

Transport Evidence Base Strategy

TEBS Progress Report

February 2023



Te Kāwanatanga o Aotearoa
New Zealand Government

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Introduction

The Transport Evidence Base Strategy (TEBS) creates an environment to ensure data, information, research and evaluation play a key role in evidence-based decision-making.

Good, evidence-based decisions also enhance the delivery of services provided by both the public and private sectors to support the delivery of transport outcomes and improve wellbeing and livability in New Zealand. Preparation of an annual report on the progress of implementing the TEBS is the responsibility of the Ministry of Transport. This, the third TEBS Annual Progress Report, provides an update on progress in implementing the TEBS. The report will provide an overview on implementation of the TEBS:

We are reporting for the first time on the TEBS Implementation Plan which was released in October 2022. To ensure consistency with the previous TEBS Progress Report 2020, we continue to report on initiatives/actions that were identified in the TEBS that was released in 2019. It is important to note that while a comprehensive picture of activity that has been undertaken within TEBS over the reporting period, there may be gaps that have not been captured within this document.

1. Domain Plan-Recommended Actions
2. Research Strategy-Recommended Actions
3. Evaluation Strategy-Recommended Initiatives and Actions

Domain Plan Recommended Actions

The Domain Plan identified 5 overarching initiatives and 24 high-priority actions to fill the most important data and information gaps. Progress on implementing these is described in Table 1 and Table 2 below.

TABLE 1 – DOMAIN PLAN OVERARCHING RECOMMENDED ACTIONS (FROM THE [TEBS IMPLEMENTATION PLAN 2022](#))

Domain Plan					
Enabler	Action	Description	Lead Agency	Timeframe	Current progress
Improve access	IA1.1 Develop transport sector open data strategy	Development of sector strategy to enhance the availability, discoverability, and reuse of transport data	Government Transport Sector Open Data Working Group	2021-2023	Waka Kotahi Published New Zealand's first all-of-transport-sector open data framework. Its purpose is to help enable the entire sector to align efforts, prevent wheel reinvention, improve maturity etc. Published first open data user survey to better understand our users and continue to improve the Waka Kotahi open data platform. Representation was provided for the Government Transport Sector Open Data Working Group and the Transport Sector Open Data Framework by lead transport agencies. An open data value and impact study is planned for FY23.
	IA1.2 Increase availability and reuse of government transport open data	Increase number of transport statistics and datasets openly available through government digital channels	MoT, Waka Kōtahi, CAA, MNZ, KiwiRail, LGNZ	2021-	Waka Kotahi Waka Kotahi published the following on the Open Data platform: improved Crash Analysis System (CAS) documentation. Following user feedback, Waka Kotahi published detailed user

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Domain Plan					
Enabler	Action	Description	Lead Agency	Timeframe	Current progress
					documentation for our CAS open data. The documentation accompanies the CAS listings. • updated 15-min-resolution traffic count data. • carbon emissions open data: The MVR (motor vehicle register) open data – both API and CSV files – now contains fuel consumption and synthetic greenhouse gas emission data. • updated public attitudes to road safety survey 2021-22, which provides insight into public attitudes to road safety issues and behaviours in 2021. • procurement tool indexes: The infrastructure and public transport contract price adjustment indexes now on to the open data portal (previously on the Waka Kotahi website), as part of wider work to consolidate our open data. • national speed limit register: a single source of truth for speed limit data. ---- <u>Maritime NZ</u> Release of “accident, incident and mishaps notification summary data 2021” in open data format on MNZ website. Development of data inventory to document MNZ data holdings.
	IA1.3 Hold an annual Transport Knowledge	The Transport Knowledge Conference brings together the transport research, data and evaluation community with government officials, decision	TKC Organising committee (Waka Kotahi, Maritime NZ,	Ongoing	<u>Ministry of Transport</u> The Conference committee, led by the Ministry of Transport (MoT) and made up of representatives from MoT, Waka Kotahi, Maritime NZ, and the Civil Aviation Authority delivered TKC2021 and TKC2022.

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Domain Plan					
Enabler	Action	Description	Lead Agency	Timeframe	Current progress
	Conference (TKC)	makers and policy teams from across the wider transport sector with the objective to: 1 Enhance the use of evidence (date, information, research, and evaluation) to inform decision making 2 Provide a forum for people working across the transport sector to share, build and maintain their transport knowledge 3 Create a thriving transport research, data and evaluation community that delivers an evidence-based transport system that improves wellbeing and liveability. Government transport agencies actively contribute to conference organisation and presenting relevant work.	Ministry of Transport and Civil Aviation Authority)		• The TKC2021 with the theme - Future Transport Direction in Aotearoa – was held on 1 December 2021. It was attended by 217 representatives (87 online and 130 in-person) from government, private sector, NGOs, and academia. • The TKC 2022 with the theme - Transport Transition: Avoid, Shift and Improve – was held on 8 December 2022. It was attended by 170 delegates (155 in-person, and 15 online) from government, private sectors, NGOs, and academia.

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Domain Plan					
Enabler	Action	Description	Lead Agency	Timeframe	Current progress
	IA1.4 Develop evidence plans for key priority programmes	Development of evidence base research plans to support priority work programmes, such as: - Emissions reduction plan - Transport accessibility and equity - Supply chain strategy	MoT with support from Waka Kotahi, Maritime NZ and CAA	2022-2024	<u>Ministry of Transport</u> The Decarbonising Transport Research Strategy (DTRS) is being developed to provide the direction and support needed to fill evidence gaps for transport actions in the Emissions Reduction Plan. A stocktake of existing information has been completed. The strategy will be delivered in late 2023. ---- <u>Maritime NZ</u> Development of the MNZ Research Work Programme. Development of MNZ Harm Prevention Programmes (Ports and Harbours and Recreational Craft) with relevant sector stakeholders to improve safety outcomes.
Improve governance	IG1.1 Develop national data standard for land transport infrastructure assets	The adoption of data and metadata standards ensures that we are aligned with internal practices and reflect the requirement to provide/share data in a specified and standardised format. The initial focus will be on asset management data (refer TEBS R4.14). This will be delivered through the Asset Management Data Standard (AMDS) project.	Waka Kōtahi (with Road Efficiency Group (REG))	2021-	<u>Waka Kotahi</u> The first version of the Asset Management Data Standard has been released and published.

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Domain Plan					
Enabler	Action	Description	Lead Agency	Timeframe	Current progress
Invest in the right activities	IR1.1 Fill high-priority data and research gaps	Develop individual and collaborative plans to implement high-priority data and research initiatives in appendix 1. Investigate progress on Domain Plan recommended initiatives – R5.2, R10.1, R10.6, R11.10	All	2021-2023	<i>Refer to Domain Plan Initiatives and updates on progress.</i>
	IR1.2 Re-evaluate knowledge gaps resulting from Covid-19	Review remaining knowledge gaps to identify new emerging gaps arising from COVID-19 response and recovery so these can be prioritised accordingly.	Waka Kōtahi/MoT with support (as relevant) from MNZ, CAA and LGNZ	2021-2023	<u>Waka Kotahi</u> Waka Kotahi COVID-19 response reviews undertaken as new variants/sub-variants have occurred and at the various alert levels and COVID-19 Protection Framework settings: • Ongoing monitoring and surveillance of the environment being undertaken to respond and adapt appropriately Planned Waka Kotahi research: • Working from home impacts on travel and land use – Pre- and Post-COVID-19. Current Waka Kotahi research: • COVID-19 impacts on transport – ongoing reporting. ---- <u>Maritime NZ</u> Identify emerging priority data and information gaps e.g., cruise ships

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Enabler	Action	Description	Lead Agency	Timeframe	Current progress
	IR1.3 Prioritise Government investment in transport data	Participate in the Stats NZ Data Investment Plan (DIP) Working Group. This project aims to develop an aligned national Data Investment Plan (DIP) that provides a system view of data investment in key datasets that demonstrate strategic importance to Government.	DIP working group to include representatives from MoT and Waka Kōtahi	2021-	<u>Ministry of Transport</u> Supported the development of the Stats NZ Data Investment Plan by ensuring the transport sector had coverage within the plan through the topic areas identified.
	IR1.4 Develop evidence and research plans for key priority programmes	Development of evidence base research plans to support priority work programmes, such as: • Emissions reduction plan • Transport accessibility and equality • Supply chain strategy	MoT with support from Waka Kōtahi, MNZ and CAA	2022-2024	<u>Ministry of Transport</u> Emissions Reduction plan (ERP): • The Ministry of Transport is developing the Decarbonising Transport Research Strategy (DTRS) to inform and support the assessing, implementing, monitoring, and evaluating of the Decarbonising Transport Action Plan (DTAP). The first step of the DTRS is to create a Stocktake of existing research and evidence, which should be completed early this year. The DTRS is expected to be published in the second half of this year. Transport accessibility and equality: • There has been work completed to support evidence in this area. A key piece of work has been the “Transport and wellbeing project: Understanding the distributional impacts of transport accessibility”.

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Domain Plan					
Enabler	Action	Description	Lead Agency	Timeframe	Current progress
					Supply chain strategy: Work is underway to develop an evidence plan that supports the needs of the implementation of the Supply Chain Strategy. ---- <u>Waka Kotahi</u> Waka Kotahi is contributing to the development of the DTRS being prepared by the Ministry of Transport. ---- <u>Maritime NZ</u> Developing a data and analytics platform to build the sector intelligence picture and support our harm prevention approach and strategic programmes. Contribute to Te Manatū Waka research plans to support supply chain strategy. Development of MNZ Research Work Programme.

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Domain Plan					
Enabler	Action	Description	Lead Agency	Timeframe	Current progress
Facilitate collaboration	FC1.1 Enhance data sharing between transport agencies and LGNZ	Enhanced working relationship between MoT and Waka Kōtahi to facilitate coordination and collaboration on data related activities and sharing of key datasets such as the household travel survey and motor vehicle register.	MoT/Waka Kōtahi	Ongoing	<u>Waka Kotahi</u> A Memorandum of Understanding between MoT and Waka Kotahi for sharing data more easily is being considered and options are being explored. MoT and Waka Kotahi are working together to “boost” the Household Travel Survey in order to increase the sample size to allow a more granular level of analysis down to a local authority level.
	FC1.2 Increased number of public-private data sharing agreements	Enhanced relationship with the private sector to increase the availability and reuse of data collected by the private sector and number of public-private data sharing agreements	MoT/Waka Kōtahi	Ongoing	<u>Waka Kotahi</u> Ministry of Transport commissioned EY to undertake a Data Access Study. Various data sets are provided to Stats NZ for inclusion in the IDI and use in, for example, the Quarterly Consumer Price Index. ---- <u>Maritime NZ</u> Port & Harbour Marine Safety Code incident data discussion with MNZ, Regional Councils and Port representatives.
Develop capacity and capability	DC1.1 Hold periodic Government Transport Data Forum	Event to highlight work of government transport agency data, analytics, and modelling teams	MoT	2021-	<u>Ministry of Transport</u> Developed a Data Forum that was held in October 2022 to bring together analytical capability across transport and other government agencies, consultants, and the private sector.

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Domain Plan					
Enabler	Action	Description	Lead Agency	Timeframe	Current progress
	DC1.2 Improve transport sector evidence-base skills and knowledge	Develop an evidence-base-in-house training course for government to improve transport sector data and analytical capability and use of evidence in decision-making	MoT with support from Waka Kōtahi, MNZ and CAA	2022-	<u>Ministry of Transport</u> Held evidence-base-in-house training courses which included coverage of all stages training on all stages of the policy lifecycle, including Intervention Logic Mapping, the Policy Appraisal Tool (PAT), Cost Benefit Analysis (CBA) and Value for Money (Vfm).

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TABLE 2 – DOMAIN PLAN HIGH-PRIORITY DATA ACTIONS (FROM THE [TEBS 2019](#))

Recommended initiative		Current progress
R3.2	Develop an agreed approach and set of indicators for monitoring freight efficiency	<u>Waka Kotahi</u> A new measure of inter-peak predictability on key freight routes has been established (Waka Kotahi Annual Report) – there are plans to improve this in future (aiming to weight by volume and improve accuracy).
R3.9 E	Improve collection and access to data about the movement of freight. This includes: - Repeat and enhance the National Freight Demand Study (R3.9) - Domestic air freight (R3.10) - Cook Strait freight and rail operators (R3.12 and R1.12) Unrecorded light and urban freight (R3.5 and R3.7)	<u>Waka Kotahi</u> A new measure of freight mode share between road and rail has been established (Waka Kotahi Annual Report) – there are plans to improve this in future (aiming to improve frequency and reach – possibly including coastal shipping). ---- <u>Ministry of Transport</u> After discussions and development including some of our key stakeholders, FIGS rail dashboard has moved to a new publishing paradigm that emphasises easy access to insights. The old dashboard has been decommissioned. This new paradigm will be continuing to be developed to provide more insights – Aug 2022 (FIGS overview)
R6.2 E	Improve information on the cost of providing, operating, and maintaining the transport network. This includes access to: Data on the rail network (R6.8) Developing a transport infrastructure performance benchmarking tool or framework (R4.4)	<u>Waka Kotahi</u> Waka Kotahi research underway: Determining the carbon footprint of horizontal and large-scale vertical infrastructure in New Zealand.

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Recommended initiative		Current progress
		The Roding Efficiency Group (REG) is transitioning its reporting from <i>One Network Road Classification</i> to the <i>One Network Framework</i> as the evidence base for the upcoming 2024-27 National Land Transport Programme. ---- <u>Ministry of Transport</u> Work has been undertaken through the Domestic Transport Cost Charges (DTCC) that has contributed to this initiative.
R4.1 E	Research into the monetary and non-monetary returns on investment in transport infrastructure at a network level (this combines with recommended initiative R4.18)	<u>Waka Kotahi</u> Completed Waka Kotahi research: • Dynamic clustering and transport appraisal September 2021 (RR 680) • Cost–benefit appraisal methods for interrelated and interdependent projects/schemes – November 2021 (RR 684). • Database of quantification and monetisation methodologies and value proxies for non-monetised benefits – February 2022 (RR 686).
R4.14	Integrate road assessment and maintenance management (RAMM) data and improve its access	<u>Waka Kotahi</u> The Asset Management Data Standards (AMDS) project is underway with first version released in August 2022. Future work will extend the standard to include components, such as a multi modal network on which to associate transport asset information. REG Insights tool continues to evolve. A significant movement is the transition of performance measures to align with the One Network Framework
R9.2 E	Improve economic modelling oversight (R9.2) and a set of baseline assumptions (R4.2)	<u>Ministry of Transport</u> Work has been undertaken through the Domestic Transport Cost Charges (DTCC) that has contributed to this initiative

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Recommended initiative		Current progress
		- Approximately 25 papers were commissioned for the Domestic Transport Costs and Charges study to estimate the economic and social costs of the transport across a range of modes (light vehicles, heavy vehicles, PT, active transport) covering costs and benefits to; users, providers, environment, health, safety, and infrastructure. - A draft synthesis report was published in August 2022 summarising the preliminary results and the initial work is in the final stages with the aim of publishing all papers. - Additional research will look at estimating price elasticities for fuel and travel demand, which will be completed in June 2023.
R11.1	Research into transport emissions profiles	<u>Waka Kotahi</u> Completed Waka Kotahi research: - Improving our understanding of New Zealand's vehicle fleet greenhouse gas and harmful emissions using measured emissions data – Stage 1 (RR 687) - Road edge-effects on ecosystems (RR 692) Waka Kotahi research underway: - Life cycle analysis of recycled and alternative materials that could be used for transport infrastructure projects in New Zealand - What is the impact of the ride-hailing sector in NZ on transport related GHG emissions and how will this change over time? - Climate change Interventions to reduce carbon and greenhouse gases – economic instruments to effect mode change - Determining the carbon footprint of horizontal and large-scale vertical infrastructure in New Zealand

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R11.2	Develop environmental impact framework for maintaining or improving biodiversity, water quality and air quality	<u>Waka Kotahi</u> Completed Waka Kotahi research: • Determining the ecological and air quality impacts of particulate matter from brake and tyre wear and road surface dust: Stage 1 – Literature review and recommendations for developing new emission factors for New Zealand – October 2021 (RR 683) Completed update of Health and air pollution in New Zealand 2016 (HAPINZ 3.0) model - He rangi hauora he iwi – July 2022 (Ministry for the Environment/Waka Kotahi/MoT) Waka Kotahi research underway: • Community exposure to unsealed road-dust emissions • Fish passage and its relationship to asset management and resilience • Direct mortality from roads of native birds: science and solutions • Determining the health risks and ecological impacts of particulate matter arising from vehicle brake and tyre wear and road surface dust – Part 1B – Sensitivity Analysis and Source Apportionment Assessment Research Waka Kotahi has been involved in: • Research into aquatic flying insects and LED street lighting (research led/undertake by NIWA) (see here) • Desktop research into LED lighting and bats – unpublished report by Susan Mander, Massey University Waka Kotahi guidelines/strategies: • Mapping out Biodiversity legislative and policy requirements
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Recommended initiative		Current progress
		• Draft Ecological Impact Assessment guidelines under consultation • Draft Biodiversity Strategy under consultation • Water quality policy and guidelines to be scoped and progressed this financial year
R1.1 E	Regularly publish vehicle fleet profiles, across all modes (includes R1.4, R1.8, R1.9, R1.10 and R1.11)	<u>Waka Kotahi</u> Waka Kotahi publishes a monthly detailed snapshot of the entire fleet of registered vehicles in the open data portal. Waka Kotahi publishes the Motor Vehicle Dashboard which is updated monthly with just the new additions to the fleet. ---- <u>Ministry of Transport</u> Ministry of Transport publishes a Weekly Low Emission Vehicle report
R11.9	Improve environmental impact evaluation around run-off of vehicle pollutants on road	<u>Waka Kotahi</u> Completed Waka Kotahi research: • Determining the ecological and air quality impacts of particulate matter from brake and tyre wear and road surface dust: Stage 1 – Literature review and recommendations for developing new emission factors for New Zealand – October 2021 (RR 683). Waka Kotahi research underway: • Determining the health risks and ecological impacts of particulate matter arising from vehicle brake and tyre wear and road surface dust – Part 1B – Sensitivity Analysis and Source Apportionment Assessment.

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Recommended initiative	Current progress
R10.1 Develop health and safety risk profiles and exposures that leads to transport-related harm	<u>Waka Kotahi</u> Completed Waka Kotahi research: • The relationship between transport and mental health – March 2021 (RR 675) • Alcohol related crash trends – August 2022 (RR 694) • Prevalence of drugged and/or medicated driving in New Zealand – June 2022 (RR 689). Waka Kotahi research underway: • Community response to transport noise exposure in New Zealand • Social cost (health) of land transport noise exposure in New Zealand • Assessment of loud vehicle, speed change and nuisance noise from road transport • Community exposure to unsealed road-dust exposure. ---- <u>Maritime NZ</u> Port Health and Safety Leadership Group advice – development of work plan to improve safety in ports (refer below): • Maritime New Zealand is collaborating with WorkSafe to encourage participation in the Workforce Segmentation Insights Programme to understand safety culture in the fishing sector. This collaboration is also making use of psycho-social harm and carcinogen models, with reports expected shortly. • Maritime New Zealand commissioned a literature review into recreational boating competencies and decision-making. This resulted in frameworks for risk that supports recreational craft safety and can be applied across sectors.

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Recommended initiative		Current progress
R10.3	Review methods of updating the Value of Statistical Life (VOSL)	<u>Waka Kotahi</u> Completed Waka Kotahi research: Economic Evaluation Manual (EEM) parameter values study (publication pending).
R2.13	Gather additional information about pedestrian and active mode person travel (walking and cycling)	<u>Waka Kotahi</u> Completed Waka Kotahi research: - Latent demand for walking and cycling March 2021 (RR 676) - Impacts of a public sector e-bike scheme: Final evaluation report – August 2021 (RR 678) - Investigation of the external noise emitted from electric buses (e-buses) in NZ and the need for Acoustic Vehicle Alerting Systems (AVAS) to improve pedestrian safety (RR 703) - Pedestrian levels of service qualitative report – Research note November 2020 (RN 003). In addition, new data collection of walking and cycling counts starting in late 2022 – this data along with data back to 2009 is now stored in the Waka Kotahi Enterprise Data Warehouse – Quality Assurance mechanisms are being considered and established (as at August 2022). Waka Kotahi and MoT are working to improve the quality of data on active transport, as well as integrate it with data on vehicles and land use, from a storage and visualisation perspective.

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Recommended initiative		Current progress
R10.6	Align injury classification definitions across different datasets	<u>Waka Kotahi</u> The SORTED project¹ has successfully combined and linked two years' worth of hospital, ambulance, ACC and CAS data sets, and recommended undertaking work to standardise and implement compatible categories of injury severity. The project has published its findings as: <u>SORTED Study</u>: Findings of the study of road trauma evidence and data 2017/18-2018/19 [National Trauma Network, 2022]. Agencies are now considering and implementing the report's recommendations as appropriate. ---- <u>Maritime NZ</u> Maritime New Zealand is a member of a working group set up to align definitions with members of the Safer Boating Forum's Data Sub Group.
R2.14	Improve information on and understanding of Māori views and needs from use of, and involvement in, transport	<u>Waka Kotahi</u> Completed Waka Kotahi research: • A pathway towards understanding Māori aspirations for land transport in Aotearoa New Zealand – June 2022 (RR 688). Waka Kotahi research underway: • Māori experiences and expectations of our transport system - Phase 2. ---- <u>Maritime NZ</u>

¹ SORTED - a multi-agency project to combine and link road crash related data sets between the National Trauma Network, ACC, Waka Kotahi, Ministry of Health, St Johns and Wellington Free ambulance services, NZ Police, HSC and the Ministry of Transport

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Recommended initiative		Current progress
		Maritime New Zealand commissioned an external consultant to carry out community place-based research into perspective on safety in recreational craft. The report is expected June 2023.
R2.4	Establish baseline information on ‘accessibility’	<u>Waka Kotahi</u> Waka Kotahi research underway: Establishing the costs of essential transport. New measure of residential-unit building consents near frequent public transport established (Waka Kotahi Annual Report) – there are plans to improve this in future (aiming to improve frequency). New data available on Origins and Destinations of Employees from Statistics New Zealand Integrated Data Infrastructure (IDI). ---- <u>Ministry of Transport</u> The Ministry of Transport commissioned research to explore whether and how accessibility and mobility inequalities affect access to economic, social, and other opportunities for different population groups according to different household, individual and location characteristics. This report The Distributional Impacts of Transport-related Carbon Policy was completed in September 2022.

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Recommended initiative	Current progress
R2.8 E Gather additional information on people’s attitudes, preferences, and perceptions about transport (including research on why people don’t (or can’t) travel (R2.7))	<u>Waka Kotahi</u> Completed Waka Kotahi research: • A pathway towards understanding Māori aspirations for land transport in Aotearoa New Zealand – June 2022 (RR 688) • Understanding the transport experiences of disabled people, determining what barriers exist for people wanting to use Total Mobility and exploring new opportunities (RR 690) • Mode shift to micro mobility – February 2021 (RR 674). Waka Kotahi research underway: • COVID-19 impacts on transport – ongoing reporting • Waka Kotahi Journey Experience Monitor. Continuous data collection. Monthly results available. • Waka Kotahi survey Attitudes and Perceptions of Walking and Cycling. Continuous data collection. 2021 reporting published. ---- <u>Ministry of Transport</u> Completed a survey to collect baseline information on travel pattern, perception, and use of public transport by Community Service Card Holders. The survey will provide useful information to support subsequent evaluation of the Community Connect programme.
R5.2 Integrate transport system and land use data for improved land use planning	<u>Waka Kotahi</u> Completed Waka Kotahi research: • Integrated land use and transport planning (RR 702)

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Recommended initiative		Current progress
		Waka Kotahi research underway: Assessing sustainability of urban form and transport relationship.
R2.6	Improve access to high-quality public transport patronage data	<u>Waka Kotahi</u> Public transport data for Auckland Transport, Environment Canterbury and Greater Wellington Regional Council collated by Waka Kotahi continues to be provided to MoT. The National Ticketing Solution is currently being contracted. The solution will include requirements around data management functions and services to ensure timely access to data consumers, including Waka Kotahi, as appropriate.
R3.6 E	Develop geospatial capability to track freight and people movements. This includes establishing data partnerships with freight operators (R3.6) and develop approach for collecting data on people movements (R1.14)	<u>Waka Kotahi</u> Waka Kotahi has carried out a data trial assessment of telecommunications movement data currently there is not enough benefit for current use cases. Waka Kotahi is currently carrying out a freight movement data trial from a third-party provider. This is being undertaken over two maintenance regions. The data is hosted and managed within the Geospatial Platform with an aim of providing heavy freight movement analytics.
R2.1	Improve awareness of and access to information from the New Zealand Household Travel Survey (HTS)	<u>Waka Kotahi</u> Waka Kotahi, in partnership with MoT, has commissioned a nationwide booster to increase HTS sample size. Modest increase in sampling rate to date. Waka Kotahi and MoT are exploring enhanced sharing of and access to HTS data between agencies. ----

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Recommended initiative		Current progress
		<u>Ministry of Transport</u> Every year MoT presents HTS findings at the Ministry's Transport Knowledge Conference. In 2022 MoT held four presentations across the country (three of which were able to be joined virtually) to promote the HTS, its uses, its findings and how to access it.
R5.1	Develop sector definition of resilience	<u>Waka Kotahi</u> Completed Waka Kotahi research: • Developing a method for quantifying transport interdependencies – November 2020 (RR 671) • Framework for evacuation routes - October 2021 (RR 681). Ongoing progress: • MoT conducting a refresh of the Transport Resilience and Security Strategic framework • Waka Kotahi developing Tiro Rangi: Our Climate Adaptation Plan • Waka Kotahi investment Assurance project on Climate Adaptation and Investment Decision-making. ---- <u>Ministry of Transport and Maritime NZ</u> MoT and MNZ are collaborating on a report on shipping resilience in light of Refining NZ's decision on Marsden Point and the COVID-19 pandemic. Report expected by end of June 2022.

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Recommended initiative		Current progress
R11.10	Collect information on impacts of weather and environmental-related network outages	<u>Waka Kotahi</u> Waka Kotahi has a new SPE measure on the proportion of unplanned road closures resolved within standard timeframes. This provides quarterly updates on the proportion of events that are resolved within standard timeframes (less than 2 hours for urban and less than 12 hours for rural events) with separate reporting for weather related events and non-weather-related events.
R4.19	Improve information on the capacity and use of local roads	<u>Waka Kotahi</u> The One Network Framework will determine the function of roads and streets with a focus on movement and place. REG has refined its reports on resilience and has worked with Think Project to build User Defined tables to help with obtaining good resilience data.

Research Strategy Recommended Actions

The Research Strategy identified 5 overarching recommended initiatives and 17 research priority areas. Progress by the government transport agencies on implementing these is described in Table 3 and Table 4 below.

TABLE 3 – RESEARCH STRATEGY RECOMMENDED ACTIONS (FROM THE [TEBS IMPLEMENTATION PLAN 2022](#))

Research Strategy					
Enabler	Action	Description	Lead Agency	Timeframe	Current progress
Improve governance	IG1.4 Establish processes to coordinate and prioritise data, information, research, and evaluation projects	Implement governance group to help coordinate and prioritise data, information, research, and evaluation projects.	MoT/Waka Kotahi	2022-2023	<u>Waka Kotahi</u> A Research Programme Governance Group consisting of representatives from Waka Kotahi, Ministry of Transport and local government has been established to consider, quarterly, research topics being recommended for inclusion in the Sector Research Programme. ---- <u>Ministry of Transport</u> The TEBS Advisory Group was first convened in July 2022 with senior representatives from MoT, Waka Kotahi, Maritime NZ, and CAA meeting periodically to track progress and provide expertise on any issues or challenges that require cross agency support.
Invest in the right activities	1R1.5 Deliver research that aligns with the TEBS priority research initiatives	Development of research topics, procurement, delivery, and publication – linking with TEBS enduring questions and	Waka Kotahi – Sector research programme Maritime NZ – Maritime	Ongoing	<u>Waka Kotahi</u> TEBS is used as one of the key strategies used to identify and assess potential research topics for inclusion in the Sector Research Programme. Through the Transport Sector Research Programme, Waka Kotahi invests in innovative and relevant research which plays a critical role in contributing the Government's goals for transport.

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Research Strategy					
Enabler	Action	Description	Lead Agency	Timeframe	Current progress
		priority research initiatives.	research programme		---- <u>Maritime NZ</u> Establishment of Transport Maritime Knowledge Hub to aid prioritisation of high-priority data and research initiatives.
	IR1.6 Improve Transport Research Funding coordination	Enhance co-ordination between funding agencies, government researchers and research priorities for the sector. Includes reviewing research funding options for aviation and maritime sectors.	MoT (with MNZ, CAA)	Ongoing	<u>Ministry of Transport</u> Supporting system level research through the co-funding of the Māori experiences and expectations of the transport system in Aotearoa New Zealand research commissioned through the Waka Kotahi Sector Research Programme. Working with MNZ to support the development of the APEC funded proposal Preparing for the Future: A feasibility study on adapting to multiple fuel types in shipping. ---- <u>Maritime NZ</u> Working with Te Manatū Waka and other agencies to review funding options for MNZ research.

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Research Strategy					
Enabler	Action	Description	Lead Agency	Timeframe	Current progress
	IR1.7 Engage with sector to prioritise research needs	Facilitate engagement with the wider transport sector and subject matter experts to aid development and prioritisation of future research projects. This could be through the Transport Knowledge Hubs (TKH) – Topic Hubs for example.	MoT/Waka Kotahi	Ongoing	<u>Waka Kotahi</u> The use of Transport Knowledge Hubs (TKH) continues to be source of potential research topics for the Sector Research Programme. In addition, the Waka Kotahi Research and Evaluation Programme researchers own networking with subject matter experts. ---- <u>Ministry of Transport</u> This year the TKH has hosted 23 Hub events with great engagement from transport sector professionals. This has been a great showcase of data and research initiatives available in the transport space. These events have been recorded and can be found on the Transport knowledge Hub website here. ---- <u>Maritime NZ</u> Establishment of the TKH - Maritime Topic Hub.
Facilitate collaboration	FC1.3 Hold a periodic transport research application event	Annual event held in conjunction with the Transport Knowledge Conference to enhance engagement with the academic and private research sector to facilitate better connection of evidence to policy.	MoT	Ongoing	<u>Ministry of Transport</u> These events have not been held with the conference in 2021 and 2022. A programme of Academic engagement was undertaken in 2021 and 2022.

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Research Strategy					
Enabler	Action	Description	Lead Agency	Timeframe	Current progress
Develop capacity and capability	DC1.4 Establish post-graduate transport research scholarships	Transport research scholarships, summer programmes and or internships to be offered by government transport sector agencies for post-graduate masters students.	MoT/Waka Kotahi	Ongoing	<u>Waka Kotahi and Ministry of Transport</u> Transport Research Scholarship Programme established. The first, 2021, round resulted in 11 Scholarships being awarded by Waka Kotahi (six) and the Ministry of Transport (five) for study commencing in the 2022 academic year. In 2022 Waka Kotahi NZ Transport Agency is the sole funder for this award. Scholarship applications are now closed, and decisions will be made in November/December this year.
	DC1.5 Participate in international research opportunities	Contribute research ideas to the International Transport Forum (ITF) and participate in relevant research working groups.	MoT	Ongoing	<u>Ministry of Transport</u> Actively engaged with the ITF on the submission of research topics.
		Contribute research ideas to AustRoads and participate in relevant research working groups.	Waka Kōtahi	Ongoing	<u>Waka Kotahi</u> Waka Kotahi staff are involved and engaged in the AustRoads working groups and task forces across its various programmes.

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TABLE 4 – FURTHER RECOMMENDATIONS FROM STRATEGY (FROM THE [TEBS 2019](#))

Priority research topic		Current Progress
COVID-19 impacts on transport		<u>Waka Kotahi</u> Completed Waka Kotahi research: • Leveraging transport disruption to influence changes – November 2020 (RR 672) • COVID-19 transport behaviour change research note – October 2020 (RN 002) • Working from home policy and practice review research note – August 2021 (RN 001). Waka Kotahi research underway: • COVID-19 impacts on transport – ongoing reporting. Regular reporting on public transport patronage and traffic counts at key sites throughout New Zealand during the course of the COVID-19 response period.
1.0	Transport's contribution to wellbeing and liveability	<u>Waka Kotahi</u> Completed Waka Kotahi Research: • The relationship between transport and mental health – March 2021 (RR 675) • Integrated land use and transport planning (RR 702) Waka Kotahi research underway: • Community exposure to dust from unsealed roads • Social cost (health) of land transport noise exposure • Community response to noise.
2.0	The impact of new technology and innovations	<u>Waka Kotahi</u>

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Priority research topic	Current Progress
	Waka Kotahi has established Hoe ki angitū - Innovation fund to support the private sector to develop and accelerate innovative solutions that will help to solve some of Aotearoa New Zealand's biggest transport challenges. The successful applicants from the first round were announced November 2022. The second round of challenges were published in December 2022, with applications open February 2023. Completed Waka Kotahi research: • Consumer awareness, understanding, and use of advanced driver-assistance systems currently available in vehicles on New Zealand roads – December 2021 (RR 685) • Use of in-vehicle technologies to assist with and encourage safe and efficient driving behaviour – August 2022 (RR 691) • Investigation of the external noise emitted from electric buses (e-buses) in NZ and the need for Acoustic Vehicle Alerting Systems (AVAS) to improve pedestrian safety (RR 703). Waka Kotahi research underway: • Feasibility study on commercial deployment of autonomous shuttles on New Zealand public roads as a complement or substitute to public transport • Potential for Intelligent Speed Adaptation (ISA) to assist with Road to Zero objectives • Understanding the opportunities and challenges of Mobility as a Service (MaaS) for New Zealand.

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Priority research topic		Current Progress
3.1	Relationship between transport and the economy	<u>Waka Kotahi</u> Completed Waka Kotahi research: • Accessibility: its role and impact on labour and housing markets in New Zealand's main metropolitan areas – October 2021 (RR 682).
3.2	Transport-related economic costs and benefits	<u>Waka Kotahi</u> Completed Waka Kotahi research: • Cost–benefit appraisal methods for interrelated and interdependent projects/schemes – November 2021 (RR 684) • Database of quantification and monetisation methodologies and value proxies for non-monetised benefits – February 2022 (RR 686) • Economic Evaluation Manual (EEM) parameter values study (publication pending) • Incorporating distributional Impacts in the cost-benefit appraisal framework (RR 700). Waka Kotahi research underway: • Benefit realisation review and assessment
3.3	Return on transport investment	<u>Waka Kotahi</u> Completed Waka Kotahi research: • Dynamic clustering and transport appraisal – September 2021 (RR 680) • Developing a method for quantifying transport interdependencies – November 2020 (RR 671) • Economic Evaluation Manual (EEM) parameter values study (publication pending).

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Priority research topic		Current Progress
4.1	Measurement of environmental emissions	<u>Waka Kotahi</u> Completed Waka Kotahi research: • Determining the ecological and air quality impacts of particulate matter from brake and tyre wear and road surface dust: Stage 1 – Literature review and recommendations for developing new emission factors for New Zealand – October 2021 (RR 683) • Improving our understanding of New Zealand's vehicle fleet greenhouse gas and harmful emissions using measured emissions data – Stage 1 (RR 687) • Completed update of Health and air pollution in New Zealand 2016 (HAPINZ 3.0) model - He rangi hauora he iwi – July 2022 (Ministry for the Environment/Waka Kotahi/MoT). Waka Kotahi research underway: • Climate change Interventions to reduce carbon and greenhouse gases – economic instruments to effect mode change • New Zealand's experience of transitioning to a zero-emission public transport fleet • Assessing sustainability of urban form and transport relationship • New Zealand's experience of transitioning to a zero-emission public transport fleet.
4.2	Measurement of environmental impacts	<u>Waka Kotahi</u> Completed Waka Kotahi research: • Determining the ecological and air quality impacts of particulate matter from brake and tyre wear and road surface dust: Stage 1 – Literature review and recommendations for developing new emission factors for New Zealand – October 2021 (RR 683) • Completed update of Health and air pollution in New Zealand 2016 (HAPINZ 3.0) model - He rangi hauora he iwi – July 2022 (Ministry for the Environment/Waka Kotahi/MoT).

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Priority research topic	Current Progress
	Waka Kotahi research underway: • Determining the carbon footprint of horizontal and large-scale vertical infrastructure in New Zealand • Community exposure to unsealed road-dust emissions • Direct mortality from roads of native birds: science and solutions • Determining the health risks and ecological impacts of particulate matter arising from vehicle brake and tyre wear and road surface dust – Part 1B – Sensitivity Analysis and Source Apportionment Assessment • What is the impact of the ride-hailing sector in New Zealand on transport related GHG emissions and how will this change over time?
4.3 Reduce transport related environmental impacts	<u>Waka Kotahi</u> Completed Waka Kotahi research: • Road edge-effects on ecosystems (RR 692) • How effective are transport-related ecological interventions? (publication pending) • What role can integrate land-use and transport planning play in reducing the impacts of transport and improving environmental and community health outcomes? (RR 702). Waka Kotahi research underway: • Direct mortality from roads of native birds: science and solutions • Fish passage and its relationship to asset management and resilience • A review of variability in environmental regulatory requirements for roading construction projects across New Zealand – November 2020 (RR 673) • The reuse of end-of-life tyres to enhance the performance of chipseal binders – September 2021 (RR 679) • Aggregate supply and demand in New Zealand (RR 693) • Analysis of recycled and alternative materials that could be used for transport infrastructure projects in New Zealand (publication pending).

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Priority research topic		Current Progress
5.1	People's attitudes and perceptions on travel	Completed Waka Kotahi Research • Getting people out of 1 and 2-star vehicles (publication pending) • Effect on compliance of alternatives to penalties (publication pending) • Safety interventions and their contributions to mode shift (RR 701). Waka Kotahi research underway: • The road safety and multi-modal impacts of on-street parking • The gig economy and road safety. ---- <u>Maritime NZ</u> Maritime New Zealand has commissioned Ipsos to carry out a nationally representative quarterly survey of recreational craft users in NZ on participation and attitudes to safety.

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Priority research topic	Current Progress
5.2 Relationships between transport and harms	<u>Waka Kotahi</u> Completed Waka Kotahi Research • Alcohol related crash trends – August 2022 (RR 694) • Prevalence of drugged and/or medicated driving in New Zealand – June 2022 (RR 689). Waka Kotahi research underway: • School bus safety • Potential for Intelligent Speed Adaptation (ISA) to assist with Road to Zero objectives • Application of a risk-based approach to Temporary Traffic Management. ---- <u>Maritime NZ</u> Port Health and Safety Leadership Group advice - work plan to improve safety in ports initiated. This involves gathering data and insights about safety issues and critical risks (falls from heights, person versus machine, and suspended loads) in ports.²

² <https://maritimenz.govt.nz/port-safety-update/>

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Priority research topic		Current Progress
5.3	Relationship between transport and health	<u>Waka Kotahi</u> Completed Waka Kotahi Research: • The relationship between transport and mental health – March 2021 (RR 675) • Investigation of the external noise emitted from electric buses (e-buses) in NZ and the need for Acoustic Vehicle Alerting Systems (AVAS) to improve pedestrian safety (RR 703). Waka Kotahi research underway: • Community response to transport noise exposure in New Zealand • Social cost (health) of land transport noise exposure in New Zealand • Assessment of loud vehicle, speed change and nuisance noise from road transport • Community exposure to unsealed road-dust exposure.

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Priority research topic	Current Progress
6.1 Reasons for travel and transport and non-travel choices	<u>Waka Kotahi</u> Completed Waka Kotahi research: • Understanding the transport experiences of disabled people, determining what barriers exist for people wanting to use Total Mobility and exploring new opportunities (RR 690) • Mode shift to micro mobility – February 2021 (RR 674) • Latent demand for walking and cycling – March 2021 (RR 675) • Latent demand for walking and cycling – March 2021 (RR 676) • Impacts of a public sector e-bike scheme: Final evaluation report – August 2021 (RR 678) • Pedestrian levels of service qualitative report research note – November 2020 (RN 003) • Impact of half price public transport fares (RN 009). Waka Kotahi research underway: • Understanding the opportunities and challenges of Mobility as a Service (MaaS) for New Zealand (in procurement) • Establishing the costs of essential transport
6.2 Relationships between transport and land use planning	<u>Waka Kotahi</u> Completed Waka Kotahi research: • Integrated land-use and transport planning (RR 702) Waka Kotahi research underway: • Assessing sustainability of urban form and transport relationship.

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Priority research topic		Current Progress
6.3	Improve understanding Māori views and needs	<u>Waka Kotahi</u> Completed Waka Kotahi research: • A pathway towards understanding Māori aspirations for land transport in Aotearoa New Zealand – June 2022 (RR 688) • Bilingual traffic signage research note – October 2021 (RN 005). Waka Kotahi research underway: • Māori experiences and expectations of our transport system - Phase 2.
7.1	Interdependencies between transport and other infrastructure networks	<u>Waka Kotahi</u> Completed Waka Kotahi research: • Developing a method for quantifying transport interdependencies – November 2020 (RR 671).
7.2	Resilience to environmental changes	<u>Waka Kotahi</u> Completed Waka Kotahi research: • Framework for evacuation routes - October 2021 (RR 681).
7.3	Measurement of direct and indirect costs and benefits	<u>Waka Kotahi</u> Completed Waka Kotahi research: • Cost–benefit appraisal methods for interrelated and interdependent projects/schemes – November 2021 (RR 684).

Evaluation Strategy Recommended Actions

The Evaluation Strategy identified 5 overarching recommended initiatives required to enhance the availability and reuse of evaluation. The Ministry of Transport is taking a lead role in coordinating and collaborating with the sector to implement the Evaluation Strategy with a phased approach, with the initial focus being on building its internal capacity and capability. Progress on implementing these is described in Table 5 below.

TABLE 5 – EVALUATION STRATEGY OVERARCHING RECOMMENDED ACTIONS (FROM THE TEBS IMPLEMENTATION PLAN 2022)

Evaluation Strategy					
Enabler	Action	Description	Lead Agency	Timeframe	Current progress
Invest in the right activities	IR1.8 Invest in the right projects	Publish guidance on evaluation concepts and processes (e.g., the Intervention Logic Map model, the Value for Money Assessment Model, the 3-step framework, and the evaluation guiding principles).	MoT	2022-2023	<u>Waka Kotahi</u> Waka Kotahi Evaluation Framework development work commenced. ---- <u>Ministry of Transport</u> Continued to engage with internal and external stakeholders to increase awareness and uptake of the Value for Money Assessment Model throughout the intervention lifecycle.
Facilitate collaboration	FC1.4 Improve awareness of intended evaluation activities	Develop and publish Ministry of Transport's evaluation programme	MoT	Ongoing	<u>Ministry of Transport</u> Continued to update and publish the Ministry's evaluation programme on the website annually.

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Evaluation Strategy					
Enabler	Action	Description	Lead Agency	Timeframe	Current progress
Develop capacity and capability	DC1.6 Develop a suite of evaluation templates	Compile or develop evaluation templates and tools for the sector to use	MoT	2023-	N/A
	DC1.7 Establish a feasibility study for a sector-wide evaluation and capability building programme	Investigate the feasibility of having a sector-wide evaluation programme. And, dependent on the outcome of the investigation and discussions with relevant parties, subsequent actions may involve development of a sector-wide programme.	MoT	2021-2023	N/A
		Delivered in-house training exercises to cover the purpose of evaluation and the commissioning process.	MoT	Ongoing	N/A