

## Executive Summary

Opus International Consultants were commissioned by the Greater Wellington Regional Council (GWRC) in March 2011 to document modelling tests which had been completed by GWRC staff in October and November 2010. The objective of these tests were to:

“Determine, with same assumptions, which is the most effective roading solution (at the strategic level) to provide a regional east-west connection”. The following two roading options were selected by GWRC and the technical steering group for analysis:

- Upgrade of State Highway 58; or
- New highway link between Petone and Grenada

This report addresses the issue above by:

- Briefly describing what is meant by “effective roading solution”;
- Documenting landuse growth scenario assumptions;
- Describing Strategic Modelling Base Forecasts for 2006 to 2026; and
- Comparing the two highway options against the Base 2026 Forecasts.

The Wellington Transport Strategic Model has been used to study highway link options between Porirua and the Hutt Valley. The study used 2006 Base model and the medium landuse growth scenario for 2026 which assumes:

- An increase in regional population of 12% which is concentrated in Wellington and Kapiti;
- An increase in the number of households across the region of 23%. The increases range from 13% in Lower Hutt to 31% in Kapiti;
- An increase in employment across the region of 21% which ranges from 17% in the Wairarapa to 24% in Porirua.
- Fuel price increases by 20% over 2006 levels
- Public Transport fares increases by 20% over 2006 levels

These landuse/demographic factors were combined with the following *major* network and service assumptions by 2026 (see Appendix A for coding):

- Transmission Gully Motorway (TG) in place;
- SH2 Dowse-Petone Upgrades (interchange) which commenced operation in 2009;
- SH2/SH58 grade separation which was scheduled to start construction in 2011;
- Aotea – Ngauranga 4 lane each way during peak periods; and
- Kapiti train line extended to Waikanae.
- Various bus prioritisation measures (see Appendix B).

Using the assumptions above the 2006-2026 model forecasts show:

- Increase in vehicle trip demand of 23% in the AM Peak and 20% in the PM Peak across the whole network
- Increase in Vehicle Kilometres Travelled (VKT) on congested links of 35% in the AM Peak and 44% in the PM Peak
- Trips via SH58 between Porirua and Hutt Valley town centres an increase of just under 6 minutes in the westbound direction to 27.43 minutes.
- Small increase in travel times in the main flow direction (eastbound) on SH58. This would be larger but analysis of the 2006 model indicates the route is already nearing operation capacity.
- Increase in travel times on SH1-SH2 of over 6 minutes in the eastbound direction to 34.4 minutes in the AM Peak Period.

Two options were modelled to help improve linkages between Hutt Valley and Porirua:

- Widening of SH58 to two lanes in each direction
- A new link between Petone in the east and Grenada in the west.

The options were assessed against the same measures as the base forecasts and have been summarised in the table on the following page (with a focus on the AM Peak).

While both options improve highway access between the Hutt Valley and Porirua, model forecasts show the new Petone Grenada link is the most effective roading solution at reducing travel times and reducing overall network congestion. As well as reducing travel times for existing trips between Hutt Valley and Porirua the New Link has the added benefits of:

- Significantly reducing congestion on the SH1 / SH2 interchange area allowing for less restricted movement of vehicles to and from Wellington City; and
- Improving access to two key employment areas.

**Table 0-1: Summary Comparison of the Options against the Base 2026**

	<b>The SH58 Option</b>	<b>Petone Grenada New Link</b>
<b>Highway Trip Demand and Distribution</b>	Almost no impact on the overall level of vehicle trip demand in the AM and PM Peaks. However, the scheme results in an increase in trips between Porirua and the Hutt Valley of between 12% and 19% (with minor decrease elsewhere to compensate).	Increases number of trips across the whole network by 1,400 in the AM Peak and 1,500 in the PM Peak with a 39%-46% increase in trips travelling from Lower Hutt to Porirua and a 44%-51% increase in trips travelling from Porirua to Lower Hutt. Much of the effect is redistribution with corresponding absolute reductions in trips originating and terminating in the same district e.g. decrease in intra-sector trips in the AM and PM peaks of approximately 800 trips in Lower Hutt and decrease in intra-sector trips in the AM and PM peaks of approximately 250 trips in Porirua.
<b>Traffic Counts</b>	Attracts an extra 14% (for westbound) and 22% (for eastbound) traffic in AM peak than the 2026 Base.	Draws between 16% (eastbound) and 24% (westbound) vehicles away from SH58 in AM peak. In the AM peak the Grenada Petone New Link attracts 6,194 vehicles (both directions) which helps draw 30% of SH2 northbound traffic (south of Petone) and 25% of SH1's northbound traffic north of Ngauranga Interchange.
<b>Highway Volume Capacity</b>	Reduces the overall level of VKT affected by VC of 0.8 or greater in the: <ul style="list-style-type: none"> <li>- AM Peak by 7% over the 2026 Base; and</li> <li>- PM Peak by 5% over the 2026 Base.</li> </ul>	Reduces the overall level of VKT affected by VC of 0.8 or greater in the: <ul style="list-style-type: none"> <li>- AM Peak by 10% over the 2026 Base; and</li> <li>- PM Peak by 13% over the 2026 Base.</li> </ul>
<b>Highway Travel Times</b>	Reduces AM Peak travel times on SH58 in the: <ul style="list-style-type: none"> <li>- westbound direction from 29.2 minutes in the base 2026 to 26.8 minutes.</li> <li>- eastbound direction from 34.4 minutes in the base 2026 to 25.1 minutes</li> </ul>	Reduces AM Peak travel times on the new link – SH1/SH2 route in the: <ul style="list-style-type: none"> <li>- westbound direction from 31.8 minutes in the base 2026 to 21.8 minutes</li> <li>- eastbound direction from 27.4 minutes in the base 2026 to 16.7 minutes.</li> </ul>