



# GPS 2018 AND 2021 EVALUATION

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Local road maintenance

Tauākī Tikanga Here  
Kāwanatanga mō te arotake  
waka whenua (GPS) 2018-21

June 2025



**MINISTRY OF TRANSPORT**  
TE MANATŪ WAKA



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# 1 Executive Summary

## 1.1 Introduction

This report details the findings of a comprehensive evaluation of the Local Road Maintenance activity class for the three years that the 2018 Government Policy Statement on Land Transport (GPS) was in effect and for the first year that the 2021 GPS was in effect. The evaluation explores the GPS contribution to local road maintenance, delivering broader transport outcomes, including value for money, and informing future GPS iterations. This is a companion report to the *GPS 2018 and 2021 Evaluation: Walking and Cycling Improvements*.

## 1.2 Methods

### 1.2.1 Value for Money Assessment Model

Value for Money (VfM) was a key priority for GPS 2018 and became an embedded principle of GPS 2021. Accordingly, the Te Manatū Waka Ministry of Transport (MoT) VfM Assessment Model and associated VfM Framework provided a key foundation for this evaluation. The VfM Assessment Model shaped the underlying analysis based on the model's five dimensions: Impacts and Outcomes, Business Requirements, Value Indicators, Benefits Gap Factor, and Capacity and Capability.

## 1.3 Data collection

The evaluation relied on quantitative data sourced from MoT, New Zealand Transport Agency Waka Kotahi (NZTA), Road Efficiency Group Te Ringa Maimoa (REG), and Stats NZ. The analysis focused on identifying patterns and trends aligned with the evaluation objectives and criteria, involving comparisons with pre-evaluation period data when feasible.

Qualitative data collection included interviews and case studies from large urban, mid-size urban and rural councils and NZTA. Discussions explored how the GPS has guided investment planning and decision-making and the extent to which the key principles of the VfM Assessment Model were present from investment to delivery.

In addition, the evaluation received independent advice from an expert in local road maintenance (David Fraser), noted in parts of the report to provide additional context.

## 1.4 Findings

### 1.4.1 GPS impacts and outcomes

The GPS provides clear investment signals for local road maintenance. Overall, in the four-year evaluation period, total approved funding for the Local Road Maintenance activity class (\$2.7 billion) was within the GPS target range (\$2.5 to \$2.8 billion). This was a substantial increase in nominal funding compared to the 2009-18 period, but it did not result in a corresponding increase in maintenance activity due to cost increases.

Analysis of key quantifiable outcomes aligned with the GPS indicated:

- A slight downward trend in measured local road conditions over the evaluation period, and a more pronounced decline in pavement integrity, while smooth travel exposure remained stable.

- General improvement in safety outcomes on local roads (deaths and serious injuries), although diverse factors beyond road maintenance affected these outcomes.

### 1.4.2 Business requirements

Business requirements are the set of high level technical, operational, and functional requirements needed to deliver the intended outcomes. The Activity (or Asset) Management Plan (AMP) of each council/Road Controlling Authority (RCA) provides the strategic case for investment in local road maintenance, guided by GPS priorities. National guidance and benchmarks from REG are a consistent foundation for AMP development.

The Funding Assistance Rate (FAR) was considered an important contributor to areas with lower rating bases. Along with direct funding support for emergency responses, it alleviated the burden on councils during crises.

A challenge to maintaining assets was a declining capability in procuring appropriate technical or delivery expertise, highlighted by sealing methods failing sooner than anticipated through poor design and installation. This can lead to a shorter road life and higher whole of life costs.

Interviewees suggested NZTA could refine its prioritisation approach to better enable integrated planning outcomes and reduce competition between funding streams. They also advocated for collaborative efforts between NZTA, RCAs, and councils to synchronise pipeline development with local government, improving procurement timing and processes to align with market conditions and save costs.

### 1.4.3 Value indicators

Evaluative assessments were undertaken of efficiency (how investments in local road maintenance met their intended goals and managed costs) and effectiveness (the extent to which intended outcomes are apparent from that investment), drawing on available data. These are summarised below and explained further in section 3 (p.9). A series of ratings were applied that span the continuum of 'inadequate/ unacceptable', 'below expectations / improvement required', 'adequate / some improvement required' and 'acceptable.'

Regarding the efficiency of local road maintenance, we found:

Indicator	Rating	Reasoning
Alignment between funding intent and allocation	Acceptable	Alignment reflected substantial expenditure growth over the evaluation period. However, interviewees signalled ongoing need for sustained investment.
Delivery against investment	Adequate	Post 2018/21 actual (claimed) expenditure generally aligned with budgeted (approved) funding.
Unit costs and cost indexes	n/a	Per-km, maintenance costs were 33% higher in 2021/22 compared to 2017/18. This reflected international supply chain cost increases as well as local factors. However, cost containment strategies were needed, as trends differed nationally. Given the background of a general high inflation environment and external/supply chain pressures, a rating for performance of unit costs and cost indices for maintenance was not given.
Data quality	Acceptable	Most territorial authorities have sound data quality systems, though some gaps remain in moderately important indicators.

Evaluative judgements for effectiveness indicated:

Indicator	Rating	Reasoning
Local road maintenance achievements	Below expectations	decreases in most indicators. Qualitative interviews indicated a common concern about extending asset life with insufficient resources to adequately maintain or renew assets.
Activity management (delivery planning)	Acceptable	trends in AMP quality across RCAs were mixed. While REG aids AMP quality, some declines in reported AMP quality assessments were evident for some RCAs, based on independent assessments by REG.
Service performance	Below expectations	A small decline or stability across local road condition indicators, despite the increased investment.
Safety outcomes	Insufficient data	Generally, DSI reductions on local roads occurred during the evaluation period. Existing research (in the context of state highways) supported a positive contribution of maintenance to safety outcomes. <sup>1</sup>

Interviewees mentioned factors that influenced costs and delivery outside of the GPS 2018 and 2021. These included historic pressures on local road maintenance funding, external supply chain pressures, and changing service levels that raise pricing. Interviewees also mentioned deteriorating road quality due to factors outside of the NLTF, such as severe weather events or damage to roads from increased road freight and population growth.

Interviewees reported that Net Present Value (NPV) or Benefit Cost Ratios (BCR) were used to decide on maintenance or renewal options (particularly NPV), guiding each AMP and determining the best time for replacing or maintaining pavement condition. NPV was seen as a basis for decision-making by NZTA and councillors, with a structured economic approach to the asset review process.

#### 1.4.4 Benefits gap factors

A 'benefits gap' factor is included in the VfM Assessment Framework to account for not achieving the outcomes and benefits stated in business cases. However, this was not a requirement under the 2018 and 2021 GPS.

Benefits gap analysis and post-project reviews in local road maintenance are seldom used and were not seen by some as particularly relevant, partly because maintenance and renewals typically happen towards the end of the economic life cycle, making benefits easily observable. BCR analysis typically focuses on tracking the most critical assets to provide evidence for informed decisions about major repair / renewal. Some examples of pavement monitoring were given to explore how some surfaces performed better than others and to inform future decision-making, but these were not widely noted in discussions.

Budgeting for the entire life cycle of assets is challenging. Although RCAs are expected to prepare for funding future maintenance costs when making a bid for funding on capital projects, many reported a need for sufficient maintenance funding.

#### 1.4.5 Capacity and capability

Capacity and capability present challenges, especially in smaller councils or RCAs, where retaining skilled staff affects maintenance planning and delivery. In response, some councils have formed alliances to pool resources, enhance specialisation, and attract talent.

<sup>1</sup> See <https://www.nzta.govt.nz/resources/understanding-the-safety-impacts-and-opportunities-of-state-highway-resurfacing-and-renewals/>.

Supplier capacity presents an ongoing issue due to high turnover and limited resources, particularly during emergencies when suppliers and council resources are diverted. Councils seek a diverse contract mix across suppliers, and some seek to spread risks between councils and contractors to contain costs.

REG was widely referenced for guiding AMP processes and reviews, identifying skill gaps, and fostering partnerships for upskilling. The Āpōpō micro credentialing programme and the NZ Transportation Group within Engineering New Zealand were also cited for their contributions to raising capability.

The REG insights tool and the communities at risk register were valued for facilitating inter-council comparisons and safety assessments, and demonstrating the adequate qualities of investment and procurement.

## **1.5 Conclusions**

This review has shown that GPS 2018 and 2021 were important for signalling priorities and channelling those priorities through investment activity. However, it takes time for investment priorities to translate into changes in inputs, outputs and outcomes.

Key areas of improvement noted in this evaluation include better embedding the VfM Framework and Assessment Model into planning and delivery, improved risk management, and improved capability and data collection.

The translation of funding inputs to delivered outputs to realised outcomes during the evaluation period was affected by a range of issues, including the challenging task of prioritising against multiple needs, external economic factors that have significantly influenced costs, community responsiveness and demands, and the disruptions imposed by shocks such as COVID-19 and severe weather events.

The VfM Assessment Model, and its associated framework, provided a useful structure for discussion and overall findings. It enabled us to explore the drivers and disruptors to achieving value for money. However, discussions also revealed the model's low level of visibility. To achieve traction for VfM aims in the sector over the long term, the VfM Assessment Model requires substantial embedding and socialisation. This could mean including it within GPS priority setting and implementation to become a readily recognisable frame of reference for the sector.

## 2 Introduction

### 2.1 Purpose and objectives

The overall evaluation explores outcomes and learning from the 2018 Government Policy Statement on Land Transport (GPS), and the first year of the 2021 GPS, with specific reference to the Local Road Maintenance, and Walking and Cycling Improvements activity classes. This evaluation follows one undertaken in 2022 exploring the 2018 GPS more generally, regarding its impacts on transport investment and decision making.

This evaluation report reviews how the GPS contributed to the development and implementation of local road maintenance projects to deliver the wider transport outcomes sought, including value for money.

The general objectives for this evaluation and specific objectives for the two evaluation topics were as follows:

- General objectives
  - Objective 1: Test the link between how investment is directed (inputs), what is delivered (outputs) and how this link contributes to outcomes by applying the Ministry's Value for Money (VfM) Assessment Model. Identify the key factors that affect the efficiency and effectiveness of converting inputs to outputs and outcomes.
  - Objective 2: Identify opportunities for the Ministry and New Zealand Transport Agency Waka Kotahi (NZTA) to improve and supplement existing data collection and management practices related to developing, implementing, monitoring, and evaluating current and future iterations of the GPS.
  - Objective 3: Offer considerations for how the Ministry and NZTA could improve the implementation of these activity classes.
- Local Road Maintenance
  - Objective 4: Assess how the previous and current levels of funding to operate, maintain and renew local roads were established and what they intended to deliver in GPS 2018 and GPS 2021.
  - Objective 5: Examine to what extent the impact of GPS 2018 and 2021 investment into the Local Road Maintenance activity class has achieved outputs and intended impacts and outcomes (including VfM delivered via outputs/outcomes). This may include using case studies.
  - Objective 6: Understand how practical implementation and the operational environment affects delivery of outputs, outcomes and impacts.
- Walking and Cycling Improvements
  - Objective 7: Assess the impact of GPS 2018 and 2021 investment into walking and cycling improvements on increasing the use of walking and cycling networks and the intended outcomes. This may include the use of case studies.
  - Objective 8: Understand how practical implementation and operational environment for GPS 2018 and 2021 (first year) affects delivery of outputs, outcomes and impacts.

This report focuses on findings about local road maintenance. A companion report explores findings regarding walking and cycling improvements. This report is in part evaluative, where we

are assessing delivery and outcomes against some clear criteria and standards for efficiency and effectiveness. This report also serves as a landscape scan, exploring the context, practices, and challenges facing local road maintenance, as well as the visibility of the VfM Assessment Model.

Overall findings are detailed in section 3, and considerations for improvement in the activity classes, and data collection, are detailed in sections 4 and 5. Appendices provide further detail on evaluation findings and methods.

## **2.2 GPS 2018 and 2021**

The GPS sets the operational environment for the National Land Transport Programme (NLTP) and its investments through the National Land Transport Fund (NLTF) and other funding sources.

GPS 2018 set four clear priorities to guide the NLTP and the NLTF and other funding sources:

- Safety (a safe system free of death and serious injury)
- Access (including access to economic and social opportunities, enabling transport choice and access, and resilience)
- Environment (including reduced greenhouse gas emissions)
- Value for money (delivering the right infrastructure and services to the right level, at the right cost).

GPS 2021 continued the direction of GPS 2018, while adding specificity to four priority areas:

- Safety (developing a transport system where no one is killed or injured)
- Better travel options (providing people with better travel options to access social and economic opportunities)
- Climate change (developing a low carbon transport system)
- Improving freight connections to support economic development.

The 2021 GPS also established a purpose for the transport system to improve people's wellbeing, and the liveability of places, by contributing to five key outcomes: healthy and safe people; inclusive access; environmental sustainability; economic prosperity; and resilience and security.

In GPS 2018, funding was increased for the Local Road Maintenance activity class to cover costs associated with increased heavy traffic, severe weather, and an increase in scope to include footpath maintenance, to support active modes. GPS 2021 increases included new work categories for footpath and cycleway renewals.

## **2.3 Applying the Value for Money Assessment Model**

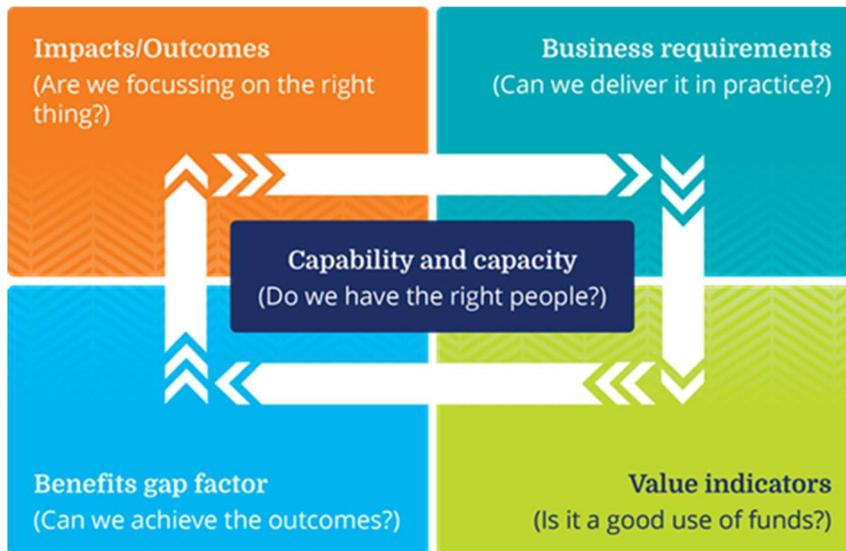
The MoT VfM Assessment Model (Figure 1), within the associated VfM Framework<sup>2</sup>, is a foundation of this evaluation. The VfM Framework review was published in September 2021, complementing GPS 2021's revision of VfM from a strategic priority to an embedded principle.

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<sup>2</sup> Ministry of Transport. 2022. Value for Money Framework Review. Wellington: Ministry of Transport, Beca

The final model was published in late 2021 and was not set as a requirement in GPS 2018 and 2021. This evaluation provides a useful opportunity to explore how it features in transport investment, and issues to consider for future embedding of the model.

Figure 1 Value for Money Assessment Model.



The VfM Assessment Model comprises the following key dimensions:

- **Impacts and outcomes – Are we focusing on the right things?** This involves assessing how the intervention’s expected impacts and outcomes align with the national strategic objectives. These objectives are set out in policy frameworks such as the GPS, the VfM framework, and other relevant government strategies. Interviews explored how the priorities and outcomes of the GPS guide decision making.
- **Business requirements – Can we deliver this?** This involves assessing the business requirements and ensuring that delivery organisations have the systems and processes to efficiently deliver intended impacts and outcomes. This requires applying appropriate processes across all aspects of development, delivery, operations, and maintenance stages. Standards and departures from standards are a key element and interviews explored the tools and frameworks used in GPS planning and decision making.
- **Value indicators – Is this a good use of funds?** This involves conducting a value assessment to indicate how efficiently each action delivers desired outcomes and impacts. Traditional cost benefit analysis (CBA) metrics such as benefit to cost ratios (BCR) are commonly used. However, there is an expectation to account for non-monetised impacts. Interviews explored the extent value indicators were established and built into planning and decision-making and the elements of value that were considered.
- **Benefits gap factor – Can we achieve the outcomes?** This involves assessing the extent to which an intervention realises the outcomes and benefits intended. Interviews explored how and to what extent the gap between benefits expected and realised were factored into investment and planning decision-making.
- **Capacity and capability – Do we have the right people?** This acknowledges the need for sufficient resources and skills to deliver the outputs intended. This is at the heart of the model as having the right capacity and capability is relevant across all model elements. Interviews explored how and to what extent considerations of capability and capacity informed investment planning and decision making.

The VfM Assessment Model also explored dimensions of efficiency and effectiveness, which informed criteria selection and assessment for this evaluation. Efficiency is defined as delivering optimal outputs with minimal wasted effort or expense. Effectiveness is defined as successfully delivering outcomes.

Evaluation methods are detailed in Appendix 4 (p.60).

## **2.4 Contextual factors affecting GPS influence**

This project evaluates the contribution of the GPS to local road maintenance, but a broad range of contextual factors should be considered that limit the influence of the GPS in any one period it operates within. A range of factors that drive costs and delivery were noted by stakeholders in this review, including the following:<sup>3</sup>

- Road quality has deteriorated due to factors outside of the NLTF, such as severe weather events, damage to roads from increased road freight and population growth.
- Growth of the roading network and maintaining an ageing network means that costs become larger and more complex to manage.
- Construction of new roads and related infrastructure for government programmes or new housing areas are extending the land transport asset.
- Changing levels of service are raising costs to deliver maintenance and/or improvements.

The timing of GPS development and publication makes it challenging to develop programmes that deliver effectively, efficiently and in line with the GPS every three years. To do so requires the NLTP and Regional Land Transport Programmes (RLTPs), and the GPS, to be published in line with statutory timelines. Furthermore, the period for councils to ensure their RLTPs are aligned with the GPS can be significantly constrained depending on the overall timeline for GPS development, which is aligned to local council and national elections. Delays in GPS development mean that councils often have a matter of weeks to ensure their RLTPs are aligned with the GPS, are efficient and effective, and deliver for their communities.

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<sup>3</sup> We acknowledge NZTA for communicating these points to inform the evaluation.

## 3 Overall findings for local road maintenance

**Objective:** Test the link between how investment is directed (inputs), what is delivered (outputs) and how this contributes to outcomes by applying the Ministry’s VfM Assessment Model. Identify the key factors that affect the efficiency and effectiveness of converting inputs to outputs and outcomes.

In this section, we reflect overall on the learning and outcomes of GPS 2018 and the first year of GPS 2021. This section synthesises findings from across the evaluation report and makes evaluative judgements against a selection of indicators addressing the underlying criteria for this evaluation. The following sections address the principles of the Ministry’s VfM model for local road maintenance.

### 3.1 Key findings

**Nominal investment increased substantially:** There was significant investment in local road maintenance over the evaluation period, but there was a view from NZTA and interviewees in regions that this has not redressed a shortfall from 2009-18. Overall, in the evaluation period, total approved funding (\$2.7 billion) was within the GPS target range (\$2.5 to \$2.8 billion).

... **but costs rose:** Escalating cost pressures offset the nominal increase in funding, with real funding in 2021/22 approximately the same as in 2017/18, and only 2.3% higher than in 2010/11. Per-kilometre, maintenance costs were 33% higher in 2021/22 compared to 2017/18. However, cost trends also likely reflected local cost drivers as trends differed nationally.

...**and measured road condition did not improve:** Averages for the condition index (CI) and pavement integrity index (PII) fell slightly during the evaluation period while smooth travel exposure (STE) remained stable. There was considerable variation across regions but many declines were evident within peer groups of local authorities.

**There is generally good activity management data quality:** Scores of 80% or higher for data quality were recorded for two-thirds of local authorities in 2021/22 REG assessments.

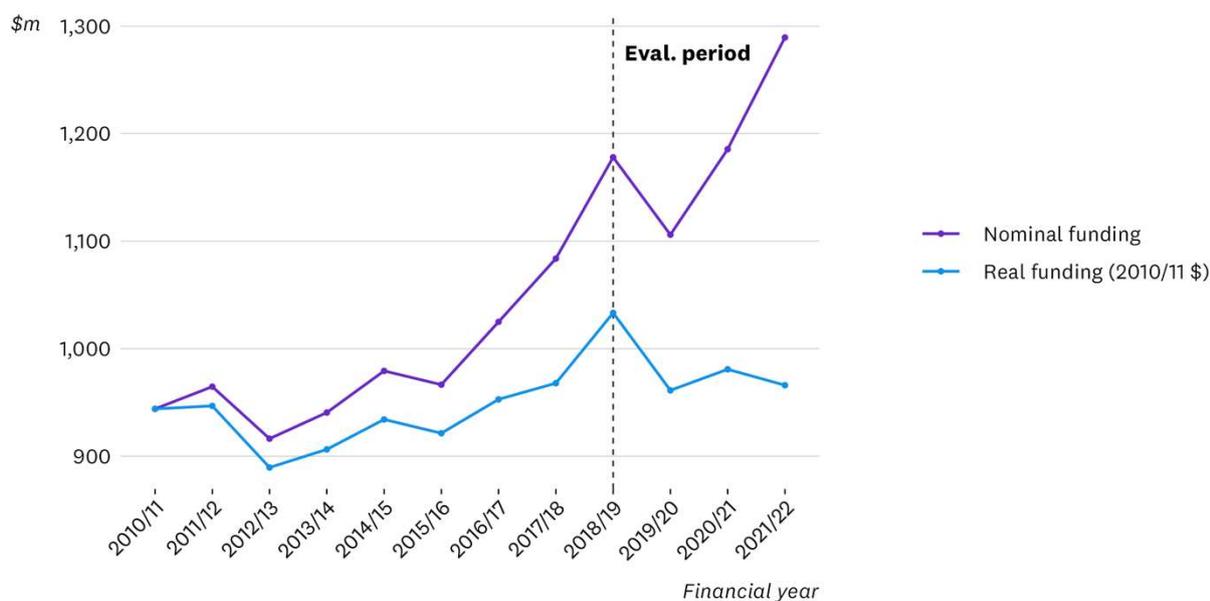
... **but there were mixed results for independent assessments of activity management planning quality:** REG assessments of AMP quality were “good” or “fit for purpose” for 93% of local authorities in 2021/22, but declining trends were apparent for some.

**There are some important exemplars of regional alliances:** There may be an important role for inter-district alliancing to work at scale and build regional capacity.

### 3.2 GPS impacts and outcomes

The GPS provides key signals for local road maintenance through the levels of investment made available, and the distribution of investment. A substantial increase in nominal investment was evident in the evaluation period compared to the period between 2010/11 and 2017/18 (Figure 2), and the investment approved was within the expected expenditure ranges. The largest proportion of investment was for sealed roads (although this decreased slightly in the evaluation period), and there was increased investment in network operations, maintenance and asset management.

Figure 2 Nominal and inflation-adjusted total approved funding for local road maintenance. Inflation adjustment uses NZTA's reseals cost index.



Interviewees were highly aware of the GPS in their local road maintenance planning, and noted clear linkages between local road maintenance activity and a range of overarching 2018 and 2021 outcomes: safety and access for 2018, and safety, travel options, and climate change for 2021.

Local road maintenance, through its ability to sustain and extend the life and performance quality of the roads was considered a foundation for delivering on GPS outcomes. The activity class was seen to connect people and communities, support economic prosperity, ensure resilience in the face of economic shocks, and provide the basis for safe travel through maintaining road conditions. Recognising resilience in the 2021 GPS was thought a notable improvement on previous GPSs, which had given less attention to the issue. This was placed into sharp relief after the various severe weather events of 2021 to 2023. These events underscored the primary purpose of the transport network to connect communities, businesses and people.

Many interviewees argued that underfunding for local road maintenance before 2018 put pressure on maintaining the asset base, particularly pavement renewals. However, MoT stakeholders noted that efficiency improvements were also developed through this period as a counterbalance. Many also spoke of large-scale investment that was either required or looming to renew assets that were reaching the end of their economic life.

Some interviewees noted the ongoing maintenance costs of many new capital investments funded outside of the NLTF, which add to the operational investment required to maintain a growing asset base. These included safety improvements, walking and cycling improvements and new pavement seals.

### 3.3 Business requirements

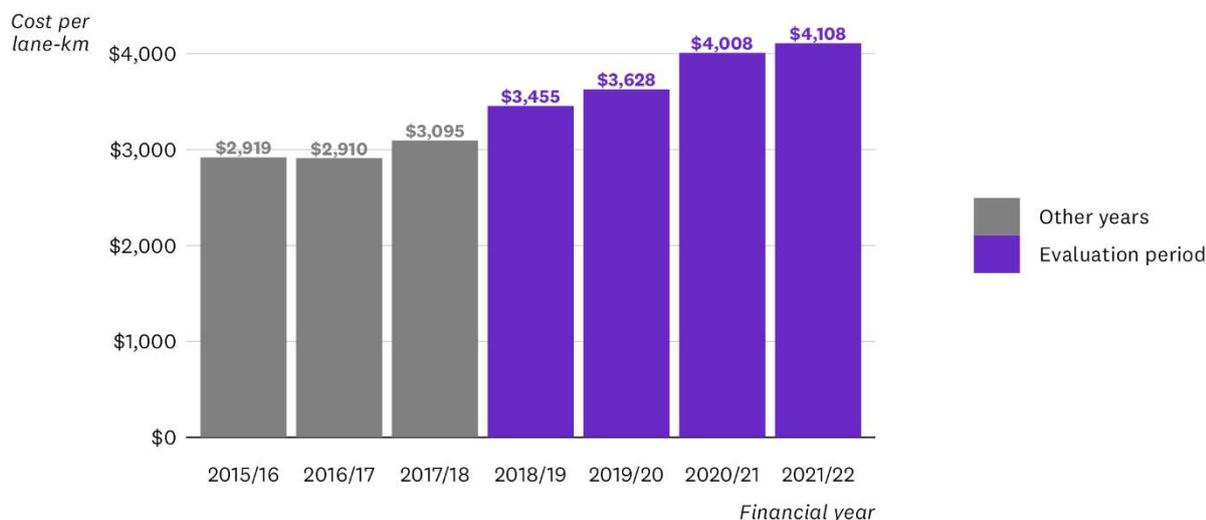
The main framework to guide local road maintenance in each council is the Activity (or Asset) Management Plan (AMP). Each AMP is guided by the priorities set out in the GPS and provides the strategic case for investment, defining problems, and identifying delivered benefits. The AMP can serve as a business case that spans planning through to delivery. National guidance and benchmarking by REG provides a consistent basis for AMP development. Data from REG indicated that AMPs were generally robust; however, some were identified as having room for improvement.

A common interview theme was that there is no strong focus on budgeting for the whole of life operations, maintenance and renewal costs for the growing base of assets. Concerns raised by interviewees included that new assets are often only funded for their capital works and not sufficiently for their ongoing maintenance.<sup>4</sup>

A significant increase in local road maintenance costs was evident, with the overall local road maintenance cost per lane-kilometre delivered increasing by 33% nationally during the evaluation period (see Figure 3 below). Interviewees indicated that while international factors strongly influenced price increases, so did domestic pressures. These included increased site traffic and safety management expectations/requirements, bitumen transport costs, ownership/control of quarries and pricing for contractors.

A range of levers were used to manage costs, including alliancing models to enable scale, working with suppliers to manage costs, and ensuring a competing range of suppliers, but these cost pressures remained difficult to contain.

Figure 3 Overall local road maintenance cost per lane-kilometre delivered.



Source: MoT annual GPS reporting

For this evaluation, we worked with an independent advisor with specialist expertise in local road maintenance, who noted that some sealing methods, particularly two-coat seals, are failing sooner than anticipated. This can lead to a shorter road life and higher whole of life costs. Traditionally, councils had specifications for materials based on nationally accepted criteria. Now, there is reportedly reduced expertise in procurement and contracting of capable technical or delivery services in this area, which contributes to the challenges encountered through poor design and installation.

Some interviewees suggested that NZTA should refine its prioritisation approach to better enable integrated planning outcomes, and reduce competition between funding streams. Also to work collaboratively with Road Controlling Authorities (RCAs) and councils, such as in coordinating pipeline development with local government, to improve procurement timing and processes to meet market conditions and achieve savings. This would provide more efficient investment and may enable accelerated progress towards meeting GPS outputs and outcomes.

The Funding Assistance Rate (FAR), based on road length and rating base within a district, was considered an important contributor to areas with high maintenance needs relative to their

<sup>4</sup> NZTA requires bids to include whole of life costs, but RCAs are responsible for budgeting their local share to pay for maintenance on activities. RCAs are expected to prepare to fund future maintenance costs when making a bid for funding on capital projects.

revenue base. Also of importance is direct funding support provided for emergency responses, alleviating the burden on councils during crises. This indicated that FAR is a useful contributor to supporting improved local road maintenance outcomes.

### 3.4 Value indicators

#### 3.4.1 Effectiveness and efficiency analyses

We have evaluated the efficiency and effectiveness of local road maintenance using a range of available quantitative criteria. These indicators were discussed and agreed through a series of meetings with the evaluation Steering Group, and were drawn from datasets considered to be both reliable and indicative of the outcomes sought from local road maintenance.

Full analysis of the quantitative findings is found in Appendices 1 and 2 (pp. 22-45), where substantially more data is presented. While the selection of criteria was informed by the available quantitative indicators, the assessment also draws from qualitative evidence.

The standards used to evaluate the criteria are detailed below in Table 1. They were drawn from standards established in the State Highway Maintenance Review (2020), and refined to reflect the evaluation approach and the extent of evaluative judgement that can be applied from the qualitative and quantitative data available.<sup>5</sup>

Table 1: Standards for evaluative judgement.

Level	Definition
Inadequate/ unacceptable	Evidence shows large deficiencies in meeting key requirements/targets. Significant improvement required of systems, processes and procedures, which are not understood or performed.
Below expectations / improvement required	Evidence shows performance below expectation/target, with minimum targets inconsistently achieved. Process and procedures documentation and systems are not fully fit for purpose, are incomplete or require significant improvement.
Adequate / some improvement required	There is sufficient evidence observed to confirm expectations are generally sufficiently met. Suitable systems and processes are in place and generally applied appropriately with only minor shortcomings, which do not compromise the ability to achieve performance.
Acceptable	Most processes, procedures, systems, and data are robust, and the identified deficiencies do not have a material impact on overall integrity of performance. Documented policies, processes, practices, and procedures are embedded, fully understood, and implemented well.
Robust / advanced	Evidence confirms that requirements are being met beyond expectations. No further improvements are required

Efficiency is defined in the VfM framework as delivering optimal outputs with minimal wasted effort or expense.<sup>2</sup> Table 2 below details the evaluative judgements for how local road maintenance has delivered on the intended investment regarding efficiency.

<sup>5</sup> Ministry of Transport. 2021. Review of the Investment in Operating and Maintaining New Zealand's State Highways. Part 1: Summary Report | Pūrongo Whakarāpopoto. Wellington: Ministry of Transport.

Table 2: Assessment of efficiency criteria against standards – Local road maintenance.

Criteria	Key indicators (see section 8)	Rating	Commentary
Alignment between funding intent and allocated funding	Approved NLTF funding for local road maintenance activities, and GPS funding ranges Qualitative feedback	Acceptable	Growth in local road maintenance expenditure in line with the GPS funding intent over the evaluation period and shows substantial increase from the funding ranges before 2018. However, widespread feedback that ongoing significant investment is required.
Delivery against investment	Proportion of approved funding for local road maintenance by work category groups Actual lane-kilometre of local road maintenance activities	Adequate	Actual activities likely affected by COVID-19 until 2020/21 when activities aligned with planned expenditure.
Unit costs and cost indexes	Cost per lane-kilometre delivered Qualitative feedback	No rating due to difficulty distinguishing between controllable and uncontrollable changes in costs	Cost per lane kilometre of maintenance delivered shows substantial increase, driven by international supply chain costs as well as local factors; from data available we can't determine the extent to which efficiency decreased, although interviews suggest some cost containment strategies are required. Given the background of a general high inflation environment and external/supply chain pressures, we have not given a rating for performance against unit costs and cost indices.
Data quality	REG data quality indicators	Acceptable	Most territorial authorities have good or very good data quality systems for local roads, but some gaps exist in moderately important indicators.

Effectiveness is defined in the VfM framework as *successfully delivering outcomes*. Table 3 below details the evaluative judgements for the extent to which delivery of intended outcomes is apparent from NLTF investment for local road maintenance, using available data.

Table 3: Assessment of effectiveness criteria against standards – local road maintenance.

Criteria	Key indicators (see section 8)	Rating	Commentary
Local road maintenance achievements: changes in indicators of road condition	Local road condition indicators Qualitative feedback	Below expectations	Decreases generally evident over the evaluation period in key local roads condition indicators (condition index, pavement integrity index), but some increase in smooth travel exposure experienced by road users. There is also a common concern of extracting maximum value from the assets, with limited maintenance resource available.
Activity management	Trends in overall activity management data quality scores by local road authority	Acceptable	All considered fit for purpose, with some improvements evident in independent assessments of activity management quality over the evaluation period. REG working actively to support AMP quality.
Service performance	Condition of footpaths Condition of sealed road network Maintenance of the sealed road network Response to service requests	Below expectations	General direction of small decline in condition and maintenance of the sealed road network, and stability in other maintenance-related targets, despite increased investment.
Safety outcomes	Trends in deaths and serious injury (DSI) rates on local roads by region	Insufficient data	General reductions in DSIs on local roads evident over the evaluation period; potential for ongoing improvement remains. However, DSI rates are affected by many potential factors beyond road maintenance, and DSIs attributable to road maintenance cannot be ascertained.

### 3.4.2 Use of Net Present Value

Net Present Value (NPV) was the most common indicator cited for assessing the best option for maintenance or renewal, and informs each AMP. NPV is primarily used for determining the optimum time of replacement versus maintaining the pavement condition. Its use was often seen to provide a good evidence base for decision makers in NZTA and councils, by signalling that there is structured economic analysis informing the asset review process.

We note that the VfM Assessment Model also refers to non-monetised benefits. Interviews indicated some use of non-monetised benefits, but this appears generally small in scale and variable in use. This may need further development to the extent that non-monetised benefits are relevant for local road maintenance.

### **3.5 Benefits gap factors**

The intention for this VfM component is to ensure lessons learned from experience are used to support delivery of outcomes or net benefits. However, this is not a requirement under the GPS. Benefits gap analysis appears to be rarely used in local road maintenance, apart from monitoring safety impacts, and some considered it irrelevant. One interviewee noted that maintenance and renewals tended to occur at the end of economic life, hence benefits are easily realised. Few interviewees could point to their application beyond larger scale capital projects, and most did not refer to undertaking any programme delivery reviews, except for two RCAs that reported using pavement performance analysis to better manage costs over time.

### **3.6 Capacity and capability**

Many interviewees noted challenges facing capacity and capability in the sector, particularly among smaller councils or RCAs where retaining staff in skilled roles can affect the planning and delivery of local road maintenance. In the face of these challenges some councils have formed alliance groups that leverage collective capacity across councils, to achieve greater economies of scale, enable specialisation, and attract skilled talent. They are particularly strong in providing services where specialist skills are required that many of their constituent authorities would struggle to resource or manage.

Supplier capacity and capability were also raised as ongoing issues, with often high turnover in the industry and difficulties meeting competing demands with limited capacity. This is a particular problem during emergency responses, when resources (for suppliers and council planning) are by necessity diverted.

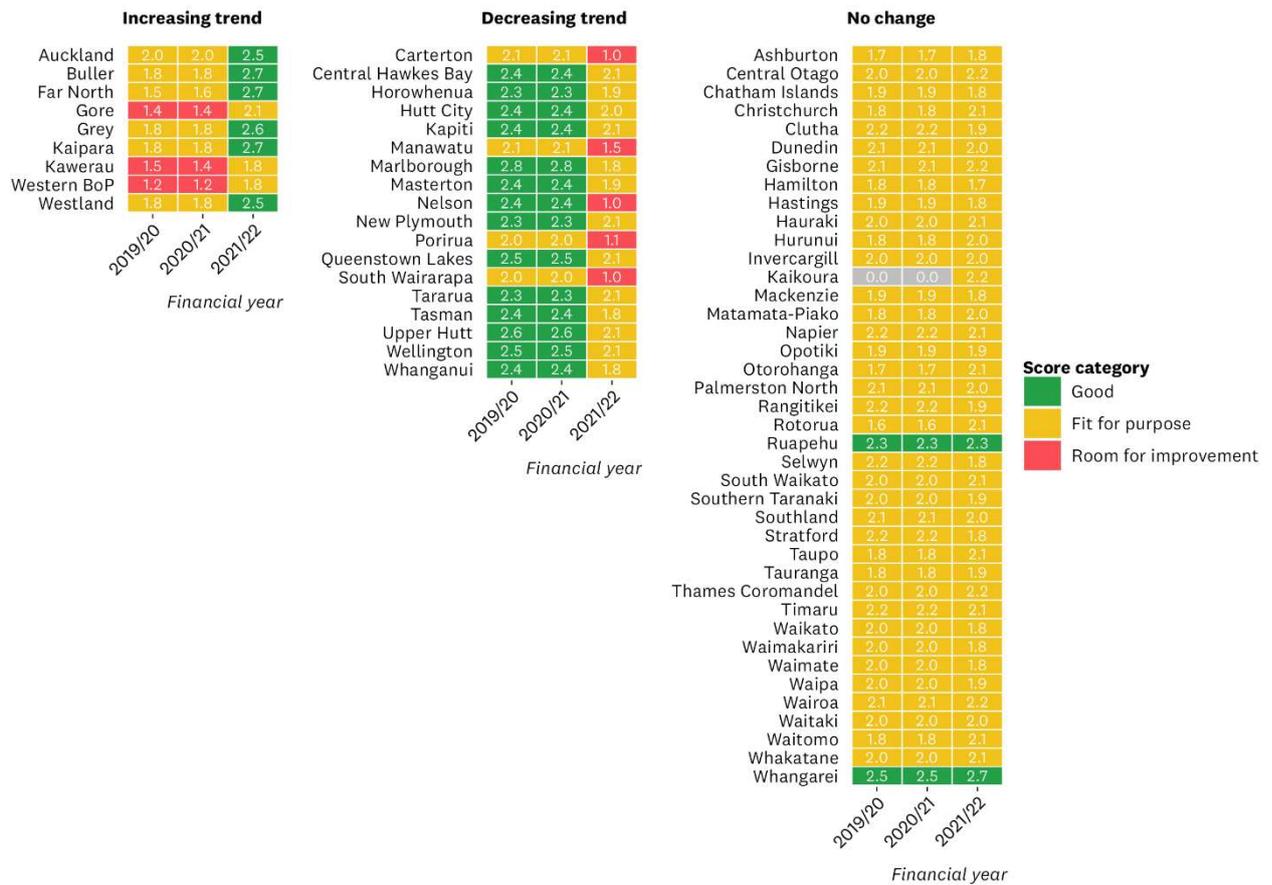
Smaller councils often seek to ensure a mix of contracts across suppliers. Some interviewees noted that local road maintenance tends to be a highly competitive and a strongly sought after area for suppliers, but has relatively low profitability. Emergency responses are generally more profitable, and RCAs/councils must carefully manage contractors to ensure costs are contained.

In terms of ensuring staff have the right skills and ongoing professional development, many interviewees highlighted REG guidance on AMP processes, including AMP reviews, which reportedly have widespread uptake nationally. REG was also noted for identifying capability gaps and actively seeking partners to upskill the sector. Others noted capacity building through the Āpōpō micro-credentialling programme and NZ Transportation Group within Engineering New Zealand. Some third party tools were mentioned to support delivery of efficiency and risk management. These were deterioration modelling tools to support a level of service optimisation, and REG insights and assessment tools. It was also noted the potential for technology and systems to support network monitoring and lower costs, and reduce human error, where they can be reliably deployed.

Some interviewees noted the value of the REG insights tool to support inter-council comparisons and benchmarking performance; and of the communities at risk register to enable safety comparisons. These could help demonstrate that investment was at the right level, and that procurement was delivering on legislative requirements.

REG has carried out a review of each council's AMPs for the last two funding rounds, including providing advice for enhancement and improvements. In 2021/22, almost all AMPs were considered 'good' or 'fit for purpose' (see Figure 4 below), but declines in quality were evident for some councils, and five were rated as 'room for improvement'.

Figure 4 Overall activity management planning quality independent assessment scores.



Source: Dovetail analysis of REG data

## 4 Considerations for improvement

**Objective:** Offer considerations for how the Ministry and NZTA could improve the implementation of the Local Road Maintenance activity class.

In this section, we draw on interviewee and Steering Group reflections to suggest potential directions for the GPS framework, regarding local road maintenance. At a general level, we see the following opportunities for improvement:

1. MoT and NZTA could consider embedding the VfM Framework and Assessment Model in the sector, through building awareness, developing good practice examples of its application and, if feasible, integrating with GPS development.
2. While the GPS provides useful guidance around funding availability and prioritisation for the strategic period, a common concern was that its short-term funding focus means that each can vary considerably. There may be value in building consensus on a longer-term strategy that sets out what a connected transport network should look like in 30 to 50 years. This approach would mean that each GPS would give each government an opportunity to prioritise and advance specific objectives under the overall strategy while remaining on a clear path toward a unified vision for the future network.

Local road maintenance provides a key foundation for economic and community connection. Regarding the contribution of the GPS to local road maintenance and driving performance in this activity class, potential areas of development included:

3. Future GPS development could ensure that the Local Road Maintenance activity class contributes to an enduring and resilient network that connects people, communities and businesses in the face of severe weather events and other emergencies, taking account of the need for local variation.
4. NZTA and REG could develop insights and benchmarking tools to optimise performance and develop procurement efficiencies. These include completing maintenance at an appropriate time, quality of maintenance and budget-cost variances.
5. NZTA could review Activity/Asset Management Plans across RCAs and explore ensuring greater consistency to better understand funding requirements. At the same time the Agency could allow local needs and circumstances to determine appropriate levels of service by building on the One Network Framework.
6. NZTA and REG could promote incorporating whole of life costs into planning for local road maintenance. This may enable the optimal level of intervention required to maintain assets and contribute to broader outcomes, and a review of any barriers to optimal intervention.

Further, to address capacity and capability constraints, we suggest the following:

7. NZTA with RCAs could explore coordinated procurement planning across districts to support reduced domestic supply chain costs.
8. NZTA and REG could promote and encourage formal inter-district collaboration, and share good practice learning from established models.

Other suggestions raised through the evaluation regarding local road maintenance include:

9. NZTA could undertake work to explore further development of appropriate maintenance standards, asking to what extent RCAs face challenges in meeting standards, and how to address these gaps.
10. NZTA could work with RCAs to explore emerging practice using benefits gaps analysis in local road maintenance, to support enhanced practice in this area, and to inform future investment.
11. NZTA and REG could develop capability development/mentoring opportunities in contract management and supervision, to ensure contractors are delivering using the best practice methodologies supported by appropriate quality management systems and processes.

## 5 Opportunities to improve and supplement data collection practices

**Objective:** Identify opportunities for the Ministry and NZTA to improve and supplement existing data collection and management practices related to developing, implementing, monitoring, and evaluating current and future iterations of the GPS.

The evaluation was supported by extensive quantitative data relating to local road maintenance primarily provided by NZTA and REG.

Potential improvements are listed below. These are improvements that may be useful for evaluation and monitoring of the GPS concerning local road maintenance, as done in this evaluation. It is likely that broader improvements in data are possible, but identifying those opportunities would require a fuller analysis of data gaps than is possible within the scope of this evaluation.

In addition to the specific points below, some of the high-level GPS monitoring indicators used to inform this evaluation were unavailable before 2017/18. This means it was not possible to compare changes during the evaluation period with an earlier baseline. If possible, backfilling these indicators to include earlier years would enable future comparisons.

### 5.1 Identified areas of data collection improvement

While there was ample quantitative data on local road maintenance to inform this evaluation, the following potential areas for improvement were identified. It is likely that many of these can be addressed by making better use of existing data and combining datasets to produce new indicators.

- **Local authority funding requirements:** Total local road maintenance funding is constrained by the overall GPS funding range. To understand the performance of local road maintenance activities, it would be useful to monitor and report on the variances (if any) between adequate maintenance funding requirements and available funding. The corresponding funding gap (if any) would help reviewers to assess the efficiency and effectiveness of actual road maintenance outcomes, so the Ministry could understand what good looks like across road categories and asset types.
- **Dollars saved by carrying out maintenance at the right time:** A high level measure of the expected savings on future local road maintenance by doing maintenance at an appropriate time in each local roading authority area could assist understanding broad trends in maintenance cost-effectiveness and enable benchmarking across areas.
- **Quality of maintenance work:** The quality of maintenance work carried out is an important characteristic of efficiency. While quality may be difficult to assess objectively, unexpected and early re-work requirements may indicate that maintenance was not undertaken to the expected standard. This could be monitored by the proportion of maintenance activities requiring re-work within a suitable time after completion.
- **Budget cost variances:** The extent to which local road maintenance activities are completed within budget is relevant to efficiency and could be monitored to identify areas of consistent and increasing variance. This would require tracking planned and actual expenditure for individual maintenance contracts and analysing the total and distribution of variances within and across local road authorities.

- **Sub-national cost indexes:** Currently available road maintenance and construction costs are nationally indexed. However, as certain costs vary substantially across regions (e.g. raw materials and potentially labour costs), it would be helpful to develop sub-national cost indexes for better visibility of regional cost trends.<sup>6</sup>
- **Develop standardised overviews across all local authorities from REG data:** The Transport Insights dashboard produced by REG provides a rich source of information about local road maintenance activities (and other local authority activities). It currently provides information to local authorities so they can compare themselves to other authorities. This data could also be used to produce a standardised set of summaries and trends across all local authorities (cf, some of the indicator summaries based on REG data included in this report). This should be relatively easy to achieve via alternative views of existing data focused on cross-regional comparisons and trends. This would enable MoT, NZTA, and others to have a better view of relative performance and trends across all local authorities.

## 5.2 Options for further analysis

During this evaluation, some opportunities for further analysis to improve understanding of the efficiency and effectiveness of local road maintenance were identified. These are out of scope for this evaluation but are noted for future reference:

- **Distribution of NPV for local road maintenance projects:** What proportion of local road maintenance projects have a positive net present value? What is the distribution of the sizes of NPVs? In what cases and how are non-quantifiable factors considered in the assessment of which local road maintenance projects to fund?
- **Gap between 'ideal' and actual local road maintenance funding:** Is information available in the AMPs or from other sources about the 'ideal' local road maintenance funding of local authorities, and how does this compare to actual funding? If not, is there a way to systematically record this information and develop a unified view of 'ideal' local road maintenance funding requirements? This may include developing a standard for 'ideal' that allows appropriate location variation and can be applied equitably across regions.
- **Impact of AMP reviews on AMP quality:** To what extent do the local authority AMP reviews by REG and NZTA affect the quality of AMPs? This could be assessed by comparing AMP quality levels and changes in quality over time for local authorities that are reviewed versus those that are not (if any).
- **Trends in physical outputs of local road maintenance:** As discussed in Appendix 2, approved funding for local road maintenance increased under GPS 2018 but this was largely offset by cost increases. This raises the question of whether physical outputs of local road maintenance have increased in response to the increase in funding. Analysis of additional data on physical local road maintenance activities measured in a consistent way across local authorities could help to answer this question.

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<sup>6</sup> We understand that NZTA investment advisors monitor costs within peer groups of similarly sized RCAs, which provides some oversight of regional cost trends. Publishing regional cost indexes would help to make such trends accessible to a greater range of stakeholders.

## 6 Conclusions

### **Priority setting for the transport operational environment**

This review has shown that the GPS can have an important role in signalling priorities and channelling those priorities through investment activity classes, and can foster a change in mindsets within the system. It does however take time for investment priorities to translate into changes in inputs, outputs and ultimately outcomes. GPS 2018 was a substantial shift in priority that required system adjustments in personnel, planning, resources and communications nationally. While GPS 2021 maintained the momentum, it required further fine tuning.

### **Local road maintenance**

Local road maintenance findings highlight a need for sustained investment in local road maintenance, highlighted by deteriorations evident in some key indicators. This was exacerbated by the severe weather events of recent years that are expected to grow in intensity and frequency. At the same time as councils and RCAs are dealing with the challenge of roads reaching the end of their economic life. For interviewees on this issue, the overarching importance of the GPS was in the size and distribution of funding for local road maintenance, and how activities in this area could be aligned with GPS priorities to maximise investment.

Case studies for local road maintenance demonstrated that the GPS provides an enabling environment for RCAs to re-prioritise activity in the face of emergencies and highlighted opportunities for capacity and capability development by forging alliances across authorities.

### **Capability development**

A key development area is capacity and capability building across a range of areas. These include procurement and contract management, inter-district collaboration, incorporating whole of life costs, and benefits gap analysis. REG, NZTA and other organisations have developed important guidance across a range of areas that that can potentially be extended.

### **Improving data systems to better understand performance and progress**

Without data and evidence, the story of progress and delivery against investment can be opaque. Local road maintenance data systems are clearly growing in maturity, with REG providing substantial momentum. These can highlight progress and system challenges, exploring the extent to which investment focuses on the key areas of need. There is, of course, room for continuous improvement.

### **Transport resilience**

Translating funding inputs to delivered outputs to realised outcomes is affected by a range of issues, including the challenging task of prioritising against multiple needs, external economic factors that have significantly influenced prices, community responsiveness and demands, and the disruptions imposed by shocks such as COVID-19. Severe weather events are likely to continue exerting a disruptive influence.

### **Embedding Value for Money**

The VfM Assessment Model, and its associated framework, provided a useful structure for discussion and overall findings. It enabled us to explore the drivers and disruptors to achieving VfM. However, discussions also revealed the model's low level of visibility. To achieve traction for VfM aims in the sector over the long term, the VfM Assessment Model requires substantial embedding and socialisation. This could mean including it within GPS priority setting and implementation to become a readily recognisable frame of reference for the sector.

## 7 Appendix 1: Local road maintenance funding in 2018 and 2021 GPS

**Objective:** Assess how the previous and current levels of the operations, maintenance and renewals funding concerning local roads were established and what they intended to deliver in GPS 2018 and GPS 2021.

### 7.1 Context of local road maintenance

#### 7.1.1 Directions set by GPS 2018 for local road maintenance

Local road maintenance is one aspect of a broader strategic direction to improve and maintain the land transport system in New Zealand. The 2018 GPS signalled a greater focus on investing in safety, access, environment, and value for money on high-risk highways and local roads across the network.

A local road is defined in the Land Transport Management Act 2003 as a road (other than a state highway) in a district that is under the control of a territorial authority. Maintaining a road is essential to delivering a defined level of service while leaving the fundamental structure of the existing road intact.

GPS 2018 identified a range of contributions of local road maintenance to GPS priorities:

- Safety: Maintenance will ensure safe system treatments remain fit for purpose.
- Access to economic and social opportunities: Continual investment in appropriate levels of maintenance and resilience to emergency events will help avoid disruption or minimise when it occurs.
- Value for money: Improving the performance of the existing network through maintenance.

In the 2018 GPS, local road maintenance is one of 12 activity classes in the GPS funding allocations, with funding expenditure classified into four categories:

- Operate: Investment in the operation of existing local roads to deliver an appropriate level of service
- Maintain: Investment in the maintenance of existing local roads to deliver an appropriate level of service, excluding asset upgrades
- Renew: Investment in the renewal of existing local roads to deliver a lower appropriate level of service

Emergency: Urgent response to transport network disruptions to restore an appropriate level of service.

#### 7.1.2 Directions set by GPS 2021 for local road maintenance

The 2021 GPS acknowledged that a large proportion of land transport funding and activity will continue to be focussed on maintaining the transport system at acceptable levels of service, taking account of the strategic priorities: safety, better travel options, improving freight connections, and climate change. Key areas of focus for regions include The Road to Zero strategy, improving the freight network and maintaining the network to a standard required to ensure a safe, resilient and accessible network with sufficient funding.

GPS 2021 identified a range of contributions of local road maintenance to key priorities:

- Safety: Optimise and maintain the road network to prevent safety issues arising from poor-quality assets.
- Better travel options: Optimise and maintain existing transport networks so all people can get to places where they live, work and play in comfort, reliably, and in a reasonable time.
- Improving freight connections: Maintain the roads and railways that are crucial for linking production points with key distribution points.

### 7.1.3 Planning, investing and monitoring local road maintenance

Each Road Controlling Authority (RCA) develops a three-year Asset/Activity Management Plan (AMP). The AMP is a key aspect of the investment process, guided by the GPS, which requires a strategic case around each activity – defining problems, and identifying benefits that are delivered. Where programmes are continuous (such as maintenance) and low cost low risk, they are exempt from requiring a business case, providing that an AMP that fulfils the necessary requirements is prepared. The AMP then serves as a business case that spans a range of elements including community expectations, links to regional and national transport strategies, procurement, and operational planning.<sup>7</sup>

RCA's vary in size from individual small territorial authorities to alliances or shared service collaborations across districts, to large Council Controlled Organisations (CCOs). AMPs are developed by RCA's with NZTA investment advisor support, and provides the 'evidence story' for investment under GPS outcomes and priorities. For larger projects (over \$2million), Regional Transport Committees will decide the relative prioritisations and business cases will be developed separate to the AMP. The smaller and ongoing maintenance activities are negotiated between the RCA and NZTA, with advisors from NZTA liaising between the national office and the approved authority.

Road maintenance and renewal activities tend not to roll over if not completed in any one AMP period. The new AMP will set new priorities based on assessed needs, although a backlog may be considered against other priorities depending on the level of need. Substantial investment is needed to maintain and renew roads, and a significant proportion of the current road network was built or upgraded in the 1950s to 1970s.

Independent advice provided to this evaluation is that the average age of roads is increasing, meaning demands for maintenance and/or renewals will be increasing to provide the same level of performance. Although asset performance and asset life are affected by several factors (including traffic types and volume, weather and environmental factors, and underlying materials), generally roads, will remain in excellent condition for 75% of their life and then will begin to deteriorate rapidly. Intervening while the road is still in good condition can extend the life span of the road and fix the overall cost of repairing the road (Figure 5 overleaf). The closer to replacement age, the more frequently renewal operations must occur and the more expensive the overall cost of the road.

Sweating roading assets means treating roads while they are in good condition to lengthen their life span, and then maintaining roads for as long as possible before they depreciate and need replacing. Many interviewees argued that we are 'holding on' to assets without enough money invested in rebuilding them.

Important for the story of local road maintenance since 2012 was the establishment of REG Transport Excellence Partnership (formerly known as the Road Efficiency Group). REG supports

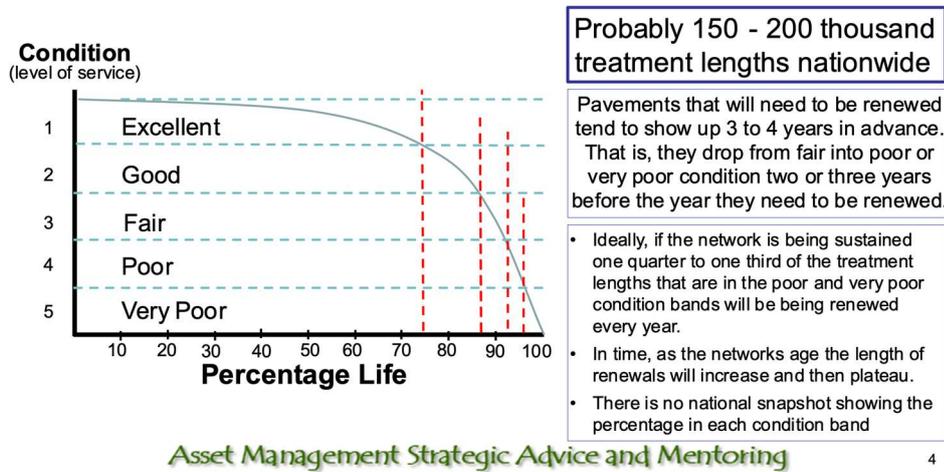
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<sup>7</sup> <https://www.nzta.govt.nz/planning-and-investment/planning-and-investment-knowledge-base/202124-nltp/2021-24-nltp-activity-classes-and-work-categories/other-activity-class-and-work-category-information/plans-that-may-be-incorporated-into-activity-management-plans/>

the partnership between NZTA and Local Government NZ to drive transport sector business excellence through guidance and benchmarking of local road maintenance activity.

Figure 5 Typical asset component performance.

### Typical Asset Component (Treatment length) Performance



Source: David Fraser, AMSAAM Ltd

## 7.2 Local road maintenance activity and expenditure

### 7.2.1 Activity on local roads

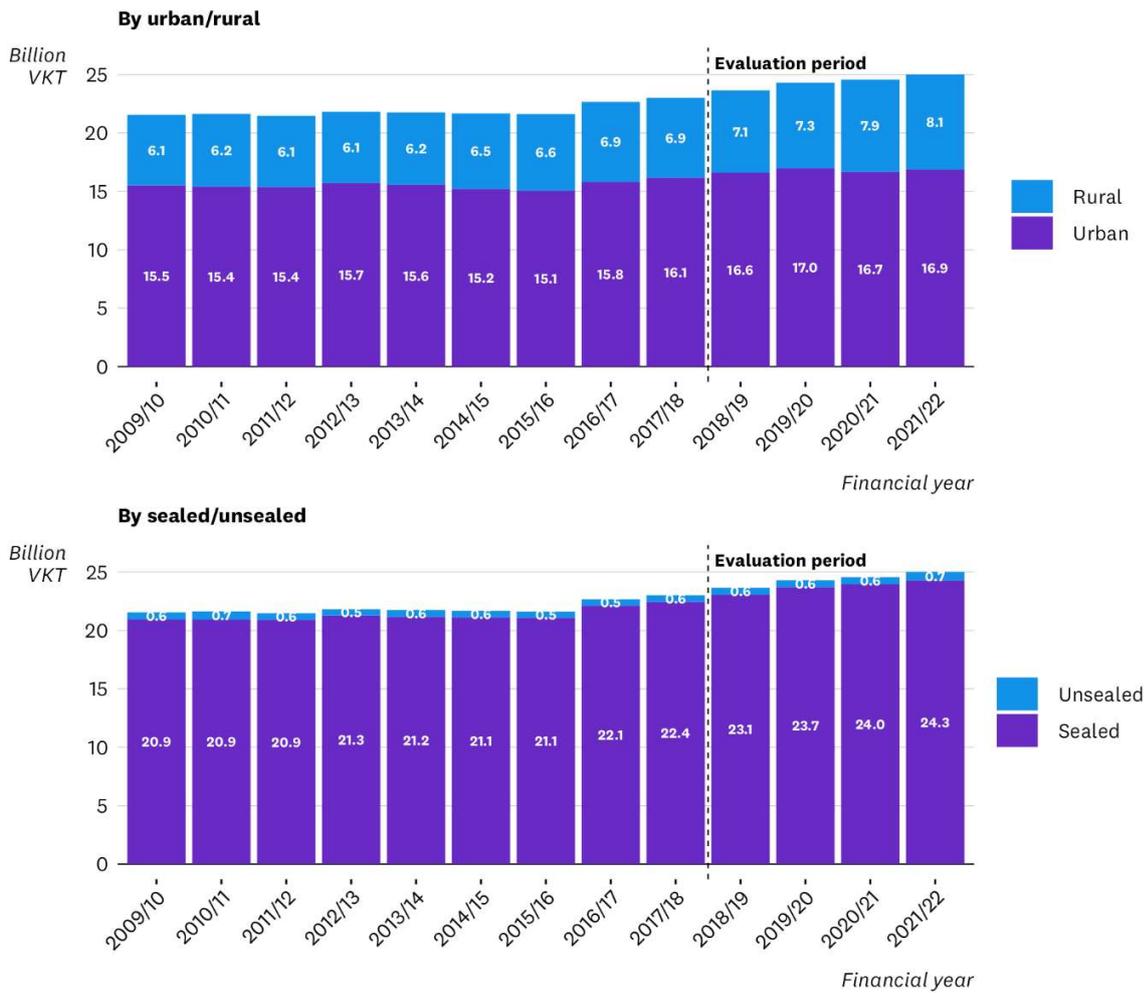
Demands for local road maintenance are created in part by activity on local roads. There was little change in vehicle kilometres travelled (VKT) on local roads between 2009/10 and 2015/16, but between 2015/16 and 2021/22, VKT on local roads grew by about 2.5% per year (Figure 6 overleaf). During the evaluation period, VKT on rural roads grew slightly faster than VKT on urban roads, causing the proportion of VKT on urban roads to fall from 70% in 2017/18 to 67.6% in 2021/22. The majority of local road VKT is on sealed roads, with total VKT on unsealed roads virtually unchanged over the past decade. In addition, heavy vehicles create substantially more wear and tear and demands for maintenance than light vehicles. Data on VKT by vehicle class is only available for state highways, but this indicates that heavy vehicles increased from 10.0% of VKT in 2011/12 to 10.8% of VKT in 2021/22.

### 7.2.2 Approved local road maintenance expenditure

Local road improvements may also create future demands for maintenance. During the evaluation period, approved expenditure on local road improvements was generally higher than in prior years (Figure 7 overleaf). The total length of local roads increased gradually from around 153,000 lane km in 2010/11 to 159,000 lane km in 2021/22, with most of this increase occurring before the evaluation period.<sup>8</sup>

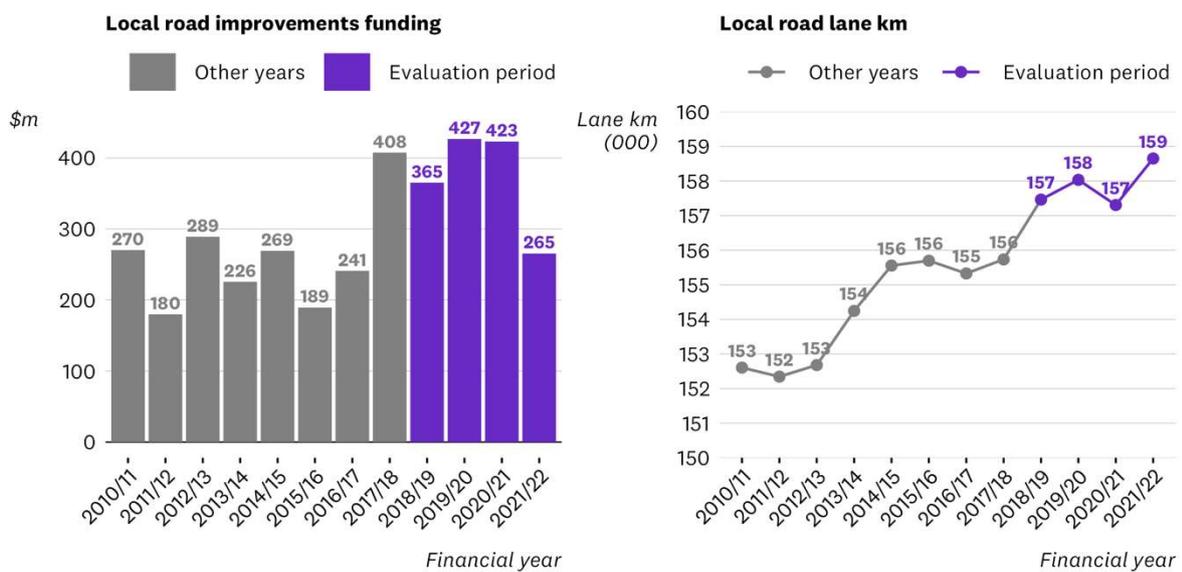
<sup>8</sup> We understand that the bulk of this increase in the length of local roads was due to vested road assets created during the development of new residential subdivisions.

Figure 6 Annual VKT on local roads.



Source: NZTA VKT data

Figure 7 Total approved funding (not adjusted for inflation) for local road improvements (NLTF + local share) and total lane km of local roads.

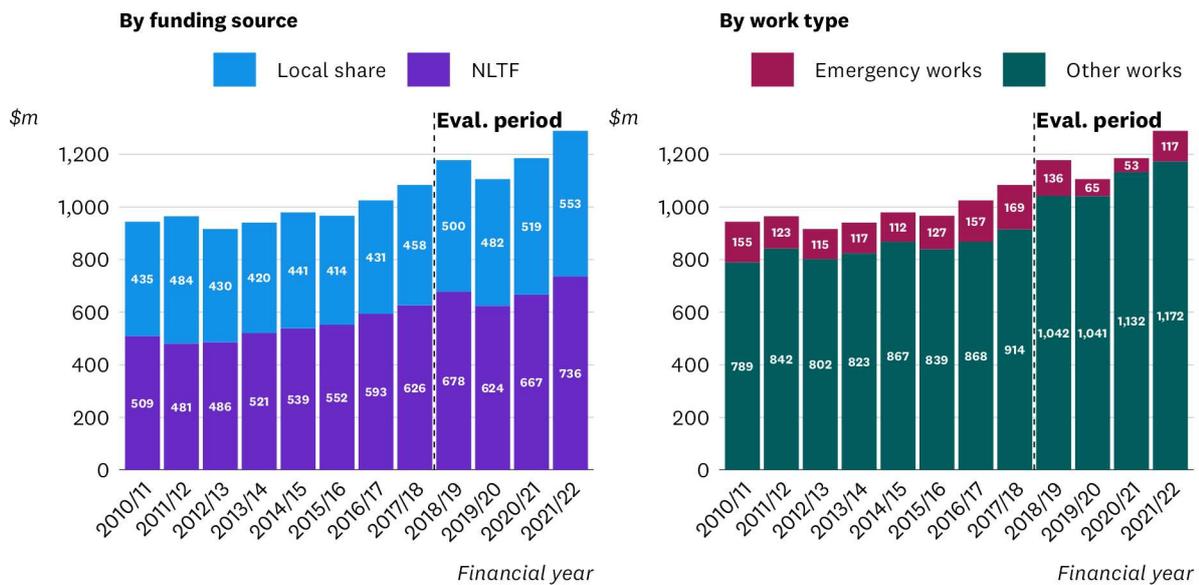


Source: NZTA NLTP data and NZTA physical statistics

### 7.3 Local road maintenance funding trends

In nominal terms, total approved funding for local road maintenance increased during the evaluation period (Figure 8 left panel), except for 2019/20 which may be a consequence of the national COVID-19 response. The amount of funding approved in 2021/22 was substantially higher than in prior years, with an increase of \$103m (8.7%) compared to 2020/21. This compares to relatively static funding for local road maintenance between 2010/11 and 2015/16, with the increasing trend starting before the evaluation period in 2015/16. Emergency works is a separate work category within the Local Road Maintenance Activity Class and accounted for around 8% of approved funding during the evaluation period (Figure 8 right panel).

Figure 8 Total approved funding (not adjusted for inflation) for local road maintenance by funding source and work type.



Source: NZTA NLTP data

We note also that there were substantial cost increases during the evaluation period (see section 8.1.3 below). Figure 9 shows the trend in inflation-adjusted (real) funding for local road maintenance (NLTF and local share combined) relative to nominal funding.<sup>9</sup> This shows that during the evaluation period, cost increases offset the nominal increase in funding, with real funding in 2021/22 approximately the same as in 2017/18, and only 2.3% higher than in 2010/11.

<sup>9</sup> Real values were calculated using NZTA's road reseals cost index, which reflects a weighted average of selected producer price indexes published by Stats NZ. See section 8.1.3 for more details.

Figure 9 Nominal and inflation-adjusted total approved funding for local road maintenance. Inflation adjustment uses NZTA's reseals cost index.

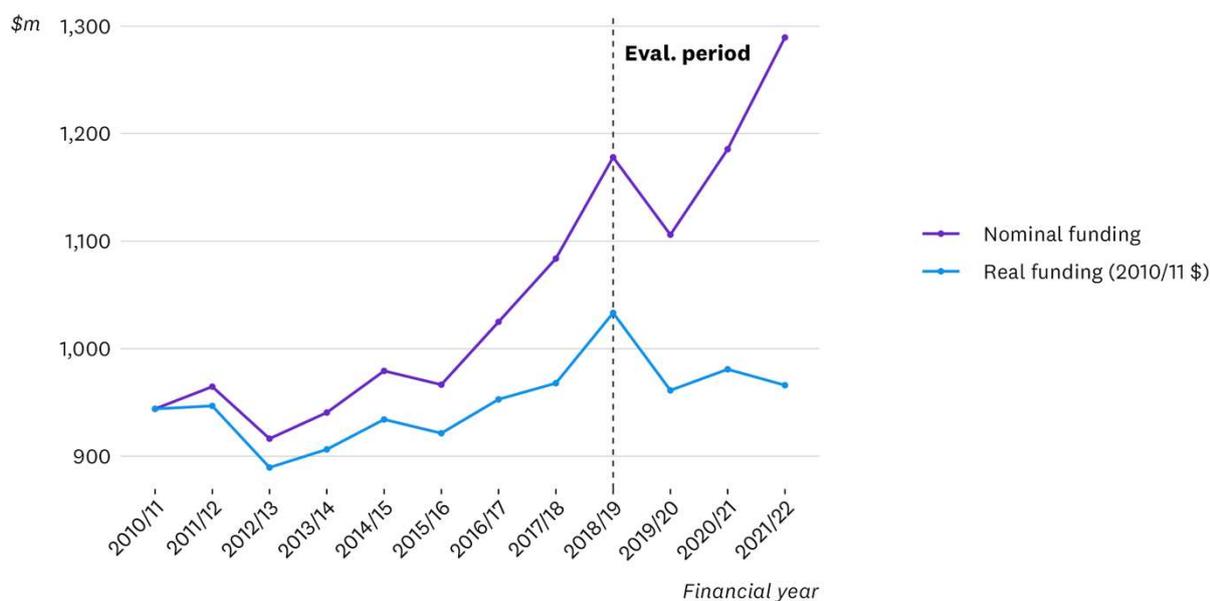


Figure 10 shows how local road maintenance funding during the four-year evaluation period was distributed across 12 road categories from the One Network Framework (ONF) and five cost types (cost figures were not inflation adjusted during the evaluation period; total lane km for each road category is also shown for context). This shows that the bulk of costs were for drainage and pavement maintenance, with these two categories accounting for 23% and 58% respectively of reported costs during the evaluation period. Across road categories, rural categories account for 68% of reported costs and 74% of lane km, while urban categories account for 32% of costs and 26% of lane km.<sup>10</sup>

<sup>10</sup> In Figure 10, lane km refers to the total lane km of each road category, not the lane km of maintenance delivered during the evaluation period.

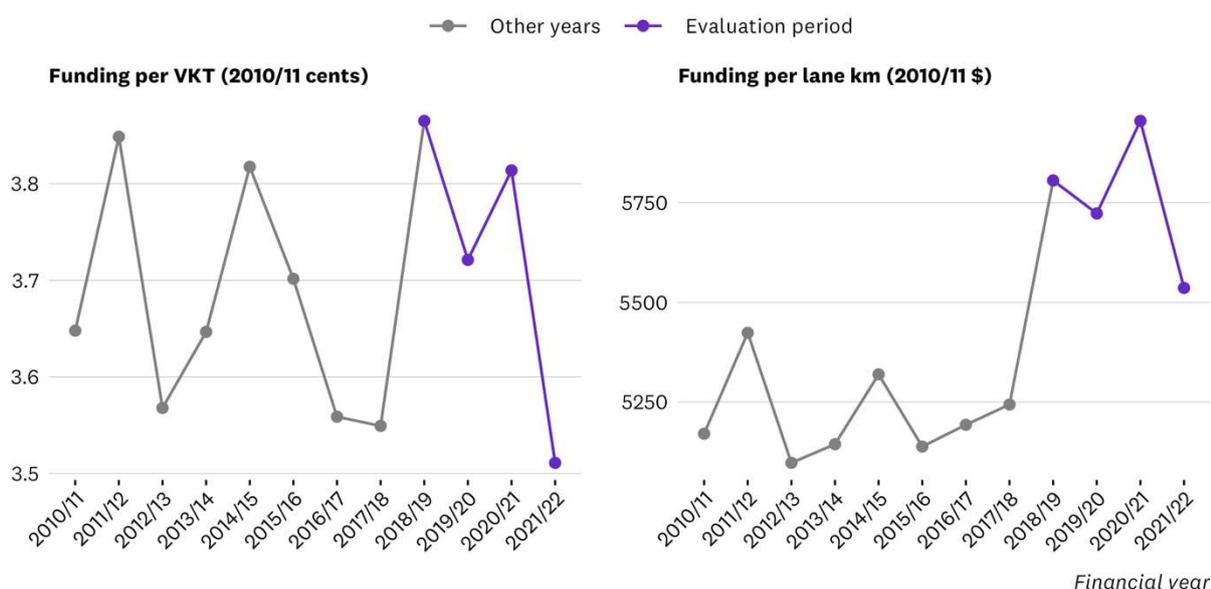
Figure 10 Distribution of local road maintenance expenditure during the evaluation period by ONF road category and cost category.



Source: Dovetail analysis of REG data

Figure 11 shows how real total approved funding from the NLTF and local share combined for local road maintenance (excluding emergency works) has changed relative to VKT and lane-kilometres for local roads. Due to increases in costs and VKT mentioned above, funding per VKT fell during the evaluation period and at the end of the period was 1.1% lower than in 2017/18. Real funding per lane km of local roads also fell during the evaluation period, but was 5.6% higher at the end of the period than in 2017/18 due to the relatively small increase in lane km. It is noted that both approved local road maintenance funding and VKT were affected by COVID-19 restrictions during part of the evaluation period (see also Figure 15 below).

Figure 11 Total approved funding for local road maintenance (NLTF + local share) excluding emergency works per VKT on local roads and lane-km of local roads, in real terms (2010/11 dollars using NZTA's reseals cost index).



Source: Calculated from NZTA NLTP, VKT, and physical statistics data

There is considerable variation in local road maintenance funding per VKT across regions even when emergency works are excluded (Figure 12). Funding per VKT has increased or remained constant over time in most regions, but some decreases are seen in Northland and Otago. Substantial requirements for emergency works also occurred during the evaluation period in Gisborne, Marlborough-Nelson-Tasman, and West Coast regions.<sup>11</sup>

Independent advice to the evaluation indicated that a range of factors come into play that contribute to the variations in costs of road construction across different districts and regions:

- Tonnage and traffic mix are different on each road – and will impact the longevity of the road. Rural roads tend to have a larger mix of traffic, ie, more freight, and vehicles travel at higher speed. Road maintenance is, therefore, a priority due to safety risks.
- Urban roads are also a priority in major arterial and bus routes. Low-volume roads do not need to be maintained as much.
- No two roads are built the same. It is likely that some councils may be managing more difficult roads (such as roads over swamp lands or winding roads in steep unstable terrain) with less funding, while other councils might be managing easier roads with more funding (such as relatively flat roads on good foundations).

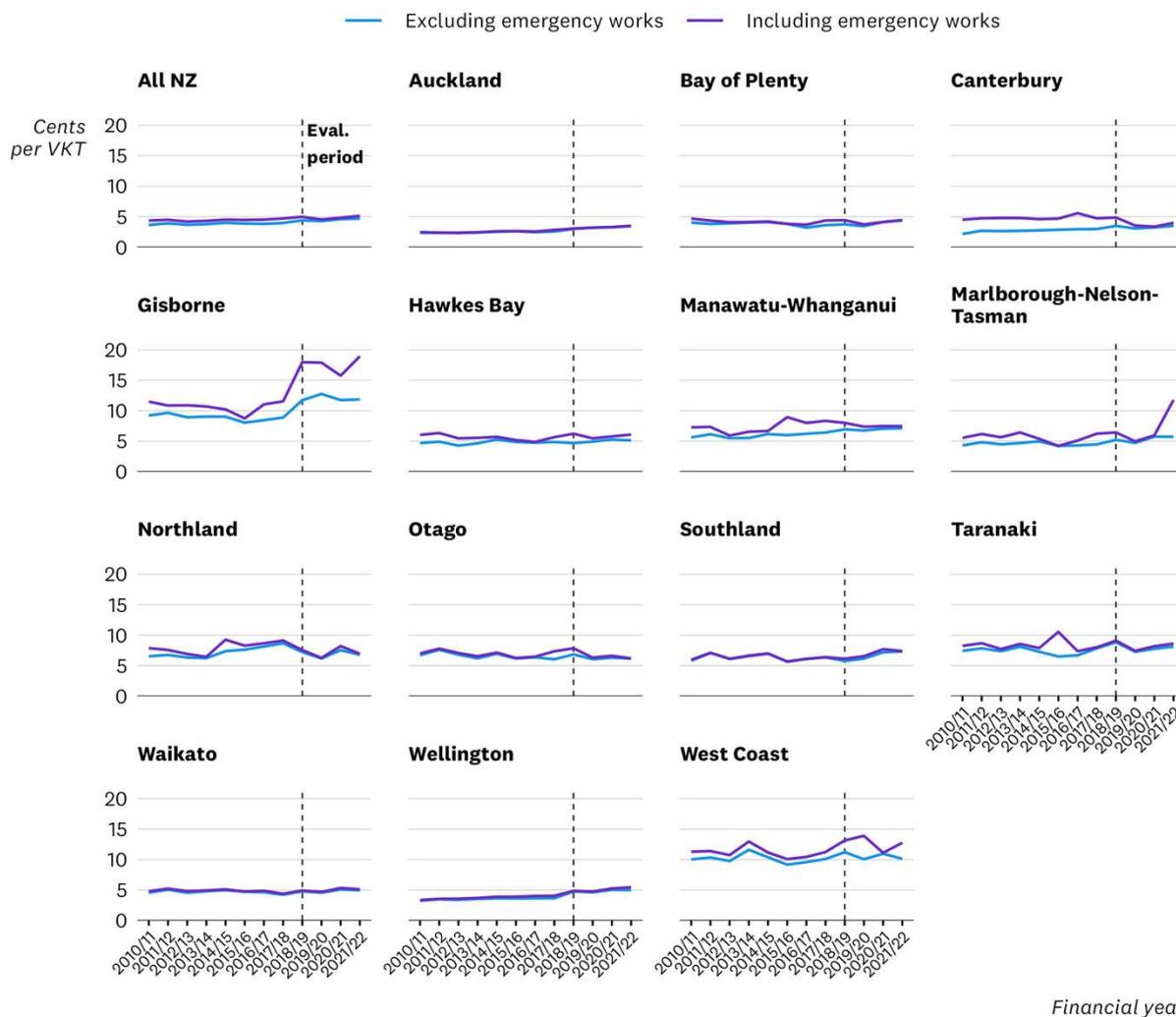
Some regions have foundations that cost more to build on and maintain. For example, in Hastings, the costs to build and repair roads differ across the region. The seal extension in one area could be 15% to 20% higher than others due to the different foundations, terrain and distance from supplies. Areas such as Rotorua and Taupo are built on pumice foundations; seals in those areas typically have a 30-year life span, which is about twice as long as most regions. Roads on the Hauraki Plains are built on peat swamp, and in parts of the East Coast of the North Island from Gisborne to the Wairarapa roads are built on bentonite clay. Both peat and

<sup>11</sup> Emergency works are a distinct work category within the Local Road Maintenance Activity Class but are funded from the same pool of NLTF funds as other maintenance-related work. This means that unexpectedly high requirements for emergency works may reduce funding available for routine maintenance unless funding for the Local Road Maintenance Activity Class is increased in response. See <https://www.nzta.govt.nz/planning-and-investment/planning-and-investment-knowledge-base/202124-nltp/2021-24-nltp-activity-classes-and-work-categories/local-road-and-state-highway-maintenance/wc-141-emergency-works/>.

bentonite clay swell in wet weather and shrink in dry conditions, making them challenging to build on and considerably more expensive as a result. In contrast Selwyn District is built on deep layers of gravel, resulting in less maintenance and a longer life span than many other localities that have similar land use.

If sealed roads are maintained correctly (i.e. drainage maintained and faults repaired at the right time using the right treatment selection and methods that won't compromise future treatments and maintenance) and resealed strategically (i.e. resealed before the existing seal coat has lost its integrity) across their lifespan, the whole of life costs can be minimised across the sealed road network.

Figure 12 Total approved funding for local road maintenance (NLTF + local share) per VKT on local roads by region.



Source: Calculated from NZTA NLT and VKT data

## 8 Appendix 2: Local road maintenance delivery and outcomes in relation to the 2018 and 2021 GPS

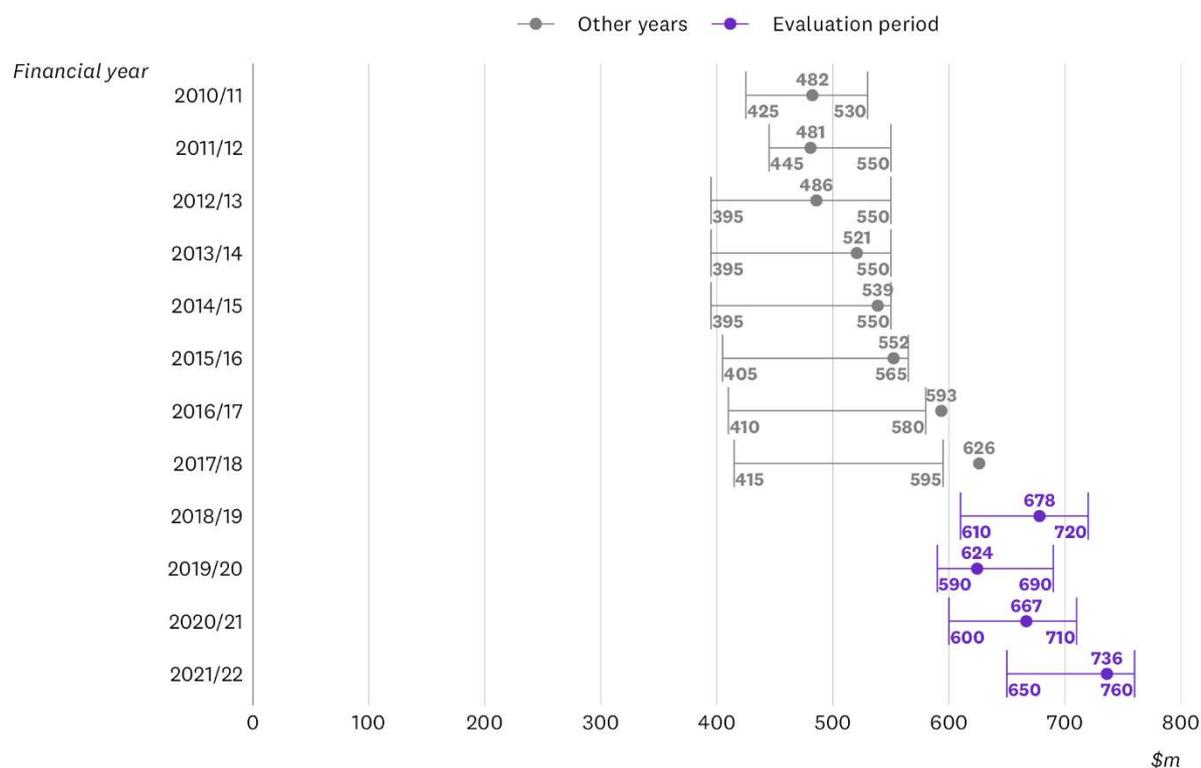
**Objective:** Examine to what extent the GPS 2018 and 2021 investment into the Local Road Maintenance activity class has achieved outputs, intended impacts and outcomes (including VfM delivered via outputs/outcomes).

### 8.1 Efficiency indicators of progress

#### 8.1.1 Alignment between funding intent and allocated funding

Figure 13 compares the approved funding from the NLTF for local road maintenance activities (including emergency works) with the annual lower and upper funding ranges set out in the GPS documents.<sup>12</sup> The GPS funding range for local road maintenance in the four-year evaluation period was substantially greater than in prior years. Overall, for the evaluation period, \$2.7 billion of funding was approved for local road maintenance, compared to a GPS target range of \$2.5 billion to \$2.8 billion.

Figure 13 Approved NLTF funding for local road maintenance activities (including emergency works), and GPS funding ranges.



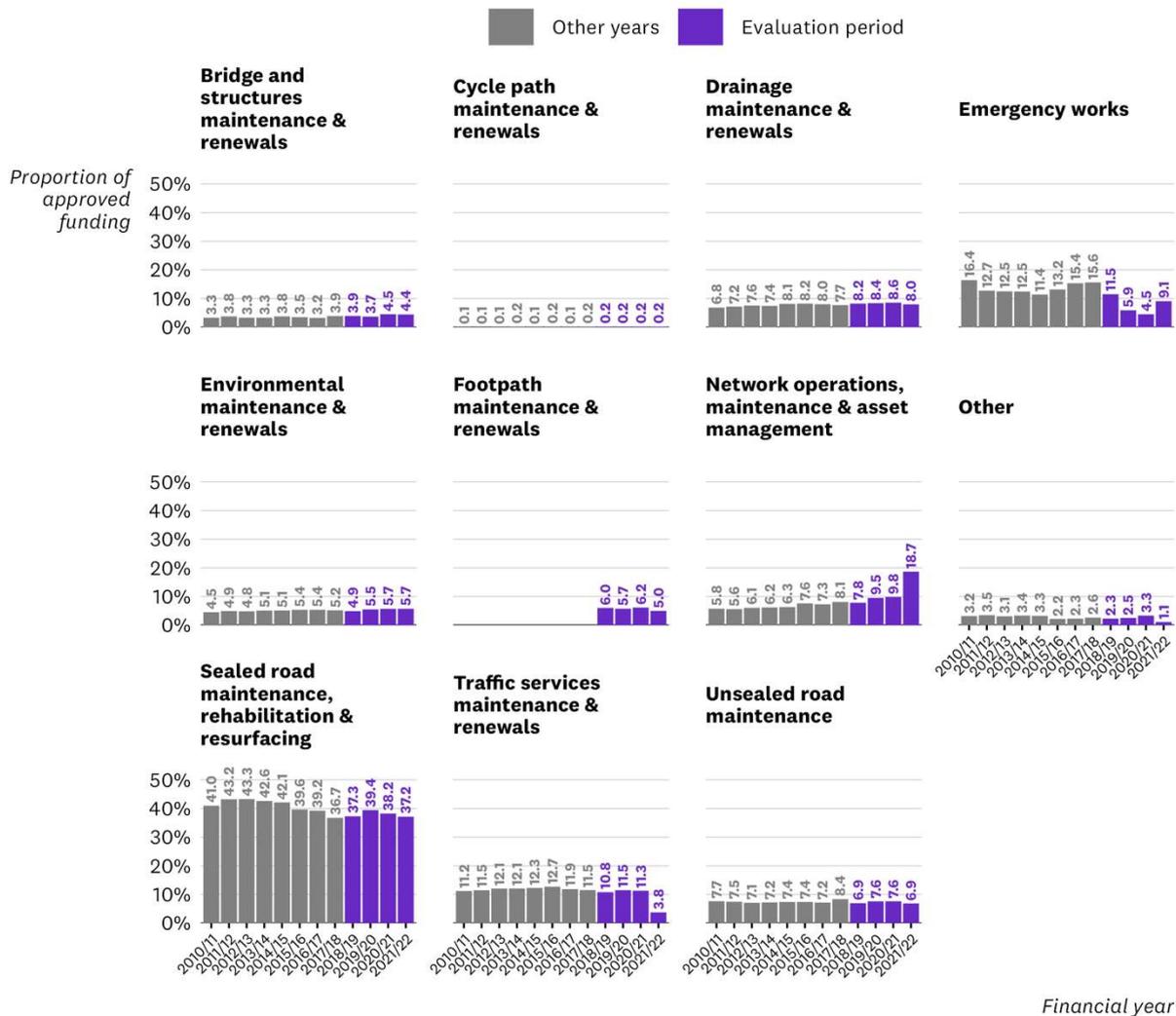
Source: Annual approved funding calculated from NLTP data provided by NZTA. GPS funding ranges from published GPS documents

<sup>12</sup> Before 2015/16, there were separate activity classes for local road maintenance and operation, and renewals. These categories were combined in Figure 13 to compare with the single Local Road Maintenance activity class used from 2015/16 onwards. Approved funding above the upper limit of the GPS funding range in 2016/17 and 2017/18 appears to be associated with a greater than expected amount of emergency works.

### 8.1.2 Delivery against investment

Figure 14 shows the breakdown of approved funding for local road maintenance across groups of work categories within the activity class. The largest proportion is for maintenance of sealed roads, although the proportion allocated to this work category was slightly lower in the evaluation period than before 2015/16. The proportion allocated to network operations, maintenance and asset management has increased over time, although it appears that in 2021/22 there was a re-allocation from the traffic services maintenance and renewals work category. Footpath maintenance and renewals was established as a work category as part of the 2018-21 NLTP; before this most footpath maintenance was not eligible for NLTF funding, except for a small proportion of footpaths on bridges and similar structures. A small proportion of funding is for cycle path maintenance and renewals.

Figure 14 Proportion of approved funding for local road maintenance (NLTF and local share) by work category groups.

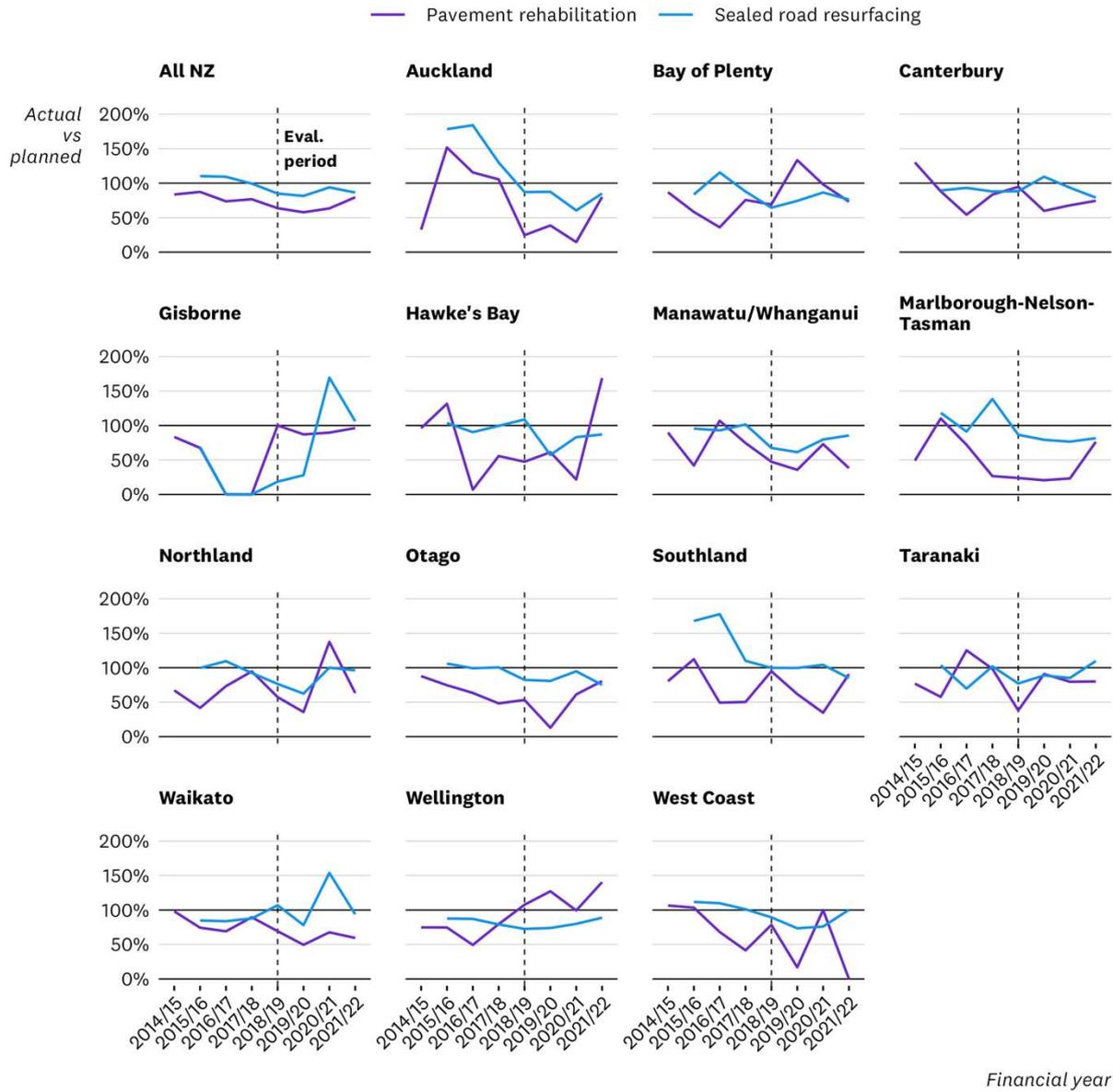


Source: Calculated from NLTP data provided by NZTA

Figure 15 shows local road maintenance activities undertaken in each region each year as a proportion of planned activities, for two types of maintenance: pavement rehabilitation and sealed road resurfacing.<sup>13</sup> During the evaluation period, these proportions were under 100% for all New Zealand and most regions, noting that this may have been impacted by COVID-19 and there was a slight improvement towards the end of the evaluation period.

<sup>13</sup> Regional averages were calculated as weighted averaged across road controlling authorities in each region, using the total length of sealed roads in the regions as weights.

Figure 15 Actual lane-km of local road maintenance activities as a proportion of planned activities, by region.

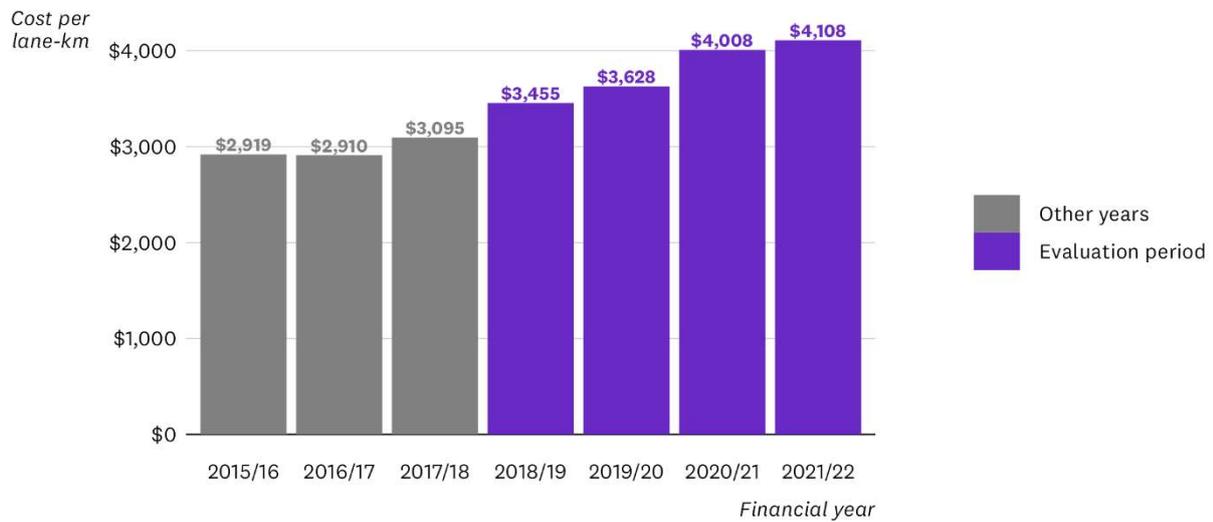


Source: Calculated from local road maintenance achievements data provided by REG

### 8.1.3 Unit costs and cost indices

Overall maintenance costs for local roads increased substantially during the evaluation period, with costs in 2021/22 being 33% higher than in 2017/18 (Figure 16).

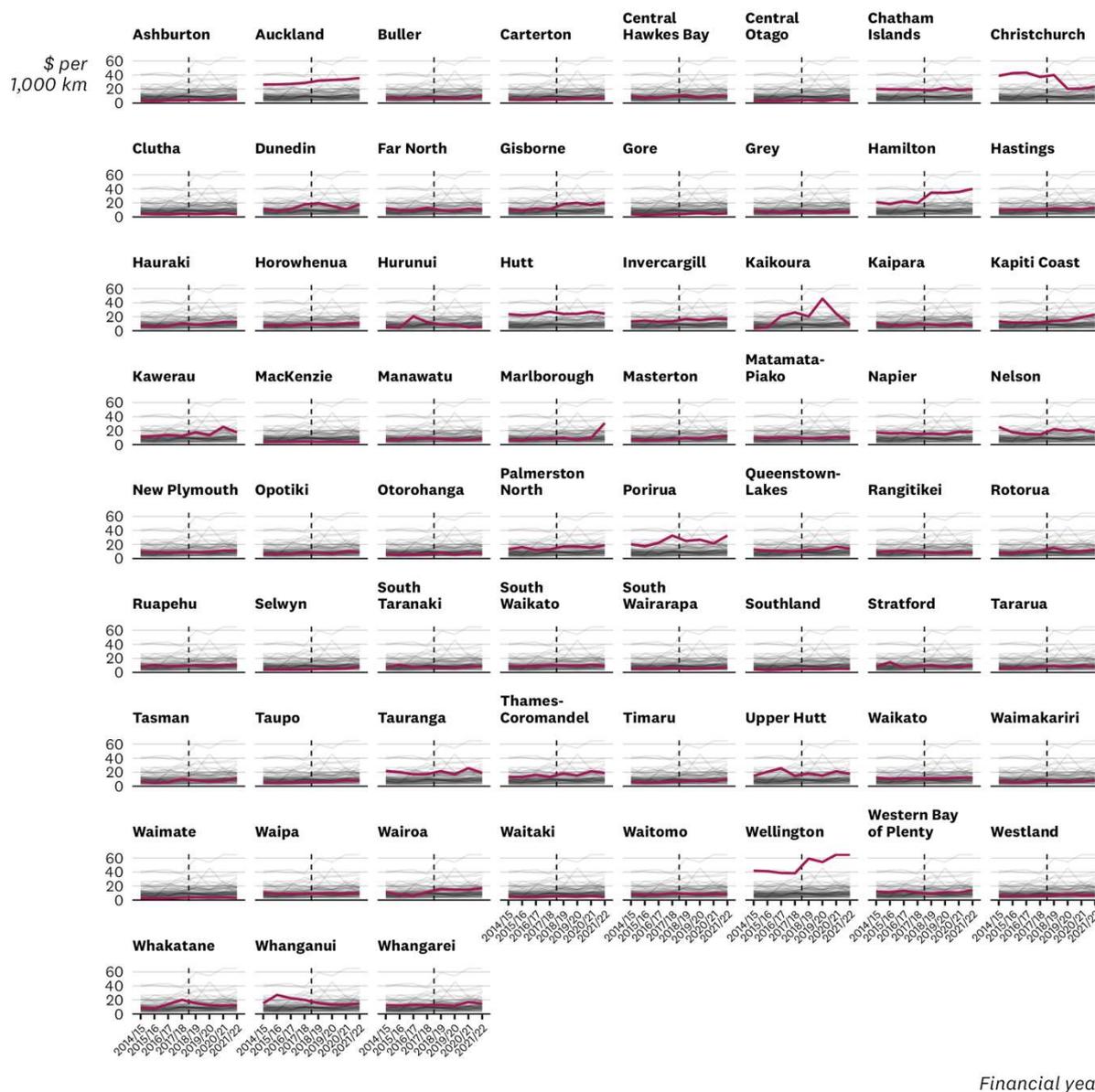
Figure 16 Overall local road maintenance cost per lane-kilometre delivered.



Source: MoT annual GPS reporting

Across local authorities, different trends in local road maintenance costs per kilometre were reported (Figure 17). Comparing 2021/22 with 2017/18, local road maintenance costs were higher for 48 local authorities but lower for 19 authorities. This implies that cost trends at the national level have not played out equally in all areas, with road maintenance costs for local authorities reflecting local cost drivers, as well as different requirements and decisions for local road maintenance.

Figure 17 Trends in local road maintenance costs (relative multiples) per kilometre for local authorities.



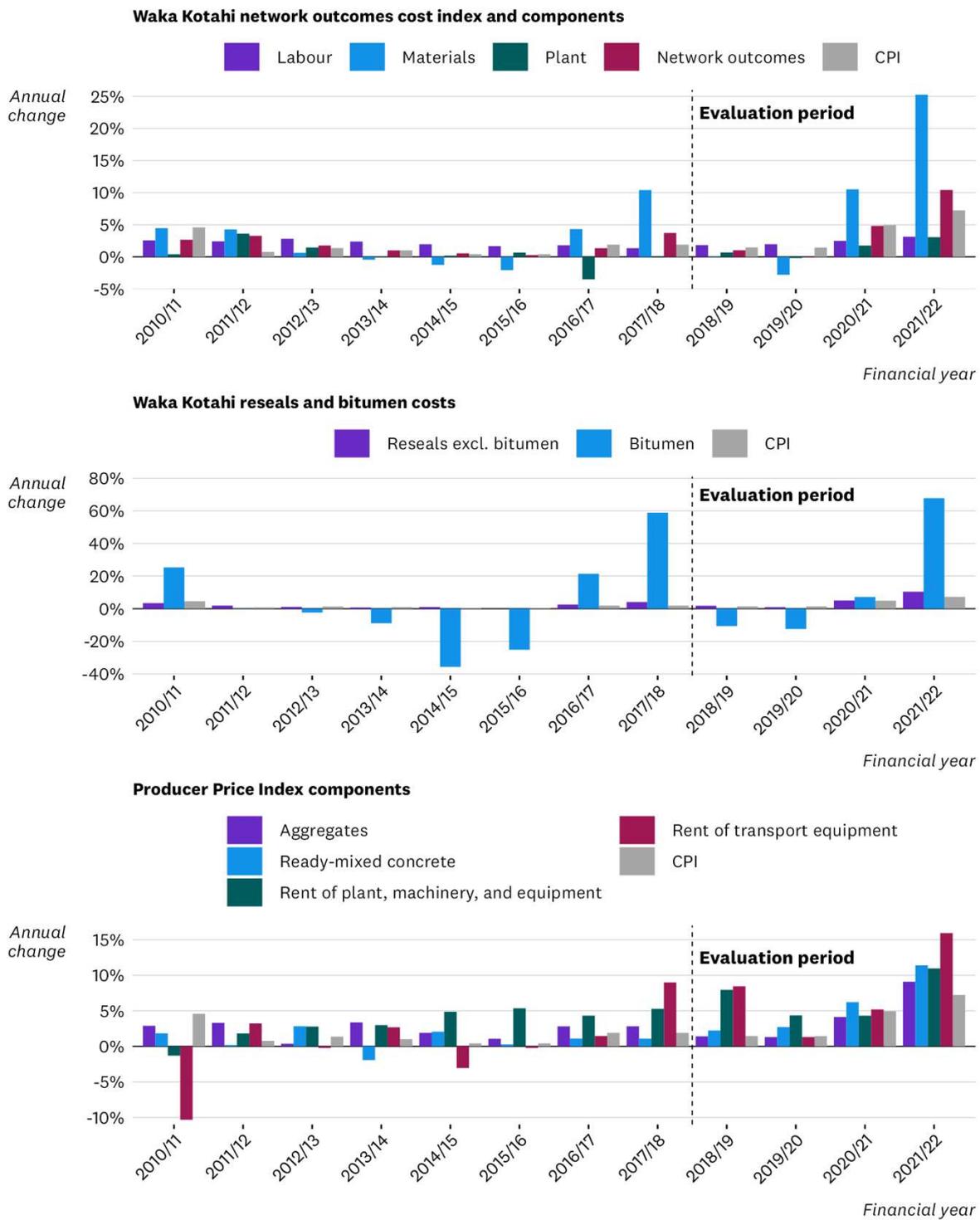
Source: REG

External drivers of costs are only measured at the national level. Figure 18 shows annual changes in three groups of cost indexes:

- NZTA's 'network outcomes' cost index which reflects costs of labour, plant, and materials (excluding bitumen) in road infrastructure construction.
- NZTA's pavement reseals and bitumen cost indexes.
- Selected sub-indexes from Stats NZ's Producer Price Index that are expected to be relevant for local road maintenance.

General consumer price index (CPI) inflation is also shown for reference. This shows that local road maintenance was subject to substantial cost pressures just before the evaluation period (2017/18) as well as towards the end of the evaluation period (2020/21 and 2021/22).

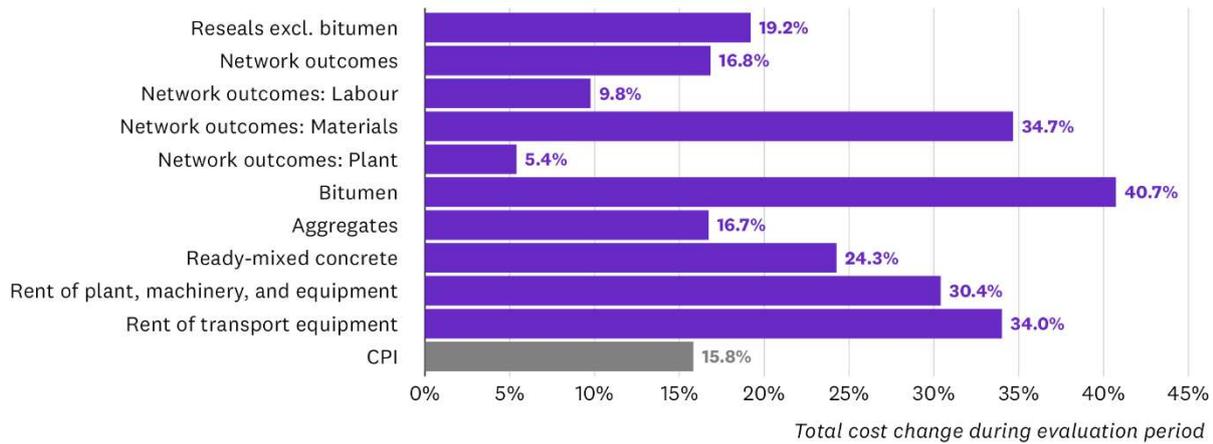
Figure 18 Road maintenance cost indexes.



Source: NZTA and Statistics New Zealand

Overall, during the evaluation period, cost indexes related to local road maintenance increased by more than CPI in all cases except for the labour and plant components of the network outcomes index. There were substantial increases more than CPI for costs related to materials, bitumen, ready-mixed concrete, and rent of equipment.

Figure 19 Overall changes in road cost maintenance indexes between 2017/18 and 2021/22.

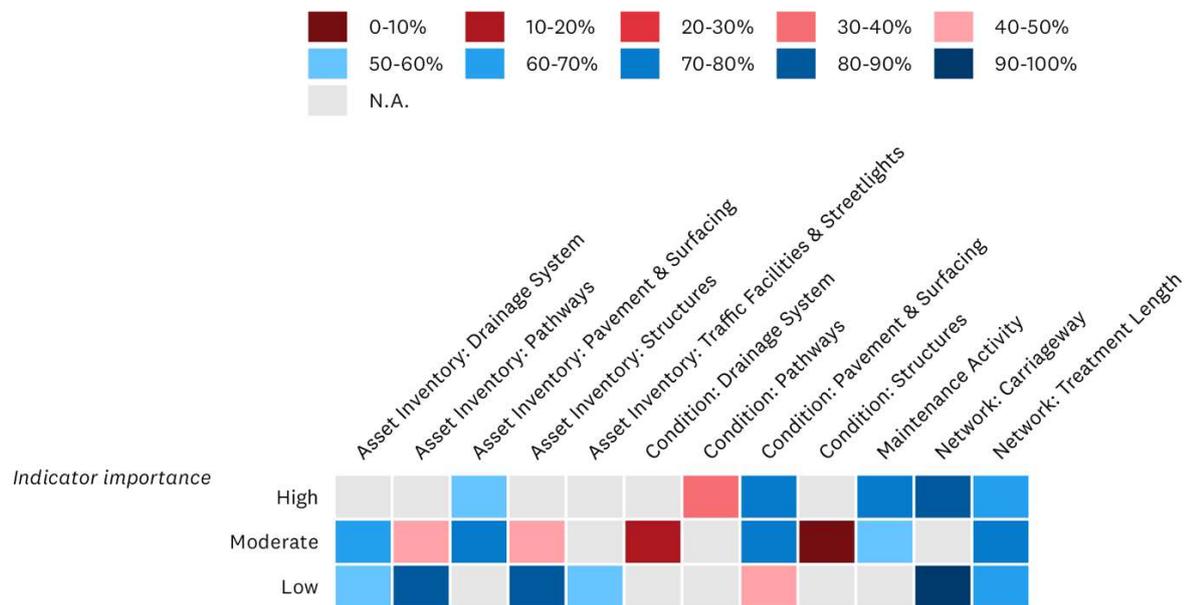


Source: NZTA and Statistics New Zealand

### 8.1.4 Data quality

The quality of data available to inform local road maintenance decision-making was assessed in 2021/22 across all local road authorities and for a wide range of indicators. Figure 20 summarises the proportion of data quality indicators relevant to local road maintenance that met the expected standard across indicator categories and importance levels.<sup>14</sup> There is generally a good quality of indicators with high importance, except for data relating to the condition of pathways.<sup>15</sup> Among indicators with moderate importance, more data quality issues were apparent for indicators relating to conditions and asset inventories of pathways, drainage systems, and structures.

Figure 20 Proportion of local road maintenance data quality indicators meeting the expected standard in 2021/22 by indicator category and importance.



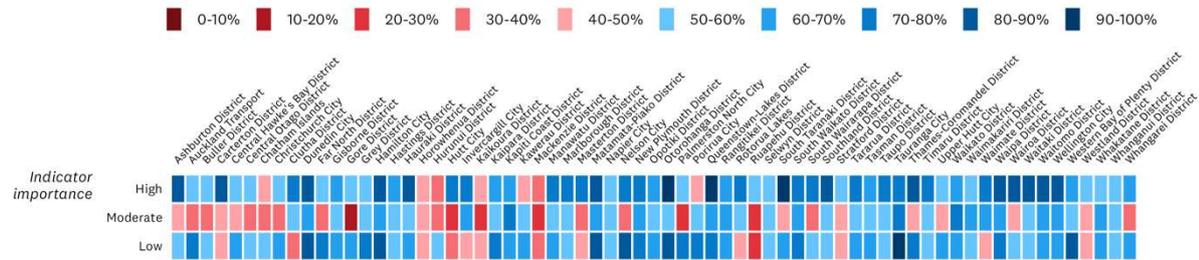
<sup>14</sup> For definitions of the standards used, see: <https://pmrt.transportinsights.nz/DQMetricLibrary>. The proportions shown in Figure 20 reflect aggregated results across 67 local roading authorities and various numbers of indicators in each category. Cells shown as 'N.A.' had no relevant indicators. Indicators in the 'crash' and 'demand/use' categories have been excluded. Indicators relating to data quality for NZTA (i.e., state highways) and DOC roads have also been excluded.

<sup>15</sup> REG uses the term pathways to as a general term for different road types which we have replicated.

Source: Dovetail analysis of REG data

Figure 21 summarises the same data described above by combining all data quality indicators relevant to local road maintenance for each local roading authority and indicators importance level. Most local roading authorities have good or very good data quality ratings for indicators of high importance, but more substantial gaps are seen in indicators of moderate importance.

Figure 21 Proportion of local road maintenance data quality indicators meeting the expected standard in 2021/22 by local road authority and importance.



Source: Dovetail analysis of REG data

## 8.2 Effectiveness indicators of progress

### 8.2.1 Local road maintenance achievements

Figure 22 shows trends in three indicators of local road condition for all individual local road authorities and as weighted averages:<sup>16</sup>

- The *condition index* (CI, 0-100) measures the surface condition of a sealed road based on visually measured defects.
- The *pavement integrity index* (PII, 0-100) reflects pavement faults in sealed road services and combines the condition index with a measure of rutting.
- *Smooth travel exposure* (STE, 0-100%) measures the proportion of travel that occurs on 'smooth' sealed roads and reflects the ride quality experienced by road users.<sup>17</sup>

During the evaluation period, the weighted averages show downward trends for CI and PII while STE is generally flat but slightly higher than in years before the evaluation period. There is also considerable variation in all three measures across local authorities and over time for individual authorities.<sup>18</sup>

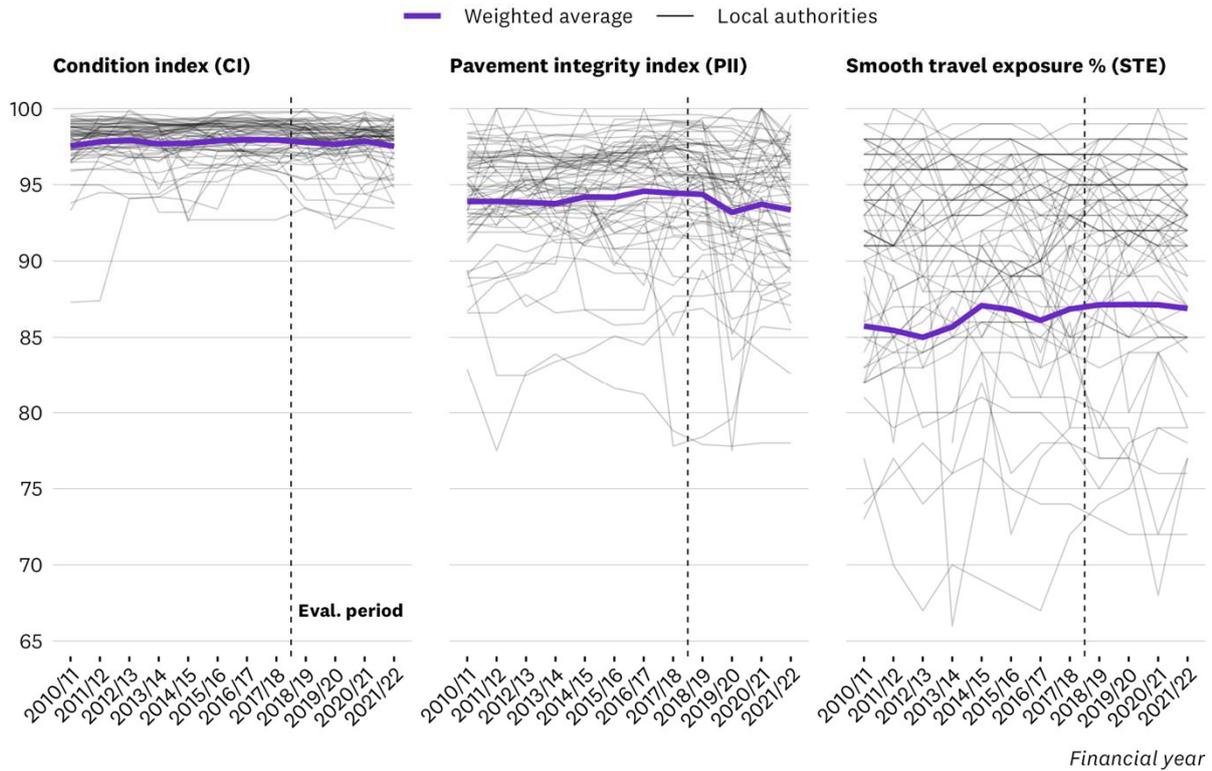
Similar patterns are shown across the four peer groups of local road authorities used by REG for benchmarking purposes. During the evaluation period, the condition index deteriorated in most local authorities in each peer group (Figure 23). Only the 'highly urban' peer group saw more increases than decreases for the pavement integrity index, while smooth travel exposure decreased for most local authorities in the 'cities' and 'provincial centres' groups.

<sup>16</sup> The averages for CI and PII are weighted by local road lane-km, while the average for STE is weighted by local road VKT, across local authorities in each year.

<sup>17</sup> It is understood that historic measurement of STE by local authorities had some flexibility regarding which roads to use for measurement that may have caused measurement variation or inconsistency over time.

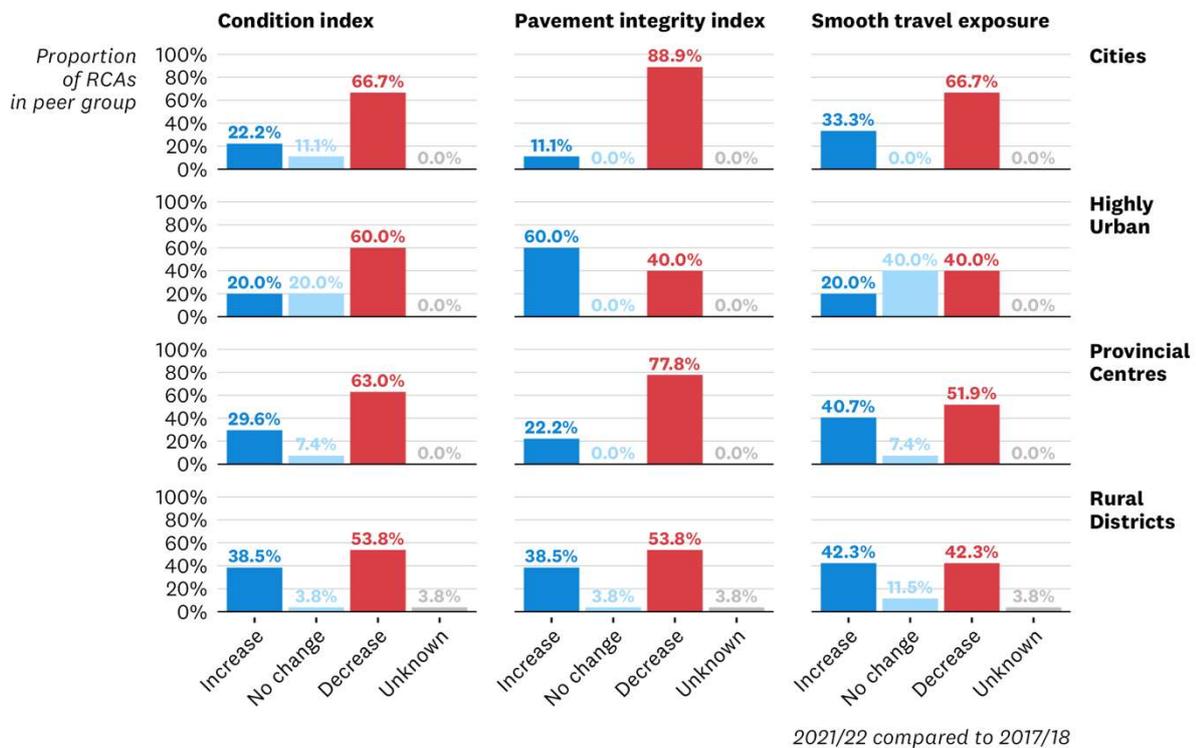
<sup>18</sup> It is understood that some of this variation reflects inconsistencies in the measurement of road condition across local authorities (and potentially across time for individual authorities). There are plans for the centralisation and standardisation of road condition measurement, which will improve comparability across local authorities.

Figure 22 Local road condition indicators over time.



Source: Dovetail analysis of NZTA data

Figure 23 Distribution of changes in local road condition indicators during the evaluation period, for peer groups of local authorities.

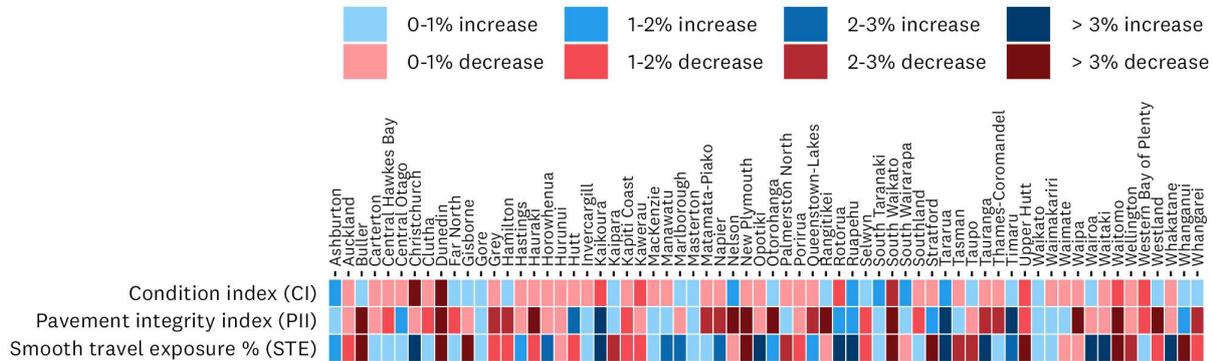


Source: Dovetail analysis of REG data

Figure 24 breaks down changes in the three local road condition indicators for local authorities by comparing the average of each indicator across the four years of the evaluation period

(2018/19 to 2021/22) with the four years before the evaluation period (2014/15 to 2017/18). Overall, CI decreased for 42 local authorities and increased for 24, PII decreased for 43 authorities and increased for 23, and STE decreased for 31 authorities and increased for 35.

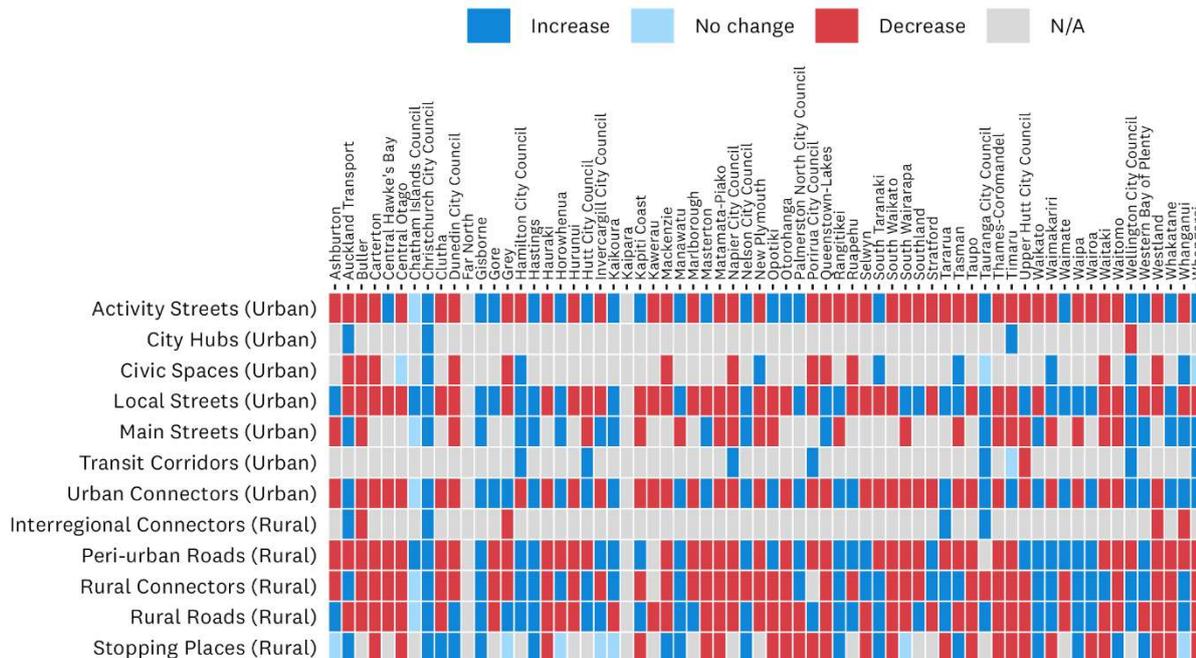
Figure 24 Changes in average local road condition indicators for 2018/19-2021/22 versus 2014/15-2017/18 by local authority.



Source: Dovetail analysis of NZTA data

Road condition data was also captured for ONF road categories within each local authority area. This data exhibits some relatively large variations from year to year that may reflect measurement issues rather than changes in actual road condition. Given this variability, Figure 25 simply summarises the overall change in STE for each combination of ONF road category and local authority during the evaluation period. Overall, smooth travel exposure decreased in 57% of combinations of local authority and road category for which data was available, increased in 40% of combinations, and was unchanged in 3%. Outcomes were slightly better in urban road categories compared to rural, with STE improved or unchanged in 44% of combinations of local authority and urban road category, compared to 42% for rural road categories.

Figure 25 Change in smooth travel exposure from 2017/18 to 2021/22 by ONF road category and local authority.



Source: Dovetail analysis of REG data

## Activity management

Information about assets including inventories and condition is essential for effective decision-making to support local road maintenance. REG has assigned an overall score to each local road authority to measure the quality of its data to support activity management. These scores range from 0 to 100 and are weighted based on relative importance of underlying measure of data available to support investment and decision-making processes.<sup>19</sup> Almost all local road authorities have seen improvements in their activity management data quality scores over the evaluation period with declining scores assessed for only three out of 67 authorities (Figure 26).

There is, however, considerable variation in activity management data quality scores across local authorities (Figure 27, p.43).<sup>20</sup>

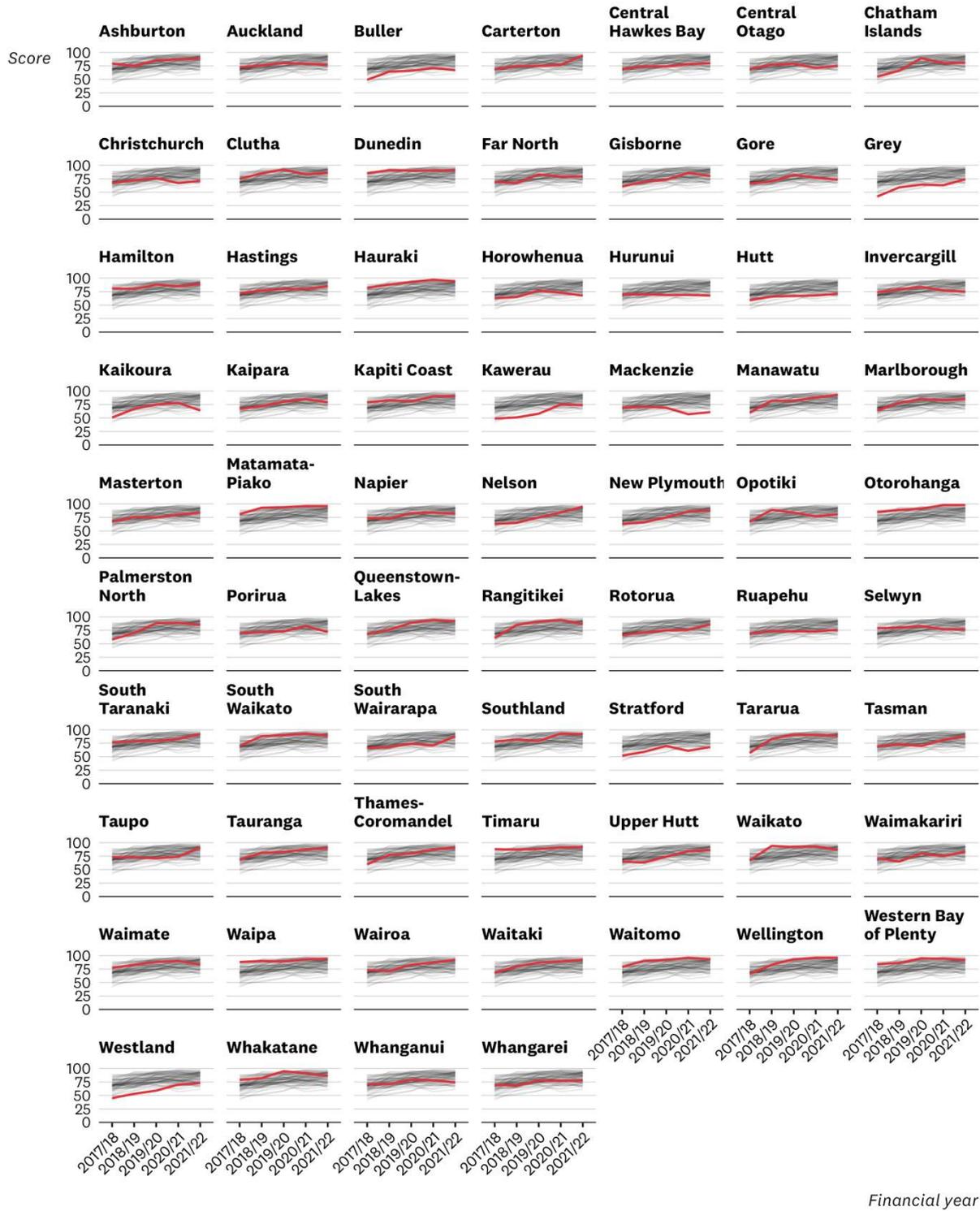
REG also provides independent assessments of activity management planning quality for local road authorities, noting that these assessments encompass all activities including maintenance and investment in improvements. Numeric scores are classified as 'good', 'fit for purpose' or 'room for improvement'. Across three years within the evaluation period, these classifications decreased for 18 local authorities, increased for 9 local authorities, and were unchanged for 40 authorities, noting that the numeric scores show some smaller changes within the unchanged category (Figure 28, p.43). In 2021/22, activity management planning quality was classified as 'good' for 8 local authorities, 'fit for purpose' for 54 authorities, and 'room for improvement' for five authorities.

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<sup>19</sup> See <https://pmrt.transportinsights.nz/DQMetricLibrary> for details of how REG assesses data quality.

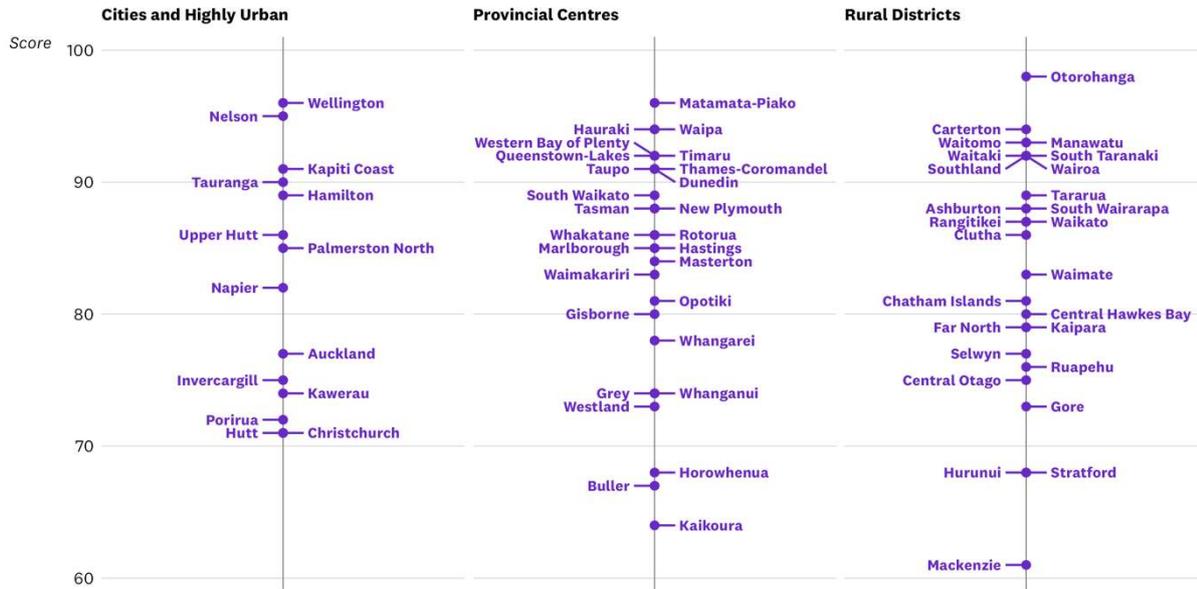
<sup>20</sup> Figure 27 uses the peer groups defined by REG for comparison purposes, but it is not clear that these groups are relevant for activity management data quality scores as the range of scores is similar across peer groups.

Figure 26 Trends in overall activity management data quality scores by local road authority.



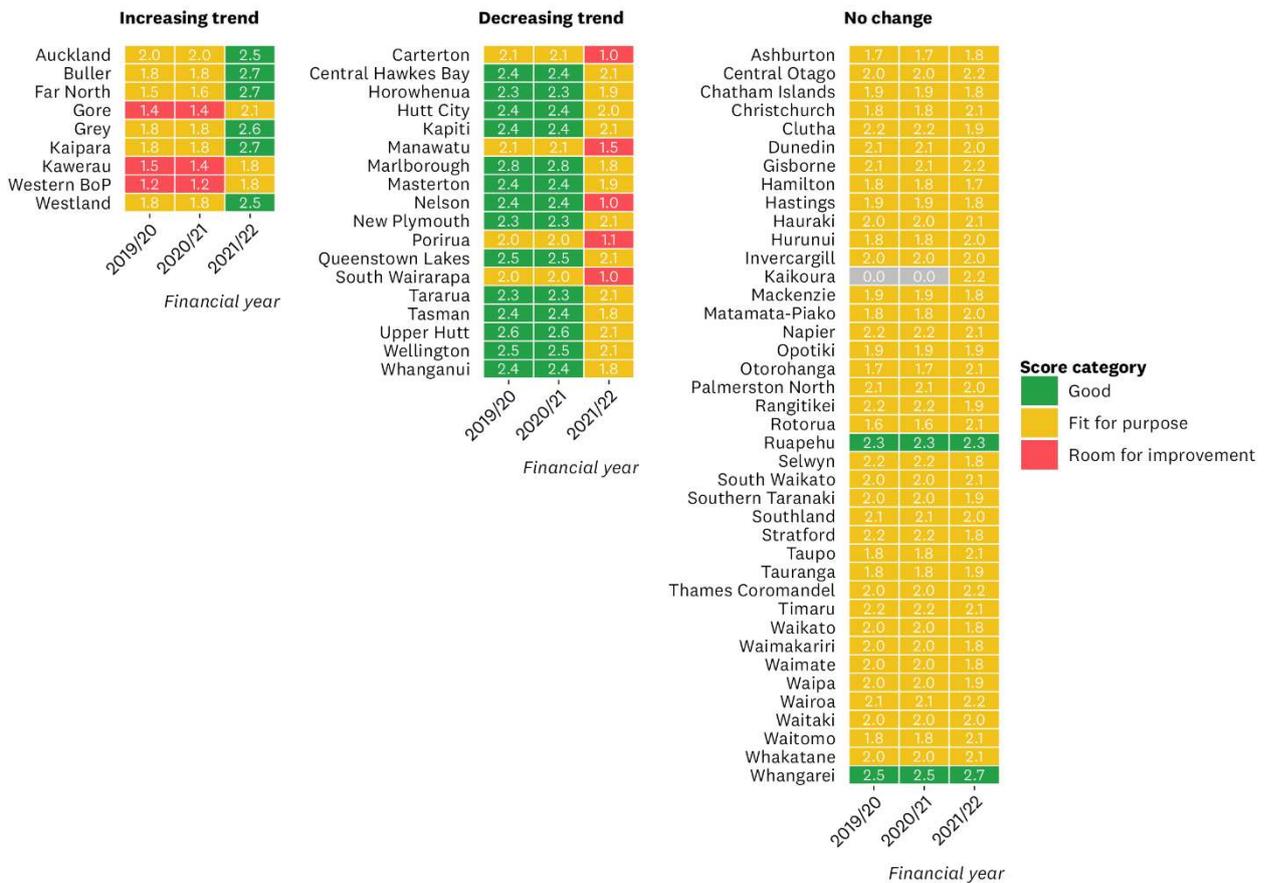
Source: REG

Figure 27 Activity management data quality scores in 2021/22 by peer group.



Source: REG

Figure 28 Overall activity management planning quality independent assessment scores.

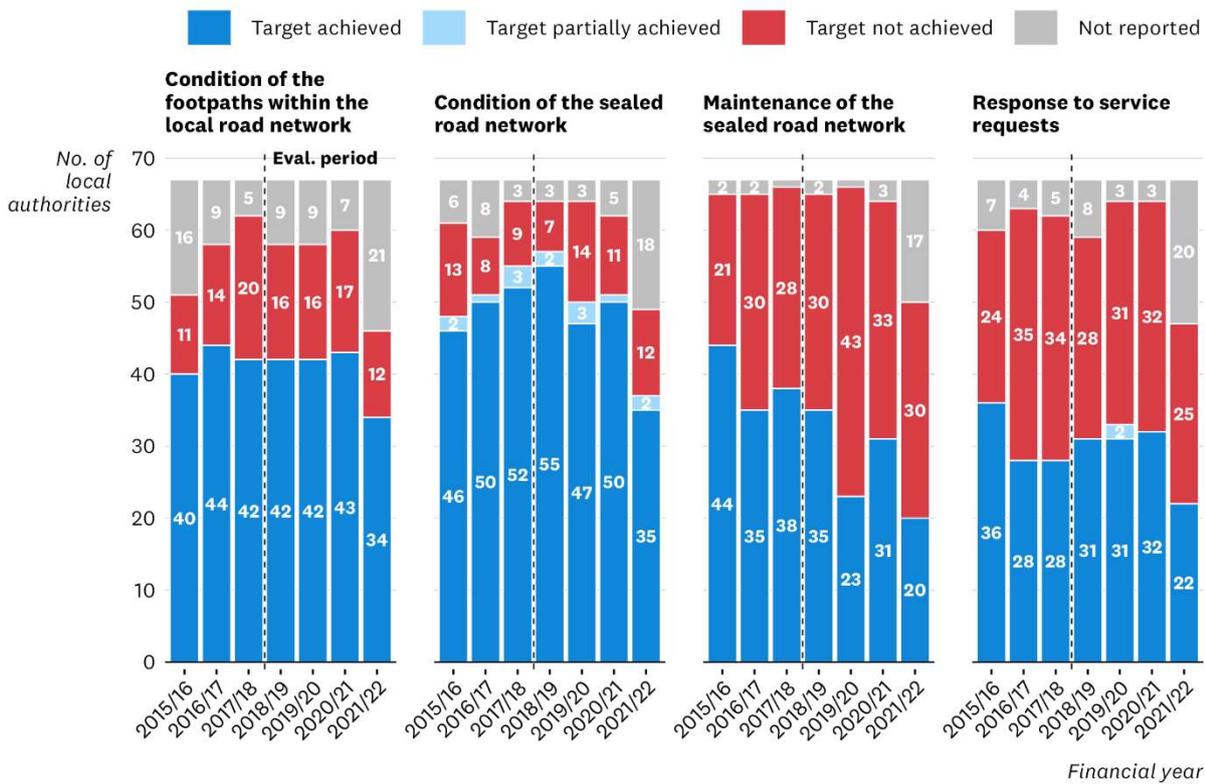


Source: Dovetail analysis of REG data

### 8.2.2 Service performance

Non-financial performance measures relating to local road maintenance are tracked by REG. These summarise the number of local road authorities that achieved targets set out on the 2018-28 long-term plan (for 2018/29 to 2020/21) and 2021-31 long-term plan (for 2021/22). Across all four measures, these indicators show a decrease in the number of local authorities that achieved their targets, although this is partially influenced by a relatively high number of authorities not reporting results for 2021/22 (Figure 29).<sup>21</sup> If 2021/22 is ignored, there are apparent decreases in the number of authorities achieving their targets relating to condition and maintenance of the sealed road network, but the number of authorities that achieved targets relating to condition of footpaths and response to service requests remained relatively constant during the evaluation period.

Figure 29 Local road maintenance service performance measures.



Source: REG

### 8.2.3 Safety outcomes

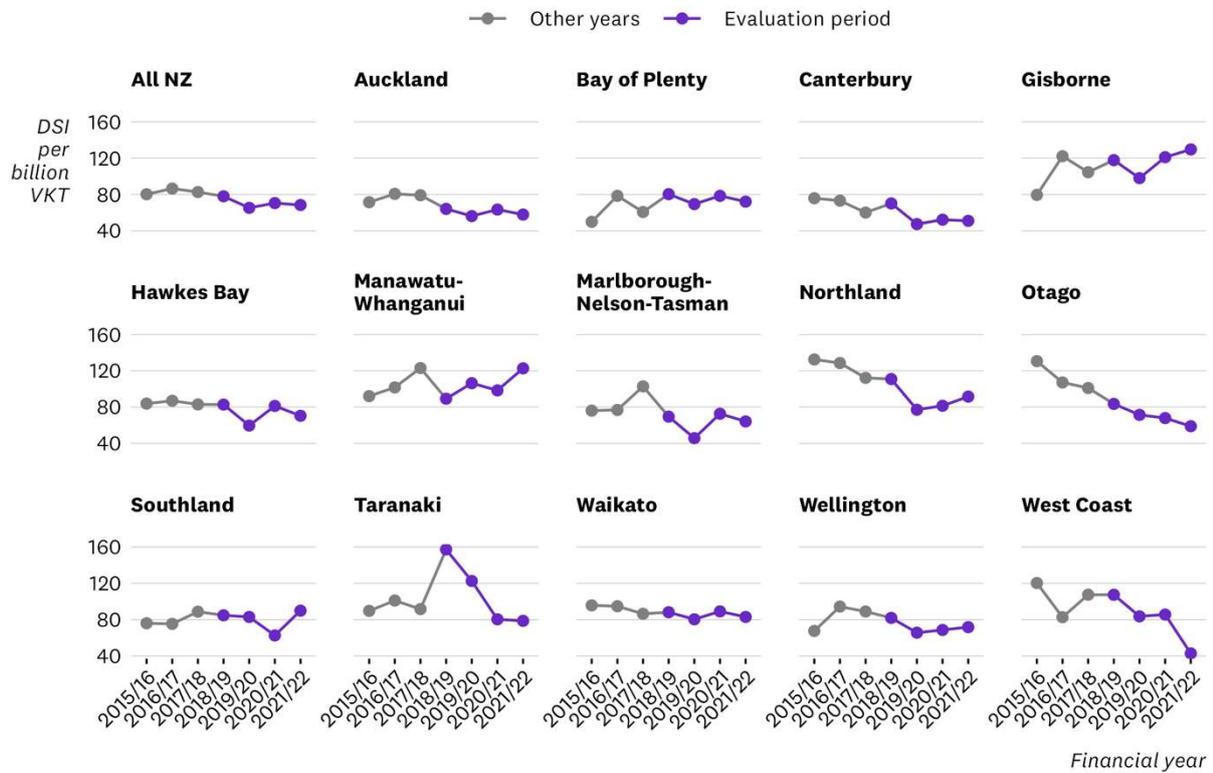
Maintenance is one of many factors that affect road safety outcomes on local roads. Given this, it is not possible to distinguish the impacts of changes in maintenance on safety outcomes from other factors such as investments in road improvements, driver behaviour, new vehicle safety technologies, and road safety campaigns. In addition, road safety outcomes during the evaluation period were likely impacted by COVID-19 lockdowns during 2020 and 2021.

With these caveats in mind, Figure 30 shows trends over time in the rates of deaths and serious injuries (DSIs) per VKT on local roads by region and for all regions combined. For all NZ, the rate of DSIs on local roads decreased from 82.7 per billion VKT in 2017/18 to 68.4 per billion VKT (a 17% reduction) at the end of the evaluation period in 2021/22. A similar improvement in road safety outcomes during the evaluation period occurred in most of the regions shown, with DSI rates falling in 10 out of 14 regions. Decreases in DSI rates greater than the national

<sup>21</sup> Reporting requirements on local road authorities were temporarily relaxed in response to the COVID-19 pandemic, which may explain the reduction in reporting for 2021/22.

average occurred in the West Coast, Otago, Marlborough-Nelson-Tasman, Auckland, Wellington, and Northland regions. The exceptions where local road DSI rates increased or were unchanged are Bay of Plenty, Gisborne, Manawatu-Whanganui, and Southland.

Figure 30 Trends in death and serious injury (DSI) rates on local roads by region.



Source: Dovetail analysis of MoT and NZTA data

## 9 Appendix 3: Practical implementation and the operational environment for local road maintenance

**Objective:** Understand the roles of practical implementation and the operational environment in delivering outputs, outcomes and impacts.

### 9.1 Impacts and outcomes of the GPS

#### 9.1.1 Overall impacts of GPS

Across stakeholder interviews, the key lever for GPS outcomes regarding local road maintenance was considered the level of investment set through each successive GPS. Interviewees seek to align their investment planning with the GPS priorities to ensure sufficient funding is available for maintenance.

*“We try and make that match the objectives of the GPS because the more we align that to what the government have come out and said, then the better chance we have of going through the various boxes to get approval for projects.”*

Few interviewees indicated that GPS creates significant new activity in local road maintenance, because the activity is focused on supporting the existing asset base rather than on creating new assets. Nevertheless, it was evident that each GPS contributes different scales of impact, from drainage and pavement upgrades in small rural councils, to supporting the integrity of the transport network in a large city. There was also a level of transparency to the GPS priorities, which supported a relatively robust investment process.

Local road maintenance – looking after the asset base – was widely seen as a fundamental enabler of GPS outcomes. It is seen as a critical form of connecting people and economic activity, ensuring resilience in the face of various shocks, and it therefore aligns strongly with access and economic prosperity.

*“If you look after or maintain your drainage systems, you're less likely to have a slip occur on your network and when you run through them all, in order to achieve those outcomes, the first step is to actually look after what you have.”*

In a similar vein, safety was also seen as a key outcome of maintenance by ensuring surfaces were fit for purpose.

*“Your safety link is back to if we have a good road because we're renewing at appropriate times and renewing our signage, renewing our line markings, all of these things.”*

Resilience and security were considered to depend on the road surface conditions. However, the lack of resilience as a priority in the 2015 and 2018 was seen as a significant gap that impacted on investment in local road maintenance. The 2021 GPS was seen as better positioned in this regard.

*“Our primary focus has been and still is, maintaining and renewing the existing system, which the previous GPS hasn't really supported. There's been elements that we've been able to maximise on around integrated systems and resilience and safety and accessibility, but when our primary objective is maintaining and renewing what we already have, in 2018 and 2021, that hasn't been a key objective...”*

### 9.1.2 Maintaining the asset base

A common concern was raised about insufficient asset base maintenance, due to constraints on funding both in councils and via NZTA funding. The investments in roading that occurred across the late 1960s and 1970s were often seen to be reaching the end of their life, and obtaining the best mix of maintenance and renewals was a significant challenge.

Interviewees from smaller councils were focusing their investment on maintenance and extending the life of assets rather than new capital works. However, across most interviewees, a common refrain was “sweating the assets” (a renewal rate that is less than the deterioration rate), but with the risk of deteriorating the asset base and running them closer towards failure. Many spoke of large scale investment needed to maintain and renew roads, after what was seen as under-investment before the 2018 GPS, and that this would be a major challenge over the next 10 to 30 years. Some argued that greater investment was needed to maintain the asset base, than spend on new capital.

*“So people had predicted that you might have got 70 years out of a road or 100 years out of a bridge or whatever but until you actually get to the end, you don't exactly know what those numbers are. So the bow wave kept getting pushed and pushed and pushed and pushed but I think largely speaking now, most people throughout the country are finding that they're hitting it or they've already hit it or they're climbing.”*

Many described local road maintenance as critical to delivering on the key priorities of each GPS, and a critical input to achieving optimal whole of life costs.

*“The only reason we have a road network is to unlock the economic potential of land. Without that, you don't have economic prosperity, that's why we have transport... If you don't protect the surface of the road, you completely destroy the value of the road.”*

Some rural interviewees noted the importance of the state highway network as key routes in their districts. The levels of funding available from local and national sources often only allow limited maintenance of the local roading network, and new seals, or maintaining existing seals, are significant investments.

### 9.1.3 Aligning priorities

Each RLTP sets out to align the GPS with local needs and to secure the funding required. Some interviewees noted parallel consultation and planning processes for AMPs, regarding the long term plan to identify community aspirations under the Local Government Act, and GPS activity class funding under the Land Transport Management Act. While these processes bring together community needs and national funding priorities, the two do not always align. Accordingly, the articulated local needs are not always considered sufficiently funded.

*“If the sector at a local level are providing increasingly robust submissions around need, when does that bottom-up feedback start informing the budget allocation process and at what point do local authorities stop investing time and resource into working out what they see as needed if they're not going to get it?”*

Access (2018 GPS), better travel options, economic prosperity and resilience (2021 GPS) were often raised as key levers for GPS investment. Safety (both 2018 and 2021 GPS) was mentioned to a lesser extent, as local road maintenance is more usually opex rather than capex. However, safety and walking and cycling investments were noted as creating longer term demands, as new assets need to be maintained. Some interviewees spoke of working through complex processes of adding cycleways or footpaths alongside road renewals to justify investment through GPS priorities.

Some interviewees noted the priority shifts that occurred with successive GPS. These shifts were seen to create uncertainty and some argued that they had financial impacts as the markets factor in uncertainty and set higher prices.

#### 9.1.4 Transparency in investment decision-making and reporting

Each council/RCA has its own investment prioritisation process, with their respective AMPs developed by the council in consultation with NZTA, and with the support of a NZTA investment advisor.

RCAs/council staff engage with councils on the indicative direction of the AMPs, and with the public in the long-term planning process. They report to council on delivery, including against KPIs (for example, smooth travel exposure, safety/crashes and quality of renewals). Reporting to councils was noted by employees as closely audited; the scale of maintenance activity generally means that reporting is limited to what is required. In Auckland, an asset management strategy is in place with board oversight.

## 9.2 Business requirements

This component of the VfM Assessment Model is about understanding what the needs are and delivering the solutions required by filling the technical, operational and functional (i.e. business) requirements. Interviewees were asked to explore the business requirements that were considered most important for achieving the GPS goals.

### 9.2.1 Planning and decision-making tools

Each AMP sets out the key needs of the RCA area and provides the underlying business case for activity. A range of planning and decision-making tools are employed by RCAs. Guidance from REG provides the basis for AMP development and supports funding requests based on consistent analysis and optioneering between maintenance and renewals options for local road maintenance needs.

*“There's well established deterioration and prioritisation models that we run everything through so we know the condition of the asset, we know the criticality of the asset and then we know the cost, the rate, cost to do repairs and we have a finite budget. So we effectively prioritise those things that the most deteriorated on the most critical parts of the network with the most cost-effective value for money treatment. So it basically runs on a prioritised ranking so that we're always doing the most important pieces of maintenance work or renewal work.”*

Planning and decision-making tools noted by interviewees included the following:

- NZTA Investment Decision Making Framework
- dTIMS modelling tools on deterioration to support level of service optimisation.
- One Network Framework (ONF) and One Network Road Classification system (ONRC) to support prioritisation and decision-making.
- REG insights and assessment tools to support inter-district/RCA comparisons; this was the most noted best practice guidance by interviewees.

Auckland Transport interviewees also noted a shift underway in their activity to ISO 55000, which applies consistent standards to asset management.

### 9.2.2 Funding for local road maintenance and renewals

A common concern raised by many interviewees was longstanding shortages of funding for maintenance and renewals, and it was thought that increases in investment since 2018 were not yet meeting the scale of need. The funding shortfalls were particularly noted as having negative impacts on pavement renewals.

Some noted that bridge replacements are a particular challenge, and struggle to fit funding criteria; often separate business cases are required outside of the AMP. As a result, some suggested that these are occurring below the expected level of replacement and their importance is often only recognised after a loss in a severe weather event.

Access to basic components for local road maintenance can significantly impact costs; for example, the Gisborne region was noted as an area with no gravel sources, so they need to be freighted in. The ownership of gravel quarries by roading contractors was also reported as potentially impacting costs for their competitors, reducing competition in the local market.

### 9.2.3 Increases in supply chain costs

A significant increase in supply chain costs was noted as part of an international trend, and expectations have now shifted from a low-inflation environment to a high inflation environment. One interviewee noted that a RLTP had factored in a 7% forecast increase in prices over three years and instead encountered an actual 25% increase over the same period.

*“We need to take our councillors along the ride with us because we’ve got to tell them, in this environment, we don’t have the money to do everything we used to do, we need to look at changing levels of service to offset that.”*

There are some international drivers of these cost increases; for example, a national infrastructure investment programme in the United States will push up materials costs globally, and timing procurement at periods of peak demand will add costs.

However, the cost drivers are not just in the international market. Local factors raised by interviewees that affect supply chain cost increases included increased site traffic and safety management expectations; bitumen transport costs (and their impact on pavement surfaces); and ownership/control of quarries and pricing for contractors.

Together, these indicate a major challenge for RCAs in maintaining the existing network with available investment and rising costs. A representative from a smaller council noted the need to be modest in requests for maintenance and renewals in an area with a small network and relatively low usage. Smaller councils also noted the need to be prudent with new seals versus maintaining the existing seal (with a suggested cost differential of \$700,000 per kilometre versus \$50,000). Another council noted a move to spread risks between councils and contractors to help manage costs.

### 9.2.4 Procurement challenges

The cheapest way to maintain roads and extend their life span as much as possible is to ensure that drainage is maintained adequately and that sealed roads are resealed on time. Councils that have the right resources and smart buyer capacity will manage their contractors correctly and get the best value for money. However, projects that are intended as low cost and low risk could pose a risk to the life span of the asset through poor design and installation.

Low cost and low risk are often add-ons or enhancements to existing infrastructure, and care is needed in the design and installation, so that the integrity of the existing infrastructure isn’t compromised. Independent advice to the evaluation noted some sealing methods (particularly two coat seals) are not achieving the life anticipated and are accelerating failure of the pavement surface. This leads to premature pavement renewals and increased whole of life costs per annum due to the shorter life span. RCAs were reported to often lack expertise to challenge contractors’ decisions in this area, signalling shortfalls in procurement capacity and capability. This was supported by accounts of unfilled vacancies in senior roading management in many rural areas.

Some interviewees also argued for NZTA to refine its prioritisation approach to be more enabling of integrated planning outcomes, and to reduce competition between funding streams. Another said there was an opportunity to work collaboratively with RCAs and councils, such as in coordinating pipeline development with local government, and water and utility providers, to improve procurement timing and processes and meet market conditions and achieve savings.

*“All it would take would be a Crown driven emphasis on knowing, understanding and using the market to achieve that value for money rather than a programme or portfolio driving the approach to market in isolation. That's what I think is missing. I don't see anybody being incentivised to slow down their own project or programme in order to allow something else to go to market first to keep some competitive tension over the foreseeable future.”*

REG has been promoting more strategic thinking and best practice delivery through such activities as guidance on AMP processes, and conducting AMP reviews.

### 9.2.5 Asset valuation

Some interviewees noted that it was difficult to fully account for all factors in asset valuation. Some reported asset valuation processes were based on annual stocktakes and using dTIMS asset management software and Road Assessment and Maintenance (RAM) databases to gather data on the condition of the network and assess values. These factors then informed the AMP.<sup>22</sup>

Auckland Transport interviewees reported a fixed asset register with asset valuations, and depreciation in line with best accounting practice. It was also noted that Auckland has a much wider and therefore more complex range of assets than most RCAs, which includes roads, cycleways and footpaths, rail stations, rolling stock, bus stations, busways, marine assets, and aviation assets.

Some reported the challenge of receiving additional new assets through additional grants or non-NLTF subsidisation, which have flow-on impacts of increasing the depreciation costs. These can include road barriers, cycle lanes, and additional sealed roads.<sup>23</sup> These were seen to both compete with local road maintenance for available capacity and resources, and send mixed messages about investment priorities.

### 9.2.6 Whole of life impacts

Interviewees noted that the growing asset base of most councils/RCAs was also growing in their complexity. Asset growth can include new assets such as sealed roads, speed bumps, cycle lanes and wayfinding; and vesting of new roads from developments; as well as assets that are gifted (e.g. former state highways), but which don't have maintenance costs gifted with them. Additional funds outside of NLTF create opportunities for new capital works.

A common theme of interviews was that there is not a strong focus on budgeting for the ongoing operations, maintenance and renewals costs.

*“I just see this massive amount of operational cost that's been borne out of a safety programme that's looked at short life assets, which creates massive lifecycle cost drains on the allocation bundle... If you have to put in a whole pile of electronic changing signs to maintain outside schools and marae, great policy setting, who did the work to understand the whole of life costs and what*

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<sup>22</sup> A recently published working paper (using data for 2018/19), noted that approaches used by councils to value the land assets vary and the outcomes are not always published. See 2023 Domestic Transport Costs and Charges Study report: <https://www.transport.govt.nz/assets/Uploads/DTCC-Main-Report-June-2023.pdf>

<sup>23</sup> NZTA advises that RCAs will typically be the recipient of new assets primarily through land development and subdivision. To limit depreciation costs, RCAs should ensure that these new assets are built to appropriate standards to minimise the cost to the RCA for at least the first 20 years, but 40 years or more is more desirable.

*needs to be injected when you have assets that have maybe three-to-five-year obsolescence, every one of those you put in, wire rope barriers, they cost a lot to maintain.”*

It was stressed by some interviewees that whole of life costs need to be considered to renew and maintain assets, and that there are insufficient funds available to “look after the assets from a minimum lifecycle cost basis.”

### 9.2.7 Funding Assistance Rate

The Funding Assistance Rate (FAR) was noted by some interviewees as an important contributor for councils with a low revenue base and high network sizes, although meeting maintenance needs was still challenging. It was also noted that that additional assistance is available for specific initiatives through Crown grants, such as for road safety initiatives. As noted earlier however, these can have distortive effects and can detract from mainstream local road maintenance activities.

## 9.3 Value indicators

The VfM Assessment Model uses the term ‘value indicators’ to explore different ways of capturing value, and is explicit that both monetised and non-monetised indicators may play a role in determining whether a project is good use of funds. Cost-benefit analysis (CBA) is the quantitative tool traditionally and most used in transport for this purpose, producing indicators such as net present value (NPV) and benefit cost ratio (BCR). Interviews explored the different tools used and their application in decision-making.

NPV or BCR were commonly used to assess the best option for local road maintenance, and informs each AMP. NZTA guidance advises use of NPV analysis for renewals, particularly pavement renewals. NPV is primarily used for determining the optimum time of replacement versus maintaining the pavement condition, while BCR is used to assess whole of life costs to a road improvement project. Although not the only tool that is used, NPV was often seen to provide a good evidence base for NZTA and elected members within councils that there is structured economic thought going into the asset review process.

*“So we know eventually we will have to replace that asset but we use the NPV to determine the optimum timing.”*

However, independent advice to the evaluation expressed the view that NPV on a project basis may not always produce the best result for the network. It can favour short-term over long-term solutions, leading to higher demand on funds in the future as more roads fail due to having a shorter life. Lack of resealing at the appropriate time or the wrong choice of seal treatment can lead to a shorter road life and higher whole of life costs.

Some interviewees also noted the value of the REG insights tool to enable inter-council comparisons and benchmarking performance; and the communities at risk register to enable safety comparisons. These were seen to help demonstrate that investment was at the right level, and the quality of procurement.<sup>24</sup>

Non-monetised benefits (benefits that focus on quantitative or qualitative measurement of the impact of an investment)<sup>25</sup> can include embodied carbon, biodiversity and resilience, and were to some extent acknowledged by interviewees.

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<sup>24</sup> We understand that REG has introduced a differential levels of service tool to enable councils to assess impacts of different service levels as part of their decision-making processes. This includes a calculator for variation in emissions as the options change. Some councils already use this in the current AMP development and long-term planning round.

*“So if you do this, what does it mean from a carbon point of view or emissions point of view versus if you do this or don’t do this. And so from an option analysis point of view, having a lot more awareness of it and taking it into consideration.”*

These were informed by the non-monetised benefits manual,<sup>25</sup> but were seen by some to be complicated and time-consuming to analyse, and the analysis often needed to be purchased. No other tools for local road maintenance were raised by interviewees.

## **9.4 Benefits gap factors**

Use of a benefits gap factor acknowledges that once implemented, many initiatives fail to realise their originally intended outcomes and benefits. Operational performance is often optimistically stated and along with delivery challenges, there is often a gap between intended and realised benefits. The VfM framework argues that an appropriate benefits gap factor should therefore be applied in investment planning and decision making.

These, however, appear to be rarely used in local road maintenance, apart from in monitoring safety impacts, and were not seen by some to be relevant. One noted that maintenance and renewals tend to occur at the end of economic life, and the benefits are therefore easily realised (unless it would be cheaper to renew the asset than trying to keep it functional by maintaining it). No interviewees could point to their application beyond larger scale capital projects, and most did not point to any programme delivery reviews being undertaken.

However, one rural council noted use of a pavement performance report exploring the previous six years of activity, and documents differences encountered during construction to determine why some sites perform better than others. This is used to inform decisions for future projects and better manage unforeseen costs. Auckland interviewees noted a prioritisation process through a rolling condition survey every two years for the main roads and every two years for every other road. These contribute to a three-year forward works programme.<sup>26</sup> There are also real time systems in place to detect deficiencies (e.g. potholes) that give rise to requests for maintenance work, and systems to record the location and frequency of these on parts of the network.

During this evaluation, NZTA advised that both they and councils explored the benefits and disbenefits of activities through tools other than a benefits gap factor. NZTA frequently utilises BCR to inform decisions, and councils use their activity management plans to look at gaps (i.e. challenges and issues). Through REG, NZTA encourages councils to use business cases and the Integrated Intervention Logic Model (IILM) to clearly articulate issues.

## **9.5 Capacity and capability**

### **9.5.1 Council and RCA capacity and capability**

The VfM Assessment Model acknowledges that successful delivery and outcomes under the GPS is underpinned by the capacity and capability of all involved. Without adequate capacity and capability, value for money will not be achieved.

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<sup>25</sup> NZTA. 2020. Non-monetised Benefits Manual: Qualitative and quantitative measures. Wellington: NZTA. We note that the manual states that these “measures are associated with all but four of benefits included in the benefits framework, regardless of whether or not they can be monetized.”

<sup>26</sup> NZTA has a similar programme for the state highway network, known as SCRIM+. For further information see <https://www.nzta.govt.nz/roads-and-rail/road-composition/pavement-condition-surveys/high-speed-data-collection-programmes/>

Many interviewees noted challenges facing capacity and capability in the sector, particularly among smaller councils or RCAs where retaining staff in skilled roles can impact on planning and delivery of local road maintenance. Asset management is a skill that is not widely available in the industry, and is widely sought after. One interviewee noted significant capacity gaps in some councils, where senior vacancies have remained unfilled for some time.

In the face of these challenges some councils have formed alliance groups that leverage collective capacity across councils, such as in Northland and South Wairarapa (see case study below). These alliances can achieve greater economies of scale, enable specialisation, and can attract skilled talent; they also are reported to have greater capacity to pay competitively. Similarly, organisations working at the scale of Auckland Transport can also provide a career and pay structure that is competitive and can maintain capacity.

### 9.5.2 Supplier capacity

Suppliers have capacity challenges, with a limited number of suppliers available for contracting, which can drive up prices, particularly when maintenance or construction is urgent. Supplier capacity was raised as an ongoing issue, with often high turnover in the industry. Hence, meeting competing demands with limited capacity (particularly in the face of emergency responses, discussed further below) can be a struggle. Some interviewees reported focusing on ensuring scalability of responses by suppliers, by seeking a mix of suppliers rather than reliance on any one provider. Others reported benchmarking and standardising their supplier contracts.

*“So we’re able to benchmark results amongst the contractors, benchmark performance amongst the contractors. Our staff and our contractors are all trained up on the same contract, we can shift staff around between contracts, so there’s heaps of benefit.”*

For smaller councils, multi-term agreements can give some surety, but at the same time carry a risk of driving other suppliers out of their region; a mix of contracts across suppliers is therefore often sought. One rural respondent also noted efforts to balance large-scale contractors with local suppliers, to ensure local knowledge retention and develop or retain skills in the region.

Some interviewees noted that local road maintenance tends to be a highly competitive area for suppliers that is strongly sought after, because it offers steady, consistent work. Margins tend to be relatively low. However, emergency responses are often more profitable, and RCAs/councils must carefully manage contractors to ensure this is contained.

There are also reported skills shortages across many key areas of the local road maintenance labour force, in part driven by competitive salaries in Australia.

*“It’s the scarcity of the right skills within the labour workforce that means that not every aspect of maintenance can get done, so we are short of some skilled plant operators, we’re short of some skilled water people, particularly around culverts and water engineering, grader drivers, very hard to get hold of good grader driver.”*

Furthermore, the priority that emergency responses often receive can have flow-on impacts on delivery of the business-as-usual local road maintenance, given the limitations of capacity at any one time.

*“A lot of their staff are skilled specialist staff, which they can’t easily replace, you take a sealing crew or something like that or asphalt crew or something like that or a bridge construction crew, you can’t just find. You can pick up a labourer, but you can’t find someone to run it and that’s a big problem for us.”*

### 9.5.3 System roles in capacity and capability building

Interviewees were asked who, if anyone, in the system, was leading in capacity and capability building in local road maintenance. Many interviewees pointed to REG in their guidance on AMP

processes, and conducting of AMP reviews, which reportedly have widespread uptake nationally. REG was also noted for identifying capability gaps and actively seeking partners to upskill the sector.

*“Our AMP is the business case and it runs through exactly the same principles but in a more defined way because REG have developed a national process.”*

REG assesses every AMP in the country and scores them against pillars of success – such as data, systems, evidence, and organisational culture. These are open access and can be used to inform future AMP development.

Others referred to Āpōpō (formerly the Institute of Public Works Engineering Australasia) and its micro-credentialling programme. The NZ Transportation Group within Engineering New Zealand also seemed to have an interest in this space, but none of the programmes were seen to be leading activity.

Some also noted inter-district activities in capability and capacity development, such as groupings of roading managers across districts, as well as alliancing arrangements that offer greater collective capacity.

It was also noted that there is strong potential for technology and systems that can enable network monitoring and low cost, and reduce human error, providing that the logic or functioning behind decisions being offered is appreciated and factored into decision-making (for example, the use of technology to design seal treatments based on averages can lead to surface failures and premature pavement renewals).

*“So right now, we inspect bus shelters by driving in a car, sending a couple of people out with their cameras and tape measures and stuff like that. That puts people in harm’s way... We’ve seen this in Brisbane and Morton Bay Council in Australia where they’ve basically put a 360-degree camera on a car with LiDAR scanners and they can drive five and a half thousand kilometres four times a year and tell you exactly what’s changed on the network. You never have to put anybody in harm’s way and you can capture data that fast.”*

## **9.6 Case study: South Wairarapa collaboration**

### **9.6.1 Background and significance**

Carterton and South Wairarapa District Councils have been collaborating to procure and deliver local road maintenance contracts across their two territorial authority catchments for the last five years, in partnership with the Department of Conservation. The partnership was the product of discussions exploring opportunities to create efficiencies in buying power and delivery capability and capacity within the region. The councils create a shared asset management plan, with local road maintenance making up around 30% of each council’s overall available budgets.

The cross-council collaboration is not a novel idea, with smaller councils across New Zealand currently implementing shared services across different areas. However, the collaboration’s approach to local road maintenance is seen as an exemplar of community service delivery and capacity development.

This case study highlights the value of alliancing across districts to leverage collective capacity and achieve economies of scale to achieve integrated road maintenance across a region. The South Wairarapa alliance is not unique (similar examples exist in Northland and Canterbury for example), but they are relatively rare, and the case study shows the potential for their application across neighbouring councils with limited individual resources. At a time when skills and expertise are often lost to larger centres or to the private sector, an alliance offers a more robust

organisational structure, diverse learning experiences and a platform for career development within a region.

### 9.6.2 Nurturing young talent to address capability and capacity shortages

The recruitment and retention of skilled staff is a common issue within smaller local councils in New Zealand, and asset management is a particular area of need. Partners saw collaboration on local road maintenance contracts to provide stability and sustainability to roles. Over the years, the councils have experienced a high turnover of experienced staff and after surveying the talent options in the area, have restructured positions to suit the wave of younger talent coming through. This includes adopting much more structured ways of working that nurture talent in a supportive environment, providing a broad range of experiences and opportunities to enable employees to develop and grow within the roles.

*“They see some pretty interesting facets of engineering when they're out on the roads they wouldn't see elsewhere and it fills them with excitement and challenges thinking how are we going to do this, how we're going to do that? By not being siloed, they have capacity to grow extremely broadly and extremely rapidly.”*

### 9.6.3 Supporting and connecting local businesses and communities

The South Wairarapa community has a unique economic landscape that is driven by agriculture, viticulture, forestry, and tourism, all of which shape the needs of the local communities that the partners work with. The local roading network accommodates events such as regional wine festivals and cycling events, which bring significant economic benefits for local business. Connecting communities through the regions is another important benefit that the collaboration looks to generate through joint local road maintenance projects. The smaller geographical area of the collaboration means that communities work and live within the network, creating a sense of buy-in and shared ownership.

*“Being part of a smaller Council, one of the benefits is everybody that works on our network, lives in our network is an integral part of it because they all know somebody who knows somebody and that two degrees is very close in rural New Zealand.”*

Involving impacted communities in the way the council conducts local road maintenance projects and ensuring that work enhances productivity and connection of these communities has been important. The growth of social media over the last ten years has had a significant impact on community engagement for smaller councils like those in the collaboration who regularly use these platforms to understand the needs and expectations of impacted communities.

### 9.6.4 Building roading resilience

The GPS is designed to support decision making across all of New Zealand, but the resilience needs of communities are different across the country and have shifted with time. Resilience has been an important consideration for smaller, rural councils like those involved in collaboration for many years, regardless of the outcomes being driven by the GPS.

When funding resilience works, previous iterations of the GPS have tended to focus on coastal protection work; however, the collaboration has seen resilience needs shifting toward access needs, flood plain management and land movement. The needs of rural communities have shifted in this direction as well. The collaboration has observed that rural communities are no longer as self-sufficient as they once were, with more people moving into rural areas but traveling into urban areas for work and relying heavily on technology and power. The changing needs and expectations of those living within the region has impacts on the way that assets are planned and delivered.

### 9.6.5 Whole of life considerations

Asset Management Plans (AMP) have over time facilitated a shift in language from 'wear and tear' to 'whole of life of assets'. Understanding the whole of life considerations in local road maintenance has become a part of day-to-day discussions, with a dedicated staff member to support the use of data and tools to model and understand condition ratings and inspection findings. In road maintenance projects, a conscious effort is made to repair problems rather than faults, even if there is a 10% increase in costs upfront, because the long-term benefits of a whole of life approach are much more significant in the long run.

*"I think the local road network's a pretty simple network. It's not complicated and everything we do has got a benefit of some degree. If we fix something, there's a benefit to the road user, it makes them safer, and if we do it right, we don't have to do it again."*

## 9.7 Local road maintenance in the context of emergency responses

### 9.7.1 Perceived role of the GPS in emergency responses

Interviewees frequently drew attention to both the imperative and the challenges of local road maintenance against the backdrop of a range of severe weather events and the growing impact of climate change.

The GPS was widely seen to have a role in setting the groundwork to support resilience and adaptation activities ahead of and in response to severe events, but does not in itself drive an emergency response. These extreme events have revealed the primary purpose of the transport network to connect communities, businesses and people, and form a critical underpinning to all other GPS outcomes.

*"Our focus changed in terms of responding to the greatest needs of the network and I think it brought to the forefront that stream of resilience of the network. ...We pivoted, we put a whole lot of resource to look at restoring access to communities that were cut off and individual properties that were cut off. So we spent a lot of time, energy and resource on restoring access and then we moved towards rebuilding or restoring the road network that was damaged and then also considering build back better resilience and climate adaptation aspects to what we were doing."*

The need for funding certainty to plan for supply chain efficiencies was noted by one respondent. Another highlighted the need to spend resources on preventative maintenance around drainage to mitigate the impacts of emergency events.

*So not clearing culverts for example, drainage not being attended to, when it does flood it creates more work for you. If your roading manager isn't on top of what you're delivering, you can create your own work for an emergency, out of a bad weather event.*

### 9.7.2 Reprioritisation of investment and resources

With the onset of a severe weather event and other emergencies, the focus immediately shifts to restoring network access for communities. Existing contracts will often be leveraged initially, followed by a move to refocus resources towards the ongoing response. Often there will be a significant uplift in contractor engagement over subsequent weeks as the RCA or council looks to restore and rebuild the roading network.

Events such as Cyclone Gabrielle have critically impacted local road maintenance activities by quickly channelling available resources to restoring access and community connections. BAU work programmes will be reprioritised in favour of emergency responses. Limited resources at any one time, particularly in the immediate aftermath of a severe event, mean that ongoing maintenance activities suffer for at least the short term.

One interviewee indicated that prioritisation tends to focus on the service offering, ie, how large the affected community is and whether they have alternatives available, rather than on the individual assets affected. These events also disrupt longer-term planning particularly for councils/RCAs (such as in the lower South Island) that rely on seasonal periods for undertaking maintenance.

Interviewees acknowledged the importance of the funding support available for immediate operational costs, and for longer-term capital rebuild activities, along with a higher FAR. The support means that councils are not left to pay for all the rebuild costs, and navigate the scale of rates increases (the costs remaining for councils can nevertheless still be significant). In theory this frees up investment to continue the business-as-usual programme, but with limited resources. Hence, some reprioritisation of the programme is inevitable.

### 9.7.3 Capacity and capability in emergency responses

At the time of a severe weather event, the supply chain for local road maintenance comes into sharp relief. Access to temporary bridges (one noted only seven Bailey bridges are available nationally), and sufficiency of supplies of fuel stock, aggregate, bitumen and sealing chip become key considerations for council leads.

Severe events also impact on the management and planning aspects of council resources, which shifts focus away from BAU activities, often for an extended time, with one respondent noting as much as a six-month impact before business-as-usual resumes.

*“A number of the thinking people in the asset management space, because they’ve got operational skills, got ripped over into the recovery team. So that work actually stopped... So when you’ve only got a three-year cycle, that’s a lot of your thinking time is suddenly gone and the programming of the maintenance and renewals in that three-year period, is not only disrupted by the event but then disrupted by the tail of that event because you can’t reseal roads on their own.”*

In response to an emergency, councils need to harness supply capacity from within their region and often more widely. The demand for work often means that emergency response and reinstatement works can be a lucrative cost compared to business-as-usual works which have tighter margins. This is because work is often completed on an hourly rate model, and requires contractors and clients to have a good knowledge of the resources required and early agreement on their allocation. Councils/RCAs need to carefully ensure that contractors are not over-charging in the immediate wake of an emergency, and work out appropriate rates as work progresses over subsequent months.

## 9.8 Case study: Hastings emergency response

### 9.8.1 Background and significance

Hastings District Council covers the urban areas of Havelock North, Hastings and Flaxmere, and the surrounding settlements of Clive, Te Awanga, Haumoana, and Waimarama.

Hastings incurred significant damage following Cyclone Gabrielle in February 2023, with the total cost in the Hastings District estimated to surpass NZ\$2 billion. Since the cyclone, the council has undertaken significant work to carry out initial response activities and work was prioritised based on road hierarchy and well-known high-intensity farming routes. The council is now turning its attention to investigating and designing solutions for more significant challenges, such as major landslides, bridge projects, and culvert repairs within the road network.

Although the severe weather events affecting the region occurred outside the evaluation period, the experience of Hawkes Bay highlights the importance of the GPS in enabling councils to adjust and reprioritise in the face of significant natural disasters exacerbated by climate change.

Ensuring resilience and security of the network is a key feature of the 2021 GPS, underscored by the experience reported in this case study. A range of themes highlight the different contributions to resilience and responsiveness, including RCA and supplier networks capacity and capability; materials access; and building whole of life thinking in maintaining assets.

### 9.8.2 Reprioritising resources and sourcing capability and capacity

In the few days following Cyclone Gabrielle, transport system connectivity was a major problem, not just for the public but also for the two major maintenance contractors that needed to mobilise to begin recovery works. During this period, the council leveraged existing procurement and relationships with ongoing contractors who could bring labour and resource from elsewhere to support recovery efforts. The council also drew on a range of different labour sectors to ensure there was enough capability and capacity on the ground. This included flying in forestry earthwork contractors and landfill contractors. Ultimately, having strong relationships with existing suppliers as well as broader areas of the supply market was seen to be an important factor in getting work started quickly following an emergency.

A healthy local balance sheet allowed the council to “just get on with what needs to happen” in the aftermath of the cyclone, along with Crown funding for immediate response work, and further funding from the NLTP for longer-term capital rebuild activities. The nature of emergency response efforts means that there is a degree of flexibility to get work done more efficiently than may otherwise be possible. However, consequently, there is little time or resource available to discern who will be awarded contracts to carry out work. Following Cyclone Gabrielle, the council sourced resource and labour from wherever possible, opting to assess the nature of the relationships after the initial response was underway. Contractors who could negotiate fair and reasonable prices amidst the recovery work were considered favourable suppliers for future work outside of recovery efforts.

*“The key is actually outcome, get it done and then you start adding back in, who’s performing, who’s not performing, from a cost and from a quality and you start culling those suppliers out.”*

Sourcing materials and resources was another important consideration following the weather event. Access to materials such as aggregate, sealing chip and bitumen as well as access to culverts and consentable allocations were all challenges during the response. Having strong supply chains and reaching out to different suppliers all impacted on the success of the response.

*“New Zealand doesn’t have enough temporary bridges, there aren’t enough Bailey bridges. We ordered a key one fast, one that services about 700 households. We quite quickly went into a prioritisation process around that but then also reached out to the private market and I now know you can lease bridges from private suppliers. So, we’ve got a couple of lease bridges including a two lane with a cycleway one now.”*

### 9.8.3 Connecting communities, businesses, and people

In prioritising work following the damage inflicted by Cyclone Gabrielle, the council focused on service offerings, rather than taking an asset focused approach. In doing so they dealt with damaged routes that provided no other connection alternatives. The underlying principle that the core purpose of transport networks is to connect people and communities guided this approach and the decision- making process.

*“There was one [bridge] that was creating massive ... congestion in Hawke’s Bay that we got to, it now has a two- lane temporary bridge on it, but we didn’t do it first because there were alternatives. Whilst they weren’t the most efficient alternatives, there were alternatives.”*

In setting overall outcomes the GPS seeks to “direct where people are prioritising their spend.” While these outcomes are seen to be important, it is the primary function of the transport

network – to connect communities, businesses, and people – that needs to be central to decision-making and local road maintenance plays an important role in delivering a network that connects communities. Outcomes such as reducing emissions were seen to be unimportant if the network is not connecting communities reliably. Instead, “value add” outcomes such as emissions reduction should be viewed as outcomes that can be achieved in the ways in which maintenance and operations activities are carried out. For example, by maintaining roads more frequently, you reduce potholes and maintain adequate road condition which means fewer safety hazards and lower emissions generated.

#### 9.8.4 Whole of life and resilience considerations

Whole of life considerations feature frequently in the local road maintenance decision making and thinking for Hastings Council. Any improvement project needs to demonstrate that it is a resilient solution – one that will be sustainable for the long-term and that can be adequately maintained and operated. A part of this conversation is prioritising investment into “looking after what we have first”. This includes road maintenance and renewing assets such as bridges, which have an important role to play in overall connectivity of the network but are seen as “a lost child in the investment thinking framework at the moment.”

When thinking about resilient solutions, there is an opportunity to look at some of the lifecycle modelling and potential alternatives for renewal cycles in New Zealand. The currently used outdated economic models, such as 25- or 50-year pavement renewals or cheap 10-year pavement rebuilds contribute to the growing scale of repair and renewal work on the roading network. Whole of life thinking in local road maintenance has the potential to reduce the number of times that intervention is required to maintain assets and contribute to broader outcomes as well, such as emissions reduction.

*“A lot of the state highway design or local road design is they’ll use a 25 or a 50- year pavement life and that comes from the old days when there was a discount factor of 10%, is after 25 years there was no point in investing – you don’t build something that will last longer than 25 years because there’s no benefit. Whereas if you were to move it through from a more of an amortisation view, if you get 50 years out of it or 100, then it’s a marginal cost to go a bit longer.”*

Regarding the lifespan of projects and building back better, there is still a need to factor in the ongoing costs that are associated with maintaining, renewing, and operating assets. There can be significant operational costs associated with, for example, safety programmes on short-life assets, which puts large lifecycle cost drains on allocation bundles. Appropriate lifecycle costing, particularly when implementing short-term solutions, needs to recognise the funding uplift associated with maintenance.

## 10 Appendix 4: Methods

### 10.1 Evaluation design

The evaluation applied the Value for Investment (Vfi) evaluation system to structure the design and implementation of this project. The Vfi approach is designed to answer questions about how well resources are used, and whether the resource use is justified. This provided a structured process and guiding principles for the evaluation, through which the Ministry's Vfi Assessment Model is systematically applied.

In applying Vfi, a mixed methods approach of quantitative and qualitative data gathering and analysis was used to explore patterns of efficiency and effectiveness in local road maintenance and walking and cycling improvements. The underlying factors and challenges driving the issues was surfaced by the quantitative data.

Through a collaborative design process with the evaluation Steering Group, and other stakeholders from MoT and NZTA, the following elements were developed:

- Analysis of the GPS 2018-2021 context, including a GPS theory of change (Appendix 2).
- Criteria for the evaluation that were aligned with the Ministry's Vfi Assessment Model and the evaluation objectives, while also being shaped by the availability of indicator data to support the evaluation.
- A standards framework for assessing performance on key criteria, drawing on that based on the State Highway Review 2021.
- Key indicators for quantitative data collection and analysis.
- Areas of exploration and detailed interview guides for qualitative data collection.
- Interviewees for qualitative interviews and case studies.

Regular Steering Group meetings enabled discussion and refinement of key indicators and data sources, updates on progress, and reporting of emerging findings from quantitative and qualitative data collection and analysis.

### 10.2 Quantitative data sources

The quantitative data used in this evaluation was limited to existing datasets that were readily available from MoT, NZTA, REG, and Stats NZ:

- GPS 2018 and 2021 monitoring indicators collated by MoT
- NZTA's organisational annual report and NLTF annual reports
- NLTP extracts provided by NZTA
- NZTA road cost indexes
- Business cost index data from Stats NZ
- NZTA NLTP programme monitor reports for 2018-21 and 2021-24
- Results from NZTA surveys about public attitudes to road safety and attitudes and behaviours relating to walking and cycling
- Annual summary data from NZTA about approved funding for walking and cycling improvements and local road maintenance and improvements
- NZTA physical statistics (km and lane-km) for roads and cycleways
- NZTA annual road VKT data from regional traffic monitoring

- Detailed extracts from NZTA's Transport Investment Online (TIO) system about walking and cycling improvements projects
- Activity data from selected active modes counters provided by NZTA
- Data from the REG [Transport Insights portal](#) with detailed information about local road maintenance activities of local road authorities, including:
  - Local road pavement and surface condition, and smooth travel exposure
  - Local road maintenance works completed
  - Activity management quality assessments
  - Data quality assessments
  - Local road network physical characteristics
  - Safety outcomes on local roads.

Quantitative data was cleaned, analysed, and visualised in R. Analysis focussed on identifying patterns and trends in the data that are relevant to the evaluation objectives and criteria. Where possible, comparisons were made against data before the four-year evaluation period.

### **10.3 Qualitative data collection and analysis**

In total, 14 key informant interviews were undertaken with 30 people from across New Zealand, with expertise in local road maintenance, and walking and cycling improvements. These included:

- For local road maintenance, five interviews with ten people from a mixture of large urban, mid-size urban and rural council representatives, and a national NZTA representative.
- For walking and cycling, six interviews with 13 people from a similar mixture of large urban, mid-size urban and rural council representatives, and leads within NZTA.
- Three case study interviews with seven council representatives from Hastings, South Wairarapa (local road maintenance), and Christchurch (walking and cycling improvements). These were chosen as they were seen to offer valuable learning opportunities in different respects: local road maintenance emergency responses (Hastings); alliancing and collaboration in local road maintenance (South Wairarapa); and effective implementation of a walking and cycling programme (Christchurch).

All interviews were structured around the VfM Assessment Model, and with specific reference to the GPS and the factors that supported or challenged achieving GPS outcomes and priorities.

A feature of an approach built around key informant interviews was the participation of selected individuals based on their knowledge and expertise in a particular area, in this case transport planning. This approach is intended to draw on knowledge and expertise to deliver insight, rather than provide a representative sample, and is often described as purposive sampling.<sup>27</sup>

Qualitative findings were explored using thematic analysis approaches. Thematic analysis methods were used to comprehensively and systematically explore and map emerging themes from the range of qualitative data.

### **10.4 Evaluative synthesis and judgements**

This report addresses evaluative questions by assessing delivery and outcomes against explicit criteria (aspects of performance) and standards (levels of performance), co-defined and agreed in advance with the evaluation Steering Group. The criteria and standards provide a framework

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<sup>27</sup> Denzin NK, Lincoln, YS. 1998. *Strategies of Qualitative Inquiry*. London: Sage.

to reach evaluative conclusions based on evidence and transparent reasoning. This core component of sound evaluation practice underpins the VfI approach.<sup>28,29</sup>

Preliminary judgements were presented to the Steering Group and NZTA stakeholders for validation, with the opportunity to challenge conclusions or offer additional context. Nonetheless, the conclusions presented in the reports represent the independent assessment of the evaluation team. Note that some sections of the reports are not evaluative but explore the context, practices, and challenges facing local road maintenance and walking and cycling improvements.

## 10.5 Limitations and scope

The quantitative data analysis is subject to the following limitations and caveats:

- Data obtained from the sources listed above is assumed to be correct, and the evaluation team has not verified its accuracy.
- Some quantitative indicators were only available for a limited period, and comparisons of outcomes in the evaluation period with prior years were not possible. Some indicators were also missing data for the last year of the evaluation period (FY2021/22).
- When analysing trends in high-level indicators over time, we have not attempted to distinguish the impacts of other factors aside from GPS 2018 and 2021 on the observed outcomes. In general, it is difficult to distinguish the impacts on observed outcomes of a GPS from the many other external factors and trends that also affect transport outcomes and activity, due to the broad nature of the GPS, time lags between changes in the GPS and changes in outcomes, and small sample sizes in indicator datasets. The evaluation period includes the COVID-19 pandemic and responses such as nationwide and regional lockdowns implemented in calendar 2020 and 2021 that affected transport activity, investment and maintenance.
- The four-year evaluation period specified for this evaluation includes the full period for which GPS 2018 was in effect and the first year GPS 2021 was in effect. There are some differences in these two GPS policy objectives, but we have not attempted to analyse them separately.

The qualitative data analysis is subject to the following limitations:

- Interviewees were not intended to be a representative sample of transport planners, but were chosen purposively for their expertise and knowledge from various perspectives.
- While every effort was made to explore in-depth the dimensions of the VfM Assessment Model through interviews, all interviewees were challenged by time and availability, and in some cases not all areas could be covered comprehensively with all interviewees.
- The interviews were not to explore the use of the VfM Assessment Model but to use the dimensions as a lens for understanding the role and utility of the GPS and broader contextual considerations for local road maintenance and walking and cycling.
- Councils around the country have different experiences, capabilities and goals, and reflect the needs of their communities. The viewpoints of different councils in this report are not intended to reflect all councils, but rather to provide insight on the operational environment of the GPS.

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<sup>28</sup> ANZEA & Superu (2015) Evaluation standards for Aotearoa New Zealand. Wellington, NZ: Aotearoa New Zealand Evaluation Association and Social Policy Evaluation and Research Unit.

<sup>29</sup> King J (2017) Using Economic Methods Evaluatively. *American Journal of Evaluation* 38(1), 101-113

## 11 Appendix 5: GPS Theory of Change

In planning for the 2018 GPS evaluation, we developed a theory of change to describe how change and outcomes from GPS 2018 were expected to occur.<sup>30</sup> Figure 31 on the following page sets out the theorised process, adapted to include both the 2018 and 2021 GPS, summarised below.

- MoT, working with the Minister of Transport and Associate Minister(s) of Transport, develop the GPS and the key outcomes agreed by government through investment strategy, strategic priorities and objectives, and activity classes. The GPS then guides investment decision-making by NZTA and regional councils.
- NZTA prioritises the activities and programmes in RLTPs which are developed by Regional Transport Committees and include activities of NZTA. The board sets an investment target within the funding range for each activity class set in the GPS. The NLTP must give effect to the GPS and consider regional priorities. The Regional Transport Committees prioritise regional programmes in the RLTPs and can deliver the prioritised programme included in the NLTP with NLTF funding assistance. A council can choose to fully fund activities not included in the NLTP.
- Regional councils decide the investment mix for their regions, working with NZTA.
- NZTA, along with regional councils, territorial authorities and council-controlled organisations (CCOs) deliver on transport investments through planning, procurement processes, and contracting.
- These same organisations, and their contracted providers, then implement the GPS direction through design, consultation processes, construction, and service delivery.

However, it is important to note the limitations of any individual GPS. These include:

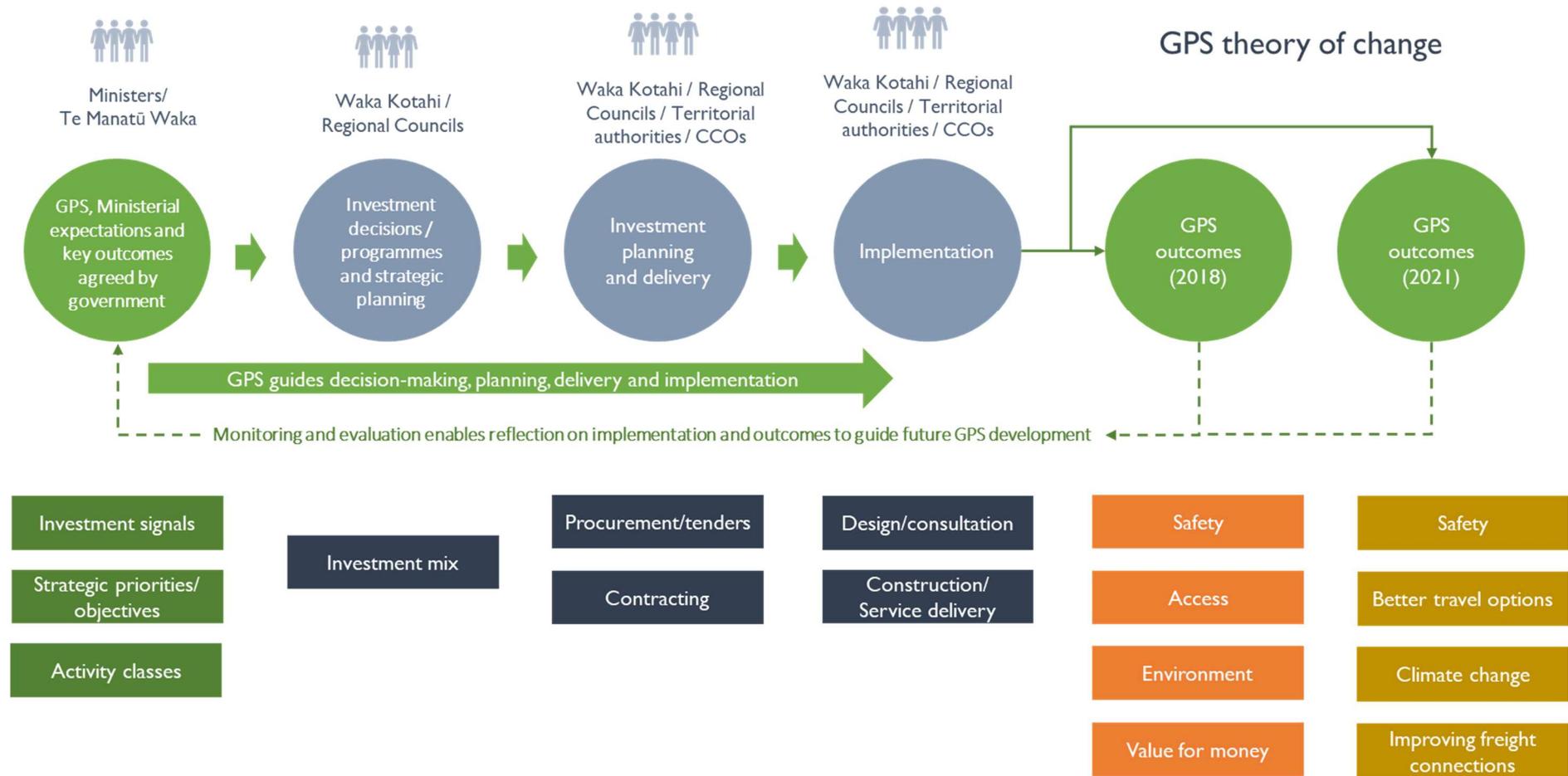
- The legacy effects of previous investment decisions that are fully completed and which can be some years in the making (e.g. the Roads of National Significance programme); and which typically mean that a substantial amount of transport investment expenditure may have been pre-committed by earlier investment decisions made under a prior GPS.
- Proposals/business cases that were stopped due to changing priorities or circumstances.
- Investments that commence in the three years when GPS 2018 is in effect, but which are not concluded in that period.
- Other transport-related policy and investment areas independent of the GPS, or regional land transport plans (RLTPs) that can be influenced by the GPS, but which also determine local priorities. Together these can consume a significant amount of funding.

Accordingly, in the short-term, the range of investments influenced by any one GPS period may be quite limited, with substantial transport expenditure (historically around three-quarters of the transport investment in any year) pre-committed or allocated to 'baseline' activities such as ongoing maintenance. The GPS can, however, provide a degree of certainty, by setting important long-term signals that are realised beyond the immediate three-year NLTP. This can produce changes over the course of a decade and are gradually reflected in transport investment decisions made by NZTA, territorial authorities, and regional councils. However, the pace of change is clearly an issue in the face of urgent strategic imperatives such as climate change and the road safety burden.

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<sup>30</sup> Funnel, S.C., Rogers P.J. (2011). *Purposeful Program Theory: Effective use of theories of change and logic models*. Hoboken: Wiley.

Figure 31 GPS Theory of Change



GPS 2018 and 2021  
Evaluation

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Local Road Maintenance

Tauāki Tikanga Here  
Kāwanatanga mō te arotake  
Waka whenua (GPS) 2018-21

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