

# TOITŪ TE TAI AO OUR SUSTAINABILITY ACTION PLAN

OVERVIEW | APRIL 2020







**Waka Kotahi NZ Transport Agency**

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## KARAKIA

Mai ea te tupua  
 Mai ea te tawhito  
 Mai ea te kāhui o ngā Ariki  
 Mai ea tāwhiwhi ki ngā Atua

Tēnei ra te mauri nui, te mauri roa,  
 te mauri tapu, te mauri ka whakapiki,  
 te mauri ka whakakake

Te mauri o Rangi e tū iho nei  
 Te mauri o Papatūānuku i takoto mai nei  
 Te mauri tapu o ngā wai Māori  
 Te mauri tapu o ngā wai tai

Kia tau te mauri ki runga ki ēnei taura,  
 ki ēnei tauira

Tēnei te matatau ka eke, whakatū tārewa  
 ki te rangi

Ūhi wēro, tau mai te mauri

Haumi ē, hui ē, taiki ē!

*Te Waka Kotahi invokes the inspiration and  
 guidance from the universe and the gods.*

*We invoke every encapsulating life force,  
 the ever presence life force, the sacred life  
 force, the life force of our sky father and our  
 earth Mother.*

*The life force of the water of life, the life force  
 of the sea water, these life forces consume us.*

*Let us attain the sacred knowledge from the  
 highest heavens to look after the mauri.*

*Hold fast, hold strong, and let it be done!*

## MIHI

E tū whakaiti nei tātou i raro i a Ranginui,  
 i runga i a Papatūānuku, e tītiro kau ana ki  
 ngā maunga whakahī me ngā tini uri o Tāne.

Ka hoki ngā mahara ki te tini me te mano  
 kua huri kaweka nei, he tangi apakura mō  
 rātou katoa, haere i runga te rangimārie.

Ka hoki nei ki a tātou te hunga ora  
 tēnā tātou katoa.

Anei he rautaki toitū mō Waka Kotahi,  
 hei aratohu i a tātou mahi.

Kia mahi tahi ai tātou ki te tiaki i te taiao.

Mā tō rourou me taku rourou ka ora  
 ai te taiao.

Waka Kotahi, tukuna tō wairua kia rere.

Tīhei mauri ora!

*We stand humbly under the sky and on  
 our sacred earth mother we look at the  
 impressive mountains and the many different  
 children of Tane*

*Our thoughts turn to the many who have  
 departed this life, we sing a final lament to  
 them all, farewell in peace.*

*We return to all of us the living salutation  
 to us all*

*Please find our sustainability plan a guide  
 for our future work.*

*As we work together to nurture and  
 look after the world around us*

*With your basket of knowledge and  
 our basket of knowledge we can make the  
 world a better place*

*Waka Kotahi let your spirit soar.*

This Karakia and Mihi were gifted to reflect the aspirations and desires of Toitū Te Taiao Our Sustainability Action Plan, with the goal to leave our planet in a better condition for our grandchildren. It calls upon us all to do our part in the protection of the earth and the waterways and seeks celestial knowledge to help support our physical actions to uplift the mauri of the Taiao (Environment).



**OUR VISION IS FOR  
A LOW CARBON,  
SAFE AND HEALTHY  
LAND TRANSPORT  
SYSTEM**



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# TE WHAKAKITENGA OUR VISION 2050

## A LOW CARBON, SAFE AND HEALTHY LAND TRANSPORT SYSTEM

Waka Kotahi NZ Transport Agency has a vision for a sustainable, multi-modal land transport system where public transport, active or shared modes are the first choice for most daily transport needs. Towns and cities are re-shaped to reduce reliance on cars and support active, healthy and shared transport choices. Where people and business require motorised travel, it is low carbon, safe and efficient.

In regional and rural Aotearoa New Zealand, provision for efficient freight movement and attractive tourism routes treads lightly on the land and is sensitive to natural and built environments.

The land transport system is an exemplar of sustainable management supporting attractive and liveable environments for people and ecosystems to thrive. Avoiding harm is valued, the natural, cultural and built environment is maintained, protected and enhanced, and harm is remedied.

Our vision responds to some of the greatest challenges Aotearoa and the world are facing: an urgent need to reduce land transport emissions and limit global warming; poor levels of physical activity and associated public health outcomes; threats to indigenous biodiversity and water quality and escalating resource use.

Our vision also responds to the opportunities that are particular to Aotearoa: protecting our unique flora, fauna and Māori cultural heritage not found anywhere else in the world; and supporting grass-roots, community-led actions to identify and protect what is important to our culture, our communities and the environment we call home.

## OUR FOCUS

Toitū Te Taiao Our Sustainability Action Plan sets out the commitment of Waka Kotahi to environmental sustainability and public health in the land transport sector. It describes how Waka Kotahi will use the levers within our control and influence to deliver on our Vision.

Arataki Our Plan for the Land Transport System 2021-2031 affirms our focus on reducing transport greenhouse gas emissions to tackle climate change and support the transition to a low-emission economy; and improving public health as part of transitioning to a safe and healthy land transport system.<sup>1</sup> Toitū Te Taiao contains the steps we will take to deliver these objectives.

## MĀTĀPONO: OUR PRINCIPLES

### KAITIAKITANGA<sup>2</sup>

We recognise the environment is a taonga that must be managed carefully. We also recognise that Māori have a responsibility and obligation of care over their communities and environments.

### RECOGNITION OF CULTURAL VALUES

We recognise and provide for Māori perspectives, tikanga (customs) Te Reo Māori and kawa (protocols) in the work we do.

### STEWARDSHIP

We take a long-term view to ensure a sustainable transport future and conservation of resources.

### PRECAUTIONARY

When an activity raises threats of harm to human health or the environment, we take precautionary measures.

### EQUITY

We consider broad equity impacts of land transport interventions, including intergenerational impacts.

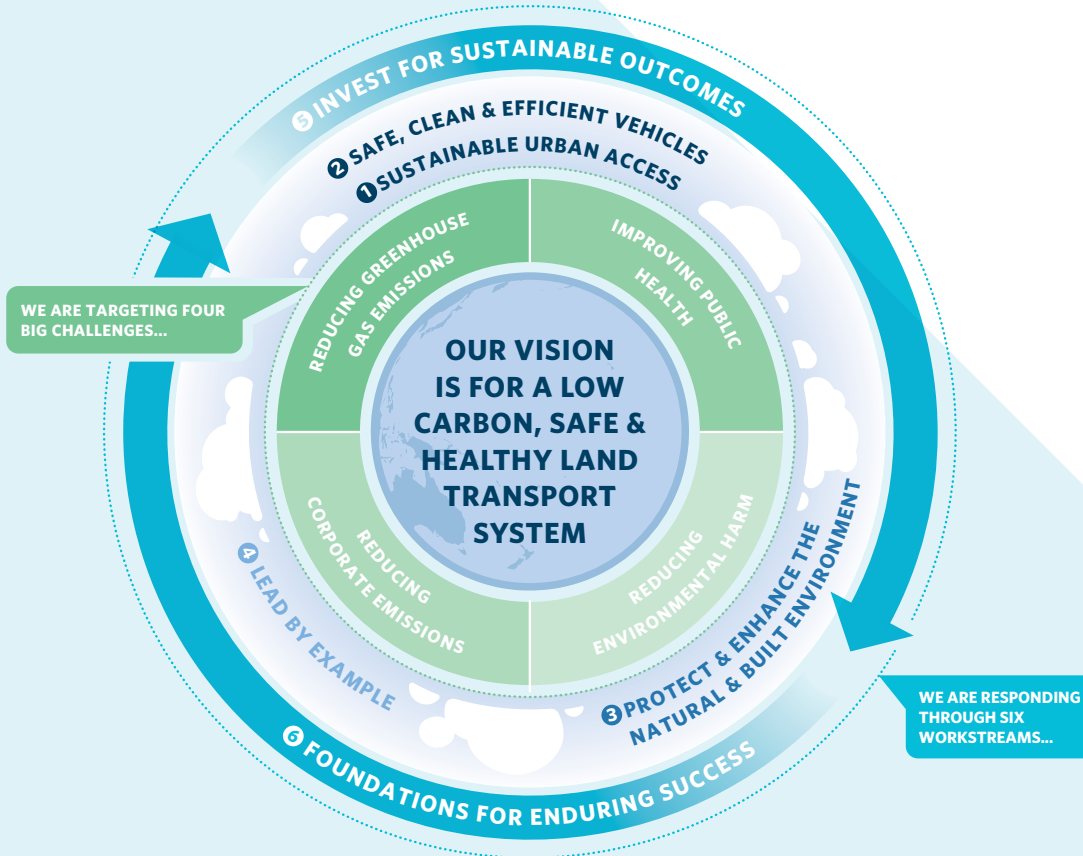
### REMEDICATION

We put right elevated harm arising from the land transport system.

### COMPREHENSIVE

We consider social, cultural, environmental and economic costs and benefits, including those that are indirect, long-term and not monetized.

## TOITŪ TE TAI AO AT A GLANCE



### 1 SUSTAINABLE URBAN ACCESS

Using our planning and investment levers to reduce emissions and improve public health through interventions that:

- Avoid or reduce our reliance on travel by car
- Shift people to shared/active or low carbon modes

### 2 SAFE, CLEAN AND EFFICIENT VEHICLES

Using our regulatory lever to reduce emissions and improve public health through interventions that:

- Improve vehicle fleet efficiency

### 3 PROTECT AND ENHANCE THE NATURAL AND BUILT ENVIRONMENT

Using our planning, infrastructure management and procurement levers for system-wide environmentally and socially responsible practice

### 4 LEAD BY EXAMPLE

Reducing business emissions and modelling sustainable behaviours, internally and externally

### 5 INVEST FOR SUSTAINABLE OUTCOMES

Re-calibrating Waka Kotahi planning and investment settings for sustainable outcomes

### 6 FOUNDATIONS FOR ENDURING SUCCESS

Establishing the building blocks for enduring success and continuous improvement



## TOITŪ TE TAIĀO RESPONDS TO FOUR BIG CHALLENGES

## OUR LONG TERM OUTCOMES TO 2050

### REDUCING GREENHOUSE GAS EMISSIONS

- Reducing land transport greenhouse gas (GHG) emissions to mitigate climate change  
*NOTE: Climate change adaptation is managed by our Resilience Plan*

- Net zero land transport GHG gas emissions by 2050

### IMPROVING PUBLIC HEALTH

- Reducing harmful land transport related air and noise pollution
- Enabling more people to safely use active modes

- No harm from land transport air and noise emissions
- Land transport supports physically active and healthy travel options

### REDUCING ENVIRONMENTAL HARM

- Reducing adverse effects of land transport on biodiversity and water quality
- Improving resource efficiency and waste management

- The land transport network is managed to support and enhance indigenous biodiversity
- Water bodies are protected from adverse effects of land transport storm-water run-off
- We use resources and energy sustainably

### REDUCING CORPORATE EMISSIONS

- Reducing our corporate carbon footprint

- Waka Kotahi is carbon neutral

# REDUCING GHG EMISSIONS AND IMPROVING PUBLIC HEALTH

## EXPLORING OUR CHALLENGES

### CLIMATE CHANGE MITIGATION: REDUCING EMISSIONS

#### **Climate change is impacting our planet<sup>3</sup>**

Although Aotearoa is a small emitter by global standards, our per person GHG emissions are amongst the highest in the OECD. We're not yet pulling our weight in the global challenge to reduce emissions; and Aotearoa is now committed to reducing GHG emissions to net zero by 2050 (excepting biological methane).

#### **Land transport is part of the problem**

Transport accounts for about 20% of Aotearoa's GHG emissions, 90% of which arise from road transport. The light vehicle fleet accounts for 73% of road transport emissions and is the fastest growing source of them. These emissions are concentrated in our major urban areas.<sup>4</sup>

#### **The scale of the challenge is immense**

Emission reduction budgets will soon apply to the land transport system.<sup>5</sup> It's a huge challenge, requiring a transformation in urban travel choices and the vehicles we travel in.

To date, efforts to reduce emissions have tended to focus on transitioning to a low/no carbon light vehicle fleet and supporting the uptake of electric vehicles (EVs). Meeting the 2050 target by this mechanism is a challenge of immense proportions, requiring over 140,000 fossil fuel vehicles to be replaced by low/no carbon vehicles every year from 2020 to 2050.<sup>6</sup>

By mid-February 2019, there were just over 19,500 low/no carbon vehicles in the fleet. It's taken seven years to get this far.<sup>7</sup> While the pace of uptake has seen a big increase since 2017 - the pace required is far, far greater. Additional actions beyond the widespread uptake of electric vehicles are required.<sup>8</sup>



## PUBLIC HEALTH: AIR, NOISE, PHYSICAL ACTIVITY

### **Our land transport system could be safer, healthier and more active**

The land transport system is not as safe as it could be. In 2019, 353 people were killed on our roads, and 2,562 were seriously injured. This comes at an annual social cost of \$4.62 billion.

Air emissions play a role in shortening the lives of over 250 people a year. Of most concern are fine particles and oxides of nitrogen from the tailpipe, brakes and tyres of vehicles.

Exposure to high levels of noise is linked to health issues such as obesity, hypertension and heart disease, stress and anxiety. About 38,000 people are exposed to high levels of road noise. More than 500,000 people are exposed to potentially unhealthy noise levels if we use health-based criteria from the World Health Organisation.

In Aotearoa, in 2016/17, only half of adults (15 years and over) were physically active (at least 30 mins on 5 days per week) and 13% of adults did less than 30 minutes per week. Nationally, 83% of journeys are by car, 12% are by walking, 1% by cycling and 3% by public transport. Major urban areas are improving, but active transport mode share is low by international standards.

Our car dependency is part of what explains our high per capita emissions.

The adverse public health impacts of car dependency are of a similar or even greater scale to our road trauma statistics – but they are less well recognised.



## OUR OPPORTUNITIES AND APPROACH

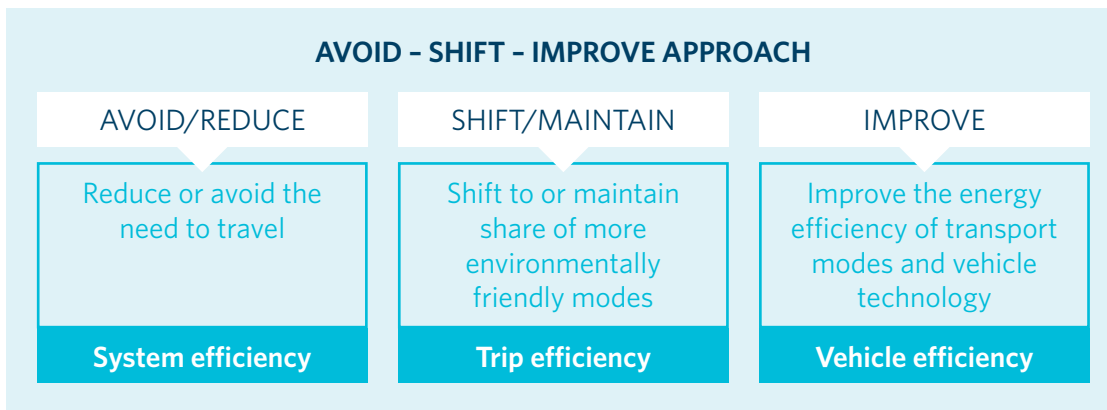
### Our opportunities

We have an opportunity to galvanise a sustainable urban transport and liveability transformation.

- Through our planning and investment levers we can harness emission reduction targets to shape land use and mode shift interventions that unlock climate, health and accessibility benefits.
- Through our regulatory lever we can support the transition to a low carbon vehicle fleet.

### Our approach

Our approach is shaped by the **Avoid - Shift - Improve** model.<sup>14</sup>



**AVOID/REDUCE** interventions aim to avoid or reduce the need to travel, or the time or distance travelled by car while improving accessibility, eg through integrated land use and transport planning for urban form that supports well-connected multi-modal access to local services and employment. This is critical for long term emission reductions at a system level; and brings many other transport, public health and environmental benefits, through reduced air and noise pollution, increased levels of physical activity, reduced congestion, better connected communities and improved safety.

**SHIFT/MAINTAIN** focuses on shifting people who need to travel from cars to more energy efficient modes such as public transport and active or shared modes, eg through better provision of low carbon travel options and incentives to choose them.

**IMPROVE** focuses on improving the energy efficiency of motorized vehicles (eg through fuel standards or EV uptake); and optimization of transport infrastructure and operations for more efficient vehicle movement.

Current cross-government efforts are focused on actions to 'improve' the vehicle fleet.<sup>15</sup> It's right to put a lot of effort here as improving the vehicle fleet will yield the greatest transport GHG emission reductions in time. However, additional actions will be required to get us to net zero land transport emissions by 2050 - and to address challenges associated with car dependency such as congestion, urban sprawl and inequitable access to travel options.<sup>16</sup>



## WHAT WE WILL DO

Rising to the emissions challenge requires that 'Improve' actions are complemented by 'Avoid' and 'Shift' actions, focused on cities where emissions are most concentrated. We will support this through two complementary workstreams:

### WORKSTREAM 1: SUSTAINABLE URBAN ACCESS

**Focus:** Using our planning and investment levers to influence urban land use decisions and rethink how cities manage growth (Avoid/Reduce interventions); and accelerate mode shift to low carbon, active and/or shared mobility (Shift interventions).

#### Summary actions Headline actions to June 2021

Define and embed a strategic approach for Waka Kotahi on urban form and transport planning for sustainable development that reduces emissions, improves access and liveability.

Size the mode shift contribution to net zero land transport emissions 2050: Support lead government agencies and the Climate Change Commission to understand the urban form and mode shift contribution to achieving net zero land transport emissions, relative to improving the vehicle fleet so that achievable emission reduction interventions, objectives and targets can be set.

#### Additional actions to be prioritised and sequenced for the next three years

- Partner for innovation, pilots and demonstrations of low carbon, safe and healthy transport choices
- Partner to set emission reduction objectives for mode shift plans in our fastest growing cities
- Partner for a pathway to sustainable transport in urban areas outside of *Keeping Cities Moving*<sup>17</sup>
- Partner for clean and efficient movement of inter and intraregional freight (eg land use, journey management, mode shift)
- Develop best practice guidance for low carbon, safe and healthy transport choices in urban areas.

## WORKSTREAM 2: SAFE, CLEAN AND EFFICIENT VEHICLES

**Focus:** Using our regulatory lever and touchpoints and our information and promotional expertise to support efforts that improve the energy efficiency of the vehicle fleet. This includes support and administration of the government's clean car reforms, when approved; other actions to support the uptake of electric vehicles; and partnering for solutions to decarbonise public transport buses and heavy vehicles.

### Summary actions Headline actions to June 2021

Gear up and administer the Government's proposed Clean Car Discount and Clean Car Standard when approved.

Support the feasibility study for social leasing to help low income households into safe and clean vehicles.

Partner to provide individuals and fleet owners with the knowledge and confidence to purchase and use electric vehicles (charging infrastructure; information and education)

### Additional actions to be prioritised and sequenced for the next three years

- Explore opportunities to reduce in-service fleet harm and emissions (air, noise, GHGs)
- Partner to decarbonise the public transport bus fleet in major urban areas
- Support partners and the sector to identify a roadmap for safe and clean freight vehicles





# REDUCING ENVIRONMENTAL HARM

## EXPLORING OUR CHALLENGES

The land transport system is a substantial presence in our natural and built environment, traversing many sensitive habitats, waterways and areas of significant cultural and heritage value. Just as significant as the 'footprint' of the land transport system, is the kind of urban land use and development it enables. Productive land and loss of native land cover, habitats and biodiversity are casualties of urban sprawl.

*Environment Aotearoa 2019* identifies the land transport system as a contributor to environmental degradation through its climate-changing greenhouse gas emissions, land use impacts, its air and water pollution and its significant footprint on areas with sensitive habitats and waterways. This report identifies that 3,747 of species native to Aotearoa are threatened or at risk of extinction. The land transport system has played a part in this.<sup>18</sup>

The national road network is 94,000 km long. Waka Kotahi is responsible for state highways which are 12% or 11,000 km of the total network. We invest approximately 50% of the cost of looking after the remaining 83,000 km of local roads managed by Road Controlling Authorities.<sup>19</sup> Building, maintaining and operating this land transport system consumes large quantities of fossil fuels, virgin materials such as aggregate and other resources. The construction and demolition industry is one of the largest waste producing industries in Aotearoa, contributing about 50% of all waste to landfills and most clean fill waste.<sup>20</sup> Much waste from land transport construction and demolition is not routinely recycled, and the use of recycled or alternative materials in new builds is limited.

## OUR OPPORTUNITIES AND APPROACH

### Our opportunities

**We have an opportunity to shape transport sector-wide sustainable management practice.**

Our environmental practice is sound and sometimes leading, however we are currently focused on meeting the requirements of the Resource Management Act 1991 (RMA). We have an Environmental and Social Responsibility Policy and supporting standard; we use sustainability rating tools, have a suite of social and environmental contract specifications and we deploy progressive planning and procurement approaches. There is a great opportunity to review our policy and extend these approaches, embed them into our core practice and secure them through our procurement lever for a step-change in sustainable management.

There is also a big opportunity to pursue innovation in resource efficiency and waste minimisation by adopting a circular economy approach: designing out waste and pollution, keeping materials in use, regenerating natural systems, and repurposing structures and cultural heritage assets.

The scale of our investment, management of the state highway network and other infrastructure and our responsibility for procurement settings offer the potential for us to positively influence the management of all 94,000 km of Aotearoa's road network and the natural, cultural, heritage and built environment it traverses.

## Our approach

### Our infrastructure management, planning and procurement levers are a powerful mechanism for change.

We are the State highway manager, a co-investor in local roads and responsible for provision of other significant infrastructure on behalf of government. Our procurement settings and practices are at the frontline of our ability to influence the sustainable management of the land transport system. Getting our procurement settings in the right place to do this means reviewing our Environmental and Social Responsibility Policy and our Environmental and Social Responsibility Standard, defining our requirements, embedding them in contract specifications and procurement processes, and monitoring and managing performance more effectively.

## WHAT WE WILL DO

### WORKSTREAM 3: PROTECT AND ENHANCE THE NATURAL AND BUILT ENVIRONMENT

**Focus:** Using our land transport infrastructure management, planning, procurement and co-investor functions to set and embed sustainable management practices into the core practice of Waka Kotahi and the sector for managing and developing the land transport network and the natural, cultural, heritage and built environment it interacts with.

#### Summary actions Headline actions to June 2021

Review and update our Environmental and Social Responsibility Standard to ensure tools, guidance and requirements give effect to a refreshed Environmental and Social Responsibility Policy and enable consistent management and monitoring of environmental performance (especially biodiversity and water quality); social, cultural and heritage outcomes; and public health outcomes (related to air and noise emissions).

Leverage procurement for a step-change in sector environmental and social responsibility practice: embedding sustainable management requirements into contract documentation.

Develop and embed a resource efficiency and waste minimisation policy.

*NOTE: The Foundations for Success workstream holds the related headline action for reviewing our Environmental and Social Responsibility Policy, inclusive of establishing significance and remediation policies. This action is in the Foundations package as its application extends beyond the functions of Waka Kotahi called out here.*

#### Additional actions to be prioritised and sequenced for the next three years

- Deliver part or all, of the noise remediation programme as funding allows.
- Develop an integrated national asset management system, toolkit and data standard to support data capture and analytics, management and monitoring of environmental assets.
- Improve performance monitoring, audit, compliance and incident management functions.



# WAKA KOTAHI CORPORATE SUSTAINABILITY

## EXPLORING OUR CHALLENGES

### Our business travel emissions

Where we can make comparisons with other government agencies, our emissions are high, driven by business travel.<sup>21</sup> In calendar year 2018, about 94% of our GHG emissions arose from business travel, primarily domestic air travel. Domestic air travel emissions on their own make up more than 80% of our travel emissions, with long and short haul international air travel making up close to 5% of emissions.

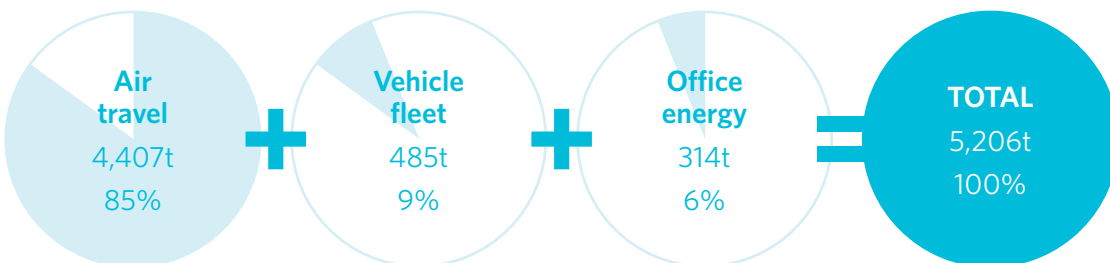
### Our vehicle fleet emissions

In line with Government expectations for the public sector, we are transitioning our vehicle fleet to all new vehicles being 100% electric (as far as practicable) by 2025.<sup>22</sup> We have 164 fleet vehicles, 23% of which are EVs. We are transitioning our fleet and our vehicle fleet emissions profile is relatively low compared to many other government agencies. There is potential to do better as utilisation of these vehicles is low.

### Our office energy

Our data is incomplete for waste and electricity emissions, but we've made a start on improving this.

### Our estimated carbon footprint: Tonnes of CO<sub>2</sub> per annum (tCO<sub>2</sub>/pa): Calendar year 2018



### Public sector leadership

Our Environment Position Statement sets an ambition for leading the public sector in reducing staff travel emissions and vehicle emissions. We must put our own house in order if we want to lead by example.

## OUR OPPORTUNITIES AND APPROACH

### Our opportunities

**Our corporate sustainability challenge offers an opportunity for public sector sustainability leadership.**

We have a great opportunity to put our house in order and align our corporate behaviours with our sustainability principles and expectations. As the largest transport planner and investor in Aotearoa, this is the time to find smart ways of meeting our business needs and improving our effectiveness, while tracking towards carbon reductions, learning from and sharing our lessons learned with public sector colleagues.

### Our approach

Realising our vision for a low carbon, safe and healthy land transport system requires us to align our own corporate behaviours and practices with this vision. We must walk our talk and grow an internal culture of sustainable practice if we wish to model authentic leadership.

## WHAT WE WILL DO

### WORKSTREAM 4: LEAD BY EXAMPLE

**Focus:** Reducing our business travel emissions while growing our effectiveness; building a culture of sustainability into all we do and all we are; and providing public sector leadership.

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#### Summary actions Headline actions to June 2021

Robustly measure and verify our carbon footprint and set reduction targets.

Reduce our corporate travel emissions, addressing technology barriers and opportunities for working more effectively.

#### Additional actions to be prioritised and sequenced for the next three years

- Improve the sustainability performance of the products and services we use
- Improve our energy efficiency and waste minimisation
- Step up to public sector sustainability leadership for reducing business travel emissions
- Support sustainable commuting choices for our people.

# CROSS-CUTTING WORKSTREAMS

Two cross-cutting workstreams are critical enablers of our vision and actions:

- Workstream 5: Invest for sustainable outcomes
- Workstream 6: Foundations for enduring success.

## OUR OPPORTUNITIES AND APPROACH

### WORKSTREAM 5: INVEST FOR SUSTAINABLE OUTCOMES

**Recalibrating the Transport Agency's investment settings for long term sustainability.**

We manage over \$4 billion of land transport funding and co-investment each year on behalf of Government. Government sets our investment framework and priorities; we determine how priorities are achieved and what is or is not funded via our investment assessment and prioritisation settings. Our investment settings are a powerful mechanism for shaping activities and behaviours to support sustainable outcomes.

This workstream focuses on enabling investment settings for long term, balanced and multiple outcomes that seek 'win-win' solutions ahead of trade-offs.

#### Long term outcomes

Investment for long term outcomes is vulnerable to near term priorities. There are currently no tests for assessing the impact of land transport investment decisions on long term outcomes such as emission reductions. In the absence of such tests, investment risks addressing near term challenges, while undermining long term goals.

#### Balanced outcomes

Investing for sustainable outcomes is about balanced social, environmental and economic outcomes over time. How impacts are assessed is important. Some environmental impacts are not currently monetized or supported by good measurement tools, and so despite best efforts, they are not fully considered. When impacts are assessed is also critical. Currently, environmental impacts are largely considered at a project level. This can miss opportunities to inform earlier strategic decisions and consideration of alternatives that avoid adverse impacts or reduce the need for mitigation.

#### Designing for and driving multiple outcomes: Win-Wins

As the government's investment manager of the National Land Transport Fund, we have an obligation to ensure investment decisions deliver on government expectations for the land transport system, and for Aotearoa. Every dollar of investment must work hard and deliver on the outcomes sought by government.

Traditionally, investment proposals have focused on delivering a primary outcome. They may identify a range of secondary co-benefits that could accompany the proposal, but which are not deliberately targeted for achievement or designed into it. We are reviewing our Investment Decision-Making Framework. Our new investment principles encourage and support a more deliberate approach to designing and investing for multiple outcomes to ensure every dollar invested works harder and more effectively, supporting government expectations for transport, and wider government priorities.



The key to doing this well means calibrating smart sets of results or outcomes that can drive ‘win-win’ solutions designed to powerfully deliver multiple outcomes at the same time. For example, imagine a transport solution is required to significantly improve access to affordable housing, reduce congestion, improve road safety and reduce emissions *at the same time*.

- Increasing EV uptake addresses the emissions objective, but not the other objectives
- Building a new road can address access, congestion and safety objectives but fall short on emissions.

Deliberately designing for these multiple outcomes could lead to interventions that intensify affordable housing options in areas well served by public transport, walking and cycling; increase levels of service and safety for public transport and active modes; and use pricing and network management mechanisms to encourage people into more efficient, reliable and low carbon public transport or active modes. The approach looks for win-wins ahead of trade-offs, resolving conflicts between outcomes.

Including GHG emission reduction objectives in the primary outcome ‘mix’ for transport solutions could be a powerful catalyst for resolving near term challenges unrelated to climate change (such as congestion, air and noise pollution, urban sprawl and poor accessibility), while also tracking towards long term GHG emission reduction targets. This is because many of the interventions that reduce emissions can also deliver safety, health and access benefits, if designed that way.

## WHAT WE WILL DO

As part of the Investment Decision-Making Framework Review, we will:

### Summary actions Headline actions to June 2021

Enable investment for land transport GHG emission reductions through:

- Embedding long term emission reduction objectives and emissions-based thinking into planning, investment and accountability instruments (includes consideration of planning and investment bottom lines)
- Designing and implementing a methodology to support emission profiling and monitoring of national and regional land transport programmes; and significant infrastructure with an inter-generational life
- Working with central government partners to establish values for carbon aligned to international best practice.

### **Additional actions to be prioritised and sequenced for the next three years**

- **Enable investment for long term outcomes**, through embedding sustainability principles into our decision-making approach; and establishing early strategic impact assessment for near and long term sustainability outcomes, to value avoidance of irreversible adverse climate, public health, cultural, heritage, natural and built environmental impacts.
- **Enable balanced assessment of outcomes** to support transparent consideration of monetised and non-monetised social and environmental outcomes, benefits and costs.
- **Embed the investment hierarchy into investment decision-making** to ensure a broad range of options and alternatives, including non-transport solutions are considered
- **Optimise** programmes and packages for delivery against multiple/priority outcomes specified in the strategic case.

## **OUR OPPORTUNITIES AND APPROACH**

### **WORKSTREAM 6: FOUNDATIONS FOR ENDURING SUCCESS**

#### **Establishing the building blocks for success**

The task of this workstream is to establish the building blocks to embed the focus, principles and actions of Toitū Te Taiao into the work of individuals and teams across Waka Kotahi, and allow us to become a land transport sector sustainability leader.

#### **We're at the start of a significant journey of change**

Delivery of Toitū Te Taiao requires accountability and engagement across every part of Waka Kotahi. It's a significant change programme. While we are already supporting sustainable outcomes, this plan puts our efforts on a new footing.

For individuals and organisations, successful change can be difficult, and for organisations aiming to lead successful sector-wide change for the long term – change can be even more difficult. Research has shown that most change projects do not fully deliver their expected returns and value.<sup>23</sup>

Successful projects and programmes share common best practice change management elements:

- Active and visible executive leadership
- A structured change management approach
- Dedicated change management resources
- Middle management engagement for delivery
- Employee engagement and participation
- Frequent and open communication
- Integration and engagement with project management.<sup>24</sup>

This workstream will put these elements in place to ensure the enduring success of our commitment to environmental sustainability and public health in the land transport sector.

## WHAT WE WILL DO

### Summary actions Headline actions to June 2021

Establish and support effective sustainability leadership

Establish and implement supporting frameworks, plans and policies:

- Review our Environmental and Social Responsibility Policy (inclusive of establishing significance and remediation policies to address RMA considerations of avoidance, remediation and mitigation)
- Change management plan, inclusive of culture change and capability development
- Communications plan
- Sustainability Monitoring Framework, inclusive of sustainability reporting and developing our evidence base.

Integrate Toitū Te Taiao into our strategy, business plan, policies and accountability mechanisms

### Additional actions to be prioritised and sequenced for the next three years

- Establish a strategic partnership framework
- Establish a research and innovation programme to address knowledge gaps and identify new opportunities



# MONITORING PROGRESS

We will publish an annual Sustainability Monitoring Report to track the progress towards our long-term outcomes and our vision for a low carbon, safe and healthy land transport system.

The first Sustainability Monitoring Report will be published in 2020. It will establish a 2018 baseline for a range of measures.



## APPENDIX 1

## HEADLINE ACTIONS TO JUNE 2021

## WORKSTREAM 1: SUSTAINABLE URBAN ACCESS

## HEADLINE ACTIONS

## SUB-ACTIONS

- | HEADLINE ACTIONS  | SUB-ACTIONS   |
|---|---|
| 1 Define and embed a strategic approach for Waka Kotahi on urban form and transport planning for sustainable development that reduces emissions, improves access and liveability. |   |
| 2 Size the land use/mode shift contribution to net zero land transport emissions 2050   | 2a Support lead government agencies and the Climate Change Commission to understand the land use (Avoid/Reduce) and mode shift (Shift) contribution to achieving net zero land transport emissions, relative to vehicle fleet transformation (Improve). |
|   | 2b Baseline the current and planned transport emissions profile of major urban areas targeted by <i>Keeping Cities Moving</i> .   |
|   | 2c Identify the gap between baseline emissions and the scale of emission reductions required to deliver the land use/mode shift contribution to net zero carbon emissions 2050.   |

## WORKSTREAM 2: SAFE, CLEAN AND EFFICIENT VEHICLES

## HEADLINE ACTIONS

## SUB-ACTIONS

- | HEADLINE ACTIONS  | SUB-ACTIONS   |
|---|---|
| 1 Gear up and administer the Government's proposed Clean Car Discount and Clean Car Standard when approved.                             |   |
| 2 Support the feasibility study and pilot (if necessary) for social leasing to help low income households into safe and clean vehicles. |   |
| 3 Partner to provide individuals and fleet owners with the knowledge and confidence to purchase and use electric vehicles.              | 3a Identify partners and customer needs; leverage existing touch points; coordinate a new level of service for light vehicle public charging infrastructure to support accelerated uptake of EVs.                                   |
|   | 3b Maintain oversight of the effectiveness of interoperability standards for light charging infrastructure; and maintain a watching brief on public charging infrastructure needs of other light modes (eg e-bikes, e-motorcycles). |
|   | 3c Work with the electricity industry to identify additional land owned by Waka Kotahi that may be suitable for public charging infrastructure.   |
|   | 3d Continue to use our EVRoam data and analytics to support sector and customer decision-making.  |
|   | 3e Improve signage and other information to help EV users easily locate and use charging infrastructure.  |

## WORKSTREAM 3: PROTECT AND ENHANCE THE NATURAL AND BUILT ENVIRONMENT

### HEADLINE ACTIONS

### SUB-ACTIONS

<p><b>1</b> Review and update our Environmental and Social Responsibility Standard: Applicable to all infrastructure projects and activities for the whole lifecycle (ie including maintenance and operation)</p>	<p><b>1a</b> Review and update the ESR Standard to ensure tools, guidance and requirements give effect to Environmental and Social Responsibility Policy (Foundations workstream), enabling consistent management and monitoring of environmental performance (especially biodiversity and water quality); social, cultural and heritage outcomes; and public health outcomes (related to air and noise emissions). Ensure application to all relevant infrastructure (eg rail, public transport and active mode infrastructure as well as roads, bridges etc).</p> <p><b>1b</b> Establish desired levels of service and KPIs for the broad range of environmental, social, cultural and heritage assets managed by the asset data management system; and social and environmental levels of service for infrastructure assets.</p> <p><b>1c</b> Clarify the application of the ESR Standard for different types of programmes and projects across the decision-making and infrastructure life-cycle.</p> <p><b>1d</b> Align the ESR Standard to other key levers, tools and policies (eg business case approach, Te Ara Kotahi; good practice guides).</p>
<p><b>2</b> Leverage procurement for a step-change in sector environmental and social responsibility practice</p>	<p><b>2a</b> Review and implement procurement processes and collateral, to reflect environmental and social responsibility policy.</p> <p><b>2b</b> Review and implement standard contract specifications and performance measures to ensure they give effect to environmental and social responsibility policy: Prioritise Network Management Contracts coming up for renewal; and contracts under the Infrastructure Upgrade programme</p> <p><b>2c</b> Include environmental and social responsibility policy within future procurement improvement, engagement and capability development activities (including those involving industry and Councils).</p> <p><b>2d</b> Review and implement the policy guiding use of sustainability rating tools to provide for a broader application and use of such tools.</p>
<p><b>3</b> Develop and embed a resource efficiency and waste minimisation policy</p>	<p><b>3a</b> Develop and implement a resource efficiency and waste minimisation strategy and supporting policy, measures and targets.</p> <p><b>3b</b> Identify quick wins and form a prioritised set of actions to support Waka Kotahi, Regional Councils and our contractors to embed resource efficiency and waste management practices into core practice.</p> <p><b>3c</b> Facilitate a national conversation on resource efficiency for the wider infrastructure sector (eg addressing sustainability of aggregate supply).</p> <p><b>3d</b> Incentivise and champion innovation.</p>



## WORKSTREAM 4: LEAD BY EXAMPLE

HEADLINE ACTIONS	SUB-ACTIONS
1 Robustly measure and verify our carbon footprint and set reduction targets	1a Establish processes for the collection and reporting of all corporate carbon data.
	1b Set corporate emission reduction targets (aligned to the science-based target methodology which reflects the Paris Agreement and/or NZ carbon emissions budgets).
	1c Obtain independent verification of our corporate carbon footprint to standards set by Enviromark Solutions.
	1d Investigate off-setting options and costs for residual corporate emissions to achieve carbon neutrality.
2 Reduce our corporate travel emissions	2a Significantly reduce corporate travel emissions.
	2b Establish and audit guidelines for sustainable corporate travel.
	2c Identify and address technology barriers and opportunities for working more effectively.
	2d Sequence the transition of the vehicle fleet to achieve as near as practical 100% EV by TBC.
	2e Increase utilisation of the EV fleet by staff.

## WORKSTREAM 5: INVEST FOR SUSTAINABLE OUTCOMES

HEADLINE ACTIONS	SUB-ACTIONS
1 Enable investment for land transport GHG emission reductions	1a Embed long term emission reductions objectives and emissions-based thinking into planning, investment and accountability instruments, including national and regional land transport programmes.
	1b Design and implement a methodology to support GHG emission profiling and monitoring of national and regional land transport programmes; and significant infrastructure with an intergenerational life.
	1c Work with central government partners to establish values for carbon aligned to international best practice to support assessment of carbon impacts.

## WORKSTREAM 6: FOUNDATIONS FOR ENDURING SUCCESS

HEADLINE ACTIONS	SUB-ACTIONS
1 Establish effective sustainability leadership	1a Establish and support a governance group to champion Toitū Te Taiao internally and externally, provide executive leadership, and maintain the commitment and momentum required to deliver the workstreams across Waka Kotahi
	1b Establish a community of interest to support the governance group, lead the execution of Toitū Te Taiao into and across Waka Kotahi and contribute to the ongoing development of our sustainability maturity.
	1c Establish a review and refresh cycle for Toitū Te Taiao.
2 Establish and implement supporting frameworks, plans and policies	2a Review and implement a refreshed Environment and Social Responsibility Policy, inclusive of establishing significance and remediation policies to address RMA considerations of avoidance, remediation and mitigation.
	2b Establish sustainability monitoring and reporting: <ul style="list-style-type: none"> <li>▪ Agree and implement a regular measurement and monitoring process</li> <li>▪ Align key performance measures with:               <ul style="list-style-type: none"> <li>- The Transport Outcomes Framework</li> <li>- The Government Policy Statement on land transport</li> <li>- Investment performance measures</li> <li>- Transport Agency and Group objectives</li> </ul> </li> <li>▪ Develop a comprehensive evidence base to underpin our sustainability work and development; and identify and resolve data gaps</li> <li>▪ Transition monitoring and reporting on Toitū Te Taiao into the Transport Agency's regular reporting process.</li> <li>▪ Publish the first annual sustainability report in 2020, setting a baseline to measure future performance against.</li> </ul>
	2c Establish and implement a Communications and Engagement Plan for Toitū Te Taiao to: <ul style="list-style-type: none"> <li>▪ Embed Toitū Te Taiao into Waka Kotahi and support the culture change required to make sustainability part of our DNA</li> <li>▪ Implement regular checks on communication effectiveness and update the plan accordingly.</li> </ul>
	2d Establish and implement a change management plan, inclusive of culture change and capability development: <ul style="list-style-type: none"> <li>▪ Change management</li> <li>▪ Culture change</li> <li>▪ Capability</li> </ul>
3 Integrate Toitū Te Taiao into our strategy, business plan, policies and accountability mechanisms	

APPENDIX 2

# TOITŪ TE TAI AO – WAKA KOTAHI SUSTAINABILITY ACTION PLAN ON A PAGE

TE WHAKAKITENGA - OUR VISION 2050: A LOW CARBON, SAFE AND HEALTHY LAND TRANSPORT SYSTEM

MĀTĀPONO: OUR PRINCIPLES

KAITIAKITANGA<sup>2</sup>

We recognise the environment is a taonga that must be managed carefully. We also recognise that Māori have a responsibility and obligation of care over their communities and environments.

RECOGNITION OF CULTURAL VALUES

We recognise and provide for Māori perspectives, tikanga (customs) Te Reo Māori and kawa (protocols) in the work we do.

STEWARDSHIP

We take a long-term view to ensure a sustainable transport future and conservation of resources.

OUR CHALLENGES

LONG TERM OUTCOMES TO 2050

GPS OUTCOME MEASURES

REDUCING LAND TRANSPORT GREENHOUSE GAS EMISSIONS

Although by global standards, New Zealand is a small emitter, our per person emissions are amongst the highest in the OECD. Transport accounts for approximately 20% of New Zealand’s greenhouse gas emissions, 90% of which arise from road transport. The light vehicle fleet accounts for 75% of road transport GHG emissions and is the fastest growing source of GHG emissions. These emissions must be significantly reduced if Aotearoa is to achieve net zero emissions by 2050.

**Reducing greenhouse gas emissions:** Net zero land transport GHG emissions 2050

**Tonnes of greenhouse gases emitted per year from land transport by vehicle and by region**

IMPROVING PUBLIC HEALTH

Air emissions play a role in shortening the lives of over 250 people a year. Approximately 38,000 people are exposed to high levels of noise from state highways and major local roads in Aotearoa – many more are exposed if we use European standards. In terms of physical activity levels, in 2016/17 only 50.2% of adults in Aotearoa (15 years and over) were physically active (at least 30 mins on 5 days per week) and 13.4 percent of adults did less than 30 minutes per week. Our active mode share is low by international standards. And our land transport system is not as safe as it could be: In 2019, over 350 people died and over 2500 were seriously injured on our roads, which comes at a social cost of more than \$4.6B per annum.

**Active modes:** The land transport system supports physically active and healthy travel options

**Air quality:** No harm from land transport air emissions

**Noise:** No harm from land transport noise

**Total number of journeys by mode [active modes] and Road Controlling Authority**  
**Exposure to elevated concentrations of air pollution from the transport system**  
**Number of people exposed to elevated levels of land transport noise**

REDUCING ENVIRONMENTAL HARM

The land transport system is a substantial presence in our natural environment, traversing many sensitive habitats and waterways. Just as significant as the ‘footprint’ of the land transport system, is the kind of urban land use and development it enables. Productive land and loss of native land cover, habitats and biodiversity are casualties of urban sprawl. The land transport system and the kind of development it supports has a variety of impacts on biodiversity from destruction and severance of habitat to enhancing transport corridor ecological and cultural values. Storm-water run-off from roads contains a variety of toxic elements that can adversely affect the ecological health of water bodies. Construction and demolition waste represent about 50% of all waste going to landfill. Land transport construction and demolition waste is not routinely recycled and the use of recycled or alternative materials in new builds is limited.

**Biodiversity:** The land transport network is managed to support and enhance indigenous biodiversity

**Water:** Water bodies are protected from adverse effects of land transport storm-water run-off

**Resource efficiency:** We use resources and energy sustainably

**TBD: Not covered by the GPS**  
**Tonnes of selected contaminants discharged from the land transport network into sensitive water bodies**  
**TBD: Not covered in the GPS**

REDUCING CORPORATE EMISSIONS

In calendar year 2018 our total carbon emissions were 5.2 kilo tonnes, 94% of which arose from travel; and most of this arising from domestic air travel. Travel emissions have increased 80% since 2016 (calendar year); domestic air emissions have increased 94%. We must transition our vehicle fleet to 100% electric (as far as practicable) by 2026; and we aspire to public sector sustainability leadership.

**Reducing corporate emissions:** Waka Kotahi is carbon neutral

**Waka Kotahi carbon footprint**



**PRECAUTIONARY**

When an activity raises threats of harm to human health or the environment, we take precautionary measures.

**EQUITY**

We consider broad equity impacts of land transport interventions, including intergenerational impacts.

**REMIEDIATION**

We put right elevated harm arising from the land transport system.

**COMPREHENSIVE**

We consider social, cultural, environmental and economic costs and benefits, including those that are indirect, long-term and not monetized.

**TRANSPORT AGENCY HEADLINE MEDIUM TERM OBJECTIVES 3-10 YRS**

- Long term emission reduction objectives are embedded in planning and investment instruments
- Urban access in major urban areas is transitioning to low emission, shared and active modes
- Intra and inter-regional freight movement is safer and more efficient
- Physical activity as a component of travel choice is increasing
- Exposure to harmful air pollution is reducing in targeted areas
- The carbon intensity of the vehicle fleet is reducing
- Individuals and fleet owners find it easy to purchase and use electric vehicles

- Known harm is programmed for remediation
- Infrastructure activities are assessed, designed, delivered and managed to protect and enhance the natural and built environment
- Procurement processes, KPIs, specifications and policy improve sector sustainability practice and outcomes
- Waste from construction, maintenance and demolition is reducing
- Use of sustainable materials is increasing

- Our business travel emissions are significantly reduced

**TARGETS**

To be developed following baselines to be identified in the Sustainability Monitoring Framework (first report due June 2020)

**WORKSTREAMS**

- 1**  
Sustainable urban access
- 2**  
Safe, clean and efficient vehicles

- 3**  
Protect and enhance the natural and built environment

- 4**  
Lead by example

**CROSS CUTTING WORKSTREAMS**

- 5**  
Invest for Sustainable Outcomes +
- 6**  
Foundations for enduring success (Leadership; Frameworks and policies; Integration into strategy, business planning and policies)

**TRANSPORT AGENCY HEADLINE ACTIONS TO JUNE 2021 FOR ADDITIONAL ACTIONS REFER TO TOITŪ TE TAIAO**

**INVEST FOR SUSTAINABLE OUTCOMES**

- Embed long term emissions reduction objectives and emissions-based thinking into planning, investment and accountability instruments
- Design and implement a methodology to support GHG emission profiling and monitoring or national and regional land transport programmes; and significant infrastructure with an intergenerational life
- Work with central government partners to establish carbon values aligned to international best practice.

**SUSTAINABLE URBAN ACCESS**

- Define and embed a strategic approach for Waka Kotahi on urban form and transport planning
- Size the land use/mode shift contribution to net zero land transport emissions 2050, relative to changes in the vehicle fleet.

**SAFE, CLEAN AND EFFICIENT VEHICLES**

- Gear up and administer the Government’s proposed Clean Car Discount and Clean Car Standard when approved
- Support the feasibility study for social leasing to help low income households into safe and clean vehicles
- Partner to provide individuals and fleet owners with the knowledge and confidence to purchase and use electric vehicles

**PROTECT AND ENHANCE THE NATURAL AND BUILT ENVIRONMENT**

- Review and update our Environmental and Social Responsibility Standard: Applicable to all infrastructure projects and activities across the whole lifecycle
- Leverage procurement for a step-change in sector environmental and social responsibility practice
- Develop and embed a resource efficiency and waste minimisation policy

**FOUNDATIONS FOR ENDURING SUCCESS**

- Review and implement a refreshed Environmental and Social Responsibility Policy

**LEAD BY EXAMPLE**

- Robustly measure and verify our carbon footprint and set reduction targets
- Reduce our corporate travel emissions

# END NOTES

- <sup>1</sup> Arataki is our 10-year view of what is needed to deliver on the government's current priorities and long-term objectives for the land transport system. It's our way of being more transparent about what we see coming nationally and regionally, and about how we want to work with you to shape the best land transport system for New Zealand. <https://www.nzta.govt.nz/planning-and-investment/planning/arataki/>
- <sup>2</sup> Our first two principles are shared with Te Ara Kotahi – Our Māori Strategy
- <sup>3</sup> Environment Aotearoa 2019: New Zealand's Environmental Reporting Series, Ministry for the Environment and Statistics NZ, p. 92.
- <sup>4</sup> Annual Fleet Statistics 2018, Ministry of Transport, p. 15; NZTA Vehicle Emissions Mapping Tool; Moving the light vehicle fleet to low-emissions: Discussion paper on a Clean Car Standard and Clean Car Discount, Ministry of Transport, (9 July 2019), pp.6-7
- <sup>5</sup> The Climate Change Response (Zero Carbon) Amendment Act sets a net zero carbon emissions target for all greenhouse gas emissions (except biological methane) by 2050.
- <sup>6</sup> According to the Ministry of Transport's Annual Fleet Statistics 2018, there were nearly 4.3 million vehicles in the fleet by 2018; and as of 4 December 2019 and according to the Ministry of Transport monthly vehicle registration data (<https://www.transport.govt.nz/mot-resources/vehicle-fleet-statistics/monthly-electric-and-hybrid-light-vehicle-registrations/>), there were 18,000 electric/hybrid vehicles in the fleet, constituting about 0.4%. Replacing nearly 4.3 million fossil fuel vehicles with no/low emission vehicles by 2030 constitutes a replacement rate of over 142,000 vehicles a year.
- <sup>7</sup> Ministry of Transport: Monthly Electric and Hybrid Vehicle Registrations: <https://www.transport.govt.nz/mot-resources/vehicle-fleet-statistics/monthly-electric-and-hybrid-light-vehicle-registrations/>
- <sup>8</sup> Transport Outlook: Future State, Ministry of Transport (2017), p.74
- <sup>9</sup> Road Safety Outcomes: Supplement to the NZ Transport Agency's Quarterly Results and Insights Q2 2019/20, <https://www.nzta.govt.nz/assets/resources/road-safety-outcomes/docs/rso-oct-dec-2019.pdf>
- <sup>10</sup> Updated Health and Air Pollution in New Zealand Study, Volume 1: Summary Report (March 2012), Table 6.3, p.31; Environment Aotearoa 2019, pp. 68-70
- <sup>11</sup> 'National Land Transport (Road) Noise Map', 2019 Project Report (AECOM) (unpublished)
- <sup>12</sup> Turning the Tide – From Cars to Active Transport, University of Otago (April 2019), p. 10
- <sup>13</sup> Turning the Tide, p. 10
- <sup>14</sup> Sustainable Urban Transport: Avoid-Shift-Improve (ASI), Sustainable Urban Transport Project

- <sup>15</sup> The Cross-Government Low Emission Vehicles Work Programme is a whole of government effort to accelerate the transition to a low carbon vehicle fleet. It has four areas of focus and primarily addresses the light vehicle fleet.
- <sup>16</sup> Modelling by the Ministry of Transport shows that the scale of projected EV uptake is uncertain; and current projections of land transport emissions are not consistent with achieving the 2030 Paris Agreement target (30% below emissions at 2005) or achieving net zero land transport emissions by 2050. ( Moving the light vehicle fleet to low-emissions: Discussion paper on a Clean Car Standard and Clean Car Discount, Ministry of Transport, (9 July 2019) <https://www.transport.govt.nz/multi-modal/climatechange/electric-vehicles/clean-cars/>
- <sup>17</sup> Keeping Cities Moving is a our plan for supporting and enabling greater mode shift from cars to public transport and/or active modes in our fastest growing cities – Auckland, Hamilton, Tauranga, Wellington, Christchurch and Queenstown. It aims to deliver on social, environmental and economic outcomes by growing the share of travel by public transport, walking and cycling. <https://www.nzta.govt.nz/walking-cycling-and-public-transport/keeping-cities-moving/>
- <sup>18</sup> Environment Aotearoa 2019, p. 7; p. 17.
- <sup>19</sup> <https://www.nzta.govt.nz/roads-and-rail/research-and-data/state-highway-frequently-asked-questions/#useful-facts>
- <sup>20</sup> BRANZ: Reducing Building Material Wastes: Construction Guide 2014: [https://www.branz.co.nz/cms\\_show\\_download.php?id=5e8633f5234594b316612f186e49687aff5475dd](https://www.branz.co.nz/cms_show_download.php?id=5e8633f5234594b316612f186e49687aff5475dd)
- <sup>21</sup> While government agencies are required to disclose their average vehicle fleet emission profile of their vehicle fleets, there are no requirements for government agencies to measure or disclose their complete emission profile. The Energy Efficiency and Conservation Authority (EECA), the Environmental Protection Agency (EPA) and the Ministry for the Environment however do. Based on 2018 data from these agencies, we have identified that our overall emissions are high, and our per FTE emissions is also high when compared to these agencies. Comparisons must be treated with some caution since Waka Kotahi is a different and much larger agency than these other agencies.
- <sup>22</sup> <https://www.procurement.govt.nz/broader-outcomes/reducing-emissions-and-waste/reducing-government-fleet-emissions/>
- <sup>23</sup> Helping Employees Embrace Change, McKinsey Quarterly 2002 Number 4, Jennifer A. La Clair and Ravi P. Rao
- <sup>24</sup> <https://www.prosci.com/resources/articles/change-management-best-practices>





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