

## 6 Traffic Patterns

The 2005 Western Corridor Study was a multi-modal study which aimed to develop interventions to address the national and regional transport needs along the Kapiti Coast from north of Waikanae to Ngauranga. The study relied upon the Wellington Regional Transport Model (WTSM) as a tool for testing the options developed. At the time WTSM was based largely on 2001 census data and demographic projections. Analysis of the 2006 census data has subsequently identified that projections made in 2001 underestimated population growth between 2001 and 2006.

This study investigated and assessed options to improve transportation along this corridor with the aim of providing safer, more efficient, more reliable and sustainable transport options for the nation and the region. The Western Corridor made a number of recommendations which have subsequently been adopted within the regional strategy.

The Kapiti State Highway 1 strategy study will build upon the findings and conclusions of the Western Corridor Study. Options to increase the proportion of trips made using passenger transport or by active forms of travel have previously been investigated as have measures to reduce the demand for travel. A significant amount of work is underway to develop and implement these projects which are described in sections 2.4 and 2.5.2. This study has been commissioned to identify ways of accommodating the current and future trips that are not expected to be made on foot, by bicycle or using passenger transport.

### 6.1 2006 Recorded Traffic Flows

Annual Average Daily Traffic Flows vary along the length of SH1 within the study area. Figure 6.1 shows that daily traffic volumes<sup>12</sup> are higher in the southern part of the study area nearest to Wellington. The figure also shows that daily traffic flow on SH1 in Paraparaumu is higher than at any other location within the study area.

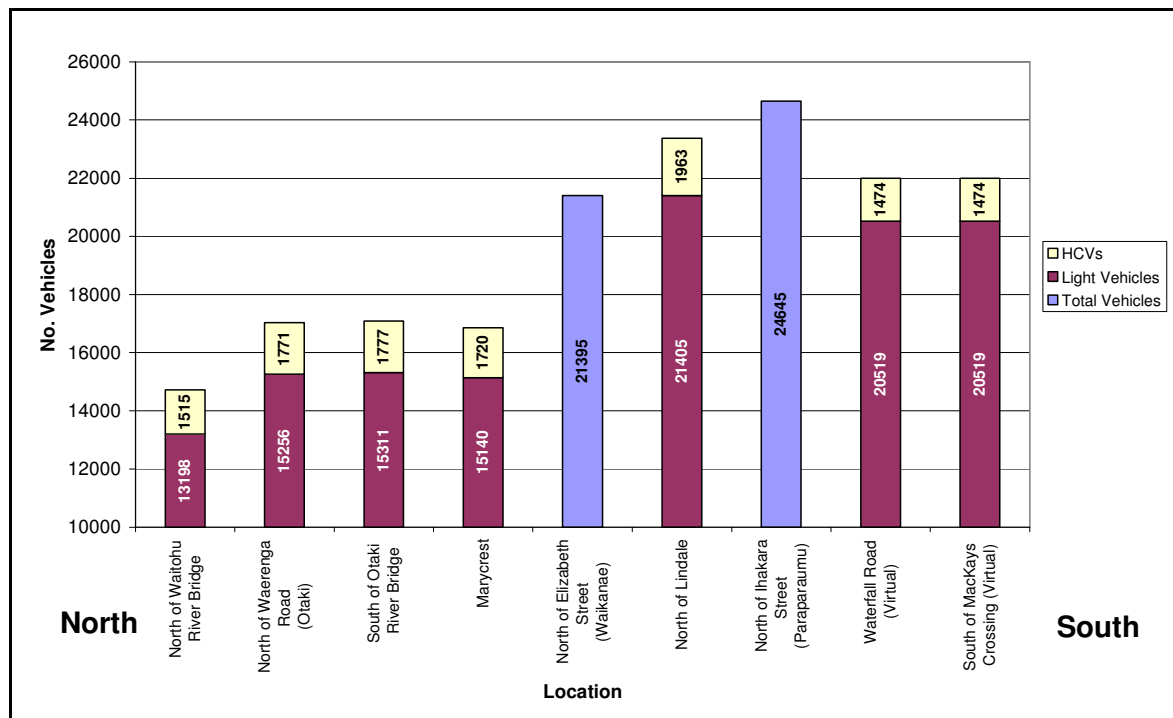
Assessment of seasonal variation in 2006 found that higher daily traffic flows were recorded in November, December and February. In each of these months, daily flows were between 4% and 7% higher than the annual average. Conversely, in the winter months from May to August daily traffic flows were between 3% and 4% less than the annual average.

Like other main arterials in the region, morning and evening peaks corresponding with the times when people travel to and from work are observed on weekdays. Hourly traffic flows in the morning and evening peak hours are approximately 25% and 60% higher than hourly flows in the inter-peak respectively.

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<sup>12</sup> Data extracted from Transit Traffic Flow Data Manual

Figure 6.1 – AADT for State Highway 1 through the Kapiti Coast District



## 6.2 Forecast Traffic Flow

A significant amount of assessment work has been undertaken for the Kapiti Coast road network using the existing 2001 validated base traffic model. Forecast models have also been developed for 2006 and at 5 year intervals to 2026. The schemes that are assumed to be included in the Do minimum scenarios are listed in Appendix C.

Despite proposed interventions designed to improve passenger transport services and to enable active travel, the developments proposed within the district are forecast to result in increases to the number of motorised vehicle trips on roads within Kapiti Coast District. Total growth in the number of trips on the Kapiti Coast Road network could be as high as 70% between 2006 and 2026.

The increased number of vehicle trips between 2006 and 2026 incorporated within the 2001 Kapiti Coast SATURN correspond with a:

- 61% increase in the number of AM peak hour trips;
- 71% increase in the number of inter-peak hour trip; and
- 82% increase in the number of PM peak hour trips.

This increase in local trips corresponds with trends observed over the last decade. Most of the additional trips are forecast as short, local trips within Kapiti Coast District. If no changes are made to the local road network it is expected that much of the increase will need to be accommodated on State Highway 1 which is already subject to significant congestion, delay and poor reliability for users at times of peak demand.

Table 6.1 shows the change hourly traffic flows forecast for SH1 at three screen lines between 2006 and 2026. The table shows that the largest increases in traffic flow are expected southbound towards Waikanae in the morning peak hour and northbound away from Waikanae in the PM peak. Relatively large increases in hourly flow are also forecast in the morning and inter-peak periods northbound towards Paraparaumu.

**Table 6.1 – Change in Hourly Traffic Flow on State Highway 1: 2006 - 2026**

		No. of trips in 2006			No. of trips in 2026			No. Change (% Change)		
		AM	IP	PM	AM	IP	PM	AM	IP	PM
SH1 North Waikanae	s/b	700	667	649	1422	1141	1084	722 (103%)	474 (71%)	435 (67%)
	n/b	484	632	813	813	1163	1641	329 (68%)	531 (84%)	828 (102%)
	total	1184	1299	1462	2235	2304	2725	1051 (89%)	1005 (77%)	1263 (86%)
SH1 North Otaihanga	s/b	1286	951	978	1646	1269	1289	360 (28%)	318 (33%)	311 (32%)
	n/b	884	858	1320	1144	1325	1906	260 (29%)	467 (54%)	586 (44%)
	total	2170	1809	2298	2790	2594	3195	620 (29%)	785 (43%)	897 (39%)
SH1 South of Raumati	s/b	1026	851	727	988	881	1079	-38 (-4%)	30 (4%)	352 (48%)
	n/b	853	860	1161	1436	1284	1500	583 (68%)	424 (49%)	339 (29%)
	total	1879	1711	1888	2424	2165	2579	545 (29%)	454 (27%)	691 (37%)

In 2026 it is forecast that there will be more than 10,000 long distance motor trips through the Kapiti Coast on SH1 each day. These regional and national trips would not start or end within the District.

In addition to long distance trips, it is expected that SH1 will continue to be used for local trips. Around 70% of vehicle trips made using SH1 at present are local trips. Current forecasts are that each day in 2026, there would be approximately 52,000 vehicle trips across the Waikanae River using the Western Link Road and SH1. Given the high proportion of local trips in the district, the creation of a reliable local road network is crucial if the reliability of national and regional trips made using SH1 is to be protected.

Figure 6.2 shows that shorter travel times are expected for SH1 traffic in 2016 and 2026, than are forecast for conditions in 2006. These forecasts assume that the Western Link Road is constructed by 2016 and that the amount of traffic using SH1 is reduced. Figure 6.3 shows travel time forecasts for the Western Link Road in 2016 and 2026. It shows that as the amount of traffic using the road increases (between 2016 and 2026) the travel times deteriorate. If the Western Link Road is not built and traffic continues to grow, it is expected that travel times on SH1 would increase over time.

Figure 6.2 – Travel Time Comparisons SH1

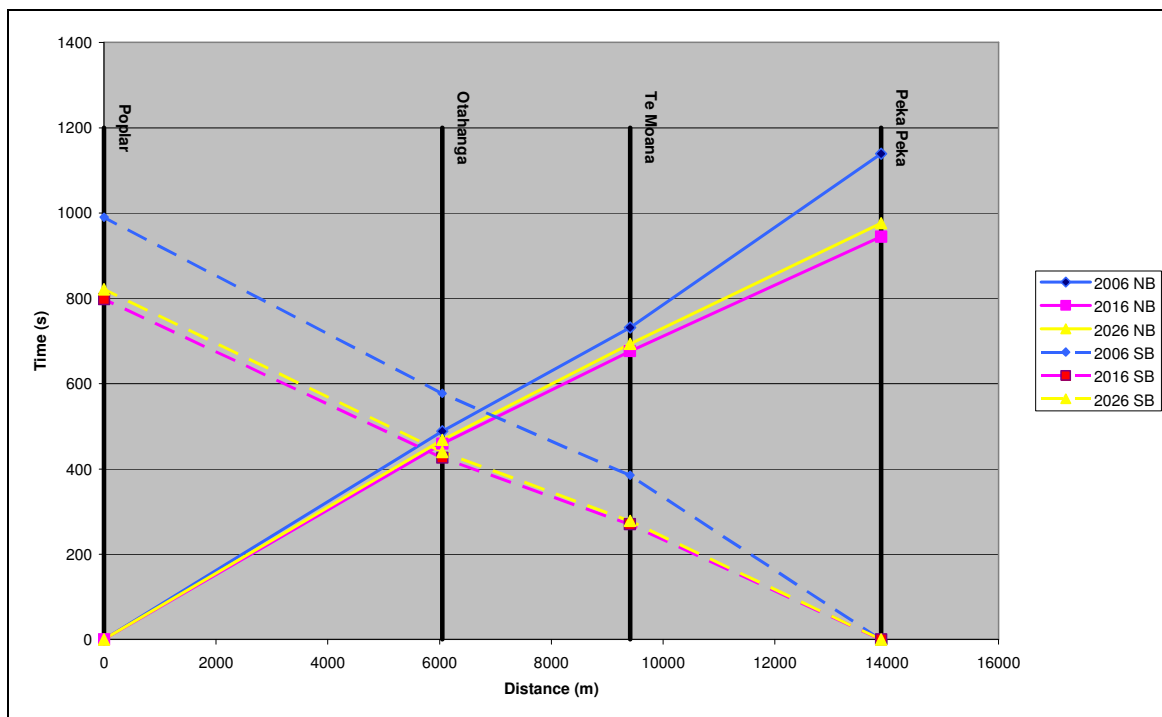
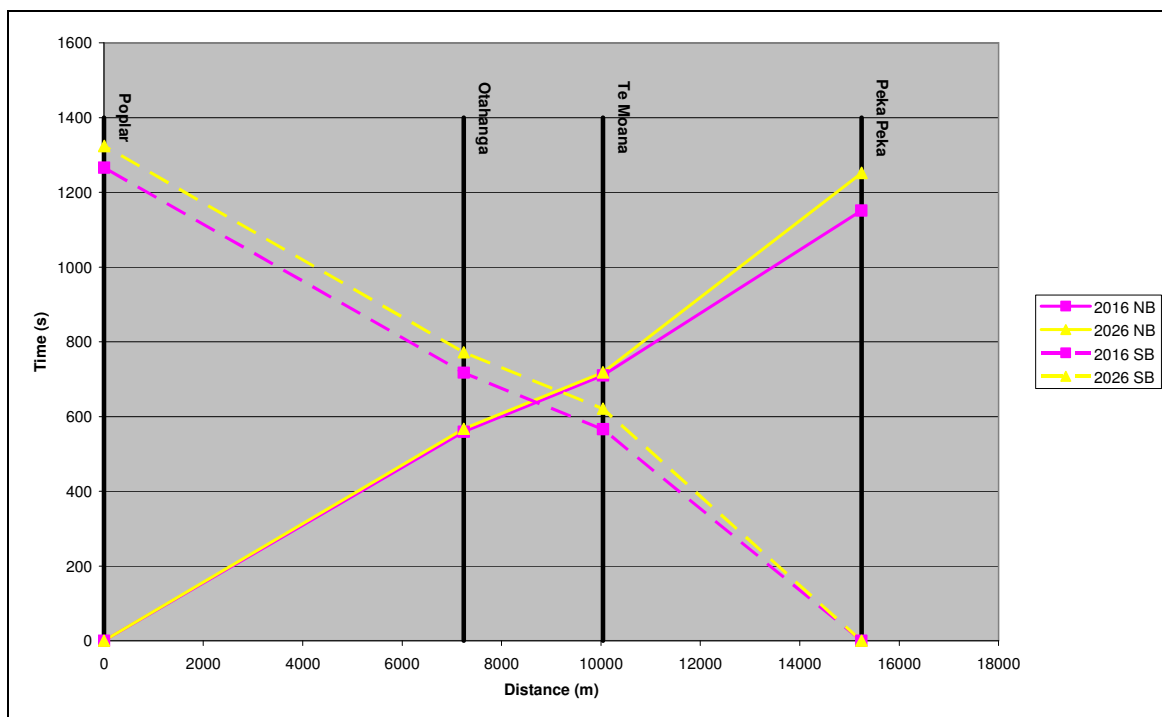


Figure 6.3 – Travel Time Comparisons Western Link Road



### 6.3 Movement of Freight

Heavy Commercial Vehicle (HCV) trips are important in that they can significantly affect the performance of intersections, particularly in high speed areas like on SH1. The effects are due to the time needed for larger vehicles to accelerate and decelerate.

Within the study area, Paraparaumu is the primary origin and destination for HCV's. Almost all HCV trips are routed along SH1 for some distance. A significant number of HCV trips begin and end at the Te Roto Drive industrial park which is accessed from SH1 via Kapiti Road. HCV also travel to and from industrial sites close to Coastlands Drive and in Paraparaumu on the eastern side of SH1. The majority of these trips are local service trips with a small number of long distance supply and export trips associated with businesses.

The 2001 Kapiti Coast SATURN models do not distinguish between light and heavy motor vehicles. Instead WTSM matrices are converted into passenger car units (PCU) and incorporated within SATURN. HCV proportions derived from outputs of the 2001 SATURN model are therefore unreliable. Data collected at State Highway 1 count sites indicates that the number of HCV's using SH1 within the study area varies between 1450 and 2000. At locations with lower traffic volumes, this represents up to 10.4% of AADT. Closer analysis of daily traffic flow reveals that many of these trips are made before and after the AM and PM peak hours respectively so that at peak times HCV proportions are no more than 5% of total traffic flows.

One of the design aims for the Western Link Road project is to provide an arterial link between SH1 and planned industrial areas likely to generate HCV trips. The intention is that HCV trips to local sites do not need to be routed on State Highway.