REG | THE ROAD EFFICIENCY GROUP

ONE NETWORK
ROAD CLASSIFICATION

Applying the One Network Road Classification Guidelines

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ONE NETWORK ROAD CLASSIFICATION

NZ TRANSPORT AGENCY
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THIS DOCUMENT SETS OUT GUIDELINES FOR APPLYING THE ONE NETWORK ROAD CLASSIFICATION (ONRC) TO ALL NEW ZEALAND'S PUBLIC ROADS. THE ONRC HAS BEEN DEVELOPED BY A JOINT LOCAL GOVERNMENT/TRANSPORT AGENCY PROJECT TEAM AS PART OF THE ROAD EFFICIENCY GROUP (REG) WORK PROGRAMME.

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THE CONTEXT FOR DEVELOPING THE ONE NETWORK ROAD CLASSIFICATION

New Zealand's roads are a vital part of our transport infrastructure and make a major contribution to economic growth and community vitality. It is essential that each part of the roading network operates as effectively, efficiently and safely as possible. It is also desirable that the road network should be planned, developed, operated and maintained in as consistent manner as possible nationwide.

At a total length of around 94,000 km – New Zealand's roading network is diverse. It includes:

- the roads at the margins of the network that connect us with New Zealand's wilderness
- rural roads that are the first link in the supply chain between our farms and forests and world markets
- suburban streets and service lanes which serve those driving cars and trucks, travelling in buses and cycling and walking in order to travel to destinations in their communities
- roads in urban areas that serve important public realm/'place' functions
- the regional and national routes and state highways that connect our regions, cities, towns and communities
- the express ways/motorways which accommodate the highest national and regional traffic, while providing access for freight and business into city centres and other significant land uses such as ports and airports.

In the past, road controlling authorities (RCAs) have tended to take locally appropriate approaches to developing and maintaining roads within their jurisdiction, often based on local needs and affordability. While this approach works well from an individual community perspective, users of the road network may not be as well served as they travel the network experiencing significant variation in service quality as they travel over local government boundaries.

Currently, some RCAs are adopting increasingly sophisticated approaches to classifying their networks to both optimise transport outcomes within available funding and to better integrate transport and land use planning objectives. However, the current absence of a common national framework means that RCAs are taking a wide array of different approaches. This makes it difficult to make useful comparisons between networks, to deliver desirably consistent network wide customer levels of service and ultimately to demonstrate optimal value for money from investment decisions at the national and local level.

It is increasingly important therefore to take a *'one network'* approach across the roles and responsibilities of RCAs (TLAs, DOC and the Transport Agency alike), which better addresses users needs for a more consistent roading network and at the same time offers improved integration between land use and transport planning.

The goal is to provide road users, whether they are vehicle drivers, riders on passenger transport, cyclists or pedestrians with more consistent customer levels of service across the country. This is important for users of the network as diverse as freight operators who want to know the costs of operating their vehicles across multiple district networks and who highly value journey time consistency and reliability, as to the safety and speed management needs of cyclists and pedestrians moving through a city's streets.

WHAT IS A ROAD CLASSIFICATION?

Road classification involves categorising roads based on the main function(s) each category of road performs – for example, the movement of freight, for tourism, or for everyday travel, to provide appropriate access to locations and demand generators and to recognise the importance of 'place'. Place is particularly important at the local level and in urban environments. Defining customer levels of service (CLoS), outcomes that are 'fit for purpose' for each category is a key part of the work associated with defining the attributes of each category of road and so is an integral part of this project.

However, roads and routes in the same defined category will not necessarily always look the same throughout the network – e.g. a suburban street and rural service road may be classified the same but have a different form (how the road looks). Some longer distance routes such as a state highway passing through communities might change their local function and hence form along their length. Also, the role of some roads changes during the day, especially in urban areas – a road might service passenger transport priorities in morning and afternoon peaks, while pedestrian needs might feature more highly during the day. Lastly, freight and the servicing of premises might take place outside these hours.

WHY INTRODUCE A ONE NETWORK ROAD CLASSIFICATION?

The Government Policy Statement 2012/13 – 2021/22 (GPS) requires a clear focus on value for money across all aspects of the National Land Transport Programme. The Government recognised that there were opportunities to improve value for money in the procurement of road maintenance and renewals. The Ministerial Road Maintenance Taskforce (RMTF) was established and identified key opportunities to improve asset management practices, including:

- Adapting business models
- **Improved prioritisation of investment – using a national road classification with levels of service**
- Advanced asset management
- Improved procurement practices.

The Road Efficiency Group (REG), a joint local government/Transport Agency initiative, was established to drive appropriate implementation of the findings of the RMTF. The ONRC project is one of the REG work-streams, with project team members drawn from local government, the Transport Agency, the Department of Conservation and the Ministry of Transport.

The ONRC will be used by:

- **Road Controlling Authorities** (local authorities, the Transport Agency's Highway and Network Operations Group, the Department of Conservation and Waitangi National Trust) to increasingly help deliver a consistent customer level of service to road users nationwide.
- **The Transport Agency** to help prioritise investment decisions across different nationally defined categories of roads. The ONRC will therefore be used to help inform the investment priorities in the National Land Transport Programme, beginning in the 2015-18 period. It is intended that road controlling authorities will also therefore be able to use the classification to help guide their own decisions about investing in the different road categories.
- **The Ministry of Transport** to understand the state and performance of the overall nationwide roading network, which will inform its advice on the Government Policy Statement on Land Transport 2015 as well as other policy development.

The ONRC will have a number of benefits:

- Support more consistent asset management across the country – a matter of direct concern to the Transport Agency and RCAs alike.
- Over time, road users can increasingly expect to have similar experiences across the country, on roads in the same category. This will aid journey safety and consistency.
- Make collaboration and prioritisation easier between those organisations responsible for the planning, delivery, operation and maintenance of the nation's road network, leading to a more efficient and safer network and improved value for money.

The ONRC aims to provide a **nationally consistent framework** that is at the same time guided and informed by the local and regional context. To achieve that consistency, the framework needs to focus on key functional attributes at a high level in order to be able to realise consistent road categories that reflect New Zealand's diverse network. The framework with its broad road categories will also provide RCAs with a **common language** with which to have a conversation with the Transport Agency and other RCAs about their specific network – and its investment needs.
It is fully expected that RCAs will also apply more sophisticated models and approaches to network management of their own, that are consistent with this common framework, such as deploying supplementary tools to assist with asset management that ensure operational and maintenance value for money decision making.

The classification will also help with collaborative inter-regional freight planning, the national speed management project and link with Network Operating Planning and a range of other initiatives designed to integrate network decision making.

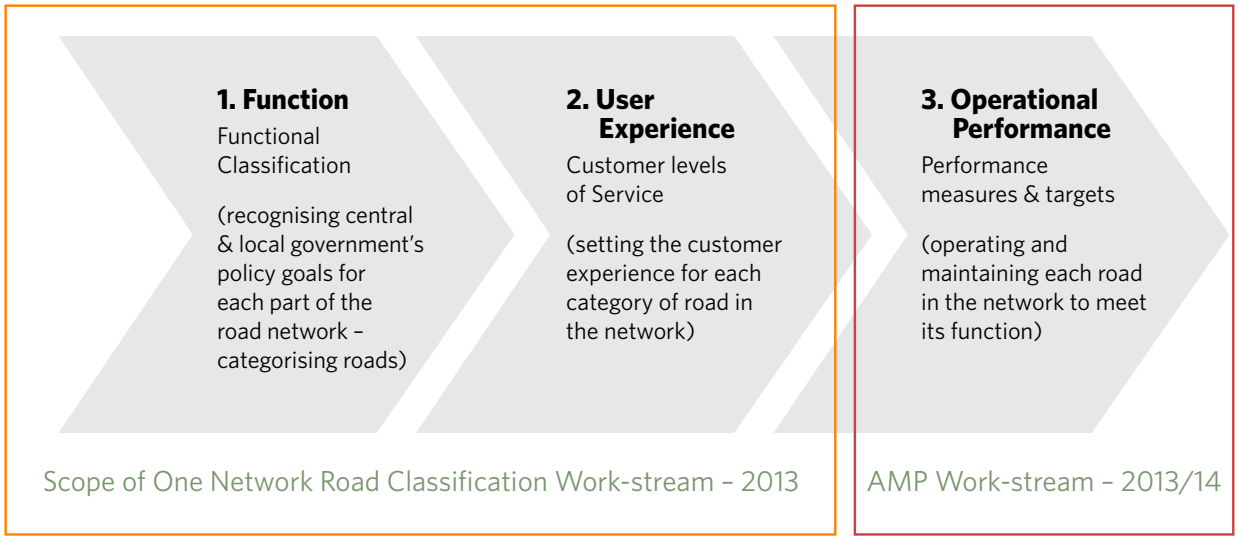
The development of the ONRC, therefore, contributes to a **range of important government priorities,** as set in the National Infrastructure Plan 2011, the Government Policy Statement on Land Transport Funding and the Safer Journeys Strategy. In particular, it is the cornerstone for the REG's efforts to promote appropriate operations and maintenance of road assets across the country and support investment in new and improved transport infrastructure at the national, regional and local level, where appropriate.

CLASSIFYING THE ROAD NETWORK

The ONRC has three components:

1. **A Functional Classification**
2. **Customer Levels of Service**
3. **Performance Measures and Targets**

Classifying roads involves placing them in categories based on the primary function(s) each perform. This information helps inform decisions about the associated customer level of service that a particular category of road should offer; and in turn, the operational performance the road needs to deliver to meet that level of service for the customer.



Customer levels of service are the experience a road user should have, over time, on a particular category of road. In many cases this will be the same as the experience currently offered on these roads today. However, in some cases there may be a gap between what is experienced and what should be experienced or is 'fit for purpose' (either more or less). When working out the customer levels of service associated with each category of road, a range of variables need to be considered including road function, traffic movement, the expectations of users, user mode share, safety and speed needs as well as funding opportunities available for investment in the network.

The following principles have therefore guided the development of the ONRC:

- **Partnership approach** between RCAs (including DoC) and the Transport Agency with input from the Ministry of Transport
- **A simple and transparent framework** that is easy to use and will support nationally consistent application and journey continuity
- **Build on existing work** – State Highway classification, draft national road classification system, international best practice examples and regional and local classification frameworks
- **Incorporate quantitative & qualitative criteria:**
  - Quantitative – where consistent and readily available national data sets exist
  - Qualitative – value local and regional knowledge
- **An agile framework** – able to accommodate current & future state data and respond to changing circumstances/needs at national/local level
- **Evolve & incorporate economic value data** – when this becomes nationally available
- **Periodically review** the framework to recognise changes nationally, regionally and locally in the operating environment. This review period is likely to fit with the development of each NLTP.

COMPONENT ONE OF THE ONRC – A FUNCTIONAL CLASSIFICATION

PRINCIPLES FOR USE

- Consistency (supported by appropriate logic) – the Functional Classification has quantitative and qualitative criteria that seek to balance national consistency with local knowledge. It is not a 'paint by numbers' tool but should be used with some flexibility. For example, the thresholds for the typical daily traffic (AADT), or population counts for communities should be seen as approximations rather than requiring an exact number.
- Coherence – the result of applying the Functional Classification should be a coherent network that provides route continuity.
- Valuing local knowledge – the Functional Classification relies on the local knowledge of RCAs to complete the categorisation of roads, particularly with respect to 'place' functions (for example, critical connectivity, route continuity and regionally or locally significant tourism destinations and scenic routes).
- In general, there should not be parallel routes with the same function in the upper categories of the Functional Classification (National, Regional and Arterial categories).

THE FUNCTIONAL CLASSIFICATION CATEGORIES

As a result of feedback from regional engagement, the project team have developed a Functional Classification consisting of six road categories with additional high and low volume subsets (see the attached Functional Classification table, Appendix 1). Although the functions of the roads in these subsets are the same as their parent category the subsets recognise the high and low volumes at the top and bottom of the classification. In particular, the low volume subset provides a useful level of differentiation at the lower end of the classification, identifying cul de sacs and service lanes in urban areas while differentiating important 'spine' roads from low volume access roads in rural areas.

There are criteria and thresholds for each category, reflecting the functions the road performs within the network. To be included in a particular category a road must meet the thresholds for a specified number of criteria.

The six functional categories are:

- *National:* These are roads that make the largest contribution to the social and economic wellbeing of New Zealand by connecting major population centres, connecting to major ports or international airports and have high volumes of heavy commercial vehicles or general traffic. They must meet the thresholds for 3 criteria or more, including at least one of the following movement criteria (Typical Daily Traffic, Heavy Commercial Vehicles or Buses Urban Peak) and at least one of the economic and social criteria (i.e. 3 in total). To be included in the high volume subset a road must also meet one of the high volume criteria for Typical Daily Traffic or Heavy Commercial Vehicles.
- *Regional:* These roads 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. As well as meeting at least one of the following movement criteria (Typical Daily Traffic, Heavy Commercial Vehicles or Buses Urban Peak) these roads need to meet at least one of the economic and social criteria (i.e. 2 in total).
- *Arterial:* These roads make a significant contribution to social and economic wellbeing, link regionally significant places, industries, ports or airports and may be the only route available to some places within the region (i.e. they may perform a significant lifeline function). In urban areas they may have significant passenger transport movements and numbers of cyclists and pedestrians using the road. As well as meeting at least one of the following movement criteria (Typical Daily Traffic, Heavy Commercial Vehicles or Buses Urban Peak) they also need to meet at least 1 other criteria (i.e. 2 in total).

- *Primary Collector:* These are locally important roads that provide a primary distributor/collector function, linking significant local economic areas or areas of population. They may be the only route available to some places within the region and in urban areas they may have moderate passenger transport movements and numbers of cyclists and pedestrians using the road. These roads need to meet at least one of the movement criteria (Typical Daily Traffic, Heavy Commercial Vehicles or Buses Urban Peak (i.e. 1 in total). The other criteria are then considered to provide a local 'ground truthing' check, and in some instance by considering these criteria, this may result in a road moving up or down a category to reflect the function of the road.
- *Secondary Collector:* These are roads that provide a secondary distributor/collector function, linking local areas of population and economic sites and may be the only route available to some places within this local area. These roads need to meet at least one of the movement criteria (Typical Daily Traffic or Heavy Commercial Vehicles (i.e. 1 in total). The other criteria are then considered to provide a local 'ground truthing' check, and in some instance by considering these criteria, this may result in a road moving up or down a category to reflect the function of the road.
- *Access:* These are all other roads. Low volume roads within this category will fall into the low volume subset.

CLASSIFICATION CRITERIA

Criteria and thresholds have been identified that are proxies for the function(s) and relative importance of roads in the context of the national network. Ten functional criteria have been used with a focus on criteria underpinned by currently available data, either generally held by all RCAs or publicly available from the Ministry of Transport or Statistics New Zealand. They are a mix of proxies for measuring roads' economic growth & productivity contribution, their social contribution and their link and place functions. The variables selected following sector engagement are:

- Typical daily traffic (average annual daily traffic): a proxy for economic activity based on the movement of people. Also a proxy for traffic generators with both economic and social/place dimensions such as employment locations, shopping areas and schools/tertiary institutions
- Heavy commercial vehicles (daily vehicle flows): a proxy for economic productivity through connecting major industrial/commercial and distribution centres to markets
- Buses (buses per hour and/or bus passengers per hour – urban peak): proxy for bus link and 'density of exchange' place functions
- Active modes (significant numbers of pedestrians and cyclists (urban peak) or part of identified cycling or walking network): proxy for 'density of exchange' place function
- Linking places (centres of population): Major urban areas have the highest concentration of economic activity in employment and firms
- Critical connectivity (remote regions/sole connectivity in urban areas or access to significant critical infrastructure): A further important function of routes/roads is linking remote regions or providing sole connectivity in urban areas and providing critical connectivity (lifeline connections) where there are no alternative routes, particularly in rural areas
- Freight tonnes and values at ports and inland ports (per annum): key economic criteria utilised by the State Highway Classification and provides a useful indicator of the significance of a route/road in economic terms
- Airport passenger numbers (annual): proxy for economic productivity
- Significant tourism destinations and significant scenic routes: proxy for the significance of tourism to the New Zealand economy in rural and urban areas alike
- Access to tertiary or regional hospitals: proxy for an important social place function.

MOVEMENT OF PEOPLE AND GOODS CRITERIA

Testing by the project team indicates that the Typical Daily Traffic and Heavy Commercial Vehicles (HCV) criteria work well as a means of differentiating between most roads, particularly at the lower categories and in provincial urban and rural areas. In some urban areas, HCV counts can initially be skewed too high by the inclusion of light commercial vehicles in HCV counts – these should be excluded for the purposes of classification.

Both the number of urban bus movements and number of passengers carried by buses per hour during the peak are used for the bus movement criteria. Although the number of passengers is probably more significant than the number of buses the project team considered that by using the number of bus movements, a rough comparison can be made with the number of people movements compared to those in private motor vehicles using the road to assist apportionment of road space to maintain a relative form of equality between the two.

Due to the difficulty of identifying New Zealand wide validated walking and cycling data the project team have included a general qualitative walking and cycling criteria – 'significant numbers of pedestrians and cyclists (urban peak) or part of a cycling or walking network' for the arterial down to access categories. Although it is recognised that cyclists and pedestrians will be moving along and across regional and national categories, particularly in urban areas, they do not contribute to the classification of these categories as they need to meet both a movement and economic/social criteria. In contrast, the walking and cycling criteria will contribute to the classification of roads from arterial down but will not be the determining factor due to the qualitative aspect of the criteria.

To meet the movement criteria a road would have to meet the thresholds for the relevant category.

ECONOMIC AND SOCIAL CRITERIA

To meet the economic and social criteria a road needs to do the following:

- Linking places – connect cities or towns with the relevant population threshold. For example: SH6 connects Greymouth (pop: ~>10k) to Nelson. This should be identified as the main route rather than the same criteria (linking places ~>10K) being used for multiple parallel routes. In the metropolitan areas of Auckland, Wellington and Christchurch connecting **major** sub-regional metro areas with the relevant population threshold (for example, Takapuna CBD to Auckland CBD, or Lower Hutt CBD to Wellington CBD).
- Connectivity:
  - Connect remote regions (as per regional council boundaries, e.g. SH73 to the West Coast), remote areas within regions or provide sole connectivity in urban areas (e.g. Lake Road in Devonport).
  - Critical connectivity:
    - Provide a critical life-line route (e.g. for civil defence) or because there are no alternative routes
    - Provide a critical connectivity function to a significant place. These may be critical infrastructure such as water treatment plants or places critical to RCAs such as quarries.
- Freight – Inland ports/ports – connect directly to a port or inland port. This needs to be the main route to the port/inland port rather than a parallel route – these will generally be state highways, or the 'last mile' from a state highway to the port.
- Airport passenger numbers – connect directly to an airport. Like the freight criteria above this needs to be the main route to the airport rather than a parallel route.
- Tourism:
  - Connect directly to the top 5 destinations (Milford Sound, Bay of Islands, Waitomo Caves, Rotorua, Queenstown)
  - Connect directly to a regionally/locally **significant** tourist destination or is a regionally/locally **significant** scenic tourist route. It is up to RCAs to determine these roads from their knowledge of their local area, but examples might include: major access points to National Parks or major tourist attractions

- Hospitals: provide direct access to tertiary or regional hospitals. This needs to be the main route to the hospital rather than a parallel route.

Where these metrics are numerical the thresholds should be seen as approximate, +/- 10%.

CATEGORISING A ROAD

Decision trees have been developed to assist with the process of categorising a road into one of the categories (see Appendix 2).

From the Arterial category down the non-movement criteria (linking places, connectivity, freight, airport passengers, tourism and hospitals) should be considered to provide a local 'ground truthing' or qualitative assessment, and in some instances by considering these, this may result in a road moving up one category to reflect the function of the road. For example, an Access road may provide critical connectivity or provide access to a regionally or locally significant tourist destination warranting it moving up a category to Secondary Collector even through it does not conform to the movement criteria for that category. However when considering the non-movement criteria an assessment needs to be made as to whether these criteria really do signal a significant change to the overall function of the road and therefore warrant it moving up a category.

Alternatively, there may **occasionally** be circumstances where, in an RCAs expert judgment, a road should drop a category lower than the classification determines.

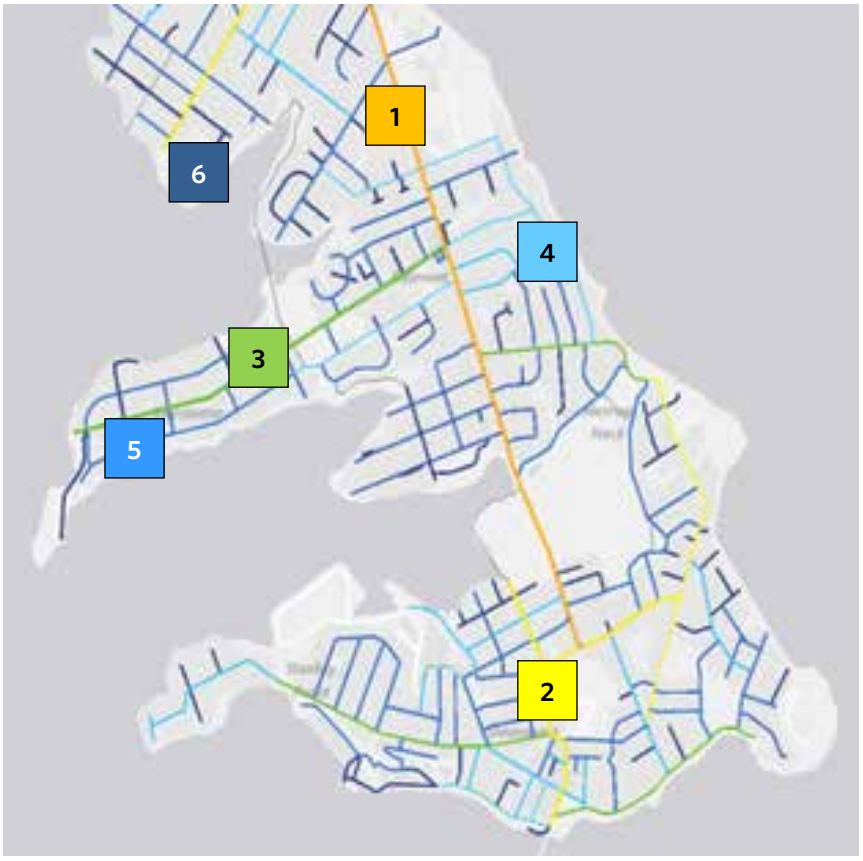
Examples of the Functional Classification being applied to parts of the roading network are mapped below. For each map the criteria that some of the roads meet have been highlighted in the adjacent table to illustrate the classification process. These are **indicative classifications only** not final (further local/regional validation will be required to finalise some roads).

The maps show areas of:

- Auckland – Devonport
- Western Bay of Plenty – Paengaroa area
- Waitaki – rural area north of Oamaru
- South Island State Highways – Southern region.

The Functional Classification is designed to accommodate current state or future state data.

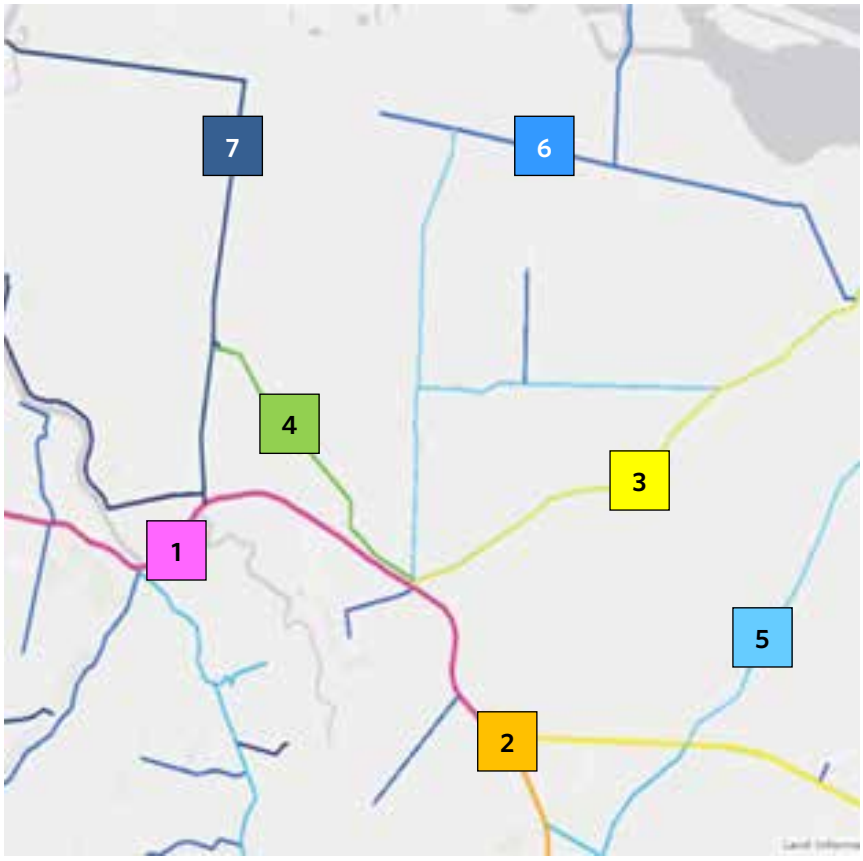
EXAMPLE 1: AUCKLAND – DEVONPORT



Indicative classification only – not final

KEY	ROAD CATEGORY	ROAD NAME	CRITERIA ROAD MEETS
	Regional	Lake Road (1)	2 criteria: Meets Typical Daily traffic, HCV & Bus criteria for *National* but doesn't meet any of *National* economic/social criteria, therefore consider *Regional*. Meets critical connectivity criteria for *Regional* (sole connectivity in urban areas)
	Arterial	Albert Road (2)	2 criteria: Meets Typical Daily Traffic and HCV criteria for *Arterial*
	Primary Collector	Bayswater Avenue (3)	1 criteria: Meets Typical Daily Traffic and HCV criteria for *Primary Collector*
	Secondary Collector	Hamana St (4)	1 criteria: Meets Typical Daily Traffic and HCV criteria for *Secondary Collector*
	Access	Norwood Road (5)	Meets Typical Daily Traffic criteria for *Access*
	Access (low volume)	Marsden St (6)	Meets Typical Daily Traffic criteria for *Access Low Volume*

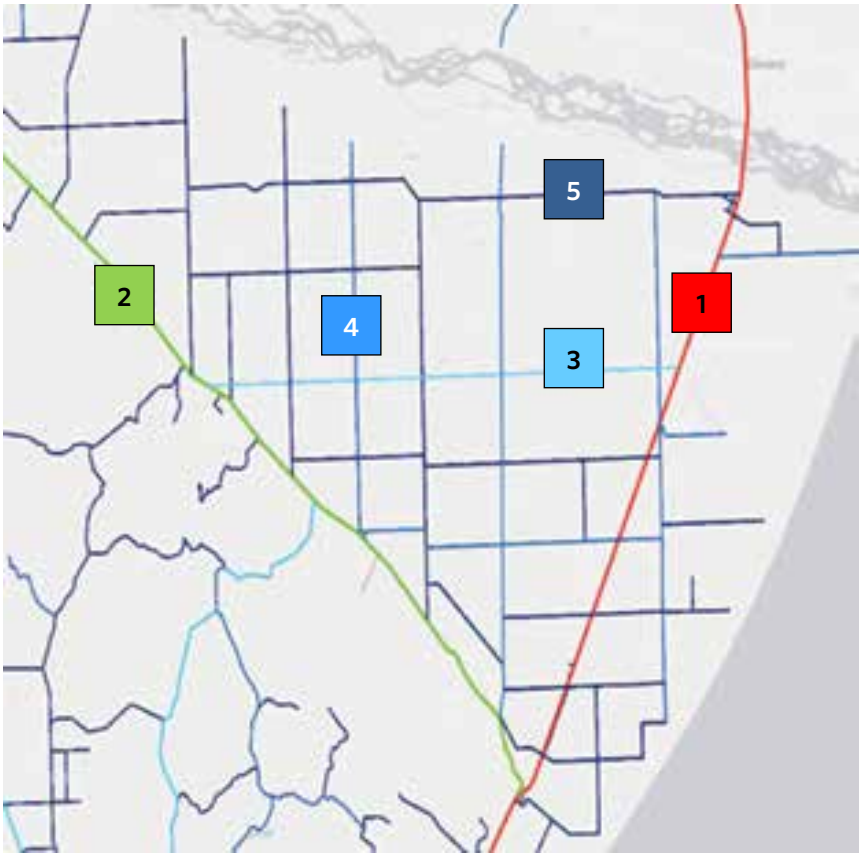
EXAMPLE 2: WESTERN BAY OF PLENTY – PAENGAROA AREA



Indicative classification only – not final

KEY	ROAD CATEGORY	ROAD NAME	CRITERIA ROAD MEETS
	National (high volume)	SH2 Tauranga to Te Puke (1)	3 criteria: Meets HCV volumes, linking places (Tauranga to Rotorua), access to Tauranga port for *National.* And above HCV threshold for *National High Volume* sub-category
	Regional	SH33 (2)	2 criteria: Meets HCV & Linking places (Tauranga to south – route continuity with SH2) criteria for *Regional*
	Arterial	Maketu Road (3)	2 criteria: Meets Typical Daily Traffic and HCV criteria for *Arterial*
	Primary Collector	Young Road (4)	1 criteria: Meets HCV criteria for *Primary Collector*
	Secondary Collector	Wilson Road North (5)	1 criteria: Meets Typical Daily Traffic and HCV criteria for *Secondary Collector*
	Access	Kaituna Road (6)	Meets Typical Daily Traffic criteria for *Access*
	Access (low volume)	Pah Road (7)	Meets Typical Daily Traffic criteria for *Access Low Volume*

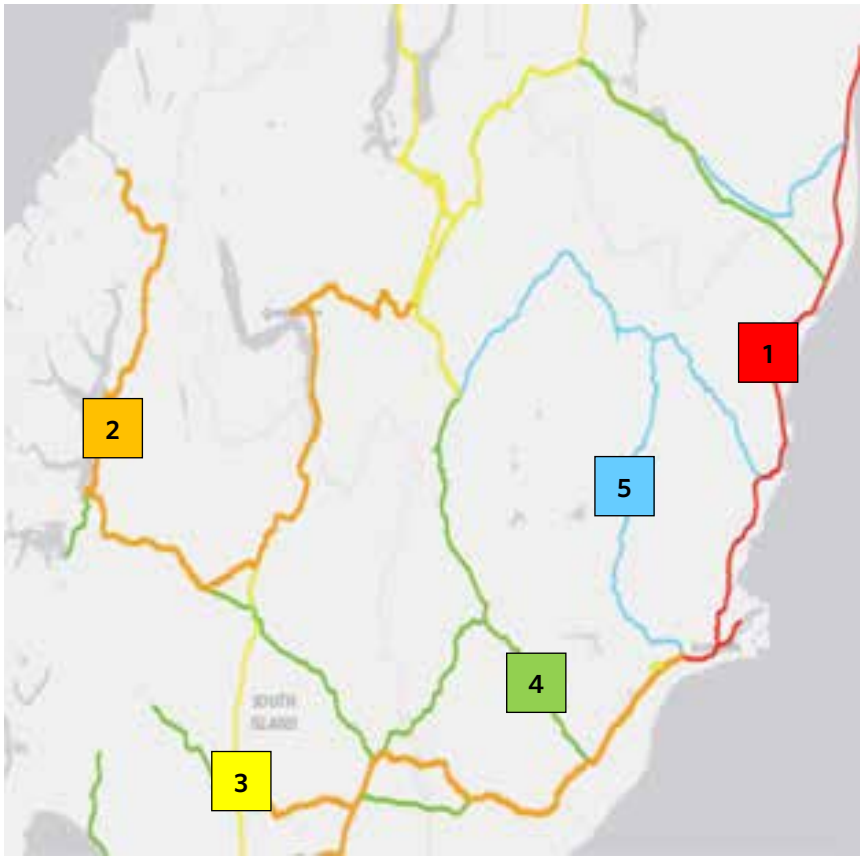
EXAMPLE 3: WAITAKI – RURAL AREA NORTH OF OAMARU



Indicative classification only – not final

KEY	ROAD CATEGORY	ROAD NAME	CRITERIA ROAD MEETS
	National	SH 1S (1)	3 criteria: Meets Linking places (Christchurch to Dunedin), access to port (Christchurch & Dunedin), and HCV criteria for *National*
	Primary Collector	SH 83 (2)	1 criteria: Meets HCV criteria for *Primary Collector*
	Secondary Collector	Seven Mile Road (3)	1 criteria: Meets Typical Daily Traffic and HCV criteria for *Secondary Collector*
	Access	Papakaio Road (4)	Meets Typical Daily Traffic criteria for *Access*
	Access (low volume)	McPherson Road (5)	Meets Typical Daily Traffic criteria for *Access Low Volume*

EXAMPLE 4: SOUTH ISLAND STATE HIGHWAYS – SOUTHERN REGION



Indicative classification only – not final

KEY	ROAD CATEGORY	ROAD NAME	CRITERIA ROAD MEETS
	National	SH 1S (1)	3 criteria: Meets Linking places (Christchurch to Dunedin), access to port (Lyttleton & Port Chalmers), and HCV criteria for *National*
	Regional	SH94 (2)	2 criteria: Meets Airport passenger numbers (Queenstown) and linking two of the five top 5 tourist destinations (Queenstown and Milford Sound) for *Regional*[1]
	Arterial	SH 6 (3)	2 criteria: Meets HCV criteria for *Arterial* and provides critical connectivity (Queenstown to Invercargill)
	Primary Collector	SH 8 (4)	1 criteria: Meets HCV criteria for *Primary Collector*
	Secondary Collector	SH 87 (5)	1 criteria: Meets Typical Daily Traffic and HCV criteria for *Secondary Collector*

1 There are three state highways deemed to be regional where they only meet economic and social criteria, and not 1 of the movement criteria as well. These are SH 94 (Queenstown airport passenger numbers and linking Queenstown and Milford Sound, two of the five top 5 tourist destinations); SH 73 (linking places and remote regions); SH 2, Napier to Gisborne (linking places and remote regions).

COMPONENT TWO OF THE ONRC – *PROVISIONAL* CUSTOMER LEVELS OF SERVICE

The provisional customer levels of service (CLOS) associated with each category of the Functional Classification, and accompanying set of principles to inform their context specific application are outlined below. (See the attached Customer Levels of Service (CLOS) Fit for Purpose Outcomes Table in Appendix 3 detailed descriptors).

In developing the provisional CLOS we have drawn on the draft levels of service developed for the draft National Road Classification, the provisional levels of service and principles of the State highway classification, Network Operating Planning thinking, recent work by Austroads on levels of service and feedback from regional engagement.

The CLOS describe the 'fit for purpose' customer experience each category of road should provide to road users, over time, if the road is to fulfil its function within the national network.

The six CLOS variables are:

Mobility:

- Travel time reliability: the consistency of travel times that road users can expect
- Resilience: the availability and restoration of each road when there is a weather or emergency event, whether there is an alternative route available and the road user information provided
- Optimal speeds (safety and efficiency): indicates the optimal speed for each road. The optimal speed is the speed that is appropriate for road function (classification), design (including safety) and use. Optimal speeds support both safety and economic productivity.

Safety:

- How road users experience the safety of the road.

Amenity:

- The level of travel comfort experienced by the road user and aspects of the road environment (e.g. cleanliness, comfort/convenience and security) that impact on the travel experience of road users in the road corridor.

Accessibility:

- The ease with which people are able to reach key destinations and the transport networks available to them – includes land use access and network connectivity.

The CLOS are deliberately broad so for each functional category they should be read as encompassing urban and rural roads and describe 'fit for purpose' outcomes for all modes – light and heavy vehicles, buses, cyclists and pedestrians.

The following overarching principles provide the strategic context within which the CLOS 'fit for purpose' outcomes should be understood:

1. Over time all roads in a particular category should offer an increasingly consistent, fit for purpose customer level of service for road users.
2. Value for money and whole of life cost will be optimised in the delivery of affordable customer levels of service.
3. The customer levels of service will be delivered in the context of an integrated national network, integrating land use and transport, including all modes and both rural and urban areas.
4. The customer levels of service will be delivered in the context of a safe system approach, which aims to create a forgiving road system, where human error and vulnerability do not result in death or serious injury.

The following foundation principles guide the implementation of the CLOS:

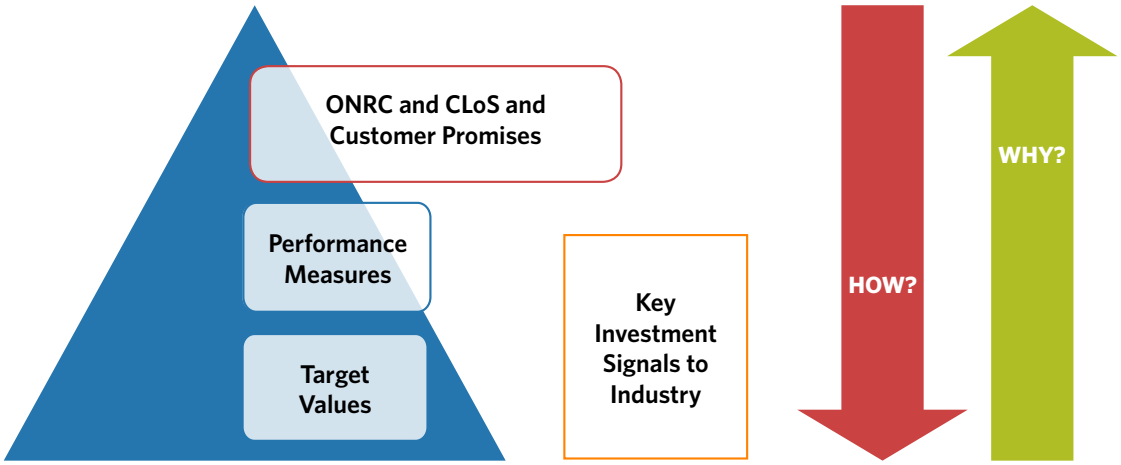
1. Customer levels of service are delivered in line with Approved Organisation's (AO) principles regarding:
   - › empathy (understand & respond to needs of customers),
   - › assurance (demonstrate competence & capability),
   - › response (customer's request for service will be responded to), and
   - › tangibles (customers are aware of service that RCA provides).
2. Capacity limits on the network may require actions that shape demand to provide for the cost effective and efficient travel choice needs for customers.
3. The delivery of customer levels of service for all modes will be optimised by time of day consistent with the principles of network operating planning and asset management planning.
4. Local factors (e.g. topography, geology, climate, adjacent land use and 'place' function, population density) may influence delivery of the customer levels of service.
5. The functional classification and its customer levels of service will be reviewed regularly.
6. The resilience LOS delivered for any route in the network will consider whether it functions as a critical lifeline for nationally significant infrastructure, and its resilience will be delivered by considering a multi-modal, whole-of-network approach.
7. Access to the transport network by network utility operators and community events will be managed to limit the impact on transport network users.

The CLOS are provisional because they will continue to be refined through an iterative testing process, as the performance measures are developed by the AMP Group. They will also be subject to value for money testing as the NLTP 2015-18 is developed during 2014, and they will be amended, if required, to ensure they drive appropriate value for money investment decisions by RCAs.

COMPONENT THREE OF THE ONRC – PERFORMANCE MEASURES AND TARGETS

The third component of the ONRC is the performance measures and targets. These are being developed at the moment and will be tested and refined with the sector in the first half of 2014.

The process being used leverages off work undertaken by the Transport Agency's HNO Group in their development of performance measures for the Network Outcomes Contracts. The following Diagram shows the process being used, with the one to many relationship between CLOS and measures represented as a pyramid.



USING THE THREE COMPONENTS OF THE ONRC

The three components of the One Network Road Classification (Functional Classification, Customer levels of service and performance measures & targets) work together to deliver the 'fit for purpose' customer levels of service outcomes required for a road to fulfil its function. The steps are:

1. Categorise each road using the functional classification– this will differentiate the road into a specific category based on the main function(s) that the road performs.
2. Based on the function(s) the road is performing, identify the CLOS outcomes that the road should be delivering. For example, for a primary collector that has bus movement as a main function the CLOS outcomes of travel time reliability, amenity and accessibility may be the among the most important CLOS outcomes considered necessary on the road.
3. Consider the current CLOS on the road and what its fit for purpose CLOS should be (using the next level of detail provided by the performance measures and targets) – is it meeting the identified outcomes or is there a gap (more or less)?
4. Assess how to bridge the gap over time to deliver the CLOS outcomes for the road by referring to the relevant performance measures and targets.

Appendix 1: One network road classification - functional classification

ROAD & STREET CATEGORIES/CRITERIA	FUNCTIONAL CRITERIA AND THRESHOLDS									
	MOVEMENT OF PEOPLE & GOODS				ECONOMIC AND SOCIAL					
	← LINK — PLACE →				← LINK — PLACE →					
	TYPICAL DAILY TRAFFIC (AADT)[1]	**HEAVY COMMERCIAL VECHICLES**[2] (daily flows)	**BUSES** (urban peak)[3]	**ACTIVE MODES**[4]	**LINKING PLACES**	**CONNECTIVITY**	**FREIGHT - INLAND PORTS/PORTS** (per annum)	**AIRPORT PASSENGER NUMBERS** (per annum)[5]	**TOURISM**[6]	**HOSPITALS**
NATIONAL Meet 3 criteria (incl. at least 1 of Typical Daily Traffic, HCV or Buses & 1 economic or social) **(HIGH VOLUME)** Meet at least 1 high volume (Typical Daily Traffic or HCV)	U[7]: > 25,000 R: > 15,000 U: > 35,000 R: > 20,000	>800 >1200	> 40 buses or 2000 people per hour		>100,000 population[8]		>2 million tonnes (or >$3 billion)[9]	>3 million[10]		
REGIONAL Meet 2 criteria (incl. at least 1 of Typical Daily Traffic, HCV or Buses & 1 economic or social)	U: > 15,000 R: > 10,000	>400	> 40 buses or 2000 people per hour		>30,000 population[11]	Linking remote regions (regional councils) or sole connectivity in urban areas	>1 million tonnes[12]	>500,000[13]	Top 5 tourist destinations	Access to tertiary hospitals
ARTERIAL Meet 2 criteria (incl. at least 1 of Typical Daily Traffic, HCV or Buses)	U: > 5,000 R: > 3,000	>300	> 15 buses or 750 people per hour	Significant numbers of pedestrians and cyclists (urban peak) or part of identified cycling or walking network	>10,000 population[14]	Critical Connectivity (no alternative routes)		>250,000[15]	Regionally or locally significant tourist destinations or significant scenic routes	Access to regional hospitals
PRIMARY COLLECTOR Meet 1 criteria (incl. at least 1 of Typical Daily Traffic, HCV or Buses)	U: > 3,000 R: > 1,000	>150	> 6 buses or 300 people per hour		>2,000 population					
SECONDARY COLLECTOR Meet 1 criteria (incl. at least 1 of Typical Daily Traffic or HCV)	U: > 1,000 R: > 200	>25			>250 population		< 1 million tonnes	<250,000		
ACCESS All other roads **(LOW VOLUME)** Meet low volume Typical Daily Traffic	U: < 1,000 R: < 200 U: < 200 R: < 50	<25			<250 population					

Functional Classification

There are criteria and thresholds for each category, based on the functions the road performs within the network. To be included in a particular category a road must meet the agreed criteria and thresholds, including at least one of either – typical daily traffic (AADT), heavy commercial vehicles (HCV), or bus (urban peak) as appropriate.

The six functional categories are:

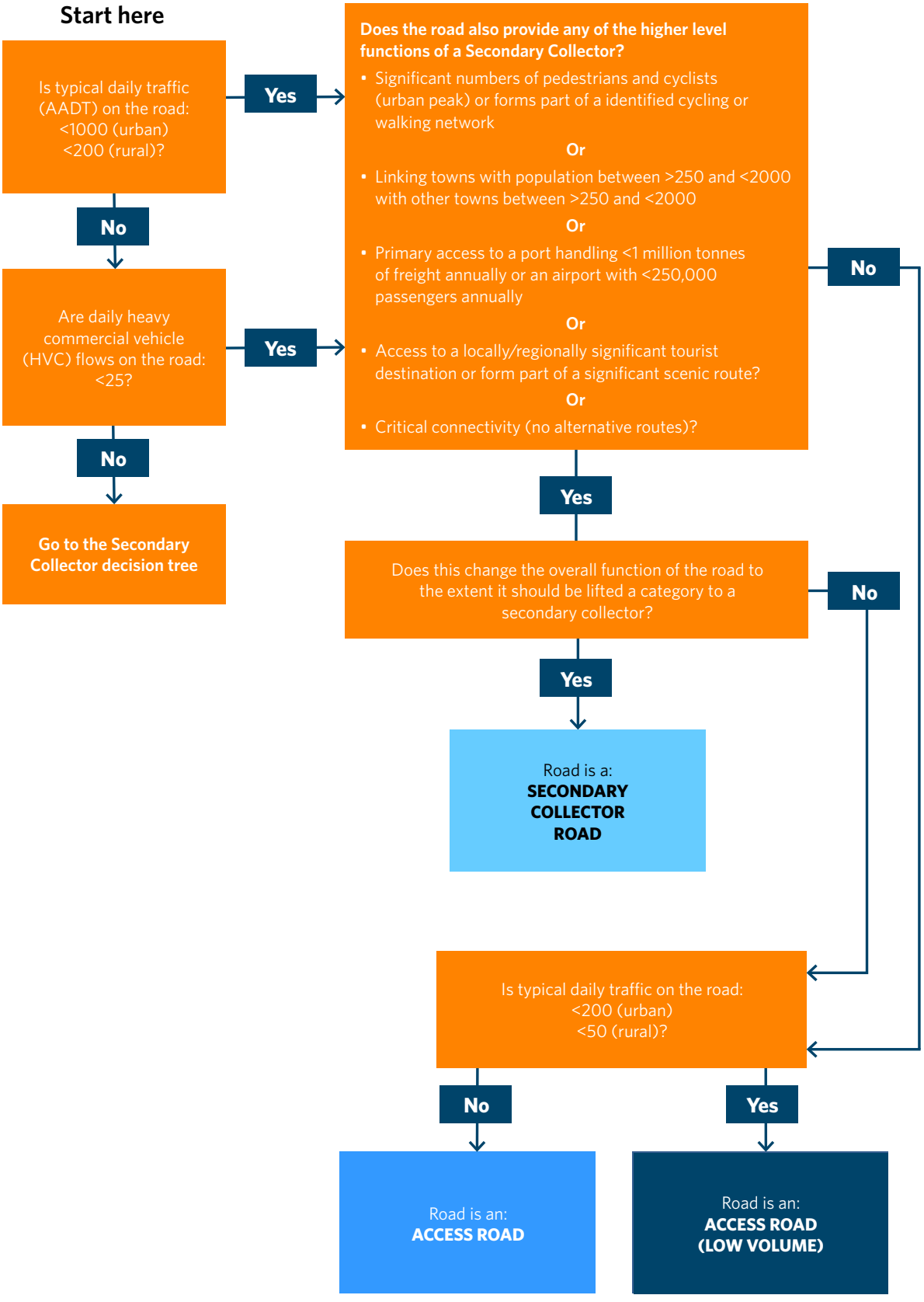
- National: These are roads that make the largest contribution to the social and economic wellbeing of New Zealand by connecting major population centres, major ports or international airports and have high volumes of heavy commercial vehicles or general traffic. They must meet the thresholds for 3 criteria, including at least one of the following movement criteria (Typical Daily Traffic, Heavy Commercial Vehicles or Buses, Urban Peak) and at least one of the economic and social criteria (i.e. 3 in total). To be included in the high volume subset a road must meet one of the high volume criteria for typical daily traffic or HCVs.
- Regional: These roads 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. As well as meeting at least one of the following movement criteria (Typical Daily Traffic, Heavy Commercial Vehicles or Buses, Urban Peak) these roads need to meet at least one of the economic and social criteria (i.e. 2 in total).
- Arterial: These roads make a significant contribution to social and economic wellbeing, link regionally significant places, industries, ports or airports and may be the only route available to some places within the region (i.e. they may perform a significant lifeline function). In urban areas they may have significant passenger transport movements and numbers of cyclists and pedestrians using the road. As well as meeting at least one of the following movement criteria (Typical Daily Traffic, Heavy Commercial Vehicles or Buses Urban Peak) they also need to meet at least 1 other criteria (i.e. 2 in total). The other criteria should then be considered to provide a local 'ground truthing' check, and in some instances by considering these this may result in a road moving up or down a category to reflect the function of the road.
- Primary Collector: These are locally important roads that provide a primary distributor/collector function, linking significant local economic areas or areas of population. They may be the only route available to some places within the region and in urban areas they may have moderate passenger transport movements and numbers of cyclists and pedestrians using the road. These roads need to meet at least one of the movement criteria (Typical Daily Traffic, Heavy Commercial Vehicles or Buses Urban Peak - (i.e. 1 in total). The other criteria are then be considered to provide a local 'ground truthing' check, and in some instance by considering these criteria, this may result in a road moving up or down a category to reflect the function of the road.
- Secondary Collector: These are roads that provide a secondary distributor/collector function, linking local areas of population and economic sites and may be the only route available to some places within this local area. These roads need to meet at least one of the movement criteria (Typical Daily Traffic or Heavy Commercial Vehicles - i.e. 1 in total). The other criteria are then be considered to provide a local 'ground truthing' check, and in some instance by considering these criteria, this may result in a road moving up or down a category to reflect the function of the road.
- Access: These are all other roads. Low volume roads within this category will fall into the low volume subset.

In the Primary/Secondary Collector and Access road categories we propose that the criteria other than the Typical Daily Traffic, Heavy Commercial Vehicles, Bus Urban Peak can be used to move a road up a category on the basis of local knowledge. For example, an Access road may provide critical connectivity or provide access to a regionally or locally significant tourist destination warranting it moving up a category to Secondary Collector even through it does not conform to the movement criteria for that category.

1. Proxy for traffic generators with both economic and social dimensions such as employment, shopping areas and schools/tertiary institutions
2. Proxy for economic productivity – connecting major industrial/commercial and distribution centres to markets.
3. Proxy for bus link and density of 'exchange' place function
4. Proxy for density of 'exchange' place function
5. Proxy for economic productivity
6. Proxy for economic productivity
7. U – Urban, R - Rural
8. Top 7 cities as defined in the Transport Agency Planning Policy and Funding Manual – Auckland, Hamilton, Tauranga, Napier/Hastings, Wellington, Christchurch, Dunedin.
9. Top 8 ports – Tauranga, Auckland, Christchurch, New Plymouth, Marsden, Dunedin, Wellington, Napier plus Auckland International Airport. Break point in tonnages/values.
10. Top 3 airports – Auckland, Wellington, Christchurch. Break points in data.
11. Statistics NZ definition of main urban area
12. Next 3 ports – Picton, Nelson, Bluff
13. Next 2 airports – Queenstown, Nelson
14. Statistics NZ definition – secondary urban area
15. Next 5 airports – Dunedin, Palmerston North, Hamilton, Rotorua, Napier

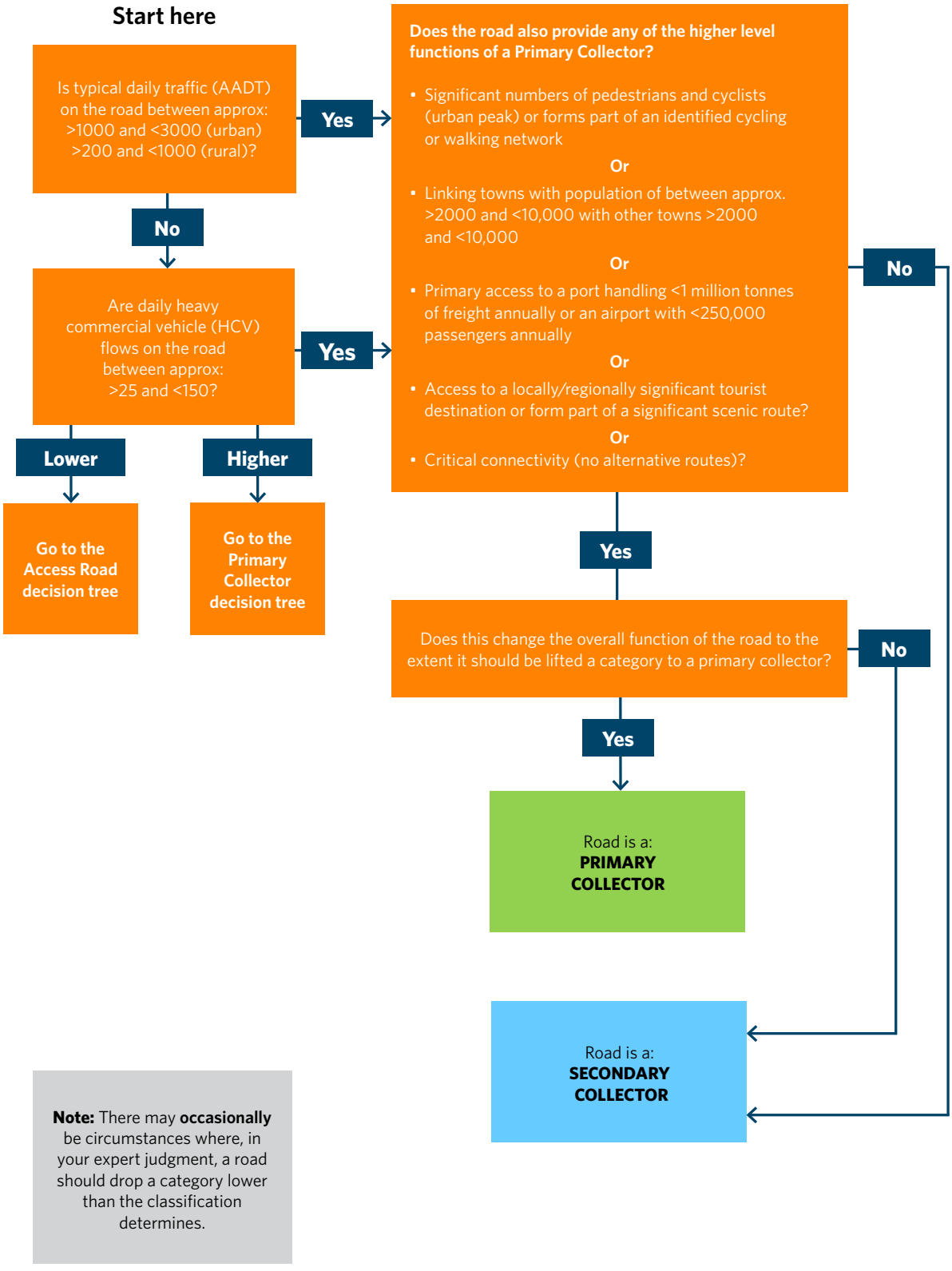
APPENDIX 2: ROAD/STREET CATEGORIES – CLASSIFICATION DECISION TREES

Access Road Decision Tree



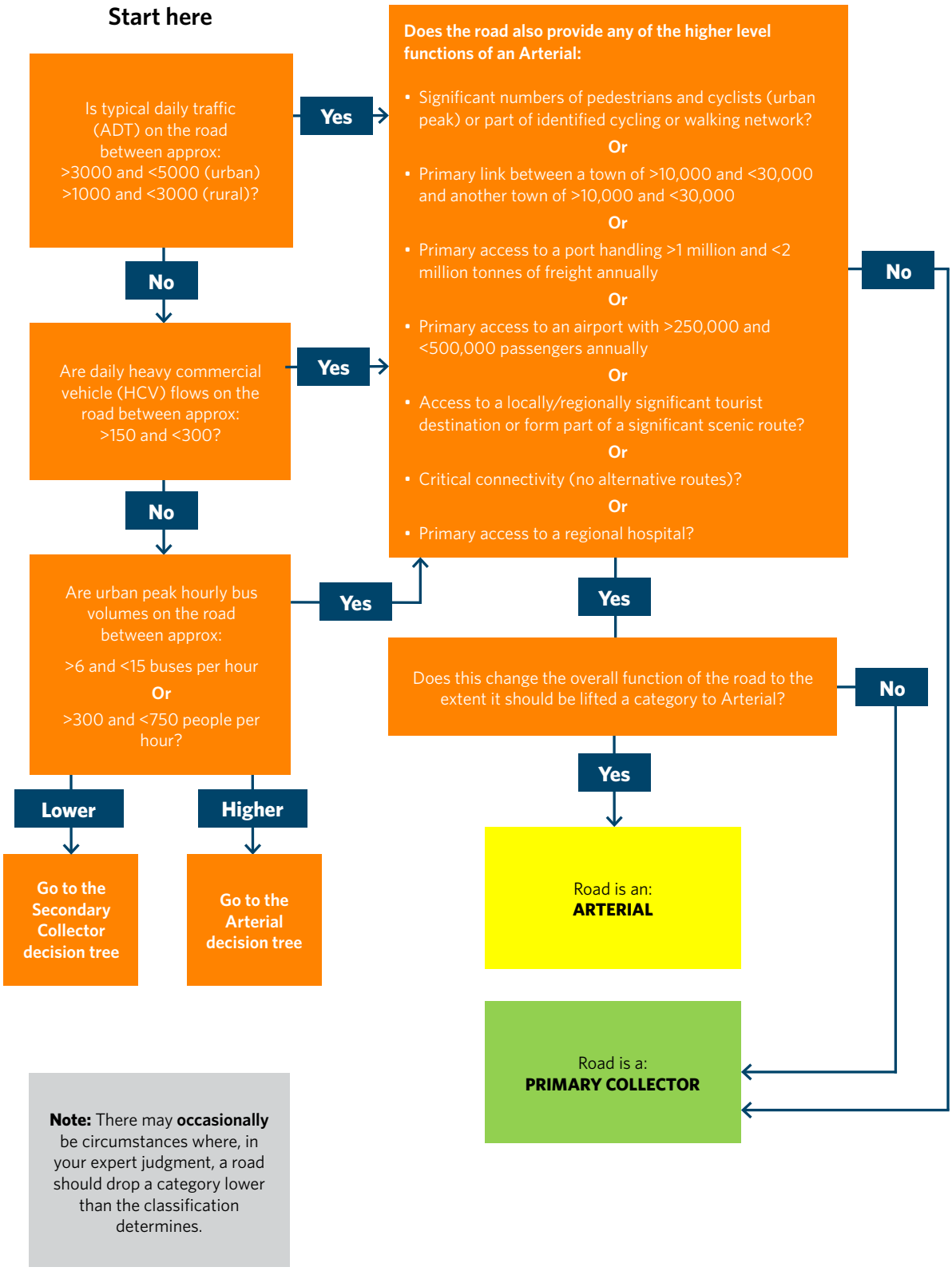
Secondary Collector Decision Tree

(road must meet, at least, the ADT or HCV criteria)



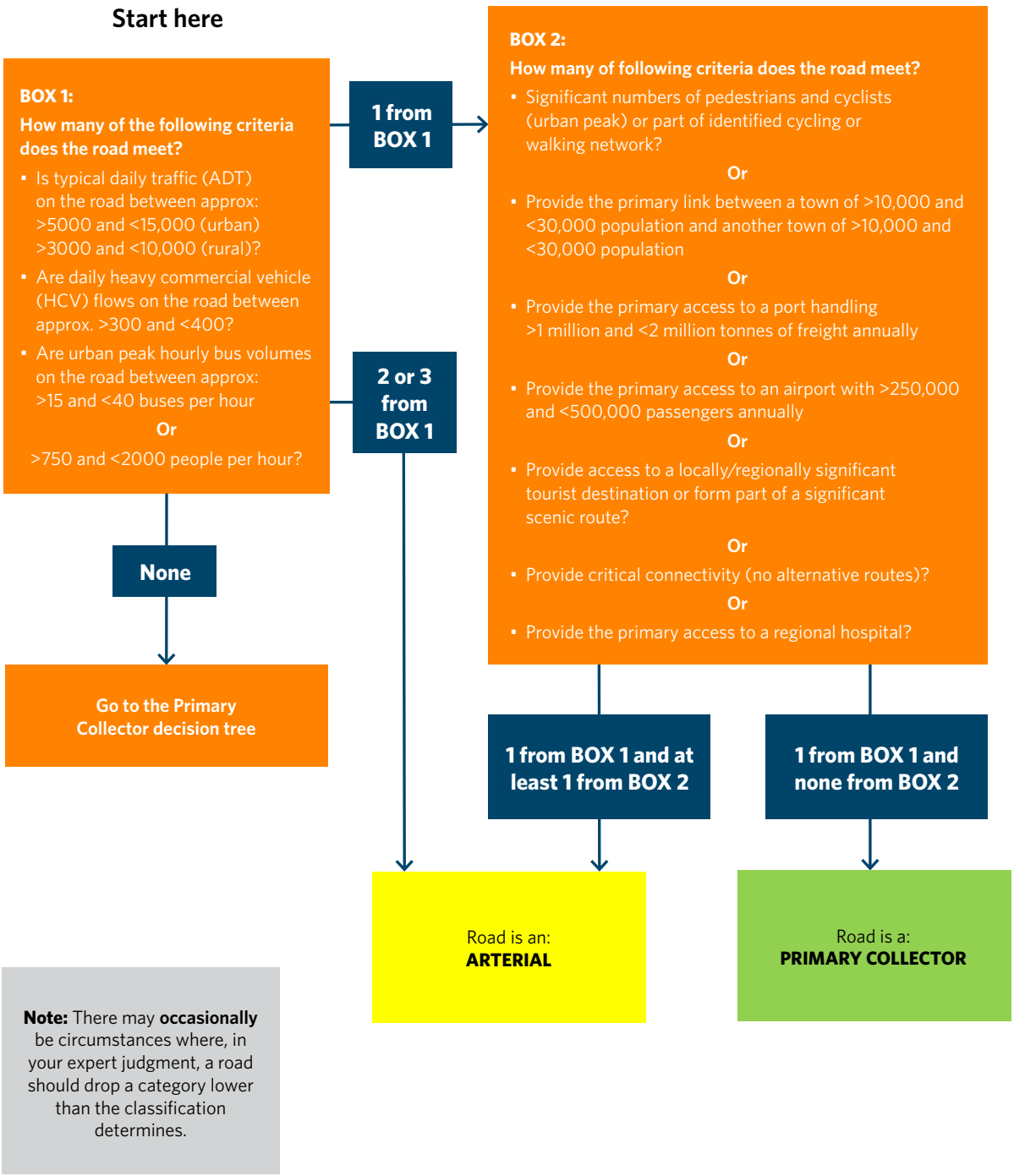
Primary Collector Decision Tree

(road must meet, at least one of the ADT, HCV or bus criteria)



Arterial Decision Tree

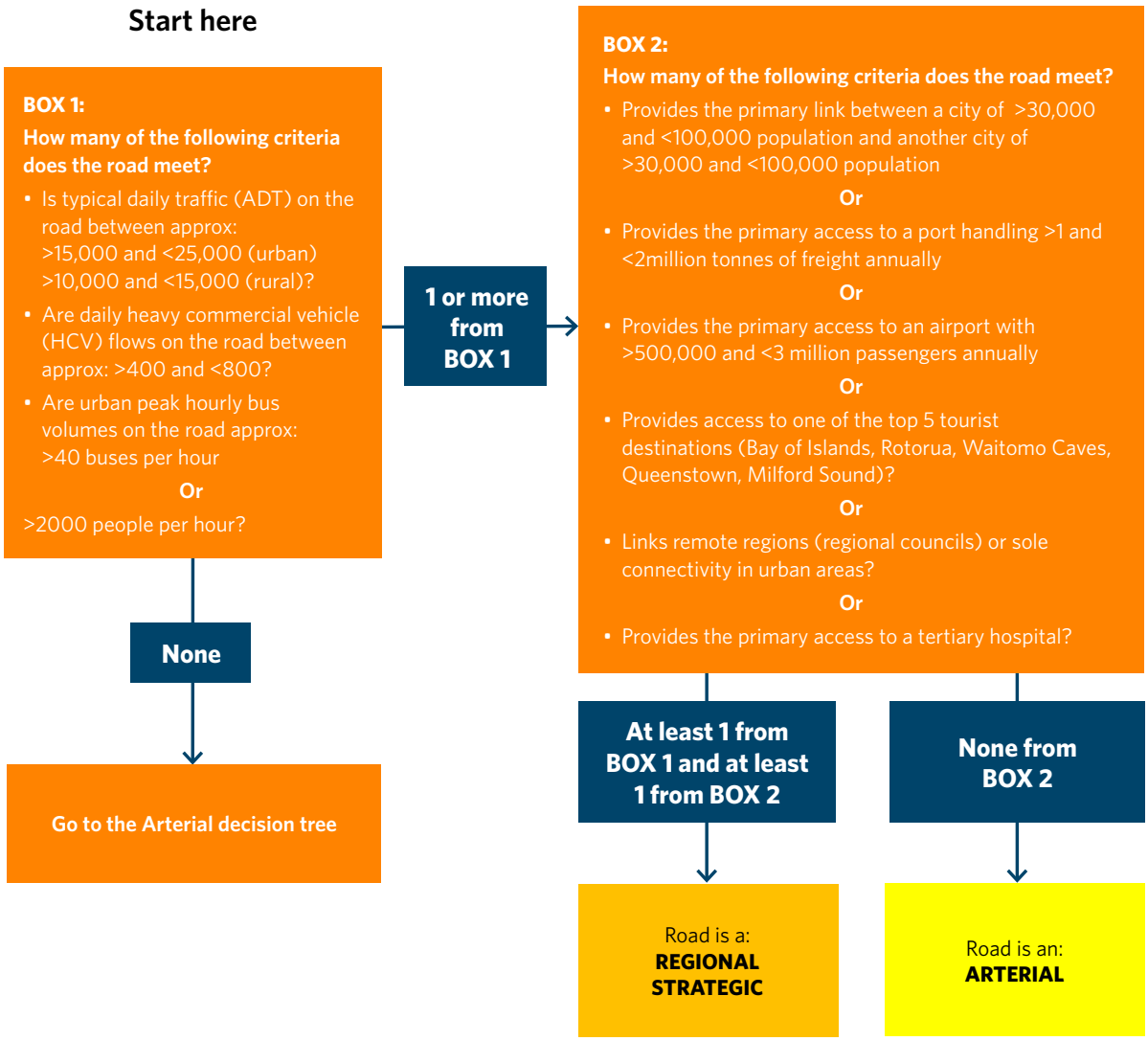
(road must meet 2 criteria in total – including at least 1 from BOX 1)



Note: There may **occasionally** be circumstances where, in your expert judgment, a road should drop a category lower than the classification determines.

Regional Decision Tree

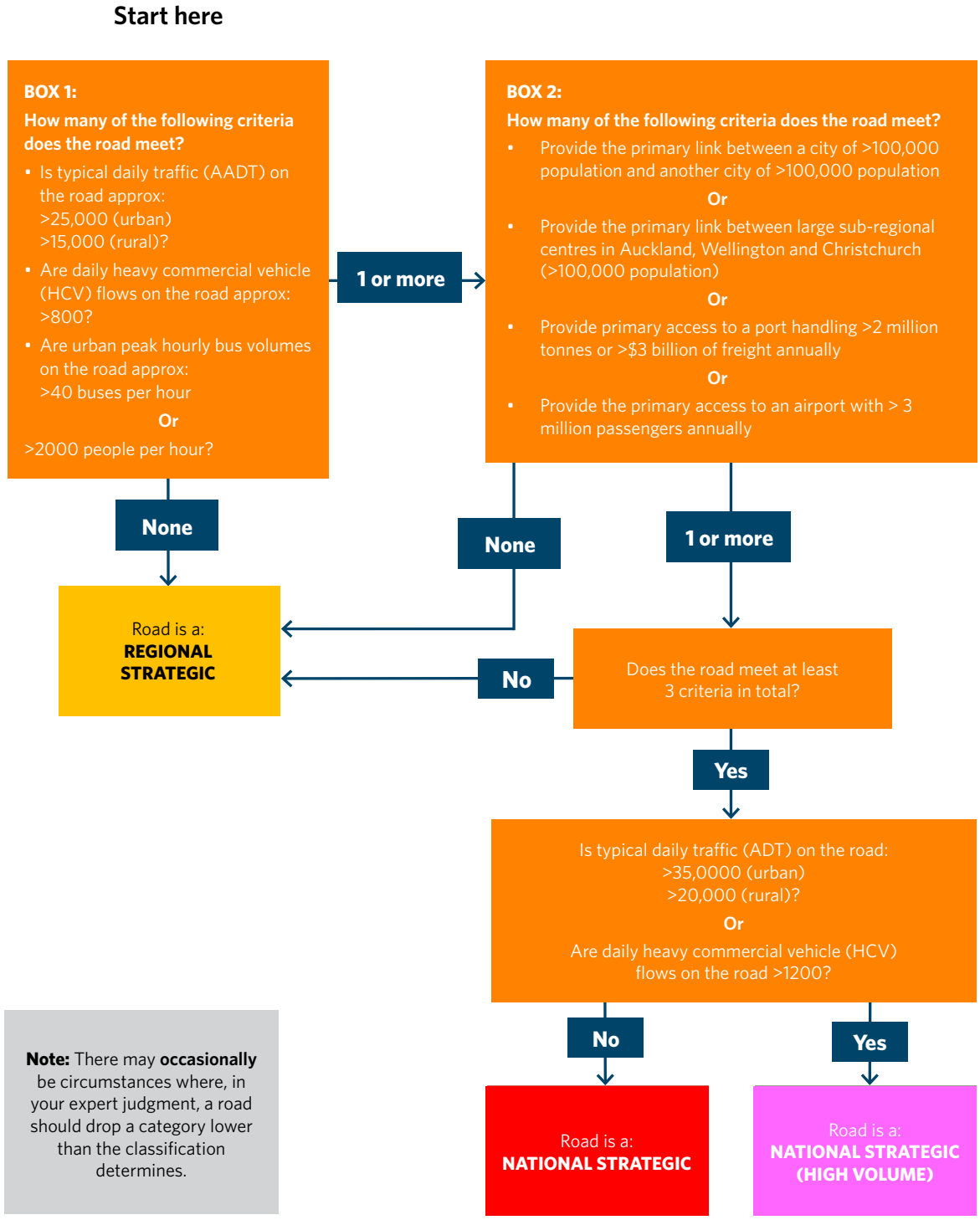
(road must meet 2 criteria in total – including at least 1 from BOX 2)



Note: There may **occasionally** be circumstances where, in your expert judgment, a road should drop a category lower than the classification determines.

National Decision Tree

(road must meet 3 criteria in total: with at least one from Box 1 and at least one from Box 2)



Appendix 3: Fit for purpose customer levels of service (CLoS) outcomes (provisional)

Overarching principles:

1. Over time all roads in a particular category should offer an increasingly consistent, fit for purpose customer level of service for road users
2. Value for money and whole of life cost will be optimised in the delivery of affordable customer levels of service.
3. The customer levels of service will be delivered in the context of an integrated national network, integrating landuse and transport, including all modes and both rural and urban areas.
4. The customer levels of service will be delivered in the context of a safe system approach, which aims to create a forgiving road system, where human error and vulnerability do not result in death or serious injury.

[Blue descriptions in square brackets indicate guidance for the AMP Group preparing performance measures and targets and will be removed from the final customer level of service descriptors].

Road categories	Mobility			Safety	Amenity	Accessibility
	Travel time reliability	Resilience	Optimal speeds (safety and efficiency)			
National (high volume)	The majority of road users experience consistent travel times with some exceptions in major urban centres.	Route or viable alternative is always available. Very rapid restoration of route affecting normal operating conditions. Road users are advised well in advance of issues affecting network performance and availability.	Higher speeds on KiwiRAP[1] 4-star dual carriageway roads, or lower or variable speeds where required to support network safety or productivity. [Priority users (buses and freight) provided with separate facilities where appropriate].	Mostly forgiving roads and roadsides, equivalent to KiwiRAP 4-Star standard. User hazards absent or mitigated including head on risk. Active road users generally do not have access - if present, they are provided with separate space or are physically separated. Form of road provides road user guidance.	High level of comfort, no discernable roughness. Aesthetics of adjacent road environment reflects journey experience needs of higher numbers of through traffic users. Character of scenic/tourist routes protected and enhanced.	Landuse access for road users rare and highly engineered, usually only to highway service centres. Strategic network connectivity for road users due to infrequent connections, generally only to National high volume roads. High volume traffic will be unimpeded by other traffic at junctions. [Mainly express bus services]. Active road users generally do not have access - if present, they are provided with network access and journey continuity by a separate space or are physically separated. Provision of quality information relevant to national road user needs.
National	The majority of road users experience consistent travel times with some exceptions in urban heavy peak, holiday or during major events.	Route is always available during major weather or emergency events and viable alternatives exist. Rapid clearance of incidents affecting road users. Road users are generally advised in advance of issues and incidents	Higher speeds depending on assessed level of risk. Lower if mixed use, high intersection density, schools, shopping, concentrations of active road users. [Priority users (buses and freight) provided with separate facilities where appropriate.]	A high KiwiRAP 3 or 4-star standard, or equivalent, with consistent and predictable alignment. User hazards mostly mitigated. Active road users (if present) are mostly provided with separate space or are physically separated. Some lower standards and/or winding sections may require lower speeds and extra care. High level of road user safety guidance provided.	High level of comfort, infrequent roughness. Aesthetics of adjacent road environment reflects journey experience needs of higher numbers of through traffic users. Character of scenic/tourist routes protected and enhanced.	Landuse access for road users infrequent and and highly restricted in rural areas, and often restricted in urban areas. Mainly strategic network connectivity for road users due to infrequent connections, generally only to other equal and higher category roads.[Mainly express bus services.] Network access and journey continuity for active road users (if present) mostly provided by separate space or physical separation. Easy navigation at intersections, with National road traffic given priority, unless joining with equal or higher category roads. Provision of quality information relevant to national road user needs.
Regional	The majority of road users experience consistent travel times with some exceptions in urban heavy peak, holidays, during major events or during severe weather events.	Route is always available except during major-extreme weather or emergency events and viable alternatives nearly always exist. Rapid clearance of incidents affecting road users. Road users may be advised in advance of issues and incidents		Mostly KiwiRAP 3-star equivalent or better. Active road users are mostly provided with additional space in urban areas and in some rural areas. Some lower standards and/or winding sections may require lower speeds and extra care. High level of road user safety guidance provided.	High level of comfort, infrequent roughness. Aesthetics of adjacent road environment reflects journey experience needs of both through traffic and active road users. Character of scenic/tourist routes protected and enhanced. Amenity outcomes of active road users are mostly provided with additional space in urban areas and in some rural areas. Clean and secure [lighting, park and ride and cycle park facilities, weather protection for PT users].	Landuse access for road users in rural areas often restricted, and some restrictions in urban areas. Limited road user connections to other National roads and Arterials, with priority over lower category road users. [Numerous bustops with high frequency services to key destinations and interchanges.] Network access and journey continuity for active road users are mostly provided with additional space in urban areas and in some rural areas. [Parking for all modes, and facilities for mobility impaired at activity centres with some shared spaces.] Extra care required around activity centres due to mixed use, including goods vehicles. Provision of quality information relevant to regional road user needs.
Arterial	Generally road users experience consistent travel times with some exceptions in urban heavy peak, holidays, during major events or during moderate weather events.	Route is nearly always available except in major weather events or emergency event and where no other alternatives are likely to exist. Clearance of incidents affecting road users will have a high priority. Road users may be advised of issues and incidents	Higher speeds depending on assessed level of risk. Lower if mixed use, high intersection density, schools, shopping, concentrations of active road users. In urban areas travel speeds depend on assessed level of risk and recognise mixed use, schools, shopping strips and concentrations of active road users	Variable road standards, lower speeds and extra care required on some roads/sections particularly depending on topography, access, density and use. Road user safety guidance provided at high risk locations. Some separation of road space for active road users in urban areas	Good level of comfort, occasional areas of roughness. Aesthetics of adjacent road environment reflects journey experience needs of both road users and land use. Urban arterials reflect urban fabric and contribute to local character. Some separation of road space for active road users for amenity outcomes in urban areas. Clean and secure [lighting, good PT and cycle numbers, including park and ride and cycle park facilities, and weather protection for PT users]	Some landuse access restrictions for road users, both urban and rural. Road user connection at junctions with National, Arterial or Collector roads, and some restrictions may apply in urban areas to promote Arterials. Traffic on higher classified roads generally has priority over lower order roads. [Numerous bustops with high frequency services to key destinations and interchanges.] Some separation of road space for active road users in urban areas to provide network access and journey continuity. [Parking for all modes and facilities for mobility impaired at activity centres, and some shared spaces.] Extra care required around activity centres due to mixed use, including goods vehicles. Provision of quality information relevant to Arterial road user needs.

Road categories	Mobility			Safety	Amenity	Accessibility
	Travel time reliability	Resilience	Optimal speeds (safety and efficiency)			
Primary collector	Generally road users experience consistent travel times except where affected by other road users (all modes) or weather conditions	Route is nearly always available except in major weather events or emergency event and alternatives may exist. Clearance of incidents affecting road users will have a moderate priority. Road users may be advised of issues and incidents	Travel speeds depend on assessed level of risk and recognise mixed use, schools, shopping strips and concentrations of active road users	Variable road standards and alignment. Lower speeds and greater driver vigilance required on some roads/sections particularly depending on topography, access, density and use. Active road users should expect mixed use environments with some variability in the road environment, including vehicle speed. Road user safety guidance provided at high risk locations.	Moderate level of comfort, occasional areas of roughness. Aesthetics of adjacent road environment reflects journey experience needs of all road users and adjacent land use. Urban collectors reflect urban fabric and contribute to local character. Specific provision where active road users present. Clean, safe and secure [lighting, reasonable PT and cycle numbers, accessible PT and parking facilities].	Landuse access for road users generally permitted but some restrictions may apply. Road user connection at junctions with Arterial or Collector roads, and some restrictions may apply in urban areas to promote Arterials. Traffic on higher classification roads generally has priority over lower classification roads. [Regular bus services to key destinations and interchanges.] Active road users should expect mixed use environments with some variability in the road environment, including vehicle speed. [Parking for all modes and facilities for mobility impaired at activity centres.] Provision of quality information relevant to Collector road user needs.
Secondary collector	Road users travel times may vary as a result of other road users (all modes), weather conditions or the physical condition of the road.				Moderate level of comfort, longer areas of roughness. Aesthetics of adjacent road environment reflects journey experience needs of all road users and adjacent land use. Urban collectors reflect urban fabric and contribute to local character. Specific provision where active road users present. Clean, safe and secure [lighting, reasonable PT and cycle numbers, accessible PT and parking facilities].	Landuse access for road users generally permitted but some restrictions may apply. Road user connection at junctions with other Collectors or Access roads. Collector road traffic generally has priority over Access road traffic. [Regular bus services to key destinations and interchanges.] Active road users should expect mixed use environments with some variability in the road environment, including vehicle speed. [Parking for all modes and facilities for mobility impaired at activity centres.] Provision of quality information relevant to Collector road user needs.
Access	Road users experience varied travel times as a result of other road users (all modes), weather conditions or the physical condition of the road.	Route may not be available in moderate weather events and alternatives may not exist. Clearance of incidents affecting road users and road user information will have a lower priority.	Travel speeds depend on assessed level of risk and recognise access and use values, particularly schools, shopping strips and concentrations of active road users	Variable road standards and alignment. Lower speeds and greater driver vigilance required on some roads/sections particularly depending on topography, access, density and use. Road users should expect mixed use environments with some variability in the road environment, including vehicle speed. Road user safety guidance may be provided at high risk locations.	Lowest level of comfort, may include extended areas of roughness and unsealed surfaces (on rural roads). Aesthetics of adjacent road environment strongly reflects land use and place function. Strong shared philosophy between active road users (if present) and vehicular traffic. Active road users expect evironment appropriate to their needs. Urban areas clean, safe [low vehicle speed] and secure [lighting].	Access to all adjacent properties for road users. Road user connection at junctions ideally with Collectors and other Access roads. Access road traffic generally has lower priority over traffic on all higher classification roads. Active road users should expect mixed use environments with some variability in the road environment, including vehicle speed. Enhanced accessibility via 'share the road' philosophy (active road users, mobility impaired and drivers), journey connectivity to key destinations via all modes, and provision of quality information.
Access (low volume)		Route may not be available in weather events and alternatives may not exist. Clearance of incidents affecting road users and road user information will have the lowest priority.				

Foundations:	
	1. Customer levels of service are delivered in line with Approved Organisation (AO) empathy, assurance, response and tangibles principles[2] 2. Capacity limits on the network may require actions that shape demand to provide for the cost effective and efficient travel choice needs for customers 3. The delivery of customer levels of service for all modes will be optimised by time of day consistent with the principles of network operating planning and asset management planning 4. Local factors (e.g. topography, geology, climate, adjacent landuse and 'place' function, population density) may influence delivery of the customer levels of service. 5. The functional classification and its customer levels of service will be reviewed regularly. 6. The customer levels of service delivered for any route in the network will consider whether it functions as a critical lifeline for nationally significant infrastructure and its resilience will be delivered by considering a multi-modal, whole-of-network approach. 7. Access to the transport network by network utility operators and community events will be managed to limit the impact on transport network users

[1]KiwiRAP analyses the road safety of the rural state highway network and an urban application is currently being developed

[2]Empathy: understand & respond to needs of customers; Assurance: demonstrate competence & capability; Response: customer's request for service will be responded to; Tangibles: customers are aware of service that RCA provides

The associated Customer Levels of Service for each functional category have been developed to reflect the following six fit for purpose outcomes:

Mobility

- Reliability: the consistency of travel times that road users can expect
- Resilience: the availability and restoration of each road when there is a weather or emergency event, whether there is an alternative route available and the road user information provided
- Speed: indicates the optimal speed for each road. The optimal speed is the speed that is appropriate for road function (classification), design (including safety) and use. Optimal speeds support both safety and economic productivity

Safety

- how road users experience the safety of the road

Amenity

- The level of travel comfort experienced by the road user and the aesthetic aspects of the road environment (eg cleanliness, comfort/convenience, security) that impact on the travel experience of road users in the road corridor

Accessibility

- The ease with which people are able to reach key destinations and the transport networks available to them, including landuse access and network connectivity

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NZ TRANSPORT AGENCY
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New Zealand Government

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