



Hamilton City Council – Staff Feedback

Travel Demand in New Zealand 2050 – Consultation on a Topic for a Long-Term Insights Briefing

Ministry of Transport

18 September 2024



Hamilton
City Council
Te kaunihera o Kirikiriroa

Improving the Wellbeing of Hamiltonians

Hamilton City Council is focused on improving the wellbeing of Hamiltonians through delivering to our five priorities of shaping:

- **A city that's easy to live in**
- **A city where our people thrive**
- **A central city where our people love to be**
- **A fun city with lots to do**
- **A green city**

The topic of this staff feedback is aligned to all of Hamilton City Council's five priorities.

Council Approval and Reference

This staff feedback was approved by Hamilton City Council's Chief Executive on 18 September 2024.

Feedback # 773

It should be noted that the following feedback is from staff at Hamilton City Council and does not therefore necessarily represent the views of the Council itself.

Key Messages and Recommendations

1. We note that a number of international studies indicate that land use factors can have significant impacts on travel patterns, but that current transportation models are not accurate at predicting their effects.
2. We agree that the following improvements are needed to allow existing models to evaluate land use management strategies (Rosenbaum and Koenig, 1997):
 - Analyse land use at finer spatial resolutions, such as census tracts or block levels.
 - Determine the effects of special land use features, such as pedestrian-friendly environments, mixed-use development, and neighbourhood attractiveness.
 - Determine relationships between mixed-use development and travel mode selection.
 - Improved methods for analysing trip chaining.
 - Improve the way temporal choice (i.e., when people take trips) is incorporated into travel models.
3. **Overall Question: What are the drivers and trends that will most directly influence demand for land-based transport in New Zealand over the next 25 years, and what are the range of feasible options for responding to this demand?**
4. We believe the drivers and trends that will most directly influence demand for land-based transport in New Zealand over the next 25 years are detailed in:
 - [Arataki](#) and NZTA's "[Long Term View Think Piece](#)".
 - The extensive work of Todd Littman.
 - 'The Aotearoa Circle's' [Climate Change Scenarios \(Transport\)](#).
5. **Question 1: Do you agree that 'travel demand in New Zealand in 2050' is a worthwhile topic for the Ministry's LTIB?**
6. Yes, we agree that 'Travel Demand in New Zealand in 2050' is a worthwhile topic for the Ministry of Transport's LTIB.
7. **Question 2: Do you agree that a time horizon of 25 years is appropriate?**
8. We agree that the Ministry of Transport's LTIB should focus on travel demand in 2050, primarily to align with other key national timeframes such as the climate change target of net zero by 2050.
9. **Question 3: Do you agree that the scope should be limited to demand for land-based transport?**
10. We agree that the scope should be limited to demand for land-based transport. This aligns with Arataki, LTMA 2003, and the GPS Land Transport 2024, and ensures land use planning and the transport system are integrated, communities are well-connected and there is easy access to education, employment, and essential services.

11. **[Question 4: Which drivers and trends are likely to have the most direct influence on demand for land-based transport over the next 25 years? What data and information about those drivers and trends should we draw on to create a baseline scenario for 2050?](#)**
12. The work led by 'The Aotearoa Circle' on [Transport Sector climate change scenarios](#) provides valuable insights for the proposed Long Term Insights Briefing. The future scenarios of what moving people and goods may look like in 2050 under three different global climate change responses include potential differences in oil price, carbon price and types of travel modes by households, and freight. The changes in climate and global, national, and local climate responses have the potential to significantly influence land-based transport.
13. The impact of higher density commercial and residential development, together with organisations increasingly seeking fewer car trips for their employees, will be significant by 2050 and should all be taken into account.
14. Mode choice by age group should also be factored into the projected shift in age distribution.
15. **[Question 5: Given the uncertainty around the pace, scale and type of technological advancement, how should our analysis of future scenarios factor in technology?](#)**
16. We recommend taking a cautionary, principled approach to the analysis of future scenarios when factoring in technology, and not over-relying on predictions or assumptions about the development, market availability, financial impact, uptake, or effectiveness of technology. History confirms significant uncertainty with the speed of technological advancement.
17. The model should be using new technology for trip data collection such as ANPR for detailed vehicle class, and origin-destination (by monitoring the same number plate), together with camera analytics, and new AI techniques for cleaning and modelling complex datasets such as cellular movements.
18. **[Question 6: If we model alternative scenarios for 2050, which key assumptions do you think we should alter from a baseline scenario? \(For example, assumptions about overall population growth, assumptions about geographic population distribution etc.\)](#)**
19. Future climate scenarios and low-carbon transition approaches should form part of the alternative scenarios for 2050. 'The Aotearoa Circle' work on [Transport Sector climate change scenarios](#) could be integrated into these alternative scenarios.
20. We believe the challenge is to not oversimplify in a national-based model. We recommend ensuring that any modelling is able to input the varied challenges for different places, both in their local drivers, geographical, funding, political appetite and readiness for change, rather than taking a 'one size fits all'/national approach. Moving people and freight varies between urban, rural, and interregional levels.

Introduction

21. Hamilton City Council staff welcome the opportunity to provide feedback to the Ministry of Transport's **Travel Demand in New Zealand 2050 – Consultation on a Topic for a Long-Term Insights Briefing**.

22. The Ministry of Transport's current Long-Term Insights Briefing (LTIB) topic is **Travel Demand in New Zealand 2050**, with the LTIB responding to the following question:

“What are the drivers and trends that will most directly influence demand for land-based transport in New Zealand over the next 25 years, and what are the range of feasible options for responding to this demand?”

23. The response from Hamilton City Council staff to this overall question is underpinned by our feedback to the six key consultation questions outlined in the Ministry of Transport's 20 August 2024 consultation document **Travel Demand in New Zealand 2050 – Consultation on a Topic for a Long-Term Insights Briefing**.

Modelling Land Use Impacts on Travel Behaviour

24. Several studies have examined the ability of transportation and land use models to predict the effects of land use management strategies on travel behaviour (Cambridge Systematics, 1994; Frank and Pivo, 1995; Rosenbaum and Koenig, 1997; USEPA, 2001; Hunt and Brownlee, 2001; OTREC 2009).

25. These studies indicate that land use factors can have significant impacts on travel patterns, but that current transportation models are not accurate at predicting their effects.

26. Most travel surveys undercount non-motorised trips (since they often ignore short trips, travel by children, and walking links of motorised trips), and most models use analysis zones that are too large to capture small-scale design features (see discussion in [Evaluating Nonmotorized Transport](#)). As a result, the models are unable to predict the full travel impacts of land use management strategies such as [Pedestrian and Cycling Improvements](#).

27. Current transportation models tend to incorporate relatively little information on many of the land use features that affect travel behaviour, such as fine-scale analysis of land use mix and pedestrian conditions.

28. We agree that the following improvements are needed to allow existing models to evaluate land use management strategies (Rosenbaum and Koenig, 1997):

- Analyse land use at finer spatial resolutions, such as census tracts or block levels.
- Determine effects of special land use features, such as pedestrian-friendly environments, mixed-use development, and neighbourhood attractiveness.
- Determine relationships between mixed-use development and travel mode selection.
- Improved methods for analysing trip chaining.
- Improve the way temporal choice (i.e., when people take trips) is incorporated into travel models.

29. **Overall Question: What are the drivers and trends that will most directly influence demand for land-based transport in New Zealand over the next 25 years, and what are the range of feasible options for responding to this demand?**

30. We believe the drivers and trends that will most directly influence demand for land-based transport in New Zealand over the next 25 years are detailed in the following references:

- The [Strategic context of Arataki](#) has full guidance on how we'll move in the future, as well as information on key drivers for future change, and the challenges and opportunities for transport outcomes.

- The [long-term view think piece](#) that the NZTA published in 2018.
 - The work of Todd Littman:
 - [Land use impacts on transport](#): May 2024.
 - [Transport demand](#) (specifically Table 1).
 - [Land use evaluation and transport decisions.](#)
 - [The Future Isn't What It Used To Be - Changing Trends and Their Implications for Transport Planning](#) (specifically Table 1).
 - The work led by 'The Aotearoa Circle' [on Climate Change Scenarios \(Transport\)](#).
 - The chapter [How transport demand will change by 2050](#) in the ITF Transport Outlook 2019.
31. Improved demand analysis considers a wide range of factors that influence travel activity. This is important for Travel Demand Management planning, which requires information on factors that influence transport activities, such as:
- People's willingness to use [Non-motorized Modes](#), such as walking and cycling. Why is cycling much more common in some communities than others? To what degree does non-motorised travel substitute for automobile travel?
 - People's willingness to use [Public Transit](#) (Karash, et al). What transit service improvements and complementary strategies are most effective at [Encouraging Public Transit](#) travel? To what degree does the increased transit travel substitute for automobile travel?
 - Household and business location decisions, and what strategies can encourage [Location Efficient Development](#)?
 - The effects of incentives such as [Road Pricing](#), [Parking Pricing](#) and [Fuel Taxes](#) on travel behaviour.
 - Factors influencing employer policies regarding [Flextime](#) and [Telecommuting](#).
 - How integrated [TDM Programs](#), which include a combination of service improvements and incentives, affect transport activities.
32. [Question 1: Do you agree that 'travel demand in New Zealand in 2050' is a worthwhile topic for the Ministry's LTIB?](#)
33. We agree that 'Travel Demand in New Zealand in 2050' is a worthwhile topic for the Ministry of Transport's LTIB.
34. [Question 2: Do you agree that a time horizon of 25 years is appropriate?](#)
35. We agree that the Ministry of Transport's LTIB should focus on travel demand in 2050. Alignment with other national timeframes, such as the goal of net zero by 2050, is critical to ensure that there is national consistency.
36. The time horizon of 25 years is also important as the LTIB needs to consider what is happening in the energy sector, noting energy is so significant for transport.
37. [Question 3: Do you agree that the scope should be limited to demand for land-based transport?](#)
38. We agree that that the scope should be limited to demand for land-based transport. This aligns with Arataki, LTMA 2003, and the GPS Land Transport 2024, and ensures land use planning and the transport system are integrated, communities are well-connected and there is easy access to education, employment, and essential services.
39. Land-based transport is also contributing to over 90% of transport related emissions (light fleet 62.8%, heavy fleet 28.2% and rail 0.9% according to the draft Second Emissions Reduction Plan).

40. A focus on land-based transport will inform policy and legislative changes that may influence land-based travel demand, identify if and what changes may be beneficial, and direct funding to appropriate focus areas that bring the biggest return on investment.
41. **[Question 4: Which drivers and trends are likely to have the most direct influence on demand for land-based transport over the next 25 years? What data and information about those drivers and trends should we draw on to create a baseline scenario for 2050?](#)**
42. The work led by 'The Aotearoa Circle' on [Transport Sector climate change scenarios](#) provides valuable insights for the proposed LTIB. The future scenarios of what moving people and goods may look like in 2050 under three different global climate change responses include potential differences in oil price, carbon price and types of travel modes by households, and freight. The changes in climate and global, national, and local climate responses have the potential to significantly influence land-based transport.
43. The impact of higher density commercial and residential development should be factored in. Organisations will increasingly be seeking fewer car trips for their employees by promoting alternatives such as bus cards, in-house bike and scooter fleets, remote meetings, removing work supplied vehicles, and providing fewer or no carparks. These changes will be significant by 2050 and should all be taken into account.
44. Mode choice by age group should also be factored into the [projected shift in age distribution](#) (e.g. 2050 [here](#)). The share of people aged 65+ is projected to increase from 15% to 28% of the population by 2073. This could be factored into the model using the measured mode share of those users – higher bus and train patronage, T2+ car trips/increased occupancy (carer/relative driving them), and perhaps less active mode trips.
45. **[Question 5: Given the uncertainty around the pace, scale and type of technological advancement, how should our analysis of future scenarios factor in technology?](#)**
46. We recommend taking a cautionary, principled approach to the analysis of future scenarios when factoring in technology, and not over-relying on predictions or assumptions about the development, market availability, financial impact, and uptake or effectiveness of technology. History confirms significant uncertainty with the speed of technological advancement.
47. Given the uncertainty around the pace, scale, and type of technological advancement, we recommend that modelling focus on incentivising technological advancement rather than waiting for their delivery.
48. Todd Littman's paper [The Future Isn't What It Used To Be: Changing Trends And Their Implications For Transport Planning](#) has a good summary and statement (page 21):

"...some commonly promoted modes – sometimes called hype mode – such as autonomous vehicles, flying cars and pneumatic tube transport, are likely to have more limited applications, higher costs and more limited benefits than optimists predict, while new technologies that support resource efficient modes, such as e-bikes, public transit service improvements and efficient road and parking pricing, provide the greatest total benefits".
49. The model should be using new technology for trip data collection such as ANPR for detailed vehicle class, and origin-destination (by monitoring the same number plate), together with camera analytics, and new AI techniques for cleaning and modelling complex datasets such as cellular movements.
50. The model should have an accurate 'current state' to provide confidence in its ability to predict future scenarios.
51. The model should also be using modern ML/AI techniques with the ability to learn from past policy and infrastructure changes to predict what may happen for a similar future change (e.g. new separated cycle lanes + traffic calming increased cyclists by x on a given street, reduced cars by y, and increased traffic on nearby streets by z).

52. **[Question 6: If we model alternative scenarios for 2050, which key assumptions do you think we should alter from a baseline scenario? \(For example, assumptions about overall population growth, assumptions about geographic population distribution etc.\)](#)**
53. Future climate scenarios and low carbon transition approaches should form part of the alternative scenarios for 2050. As noted in Question 4, 'The Aotearoa Circle' work on [Transport Sector climate change scenarios](#) could be integrated into these alternative scenarios.
54. New Zealand faces a complex set of land transport challenges, such as rugged topography, dispersed population centres and heavy reliance on road networks. These challenges vary considerably across the country.
55. We believe the challenge is therefore to not oversimplifying this in a national-based model. We recommend ensuring that any modelling is able to input the varied challenges for different places, both in their local drivers, geographical, funding, political appetite and readiness for change, rather than taking a 'one size fits all'/national approach. Moving people and freight varies between urban, rural and interregional levels.
56. We ask that the model be inclusive of accessibility modelling and that gaps in the data (what trips are not taken - what are the barriers?) are considered. Are the data sources asking the right questions to appropriately inform the modelling?
57. We recommend drawing on other socio-economic parameters and resources to help strengthen blind spots (reference [Transport Sector climate change scenarios](#) Appendix G - Climate Change Scenarios and Appendix H - Drivers and Descriptions).

General Comments

58. We recommend that the model is updated regularly and that it continues to evolve to reflect modelling development.
59. Given the input data and validation being used, we believe that the model should perform well at a regional or local authority level to inform travel between these zones and forecast future demand from new developments and land use changes.
60. We would like to see current model output for certain Origin-Destination pairs within Hamilton, both to check against the trip data we collect in Hamilton and to start discussions around utilising a broader range of detailed trip data to inform the current state of the model, if that's a feasible task. We realise this is difficult to integrate for a nationwide model and that every city will collect different data. It would be helpful to understand if the model currently generates 'reasonable/sensible' trips, for example, the count of destinations for a given origin, and the routes those trips are taking. We are happy to pass on any of our datasets for the Ministry of Transport to investigate against the national agent-based transport model output.
61. Heatmaps for Hamilton showing trip counts from the national agent-based transport model have a few 'holes' when looking at street level volumes. The national agent-based transport model seems to put trips down lower volume roads because they were a shorter distance, and roads such as Fairfield Bridge and Gordonton Road had higher volumes than we have measured.
62. In general, we are interested in seeing how the national agent-based transport model is validated using actual count and trip data. We can see from past reports that EROAD, 'traffic counts' (presumably tubes, and maybe detector counts?), and patronage are used, and a reference to cellular data being utilised, which will be a good source. We would be interested to know if there is there a specific algorithm used to test the model output against observed real-world data.

63. We believe there is a lack of detailed trip data for walking and cycling and wonder if counts from the simulations for these modes are being checked against all available counters. NZTA reads most of the active mode counter data, but Hamilton has about 40 devices that don't feed up to NZTA yet. Overall, we would like to hear about validation for walking and cycling trips, and how the Origin-Destination pairs and routes are being generated.

Further Information and Opportunity to Discuss Our Feedback

64. Should the Ministry of Transport require clarification of the feedback from Hamilton City Council staff, or additional information, please contact **Glenn Bunting** (Urban Integration Principal, Transport – Plan, Strategy and Programming) on **021 962 829**, or email glenn.bunting@hcc.govt.nz in the first instance.
65. We would also welcome the opportunity, if available, to discuss our feedback with the Ministry of Transport.

Yours faithfully



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