

Submission on Draft Government Policy Statement on Land Transport 2024-34

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Purpose statement

This submission is focussed on the health implications of the draft Government Policy Statement on land transport 2024 (GPS 2024). Transport is a key determinant of health and health equity in Aotearoa/New Zealand (NZ), and the health impacts of the strategic direction and specific policies in the transport sector need to be carefully considered. We also briefly address climate change issues as climate impacts have implications for health.

The authors of this submission represent most of the transport-health researchers in Aotearoa/NZ; this collective submission outlines our significant concerns about the direction of this draft GPS 2024 for population health and wellbeing.

Executive summary

The approach to transport policy outlined in the draft GPS 2024 is not consistent with a transport system that supports the health and wellbeing of the population, nor does it adequately address the transport challenges of the 21st century. The draft GPS 2024 considers health only in a very narrow way, through road safety and even this is limited. The road safety policies do not reflect best evidence of what works to reduce road deaths and injuries. Collectively, the transport policies outlined in the draft GPS 2024 will perpetuate and may worsen illness, disability, and early death in our communities, with considerable cost to the health system as well as social, economic and environmental costs to society. The lack of policy to reduce transport greenhouse gas emissions will further contribute to poor health through the impacts of climate change on the population. In summary, the draft GPS 2024 outlines policies that erode the current health benefits from transport, fails to deal with current health harms and will likely exacerbate these health harms in the short and long term.

We urge the government to revise the draft GPS 2024 to bring it in line with the evidence and best practice to create an efficient, inclusive, healthy and sustainable transport system that will help New Zealand prosper in the short and longer term.

Recommendations

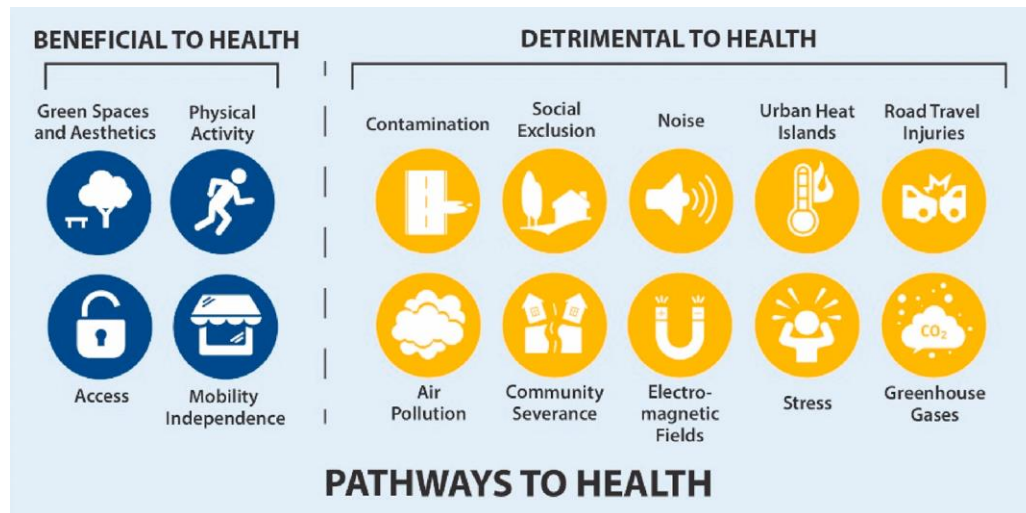
We recommend that the GPS 2024 is revised to:

1. Retain **healthy** and safe people as a key objective of the Aotearoa/NZ transport system.
2. Include **reducing greenhouse gas emissions** as a key objective of the Aotearoa/NZ transport system.
3. Revise the draft GPS 2024 to include policy to create an efficient, inclusive, healthy and sustainable transport system that will help New Zealand prosper.
4. Revise the draft GPS 2024 to take into account the extensive body of international and local research evidence about how to create an efficient, inclusive, healthy and sustainable transport system that will help New Zealand prosper.
5. Recognise the real economic and social costs and benefits of transport policies by requiring that any assessment of "value for money" of transport projects include assessment of the full costs and benefits, including the expected health and environmental impacts both in the short and longer term.
6. Reinstate the transport system priority of inclusive access to ensure that all New Zealanders can benefit fairly from the transport system they fund.
7. Include a wider range of health impacts and include policies that reduce the impact of transport on these outcomes (e.g. physical activity, air pollution, noise pollution, and inclusive access).
8. Remove the requirement that walking and cycling infrastructure is solely funded from the walking and cycling activity class.
9. Increase walking and cycling and public transport funding to enable projects that support New Zealanders' stated transport preferences as well as health and wellbeing for the short and long term.
10. Require consistent consultation and engagement processes across activity classes to ensure that all activities are considered in an equally democratic manner.
11. Prioritise policies that will achieve our legally committed emissions reductions targets while improving health of New Zealanders.

The links between transport and health

Transport is a major determinant of health in New Zealand through a wide range of pathways (see Figure 1 below).¹ Transport can improve health as well as cause significant harm, and these benefits and harms are not spread evenly across the population. Some groups (e.g. Māori, older people and more socioeconomically deprived people) gain fewer benefits from the system, suffer more of the adverse consequences and themselves contribute least to the harms of the system (as they drive less).²⁻¹¹

Figure 1: Pathways to health from the transport system



Source: Glazner et al, 2021¹

Each of the pathways in Figure 1 leads to a wide range of health, social and economic impacts. If we take physical activity as a specific example, physical activity is essential for health across the lifespan and is associated with a wide range of positive physical and mental health outcomes.¹² There is unequivocal evidence that physical activity is associated with 30% reduction in all-cause mortality, 40% reduction in cognitive decline, 35% reduction in risk for type 2 diabetes, 33% reduction for hypertension, 48% reduction in depression, 66% reduction in bone fracture risk, 20% for breast cancer risk, 25% for coronary heart disease and stroke, and 19% for colorectal cancer.¹³ However, currently, less than half of New Zealand adults and adolescents are getting sufficient physical activity to stay healthy,^{14,15} and approximately 40% of children are not sufficiently active for health.¹⁴ Low physical activity in New Zealanders was directly accountable for 920 deaths in 2019 and over 11,000 years of life lost.¹⁶

Transport choice is crucial for supporting people getting adequate levels of physical activity. People who use active transport modes, like walking, cycling, and public transport, are more likely than those who drive to meet physical activity recommendations for health.^{17,18} The transport system currently plays an essential role in enabling New Zealanders to be physically active. Nearly sixty percent of adult New Zealanders get daily physical activity from walking,¹⁹ much of which occurs in their local neighbourhoods. Physical activity through transport is almost always additional activity (i.e. not substituted from physical activity elsewhere).²⁰ This is because when transport is built into daily life, this physical activity tends to become habitual. Thus, active transport is *the most important* opportunity available to New Zealanders to increase their physical activity to adequate levels for health and the transport environment is key to facilitating or hindering this. Additionally, increasing

active transport will result in disproportionate health gains for Māori and Pacific populations and therefore is an important way to contribute to reducing differences in life expectancy between Māori and non-Māori.^{21,22}

Physical activity from transport has significant economic value. New Zealand modeling work shows that every km walked and cycled results in a net economic benefit to society of \$2.885 per km walked or \$1.598 per km cycled, relative to no travel or to travel by car or other modes which do not involve significant physical activity.²³ Moreover, cycling to work has been associated with increased productivity in multiple studies- people who cycle to work take fewer sick days than those who drive.^{24,25}

The health and wellbeing harms of the current transport system are extensive and significant.

In Aotearoa/NZ the scope of death and disease caused by the transport system currently is substantial and, compared to global peers, extremely high. From estimates of the health damage caused annually by the transport system (and all estimates tend to be highly conservative), we know:

- Health loss from transport sourced PM_{2.5} (one of the two main transport air pollutants), injury and physical inactivity is comparable to health loss from tobacco or obesity and results in billions of dollars needing to be spent by the health system. Transport-related health loss contributes 2-3% of the differences in life expectancy between Māori and non-Māori in Aotearoa/NZ.²⁶
- Recent Aotearoa/NZ-specific estimates of the health effects of transport related NO_x (nitrogen oxides, the other main transport sourced air pollutant) air pollution show that, annually, 2000 premature deaths are caused just from this pollutant alone, along with at least 8,500 hospitalisations and 13,000 episodes of asthma in children.²⁷ These are globally extreme figures for the level of NO_x related health harm.²⁸
- One assessment suggested transport related noise causes around 60 deaths annually in Aotearoa/NZ.²⁹

These health harms have significant economic impacts. The annual social costs of the health impacts of air pollution from motor vehicles is estimated as >\$10.5bn.²⁷

Greenhouse gas emissions from the transport sector in Aotearoa/NZ cause further health loss, through climate change. Climate change itself is considered one of the greatest health challenges of the 21st century. Climate change will impact on a wide range of health conditions through direct weather events (e.g. floods, landslides), changed ecosystems (e.g. reduced food yields causing price increases and reduced intake) and indirect effects (e.g. loss of employment, forced migration).³⁰

These substantive health consequences of the current transport system are not inevitable; they are the result of specific policy choices that have been made in preceding decades. The proposed GPS 2024 will worsen the health harms caused by the current transport system.

The implications of the draft GPS 2024 for health and health equity

Table 1 below outlines in detail how the policies in the draft GPS 2024 will impact on the main pathways to health. Broadly speaking, the draft GPS 2024 takes an extremely narrow view of health, focussing solely on injury, with no mention of other pathways to health such as transport related air pollution, physical inactivity and noise pollution. Climate change is mentioned briefly but the draft GPS 2024 fails to articulate a plausible approach to reducing transport emissions and thus avoid the

adverse health (and economic) consequences of transport emissions. Transport equity and exclusion are not mentioned at all. *In summary, the draft GPS 2024 outlines policies that erode the current health benefits from active transport, fails to deal with current health harms and will likely exacerbate health harms in the short and long term.*

The existing evidence suggest that the policies and approach outlined in the GPS:

- May increase vehicle deaths and serious injuries.
- Will increase walking and cycling deaths and serious injuries.
- Will reduce transport-related physical activity.
- Will increase transport sourced air pollution.
- May increase noise pollution.
- Will increase transport exclusion for a range of different groups.
- Will result in failure to meet the transport greenhouse gas emission targets towards net zero by 2050.

Table 1 Impact of draft GPS 2024 policies on key pathways to health from the transport system

Pathway to health	Key relevant policies in the draft GPS 2024	Likely impact on health outcomes	Comment
Deaths and serious injuries (DSIs)	<ul style="list-style-type: none"> • Focus on building 15 new roads of national significance to a high safety standard • Increased policing and enforcement of traffic offences e.g. speeding • Increasing financial impact of traffic offences • Public road safety education • Low-cost road infrastructure improvements e.g. rumble lines • Improving vehicle safety standards • Removal of speed limit reductions that had been put in place • Making it more difficult to reduce speed limits • Increasing speed limits on some roads • Likely increase in light and heavy vehicle kilometres travelled (VKT) over time • Removal of existing policies aiming to reduce VKT • Reduction in rail investment expected to encourage more heavy freight to roads, with associated increased risk of DSI & air pollution exposure 	<p>May result in a net increase in vehicle DSIs. The collection of policies outlined are likely to have different effects, with some policies increasing the overall risk while others decrease it. The forecast increase in light and heavy vehicle VKT, reduction of rail investment with associated shifting of freight to trucks, increase in speed limits, and removal of speed limit reductions are likely to increase risks of vehicle DSIs. While some specific roads may be safer, they represent only a small fraction of the road network on which DSIs occur. Police enforcement may reduce some DSIs. Collectively we consider these policies are more likely to result in net increases in vehicle DSIs than reduce them.</p> <p>Walking and cycling DSIs: will increase due to increased speed limits, increased car and truck VKT and failure to provide safe infrastructure for walking and cycling (outlined below).</p>	<p>Increasing financial penalties for road traffic offences is likely to create a pathway to the criminal justice system that disproportionately impacts young Māori men.</p> <p>Nearly 90 percent of those killed in heavy vehicle crashes are not the occupants, but the other road users involved so any policies to increase heavy vehicle VKT will have an outsize effect on DSIs in other modes.³¹</p> <p>VKT and speed limits are both particularly important for DSIs. The removal of current VKT reduction policies, policies that will create higher light and heavy vehicle VKT, alongside increasing speed limits are particularly concerning.^{32,33}</p>
Physical inactivity	<ul style="list-style-type: none"> • Congestion charging • Activity class funding for walking and cycling reduced compared to previous GPS • Restrictions on what activity classes can be spent on (i.e. road 	<p>Will increase ill health and years of life lost from physical inactivity (and associated health-care costs) through:</p> <ul style="list-style-type: none"> • direct reduction in current levels of walking and cycling and public transport (which has physical activity associated with trips at each end) through policies that increase the price of 	<p>There is some evidence that congestion charging <i>may</i> increase walking, cycling and public transport use,³⁴ however the other policies encouraging vehicle VKT will likely cancel out any positive impacts of congestion charging.</p>

Pathway to health	Key relevant policies in the draft GPS 2024	Likely impact on health outcomes	Comment
	<p>money cannot be spent on multimodal improvements on a transport corridor)</p> <ul style="list-style-type: none"> • Requirement that walking and cycling funding is only used where demand already exists • Reduction in public transport funding • Increase in farebox recovery requirements for public transport (which will increase public transport fares) • Restrictions on spending road safety money on traffic calming measures • Requirement for walking and cycling activities to 'undergo robust consultation' while other activities (including road building) are not subject to the same requirement 	<p>public transport and make current walking and cycling less feasible due to increasing vehicle speeds.</p> <ul style="list-style-type: none"> • Failure to use evidence-based approaches to increase walking and cycling because policies outlined will prevent or delay building of new walking, cycling and public transport infrastructure. 	<p>We note that there is already strong demand and high levels of support for walking and cycling infrastructure by both adults and children in Aotearoa/NZ to allow them to walk and cycle. For example, Aotearoa/NZ Transport Agency survey data from 2022 shows that 68% of people support cycling.³⁵ Children also consistently report that they want to travel to school by foot or bike.^{36,37}</p>
Air pollution exposure	<ul style="list-style-type: none"> • Policies promoting road building • Policies shifting funding from PT, walking and cycling • Reduction in rail investment • Assumption of increased VKT/removal of VKT reduction policies 	<p>Likely increase air pollution as a result of increasing light and heavy vehicle VKT and shift of freight to roads away from rail. Road building is likely to increase driving and lead to increase in air pollution. Reducing funding for walking, cycling and public transport may result in more driving and worsening air pollution in urban areas.</p>	<p>Additionally, the removal of the clean car discount and any weakening of emissions standards will result in more deaths, hospitalisations and missed days of school or work.</p>
Noise pollution	<ul style="list-style-type: none"> • Policies promoting road building • Policies shifting funding from public transport, walking and cycling 	<p>Likely increase noise pollution as a result of increasing light and heavy vehicle VKT and increasing speeds in some locations. Road building is likely to increase driving and lead to increase in noise pollution exposure. Reducing funding for walking, cycling and public transport may result in more driving and increased noise pollution exposure in urban areas.</p>	
Transport exclusion	<ul style="list-style-type: none"> • Increase in public transport farebox recovery 	<p>Will worsen transport inequity and increase ill health and years of life lost for disadvantaged groups through:</p> <ul style="list-style-type: none"> • Less access to the benefits of transport 	<p>Not all New Zealanders own a car, have a driver's licence or are able to drive a car. The GPS 2024 provides minimal transport investment for those who do not own or cannot drive a car.</p>

Pathway to health	Key relevant policies in the draft GPS 2024	Likely impact on health outcomes	Comment
	<ul style="list-style-type: none"> De-prioritisation of cycling, walking and public transport modes. 	<ul style="list-style-type: none"> More financial stress paying for public transport or being forced into car ownership due to lack of other options. Reduced access to employment, healthcare, whanau and friends. Poorer mental health as a result of the above. 	
Climate change	<ul style="list-style-type: none"> Reliance on ETS as main policy measure to reduce transport emissions. Installation of up to 10,000 new public electric vehicle chargers by 2030 pending cost benefit analysis Reduction in funding for interregional rail Other policies aimed to increase car dependence and road freight Assumption of increased VKT/removal of VKT reduction policies. Increased speed limits 	<p>These are not plausible policies to address transport emissions. Modelling from He Pou a Rangī/Climate Change Commission has already identified that the ETS alone is inadequate to reduce transport emissions and even with a comprehensive range of policies to incentivise electric car uptake and shift mode to walking, cycling and public transport, a large reduction in VKT is needed to meet Aotearoa/NZ's committed goal for 2030 under the global Paris Agreement, and legislated goal of net zero by 2050.^{38,39}</p>	<p>Removal of the clean car discount and any weakening of the clean car standards will also cause more greenhouse gas emissions exacerbating climate change and associated health effects.</p> <p>There is reference in the draft GPS 2024 to the forthcoming Emissions Reduction Plan (ERP2). The silence about climate change in the draft GPS 2024, and the magnitude of additional emissions resulting from GPS 2024 creates significant risks of misalignment between GPS 2024 and the ERP2.</p> <p>Transport sector policy is recognised by most countries as vital to a comprehensive multi-sector mitigation policy mix, particularly as transport emissions commonly make up 20-40% of a country's overall GHG emissions. The IMF has warned that reliance on the ETS to bring down emissions is likely to be politically difficult or unacceptable.⁴⁰ Measures taken in the land transport sector can make a material contribution to the effectiveness and efficiency of Aotearoa/NZ's overall mitigation effort. If mitigation in the transport sector is minimal, it shifts weight to other sectors such as agriculture which may find mitigation more difficult.</p>

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References

1. Glazener A, Sanchez K, Ramani T, et al. Fourteen pathways between urban transportation and health: A conceptual model and literature review. *J Transp Health* 2021; **21**: 101070.
2. Shaw C, Tiatia-Seath J. Travel inequities experienced by Pacific peoples in Aotearoa/New Zealand. *Journal of Transport Geography* 2022; **99**: 103305.
3. Mihaere S, Smith M, Jones R. The importance of culturally safe active school travel options to enable tamariki Māori to flourish. A narrative review and model. *MAI Journal* in press; **13**.
4. Hosking J, Ameratunga S, Exeter D, Stewart J, Bell A. Ethnic, socioeconomic and geographical inequalities in road traffic injury rates in the Auckland region. *Aust N Z J Public Health* 2013; **37**(2): 162-7.
5. Raerino K, Macmillan AK, Jones Ngati Kahungunu RG. Indigenous Maori perspectives on urban transport patterns linked to health and wellbeing. *Health Place* 2013; **23**: 54-62.
6. Shaw C, Russell M, Keall M, et al. Beyond the bicycle: Seeing the context of the gender gap in cycling. *J Transp Health* 2020; **18**: 100871.
7. Gage R, Mizdrak A, Richards J, et al. The Epidemiology of Domain-Specific Physical Activity in New Zealand Adults: A Nationally Representative Cross-Sectional Survey. *Journal of Physical Activity and Health* 2023: 1-12.
8. Ministry of Transport. Transport Indicators 2022. <https://www.transport.govt.nz/statistics-and-insights/transport-indicators> (accessed 16 June 2022).
9. Centre for Public Health Research. Environmental Health Indicators New Zealand: Road traffic injury mortality in New Zealand. 2022. <https://www.ehinz.ac.nz/indicators/transport/road-traffic-injury-deaths-and-hospitalisations/>.
10. Ministry of Health. Annual Data Explorer 2018/19: New Zealand Health Survey [Data File]. 2019. <https://minhealthnz.shinyapps.io/nz-health-survey-2018-19-annual-data-explorer/> (accessed 17 June 2020).
11. Statistics New Zealand. Motor vehicles, and phones, fax, and Internet. 2013. http://archive.stats.govt.nz/Census/2013-census/profile-and-summary-reports/ethnic-profiles.aspx?request_value=24705&tabname=Motorvehicles,andphones,fax,andInternet#gsc.tab=0 (accessed 12 October 2020).
12. Bull FC, Al-Ansari SS, Biddle S, et al. World Health Organization 2020 guidelines on physical activity and sedentary behaviour. *Br J Sports Med* 2020; **54**(24): 1451-62.
13. Physical Activity Guidelines Advisory Committee. 2018 Physical Activity Guidelines Advisory Committee Scientific Report. Washington, DC: U.S. Department of Health and Human Services, 2018.
14. Wilson OWA, Ikeda E, Hinckson E, et al. Results from Aotearoa New Zealand's 2022 Report Card on Physical Activity for Children and Youth: A call to address inequities in health-promoting activities. *J Exerc Sci Fit* 2023; **21**(1): 58-66.
15. Ministry of Health. Annual Data Explorer 2021/22: New Zealand Health Survey [Data File]. 2023. https://minhealthnz.shinyapps.io/nz-health-survey-2021-22-annual-data-explorer/#/w_3543bd29/#!/explore-indicators (accessed 23 March 2023).
16. Institute for Health Metrics and Evaluation. Global Burden of Disease Study: GBD Compare VizHub. University of Washington; 2024.
17. Shaw C, Keall M, Guiney H. What modes of transport are associated with higher levels of physical activity? Cross-sectional study of New Zealand adults. *J Transp Health* 2017; **7**: 125-33.
18. Martin A, Boyle J, Corlett F, Kelly P, Reilly JJ. Contribution of Walking to School to Individual and Population Moderate-Vigorous Intensity Physical Activity: Systematic Review and Meta-Analysis. *Pediatr Exerc Sci* 2016; **28**(3): 353-63.
19. Sport New Zealand. Active NZ 2019 Participation Report. Wellington: Sport New Zealand, 2020.
20. Wanjau MN, Dalugoda Y, Oberai M, et al. Does active transport displace other physical activity? A systematic review of the evidence. *J Transp Health* 2023; **31**: 101631.

21. Bassett D, Hosking J, Ameratunga S, Woodward A. Variations in the health benefit valuations of active transport modes by age and ethnicity: A case study from New Zealand. *J Transp Health* 2020; **19**: 100953.
22. Lindsay G, Macmillan A, Woodward A. Moving urban trips from cars to bicycles: impact on health and emissions. *Aust N Z J Public Health* 2011; **35**(1): 54-60.
23. Ministry of Transport. Domestic Transport Costs and Charges (DTCC) Study – Main Report, Prepared by Ian Wallis Associates Ltd. Wellington Te Manatū Waka Ministry of Transport 2023.
24. Mytton OT, Panter J, Ogilvie D. Longitudinal associations of active commuting with wellbeing and sickness absence. *Preventive Medicine* 2016; **84**: 19-26.
25. Hendriksen IJM, Simons M, Garre FG, Hildebrandt VH. The association between commuter cycling and sickness absence. *Preventive Medicine* 2010; **51**(2): 132-5.
26. Randal E, Shaw C, McLeod M, Keall M, Woodward A, Mizdrak A. The Impact of Transport on Population Health and Health Equity for Maori in Aotearoa New Zealand: A Prospective Burden of Disease Study. *Int J Environ Res Public Health* 2022; **19**(4): 2032.
27. Kuschel G, Metcalfe J, Sridhar S, et al. Health and air pollution in New Zealand 2016 (HAPINZ 3.0): Volume 1 –Finding and implications. Wellington: Ministry for the Environment, Ministry of Health, Te Manatū Waka Ministry of Transport and Waka Kotahi NZ Transport Agency, 2022.
28. Hales S, Atkinson J, Metcalfe J, Kuschel G, Woodward A. Long term exposure to air pollution, mortality and morbidity in New Zealand: Cohort study. *Science of The Total Environment* 2021; **801**: 149660.
29. Briggs D, Mason K, Borman B. Rapid Assessment of Environmental Health Impacts for Policy Support: The Example of Road Transport in New Zealand. *Int J Environ Res Public Health* 2015; **13**(1): ijerph13010061.
30. Romanello M, Napoli Cd, Green C, et al. The 2023 report of the Lancet Countdown on health and climate change: the imperative for a health-centred response in a world facing irreversible harms. *The Lancet* 2023.
31. Ministry of Transport. Road Safety Strategy - Vehicles, Vehicle Standards and Certification Reference Group Outcomes Report Wellington: Ministry of Transport, 2019.
32. Litman T, Fitzroy S. Safe Travels: Evaluating Transportation Demand Management Traffic Safety Impacts Victoria: VTPI, 2024.
33. Speed management: a road safety manual for decision-makers and practitioners, second edition. Geneva: Global Road Safety Partnership, International Federation of Red Cross and Red Crescent Societies, , 2023.
34. Brown V, Moodie M, Carter R. Congestion pricing and active transport – evidence from five opportunities for natural experiment. *J Transp Health* 2015; **2**(4): 568-79.
35. Waka Kotahi/New Zealand Transport Agency. Understanding attitudes and perceptions of cycling & walking. Wellington: New Zealand Transport Agency 2022.
36. Hinckson E. Perceived challenges and facilitators of active travel following implementation of the School Travel-Plan programme in New Zealand children and adolescents. *J Transp Health* 2016; **3**(3): 321-5.
37. Egli V, Mackay L, Jelleyman C, Ikeda E, Hopkins S, Smith M. Social relationships, nature, and traffic: findings from a child-centred approach to measuring active school travel route perceptions. *Children's Geographies* 2020; **18**(6): 667-83.
38. He Pou a Rangi/Climate Change Commission. 2023 Draft advice to inform the strategic direction of the Government's second emissions reduction plan. Wellington He Pou a Rangi/Climate Change Commission, 2023.
39. He Pou a Rangi/Climate Change Commission. Ināia tonu nei: a low emissions future for Aotearoa. Wellington Climate Change Commission, 2021.
40. Pullar-Strecker T. NZ won't meet 2030 emissions promise without further action, IMF warns. . 2023. <https://www.stuff.co.nz/business/132817501/nz-wont-meet-2030-emissions-promise-without-further-action-imf-warns> (accessed 21 March 2024).