8. STRATEGIC ROAD NETWORK

8.1 INTRODUCTION

The strategic road network forms the backbone of the region’s transport network. It comprises the state highways and some higher volume local roads. It serves an important role for both inter-regional long distance trips and short to medium distance trips within the region, and provides access and connectivity for people and goods to key regional destinations (such as Wellington CBD, CentrePort, the regional hospital and international airport) as well as links between key regional centres.

Investment in the strategic road network is just one element of the wider plan for improving the region’s transport network, and needs to be considered as part of an integrated planning and investment approach.

8.2 WELLINGTON’S STRATEGIC ROAD NETWORK

The strategic road network has been defined as those routes meeting the criteria for the top three tiers of the One Network Road Classification – ‘National High Volume Roads’, ‘National Roads’, and ‘Regional Roads’.

To be included in a particular category a road must meet the agreed criteria and thresholds which include a combination of:

- Movement of people and goods - vehicle flows, heavy commercial vehicles, buses, and active modes
- Economic and social functions - links to key destinations such as ports, airports, hospitals, top tourist attractions, or provides the key link to adjacent regions

National roads are those that make the largest contribution to the social and economic wellbeing of New Zealand by connecting major population centres, major ports or international airports and have high volumes of heavy commercial vehicles or general traffic.

To be considered a ‘National High Volume Road’ a road must meet one of the high volume criteria for typical daily traffic or heavy commercial vehicles.

Regional roads are those that make a major contribution to the social and economic wellbeing of a region and connect to regionally significant places, industries, ports or airports. They are also major connectors between regions and in urban areas may have substantial passenger transport movements.

What is the One Network Road Classification (ONRC)?

The ONRC involves categorising roads based on the primary function(s) they perform.

The ONRC is a nationally consistent classification system for the state highway and local road network.

It has been formally adopted by NZ Transport Agency for use in the development of the NLTP 2015-18.

It helps inform decisions about the associated customer level of service that a particular category of road should offer.

The existing strategic road network comprises:

- SH1 from Wellington Airport to just north of Otaki
- SH2 from Ngauranga Interchange to north of Masterton
- SH58 between SH1 and SH2
- SH53 between Featherston and Martinborough
- Adelaide Road, in Wellington between the Basin Reserve and John Street (Wellington Hospital)
- Aotea Quay and Waterloo Quay, in Wellington between SH1 and Hinemoa Street (CentrePort)
- Petone Esplanade and Waione Street, in Lower Hutt between SH2 and Seaview Road

These strategic roads are shown on Figure 22. Also shown are some of the existing challenges and planned new roads that will form part of the future strategic road network.
Figure 22. Wellington Region Strategic Road Network

Key
- National high volume road
- National road
- Regional road
- Future road
- Future state highway revocation

Existing challenges
- Community severance
- High crash risk
- Variable travel times
- No alternative route

Airports: Airport, Port
Hospitals: Hospital

Wellington City

Wellington Region

Challenges:
- Community severance
- High crash risk
- Variable travel times
- No alternative route

Locations:
- Aotea Quay
- Basin Reserve
- Adelaide Rd
- Riddiford St
- Otaki
- Waikanae
- Paraparaumu
- Featherston
- Greytown
- Carterton
- Martinborough
- Upper Hutt
- Lower Hutt
- Seaview
- Pukerua Bay
- Pōrirua
- Paekakariki
- Wellington City
- Masterton

Port

Airport
8.3 THE NEED FOR INVESTMENT

Managing the region’s transport issues (identified earlier in this plan) and achieving the broad outcomes envisaged, requires an integrated multimodal response. An important part of this overall approach is investment in improvements to the strategic road network – both in terms of infrastructure and operation.

The key areas which require future investment are set out below.

Sub-standard road design

Some sections of the strategic road network were not designed to accommodate the traffic flows they now carry and are no longer fit for purpose. At-grade, signal controlled intersections on some parts of the network (e.g. SH2 through the Hutt Valley and SH1 through Kapiti) can no longer safely accommodate the traffic demand. Some parts of network are undivided, have inadequate shoulders or poor road alignment and inconsistent road design.

These factors all increase the chances of road users being involved in a serious or fatal crash. This is illustrated by the large proportion of the strategic highway network rated as high or medium to high collective safety risk1 as shown in the section 12 ‘Road Safety’ of this plan.

Congestion and travel time variability

Roads which were designed for lower traffic volumes than those they carry operate inefficiently and create congestion issues. Key pinch points in the network that require vehicles to merge or involve conflict between different traffic movements can also significantly affect traffic flows.

Congestion on the strategic road network results in traffic delays and travel time variability during peak times on weekdays and on weekends and public holidays. While the long term trend in average congestion rates has been fairly consistent over time, severe congestion is occurring on some key sections of the network and is expected to continue due to future growth pressures. The morning peak period has consistently experienced the highest level of road congestion over recent years, and also has the highest levels of variability.

Congestion and journey time variability increases the cost of freight operations and delays commuters travelling to work by car or by bus, reducing the productivity of the region’s economy. Unreliable travel times also affect visitors travelling to the inter-island ferry or international airport. Unexpected delays may cause people to miss travel connections which have reputational as well as economic impacts for the commerce and tourism sectors.

1 Annual average fatal and serious injury crashes per kilometre.

Transport and land-use conflicts

Some sections of the strategic road network carry high traffic volumes through residential and urban areas. These roads tend to have frequent intersections and often provide direct vehicle access to private property, which interrupt the flow of traffic, often resulting in delays and an increased risk of crashes occurring.

Where strategic roads carrying high traffic flows pass through urban areas and local centres they can also create a real or perceived barrier to local trips. This can make it harder for people to access local goods and services, impacting on amenity and connectivity.

In our region these issues have been identified along the following roads: SH2 through the Wairarapa townships of Featherston, Greytown, Carterton and Masterton; SH1 through Mana, Pukerua Bay, and the Kapiti Coast townships of Paraparaumu, Waikanae and Otaki; SH1 south of the Terrace Tunnel through central Wellington City to the airport.

When new strategic roads are constructed to bypass existing local centres and urban areas, it will be important to carefully manage new land use development to ensure that conflicts do not undermine the benefits of that investment. This may be a future issue for parts of Transmission Gully, Kapiti Expressway, and the proposed Petone to Grenada link road.

Lack of alternative routes

In many parts of the Wellington region the strategic road network also provides the function of a local road because there are no viable alternatives for making local trips within a district.

For example:

- SH1 through Porirua (linking Porirua city centre with suburbs to the east and north)
- SH1 through Kapiti (linking Paekakariki, Paraparaumu and Waikanae and Otaki)
- SH2 through Wairarapa (linking Featherston, Greytown and Carterton)

This can place additional pressure on those parts of the network, and result in modal conflicts between local trips made by foot, bike or horseback and longer distance vehicle trips.

The Wellington region’s strategic road network also suffers from a limited number of route options between districts and key centres.
For example:

- SH2 between Ngauranga and Petone
- SH2 between Upper Hutt and Featherston
- SH2 between Masterton and destinations north of the region
- SH1 between Pukerua Bay and Raumati South
- SH1 between Waikanae and Levin
- SH53 between Featherston and Martinborough

This lack of route alternatives leaves the region vulnerable to disruption as a result of unplanned events such as a major traffic incident, natural hazard event or earthquake.

There are also limited connections between SH1 (Western Corridor) and SH2 (Hutt Corridor). The only strategic connections between these corridors are via Ngauranga (using SH1 and SH2) or via SH58, and there are constraints with both of these routes:

- SH2 between Ngauranga and Petone is susceptible to congestion. People travelling this route at peak times experience delays and unreliable travel times. This part of the network is also vulnerable to natural events such as storm surges, landslips and earthquakes.
- SH58 is located further north than the key employment and freight generating centres of Hutt City and Seaview and does not provide for direct trips between these areas and centres in north Wellington/Porirua.

This lack of connectivity increases the cost of moving goods between these parts of the region, limits employment opportunities and economic activity and reduces the resilience of the transport system to unplanned events.

### 8.4 BENEFITS OF INVESTMENT

The benefits of investment in the strategic road network will be:

- support for regional economy growth and improved productivity
- improved journey time reliability, and freight efficiency
- reduced risk of death and serious injury
- significantly improved resilience and quicker recovery following an unplanned event.

### 8.5 STRATEGIC RESPONSE

The strategic response is to:

(a) Manage strategic roads to provide a level of service consistent with their role and function in the region’s road hierarchy, consistent with the One Network Road Classification.

(b) Develop new strategic roads to fill the identified strategic gaps in the transport network. The primary network gap is the lack of an effective east-west connection between Lower Hutt and north Wellington/Porirua.

(c) Develop improvements to existing strategic roads or new strategic roads to:

- Improve design standards and safety
- Provide additional capacity – where necessary to reduce severe congestion and travel time reliability, and taking into account impacts on the wider multimodal transport network
- Improve resilience and reduce the risk of disruption
- Provide a high level of service for pedestrians and cyclists
- Connect effectively with local roads but reduce any overlap with local road functions on the strategic road network itself
- Improve access to key destinations, including CentrePort, Wellington International Airport, the Wellington CBD, and the regional hospital.

(d) Maintain local roads to provide a level of service consistent with their role and function, including the role of local freight and tourism routes in supporting regional economic growth.
### 8.6 KEY NETWORK PRIORITIES

Figure 23. The key network priorities for strategic roads are as follows:

<table>
<thead>
<tr>
<th>Strategic Road</th>
<th>ONRC</th>
<th>Regional Priority</th>
<th>Timeframe</th>
<th>Priority Focus</th>
<th>Explanation</th>
</tr>
</thead>
</table>
| SH1            | National high volume | High             | Short to medium | • Reducing congestion (primary)  
• Faster and more reliable journeys (primary)  
• Effective and efficient freight network (primary)  
• Enhanced road safety (primary)  
• Increased resilience (primary) | The Wellington RoNS programme between Wellington Airport and Otaki is the current focus of the Government’s state highway funding for the Wellington region through the NLTP and will be central to delivering these outcomes.  
Along SH1 north of Tawa an alternative north-south strategic route will be constructed (Transmission Gully and the McKays to Peka Peka Expressway). This is expected to provide increased capacity, remove pinch points and will avoid conflicts with local urban areas. It will also contribute to significantly improving everyday transport network resilience and enable access to/from the region to be recovered much more quickly after a major natural event. Safety will be significantly improved through a range of factors including improved road alignment and design, median barriers and improved safety of intersections (e.g. through grade separation).  
South of Tawa freight access to CentrePort from the north is significantly impacted by traffic congestion between Ngauranga and Aotea during peak periods. The focus is on optimising capacity from the existing state highway corridor (e.g. through use of the shoulder to increase lane capacity and traffic management systems) to keep traffic moving smoothly during peak times. However, to significantly improve access to CentrePort additional southbound capacity through this section is required and options will be investigated as part of the Wellington RoNS programme.  
South of CentrePort the focus is to provide a strategic through route for trips to the Wellington International Airport and the eastern suburbs, and a ‘ring route’ around the city centre. Improvements are already planned for this part of the road network that focus on addressing capacity issues and pinch points through the city, which are currently preventing SH1 from effectively performing this role. These include optimising the SH1 Inner City Bypass, putting SH1 Buckle Street underground, addressing conflicting transport demands at the Basin Reserve, widening the Terrace Tunnel and providing additional capacity through the Mt Victoria Tunnel, Ruahine Street and Wellington Road. This will also have safety and local access resilience benefits, as well as enabling improved access and priority for public transport. |
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<thead>
<tr>
<th>Strategic Road</th>
<th>ONRC Priority</th>
<th>Regional Priority</th>
<th>Timeframe</th>
<th>Priority Focus</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>SH2 Ngauranga to Melling</td>
<td>National high volume</td>
<td>High</td>
<td>Medium</td>
<td>• Reducing congestion (primary) • Faster and more reliable journeys (primary) • Enhanced road safety (primary) • Effective and efficient freight network (primary) • Increased resilience (primary)</td>
<td>Between Ngauranga and Petone the options for addressing capacity constraints are limited, and the preferred approach is to: • Develop a new link road between SH2 at Petone and SH1 at Grenada to remove a percentage of trips from SH2, reducing congestion, as well as providing an alternative and more resilient route option. • Enhance the level of service for public transport and active modes along this corridor, to provide additional capacity and reduce demand along the strategic road corridor. This will include completing a current gap in the strategic cycling and walking network through the provision of a new cycling/walking route along the seaward side of the rail corridor. This would also provide significant resilience benefits to the rail network and key lifelines (critical services, infrastructure, and utilities such as transport routes, gas, electricity, water, wastewater, fuel supply and telecommunications). Along the remainder of this section of SH2 through to Melling, the priority is to improve intersections to achieve greater efficiency and safety. This should result in all intersections being grade-separated (i.e. a bridge/flyover type interchange). Improvements are already planned along this part of the corridor, including a new grade separated interchange at Petone as part of the Petone to Grenada Link Road package, short term improvements at Melling intersection to improve flows and safety by reconfiguring lane layouts and restricting some turning movements.</td>
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<tr>
<td>SH2 Melling to north of Upper Hutt</td>
<td>National</td>
<td>Medium</td>
<td>Medium to long</td>
<td>• Enhanced road safety (primary) • Faster and more reliable journeys (secondary) • Effective and efficient freight network (secondary)</td>
<td>The focus is on improving existing intersections to ensure that they can safely accommodate the traffic carried along this route. This should include grade-separating the SH2/SH58 intersection, and improving high risk intersections between SH2/SH58 and Upper Hutt and those north of Upper Hutt that have seen increased use as a result of new subdivision and development. Investment should also focus on measures to reduce the risk of head-on crashes north of Upper Hutt where the traffic travels at high speeds along non-divided sections of SH2. A secondary priority is ensuring reliable journey times. Congestion and travel time delays occur at key pinch points in the network at peak times, affecting commuters and freight. This part of the network also forms a section of a HPMV freight route.</td>
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<tr>
<td>SH58</td>
<td>National</td>
<td>High</td>
<td>Short to medium</td>
<td>• Enhanced road safety (primary)</td>
<td>Improving the safety of SH58 is an important regional priority. This should include improvements to road geometry, design and intersections. Upon completion of the Transmission Gully (TG) motorway, traffic volumes on the section of SH58 between TG motorway and SH2 are expected to increase – the design of any safety upgrades need to take this into account.</td>
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| Petone to Grenada link road   | National      | High              | Medium      | • Strategic connections (primary)  
• Increased resilience (primary)  
• Effective and efficient freight network (secondary)  
• Faster and more reliable journeys (secondary)  
• Reduced congestion (secondary) | A new strategic road link is planned to improve the connectivity between SH2/Lower Hutt and SH1/ north Wellington. This is a high priority for the region as it will provide an alternative route between corridors when SH2 or SH58 are blocked or closed, reduce congestion along the constrained section of SH2 between Petone and Ngauranga and along SH1 Ngauranga Gorge, provide improved freight connectivity within the region, and enable improved access to employment opportunities, markets and a major industrial hub at Seaview. |
| SH2 north of Upper Hutt to north of Masterton | Regional     | Medium            | Ongoing     | • Enhanced road safety (primary)  
• Effective and efficient freight network (secondary)  
• Reducing transport and land use conflicts (secondary) | This is a particularly hazardous section of road, with a high collective safety risk. SH2 Rimutaka Hill road traverses mountainous terrain, resulting in a narrow road cross section, unforgiving roadside environment and susceptibility to slips. The horizontal geometry makes the road difficult to negotiate at speed and difficult for larger heavy commercial vehicles to pass each other in opposite directions. SH2 Rimutaka Hill road forms part of an identified HPMV freight route and is the only road link between Wairarapa and the rest of the region. North of Featherston the focus is on improving the safety of the road network at identified high risk locations. Existing freight efficiency and community severance issues associated with heavy commercial vehicles travelling through the centre of Wairarapa townships will be exacerbated by expected freight growth and longer term solutions such as investigation of heavy vehicle bypasses may also need to be considered. |
| SH53 Featherston to Martinborough | Regional | Medium            | Medium to long | • Enhanced road safety (primary)  
• Increased resilience (secondary) | While SH53 carries low traffic volumes, it provides a key regional connection between the town of Martinborough and SH2. Addressing any identified safety issues along this high speed, undivided route will be important to reduce serious and fatal crashes. Replacing the Waihenga Bridge over the Ruamahanga River will improve the resilience of the network. Major flood events affecting this river can close the bridge, severing access via SH53 to Martinborough which has limited alternative routes. Seismic strengthening of bridges along this route and alternative local road access routes may also be important for resilience. |
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<tr>
<td><strong>Petone Esplanade and Cross-Valley link</strong></td>
<td>Regional</td>
<td>Medium</td>
<td>Short term (Petone Esplanade) Medium to long (Cross Valley Link)</td>
<td>• Increased capacity (primary) &lt;br&gt; • Faster and more reliable journeys (primary) &lt;br&gt; • Effective and efficient freight network (primary) &lt;br&gt; • Reducing transport and land use conflicts (primary) &lt;br&gt; • Enhanced road safety (secondary) &lt;br&gt; • Increased resilience (secondary)</td>
<td>In the shorter term, the focus for investment will be on improving traffic flows along Petone foreshore. Longer term, the objective is to relocate traffic from the Petone Esplanade to a new inland Cross Valley Link which will improve the effectiveness of access to Seaview, address local access and amenity issues, and provide a more resilient route. Petone Esplanade is a local road that meets the volume and functional criteria for a regionally significant route. This route provides an important strategic link between the major industrial hub at Seaview and SH2. It is affected by significant congestion at peak times, causing delays to both freight and commuters. The location of this strategic link along the Petone foreshore has associated community severance and amenity issues. It is also very vulnerable to natural hazards and seismic events. The proposed Cross Valley Link will connect directly to the proposed Petone to Grenada Link Road.</td>
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<tr>
<td><strong>Aotea Quay and Adelaide Road</strong></td>
<td>Regional</td>
<td>High</td>
<td>Short to medium</td>
<td>• Increased capacity – multimodal (primary) &lt;br&gt; • Faster and more reliable journeys (primary) &lt;br&gt; • Effective and efficient freight network (primary) &lt;br&gt; • Reducing congestion (secondary)</td>
<td>The priority for these routes will be improvements to provide effective and reliable access to important regional destinations of CentrePort and Wellington Hospital. Improvements will also need to reflect the role of these routes as urban roads within the local road hierarchy including provision of safe and connected facilities for pedestrians and cyclists, and priority for public transport services.</td>
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