

Road Asset Management (RAM)

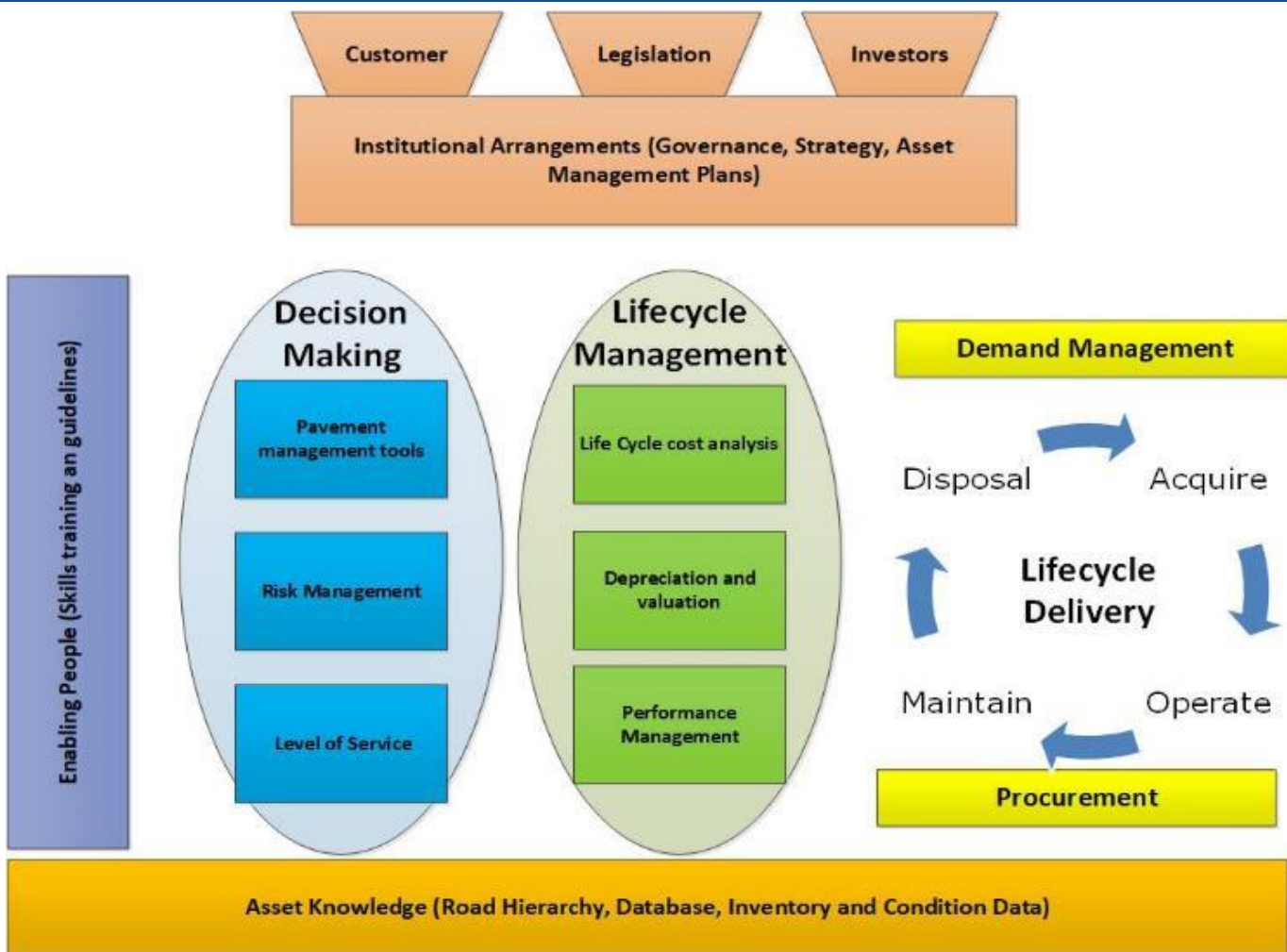
Azerbaijan

6-9th September 2022

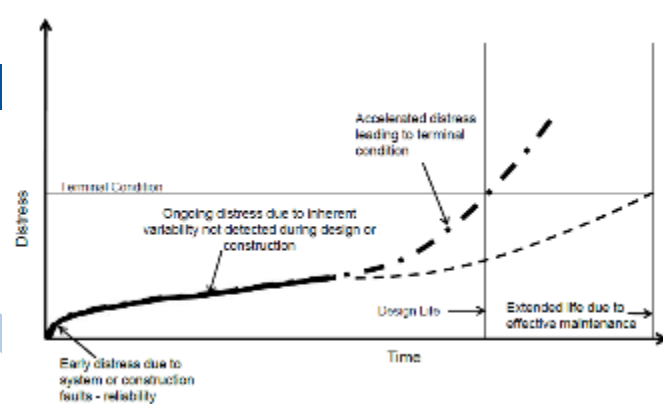
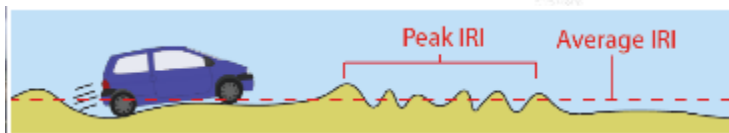
Session: Developing Service Levels for All Asset Types

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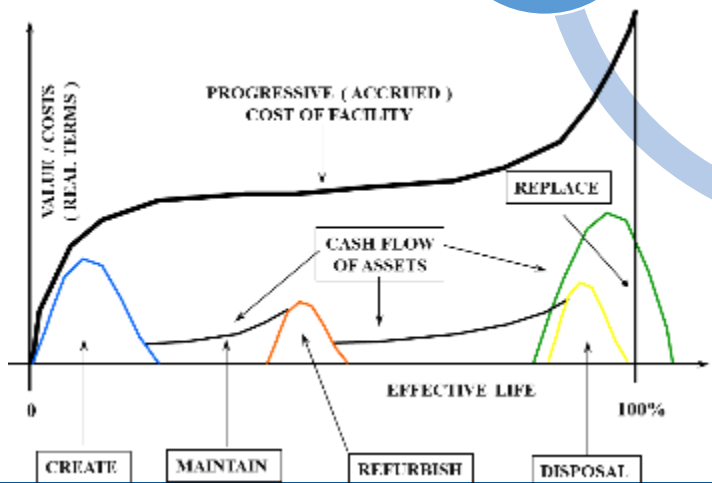
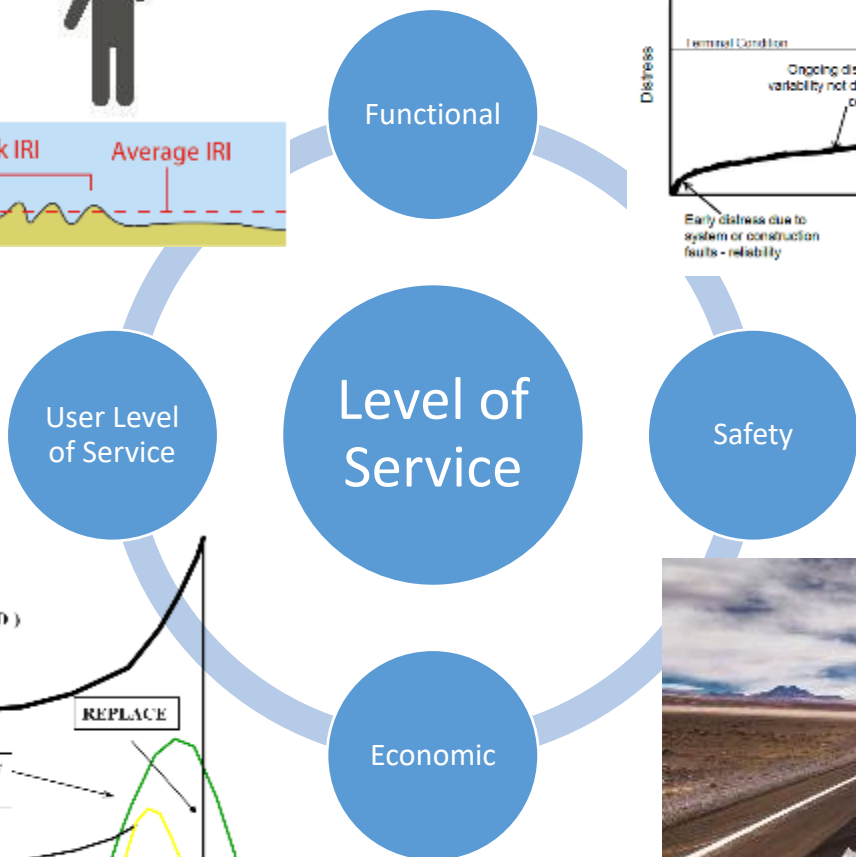
Level of Service is Key to Asset Management



Level of Service Dimensions



Source SANRAL, 2016



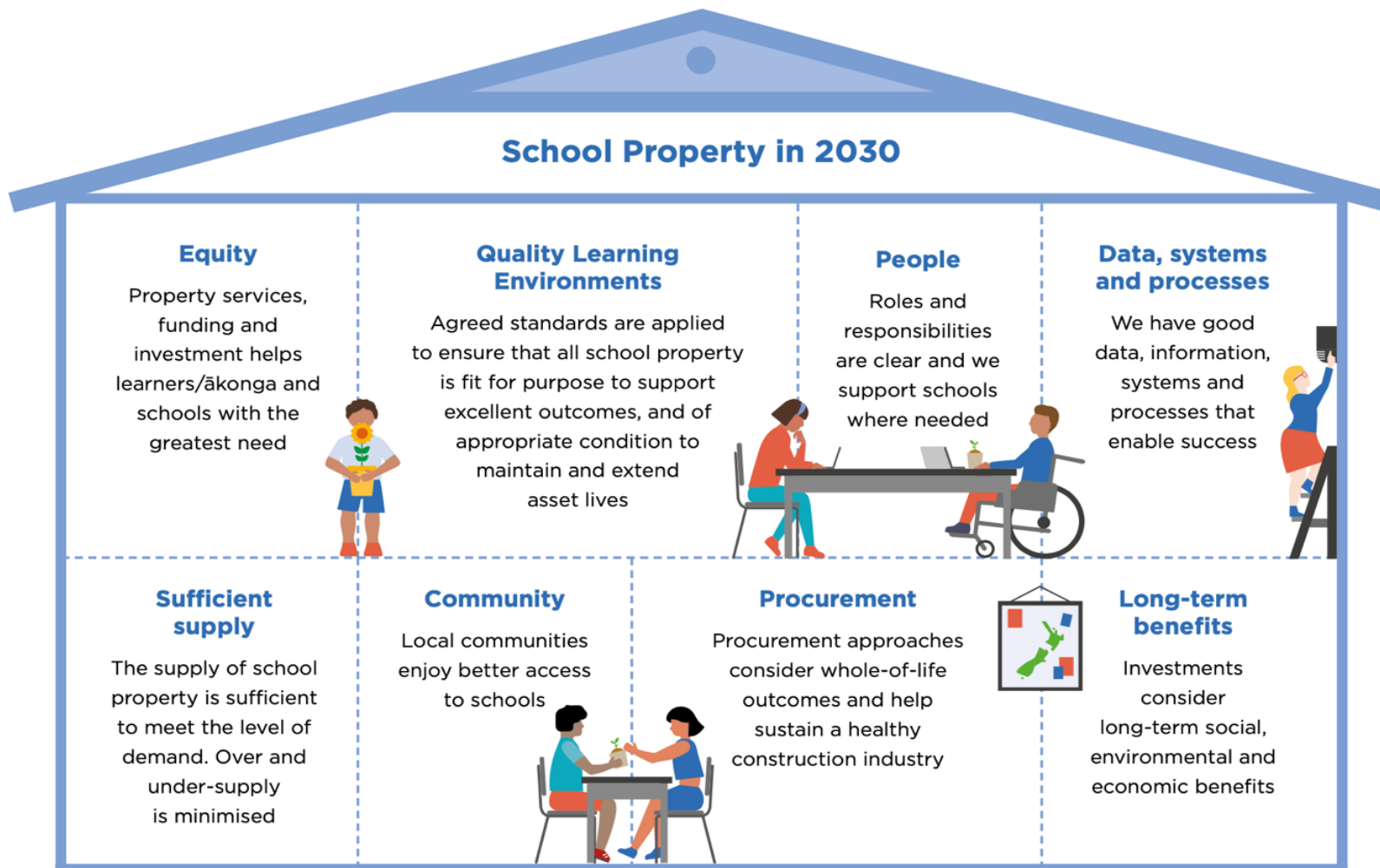
Level of Service "Knowing which roads to invest in when and when to do it":

- A focus on what matters most
 - Our ongoing work programmes (operations, maintenance and renewals)
 - Our Capital works programmes (improvements)
- A framework for prioritising our actions
- A framework for consistency across provinces and road classes
- A framework for organising our data and information



FRAMEWORK

Levels of Service Examples NZ Education Property

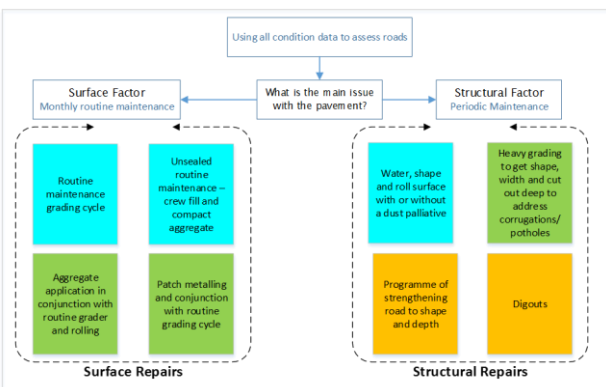


Data Collection Should be Focused on its Purpose

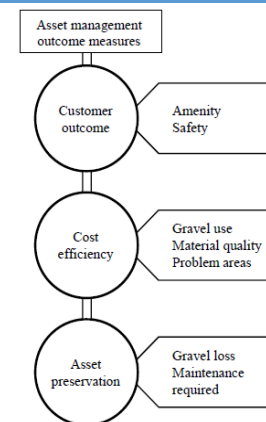
What do we use the data for?

Decision Process

Performance Monitoring



Data Framework



Where do levels of service fit in the performance management framework?

ASSET MANAGEMENT LEVEL

STRATEGIC

TACTICAL

OPERATIONAL

PERFORMANCE MANAGEMENT QUESTIONS

INVESTMENT BUSINESS CASE

- How does the actual performance compare to target levels?
- Is the investment targeting the right outcomes?
- Ensuring sustainable investment levels?
- Are the risks appropriately managed?

PROGRAMME PLANNING

- Ensure sustainable investment levels
- Timing and type of renewal and maintenance
- Linking technical inputs to performance outcomes

Knowing where you come from

Past investment
Past performance
Historical failures

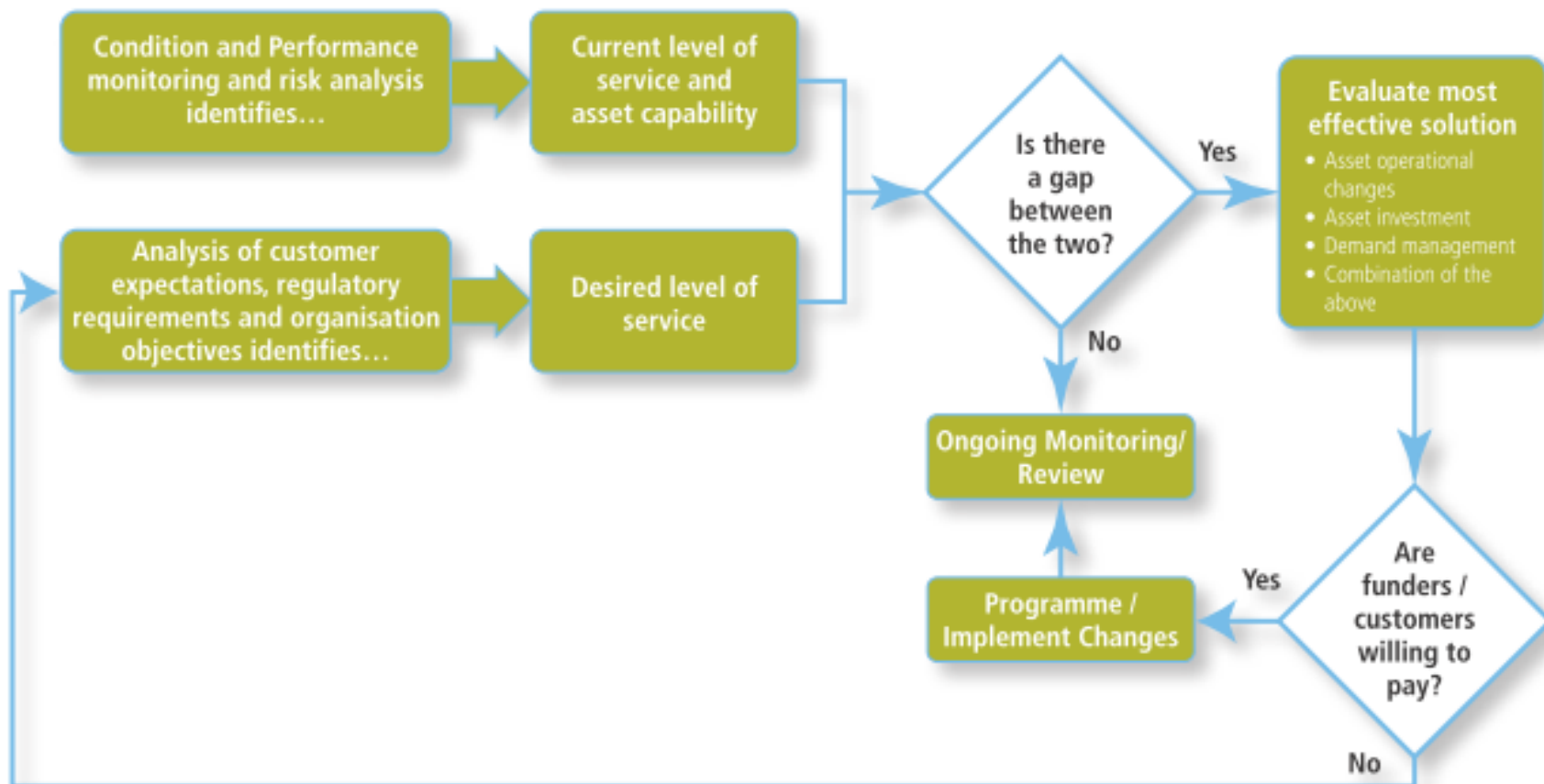
Understanding the GAP

What is my current performance in term of by desired Level of Service (LoS)

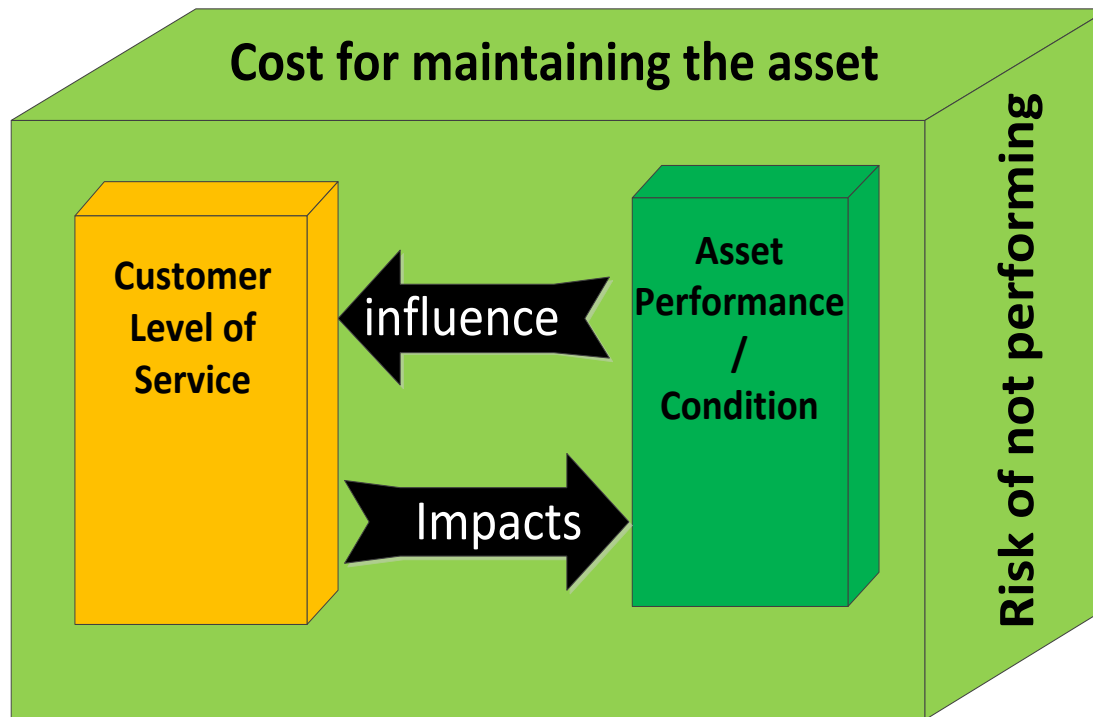
Road map to get there

Forecasted investment and LoS delivery plan

How does the levels of service review fit with asset management processes?



The Business Case for Road Investment



Road Classification System

Road Function



Strategic Routes - Military
- Emergency

Heavy Traffic - **Economic Links**

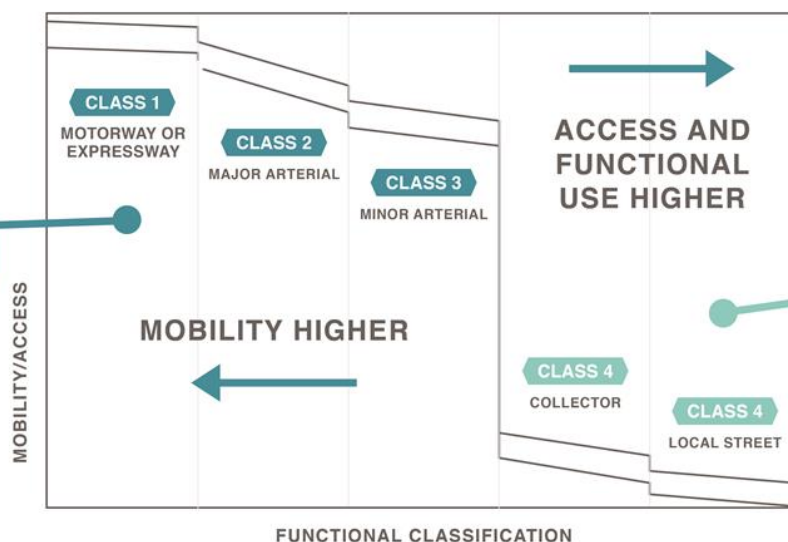
City Links - City to City
- Within Cities

Tourism

*A road ma perform more than
one function*

Road Classification Underpins LoS

- High order roads (motorway/expressway) – high speed, safety, no ad-grade access
- Low-order roads – low speed, free access, mixed use (children playing and vehicles)

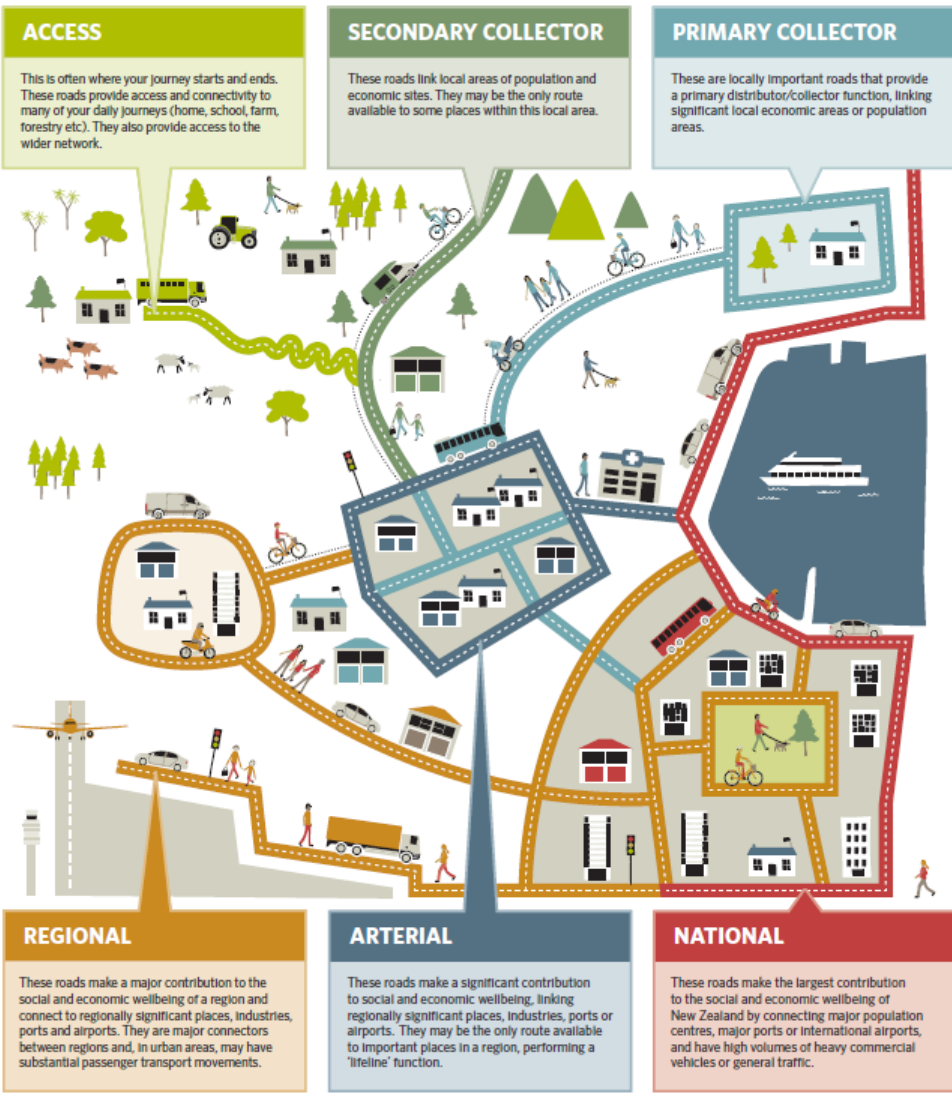


Example Classification System

Functional Classification	Sub-Function	Functional Description of Road/ Trip	Typical Trip Characteristics
Primary (Rural)*	Primary Route Regional	Connects Countries - Relatively high volumes of passengers and freight between regions	500 to 1000 km or +more, <u>large</u> freight content
	Primary Route National	Connects Provinces/Regions - Relatively high volumes of passengers and freight between the capital and provincial and district centres,	Less than 500 km, <u>large</u> freight content
Secondary Arterials Split for Rural & Urban		Connect Districts - Infrastructure primarily connects district centres, towns, villages and tourist or agricultural areas.	Less than 300 km, low to medium volumes
Feeder (Collector) Split for Urban & Rural)		Connects Chiefdoms- Feeder routes with relatively low volumes of passengers and freight over short distances between villages and higher mobility paths,	Less than 50 km, medium to low volumes
Access Roads Split for Urban & Rural)		Connects Neighbours - Provides access from individual farms and properties to villages and Feeder routes.	Less than 30 km, low volumes and other active transport modes (e.g. pedestrians and bicycles)

***Note:** Two classes of the primary route are only needed in a situation that warrant such a distinction

Example Performance Reporting



Customer Outcome
Customer Outcome Measure
Description
Reference No.



Amenity	
The smoothness of my journey is as I would expect when I take into account the importance of the road.	
Smooth Travel Exposure (STE) Index for sealed roads. (DIA Non-Fin Perf Meas)	Average Roughness - The average ride comfort level of the sealed road network meets specified levels (Local Gov Maintenance Guidelines)
Amenity - OM1	Amenity - OM2

What is the means of reporting?
Quantitative or Qualitative?
Status of Measure?

Reporting automatically from Asset Register (RAMM)	Reporting automatically from Asset Register (RAMM)
Quantitative	Quantitative
Current	Current

Road Classification
National (High Volume)
National
Regional
Arterial
Primary collector
Secondary collector
Access
Access (Low Volume)

NB: For Roughness, RCAs are required to report

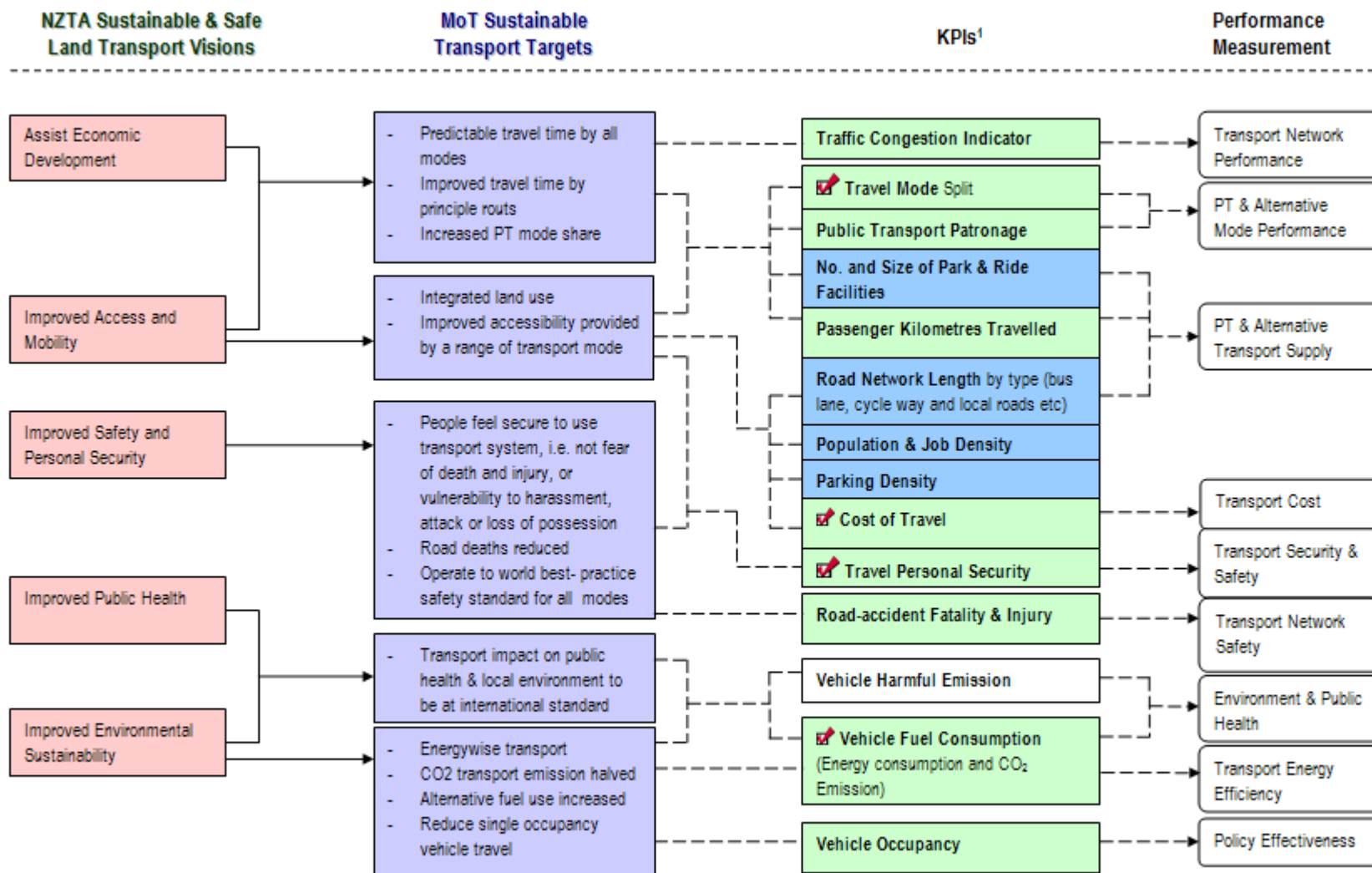
% by classification	Report No. Provisional service level is: Urban <= 90 NAASRA Rural <= 90 NAASRA
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% by classification	Report No. Provisional service level is: Urban <= 140 NAASRA Rural <= 140 NAASRA

Level of Service Framework

Key Drivers – Level of Service, Demand, Risk

- Levels of Service
 - Key service levels changing
 - Addressing service level gaps
- Future Demand
 - High population growth expected through to 2050
 - Continuing urbanization expected – shifts in population patterns
 - Growth changes resulting from natural hazard and climate risk adaptation
- Risk
 - Natural Hazard Risk
 - Calamity Risk
 - Climate change and climate adaptation risk
 - Service failure risk

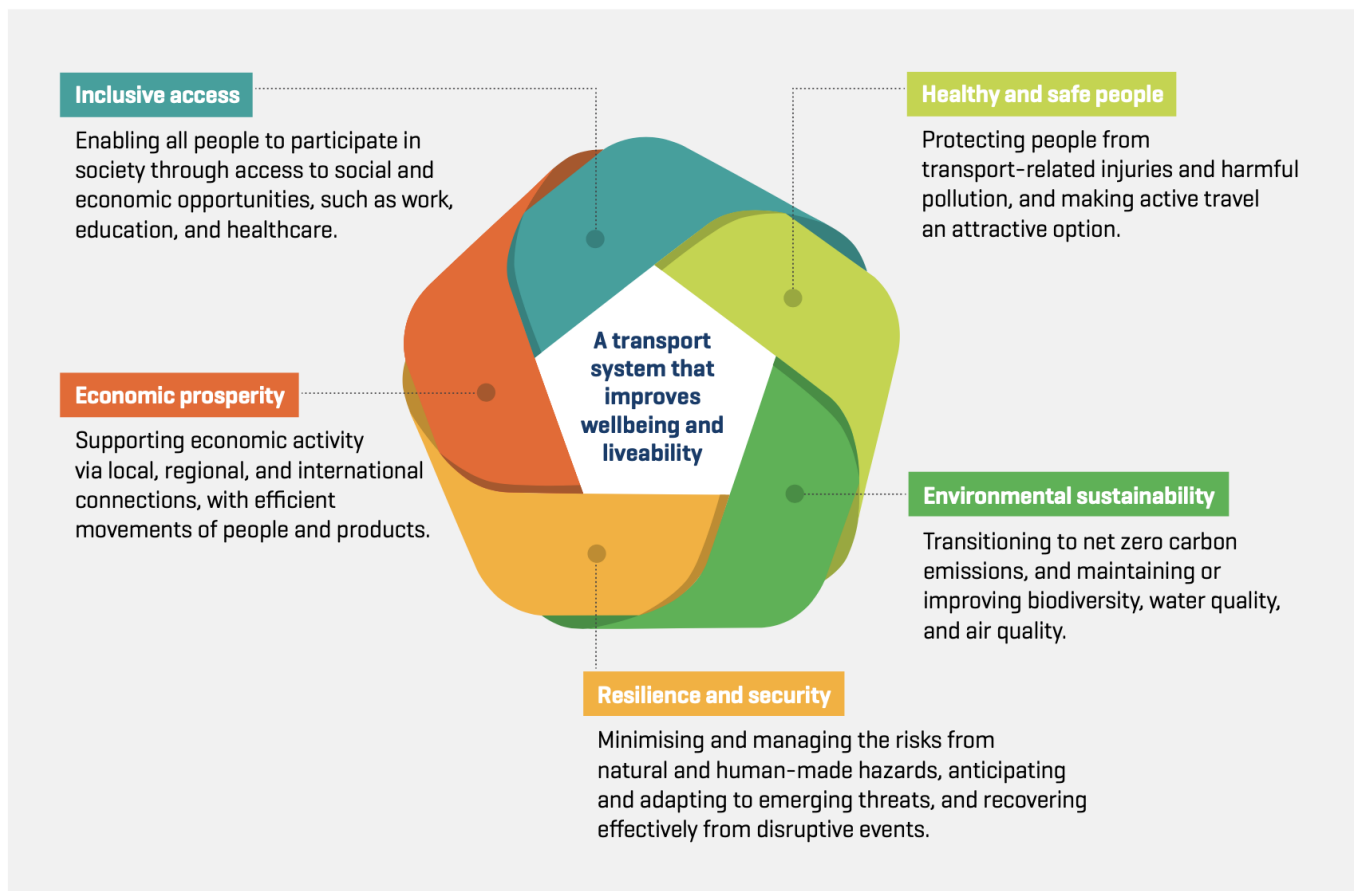
Linking to Objective or Strategic Goals



Note ¹ ✓ means KPI adopted for pilot study; □ denotes Must Have KPI; ■ denotes contextual indicator.

Levels of Service Examples NZ Transport Outcomes

Transport Outcomes Framework



Example Performance Framework for Roads



ROAD SAFETY

Crash Statistics
Road Safety Measures



TOTAL COST OF OWNERSHIP

Cost Efficiency
Asset Preservation
Road Condition



ROAD USER PRIORITY

Freight Access
Travel Time Reliability
Resilience to Unplanned Events
Road Condition



Category	Measure	Description
Safety Customer Outcome	Number of fatal and serious injuries	The total number of fatal and serious injuries /year (Total or normalised)
	Collective risk (fatal and serious injury) rate/km	Intensity measure – that highlights dangerous routes or parts of the network
	Personal risk (fatal and serious injury rate by traffic volume)	The total number of fatal and serious injuries by traffic volume/year
Safety Technical Output	Road Safety Rating	Reporting on the location and routes with high safety risk
	Black Spots	Reporting on the location and routes with high crash occurrence.

Total Cost of Ownership



Category	Measure	Description
Asset Preservation	75 th Percentile Rutting	75 th rutting value (measured by High-speed data collection)
	Pavement Condition Index (PCI)	Overall (composite) index showing the health of the road pavements
	Bridge Condition Rating (BCR)	Bridge Condition Rating
Cost Efficiency	Pavement rehabilitation	Total quantity pavement rehabilitation Total cost of pavement rehabilitation
	Asphalt resurfacing	Total quantity of asphaltic sealed road resurfacing Total cost of asphaltic sealed road resurfacing
	Bridge Repairs	Total quantity of Bridge Repairs Total cost of Bridge Repairs
	Overall network cost, and cost by work category	The overall cost per km and per vkt of routine maintenance activities Cost by work category on each road
	Asset Valuation	Asset value and trend over time as per Treasury's methodology

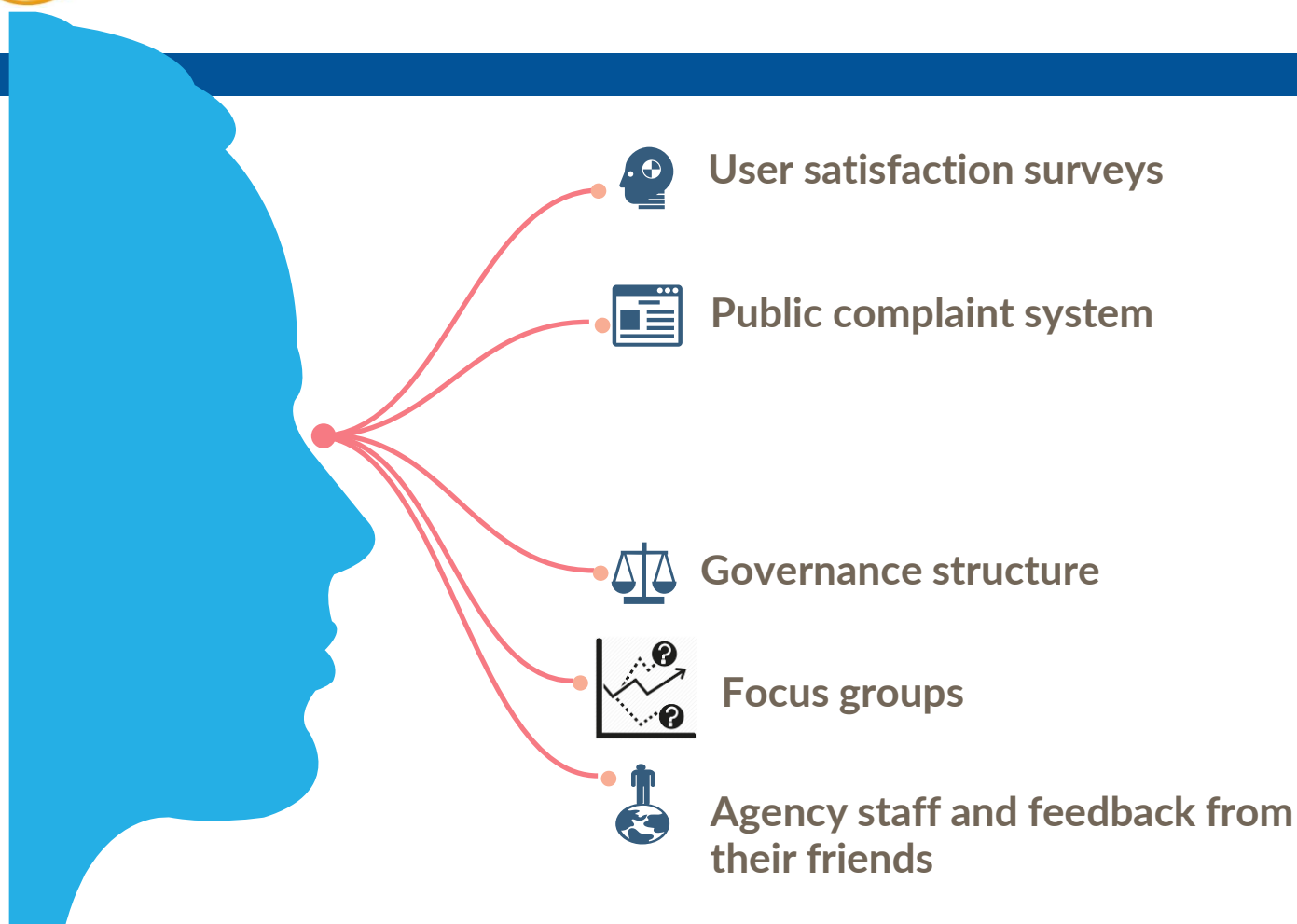
Road User Priority



Category	Measure	Description
Road Condition	Peak roughness	The 85th percentile roughness of roads
	Median Roughness	The 50 th percentile roughness of roads
Freight Access	The proportion of network not available to trucks (bridge loading constraints)	The proportion of each road classification that is not accessible to high trucks loads
Travel Time Reliability Customer Outcome	Output at indicator information sites	The hourly traffic volume during the peak morning hour and peak afternoon/evening hour
Resilience Customer Outcome	Number of journeys impacted by unplanned events	The number of unplanned road closures and the number of vehicles affected by closures

Understanding your customer

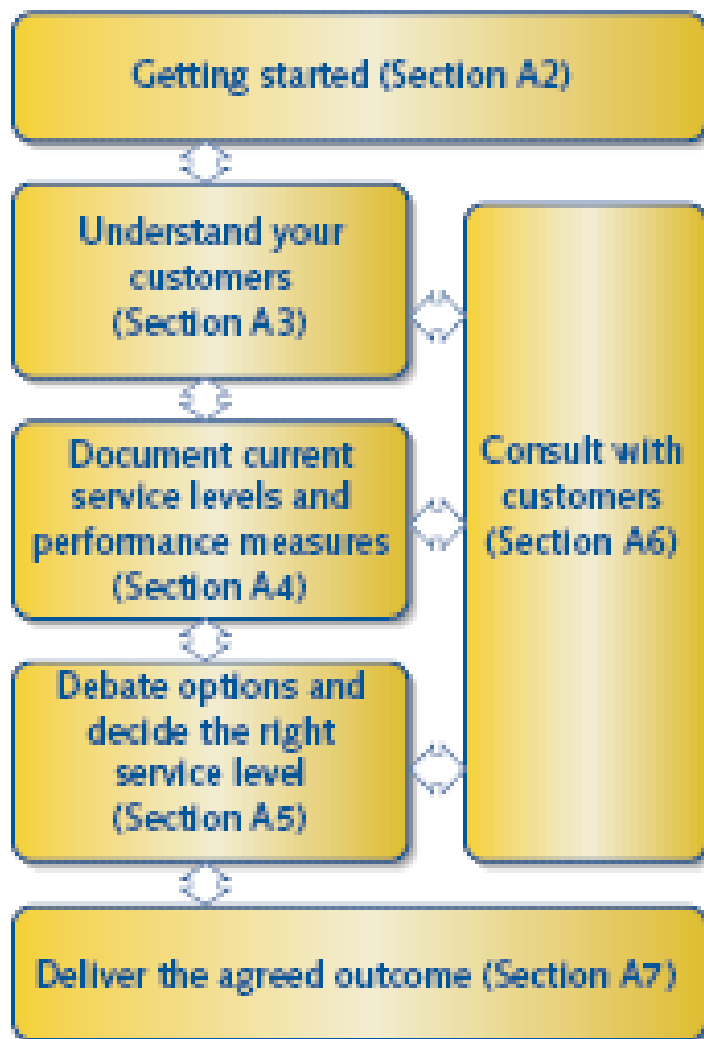
What does the customer want?



- Workshops
- Public meetings
- Stakeholder meetings
- Focus groups

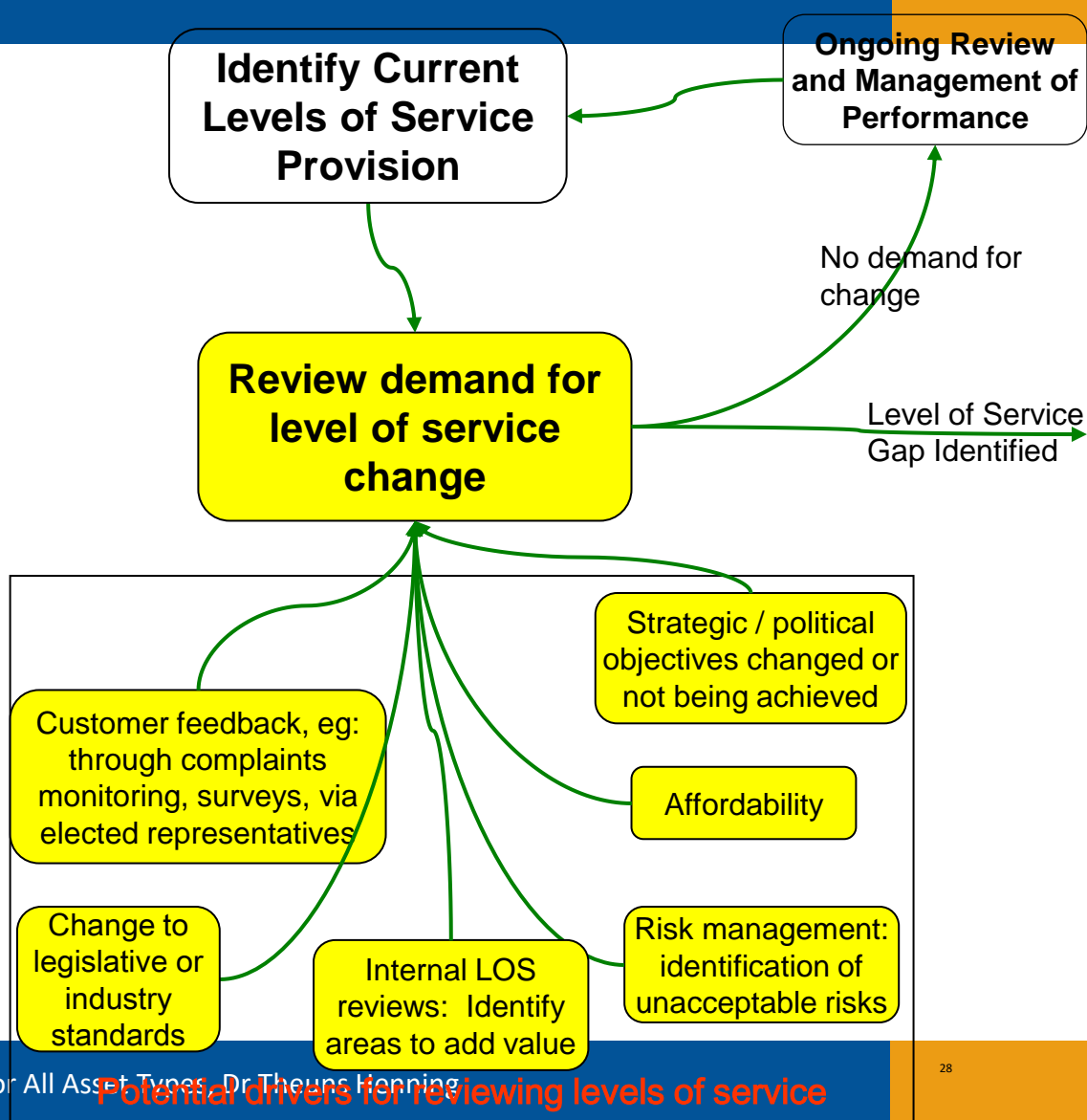


The LOS review starts, continues and ends with the customer



Selecting levels of service for review

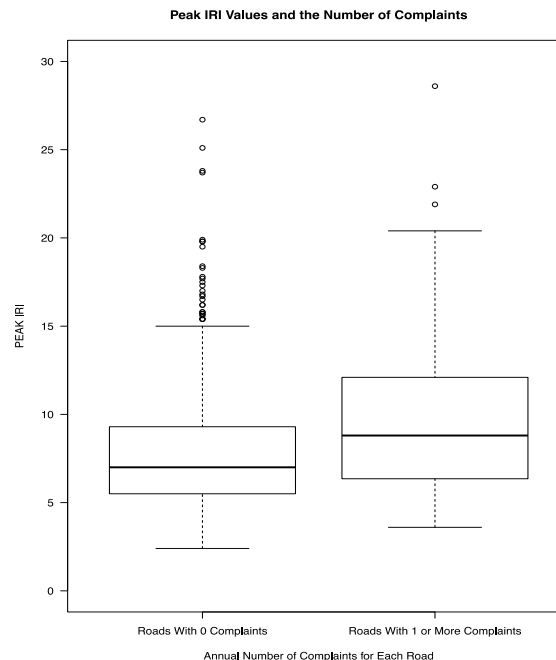
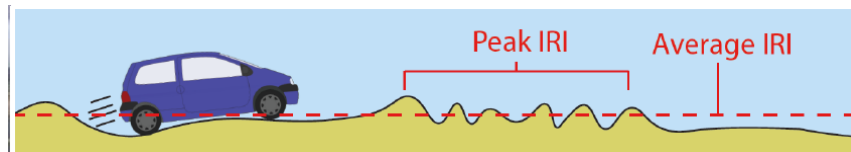
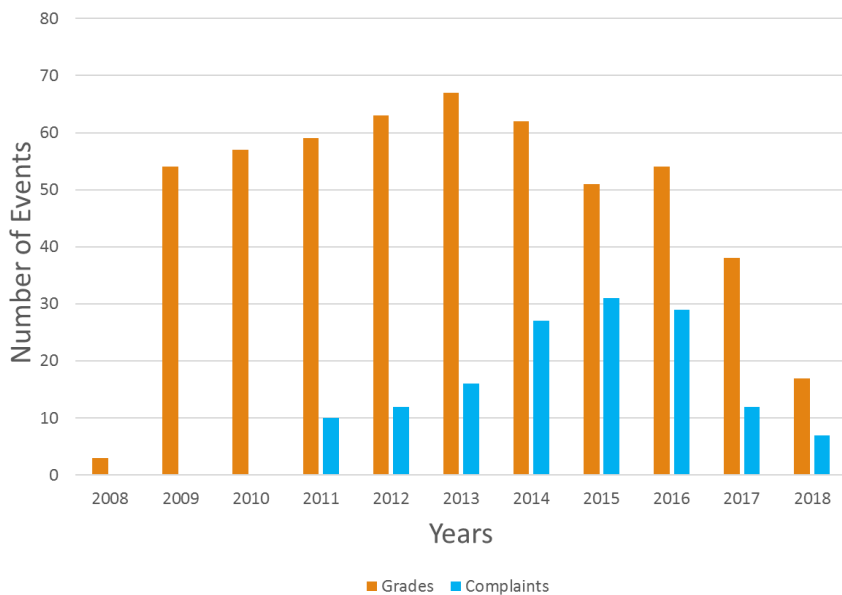
- Do the existing levels of service and performance measured align with outcomes?
- Is it likely that the community desire changes to the level of service provision?
- Is there political will or pressure to change the level of service provision?
- Is it an area of high public interest?



When do the drivers complain?

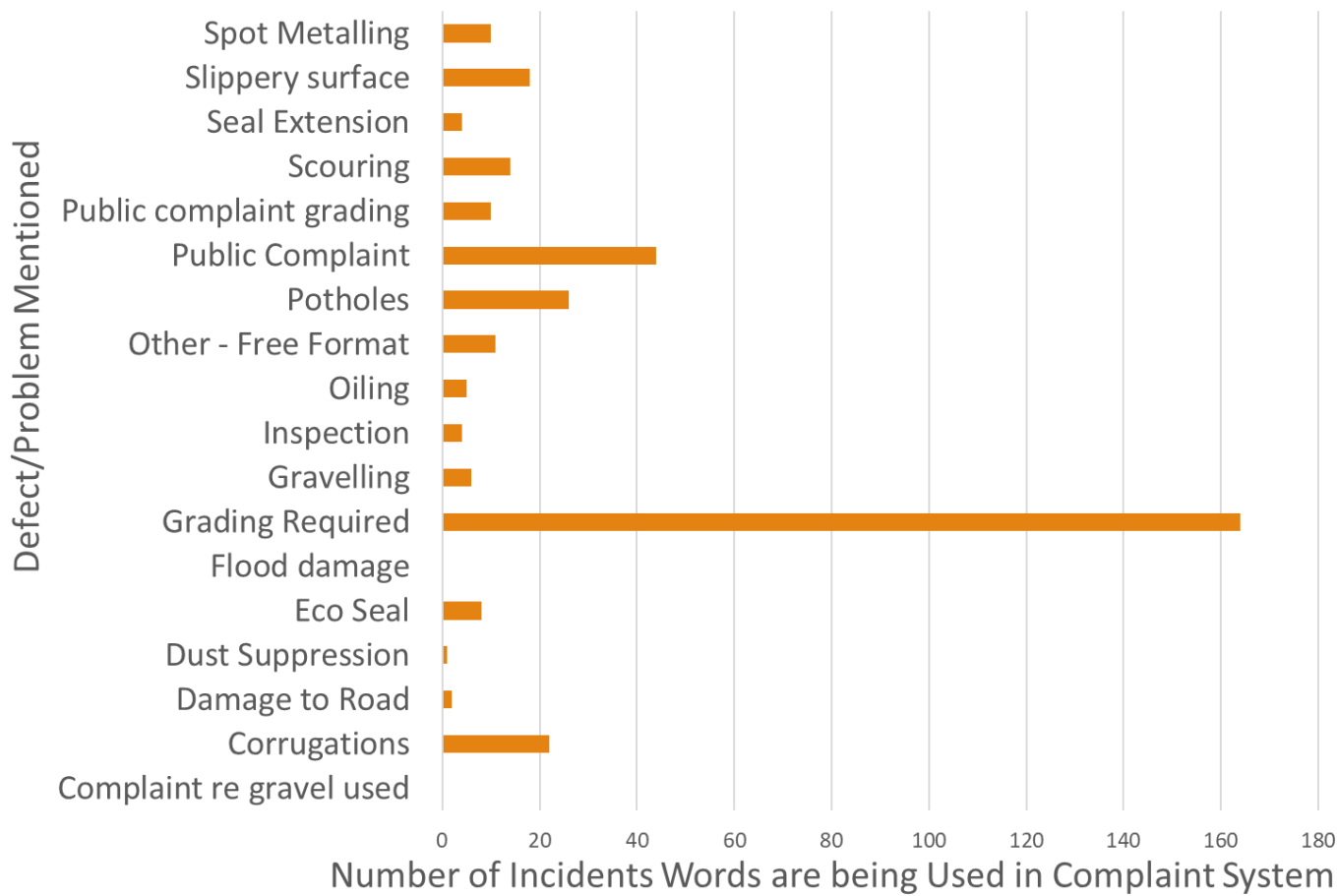
- Customers tell us when things changes
- They often complain about outliers

Total Grading Events vs Total Public Complaints on focus roads



Reporting on Complaints

Top complaints on unsealed road network



Communicating Performance

We want to achieve these benefits...
...by delivering these outcomes

EFFECTIVE NETWORK

Transform and elevate customer experience

Make better use of existing transport networks

Road network assets \$11.9 billion

Public transport network assets \$1.4 billion

Develop a resilient transport system

Increased access to affordable transport choices

Move to a safe transport network free from death and serious injury

EFFICIENT NETWORK

Develop creative, adaptive, innovative implementation

A World Class City Where Talent Wants To Live

A well connected and accessible Auckland

A fair, safe and healthy Auckland

Reducing adverse effects from Auckland's transport system - including safety, environmental, health and cultural considerations

SAFE NETWORK

Prioritise rapid, high frequency public transport

Auckland's transport system enables growth

An Auckland of Prosperity and Opportunity

A green Auckland

Integrate land use and transport

SUSTAINABLE NETWORK

Build network optimisation and resilience

Ensure a sustainable funding model

Target investment to the most significant challenges

Maximise the benefits of emerging transport technology

Auckland's transport network moves people and goods efficiently

More walking, cycling and public transport

ONRC MEASURES

<p>Customer Level of Service</p> <p>Safety</p> <p>measured by</p> <p>Deaths and serious injuries on local roads</p> <p>Safety hazards</p>	<p>Customer Level of Service</p> <p>Resilience</p> <p>measured by</p> <p>Journeys affected by unplanned events</p> <p>Instances where road access is lost</p>	<p>Customer Level of Service</p> <p>Amenity</p> <p>measured by</p> <p>Smooth Travel Exposure</p> <p>Peak Roughness</p> <p>Roughness of the road</p> <p>Aesthetic faults</p>	<p>Customer Level of Service</p> <p>Accessibility</p> <p>measured by</p> <p>Proportion of network not available to class 1 heavy vehicles and 50MAY vehicles</p> <p>Signage is fit for purpose</p>	<p>Customer Level of Service</p> <p>Travel Time</p> <p>measured by</p> <p>Throughput at indicator sites</p>	<p>Customer Level of Service</p> <p>Value for Money</p> <p>measured by</p> <p>Benchmarked costs : - by asset - in total</p>
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AT SPECIFIC MEASURES

<p>Customer Level of Service</p> <p>Sustainability</p> <p>measured by</p> <p>Proportion of renewals projects that add value to other objectives</p> <p>Environmental and financial sustainability</p>	<p>Customer Level of Service</p> <p>Lifecycle Management</p> <p>Levels of Service</p> <p>measured by</p> <p>Proportion of our assets in very poor condition</p> <p>Age of assets replaced</p>
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Carriageway

Stormwater

Bridges, walls and structures

Footpaths and cycleways

Street lighting

Traffic systems, signs and markings

Parking

Vegetation

Public Transport

Renewals

Actual Renewals (Recommended)

Renewals (Actual) Renewals (Annual Plan) Renewals (Recommended)

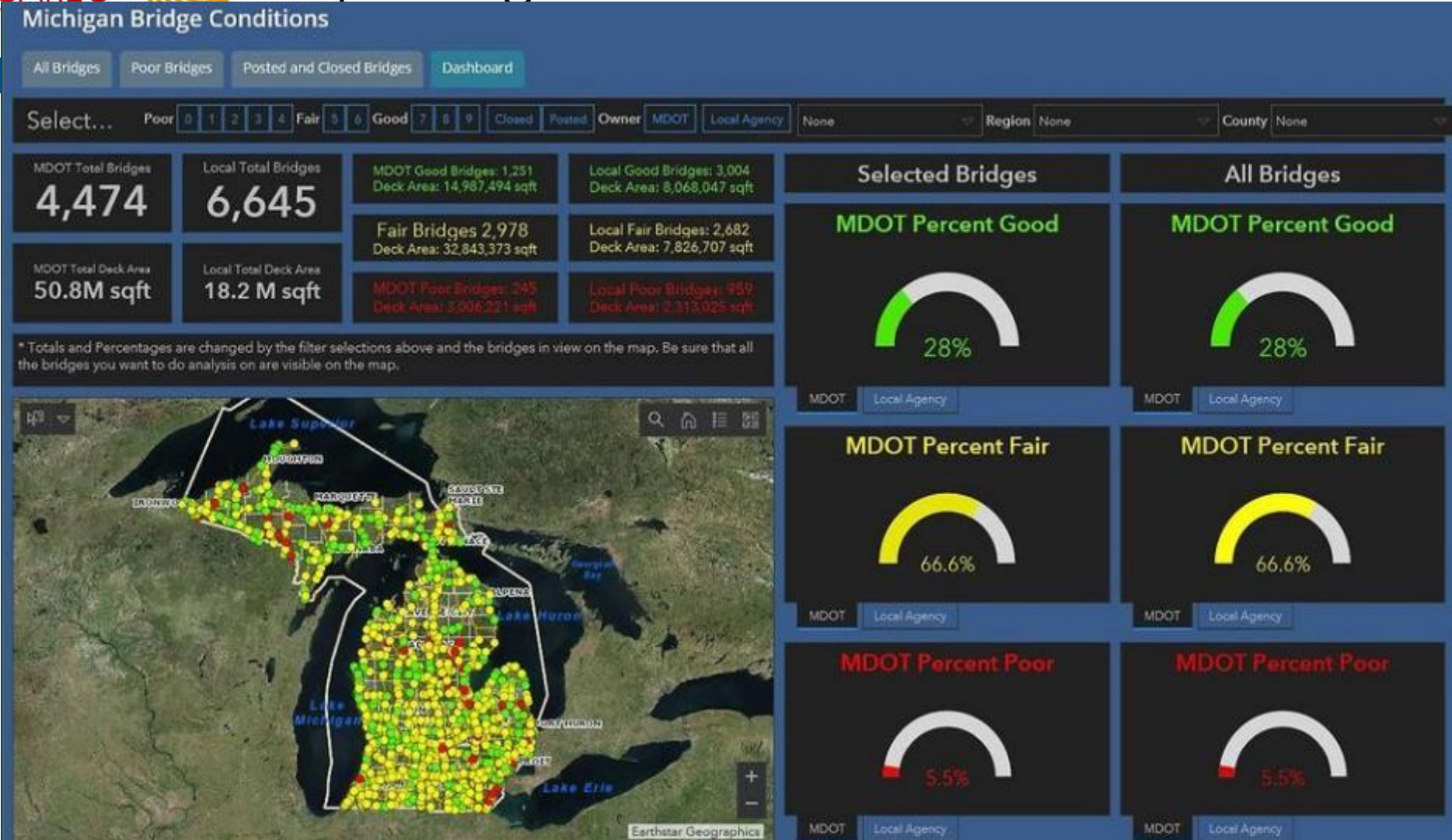
Operations and Maintenance

Maintenance & Asset based Operations (Actual) Maintenance & Asset based Operations (Annual Plan)

Recommended Base OPEX Recommended Consequential OPEX

<p>Make better use of existing networks</p> <p>Optimise key routes to increase productivity</p> <p>Continue to improve asset management efficiencies</p> <p>Maximise benefits from new transport technology</p>	<p>Target investment to the most significant challenges</p> <p>Prioritise investments to achieve best value for money</p> <p>Enable and support growth</p> <p>Strengthen strategic transport networks</p>	<p>Maximise new opportunities to influence travel demand</p> <p>Better integrate land use and transport</p> <p>Actively encourage increase in vehicle occupancy</p> <p>Progressively move to smarter transport pricing</p>
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Reporting on Performance



Questions



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