



NZTA research summary

October 2024

Assessing the relationship between the sustainability of urban form and transport in Aotearoa New Zealand

Integrated transport and land-use planning is recognised as a critically important component of reducing transport emissions and creating an urban environment that achieves broader social, economic and environmental outcomes. While international studies have demonstrated these benefits, the necessary pre-conditions required to achieve them in Aotearoa New Zealand are not well understood.

What was done

The research was carried out between July 2022 and September 2023 with the aim to address this knowledge gap and enhance understanding of the relationship between the sustainability of urban form and transport in New Zealand.

The research methods used to achieve this were:

- a literature review of the impacts of different types and mixes of urban form and transport on sustainability and on New Zealand's other core transport outcomes
- interviews with key stakeholders and practitioners involved in integrated transport and land-use planning in New Zealand
- digital 'conversations' with the general public about the barriers and opportunities to achieving sustainable transport outcomes through integrated transport and land-use planning using FranklyAI (a conversational tool that utilises artificial intelligence to gather opinions and feedback)
- exploring a methodology and concept design for a tool that can quantify the relationship between transport emissions and regional spatial plans/changes in urban form at a regional scale – a sketch planning tool was chosen as the preferred approach to a tool development framework.

Literature review

The literature review identified that sustainable urban form is characterised by compactness, mixed land uses, interconnected street layouts, proximity to transportation nodes and accessible green spaces. When developed in conjunction, these elements reduce vehicle kilometres travelled and achieve broader social, economic and environmental outcomes. Spatial planning is seen as an effective tool to plan and coordinate infrastructure. However, a body of international research suggests that spatial planning alone will not result in a sustainable urban form. Rather, an integrated approach to spatial and transport planning processes is needed.



Interviews and digital conversations

The researchers undertook eight interviews with representatives from local and central government, iwi and the private property development industry, asking a range of questions broadly relating to urban form, residential density, housing preferences, COVID-19 impacts on housing and transport preferences, delivering successful integrated transport and land-use planning, broader outcomes, property development, iwi-led development and papakāinga.

They conducted approximately 135 online conversations with the public. FranklyAI's conversational (chatbot) functionality was employed to gather insights, explore different perspectives and develop a better understanding of:

- the reasons why people travel in and around their communities
- the factors required to increase uptake of public transport and active modes
- the impacts of different typologies on communities.

In particular, the FranklyAI conversations identified a number of barriers to mode shift (from private vehicles to sustainable transportation) regardless of how well integrated transport is with housing and urban development, which highlights the importance of other factors or pre-conditions to shift people's travel behaviour and realise wider benefits.

What was found

Integrated transport and land-use planning is likely to have the greatest impact on transport emissions reductions and other sustainable transport outcomes in New Zealand when combined with public transport and active mode environments that are matched to the form of development to reduce vehicle kilometres travelled. The researchers also identified the importance of a coordinated, systems and place-based approach to integrated transport and land-use planning in New Zealand that acknowledges the unique characteristics and challenges of places.

The identified pre-conditions for successful transport and land-use integration in New Zealand relate to four interconnected themes:

- Transport infrastructure, services, attitudes and preferences.
- Housing market, attitudes and preferences.
- Social infrastructure and local amenities.
- Legislation, regulations, funding and operations.

These pre-conditions are indicative and require further investigation and testing.

Recommendations

Based on the findings of this research, the researchers made a number of high-level recommendations on next steps for transport agencies (NZTA and local government planners and funders) to help achieve the pre-conditions required for successful integrated planning of transport and urban form in New Zealand. These are organised under four key action areas intended to help guide and inspire transport agencies to define and develop their role in integrated transport and land-use planning – influence, leadership, collaboration and facilitation.

- **Influence:** NZTA and local government have the advantage of having many interfaces with the public and private sectors and communities that it can leverage to influence the system and cultural/behavioural changes needed to achieve the pre-conditions identified in this research. NZTA and local government could play a larger role in educating, advocating and promoting the success of integrated transport and land-use projects to the general public.
- **Facilitation:** NZTA and local government can facilitate some of the pre-conditions identified in this research through their regulatory and operational functions, by making it easier and/or more viable for transport and land-use integration projects to reduce transport emissions and achieve broader sustainability outcomes.
- **Leadership:** NZTA and local government are system leaders for transport. Therefore, many organisations (both public and private) look to these transport agencies for guidance on how to execute transport projects. This presents many opportunities for transport agencies to model the behaviours, principles and processes necessary for transport and land-use integration projects to reduce transport emissions and achieve broader sustainability outcomes.
- **Collaboration:** The nature of the work of NZTA and local government means they have many opportunities to partner and collaborate with mana whenua, businesses, local authorities, communities and other central government agencies. Working together will be critical to achieving the system and cultural/behavioural changes that are necessary for transport and land-use integration projects to reduce transport emissions and achieve broader sustainability outcomes.

These action areas and recommendations have been developed for NZTA and local government as they have specific responsibilities for transport planning and funding. However, some may also be applicable and/or provide inspiration for other national and local planning organisations.

The researchers acknowledge that NZTA and local government do not have the levers to directly influence a lot of the pre-conditions identified in this research. However, to create change, they can indirectly influence a lot of the pre-conditions through the levers of advocacy, leadership and working with other public sector agencies such as Kāinga Ora and neighbouring local authorities. NZTA and local government can also seek to improve the existing systems and frameworks that they work within and investigate the identified pre-conditions further through additional research.



RR 726: *Assessing the relationship between the sustainability of urban form and transport in Aotearoa New Zealand.*

NZ Transport Agency Waka Kotahi research report.

Available at www.nzta.govt.nz/resources/research/reports/726