

# Decarbonising Transport Research Strategy

Update and information session

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Te Manatū Waka Ministry of Transport

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**TE MANATŪ WAKA**  
MINISTRY OF TRANSPORT

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# Summary

- **What is the Strategy?**
- **Progress to date**
  - Research Stocktake
  - Generation of the research questions
  - Prioritisation
- **List of research questions**
- **Next steps**
  - Draft report
  - Implementation plan
- **Questions**

## What is the Strategy?

- The Decarbonising Transport Research Strategy (DTRS) sets out a coordinated and strategic approach to filling key research needs identified in the implementation of ERP 1 and in preparation for future ERPs.



Aims to ensure that we have sufficient evidence for effective policy development and decision-making.



Ultimately presents a list of research questions, to form the basis of a forward research programme.



Will provide direction to the wider research community on where our focus will be

For next 3-5 years

## Why are we doing it?

- Transport is responsible for many ERP actions (including the development of the DTRS).
- There are a lot of information gaps relating to:



Travel behaviours



Travel preferences



Policy effects



Travel patterns



Travel options & uptake



Distribution of impacts

# DTRS is a Transport Evidence Base Strategy deliverable

The following enablers are crucial to support the generation and use of ERP evidence base

## TRANSPORT EVIDENCE BASE ENABLERS

### IMPROVE ACCESS

Ensure data, research and evaluation findings are discoverable, accessible and reusable

### IMPROVE GOVERNANCE

Ensure sharing, integration, and governance of key data and information products

### INVEST IN THE RIGHT ACTIVITIES

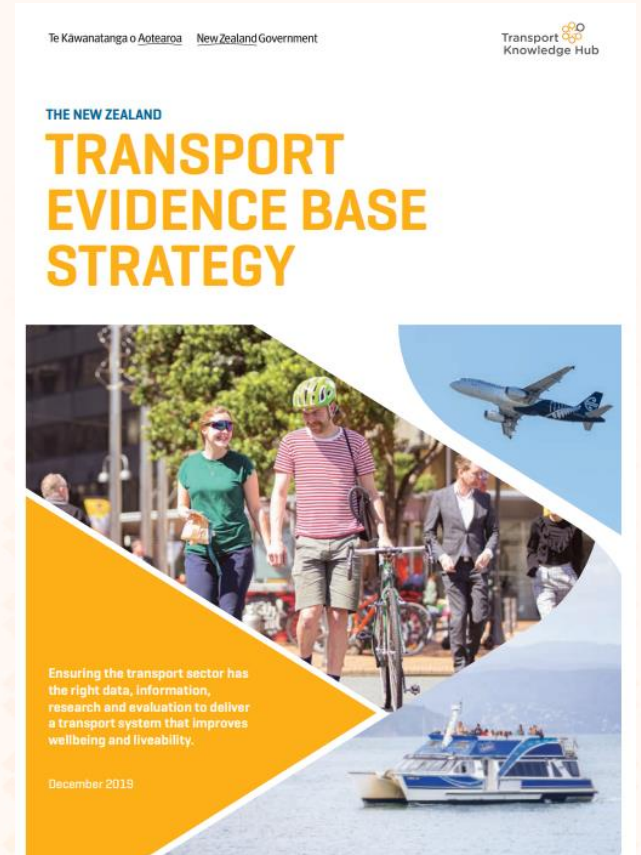
Ensure we invest in the right activities and projects

### FACILITATE COLLABORATION

Foster cross-agency collaboration and relationships with the wider transport sector

### DEVELOP CAPACITY AND CAPABILITY

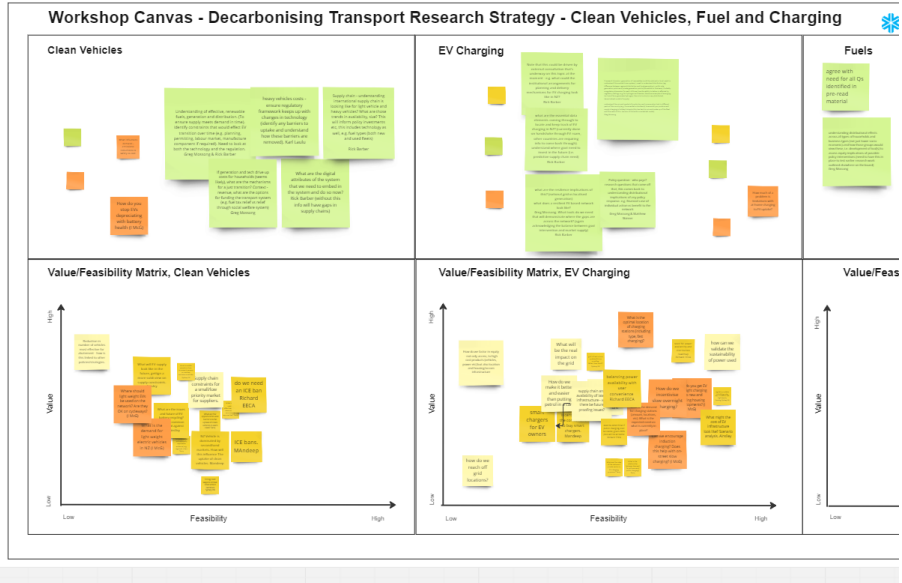
Ensure that the sector has access to the right skills and knowledge



A person wearing light blue jeans and black boots is jumping rope on a hopscotch grid painted on asphalt. The grid consists of several squares, some containing green numbers. The person is in the middle of a jump, with their right foot on a square containing the number '1'. The asphalt is scattered with small, dried leaves. The text 'Progress to date' is overlaid in a blue, serif font across the center of the image.

**Progress to date**

# Progress to date



December 2022 – Research stocktake completed

February 2023 – Initial needs conversations with ERP action owners

March/April 2023 – 7 workshops with Central Gov transport agencies

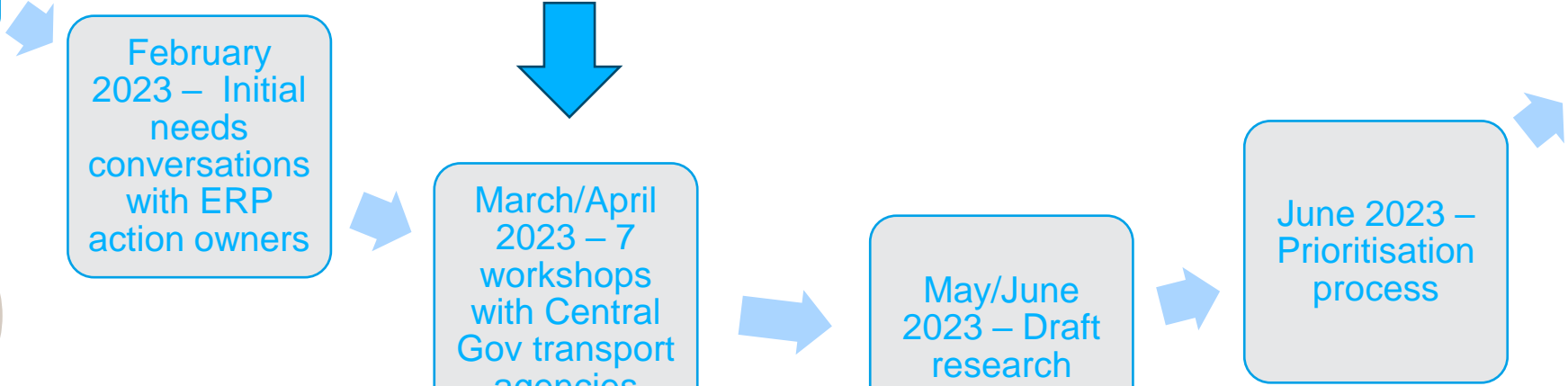
May/June 2023 – Draft research questions

June 2023 – Prioritisation process

July/August 2023 – Ordered list of research questions



This is when I came in!





## **Research stocktake**

- Completed in the second half of 2022
- Surveyed agencies on research related to decarbonising transport.
- Over 300 completed and planned research papers/reports identified and linked to ERP actions.
- Provided a (partial) evidence base to help identify gaps.
- Remains an internal resource in the Ministry.

# Generation of the research questions



Over **100** (policy, research and data) participants

Te Manatū Waka, Waka Kotahi, Maritime NZ, CAA, EECA, Scion Research, MfE, Te Waihanga, Kiwi Rail, NERI, XRB.



**6** subject areas

1. Clean vehicles, fuels & charging
2. Public transport, walking & cycling
3. Aviation & maritime
4. Freight & decarbonising trucks
5. General strategy
6. Planning & investment



Over **550** research ideas, of which around **300** were valid research questions were identified



ERP action owners in the Ministry were then asked to nominate their key 5-10 questions from the longlist.



The list was further reduced to remove duplication and group similar questions.

Ultimately, **28** questions were identified.

# Priority – criteria



## Impact

Assessing the extent to which current knowledge can be advanced



## Breadth of applications

Assessing the extent to which the new knowledge can be spread and absorbed across the wider sector and applications to help build sector capability.



## Feasibility

Assessing whether there is access to the right capacity, capability, tools, data, systems and financial resources to close the knowledge gap.



## Strategic Value

Assessing whether the evidence/research is needed for the future, to have sufficient information as a baseline for decision making. Also assessing whether it is of benefit/interest to Māori and align to other key government strategies.

weightings

4

2

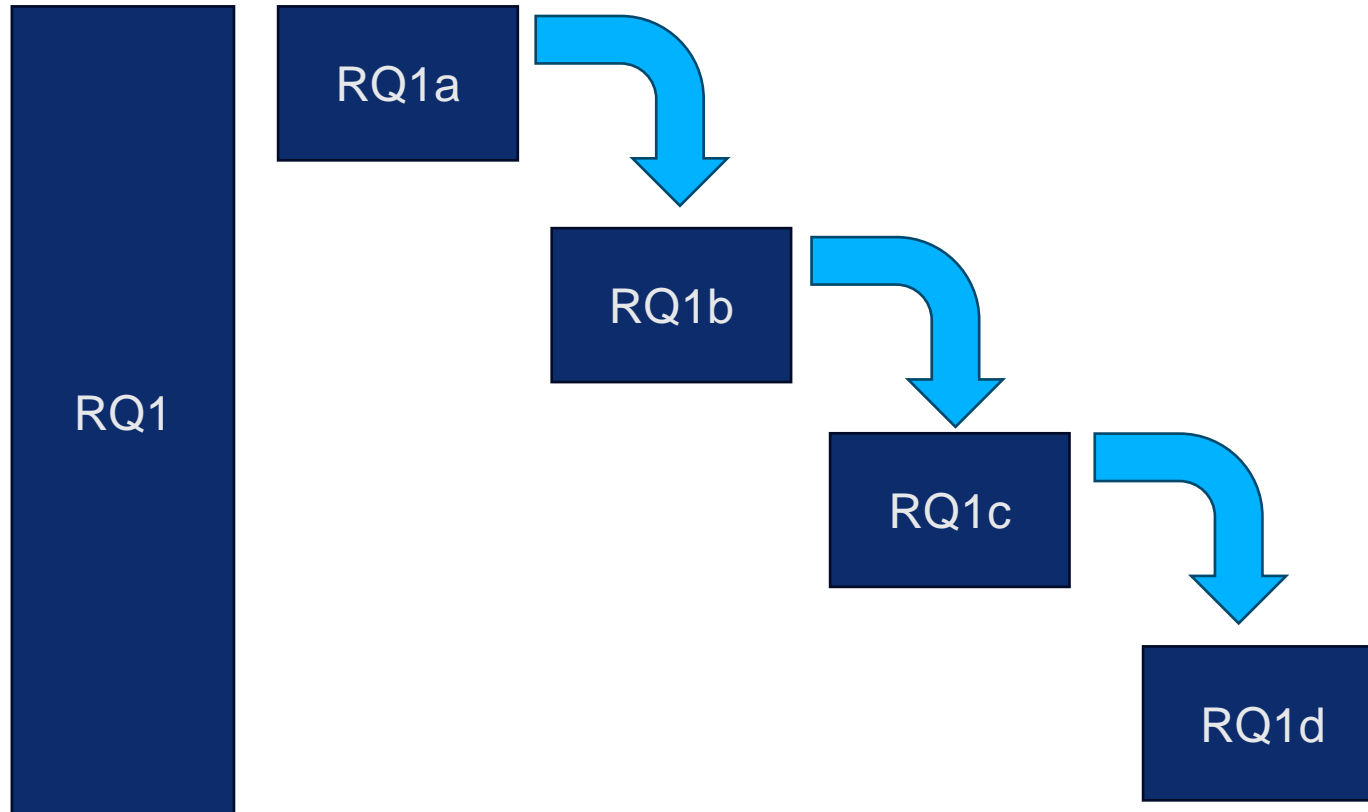
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## Priority – sequencing

- Further, research questions identified as being linked together are connected with an overarching question, and practically ordered when sequencing was needed.





# The Research Questions




## ]

# Note about the research questions

- The questions presented to you are indicative. Research questions will go through a commissioning process, where the specific detailed scope of the research will be developed and refined.
- That said, this strategy development has not been operating in a vacuum – many of these questions are now being used in commissioning research projects or are already underway.
- The research questions are **prioritised** into 3 groups, high, medium and lower priority. In many cases there are not much difference between the categories (i.e. 1 or 2 points) as most were clustered in the middle. All questions are viewed to be high priority to have made this list.

# Focus Area 1: Reduce reliance on cars and support people to walk, cycle and use public transport

RQ1	(Overarching question) Evidence and approach to better understand and assess what would lead more New Zealanders to choose to travel by public transport and active modes, and to travel less by cars.
RQ1a	<b>Build/complete our understanding of data</b> on transportation modes used in New Zealand, by mode type and particularly adding breakdowns more spatially/regionally (urban/suburban/exurban/rural)
RQ1b	<b>Investigate the policy settings</b> (for walking; cycling; PT; and interventions that discourage driving) that are applicable to New Zealand and their likely costs and benefits. How and where can we practically and effectively apply these policies in New Zealand? Where will they work and where won't they?
RQ1c	Based on the above, <b>extend the existing models</b> (e.g, MONTY, regional models) to estimate the effects of different policy scenarios that include different combinations of policy options (including pricing and non-pricing TDM techniques, urban development and design changes etc). Modelling outputs include: <ul style="list-style-type: none"> <li>• Social and economic costs and benefits (including co-benefits)</li> <li>• One-off investment costs (eg infrastructure)</li> <li>• Ongoing costs (eg operation, maintenance and services)</li> <li>• Social and environmental costs (eg GHG emissions)</li> <li>• Equity impacts</li> <li>• Other quantifiable but non-monetised impacts</li> </ul>

Key- priority	
High	
Medium	
Lower	




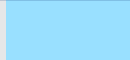

# Focus Area 1: Reduce reliance on cars and support people to walk, cycle and use public transport (ctd)

RQ2	(Overarching question) Improving understanding of the barriers, attitudes, behaviours, patterns and other factors affecting and influencing Public Transport patronage
RQ2a	<b>What motivates/discourages use of Public Transport?</b> Where is the tipping point? How does this differ for different groups (e.g. Māori and non-Māori, disabled and non-disabled people, and broken down by age, income, and location)?
RQ2b	<b>What are we doing now</b> (mode type, regionally/spatially)? Is the current provision of public transport in Aotearoa New Zealand equitable? For example, is the frequency, reliability, and suitability of public transport services to low-income neighbourhoods comparable to that in high-income neighbourhoods? Do low-income neighbourhoods have the same level of public transport infrastructure (i.e. number and location of bus stops and train stations) as high-income neighbourhoods? Who benefits and who pays?
RQ2c	How have <b>barriers to higher uptake</b> of public transport successfully been removed in other jurisdictions (especially for diverse/disadvantaged groups), and how would these measures translate in the Aotearoa New Zealand context?
RQ2d	How can we practically and effectively <b>apply these</b> to a New Zealand context, considering regional differences?

Key- priority	
High	Green
Medium	Light Blue
Lower	Orange

# Focus Area 1: Reduce reliance on cars and support people to walk, cycle and use public transport (ctd)

RQ3	<b>(Overarching question) Improve understanding of people's attitudes and behaviours towards transport and transport policies</b>
RQ3a	<b>What attitudes, perceptions and preferences</b> do people have toward the adoption of different modes of transport and specific interventions, and why?
RQ3b	<b>What would it take for more people living in Aotearoa New Zealand to decide to meet most of their daily needs by active travel and public/shared modes?</b> Consider the relative importance of factors including: price (of vehicles, fuel/charging, maintenance), cultural factors (including importance of cars as a signifier of cultural/personal identity as well as cultural factors like accessing significant locations, providing transport for elders for different cultural and ethnic groups), availability and attractiveness of alternatives, behaviour of peers, etc
RQ3c	What is required to <b>increase uptake of walking and cycling, including e-bikes (behaviour etc), and active travel to and from schools?</b> What are the most significant barriers (perceived and actual) to higher uptake of active school travel (e.g. safety, lack of access to bikes/scooters, inability to ride, attendance at non-local schools) and how can these be removed?
RQ4	How do <b>developers make urban development-related decisions</b> and how can we encourage alignment with integrated planning outcomes?

Key- priority	
High	
Medium	
Lower	

## Focus Area 2: Rapidly adopt low emissions vehicles

RQ5	<b>Improve the data and modelling of CO2 and harmful pollutants</b> (tyre pollutants, battery disposal, parts etc) of our vehicle fleet (incl EVs).
RQ6	<b>Improve our understanding of consumer preferences around adopting low emission vehicles</b> , What are the current barriers to uptake of low-emissions vehicles and how can these be removed? In particular, what role do a) actual or perceived scarcity of charging infrastructure b) cost of EVs vs ICE vehicles c) cultural/societal norms d) impact of policies such as the Clean Car Discount play in encouraging or discouraging uptake?
RQ7	<b>What is the market (incoming stream of vehicles) able to reduce its CO2 emissions by</b> over the course of this decade (distributed across characteristics, other constituent parts)? This would include the light vehicle market (both used and new) and the heavy vehicle market.
RQ8	<b>Improve the data and modelling of EV charging usage and projections</b> (monitoring vs projections - identifying trouble spots; links back to vehicle projections) Some questions beginning to be explored by the MInistry include: <ul style="list-style-type: none"> <li>• the availability of home charging for renters, and whether the government should pursue a “right to charge” policy for renters</li> <li>• the availability of charging infrastructure in locations with challenging topography and limited off-street parking</li> <li>• issues around charging being available within multi-unit developments</li> <li>• the need for charging infrastructure at social housing</li> <li>• the charging needs of low-income communities</li> <li>• the degree to which older wiring poses a barrier to home charging.</li> </ul>

Key- priority	
High	
Medium	
Lower	

## Focus Area 3: Begin work now to decarbonise heavy transport and freight

RQ9	What are the <b>different business models for road freight operators</b> , and how are decisions made on vehicle purchases within these models, including for zero emissions vehicles versus ICE models?
RQ10	<b>What is the infrastructure that is needed to support the freight sector</b> , both from a public perspective and a private perspective? What are the likely impacts on the grid?
RQ11	What are the <b>current and expected future freight movements</b> by commodity and location (trans-national, national and subnational levels)?
RQ12	Understanding what the transition to zero emissions freight will mean for our <b>labour force across the freight system</b> including employment opportunities, and what are the distributional and equity impacts? This could include transition to other freight modes.
RQ13	What is the emissions reduction opportunity that could be achieved through <b>improved efficiencies or optimisations</b> (e.g, vehicle-related, driver-related, operational, network or others) in a New Zealand context and how might that be achieved?
RQ14	Over time, New Zealand may become more responsible for <b>international (air and shipping) emissions</b> . What evidence will we need and what are our options for reducing these emissions?
RQ15	What is the <b>size and emissions profile by subsector for cruise/shipping/recreational boating</b> (+Emissions in NZ from fuel bunkered offshore)
RQ16	For port (air and sea) infrastructure, what are the <b>likely costs and impacts for accommodating new fuels</b> ? For example, the requirements for storage, maintenance, and distribution.

### Key- priority

High

Medium

Lower

## Focus Area 4: Advancing cross-cutting and enabling actions

RQ17	In what ways do Māori experience transport disadvantage currently? What are the specific transport needs and considerations for Māori (e.g access to culturally significant locations, expectations of whānau, intersections between transport and the justice system, ability to engage with transport decision-making) and how can these be addressed in partnership with the Government as part of the transition to a low-emissions transport system?
RQ18	How does <b>emissions reductions factor into business cases</b> for transport projects and programme, and how could this be improved? Other outcomes areas (not just emissions reductions) could also be considered.
RQ19	Build a standardised approach to estimating a) potential emissions reductions in the current emissions budget period b) potential future emissions reductions unlocked in future emissions budget periods c) financial costs d) co-benefits of each component of ERP1, and for future ERPs, in order to <b>develop a unified picture of their potential value</b> . Identify and map the interrelationships between components and financial implications.
RQ20	What does <b>best practice community engagement and consensus-building look like to develop transport decarbonisation policies for Aotearoa New Zealand</b> , (and implementing/delivering on these policies) that will lead to the best long-term outcomes? In addition, What would it mean to take a Te Tiriti o Waitangi based approach to decarbonising transport, and what are the first steps that can be taken towards this goal?
RQ21	Transitions to low carbon - <b>implications and forecasts(e.g. next decade) from fuel to electricity</b> - how people/businesses are affected, - affordability etc;

### Key- priority

High

Medium

Lower

# Proposed output for research questions

(in final report)

RQ1a	
<b>Purpose</b>	Expand baseline data on transport modes used by New Zealanders To expand existing data in order to be able to complete analyses by mode types at a more disaggregated level, so that the impacts of regional investments and policy changes can be better understood.
<b>Problem definition and knowledge development opportunity</b>	Existing datasets (such as that from the Household Travel Survey,HTS, or the Journey Experience Monitor,JEM) provide us a good national picture of transportation modes used in New Zealand. The identified gap is that the sample size/ accuracy of current surveys is insufficient to adequately allow analyses at a regional and sub-regional level. One particular area of interest is regional analyses breaking down urban/suburban/exurban/rural categories. These different area types require significantly different approaches to transport modes and it would be useful for policy-makers able to compare across these, so that the impact of regional-level investments and policy changes can be better measured and understood. Other areas that could also provide value would be linking journey purpose, origin/destination of journeys, and socio-economic status of households.
<b>Proposed approach</b>	<p>This research could be done by extending the sample of existing survey data collections, through a boosted sample or oversampling of specific regions, in order to collect enough responses to do a meaningful analysis of the above research areas.</p> <p>Work is currently underway in boosting the existing HTS to do annual analyses, though likely will not meet the level of disaggregations needed. Further expansion of this survey could be prohibitably expensive, so other methods for collecting the information should be considered and explored.</p>
<b>Related enduring questions</b>	EQ2.1
<b>Related ERP actions</b>	
<b>ERP co-benefits</b>	Economic prosperity, healthy and safe people, environmental sustainability, inclusive access, resilience and security
<b>Activity stream</b>	Collect new or additional data
<b>Status (as at Sep 23)</b>	To be further scoped

# Research question consultation

- Thoughts and feedback on the question list and the process thus far is welcome!
- You will have up to 6<sup>th</sup> September 2023 to provide your feedback to:  
**M.Webster@transport.govt.nz.**
- In the feedback, we will like for you to focus on the following:
  - Are these the **right questions**?
  - Is there **key research gaps** we are missing in the questions?
  - Is there **existing or ongoing research** that answers these questions we aren't aware of?

A wide-angle photograph of a coastal dune landscape. A light-colored wooden boardwalk, constructed from parallel planks, curves from the bottom center towards the middle ground, leading the viewer's eye into the scene. The dunes are covered in dense, tall grasses in shades of green and yellowish-brown. In the background, several sand dunes are visible, some with patches of exposed sand. A thin line of dark evergreen trees marks the horizon under a heavy, overcast sky with soft, diffused light. The overall mood is serene and natural.

**Next steps**



# Next steps

Aug/Sep 2023  
External  
consultation on  
research  
questions



Sep 2023 –  
Draft report  
completed



Sep/Oct 2023 –  
Consultation of  
draft report



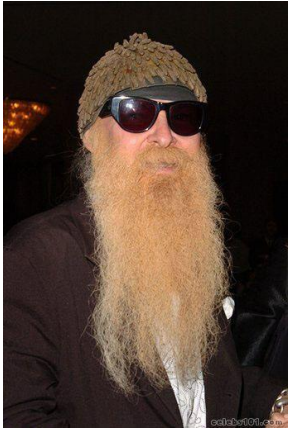
October 2023 –  
Final report  
released



End 2023  
Implementation  
plan



Me at the  
end of  
the  
process!



# Draft report

Planned  
consultation on  
report in  
September/ early  
October 2023.

## Executive Summary

## Introduction

## Background and context

## Purpose and objectives

## Scope

## Method

- Research Stocktake
- Gap identification
- Prioritisation framework
- Sector consultation

## Results

- List of research questions

## Next steps

- Implementation plan
- Strategic actions

## Appendix: Detailed summary of research questions

# Implementation plan

- Aware that strategies need continued support to realise their objectives!
- Our 2024 workplan has resources supporting the implementation of research from the Strategy – though FTEs and funding to be finalised.
- The implementation plan will set out planned organisational leadership and sequencing of research projects, as well as funding sources.
- Intend to provide an (annual?) update summarising progress.
- Details to be finalised.

**Questions**



**Ngā mihi**  
**Thank you**