used the following assumptions in the analysis of the RAMM data as described above.

- = All arterials and collector roads were analysed on the basis they are 2-lane 2-way roads (not multiple lanes), and local roads less than 5m wide are 1 lane

<sup>1</sup> LTNZ land transport road assets, Waipa District (as at June 2007)

- = The estimated AADT was current on 01 January 2008
- = The road capacity of 7,900 vpd for Level of Service C was taken as the acceptable average daily traffic over a 24 hour period and compared against existing and future AADT
- = The road capacity of 13,500 vpd for Level of Service D was taken as the acceptable for the peak hour, and compared against existing and future AADT
- = The growth rates published in the EEM have been applied up to year 2050
- = The evaluation ignores changes to traffic patterns caused by significant infrastructure projects and urban growth.

#### 3.4.2. INTERSECTIONS

Austrroads Guide to Traffic Engineering Practice Part 5: Intersections at Grade, Table 4.1 suggests the following practical capacity for unsignalised minor intersections.

Traffic volumes (hourly in brackets) Inferred Daily Traffic Volume (at 12.5% peak:ADT)		
Major Road Flow		Minor Road Flow
3200	(400) 12%	2000 (250) 37%
4000	(500) 8%	1600 (200) 47%
5200	(650) 7%	800 (100) 83%

**Table 4 From Austrroads, Table 4.1 Intersection Capacity (Two lane roads), with inferred daily traffic volumes taken to be eight times peak hourly.**

Beyond these levels, auxiliary lanes or other treatments may be necessary. Based on length (and presuming equal distribution of intersections) that suggests that approximately 5% of intersections may require capacity as a consideration. Intersections likely to be of concern should be identified through GIS or modelling and reserve capacity assessed. All collector/arterial intersections with state highways are likely to present challenges.

#### 3.4.3. SUMMARY OF FINDINGS

Approximately 172 km of road is deficient in width or has inadequate future capacity, and will require upgrade prior to 2050 (approximately 4km of upgrade per year). The Waipa District Annual Plan 2008/09 (draft) allows for a total length of road reconstruction of 8.5km. If widening is completed to Council standards at the same time, the predicted width deficiency should be corrected by 2050 if Council chooses to prioritise underwidth roads.

The areas most likely to require intervention include:

- = Arterial road intersections including the state highway interfaces
- = Arterial roads (including state highways) carrying high volumes of through or commuter traffic through urban centres with expectations of higher pedestrian amenity and greater side friction from local access demands
- = Urban/rural transition areas as development intensity increases changing frontage characteristics, access demands and travel patterns
- = Increased development of rural residential areas and higher expectations from residents for recreational and access amenities such as footpaths, lighting, etc.

The following is a summary of findings by road hierarchy.

#### Arterial roads

The existing arterial road network is generally adequate to cope with the predicted increase in traffic volumes over the next 30 to 40 years. Some sections of road will require widening to improve capacity and to meet Waipa District Council's minimum design standards for arterial roads.

- = 65km of arterial road is identified as requiring widening, with approximately 60km being less than 7.5m wide
- = 13km of arterial road will fail to meet LOS C by 2050, with 8km failing to meet LOS D by 2050
- = 95km of arterial road will require upgrade by 2050 (due to a deficiency in width or to achieve LOS C)

#### **Collector roads**

- = 93km of collector road is identified as requiring widening, with approximately 85km being less than 7.0m wide
- = All of the collector roads have adequate capacity to meet LOS C in 2050.

#### **Local roads**

All local roads have adequate capacity to meet LOS C in 2050.

- = 16km of local road is identified as requiring widening.

The width deficiencies are likely to have little impact on the efficiency of the Waipa network. If significant, the width deficiencies are more likely to be characterised by increased crashes.

## 4. MANAGEMENT CONSIDERATIONS

### 4.1. District Roding Standards

The existing Waipa District Council roading standards, as referred to by the District Plan, are outlined in the “Code of Practice for Land Development and Subdivision, May 1995”. These standards typically apply to new developments and projects rather than major retrofitting of existing “substandard” roading.

Volume 5 of the Development Manual is a District Council Supplement. Volume 5 has been prepared as a supplement to the Hamilton City Development Manual which has been adopted, or is intended to be adopted in conjunction with future Plan changes, for use by six neighbouring councils including Waipa District.

Volume 5 sets out general variances to the existing Manual and/or additional design standards or technical specifications that should be followed for the installation of services in subdivision and contract works in the above district council areas.

Each district council may also maintain an addendum to this Manual setting out specific district requirements, and each district reserves the right to make a final decision regarding any of these standards to suit the individual practices within their district. Waipa District Council does not have an addendum at this stage, and one is not planned.

### 4.2. District Roding Management

The Waipa District Annual Plan 2008/09 (draft) defines transportation management as the management and development of local roads and car parks, including safety improvements, road marking and signage, street lighting, kerb and channelling, and footpaths. It states that the activity also includes the progressive sealing of unsealed roads.

The management of the roading asset is determined by the available funding to maintain the network as a viable entity. In order to obtain subsidy from Land Transport New Zealand (who provide a high proportion of roading funding), road-controlling authorities must comply with the requirements detailed in the “Programme and Funding Manual”, the “Project Evaluation Manual” and the “Competitive Pricing Procedures”. Typically these require standards and design guidelines to be met. These are typically publications from organisations such as:

- = Transit New Zealand (e.g. Bridge Manual, Bituminous Sealing Manual).
- = Land Transport New Zealand (e.g. Manual of Signs and Markings).
- = Ministry of Transport (e.g. Series of RTS Guidelines such as Setting Speed Limits, Rural Road Marking and Delineation).
- = AUSTROADS (e.g. Rural Road Design, Pavement Design Manual).
- = NZ Standards (e.g. Code of Practice for Urban Land Subdivision).

Some recent seal extension work appears to have been carried out on a “seal existing” basis. Previously Waipa DC has sought to carry out network improvements to current standards at the time of sealing or major rehabilitation.

Land Transport NZ monitor RCA performance through collection of various indicators based on RAMM data, such as pavement defects, and crash performance of the network. Waipa DC



appears to have been consistently performing better than similar RCAs until 2006/2007, when the indicator data suggests that comparative performance levels have dropped to match those of similar RCAs.

### 4.3. Legislative Framework

Waipa District Council is defined under legislation as the “Road Controlling Authority” for the district’s roads. This means Council is required by law to control activities on roads, although it may choose the level at which it will maintain the assets providing these services, recognising that legislation sets the minimum standards of service which the assets must meet.

Legislation relating to the control and maintenance of roading assets has been identified and requirements have been incorporated into the management of the transport asset network. Land Transport New Zealand also agrees specific levels of service (LOS) for the maintenance of roading assets. The relevant Acts, taken from the Waipa District Council roading asset management plan, are presented in the below table.

Legislation	Description and Application
Local Government Act 2002	<p>Defines the purpose of local authorities as enabling local decision-making by and on behalf of the community, and allows local authorities the power of general competence. To help local authorities achieve this, the Act includes significant consultative requirements including:</p> <ul style="list-style-type: none"> <li>= Council must, no less than every 6 years, carry out a process to identify community outcomes and priorities for its region or district;</li> <li>= Council must, no less than once every 3 years, prepare and adopt a long term council community plan in accordance with the special consultative procedure;</li> <li>= Council is required to consult with the community on a range of specific issues, including changes to service delivery and transfer of Council assets;</li> <li>= Council must provide appropriate information when consulting with the community and deliver information in ways that will enable communities to participate effectively;</li> <li>= Council must prepare an AM policy that is likely to outline how the asset management implications of changes to service levels and standards are to be assessed and dealt with.</li> </ul>
Resource Management Act 1991 and amendments	<p>Resource Management Act 1991 - Requires council to manage the use, development and protection of natural and physical resources in a way, or at a rate which enables people and communities to provide for their social, economic and cultural well-being and for their health and safety while:</p> <ul style="list-style-type: none"> <li>= Sustaining the potential of natural and physical resources to meet the reasonable foreseeable needs of future generations.</li> <li>= Avoiding, remedying or mitigating any adverse effect of activities on the environment.</li> <li>= Safeguarding the life-supporting capacity of air, water, soil and ecosystems.</li> <li>= Comply with planning documents prepared under the Resource Management Act that impact on the management of parks assets (including the District and Regional Plans)</li> <li>= Take into account the principles of the Treaty of Waitangi in exercising functions and powers under the Act relating to the use, development, and protection of natural and physical resources.</li> </ul> <p>In managing the use, development, and protection of natural and physical resources, requires Council to recognise and provide for the following matters of national importance:</p> <ul style="list-style-type: none"> <li>= The preservation of the natural character of the coastline environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use and development.</li> <li>= The protection of outstanding natural features and landscapes from inappropriate subdivision, use and development.</li> <li>= The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna.</li> <li>= The maintenance and enhancement of public access to and along the coastal marine area, lakes and rivers.</li> </ul>

	= The relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu and other taonga.
Land Transport Management Act 2003	Provides a legislative framework for the funding, planning and provision of transport infrastructure by Transfund New Zealand. <sup>12</sup> This includes requirements for: <ul style="list-style-type: none"> <li>= The maintenance of roads, minimum levels of service and performance measurement to sustain appropriate financial assistance for roading infrastructure activities;</li> <li>= The development and implementation of a Safety Management System to contribute to the NZ Road Safety Strategy objectives to reduce fatality and hospitalisation numbers by 2010;</li> <li>= The integration of all modes of transportation to contribute to the NZ Transport Strategy vision of an affordable, integrated, safe, responsive and sustainable transport system by 2010.</li> </ul>
Land Transport New Zealand Programme and Funding Manual	Provides policies and information on how to get financial assistance for roading infrastructure.
Transport Act 1962	Controls aspects of road and traffic operations, including Traffic Regulations, bylaws and enforcement.
Civil Defence Emergency Management Act 2002	Requires lifelines to function to the fullest possible extent during and after an emergency and to have plans for such functioning (business continuity plans).
Telecommunications Act 2001, Electricity Act 1992, Gas Act 1992, Petroleum Demand Restraint Act, Railway Safety and Corridor Management Act 1992	Provide utility operators and others with powers to use road corridors.
Health and Safety in Employment Act 1992	Health and Safety in Employment Act 1992: Council must ensure the safety of the public and all workers (including contractors) when carrying out works.
Summary Offences Act 1981	Makes it an offence for any person to leave, without reasonable excuse, anything in a road (e.g. a pothole) with reckless disregard for others.
Building Act 1991	Sets minimum standards for buildings and facilities. It requires Councils to produce Project Information Memoranda (PIM's) which may include details of access restrictions, approvals, leases, plans, relevant records, notices, correspondence etc.
Public Works Act 1981	Provides compulsory land acquisition for essential public works.

**Table 5 Relevant Legislation**

#### 4.4. Levels of Service (Seeking data to compare current LOS)

The Waipa District Annual Plan 2008/09 (draft) gives the following levels of service for transportation management:

Customer Level of Service	Technical Level of Service	Performance measurement procedure	Target LOS 2008/09	
Satisfaction of users with road safety	Reduction in injury crash trends and other road safety trend data, relative to control group as established by Land Transport New Zealand	Analyse Land Transport New Zealand road safety issues report	Poor observation Speed Road Factors	Less than or equal to Peer Group
		Annual Community Satisfaction Survey	>=88% satisfaction from those who had an opinion	
Smooth and comfortable travel experience	Compliance with performance measures within Land Transport New Zealand Roding Programme Agreement	Annual Audit	100% compliance	
	Sealed roads maintained to NAASRA standards	Annual Roughness survey	100% compliance	
	All roads capable of being effectively sealed are sealed	Annual Review	96.5% of sealable roads are sealed	

<sup>2</sup> Now Land Transport New Zealand

Customer Level of Service	Technical Level of Service	Performance measurement procedure	Target LOS 2008/09
Customer satisfaction with the quality of Council roads and footpaths	All roading assets maintained to appropriate standards	Annual Community Satisfaction Survey	>=88% satisfaction from those who had an opinion
	Every residential street in Cambridge, Te Awamutu, Kihikihi, Pirongia and Ohaupo has a footpath on at least one side	Annual Review	100% compliance
	Street lighting meets NZ standards	Annual review Customer Complaints	100% compliance
The services are affordable and managed at lowest possible cost for the required level of service	All projects are selected based on defined prioritisation and funding criteria  Operation, maintenance and renewal expenditure managed to within a range of +/- 10 % of budget.	Annual review	Capital projects are completed on time, within budget and to the appropriate standard.

**Table 6 Transportation Management levels of service from the Waipa District Annual Plan 2008/09 (draft)**

## 5. STRATEGIC OPPORTUNITIES AND CONSTRAINTS

### 5.1. Issues for Integrated Land Use Planning

A significant challenge for integrated land use and transportation planning in Waipa is the lack of certainty associated with state highway improvements such as the Cambridge Bypass and Southern Links. This should be resolved to some extent with further investigation of Southern Links expected to commence in late 2008, which will lead to Notices of Requirement for designation of the road corridors.

The sub-regional growth strategy, "Future Proof", will provide a wider framework for planning that should take regional and inter-district transportation trends into account. Cross-boundary issues such as development at the fringes of Hamilton, and possible alterations to the district boundary, will need to be taken into account in infrastructure planning and asset management.

The regional traffic model will present a significant opportunity to better take transportation costs and effects into account when planning for land use or significant network changes. There is a risk that transportation planning prior to the model being available may become superseded. However, the timing of completion of the model could be ideal in terms of testing some base scenarios for land use.

In order to promote sustainable transport modes it would be desirable to concentrate development and activities in areas where it already occurs, encourage higher density development, and develop networks that provide good connectivity for pedestrians, cyclists and buses.

### 5.2. Issues for Roading and Transportation

#### State Highway Network

The state highway network presents both a significant opportunity and constraint. The Waipa District is almost entirely reliant on an effective state highway network not just for movement of people and goods through and around the district, but also for the operation of its urban centres which are directly affected by the state highways. The main capacity and efficiency issues for the state highway network have been identified for some time, and generally projects have been developed to address them. However the national prioritisation of funding means that many of the projects in Waipa have no certainty of implementation.

Although the state highways generally operate reasonably well away from the urban centres, the traffic volumes expected within the planning horizon for this project will have potentially significant impacts on local arterial road connections. For example, the Cambridge Bypass will relieve significant congestion at important intersections and river crossing links in Cambridge. The state highway network carries a relatively high proportion of local traffic (e.g. Hamilton commuting, rural servicing, etc.).

Uncertainty regarding the timing of the major state highway improvement projects is a significant challenge for integrated planning. The capacity and safety of state highway intersections with arterial and collector roads is therefore likely to become an issue as traffic increases, especially if there is development on the side roads.

The impact of the Cambridge Bypass/SH1B interchange on traffic patterns and connections to the rural residential and rural activities to the east of Cambridge should be recognised and planned for systematically.

The potential for conflict between state highway traffic and local activities in the road corridor in urban areas is likely to become increasingly sensitive. This will affect communities such as Ohaupo, Te Awamutu, Pirongia, Kihikihi and Cambridge.

#### **Local Road Network**

Other than the interface with the state highway network, at constraint points and on key links in the main centres such as Victoria Street in Cambridge and Alexandra Street in Te Awamutu, there do not appear to be pressing problems in the local network. The main issues include:

- = Cambridge Bypass – the location and construction of SH1B interchange will have a significant impact on traffic patterns and connections to the rural residential and rural activities to the east of Cambridge.
- = Growth in Leamington is increasing pressure for a third river crossing in Cambridge, although this will be relieved to some extent by the SH1 Cambridge Bypass when completed.

#### **Other Roading Issues**

- = Waipa's provision of facilities for road users other than motor vehicles, such as bus passengers, cyclists and pedestrians are limited.
- = The high cost of undergrounding telecom and power overhead lines is a significant deterrent to completing amenity improvement works in key corridors.
- = A consistent sub-regional strategic framework should be agreed to manage cross boundary issues, such as the impacts on HCC road infrastructure from plan changes such as the airport plan change 57 and the Findlay plan change.
- = Parking appears adequate in the main centres and currently operates without active enforcement. As development intensity increases a parking review and strategy is likely to become necessary to support planning for the future.

#### **Other Transport Issues**

- = Although passenger rail services are not currently available, it is an option that should be protected for the future.
- = Land set aside for transport corridors (such as disused rail lines) can provide important connections. Where possible, continuous corridors should be protected as potential future links and considered for interim uses such as walking and cycle paths.

### **5.3. Issues Relating to Development Management**

Development contributions and payments need to take into account the potentially significant infrastructure requirements. The current policy does not specifically address heavy vehicle impacts and implies that consideration of effects should be limited to trips that have external origins or destinations. This leaves Council exposed to potentially significant maintenance and renewal costs for activities that generate high volumes of heavy vehicles such as quarries.

The current level of cash in lieu of parking for town centre zones means that it is cheaper for developers to pay for a shortfall in parking than to provide even at-grade parking. The amount (approximately \$1730 for 2008 quarter 1) is unlikely to cover the construction cost for Council (excluding land, fees etc.). This should be reviewed.

The application of Waipa DC development standards and detailing could be presented more clearly for developers. This would ensure that there is consistency in expectations between the developer, roading staff, other utilities staff, development control staff and planning staff. This applies to elements such as footpath details, lighting, street furniture, planting, and utility connections, etc.

## 6. BASE CASE CONCLUSIONS

The main conclusions from the base case analysis for transport are:

- = Encouraging higher density development around the established activity centres and urban areas will minimise the cost of transport infrastructure and support travel demand management.
- = The level of service on and development of the state highway network will be the most significant influence on the Waipa Transport system.
  - Southern Links is likely to resolve the long term framework to the south of Hamilton. This may affect district boundaries and zoning and infrastructure planning and renewals in the relevant area should consider the future status of the areas affected.
  - The Cambridge Bypass will have a significant effect on levels of service in the Cambridge Urban area.
  - There are no further investigations planned for SH3. Levels of service on SH3 in the vicinity of Te Awamutu and Kihikihi are likely to become unsatisfactory within the 50 year planning horizon.
- = In general, the local road network appears to provide a reasonable level of service in terms of safety and efficiency:
  - With appropriate maintenance, renewal and improvement projects should meet the private motor vehicle needs of the Waipa community for the foreseeable future.
  - Carrying out geometric improvements concurrent with renewal works, as at present, appears likely to be sufficient to satisfy the level of service and geometry aims for motor vehicles.
  - The role, location and management of utilities within the roading corridor should be considered so that if opportunities arise for amenity or safety improvements, Council is in a position to require or encourage those.
  - The arterial network and local road connections across the district should be reviewed for changes in arterial demand likely to result from State Highway bypasses and urban growth. It would be appropriate to wait for the Regional Traffic Model to be available for this. The Waipa Arterial Roding Strategy remains largely valid but should be updated.
  - Recent data suggests that the levels of service for roading may have dropped. Existing levels of service performance monitoring should be reviewed to be more meaningful and easier to measure.
- = Growth in Leamington is increasing pressure for a third river crossing in Cambridge.
  - Recent investigations suggested that a third bridge is not going to be required within the next twenty years, although this is reliant on the Cambridge Bypass relieving congestion at the Shakespeare Street/SH1 intersection. However it seems prudent that land use and transportation corridor planning recognise that in the long term the high level bridge is unlikely to remain viable.
- = Waipa DC's road construction and maintenance standards should be reviewed for consistency and currency.
  - The Waipa DC roading standards in the District Plan should be referenced to the HCC Development Manual and District Council Supplements.
  - Development management guidelines, development contribution and cash in lieu fees for town centres should be reviewed.

- State highway funding issues related to state highway works, such as responsibility for the Hautapu interchange on the Cambridge Bypass, also need to be resolved in a way that can reasonably and effectively be accounted for through resource management processes and the LTCCP development contributions.
- = The relatively low populations in urban centres, and the increasing rural residential development, make it challenging for sustainable transport options to be effective.
  - Waipa's provision of facilities for road users other than motor vehicles, such as bus passengers, cyclists and pedestrians are limited.
  - Structure planning for the urban centres should be used to inform development of a pedestrian linkage and amenity hierarchy
- = Parking appears adequate in the main centres and currently operates without active enforcement.
  - As development intensity increases a parking review and strategy is likely to become necessary to support planning for the future.
  - Dedicated parking enforcement staff may necessary.

## 7. RECOMMENDATIONS

### 7.1. General Actions

Waipa DC is generally well placed in terms of transportation infrastructure. The recommendations for action relating to transportation are intended to address information gaps to assist in strategic planning in terms of information, deficiencies, standards and funding, and typically relate to four areas:

- = Data management and presentation
- = Identification and management of key state highway and arterial road intersections
- = Long range strategic planning for major infrastructure items such as bridges, development and parking infrastructure.
- = Review of roading standards and their application for consistency, currency and effectiveness, and update and extend the Arterial Roding Strategy to current standards and include strategies for achieving whole of life value for money for significant maintenance and seal extension works.

All of the actions should recognize the potential influences of state highway planning, the regional traffic model, and future boundary changes.

### 7.2. Data Management and Presentation

- = Relate RAMM data to GIS data to allow traffic volumes and the relationships between roads to be visually presented and analysed, and make it easier to evaluate land use relationships with transportation spatially. Possible presentations include:
  - Roads that will be deficient in terms of width or level of service within the planning horizon to assist in identifying where widening could be combined with maintenance and renewal projects
  - Intersections that are likely to present capacity concerns by tying together traffic volumes and appropriate trigger levels
  - Identifying areas where development may lead to higher than standard projected traffic growth, and the roads likely to be affected
- = Ensure that traffic counts are taken in the same place each year to permit valid tracking of traffic growth and trends. Extend the count programme to include cycle and pedestrian data to support future funding applications.
- = Relate Waipa DC performance indicators to Land Transport NZ performance indicators, and expenditure to asset management plan expectations

### 7.3. Identification and management of key state highway and arterial road intersections

The arterial network and local road connections across the district should be reviewed for changes in arterial demand likely to result from State Highway bypasses and urban growth. Funding issues related to state highway and arterial road works also need to be resolved in a way that can reasonably and effectively be accounted for through resource management processes and LTCCP development contributions.

Examples include Rogers Place/SH3 roundabout at Te Awamutu, Golf Road intersection at SH3/St Leger Road, and connections through to Cambridge from the west. Where possible, the potential impacts of community facility improvements such as the airport, Cambridge Pool, Karapiro and Mystery Creek special events should be recognised.



#### 7.4. Long range strategic planning for major infrastructure items

There are some infrastructure items such as bridges, development access points and parking infrastructure with a significant land use or economic impact that should be tied into strategic land use planning. Examples include:

- = Development access points, such as Hautapu interchange on the Cambridge Bypass
- = Cambridge third bridge – what happens in the long term when the high level bridge is no longer serviceable? What land or planning protection is necessary to permit replacement in the same location or on an alternative corridor?
- = State highway traffic and heavy commercial traffic through Te Awamutu and Kihikihi– At what stage will a bypass be necessary? What provision is made for appropriate investigation and corridor protection? When will traffic conditions support the Te Awamutu Western Arterial
- = Parking infrastructure – e.g. identification and purchase of land for additional parking, in Cambridge and Te Awamutu if strategically desirable.
- = Bridge widening and strengthening for one lane and weight-restricted bridges.

#### 7.5. Road Design and Maintenance Standards and Facilities for Other Modes

- = The Waipa Arterial Road Strategy 2003 should be reviewed for consistency with current standards and practice.
- = The links between development standards and their application, and consistency between the Waipa DC Guide for Land Use and Development, the HCC Development Manual and District Council Supplement, and best practice, should be reviewed. When available, the cycling strategy should be tested for consistency, and standards updated to reflect it.
- = The walking strategy should be reviewed in conjunction with completion of the cycle strategy for potential synergies and opportunities. Recreational and rural residential network standards (and their relationship with road maintenance management and improvements) should also be reviewed.
- = The Waipa Passenger Transport strategy should be reviewed and updated to reflect the revised RLTS and Passenger Transport Plan so that funding requirements can be taken into account and appropriate development standards implemented. The likely increases in the extents and levels of service for passenger transport in Waipa, including opportunities for buses, and park and ride infrastructure requirements should be recognised.
- = Development standards should provide for and facilitate the use of active modes such as walking, cycling and passenger transport.

#### 7.6. Development Control

- = The basis for and method of assessing development contributions for high impact activities that may not relate to residential development or has a high proportion of heavy vehicles, such as quarries, should be reviewed.
- = Development management and detailing for infrastructure connections such as lighting, drop crossings, and stormwater should be reviewed and updated.
- = Cash in lieu fees for parking should be reviewed following preparation of a parking strategy.

# Appendix A: Road and Traffic Data

This data summarises information extracted from Waipa DC RAMM data as a spreadsheet including pavement, age, etc. for individual road sections which is available on request.

ARTERIAL ROAD - TRAFFIC COUNTS AND WIDTHS

Road Name	T (veh/day), Width and length in	
	Data	Total
MYSTERY CREEK ROAD	Average of Est AADT	13160
	Max of Est AADT	13160
	Min of Est AADT2	13160
	Average of Width	12.5
	Sum of Length	3650
SLOANE STREET	Average of Est AADT	11916
	Max of Est AADT	11916
	Min of Est AADT2	11916
	Average of Width	15.4
	Sum of Length	292
VICTORIA STREET	Average of Est AADT	10746
	Max of Est AADT	12290
	Min of Est AADT2	9500
	Average of Width	24.0
	Sum of Length	980
SHAKESPEARE STREET	Average of Est AADT	8196
	Max of Est AADT	9500
	Min of Est AADT2	7000
	Average of Width	14.3
	Sum of Length	1726
COOK STREET	Average of Est AADT	8100
	Max of Est AADT	8100
	Min of Est AADT2	8100
	Average of Width	11.8
	Sum of Length	338
ALEXANDRA STREET	Average of Est AADT	7952
	Max of Est AADT	12775
	Min of Est AADT2	2183
	Average of Width	15.5
	Sum of Length	2226
ARAWATA STREET	Average of Est AADT	5677
	Max of Est AADT	12550
	Min of Est AADT2	920
	Average of Width	15.3
	Sum of Length	447
POPE TERRACE	Average of Est AADT	5562
	Max of Est AADT	6231
	Min of Est AADT2	5310
	Average of Width	10.5
	Sum of Length	978
MUTU STREET	Average of Est AADT	5101
	Max of Est AADT	6270
	Min of Est AADT2	3850
	Average of Width	11.0
	Sum of Length	750
DUKE STREET	Average of Est AADT	4264
	Max of Est AADT	4518
	Min of Est AADT2	4200
	Average of Width	14.0
	Sum of Length	525
CAMBRIDGE ROAD (URBAN)	Average of Est AADT	3765
	Max of Est AADT	4840

COLLECTOR ROADS - TRAFFIC COUNTS AND WIDTHS

Road Name	ADT (veh/day)	
	Data	Total
ALBERT STREET	Average of Est AADT	3950
	Max of Est AADT	3950
	Min of Est AADT	3950
	Average of Width	11.0
	Sum of Length	282
REWI STREET	Average of Est AADT	3649
	Max of Est AADT	5530
	Min of Est AADT	1376
	Average of Width	10.9
	Sum of Length	1999
SHAKESPEARE STREET	Average of Est AADT	3218
	Max of Est AADT	5117
	Min of Est AADT	1500
	Average of Width	11.1
	Sum of Length	845
PARK ROAD	Average of Est AADT	3207
	Max of Est AADT	5300
	Min of Est AADT	2220
	Average of Width	9.5
	Sum of Length	2052
THORNTON ROAD	Average of Est AADT	2618
	Max of Est AADT	5140
	Min of Est AADT	500
	Average of Width	11.4
	Sum of Length	3343
ROBINSON STREET	Average of Est AADT	2355
	Max of Est AADT	2860
	Min of Est AADT	2000
	Average of Width	11.2
	Sum of Length	718
TEASDALE STREET	Average of Est AADT	2290
	Max of Est AADT	3000
	Min of Est AADT	1500
	Average of Width	12.4
	Sum of Length	792
TE RAHU ROAD	Average of Est AADT	2021
	Max of Est AADT	3315
	Min of Est AADT	680
	Average of Width	10.8
	Sum of Length	1631
FLAT ROAD	Average of Est AADT	1980
	Max of Est AADT	1980
	Min of Est AADT	1980
	Average of Width	6.2
	Sum of Length	1714
FRASER STREET	Average of Est AADT	1944
	Max of Est AADT	2127
	Min of Est AADT	1760
	Average of Width	12.2
	Sum of Length	462
BRIDGMAN ROAD	Average of Est AADT	1917
	Max of Est AADT	2150

LOCAL ROADS - AVERAGE TRAFFIC COUNTS AND WIDTHS

Road Name2	Road Name	ADT (veh/day)	
	Data	Total	
Group1	Average of Est AADT	332	
	Max of Est AADT	3955	
	Min of Est AADT	3	
	Average of Width	7.2	
	Count of Length	1436	
Total Average of Est AADT		332	
Total Max of Est AADT		3955	
Total Min of Est AADT		3	
Total Average of Width		7.2	
Total Count of Length		1436	

The complete spreadsheets hold the following information:

Road Name
Start
End
Length
Width
Lanes
Heirarchy
Est AADT
Est Date (Assumed)
NAASRA Max
NAASRA Av
AGE
Seal Year
Type
Material
AGE
Layer Date
Depth
Carriageway Area
Urban/Rural
Pavement Use
Pavement Type

ARTERIAL ROAD - TRAFFIC COUNTS AND WIDTHS

Road Name	T (veh/day), Width and length in	
	Data	Total
CAMBRIDGE ROAD (URBAN)	Min of Est AADT2	2200
	Average of Width	11.5
	Sum of Length	1813
ALBERT STREET	Average of Est AADT	3500
	Max of Est AADT	3500
	Min of Est AADT2	3500
	Average of Width	9.0
	Sum of Length	222
WHITMORE STREET	Average of Est AADT	3218
	Max of Est AADT	3400
	Min of Est AADT2	3000
	Average of Width	11.0
	Sum of Length	984
BROWNING STREET	Average of Est AADT	2970
	Max of Est AADT	4200
	Min of Est AADT2	1340
	Average of Width	10.1
	Sum of Length	886
CAMBRIDGE ROAD (RURAL)	Average of Est AADT	2900
	Max of Est AADT	3650
	Min of Est AADT2	2470
	Average of Width	9.3
	Sum of Length	19448
TUHIKARAMEA ROAD	Average of Est AADT	2840
	Max of Est AADT	2840
	Min of Est AADT2	2840
	Average of Width	7.4
	Sum of Length	4387
BANK STREET	Average of Est AADT	2570
	Max of Est AADT	3500
	Min of Est AADT2	1900
	Average of Width	12.3
	Sum of Length	1158
PUNIU ROAD	Average of Est AADT	2432
	Max of Est AADT	2630
	Min of Est AADT2	2265
	Average of Width	10.5
	Sum of Length	536
PATERANGI ROAD	Average of Est AADT	2006
	Max of Est AADT	2618
	Min of Est AADT2	1640
	Average of Width	7.7
	Sum of Length	8995
KAIPAKI ROAD	Average of Est AADT	1923
	Max of Est AADT	3280
	Min of Est AADT2	1400
	Average of Width	7.2
	Sum of Length	7533
GOLF ROAD	Average of Est AADT	1867
	Max of Est AADT	1940
	Min of Est AADT2	1770
	Average of Width	7.0
	Sum of Length	2420
VICTORIA ROAD	Average of Est AADT	1820
	Max of Est AADT	1820

COLLECTOR ROADS - TRAFFIC COUNTS AND WIDTHS

Road Name	ADT (veh/day)	
	Data	Total
BRIDGMAN ROAD	Min of Est AADT	1630
	Average of Width	12.3
	Sum of Length	519
HANNON ROAD	Average of Est AADT	1770
	Max of Est AADT	1770
	Min of Est AADT	1770
	Average of Width	8.5
	Sum of Length	1944
FAIRVIEW ROAD	Average of Est AADT	1600
	Max of Est AADT	2398
	Min of Est AADT	1395
	Average of Width	11.2
	Sum of Length	988
CARLYLE STREET	Average of Est AADT	1473
	Max of Est AADT	1670
	Min of Est AADT	1275
	Average of Width	7.2
	Sum of Length	569
RACECOURSE ROAD (T.A.)	Average of Est AADT	1379
	Max of Est AADT	1680
	Min of Est AADT	1110
	Average of Width	9.6
	Sum of Length	1404
WATKINS ROAD	Average of Est AADT	1170
	Max of Est AADT	1180
	Min of Est AADT	1165
	Average of Width	7.8
	Sum of Length	2123
TAWHIAO STREET	Average of Est AADT	1095
	Max of Est AADT	1580
	Min of Est AADT	800
	Average of Width	11.5
	Sum of Length	409
COLLINS ROAD	Average of Est AADT	1090
	Max of Est AADT	2764
	Min of Est AADT	612
	Average of Width	6.0
	Sum of Length	5000
KAIPAKI ROAD	Average of Est AADT	907
	Max of Est AADT	1100
	Min of Est AADT	810
	Average of Width	7.2
	Sum of Length	5689
ROTOORANGI ROAD	Average of Est AADT	827
	Max of Est AADT	1005
	Min of Est AADT	600
	Average of Width	7.3
	Sum of Length	9111
TE PAHU ROAD	Average of Est AADT	751
	Max of Est AADT	1178
	Min of Est AADT	500
	Average of Width	6.6
	Sum of Length	18588
FORKERT ROAD	Average of Est AADT	711
	Max of Est AADT	720

LOCAL ROADS - AVERAGE TRAFFIC COUNTS AND WIDTHS

Road Name2	ADT (veh/day)		
	Road Name	Data	Total

ARTERIAL ROAD - TRAFFIC COUNTS AND WIDTHS

Road Name	T (veh/day), Width and length in	
	Data	Total
VICTORIA ROAD	Min of Est AADT2 Average of Width Sum of Length	1820 6.7 652
PIRONGIA ROAD	Average of Est AADT Max of Est AADT Min of Est AADT2 Average of Width Sum of Length	1619 1945 1360 7.6 9200
BEECHEY STREET	Average of Est AADT Max of Est AADT Min of Est AADT2 Average of Width Sum of Length	1603 1740 1350 9.0 860
ARAPUNI ROAD	Average of Est AADT Max of Est AADT Min of Est AADT2 Average of Width Sum of Length	1513 2600 1050 8.1 30076
MAUNGATAUTARI ROAD	Average of Est AADT Max of Est AADT Min of Est AADT2 Average of Width Sum of Length	1424 1492 1390 6.7 5212
MEADWAY ROAD	Average of Est AADT Max of Est AADT Min of Est AADT2 Average of Width Sum of Length	1350 1350 1350 7.3 4090
POKURU ROAD	Average of Est AADT Max of Est AADT Min of Est AADT2 Average of Width Sum of Length	1292 2130 760 7.5 11383
LAMB STREET	Average of Est AADT Max of Est AADT Min of Est AADT2 Average of Width Sum of Length	1231 1800 500 7.5 3780
MCCLURE STREET	Average of Est AADT Max of Est AADT Min of Est AADT2 Average of Width Sum of Length	1095 1300 753 8.6 944
OWAIRAKA VALLEY ROAD	Average of Est AADT Max of Est AADT Min of Est AADT2 Average of Width Sum of Length	694 809 650 7.2 14391
WAIPAPA ROAD	Average of Est AADT Max of Est AADT Min of Est AADT2 Average of Width Sum of Length	682 785 480 6.5 7279
AOTEAROA ROAD	Average of Est AADT Max of Est AADT	670 670

COLLECTOR ROADS - TRAFFIC COUNTS AND WIDTHS

Road Name	ADT (veh/day)	
	Data	Total
FORKERT ROAD	Min of Est AADT Average of Width Sum of Length	660 7.0 3721
COLLEGE STREET	Average of Est AADT Max of Est AADT Min of Est AADT Average of Width Sum of Length	700 700 700 8.7 112
TE RORE BRIDGE ROAD	Average of Est AADT Max of Est AADT Min of Est AADT Average of Width Sum of Length	665 665 665 6.2 745
CROZIER STREET	Average of Est AADT Max of Est AADT Min of Est AADT Average of Width Sum of Length	655 710 600 6.0 409
FRONTIER ROAD	Average of Est AADT Max of Est AADT Min of Est AADT Average of Width Sum of Length	632 810 450 6.0 8800
MAUNGATAUTARI ROAD	Average of Est AADT Max of Est AADT Min of Est AADT Average of Width Sum of Length	456 1020 200 6.6 18990
KARAPIRO ROAD	Average of Est AADT Max of Est AADT Min of Est AADT Average of Width Sum of Length	451 722 315 6.5 3835
NGAHINAPOURI ROAD	Average of Est AADT Max of Est AADT Min of Est AADT Average of Width Sum of Length	416 570 300 5.7 6150
CHAMBERLAIN ROAD	Average of Est AADT Max of Est AADT Min of Est AADT Average of Width Sum of Length	403 440 330 7.4 6192
LONG ROAD	Average of Est AADT Max of Est AADT Min of Est AADT Average of Width Sum of Length	395 395 395 7.5 322
WHITEHALL ROAD	Average of Est AADT Max of Est AADT Min of Est AADT Average of Width Sum of Length	379 440 330 6.6 4525
PARKLANDS ROAD	Average of Est AADT Max of Est AADT	340 340

LOCAL ROADS - AVERAGE TRAFFIC COUNTS AND WIDTHS

Road Name2	ADT (veh/day)		
	Road Name	Data	Total

ARTERIAL ROAD - TRAFFIC COUNTS AND WIDTHS

Road Name	T (veh/day), Width and length in	
	Data	Total
AOTEAROA ROAD	Min of Est AADT2	670
	Average of Width	7.3
	Sum of Length	1534
MELLOW ROAD	Average of Est AADT	500
	Max of Est AADT	500
	Min of Est AADT2	500
	Average of Width	5.6
	Sum of Length	695
(blank)	Average of Est AADT	
	Max of Est AADT	
	Min of Est AADT2	
	Average of Width	
	Sum of Length	150390
Total Average of Est AADT		3468
Total Max of Est AADT		13160
Total Min of Est AADT2		480
Total Average of Width		10.2
Total Sum of Length		300780

COLLECTOR ROADS - TRAFFIC COUNTS AND WIDTHS

Road Name	ADT (veh/day)	
	Data	Total
PARKLANDS ROAD	Min of Est AADT	340
	Average of Width	6.0
	Sum of Length	4413
TAOTAOROA ROAD	Average of Est AADT	266
	Max of Est AADT	310
	Min of Est AADT	180
	Average of Width	6.6
	Sum of Length	6329
ROTONGATA ROAD	Average of Est AADT	245
	Max of Est AADT	250
	Min of Est AADT	235
	Average of Width	6.2
	Sum of Length	6823
BAYLEY ROAD	Average of Est AADT	190
	Max of Est AADT	190
	Min of Est AADT	190
	Average of Width	5.4
	Sum of Length	350
WHAREPAPA SOUTH ROAD	Average of Est AADT	188
	Max of Est AADT	200
	Min of Est AADT	165
	Average of Width	5.6
	Sum of Length	2624
PARAWERA ROAD	Average of Est AADT	145
	Max of Est AADT	150
	Min of Est AADT	140
	Average of Width	5.9
	Sum of Length	4177
PUAHUE ROAD	Average of Est AADT	110
	Max of Est AADT	110
	Min of Est AADT	110
	Average of Width	6.0
	Sum of Length	1128
(blank)	Average of Est AADT	
	Max of Est AADT	
	Min of Est AADT	
	Average of Width	
	Sum of Length	139827
Total Average of Est AADT		1209
Total Max of Est AADT		5530
Total Min of Est AADT		110
Total Average of Width		8.0
Total Sum of Length		279654

LOCAL ROADS - AVERAGE TRAFFIC COUNTS AND WIDTHS

Road Name2	ADT (veh/day)		
	Road Name	Data	Total

## **Appendix B: Summary of Actions**

## Summary of Actions

Recommendation	Deliverable	Budget Order Cd	Timing	Action - all subject to WDC approval	Skills needed
<b>1.1. Data Management and Presentation</b>					
<p>= Relate RAMM data to GIS data to allow traffic volumes and the relationships between roads to be visually presented and analysed, and make it easier to evaluate land use relationships with transportation spatially. Possible presentations include:</p> <p>– Roads that will be deficient in terms of width or level of service within the planning horizon to assist in identifying where widening could be combined with maintenance and renewal projects</p> <p>– Intersections that are likely to present capacity concerns by tying together traffic volumes and appropriate trigger levels</p> <p>– Identifying areas where development may lead to higher than standard projected traffic growth, and the roads likely to be affected</p>	Spreadsheets of deficient roads and intersections, lists of roads in areas of potentially higher growth	\$15K based on 2 weeks GIS and some traffic engineering input.	To suit WGS programme	Confirm GIS relationship with RAMM is achievable.	GIS specialists, RAMM operator, traffic engineer
<p>= Ensure that traffic counts are taken in the same place each year to permit valid tracking of traffic growth and trends. Extend the count programme to include cycle and pedestrian data to support future funding applications.</p>	Revised traffic count contract scope and specification	\$1-2K Review, costs of extension to programmesh	Prior to renewal of contract	Review traffic count contract scope and specification, assess benefits of extended count programme against costs	Traffic engineer
<p>= Relate Waipa DC performance indicators to Land Transport NZ performance indicators, and expenditure to asset management plan expectations</p>	Consistent performance indicators	\$5K		Compare data availability and relevance - may just be internal indicators - not LTCCP.	Roading engineer
<b>1.2. Identification and management of key state highway and arterial road intersections</b>					
<p>The arterial network and local road connections across the district should be reviewed for changes in arterial demand likely to result from State Highway bypasses and urban growth. Funding issues related to state highway and arterial road works also need to be resolved in a way that can reasonably and effectively be accounted for through resource management processes and LTCCP development contributions.</p> <p>Examples include Rogers Place/SH3 roundabout at Te Awamutu, Golf Road intersection at SH3/St Leger Road, and connections through to Cambridge from the west. Where possible, the potential impacts of community facility improvements such as the airport, Cambridge Pool, Karapiro and Mystery Creek special events should be recognised.</p>	Waipa Arterial Road Strategy review, including a critical review of the road hierarchy and funding requirements and opportunities.	\$25 - \$50K - existing strategy largely valid -	Following completion of regional traffic model and certainty regarding Southern Links. Could tie in with a review of SH3 requirements around Te Awamutu and Kihikihi	Development of scope, liaison with Transit NZ and regional model team.	Traffic engineer, civil engineer
<b>1.3. Long range strategic planning for major infrastructure items</b>					
<p>There are some infrastructure items such as bridges, development access points and parking infrastructure with a significant land use or economic impact that should be tied into strategic land use planning. Examples include:</p> <p>= Development access points, such as Hautapu interchange on the Cambridge Bypass</p> <p>= Cambridge third bridge – what happens in the long term when the high level bridge is no longer serviceable? What land or planning protection is necessary to permit replacement in the same location or on an alternative corridor?</p>					
<p>= Development access points, such as Hautapu interchange on the Cambridge Bypass</p>	Report on infrastructure requirements and funding options	\$10k- \$20K	Following arterial road strategy review and specific scoping studies for key elements below.	Draft terms of reference, confirm budget	Traffic engineer, civil engineer, planner
<p>= Cambridge third bridge – what happens in the long term when the high level bridge is no longer serviceable? What land or planning protection is necessary to permit replacement in the same location or on an alternative corridor?</p>	Scoping Report	\$50K - \$150K	After growth forecasts for Leamington fixed - Likely to be as part of arterial road strategy review	Draft terms of reference, confirm budget	Traffic engineer, civil engineer, planner



## Summary of Actions

Recommendation	Deliverable	Budget Order Code	Timing	Action - all subject to WDC approval	Skills needed
= State highway traffic and heavy commercial traffic through Te Awamutu and Kihikihi- At what stage will a bypass be necessary? What provision is made for appropriate investigation and corridor protection? When will traffic conditions support the Te Awamutu Western Arterial	TA Traffic Study Update	\$50K	After growth forecasts for Te Awamutu fixed and regional model available - Likely to be as part of arterial road strategy review	Draft terms of reference, confirm budget	Traffic engineer, civil engineer, planner
= Parking infrastructure – e.g. identification and purchase of land for additional parking, in Cambridge and Te Awamutu if strategically desirable.	Parking strategy	\$20K	Prior to next LTCCP	Draft terms of reference, confirm budget	Traffic engineer, civil engineer, planner
= Bridge widening and strengthening for one lane and weight-restricted bridges.	Asset management plan	n/a	Prior to next LTCCP	Council staff prioritisation	Council staff
<b>1.4. Road Design and Maintenance Standards and Facilities for Other Modes</b>					
= The Waipa Arterial Road Strategy 2003 should be reviewed for consistency with current standards and practice.	Refer above				
= The links between development standards and their application, and consistency between the Waipa DC Guide for Land Use and Development, the HCC Development Manual and District Council Supplement, and best practice, should be reviewed. When available, the cycling strategy should be tested for consistency, and standards updated to reflect it.	District Council Supplement, Transport standards/rules for District Plan	\$50K	Prior to District Plan Review - after individual strategies sorted out for arterial roads, walking, cycling and passenger transport.	Draft terms of reference, confirm stakeholders (NZ Transport Agency, developers, user groups), confirm budget	Traffic engineer, civil engineer, planner
= The walking strategy should be reviewed in conjunction with completion of the cycle strategy for potential synergies and opportunities. Recreational and rural residential network standards (and their relationship with road maintenance management and improvements) should also be reviewed.	Walking and Cycle network implementation plan	\$5K	After cycle strategy is available, Prior to next LTCCP	Review walking and cycle strategy for network recommendations, compare to preferred growth scenarios, development standards, etc	Traffic engineer, civil engineer, planner
= The Waipa Passenger Transport strategy should be reviewed and updated to reflect the revised RLTS and Passenger Transport Plan so that funding requirements can be taken into account and appropriate development standards implemented. The likely increases in the extents and levels of service for passenger transport in Waipa, including opportunities for buses, and park and ride infrastructure requirements should be recognised.	Updated PT Strategy	\$5K - \$10K	Prior to next LTCCP, prior to Te Awamutu PT facility infrastructure construction	Review and update PT strategy in light of revised RLTS and Regional PT Plan, and Government Policy Statement on Transport.	Traffic engineer, civil engineer, planner
= Development standards should provide for and facilitate the use of active modes such as walking, cycling and passenger transport.	Updated standards - include in District Council Supplement	\$10K - 20K	After individual strategies, before LTCCP and District Plan Review	Review and revise standards to encourage sustainable modes	Traffic engineer, civil engineer, planner
<b>1.5. Development Control</b>					
= The basis for and method of assessing development contributions for high impact activities that may not relate to residential development or has a high proportion of heavy vehicles, such as quarries, should be reviewed.	Heavy impact fee policy	\$5 - \$10K	Prior to next LTCCP, Prior to District Plan review	Waikato DC currently reviewing policy - determine need and scope following completion.	Traffic engineer, civil engineer, planner
= Development management and detailing for infrastructure connections such as lighting, drop crossings, and stormwater should be reviewed and updated.	Updated standards and detailing- include in District Council Supplement	\$20K	Prior to next LTCCP, Prior to District Plan review	Review and revise standards to minimise future maintenance impacts	Traffic engineer, civil engineer, planner
= Cash in lieu fees for parking should be reviewed following preparation of a parking strategy	Revised fees - possibly as part of parking strategy	\$5K	Prior to next LTCCP (if development contributions may reflect parking), Prior to District Plan review	Review costs of parking.	Traffic engineer, civil engineer, planner