



2021-24 National Land Transport Programme

Overview of proposed non-state highway activities

November 2020

Tell us your views on proposed non-state highway activities

- The [draft Waka Kotahi Investment Proposal](#) includes non-state highway activities that we propose for inclusion in the 2021-24 National Land Transport Programme (NLTP).
- Often called nationally-delivered programmes, these activities support sector innovation, improve value and efficiency by being implemented nationally, and align with the Government Policy Statement on land transport (GPS).
- In this document we provide detail on sector activities that we propose to deliver, their value to the sector and proposed timeframes. Some of the proposed Waka Kotahi capability activities have not been included in this pack.
- We welcome your feedback on any of these activities and your views on where you think we should focus our investment. This will help our decision-making about what we should submit to the NLTP.

- Please provide your feedback to us in this [short survey](#), or you can email us your feedback at nltp@nzta.govt.nz by Wednesday, 16 December 2020.

Our role in delivering non-state highway activities

- Waka Kotahi delivers a range of non-state highway activities as part of the NLTP.
- These activities do not need to be included and prioritised within RLTPs.
- All the proposed activities are identified in the [draft Waka Kotahi Investment Proposal](#).
- The Waka Kotahi Board makes final decisions on funded activities when all activities are assessed and prioritised for the 2021-24 NLTP.

Why are we doing this?

- We want to be transparent about the activities we are working on, promote discussion, and hear what is a priority for you.



More detail on the proposed programmes

- The proposed non-state highway activities have a national focus and benefit from being delivered nationally.
- They have been categorised as:
 1. Strategic, high-value national projects and services
 2. Ongoing sector capability development and improving value for money, and
 3. Further work required to develop scope and explore new and smarter ways to deliver customer benefits.
- Many of the proposed activities are continuing current services such as national road safety education and advertising, and joint programmes with our co-investment partners to improve sector capability.
- Some proposed activities are future focused, such as developing digital technology, promoting use of common approaches and data registers, and preparing for a digitally enabled fleet. These additional activities generally support sector innovation, improve value and efficiency, improve the effectiveness of investment decision-making.

Category 1: Strategic, high-value national projects and services

- Our priority is to put forward activities that are strategically aligned to the GPS and are more effective if managed centrally. Several items below are either work in progress or a proposed continuation of high-value activities.

Activity Description	Investment Benefits	Activity Class	Magnitude of Funding
National Ticketing Solution (NTS)	A nationally consistent integrated public transport ticketing experience offering customers new ways to pay, aligning investment over time and supporting national and regional fare policy. *	Public Transport Services	\$\$\$
Tackling Unsafe Speeds	The programme includes implementing a simpler and more effective regulatory framework for speed management, transitioning to lower speed limits around schools, and adopting a new 'highly visible, no surprises' approach to safety cameras.	Road to Zero	\$\$\$
National Road Safety Education and Advertising	Build a safety culture where people not only accept but expect road safety interventions. *	Road to Zero	\$\$\$
Travel Mode Choice Engagement programme	Travel behaviour and environment activities to support mode shift and awareness of mode choice to improve environmental and other outcomes.	Public Transport Services	\$\$
Research programmes	The Research Programmes 2021 and Beyond is a sector wide programme driven by the Transport Evidence Based Strategy which includes environmental, public health, climate change research, innovation and trial programmes.	Investment Management	\$\$
Invest in transport innovation and involve third parties	The programme is designed to support transformative ideas to improve performance and value while addressing GPS priorities. It anticipates investing in ideas proposed by private sector and academic innovators, that could lead to step-change improvements.	LR Maintenance SH Maintenance	\$\$

Key to Financial Magnitude: \$ = <\$10m, \$\$ = >\$10m to <\$100m, \$\$\$ = >\$100m

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National Ticketing Solution

- 1. Activity summary:** Delivering a modern, integrated nationally-consistent ticketing system for public transport users across New Zealand.
- 2. Expected outputs:** More efficient and secure public transport revenue collection, with new ways for customers to pay and reduce cash handling on public transport. It will provide a better national customer experience and support contactless ways of working. The improved data collection and analysis will provide insights on customers' public transport travel behaviour.
- 3. Key partners:** Partners include Auckland Transport, Greater Wellington Regional Council, Environment Canterbury and the nine members of the Regional Consortium.
- 4. Decisions that influenced the initiation of this activity:** The National Ticketing Programme was established in February 2016 when it was recognised there were significant benefits with a nationally coordinated approach to regional public transport payment solutions, including economies of scale, avoiding investment duplication, consistent customer experience and support for national policy initiatives such as the SuperGold Card. In April 2018, the Waka Kotahi Board endorsed the decision to proceed with a Detailed Business Case, to complete the initial procurement process and select a prime contractor for supply. This decision was reinforced in February 2020 to extend funding and establish the beginning of a shared service function. There is ministerial support for the system which has secured legislative change to the Land Transport Management Act to allow Waka Kotahi to operate the shared service elements.
- 5. Activity interdependencies:** Improved customer experience by offering a wider choice of payment options for public transport travel, including by bank issued contactless card, by Transit card for children or the unbanked, by mobile device, by barcoded ticket and cash. A new national dataset describing public transport user travel patterns which can enable better designed networks, more targeted fare policy and consistent long-term investment. Establishment of a shared service capability to support core operational planning and reporting, with formal participation agreements and funding arrangements to be agreed.
- 6. Expected delivery:** All contracts and agreements with a selected ticketing solution provider and supporting services are expected to be in place by August 2021, moving to subsequent phases by region through to 2026 and beyond.

Tackling Unsafe Speeds

- 1. Activity summary:** The Tackling Unsafe Speeds programme was approved by Cabinet on November 2019. The programme includes:
 - Implementing a simpler and more effective regulatory framework for speed management.
 - Transitioning to lower speed limits around schools.
 - Adopting a new 'highly visible, no surprises approach to safety cameras including the transfer of ownership and operation of safety cameras from NZ Police to Waka Kotahi, and a safety camera expansion programme.
- 2. Expected outputs:** A new approach to speed limit setting with supporting guidance and tools. Establishment of a safety camera function within Waka Kotahi as part of our wider speed management functions.
- 3. Key partners:** NZ Police, road controlling authorities and regional transport committees.
- 4. Decisions that influenced the initiation of this activity:** Cabinet decision as a fundamental part of the Road to Zero strategy.
- 5. Activity interdependencies:** Infrastructure and Speed Programme and Road Safety Partnership Programme.
- 6. Expected delivery:** Establishment of capability and transfer of existing cameras no earlier than June 2022. Safety camera expansion over three NLTP periods.



National Road Safety Education and Advertising

- 1. Activity summary:** The programme has three strategic focus areas, driven by Road to Zero:
 - Build the social licence for Road to Zero.
 - Continue to encourage good road user choices through a behaviour change programme.
 - Tactical support for specific Road to Zero road safety interventions (e.g. tackling unsafe speeds).
- 2. Expected outputs:** A comprehensive, integrated marketing, communications and education approach focused on shifting the road safety narrative for New Zealanders in line with Vision Zero and a Safe System, and delivering on the strategic focus areas.
- 3. Key partners:** NZ Police, ACC, MOT, Auckland Transport and regional and local government. Customers are all users of the transport system from children to senior citizens.
- 4. Decisions that influenced the initiation of this activity:** To broaden the programme focus as evidence has shown that only influencing individual road user behaviour will not solve the road safety problem. We need buy-in from all New Zealanders to the safe system approach and that it is unacceptable for people to be killed or seriously injured on our roads.
- 5. Activity interdependencies:** Building a social licence is a key driver for change. Improved road safety outcomes requires public intolerance of serious road trauma and a demand for change.
- 6. Expected delivery:** This continuous programme is guided by Road to Zero programme deliverables, legislative changes and customer research.

Travel Mode Choice Engagement Programme

- 1. Activity summary:** Campaign to lead the public conversation about mode shift, the need for change and the benefits of reducing car dependency.
- 2. Expected outputs:** The programme supports improved use of road networks and public transport services and other travel modes. It also supports improved customer travel choice and journey experience and promotes an improved utilisation of network capacity (both road infrastructure and public transport services). There is also an efficiency dividend from national management and delivery.
- 3. Key partners:** Local government practitioners, local govt leaders, consultants, Waka Kotahi staff and the wider public.
- 4. Decisions that influenced the initiation of this activity:** Our statutory role and independence from local politics means we are well placed to lead conversations about the benefits of reducing car dependency and the role different initiatives play in helping to shape more vibrant, sustainable and healthy communities.
- 5. Activity interdependencies:** Engagement programme supports effectiveness of investment in public transport and shared transport service offerings.



Research Programmes

- 1. Activity summary:** The programme invests in applied research which plays a critical role at the forefront of land transport thinking and contributes to achieving the government's goals for transport and is informed by the GPS and the Transport Evidence Based Strategy. The Programme is aligned with the transport sector's outcomes framework, structured around five portfolios: Economic Prosperity, Environmental Sustainability, Healthy and Safe People, Inclusive Access, Resilience and Security. The research programme strives to keep up with change through an agile, ongoing project development approach and will develop working relationships with the academic and innovation communities as well as other research funders.
- 2. Expected outputs:** [Research reports](#), [research notes](#), summaries and [insights](#) across a wide range of topic areas that respond to key knowledge gaps and emerging issues in the land transport sector.
- 3. Key partners:**
 - Research Programme Governance Group – Waka Kotahi, Ministry of Transport and Local Government NZ
 - Engagement with the sector through Transport Knowledge Hubs and other forums as appropriate
 - Representatives from across the land transport/government sectors involved in research programme through the development of specifications, procurement and delivery
 - Delivery through a broad range of research organisations from the private, public and academic sectors
- 4. Decisions that influenced the initiation of this activity:** The Sector Research Programme is a well-established programme of applied research that has been a part of the NLTP since the early 1990s. It aims to provide an evidence base to support the implementation and delivery of land transport solutions across the sector and across all NLTP activities.
- 5. Activity interdependencies:** Research projects are developed in response to the land transport sector's needs with the end use of the research being a key question asked throughout the research project development process. Research end users are actively sought and engaged throughout the process. The research is published, actively promoted and is freely available to the sector for use.
- 6. Expected delivery:** [Ongoing delivery](#), with research topics developed in consultation with the transport sector decision makers throughout the three-year NLTP period.

Invest in Transport Innovation and Involve Third Parties

- 1. Activity summary:** This programme is designed to support transformative ideas to improve performance and value while addressing GPS priorities.
- 2. Expected outputs:** The programme anticipates investing in initiatives proposed by private sector and academic innovators, that could lead to step-change improvements. Detailed topics would be identified within the NLTP period.
- 3. Key partners:** The programme will apply a collaborative approach in working with, the Ministry of Transport, LGNZ, and others, including bringing together the research community and private sector.
- 4. Decisions that influenced the initiation of this activity:** The 2021 GPS identifies the importance of innovation to ensure the land transport system adapts and becomes future-fit, relevant and responsive to innovation that will improve transport outcomes, and identifies that Waka Kotahi has a key role to enable innovation.
- 5. Activity interdependencies:** There is disruptive innovation already occurring in the transport sector, and in other sectors that intersect with transport. Part of the desired benefit is to harness the skills and leverage off innovative thinking by facilitating sector collaboration and partnerships.
- 6. Expected delivery:** Topics are proposed to be developed and commissioned from the start of the three-year National Land Transport Programme period.

Category 2. Ongoing sector development and value for money

- Proposed continuing partnerships in activities that provide significant operational value to network managers, improve the value from the existing land transport system, and support decision makers to ensure a positive return on future investments.
- This list differs from the list in the Waka Kotahi Investment Proposal as some Waka Kotahi capability activities have not been included.

Activity Description	Investment Benefits	Activity Class	Magnitude of Funding
Road Efficiency Group	Enables the recommendations of the Government Road Maintenance Task Force to be embedded across the transport system	LR Maintenance SH Maintenance	\$\$
Network Optimisation	Development of a national set of tools, standards, guidelines and standard interventions to make it easier for the sector to identify, prioritise, fund, design and deliver network optimisation.	LR Maintenance SH Maintenance	\$
Operational Network Performance	Development of a nationally consistent operational network performance shared system (all modes) so that we can improve our understanding of recurrent, seasonal and temporary conditions.	LR Maintenance SH Maintenance	\$
Code of Practice for Temporary Traffic Management review	The review is part of the SH&E 'Improving roadworker safety' programme. The review will be completed by the end of 2021 and will include a migration in platform from PDF documents to a web-based HTML format.	LR Maintenance SH Maintenance	\$

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Road Efficiency Group

- 1. Activity summary:** Activities of the Road Efficiency Group (REG) build sector capability, provide leadership in improvement of transport outcomes, and shift the culture of transport investment to proactively address future challenges and improve decision-making around wellbeing outcomes.
- 2. Expected outputs:** Improved public trust and confidence in transport investment, and improved value for money from transport investment. Roll-out of the One Network Framework completed across state highways and local roads and streets.
- 3. Key partners:** Waka Kotahi, LGNZ and local government partners (approximately 30 Road Controlling Authorities directly contribute to REG through participation and governance). REG is based on a co-design/co-delivery model. REG is governed by a governance group made up of representation from the three partner groups.
- 4. Decisions that influenced the initiation of this activity:** The Road Maintenance Task force required [the establishment of the REG](#). REG's purpose has been subsequently reset to align with the Government Policy Statement on Land Transport 2021, and includes:
 - Complete roll-out of the One Network Framework across state highways and local roads.
 - Ensure Programme/Project Managers have appropriate training and the capability to understand and deliver on outcomes as well as outputs .
 - Incentivise approved organisations to develop capability or benchmark their performance against others in their sector.
 - Demonstrate how value for money aspects have been considered in informing investment decisions and choice of delivery model.
- 5. Activity interdependencies:** REG ongoing capability development programme.
- 6. Expected delivery:** The REG Beyond 21 programme focuses on lifting sector leadership and capacity over a five-year period commencing January 2022. This builds off the success of the REG Focus 2021 programme (current business case).

Network Optimisation

- 1. Activity summary:** Develop a nationally consistent set of tools, standards, guidelines and standard interventions to make it easier for the sector to identify, prioritise, fund, design and deliver network optimisations.
- 2. Expected outputs:** Updated Network Operating Framework (NOF) and planning guidance and standards, replacement national NOF tool (replace legacy AUSTRROADS tool), and Network Optimisation Standard Intervention toolkit.
- 3. Key partners:** A sector working group with representation from urban local authorities will be formed to support this work. These outputs will make it easier for transport planners, asset managers and operations managers within Waka Kotahi and local government to optimise their networks for customers. Key beneficiaries will be local authorities responsible for large and medium size urban areas with complex multi-modal networks.
- 4. Decisions that influenced the initiation of this activity:** Making the most of existing networks is a key part of the investment intervention hierarchy which is promoted through Arataki. A lack of consistent guidance and tools means that optimising networks is not as easy as it should be. This gap was identified through the Keeping our Cities Moving mode shift plan. The benefits for improved network optimisation planning and delivery were evidenced through the development of a Auckland Network Optimisation Programme Business Case (a joint initiative between Waka Kotahi and Auckland Transport) and in the development of other business cases in urban growth centres. This led to this activity being initiated as a way to grow capability and provide nationally consistent resources for the sector.
- 5. Activity interdependencies:** The work is closely aligned with the REG One Network Framework programme and the urban development and capability toolkit initiatives.
- 6. Expected delivery:** The programme business case will be developed during 2020-21 and the outputs listed above are expected to be delivered from 2021-22 so they can fully support the development of activity management plans for the 2024-27 period onwards.

Operational Network Performance

- 1. Activity summary:** Development of nationally consistent operational network performance shared system (all modes) so that we can improve our understanding of recurrent, seasonal and temporary conditions. System will include measures, data, tools, and capability uplift across the sector to support efficient operations and low cost low risk project identification. We plan to take a similar approach to that taken by REG for One Network Road Classification performance measures.
- 2. Expected outputs:** System will include measures, data, tools, and capability uplift across the sector to support efficient operations and low cost low risk project identification.
- 3. Key partners:** A sector working group with representation from urban local authorities will be formed to support this work.
- 4. Decisions that influenced the initiation of this activity:** Waka Kotahi partners with local councils to operate the transport system across New Zealand. Through these partnerships it has been identified that we don't have consistent measures, data or tools to allow us to understand network performance day to day up to three-year periods. Changing approaches, data and tools means trends are often lost. A nationally consistent approach will provide value for money and allow the consistent comparison of performance and prioritisation of operational resources and optimisation of networks.
- 5. Activity interdependencies:** The work is closely aligned with the performance measures within the REG One Network Framework programme, urban development and capability toolkit, Effective national scale benefit management initiative.
- 6. Expected delivery:** The outputs are expected to be developed iteratively through the 2021-24 period with key outputs ready to support the development of Activity Management Plans for the 2024-27 period.

Code of Practice for Temporary Traffic Management Review

- 1. Activity summary:** A review of the Code of Practice based on submissions from a wide range of members of the Traffic Management Industry. Working groups primarily made up of industry representatives are reviewing the submissions and making recommendations of changes required. Waka Kotahi subject matter experts review recommendations and make decisions on final changes. Move to web-based HTML format.
- 2. Expected outputs :** Revised Code of Practice better aligned with industry requirements. Greater emphasis on risk based approach which considers risks associated with activities and the context in which they are undertaken.
- 3. Key partners:** WorkSafe NZ, Civil Contractors NZ, Association of Consulting Engineers NZ, Utilities Advisory Group and Temporary Traffic Management Service Providers.
- 4. Decisions that influenced the initiation of this activity:** Planned review by Waka Kotahi expanded to much greater level of industry involvement. Catalyst for timing was industry feedback to raise the understanding of risk management and its application using the code. Changes to roles and responsibilities better aligned with requirements.
- 5. Activity interdependencies:** Revisions to the Worksafe *'Good Practice Guide for road and roadside worker health'* and the Waka Kotahi *'Training and Competency Model'*
- 6. Expected delivery:** December 2021.

Category 2: Ongoing sector development and improving value for money

- The following activities look to improve sector collaboration and management of priority programmes.

Activity Description	Investment Benefits	Activity Class	Magnitude of Funding
Road to Zero activities	Supporting behavioural changes to improve road safety outcomes	Road to Zero	\$\$
Walking and Cycling National Programme	National programme of non-infrastructure walking and cycling focused activities delivered by Waka Kotahi.	Walking & Cycling Improvements	\$\$

Key to Financial Magnitude: \$ = <\$10m, \$\$ = >\$10m <\$100m, \$\$\$ = >\$100m

Road to Zero Activities

- 1. Activity Summary:** To support and strengthen our road safety management system to ensure we can achieve the 40% reduction in deaths and serious injuries (DSI) target by 2030.
- 2. Expected outputs:**, Strengthening national system leadership and coordination of road safety, support of effective regional responses, supporting monitoring and evaluation, developing and sharing evidence, improving post-crash response, updating traffic control devices manual and specifications, developing road safety tools such as the National Speed Limit Register and enabling innovation and trials aligned with Road to Zero outcomes.
- 3. Key partners:** NZ Police, Ministry of Transport, road controlling authorities and Regional Transport Committees.
- 4. Decisions that influenced the initiation of this activity:** Cabinet adoption of the Road to Zero Strategy and Action Plan, which are also reflected in the Government Policy Statement (GPS).
- 5. Activity interdependencies:** System Management is one of 15 actions in the Road to Zero Action Plan, which are all required achieve the Government's 40% DSI reduction target. This work is also directly linked to the performance measures of the Road to Zero Outcome Framework.
- 6. Expected delivery:** Ongoing delivery to 2030, with interventions and activities being developed in line with the Road to Zero Strategy.

Walking and Cycling National Programme

- 1. Activity summary:** Increasing the percentage of trips walked and cycled is a key strategic objective for the Government and Waka Kotahi and features in four different strategies including Road to Zero, Te Toitu te Taiao – our sustainability action plan, Keeping Cities Moving and Arataki. This is the national programme of actions to deliver on this strategic objective and has been designed as a change programme to lift capability, practice and active mode uptake across Aotearoa.
- 2. Expected outputs:** Sector training aimed at practitioners and leaders, design guidance and standards, tools and resources and messages and activities designed to shift behaviour and attitudes. Outputs include activities to support local council practitioners in network planning and delivery.
- 3. Key partners:** Local government practitioners, local govt leaders, consultants, Waka Kotahi staff and the wider public.
- 4. Decisions that influenced the initiation of this activity:** New Zealand does not have a history of delivering good outcomes for active modes. As a response to this a 'nationally delivered cycling activities' business case was developed in 2015-18 to support the implementation of the Urban Cycleways Programme and adapted for both walking and cycling for the 2018-21 NLTP, in the absence of a national approach. The national support provided to the sector has contributed to a lift in capability and practice but given the low base we started from, requires an ongoing programme of activities for 2021-30.
- 5. Activity interdependencies:** The transport sector has a strategic interest in delivering better outcomes for active modes as these activities are part of our response to urgent challenges such as reducing emissions, improving safety and increasing the vibrancy and economic productivity of our towns and cities. This activity is a key part of the contribution made by Waka Kotahi to address these challenges.
- 7. Expected delivery:** On-going change programme, with key deliverables for 2021-24 focussing on training, design guidance and standards, resources and tools and attitudes and behaviour shift.

Category 2. Sector development and improving value for money

- The following activities look to inform and improve the efficiency and quality of decision making and expenditure.
- This list differs from that in the Waka Kotahi Investment Proposal in that Waka Kotahi capability activities have not been included.

Activity Description	Investment Benefits	Activity Class	Magnitude of Funding
Asset Management Data Standard	Provision of better customer insights through an integrated view of all assets, providing fact-based collaboration for decision making	LR Maintenance SH Maintenance	\$\$
Spatial/digital engineering	New data collection mechanism that allows better information base using integrated data, resulting in lower costs because information transactions are electronic, and information created once is used many times.	Investment Management LR Maintenance SH Maintenance	\$\$

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Asset Management Data Standard (AMDS)

- 1. Activity summary:** We are currently in pre-implementation phase which delivers a detailed business case to implement the AMDS standard across the roading sector. The next stage will be to request funding to implement the standard over a nine-year period.
- 2. Expected outputs:** An Asset Management Data Standard for the roading sector. Detailed business case for implementing the standard for the sector for up to nine years. In reference to the 2021-31 period, we will be seeking funding to implement the standard.
- 3. Key partners:** The project is led by Waka Kotahi, with guidance and input from REG Governance Group, REG Leaders, and the REG Evidence and Insights groups. Our stakeholders are Road Controlling Authorities, construction and maintenance contractors, consultants and asset management vendors
- 5. Decisions that influenced the initiation of this activity:** There is no common data standard which makes evidence-based investment decisions difficult. The Indicative Business Case identified significant benefits in standardising and improving data management practices and enabling seamless data sharing, in the order of \$70m per annum by the year 2029. This is a significant increase on the Programme Business Case estimate of \$42m per annum. This may increase up to \$120m on completion of the full Digital Engineering for Transport (DefT) environment.

The GPS provides explicit guidance on the focus areas for transport investment. The current GPS mandates a focus on safety, accessibility, environment, and value-for-money. Treasury's 2015 National Infrastructure Plan identified a need for increased asset management maturity across the infrastructure sectors, and that consistent infrastructure asset data standards would be key enabler to this outcome. This provided the mandate for Waka Kotahi to develop and implement an AMDS on behalf of the transport sector, which led to the development of the 2018 Waka Kotahi-led Programme Business Case.

- 6. Activity interdependencies:** Accessible, integrated, complete, and reliable customer and asset information that improves delivery, maintenance and operations of the transport system and provides long-term cost savings to the land transport sector. Improved efficiency and transparency in transport-based asset decisions that achieve desired customer levels of service for all transport system users. Improved system view of transport assets and customer insight.
- 7. Expected delivery timeline:** July 2021 – June 2030: Waka Kotahi supports road controlling authorities, construction and maintenance contractors and consultants to implement the AMDS. Initial indications are the original timeframe may be able to be reduced.

Spatial/Digital engineering

- 1. Activity summary:** The management and delivery of well-structured, consistent, integrated and high-quality asset intelligence through the use of new technology (including innovative data and information use) and the recognition and treatment of the associated data as a Waka Kotahi asset.
- 2. Expected outputs:** A consolidated [information and digital asset management framework](#) that spans across the lifecycle of projects. A secure common data environment that supports digital collaboration across multiple suppliers, stakeholders and partners, on multiple concurrent multidisciplinary infrastructure projects. The standards, guidelines, procurement specifications and automation of processes that enable digital collaboration, information management and decision making for all activities.
- 3. Key partners:** REG (Road Efficiency Group), industry supply partners and all public sector asset and infrastructure owners.
- 4. Decisions that influenced the initiation of this activity:** Aging asset management and assessment tools. Discarding of digital assets at the completion of projects. Calls for [wider adoption of Building Information Management \(BIM\)](#) and development of a [national infrastructure digital twin](#) - refer [examples from Infrastructure NZ](#) (p9-19). Need to support value for money through improved cost and supply chain intelligence. This represents a significant opportunity to enhance productivity and efficiency at all stages of infrastructure design, delivery, maintenance and operation, including through delivery standardisation, platform-based manufacturing techniques, digital rehearsal and digital twinning.
- 5. Activity interdependencies:** The Asset Management Digital Standard. Data quality and reporting improvements via REG. New Infrastructure Procurement Approaches. Project Delivery Excellence.
- 6. Expected delivery timeline:** An enduring programme of work with set up period in 2021/22.

A catalyst for digital transformation

- Quickly visualise how planned or anticipated transport changes may impact the real world.
- Produce new insights that aid in business decisions and can help solve complex problems.
- Optimise service delivery through realising the value of re-using data and understanding the interconnectedness of infrastructure systems, thereby reducing costs in delivery, maintenance and operation of the transport system.
- Manage assets in a proactive manner that improves customer levels of service and supports seamless management of national, regional and local transport risks.
- Effectively manage the response and adaptation to climate change, particularly around improving the resilience of networks and increasing the adoption of green technologies.
- Improve the appeal of and grow the capability and talent within the construction industry.

Category 3. Exploring smarter ways to deliver customer benefits

- We need to strike the right balance of addressing immediate requirements within available funding and also ensuring that we are future focused on developing tomorrow's transport system.
- The table below identifies activities that could be developed into NLTP applications if there was a compelling value proposition for the sector compared with alternatives and enough Waka Kotahi resources to manage the activities.

Activity Description	Investment Benefits	Activity Class	Magnitude of funding
On Demand Transport programme	A programme of work to investigate, and trial the potential of on demand transport in partnership with cities and regions.	Public Transport Services	\$
Mobility Lab	The establishment of a living laboratory, in partnership with local government, the private sector and academia to enable the testing and trialling of innovative transport solutions in dynamic real-world environments. *	SH Maintenance	\$
Sustainability	This programme delivers on workstreams in <u>Toitū Te Taiāo</u> : our Sustainability Action Plan.	Investment Management	\$
Land Transport Security Work Programme	Focus on counter-terrorism work across government, resulting in the development of frameworks and guidance to identify areas for improvement.	Investment Management	\$
Digital Infrastructure initiatives	Replacement and upgrade of existing system infrastructure to support ITS systems across New Zealand	All	\$\$\$

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On-Demand Transport Programme

- 1. Activity summary:** A programme of work to investigate, and trial the potential of on-demand transport in partnership with cities and regions.
- 2. Expected outputs:** Waka Kotahi will develop a programme of trial projects and produce a national set of tools, standards, a policy and guidelines to support on-demand shared mobility solutions across New Zealand. It will also hold a central database of knowledge and share learnings and information with partners. The intention being that by the end of 5-years, pilots will have been delivered and sufficient information gathered to provide confidence in understanding the costs and benefits and to enable them to be set up or procured efficiently, and to establish an appropriate operating model.
- 3. Key partners:** Local government partners.
- 4. Decisions that influenced the initiation of this activity:** Access to technology and data is increasing, as are customer expectations that transport will be tailored to their needs and information about transport options and routes will be provided in real-time. When on-demand transport is provided in the form of a public transport service - that is shared, dynamically routed and can be easily booked and paid for e.g. via an app - it has the potential to make a positive impact on transport outcomes, such as improving accessibility and reducing the number of single-occupancy vehicles. On-demand transport can improve access to mobility by:
 - providing transport in areas that are not served by a traditional public transport model because, for example, they cannot support a large-scale public transport operation
 - providing first mile/last mile connections e.g. to train services
 - providing mobility for the elderly and people with disabilities
 - providing tailored services for specific sectors or industry e.g. during COVID-19.

On-demand transport may provide a more sustainable public transport service in places where at certain times, demand peaks and is predictable, but at other times, demand is inconsistent or low.

- 5. Activity interdependencies:** The trialling be undertaken as part of the Mobility Lab programme of work (next slide).

Mobility Lab

- 1. Activity Summary:** A programme which will provide a platform for government, industry and academia to work collaboratively to test and trial innovative transport solutions in real-world environments.
- 2. Key outputs:** An enabling environment which supports working collaboratively to explore, test and trial new and emerging transport technologies and business models that contribute to an integrated multi-modal transport system. Testing may take place in several locations across New Zealand and could include:
 - Building an understanding of current systems, data and processes to inform operational and regulatory requirements to enable the deployment and support of new and emerging transport solutions.
 - Investigating and trialling the physical and digital infrastructure requirements to support connected and automated vehicle (CAV) technologies.
 - Investigating and trialling Mobility as a Service (MaaS) and/or on-demand transport solutions to understand their potential to support mode shift (including first mile/last mile) and the role of Waka Kotahi in their delivery.
- 3. Key partners:** Central and local government, private sector/industry and academia will partner together and work collaboratively.
- 4. Decisions that influenced the initiation of this activity:**
 - A need to better understand how new and emerging technologies and business models respond in our environment, the capabilities needed to safely integrate them, their potential benefits and any negative impacts. Testing and trialling supports a planned, co-ordinated, national approach to investment in innovative transport solutions while delivering regional responses.
 - Similar programmes are underway internationally including the Australian Integrated Multimodal EcoSystem (AIMES) in Melbourne, which found that investment in smarter connected infrastructure realises the safety benefits of connected and automated vehicles sooner, rather than waiting for mass vehicle roll out.
- 5. Activity interdependencies:** National delivery will ensure interoperability and value for money by identifying national standards and processes. Regional and local governments do not have the capability to support these types of trials so by funding this programme we can build capability and deliver regionally focussed solutions whilst ensuring a national whole-of-system approach. The sector expects that central government will provide greater leadership, direction and support in this area. An innovation fund to support the private sector to deliver innovative transport solutions is currently being developed. This is likely to deliver greater value to the sector if supported by a model that encourages collaboration and partnerships and enables testing and trialling in the real world.

Mobility Lab

6. Expected delivery: It is intended that this will be an enduring programme of work, with the set up period being in 2021/22.

7. Strategic context:

- The Government Policy Statement (GPS) on land transport 2021 lists innovation as a principle for investing:

“Innovation can increase the net benefits from land transport investment and use... When the land transport sector considers investment, the Government expects it to take advantage of the opportunities that innovation provides. This includes supporting, developing and making use of new technologies (such as low emissions, connected and autonomous vehicles), new business models (such as car share and bike share schemes), and making better use of ‘big data’ to improve user experiences, integrate different transport options, or optimise traffic flows.”

- Within the GPS, the statement of ministerial expectations outlines:

“Waka Kotahi should be innovative within its own business, and work collaboratively with others to deliver transport innovation for the land transport system. The Minister expects Waka Kotahi will work collaboratively with others to better understand, promote and facilitate innovative solutions across the transport system. This includes demand management through piloting or demonstrating new approaches in areas such as street design, and testing the use of new technologies where they can make a meaningful contribution to the objectives of this GPS.”

- Arataki is Waka Kotahi’s 10-year view of what is needed to deliver on the government’s current priorities and long-term outcomes for the land transport system. It identifies technology as both a significant driver that will shape the future land transport system and a lever to improve our land transport system through investment in infrastructure, platforms and services.

Sustainability

1. **Activity summary:** Enabling informed, evidence based decision making to support the efficient and effective planning, investment, delivery and regulation of a low carbon, safe and health land transport system.
2. **Expected outputs:**
 - a) **Evidence base:** research and evaluation reports; data generation, collation and open access; intervention, scenario and optimisation tools; programme and project critical reviews, etc.
 - b) **Tools and Resources:** e.g. Te Puna Taiao – Land Transport Environment Impact Model, Vehicle Emission Prediction Model and Mapping Tool, EV Roam (data capture and access about public electric vehicle charging infrastructure, low carbon land transport investment programme assessment tools and guidance, etc.
 - c) **Trials and Innovation:** Low cost tactical initiatives to demonstrate a proof of concept, e.g. low emission and quiet zone establishment and regulation; test emerging low carbon technology, vehicles and products; initiatives that generate knowledge, understanding and user experience; evaluation reports and open data access.
 - d) **Education:** awareness raising and promotion of travel demand interventions, clean and safe vehicle purchase and use, sector capability building, e.g. e-learning modules, knowledge sharing events, mentoring and support services, etc, community engagement initiatives to build social licence for long-term change interventions.
 - e) **Environmental Remediation:** identification, design and treatment of transport environmental harms such as stormwater run off
3. **Key partners**
 - Central Government, e.g. Ministry of Transport, Ministry for the Environment, Ministry of Business, Innovation and Employment, Energy Efficiency and Conservation Authority, Ministry of Housing and Urban Development, Kainga Ora, KiwiRail.
 - Local Government, e.g. Regional Councils, Road Controlling Authorities, Auckland Forecasting Centre.
 - Universities and Crown Research Institutes.

Sustainability

4. Decisions that influenced the initiation of this activity:

- Enactment of the Climate Change Response (Zero Carbon) Amendment Act 2019.
- Publication of Government Policy Statement on Land Transport 2021/22 – 2030/31.
- Waka Kotahi Board approval of Te Ara Kotahi Our Maori Strategy, Arataki, Toitu Te Taiao Our Sustainability Action Plan and Keeping Cities Moving

This activity responds to this strategic direction and in particular gives effect to the headline and supporting actions in Toitu Te Taiao which is a specific output in GPS 21 that will enable delivery of the climate change strategic priority by reducing greenhouse gas emissions as well as air and noise pollution.

5. Activity interdependencies:

This activity is intended to enable Waka Kotahi and our partners to make informed, evidence-based decisions so that the sector can collectively (within the bounds of respective influence and interest) put in place the necessary national, regional and local settings and actions that will create a low carbon, safe and health land transport system for all New Zealanders.

6. Expected delivery timeline:

Continuous activity delivering prioritised and the high value products annually.



Land Transport Security Work Programme

- 1. Activity Summary:** Implementing the Land Transport Security Strategy. This includes developing frameworks and guidance to enhance network security in the following areas - information and intelligence management, security response plans, implementing the [Protecting our Crowded Places from Attack: New Zealand's Strategy](#), secure assets and an informed and accountable supply chain.
- 2. Expected outputs:**
 - This programme will ensure the security of all users of the land transport security system.
 - The provision of a Land Transport Security Advisory Service enabled to provide timely, accurate security advice to the transport sector.
 - The creation and management of a Land Transport Security Forum that enables intelligence and information sharing and aligns operational security activities.
 - The delivery of a transport sector wide security communications plan that provides regular security information and advice.
 - Protected Assets that are secure from deliberate or malicious disruptions or compromising of their physical integrity.
 - The creation of 'Security by Design' advice for all future capital projects.
 - Mechanisms to ensure that there is a secure, informed and accountable land transport supply chain.
- 3. Key partners:** This activity will support cross government security work and forms part of the Ministry of Transport Land Transport security Work Programme. It will support local government organisations, suppliers and all users of the transport system. The delivery of this activity will ensure alignment with NZ Protective Security requirements.
- 4. Decisions that influenced the initiation of this activity:** Following the 15 March 2019 terrorist attack, there is a renewed focus on counter-terrorism work across government, with an emphasis on preventing such tragedies from occurring again. Within this activity NZTA is responsible for investing in the security elements of design, construction, maintenance and operations of State Highway assets. It also part invests in the local road networks alongside other Road controlling authorities (Councils). Overall, the government expects that the Transport Agency is a key player in land transport security work programmes.
- 5. Activity interdependencies:** Engagement programme supports effectiveness of investment in public transport and other key capital projects.

Digital Infrastructure Initiatives

- Replacement and upgrade of existing system infrastructure to support ITS systems across New Zealand.
- The following activities will result in improved customer experience through better network productivity and use. Separate slides on each of the following activities follow.
 - ITS Advanced Traffic Management
 - ITS Asset Management
 - ITS Communication Platforms and Channels
 - ITS Journey Optimisation
 - ITS Systems Integration
 - ITS TOC Maintenance and Operations
 - ITS Tolling Management System
 - ITS Traffic Operations



ITS Advanced Traffic Management

- 1. Activity summary:** An upgrade of the current ATMS (Advance Traffic Management System) and the associated Intelligent Transport Systems (ITS) Network which has reached end-of-life. Upgrading the systems will provide for a single national network leading to safe and efficient customer journeys by providing near real-time information. It will also allow proactive optimisation of the Connected Transport System.
- 2. Expected outputs:** Modernising our AMTS platform is necessary to support our strategic goals and will provide vital resilience in advance of major international events like the America's Cup and APEC. We have elected to upgrade the current version of Dynac. On top of this we are moving from a build and support model to a managed service supporting our principle of rent, before you buy, before you build. We are moving from version 12 to version 15.
- 3. Key partners:** Kapsch
- 4. Decisions that influenced the initiation of this activity:** The Core Transport Management Programme was created in response to the Transport Technology Risk Mitigation Business Case which highlighted the risks in under investment in our transport technology assets.
- 5. Activity interdependencies:** ITS Network, Integration Engine, communications platforms and channels, and capital projects that open during the delivery timeline which include Transmission Gully, Christchurch Northern Corridor and Ara Tūhono - Puhio to Warkworth.
- 6. Expected delivery :** The strategy for Advanced Traffic Management is to continue the development started in 2019/21. This includes the rollover of funding from the previously approved NLTP to complete activities. Funding has been requested in out years to continue to develop the capabilities in an "as a service" state.

ITS Asset Management

- 1. Activity summary:** The current approach to Asset, Fault and Maintenance management currently uses 150 systems, sub-systems and inventory spreadsheets. This approach has created a large and complex eco-system which is both difficult to manage and creates issues in data accuracy and data management. The strategy is to complete activities around modernisation and consolidation of the management systems to a core group of applications.
- 2. Expected outputs:** Modernised application layer providing great efficiency in the management of assets, faults and maintenance.
- 3. Decisions that influenced the initiation of this activity:** A complex and aged application which supports \$70b worth of assets.
- 4. Activity interdependencies:** Asset management is a foundation element in the management of our roading infrastructure and will therefore interface with other components of our transport eco-systems including Advanced Traffic Management and Journey Management.
- 5. Expected delivery:** The strategy is to undertake a consolidation and modernisation from 2021-24. Funding has been requested in 2024-25 and beyond to continue to develop the capability in an "as a service" state.

ITS Communication Platforms and Channels

- 1. Activity summary:** The communication platforms and channels used across the roading networks and in the Transport Operation Centres requires continuous maintenance to ensure it is maintained at the highest of standards. The eco-system includes components that manage the PA systems in tunnels, the radio and telephony systems for use by operational units and agencies, the websites providing up-to-date information to the public and the integration of these communications formats to provide consistency in messaging. In several areas, the technology has not kept pace with technology advancement and is considered out-of-date. The activity is to modernise the communications capability within the transport ecosystems in FY21-24 and then maintain the eco-system at a consistent and modern level.
- 2. Expected outputs:** Enhanced and modern communication platforms and channels.
- 3. Key partners:** Cogent, Vodafone, Fushion, Internal Channels Team, MediaSuite and SilverStripe
- 4. Decisions that influenced the initiation of this activity:** The technology platforms are now aging which increases the risk of failure.
- 5. Activity interdependencies:** Dependencies with other projects in the technology area including Advanced Traffic Management, ITS Network.
- 6. Expected delivery:** The strategy for communications platform and channels is to undertake a consolidation and modernisation in 2021-24. Operational funding has been requested in 2023-24 and beyond to support and maintain the modernised capabilities.

ITS Journey Optimisation

- 1. Activity summary:** Journey management is a collection of applications and "point solution developments". Applications include the management of planned works and events, the management of unplanned incidents and events, the calculation of journey times and the integration of data between systems to allow for the presentation of journey time information. Some applications have been earmarked for decommissioning for seven-plus years and require frequent stabilisation activities. The strategy for Journey Management is to undertake a consolidation and modernisation in 2024-25.
- 2. Expected outputs:** Modernised and consolidated set of tools to manage journey optimisation.
- 3. Key partners:** Fujitsu, Internal resources, Argonaut, Auckland Transport (RiskShield) and futureTBA (dependent on a procurement process).
- 4. Decisions that influenced the initiation of this activity:** Risk position on a number of the applications.
- 5. Activity interdependencies:** The transport technology environment has an array of interdependencies. Key is the asset management system and this is scheduled for modernisation before Journey Management.
- 6. Expected delivery:** The strategy for journey management is to undertake a consolidation and modernisation in 2024-25. Operational funding has been requested in 2021-24 to support a range of applications which will be "sweated" with risk mitigation activity only taking place. Additional funding has been requested from 2025-31 to support and maintain the modernised capabilities.

Please note that this item incorporates the Transport Operations Sector Shared Systems activity which was listed in the draft Waka Kotahi Investment Proposal.

ITS TOC Maintenance and Operations

- 1. Activity summary:** Journey management focuses on disruption management or temporary event management of the network to facilitate safe and reliable customer journeys. Events range from incidents to road works and holiday weekends and consider the collaborative relationships between key stakeholders, suppliers and our customers to manage the event's impact on journeys. Transport technology applies information and communication technologies that support and optimise the transport network by cost effectively improving how it works, thereby enabling and supporting the journey management goals. It is a combination of data networks, software systems, applications and digital infrastructure designed to support the delivery of transport technology products to our customers' needs. It encompasses all modes of land transport (road, rail, cycleways, tunnels, pedestrian paths) and all purposes of travel (whether private, public, or commercial), across rural, urban and inter-urban transport networks
- 2. Expected outputs:** Operational activities to maintain the capability that enable Operation Centres to function as expected, (traffic management, video management, communications, travel time, incident management, other technical services (network, power, desktops and services, phones, etc).
- 3. Key partners:** Fujitsu, Fusion Networks , Argonaut, ASM (Auckland), Kapsch, Cogent, Sektor, Auckland Transport, Police, Wellington Free Ambulance, Downer, Vodafone and Ten Four (video wall).
- 4. Decisions that influenced the initiation of this activity:** Aging technology set.
- 5. Activity interdependencies?** Project delivery both capital and technology.
- 6. Expected delivery:** The strategy for TOC maintenance and operations is to undertake a consolidation and modernisation in 2021-24. Operational funding has been requested in future years to support and maintain the modernised capabilities.

ITS Systems Integration

- 1. Activity summary:** This project will establish the capability, governance, patterns and technology to serve the current and future system integration needs across the information technology and operational technology domains. Flexible and efficient system integration is a key enabler for technology solutions. A cost-effective and flexible technology system landscape is achieved by acquiring systems that readily integrate with other systems, that are enabled by utilising modern integration platforms and technologies. The strategy for integration is to continue to expand the use of an integration engine into the enterprise architecture.
- 2. Expected outputs:** Confirm the integration reference architecture, prepare integration solution design, configure integration platform, provide recommendations for a governance model including remits, establish the criteria for when you are likely to use the Integration Engine (not just point to point), establish an onboarding process for future integration, including operational support, proceed with migration/transition onto the Integration platform.
- 3. Key partners:** Mulesoft
- 4. Decisions that influenced the initiation of this activity:** Age of our current public services and API infrastructure, as well as the impacts that systems changes have on each other when an integration platform is not employed.
- 5. Expected delivery:** The initial development of an "as a service" cloud-based solution will be undertaken in 2020-21 with its continued primary evolution in 2021-23 followed by incremental change for 2024-31.

ITS Tolling Management System

- 1. Activity summary:** The current processing system for management of tolling charges is end of life and requires new functionality to allow new toll roads to be added. The system will not be supported beyond November 2022 and additional functionality is required from May 2022 to allow a new toll road to be commissioned. The strategy is to replace the existing back office system in 2021/22.
- 2. Expected outputs:** The new system will deliver the ability to improve the efficiency of current charging for existing toll roads and the ability to add new toll roads. All new roads are assessed against a set of criteria to identify whether tolling is applicable.
- 3. Key partners:** This is a joint programme of work involving Transport Services, Regulatory and Digital and Workplace.
- 4. Decisions that influenced the initiation of this activity:** Waka Kotahi currently manages and operates three toll roads within New Zealand. It is Waka Kotahi policy to assess all new state highway links for tolling, and so it is likely that additional toll roads will be added during the next five to 10 years.
- 5. Activity interdependencies:** Tackling Unsafe Speeds.
- 6. Expected delivery:** Initial two stage delivery model will require deployment in 2021/22.

ITS Traffic Operations

- 1. Activity summary:** ITS Traffic Operations covers the annual plan for support and maintenance of systems, infrastructure and devices used in the Intelligent Transport System (ITS). Included is allowances for support of new systems and infrastructure delivered as part of the Digital Infrastructure Initiatives and allowances for contributions around security and the use of data.
- 2. Expected outputs:** Cost to keep the systems up and running.
- 3. Key partners:** Large number of vendors including Fujitsu, Kapsch, Fusion, Argonaut, Vodafone, etc.
- 4. Decisions that influenced the initiation of this activity:** Must have to support the ongoing operation of the ITS Traffic operations.
- 5. Activity interdependencies:** Interdependent with all activities in the management and monitoring of the roading network.
- 6. Expected delivery:** Annual cost.

Send us your feedback

- We welcome your feedback on any of these activities and your views on what you think we should focus on. This will help our decision-making about what we should submit to the NLTP.
- Please provide us your feedback in this [short survey](#) by Wednesday, 16 December 2020, or you can email us your feedback at nltf@nzta.govt.nz.

