Strategic Planning Group

Ngāmotu Integrated Transport Framework

Te Kaunihera-ā-Rohe o Ngāmotu
New Plymouth District Council

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1.0 Integrated Transport Framework

Ngāmotu district is growing and changing, and we have a great chance to improve our transport system to meet future needs and adapt to climate change over time. The Ngāmotu Integrated Transport Framework (ITF) aims to help the Council and communities create a transport system that works for everyone over the next 30 years.

1.1 Background

New Plymouth district is one of the few districts of its size in the country without an adopted integrated transport strategy or framework. The Ngāmotu ITF provides the opportunity for transport decisions to be made which support our Sustainable Lifestyle Capital vision and deliver on our goals of thriving communities and culture, prosperity, and environmental excellence.

Taking this approach will allow New Plymouth district to incorporate the strategic intent and outcomes sought from the multiple local and national plans and ensure they are working together. This will benefit our community and businesses by ensuring our transport routes are efficient, resilient, productive and give our communities more choice about how they travel.

What is the ITF?

The ITF is a long-term strategic framework, specific to the New Plymouth district, to support transport planning decisions over the next 30 years. The key recommendations are based on modelling data that forecasts the future demands on the transport network created by population growth, land use and employment patterns.

The ITF pulls together the transport-related strategic intentions of the local, regional, and national strategies and plans into one place. It makes it easier to ensure the decisions to invest and actions to improve our transport network are joined up, delivered at the right time, and in the right order.

This framework assists the Council's decision-making on transport initiatives well into the future, and considers the costs, benefits and risks of future investment in transport.

While the ITF provides the big-picture overview, it is supported by two key technical documents:

- Ngāmotu ITF Programme business case, which provides the strategic, economic, financial, commercial and management justification for a 30-year programme of transport investment within the district,

- Ngāmotu Strategic Transport Model (the transport model) was developed to provide information about how the New Plymouth transport network performs now and how it is likely to perform in the future, with population growth, transport demand and employment trends considered.

Links to the technical documents are provided throughout this ITF.

Who was involved?

The ITF was subject to close collaboration with our key partners and more extensive engagement with stakeholders and the community through the different stages of its development.

Key Partners

The Council team worked closely with our key partners – NZTA, Taranaki Regional Council and Te Atiawa to understand a broad range of views and priorities in developing our options for transport. Close collaboration with our key partners is essential because responsibility is shared between New Plymouth district council, NZTA and TRC for funding and delivering the various transport initiatives in the district.

Stakeholders

Stakeholders include groups or people representing a range of different public or private sector groups (refer Fig. 1).

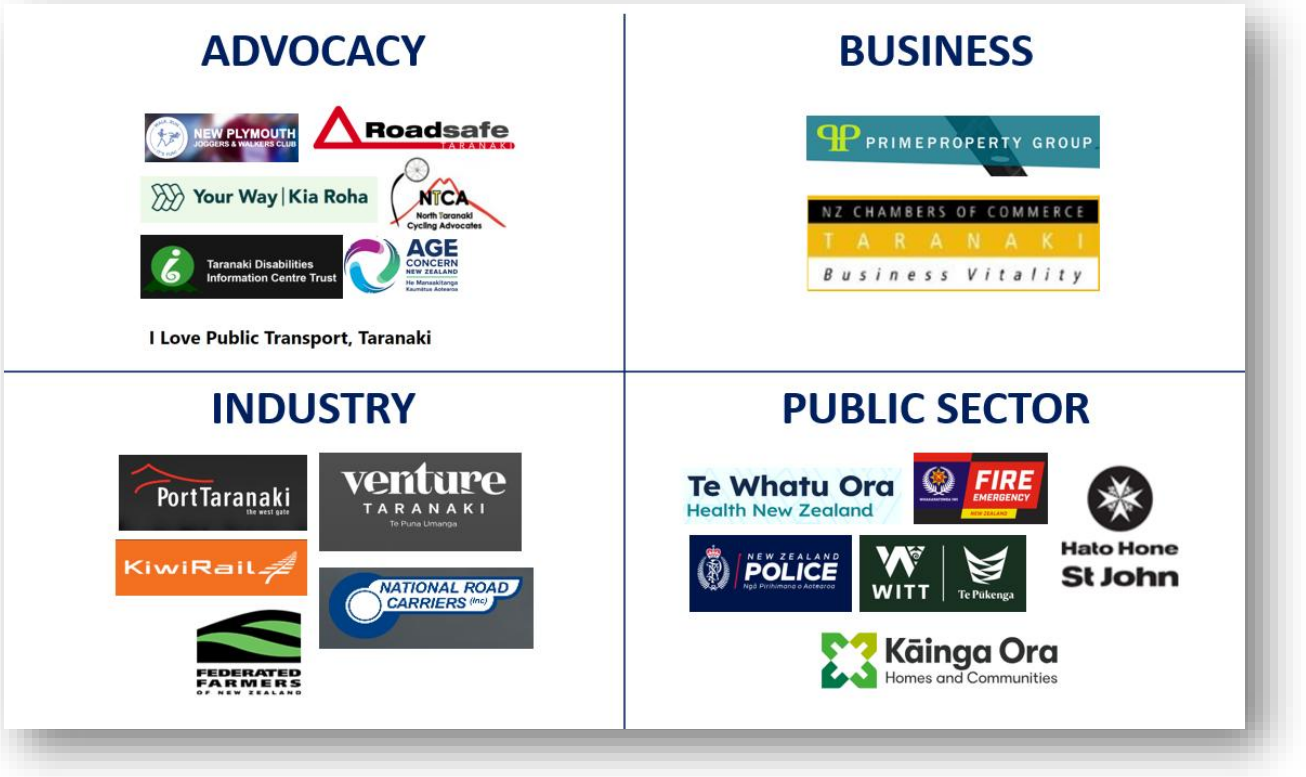

Fig. 1 – Stakeholders who contributed to the ITF

Community

The draft ITF was consulted on with the community in mid-2023 using both standard council consultation and a representative survey. This enabled a more balanced view of the diversity of community views on transport initiatives and priorities.

How did we develop the ITF?

The steps for developing the ITF involved:

- Collaboration between the project team and our key partners provided overall governance, common investment objectives and priorities that guided the process.
- Feedback from stakeholders and the community informed this process and help shape the priorities and the types of initiatives to consider.
- The application of tools and guidance such as the NZTA Early Assessment Sifting Tool, the Five Case programme business case template, Intervention Hierarchy, and Multi-criteria analysis,
- The development of the transport model enabled a long list of initiatives to be sifted down to a short list and develop different scenarios.
- The do minimum scenario was compared against four different scenarios (comprised of different initiatives) and assessed by the STM against key performance indicators to find the preferred scenario.

An overview of the process is set out below:

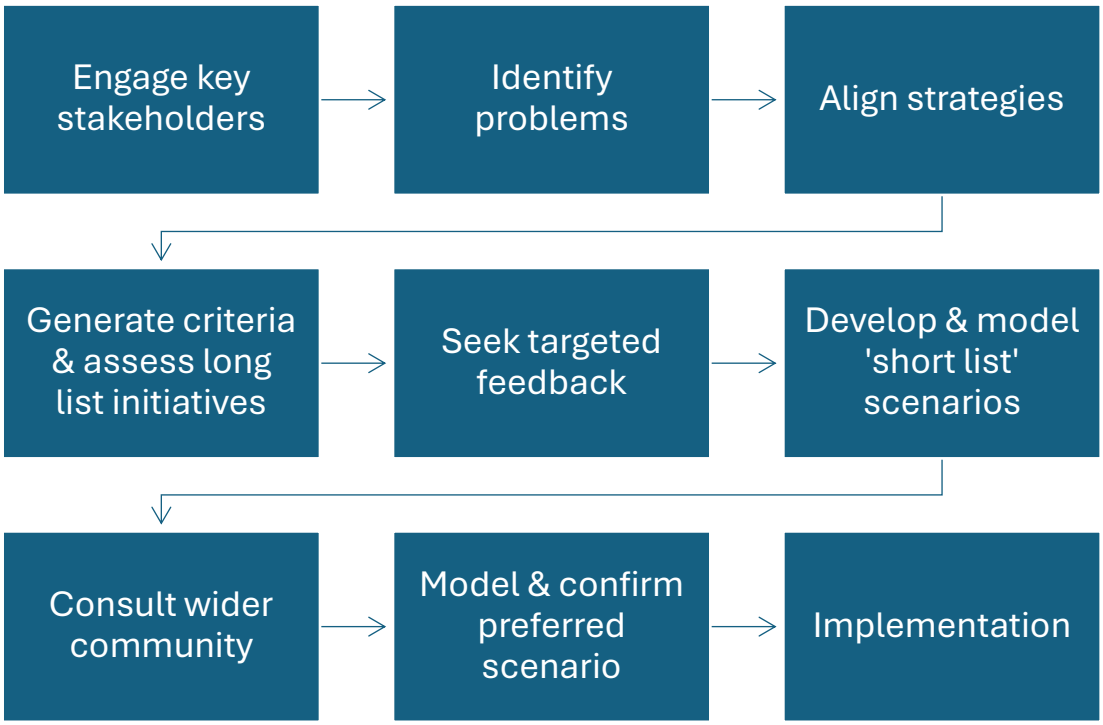

Fig. 2 - Process for delivering the ITF

1.2 Identify problem areas

In the coming decades, Ngāmotu district will grow significantly, face serious weather events, endure potential economic and political fluctuations, react to rapidly changing technology and increasing transport demands. Our transport network's ability to respond to these changes depends in part on the decisions we make now.

With our key partners and stakeholders, we identified four key problems areas, which encompass the key transport issues facing our district (refer Fig. 3).

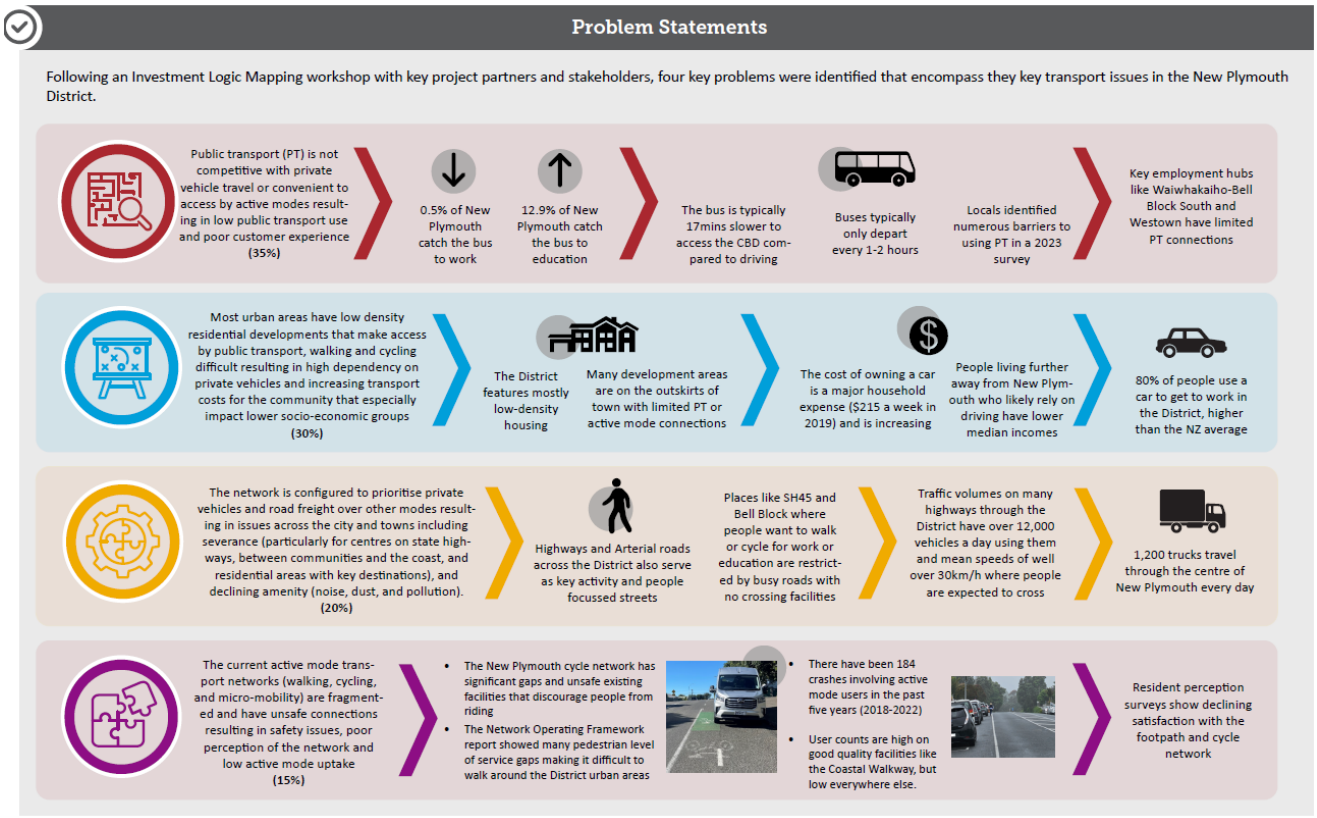

Fig. 3 – Problem areas

Gaps in our knowledge

The table shows information gaps for the problem areas. While there is sufficient existing evidence to support the problem areas, the gaps can be addressed in subsequent years and when new information comes to light (refer Fig. 4)

Problem area	Knowledge Gap
Problem 1 – lack of public transport	Travel patterns and choices outside of travelling to work and education
	Public transport reliability
	Quality and quantity of active mode links to bus stops and shelters across the district
Problem 2 – low density development dependent on private vehicle travel	Limiting factors of New Plymouth City linear and low-density form on access to key services
	Enabling factors of New Plymouth's City linear form for high-movement public transport corridors
	Constraining factors of New Plymouth City linear form and typology on active mode uptake and congestion
	Accessibility of schools across the district

Problem 3 – transport network causes adverse impacts	Modelling data for level of service for public transport, active modes, general traffic and freight
	Noise pollution statistics and pollution effects on health
	Vibration from vehicles movement statistics
Problem 4 – the walking and cycling networks are fragmented and unsafe	Evidence of active mode crashes beyond the NZTA Crash Analysis System due to under-reporting.

Fig. 4 - Knowledge gaps

Some of the knowledge gaps has been addressed by:

- The development of the Transport Model for the district
- The release of 2025 Census data relating to transport
- The adoption of the Future Development Plan and the Ngāmotu District Plan, which clarified future development within the district.

More detailed information and evidence on each problem area can be found in the Ngāmotu ITF Programme Business Case.

2.0 Investment Objectives

The key partners agreed five investment objectives to develop our transport network and respond to the problem areas within our district. These objectives reflect common ground between our partners, various existing strategies (local, regional, and national) and feedback from the community through engagement.

The objectives and benefits and how they align with the problems areas are set out in Fig. 5:

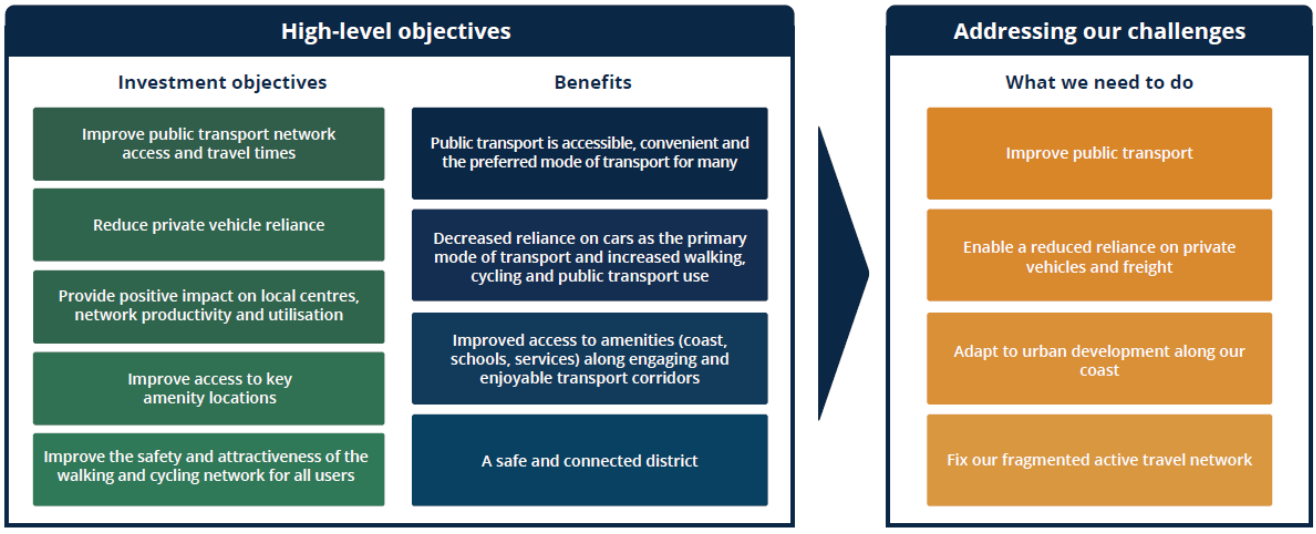

Fig. 5 – High level investment objectives

2.1 Strategic Priorities

There was a strong level of alignment between the project partners and agreement on the strategic priorities for the district. The strategies and priorities of the project partners on a national and regional level have been summarised into the following four areas (refer Fig. 6).

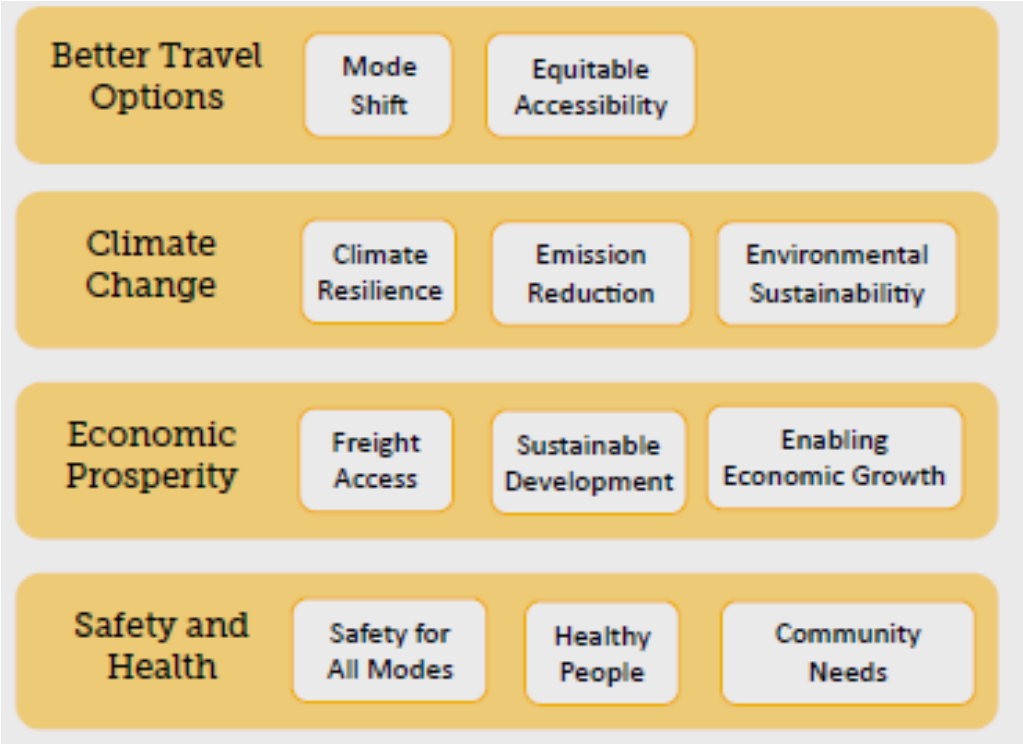

Fig. 6 – Priority areas

2.2 Engagement Feedback

We asked stakeholders and the community for feedback on the transport priorities and initiatives, from the most to the least important. The feedback helped shape our strategic priority areas in the ITF.

These included:

- Priority areas
- Public transport initiatives
- Key amenity initiatives
- Vehicle-based initiatives
- Active travel initatives.

The feedback was sought by two methods:

1. A representative survey of residents of the district aged 18 years and older on age, gender, ethnicity and location.

2. An open submission via a digital public access open link survey.

Overall, the residents prioritised having a safe and well-connected district over other priorities. The feedback summary from the research is outlined below (refer Fig. 7) and the detailed results can be found in the First Research report.

What we Heard

Following stakeholder and community feedback, the most and least prioritised initiatives for each project benefit/challenge are shown below.

Benefit/Challenge	Most prioritised initiative	Least prioritised initiative
Improve public transport	Increasing the frequency of public transport and infrastructure	Increasing parking fees
Adapt to urban development along our coast	Connecting public transport to key destinations and a seperate route for freight	Increasing road capacity
Enable reduced reliance on private vehicles and freight	Increasing accessibility around the district and shifting road freight to other modes	Reducing transport emissions and using alternative fuel
Fix our fragmented active travel network	Improving existing road connections, bridges and raised crossings	Reducing the road speeds

Fig. 7 – Most prioritised initiatives

More detailed information on how the investment objectives and priorities were developed by the project partners can be found in the Ngāmotu ITF Programme Business Case (refer section 2 and 3).

2.3 Assessment tools and templates

A wide range of NZTA assessment tools were applied to the ITF. The more important ones include:

- Investment logic map template
- Land Transport Benefits Framework
- Early assessment sifting tool guidance and template
- Multi-criteria analysis guidance and template
- Appraisal summary table guidance and template
- Intervention hierarchy.

Descriptions of these can be found at the NZTA website here.

NZTA's intervention hierarchy (refer Fig. 8) provides national direction on maintaining, operating, and improving the transport system and underpins the development of this ITF. The intervention hierarchy is used by local and central government to help drive value for money by promoting low-cost investment ahead of more costly physical infrastructure and technological investment. It promotes integrated planning, demand management and best use of the existing system ahead of new infrastructure solutions.

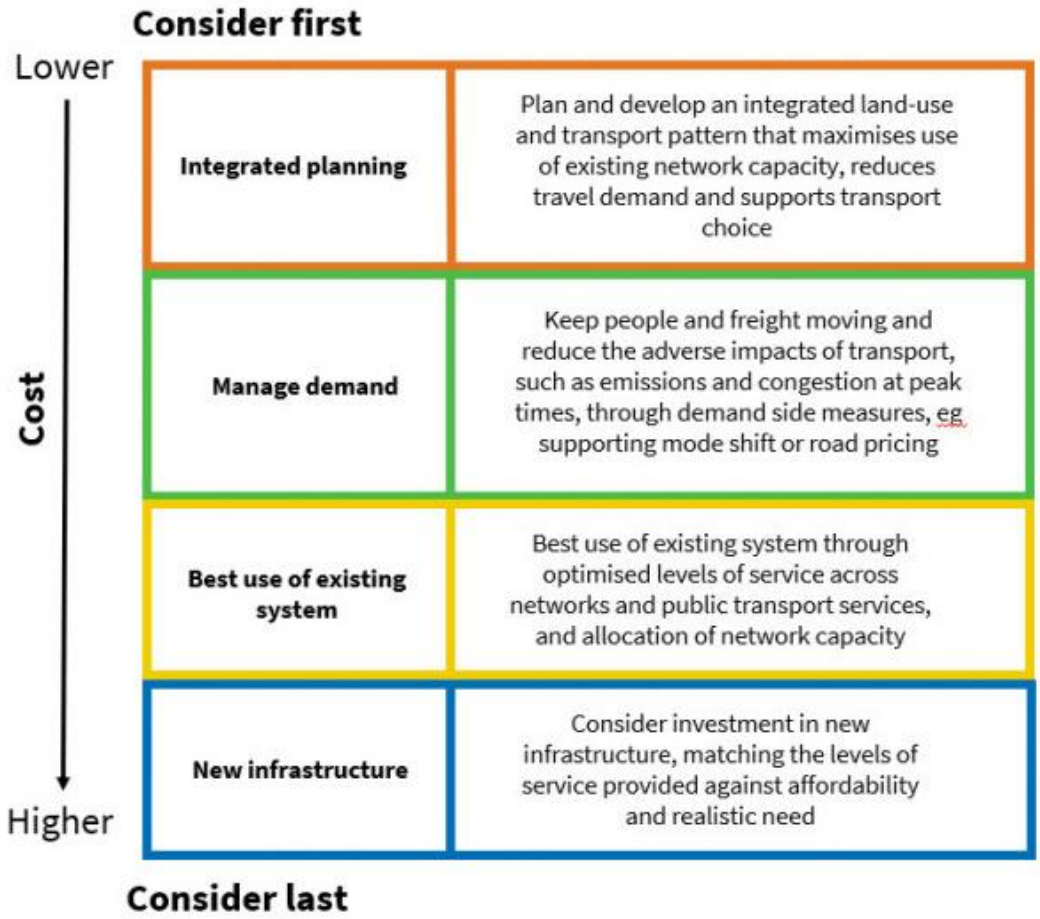

Fig. 8 – NZTA Intervention hierarchy[1]

2.4 The Strategic Transport Model (the transport model)

One of the most significant tools for the ITF is the transport model. The model provides information about how the New Plymouth District transport networks performs now and how it is likely to perform in the future, with population growth, transport demand and employment trends considered. Similar models have been developed for Palmerston North and Tauranga. This transport model, now set up, can be refreshed in future to reflect new strategic drivers and outcomes sought.

The transport model covers around 88% of the district (refer Fig. 9), however all roads in and out of settlements outside the model and all initiatives recommended by the scenarios are applicable to the whole district.

[1] Intervention hierarchy | NZ Transport Agency Waka Kotahi

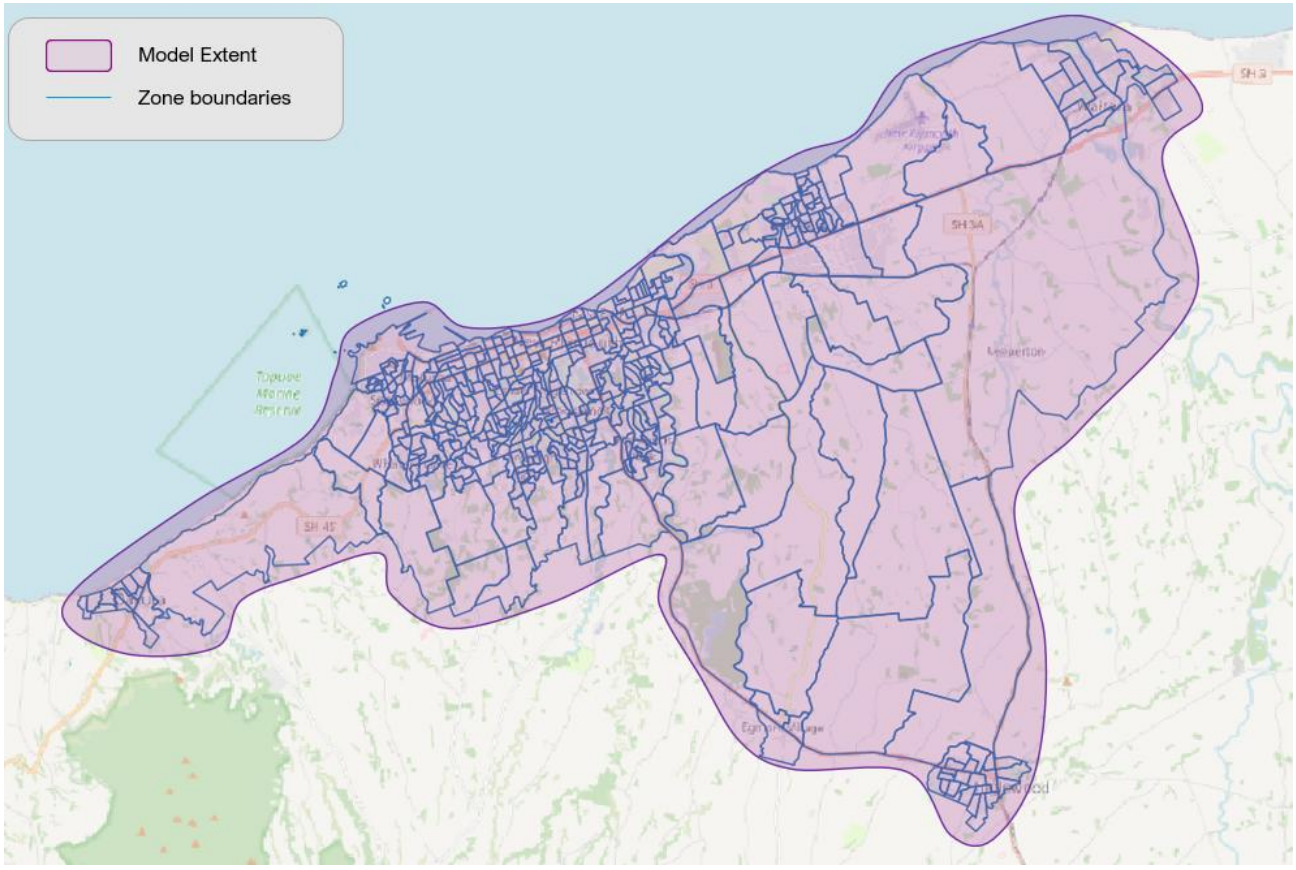

Fig. 9 – Model area

The transport model can forecast the different types of trips for work and home in each scenario, and for different trip purposes such as work, education, shopping and business. The different types of travel modes considered include trips by car, freight, cycling and public transport. More information on how the model was developed can be found in the Ngāmotu Strategic Transport Model – development report.

3.0 Scenarios

We produced different ideas to respond to the key transport problems and assessed them with experts from our partner organisations and independent advisors. We packaged our ideas into four scenarios, each a combination of different initiatives, costs and benefits to be implemented over 30 years.

3.1 Scenario projections

The scenarios include projections of future residential and employment growth, and the pattern of development based on the strategic growth areas for Ngāmotu district. The scenarios were tested and ranked by experts using the NZTA tools, independent advice and the transport model. Each scenario is made up of some unique and some common elements, and a range of new small and large initiatives. We also had a 'do minimum' scenario which represented the current state of the transport network, plus a limited number of new initiatives with committed funding (refer fig 10).

	2018 Base year	2035 Do Minimum	2053 Do Minimum
Land Use	• 67,900 People • 27,800 Homes • 28,300 Jobs	• 1 more person for every 5 • 43% growth in retail • 24% growth in industrial • 23% growth in services	• 1 more person for every 3 • 45% growth in retail • 52% growth in industrial • 26% growth in services
Road Network	• 2018 road network	• Intersection safety and resilience improvements • Intersection Safety Improvements • Bridge upgrades • Green links traffic calming • Safer Speeds around schools	• Intersection safety and resilience improvements • Intersection Safety Improvements • Bridge upgrades • Green links traffic calming • Safer Speeds around schools
PT Network	• 10 bus routes • Half hourly AM services	• Today's services plus Waitara and Bell Block service to CBD	• Today's services plus Waitara and Bell Block service to CBD
Cycle Network	• 111 KMs of cycle lanes / cycle safe facilities or network	• Transport Choices cycleways • 136 KMs of cycle lanes / cycle safe facilities or network	• Transport Choices cycleways • 136 KMs of cycle lanes / cycle safe facilities or network

Fig. 10 – Do-minimum future year projections

The do-minimum scenario for 2035 and 2053 future year projects includes the future year land use forecast in place and the committed transport initiatives. The do-minimum scenario serves as the base scenario for comparison to all other scenarios considered during the assessment.

The four new scenarios considered are described below (refer Fig. 11):

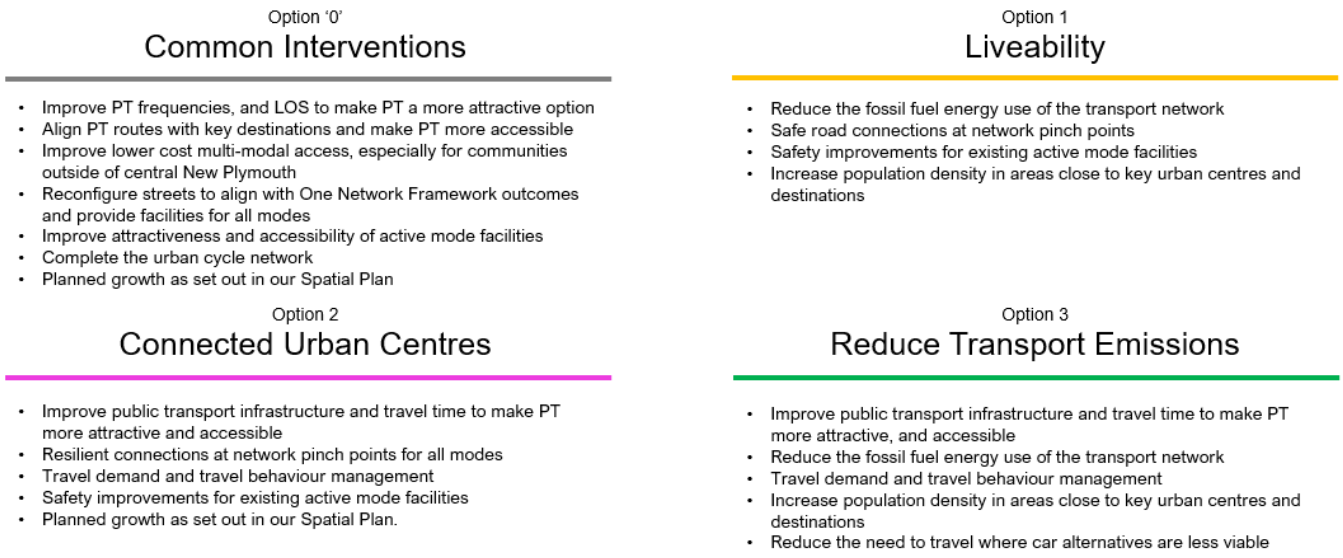

Fig. 11 - Scenarios

More information on the types of initiatives for each scenario and the do-minimum can be found in the Ngāmotu Strategic Transport Model – forecasting report (refer section 3 and 4).

The model was used to test the shortlisted transport scenarios to determine when they would have a positive impact on network performance. The scenarios were also tested against the following criteria:

a. Ability to meet the ITF objectives in the medium and long term
b. Financial viability
c. Community priorities
d. Alignment with local, regional and national strategies.

3.2 Scenario comparison results

We compared the four scenarios and the 'do minimum' over three different time periods; 2018 (Base Year), 2035 and 2053. The 2018 year as the baseline allows the use of census and traffic flow data available and performs most closely to today, with the Covid years excluded.

Each scenario was assessed in the transport model, based on their impacts on the existing strategic road network and public transport network in 2035 and 2053. Some of the results for public transport (PT) mode share and vehicle kilometres travelled (VKT) are presented in fig. 12 and 13. Option 3 provides the highest PT mode share at peak time, while Option 2 and 3 provide for a 12% reduction in VKT by 2035.

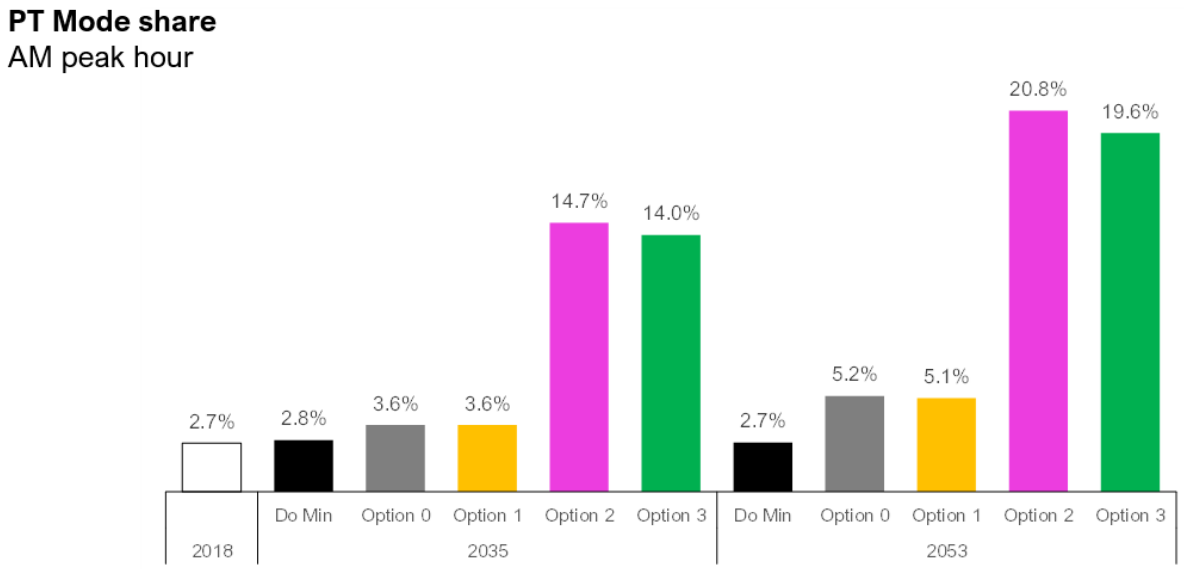

Fig. 12 – PT mode share AM peak hour per option

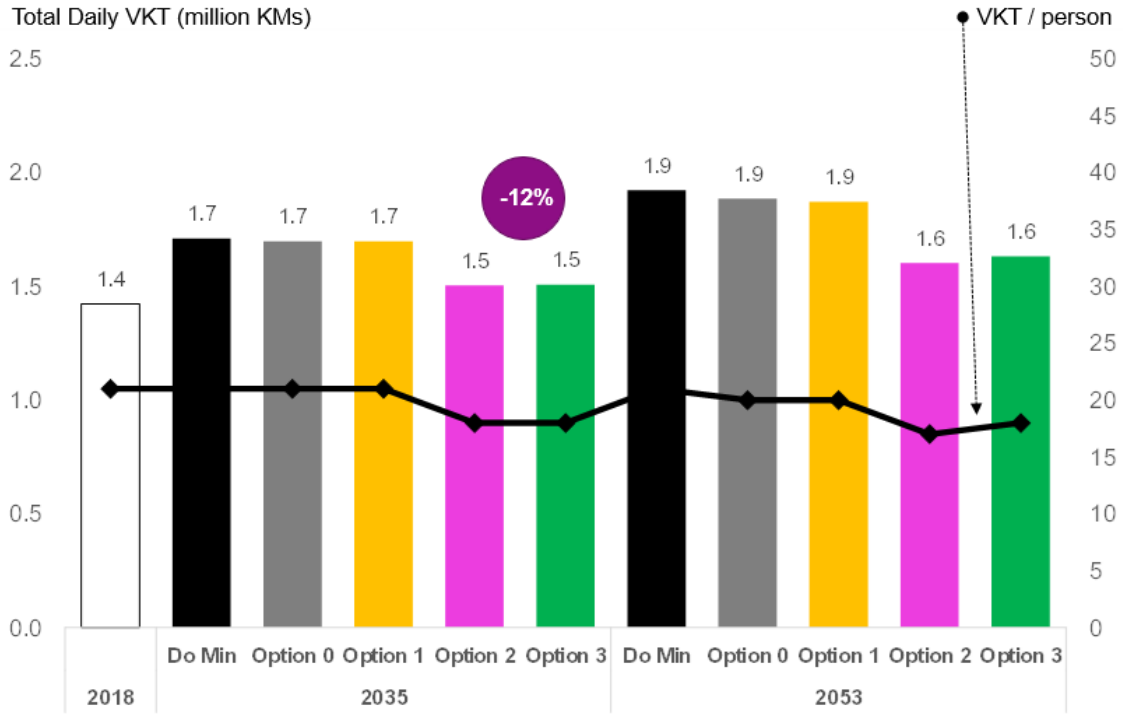

Fig. 13 – Vehicle kilometres travelled per option

Overall, the Connected Urban Centres scenario (Option 2) was found to perform the best, based on modelling results. A 12% reduction in VKT could be achieved by option 2 and 3 in 2035, but this required bringing forward significant increases in public transport, cycling and introducing road pricing. Not unexpectedly, the 'do minimum' performed the worst. More detail on the performance of each scenario can be found in the Ngamotu Strategic Transport Model – forecasting report (refer section 6).

4.0 Preferred Scenario

The Preferred scenario was made more affordable by rephasing and rescoping some of the initiatives between the short, medium and long terms. We resized high-cost initiatives for better value and set trigger points for their implementation. The Preferred Programme became known as the Core Preferred Programme to differentiate it from earlier versions.

Following the confirmation of the Core Preferred Programme, it was reviewed at the initiative level to confirm alignment with the community feedback received earlier.

The Core Preferred programme was tested in our transport model. The main groups of initiatives include:

- Managing the transport network to reduce travel time and improve safety.
- Increasing bus frequency across the district.
- Making it easier for people to walk, cycle, or scoot.
- Reducing reliance on fossil-fuelled vehicles to cut emissions.

The assessment of the Core Preferred Programme indicates a benefit-cost ratio (BCR) in the range of 3 – 10 and provides major benefits for public transport travel time and reliability, cycling travel time and user health, vehicle travel time and reliability, and crash reductions. The BCR range is provided to consider different discount rates, variations for programme option costs and significant benefits sources so we can be sure that it is resilient to changing circumstances.

4.1 Key Performance Indicators

A selection of Key Performance Indicators (KPIs) have been used to forecast the expected programme benefits across different modes. The KPIs indicate benefits for all road users, including cars and freight, as a result of the projected mode shift and transport infrastructure initiatives. We have compared a selection of KPIs between the Core preferred programme to the 'Do minimum' scenario (refer fig. 14). The positive differences are indicated by green shading.

Investment objective	KPI	Medium-term		Long-term	
		Do Minimum	Preferred	Do Minimum	Preferred
Improve public transport network access, reliability, and travel times.	1: PT travel times (Average of 4 Origins to CBD in mins)	14.4	14.5	18.1	13.5
	3: % of population within 400 metres PT walking catchments.	57.2%	57.2%	55.5%	57.5%
	4a: PT mode share for AM journey to work trips	0.7%	6.4%	0.7%	18.9%
	4b: PT mode share for AM journey to school trips	13.9%	17.7%	13.5%	27.8%
Reduce private vehicle reliance and transport related emissions and increase mode shift.	5: Tonnes of CO2E (change compared to do-minimum)	-	-6%	-	-15%
	6a: AM JTW by light vehicle mode share (change compared to do-minimum)	-	-7%	-	-20%
	6b: VKT (change compared to do-minimum)	-	-4%	-	-14%
	7: PT mode share for journey to work trips	0.7%	6.4%	0.7%	18.9%
	8: PT mode share for journey to school trips	13.9%	17.7%	13.5%	27.8%
Positive impact on local centres, network productivity and utilisation.	10: PT travel time minus car travel time (Average of 4 Origins to CBD in mins)	17	13	16.7	8.7
	13a: % of freight on non-arterial corridors	76.5%	76.1%	75.1%	77.9%
	13b: Freight travel times from east to port (change compared to do-minimum in mins)	-	-0.1	-	-1.6
Improve multi-modal access to key amenity locations.	11: % of residents living within 400m of local centre	10.2%	10.2%	9.6%	10.5%
Improve the safety and attractiveness of active mode networks for all users.	14: Annual deaths and serious injuries for cyclists	2.88	1.4	3.72	0.92
	15: % of primary cycling network that is safe and separated	13%	23%	13%	29%

Fig. 14 – KPI results for the do-minimum versus preferred programme at modelled years

The longer list of KPIs performance can be found in the Ngamotu Strategic Transport Model – forecasting report (pages 38-42).

4.2 Do minimum vs Core preferred programme

The following maps show us how the transport network performs today using 2018 as a baseline, compared to the future. The 2018 year allows the use of the census and traffic flow data available and performs most closely to today, with the Covid years excluded. The future maps relate to 2035 and 2053 if the existing level of intervention is maintained at the **do minimum** level.

Red lines indicate roads near or exceeding capacity for their expected use. Black circles show delays at intersections which are below acceptable levels of service. As the size increases so too does the amount of delay experienced by road users.

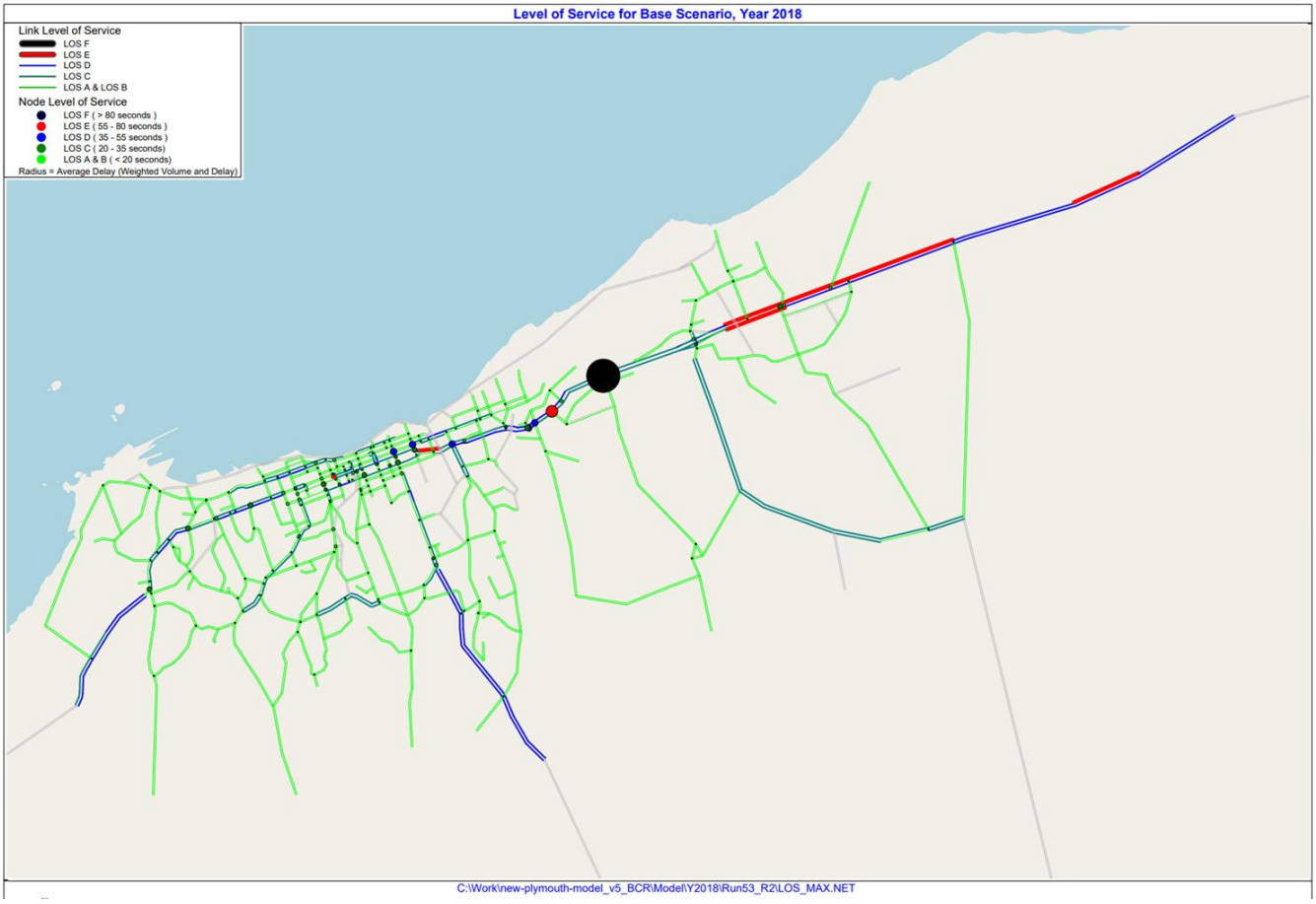

Fig. 15 – model showing levels of traffic congestion – ***baseline 2018***

The 2018 map indicates the current level of intersection delay and corridor capacity issues on the network. These mostly occur on SH3 around Mt Egmont Rd and between Bell Block to Mountain Rd (SH3A).

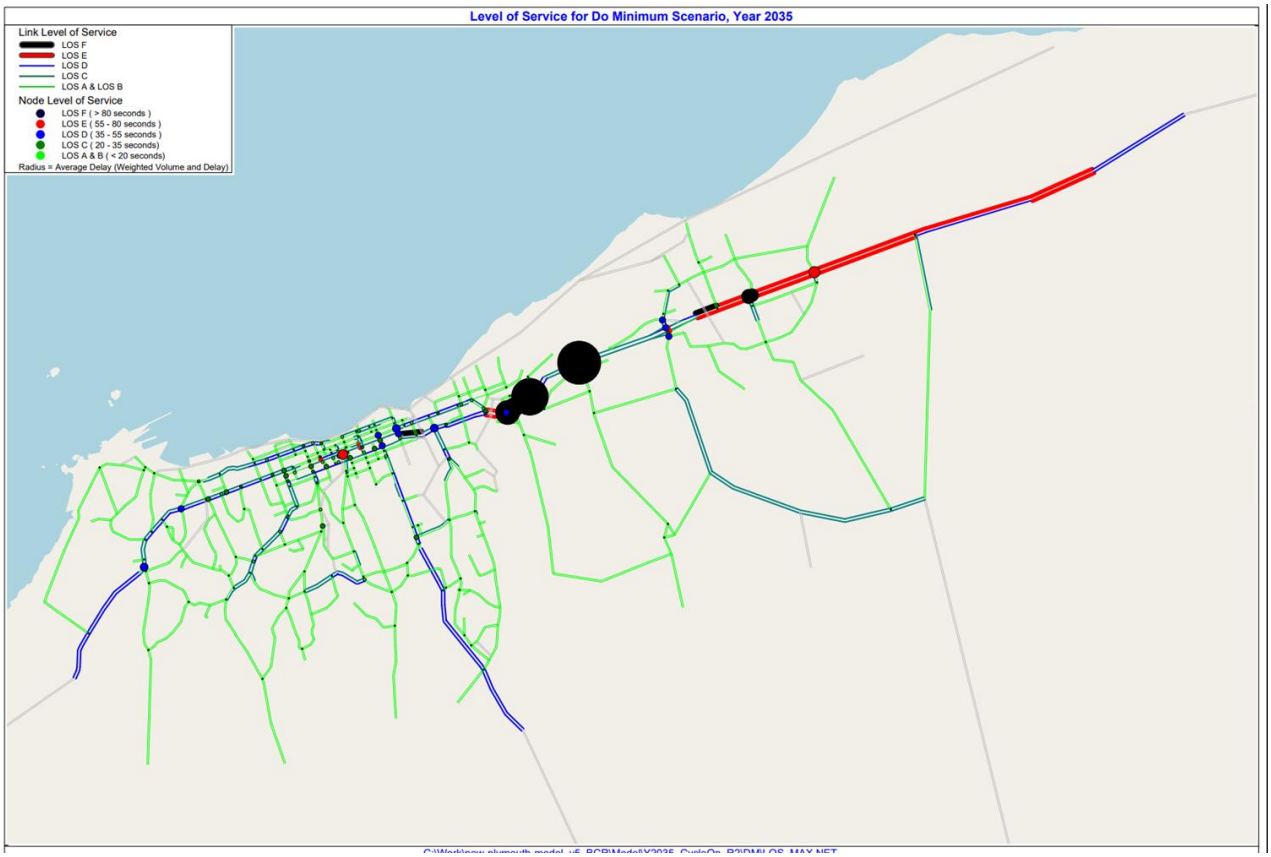

*Fig. 16 – model showing levels of traffic congestion if the 'do minimum' is maintained in **2035***

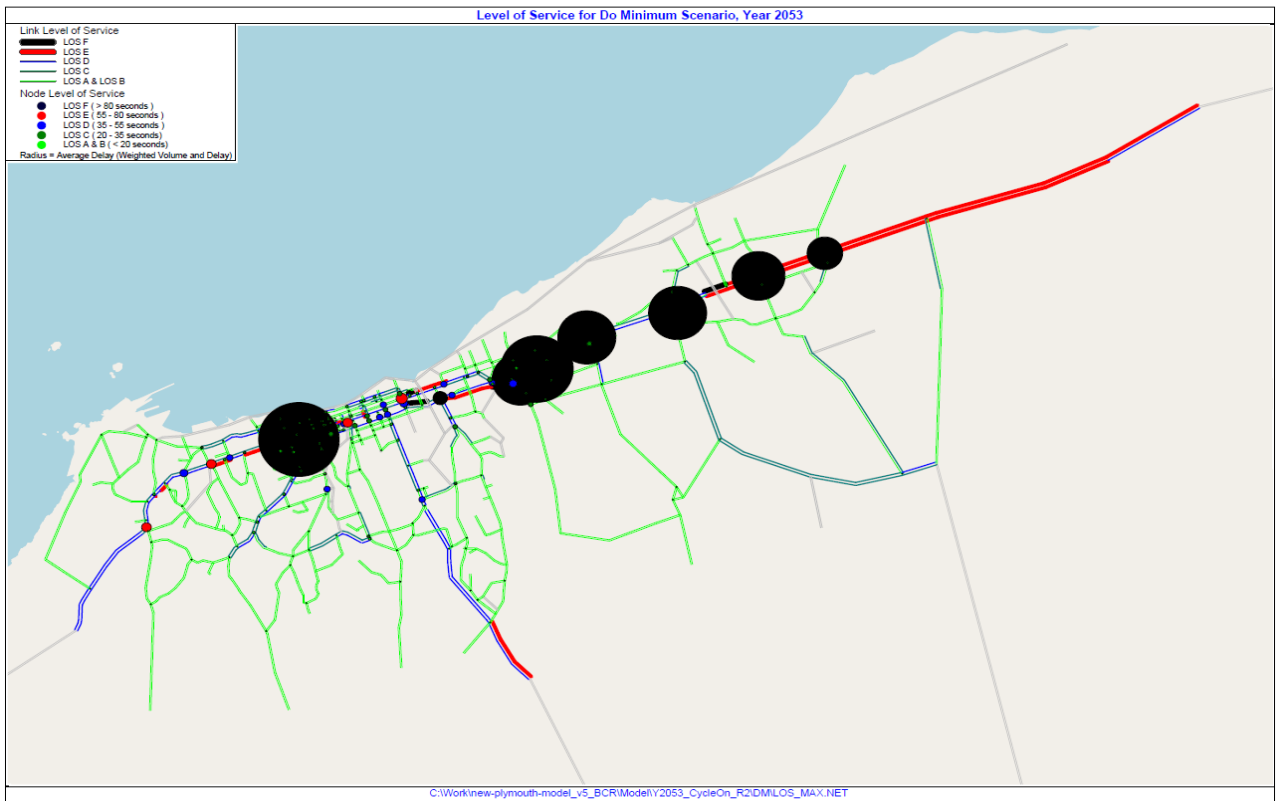

*Fig. 17 – model showing levels of traffic congestion if the 'do minimum' is maintained in **2053***

The do-minimum shows more intersection delay and corridor congestion on the One-way system and along SH3 from Northgate to Waitara in 2035 and it becomes significantly worse in 2053. The do-minimum considers all the projects and programmes we have already in New Plymouth District Council's Long-Term Plan being implemented.

The following maps from the transport model show us how the transport network performs in 2035 and 2053 if the **core preferred programme** delivers as expected. Again, red lines indicate roads near or exceeding capacity for their expected use. Black circles show delays at intersections below acceptable levels of service.

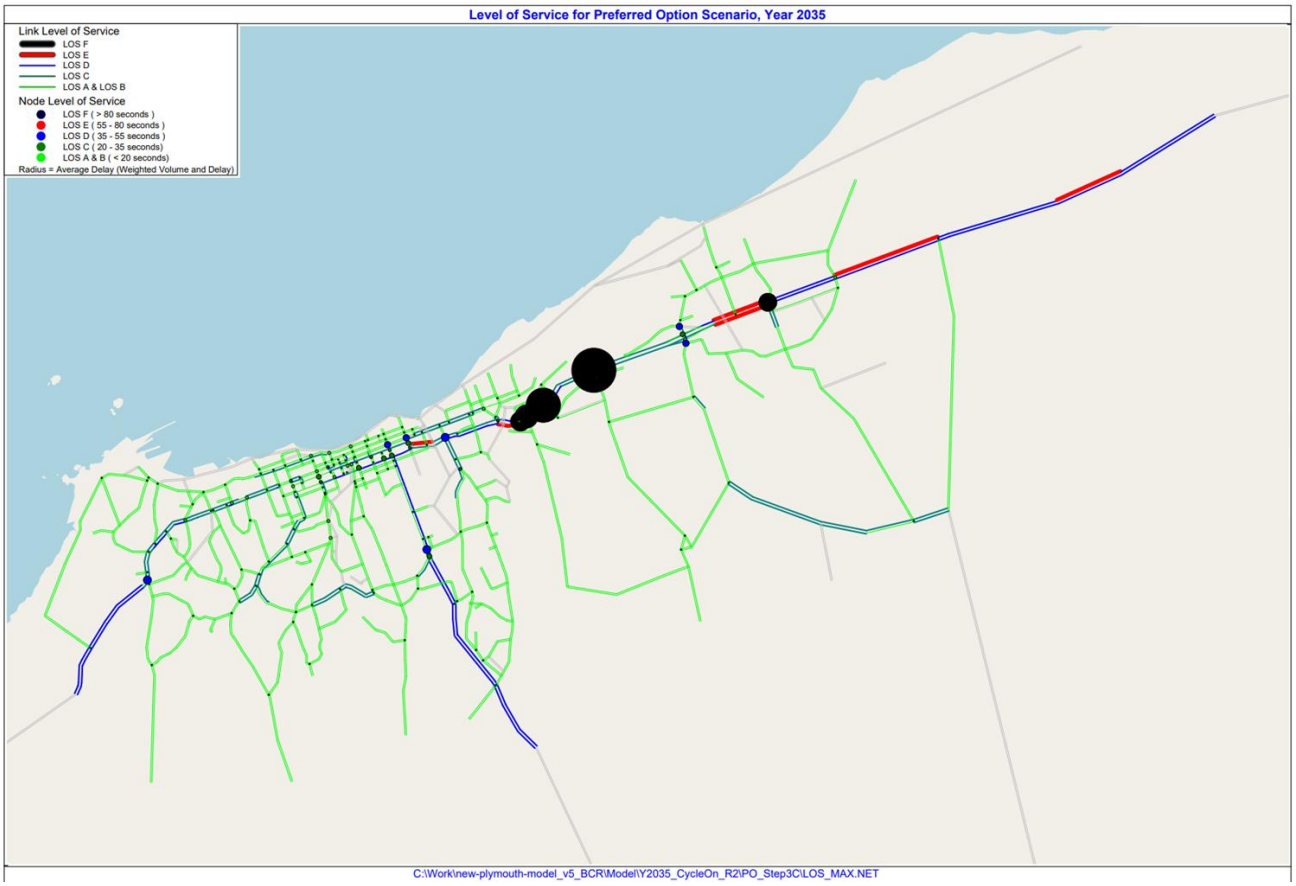

*Fig. 18 – model showing levels of traffic congestion if the preferred programme is delivered by **2035.***

*Fig. 19 – model showing levels of traffic congestion if the preferred programme is delivered by **2053**[2]*

The **core preferred programme** shows that a level of congestion is still present on SH3, but it is more manageable, while the section of SH3 between Bell Block and Waitara is nearing capacity. Improved public transport services, higher levels of walking and cycling to schools and work, higher costs for parking and travelling at peak times, and more medium density living discourages some car trips. The proposed eastern approach to New Plymouth and the second river crossing helps distribute traffic from the east and south.

The transport model assessed the KPIs for the preferred option and forecast:

a. the average daily network delay is reduced by 49% in 2053 compared to the do-minimum scenario.

b. a significant increase in the public transport mode share for trips to work (18%) and education (28%) by 2053.

c. the annual deaths and serious injury for cyclists is about 75% less in 2053 than the do-minimum scenario.

d. the comparative travel time between private vehicles and public transport on the same 4 routes to the CBD reduces over time, compared to the do-minimum scenario.

e. a 10% reduction in CO_2 equivalent emissions on the do-minimum scenario for 2053. It is important to note that the overall emission level in the do-minimum scenario follows the National Vehicle

[2] Includes the eastern approach (e.g. link from Smart Rd to SH3) and second road bridge crossing over Waiwhakaiho river, as indicated

Emissions Prediction Model (VEPM)[3], which are projected to be more than 50% less than current 2018 levels, due to a combination of fleet improvement and reductions in vehicle kilometre travelled per capita.

A comparison of forecast outputs between the base scenario 2018, the do-minimum 2053 scenario and the core preferred 2053 scenario can be found on Council's GIS website here.

4.3 Core preferred programme

The summary of the initiatives in the short, medium and long-term is set out below:

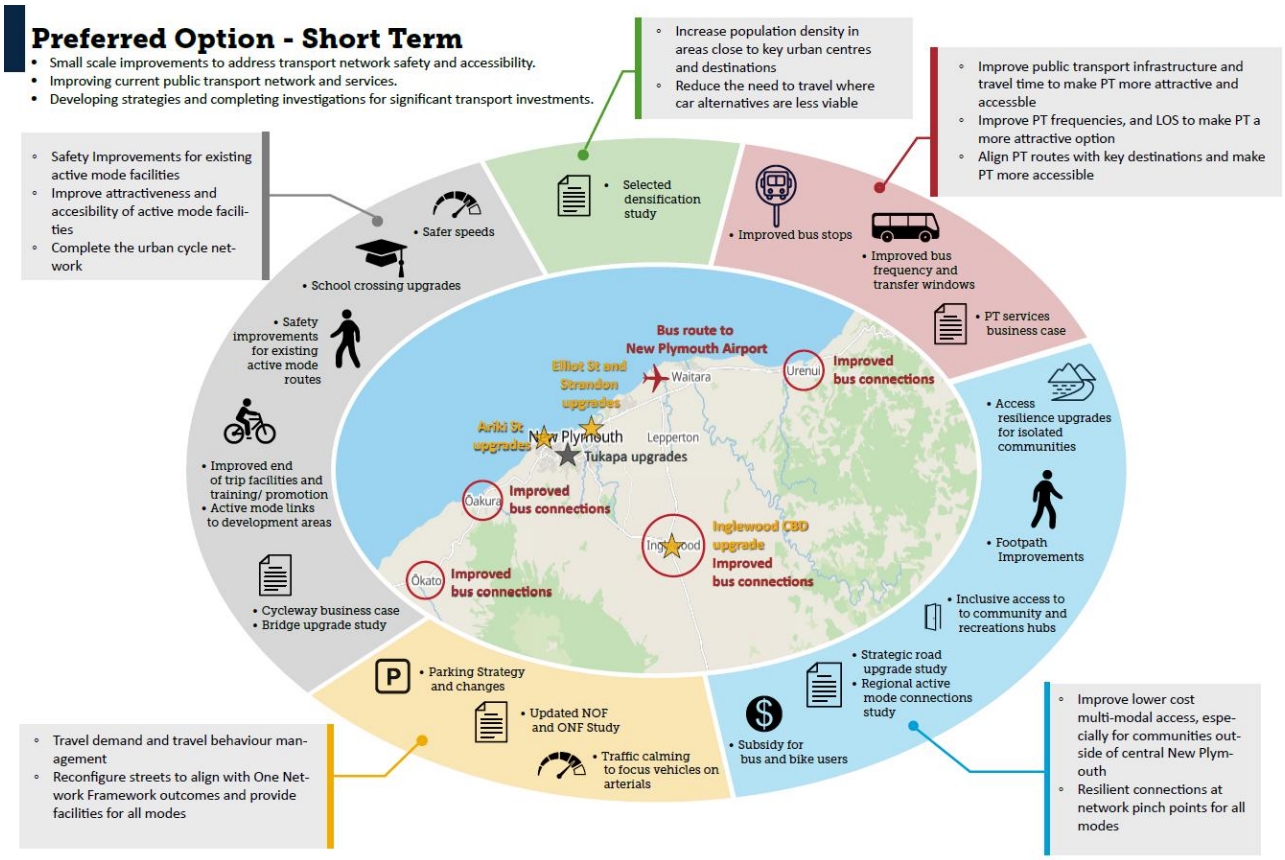

Fig. 20 – Short term; Year 0 -5

The short term focuses on lower-cost measures to improve safety and accessibility, especially ramping up public transport to a 20-minute frequency and planning for bus priority measures on congested sections of the network. Project work is required on some of the medium-term initiatives, such as design plans to fill in the gaps in the walking and cycling networks in our towns and around schools and bring them up to standard. Business case investigations will commence on long-term initiatives such as the second river crossing as an alternative eastern approach to New Plymouth. This will help identify the range of possible options and preferred option for these long-term initiatives.

[3] VEPM has been developed by NZTA and Auckland Council to predict emissions from vehicles in the New Zealand fleet under typical road, traffic and operating conditions.

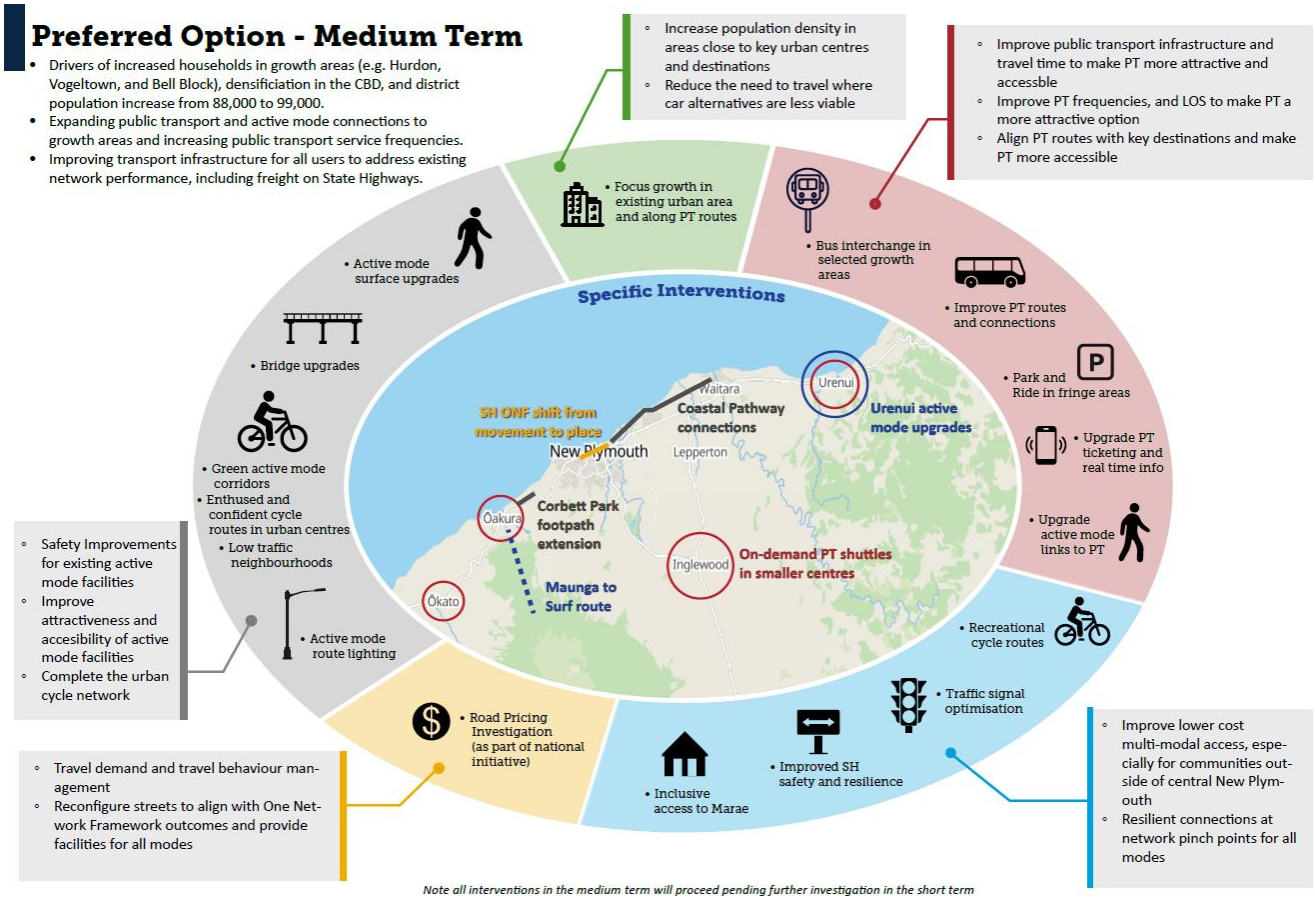

Fig. 21 – Medium term; Year 6 – 15

The medium term has to respond to more growth in residents in the New Plymouth Central Business District (CBD) and in some of the surrounding satellite suburbs such as Puketapu (Bell Block), Waitara and Oakura. The frequency of public transport will be doubled and bus priority measures installed. The Airport bus route will be in place. The price of parking in the New Plymouth CBD will be increased to support the shift to public transport and increased pedestrianisation.

The completion of safe cycle routes and more walking facilities will support the liveability of the district's suburban centres and small towns. Speed management and increased capacity at intersections will help manage congestion on our main corridors at peak times, especially along SH3, east of New Plymouth. The bypass of Inglewood will be introduced and the main street enhanced.

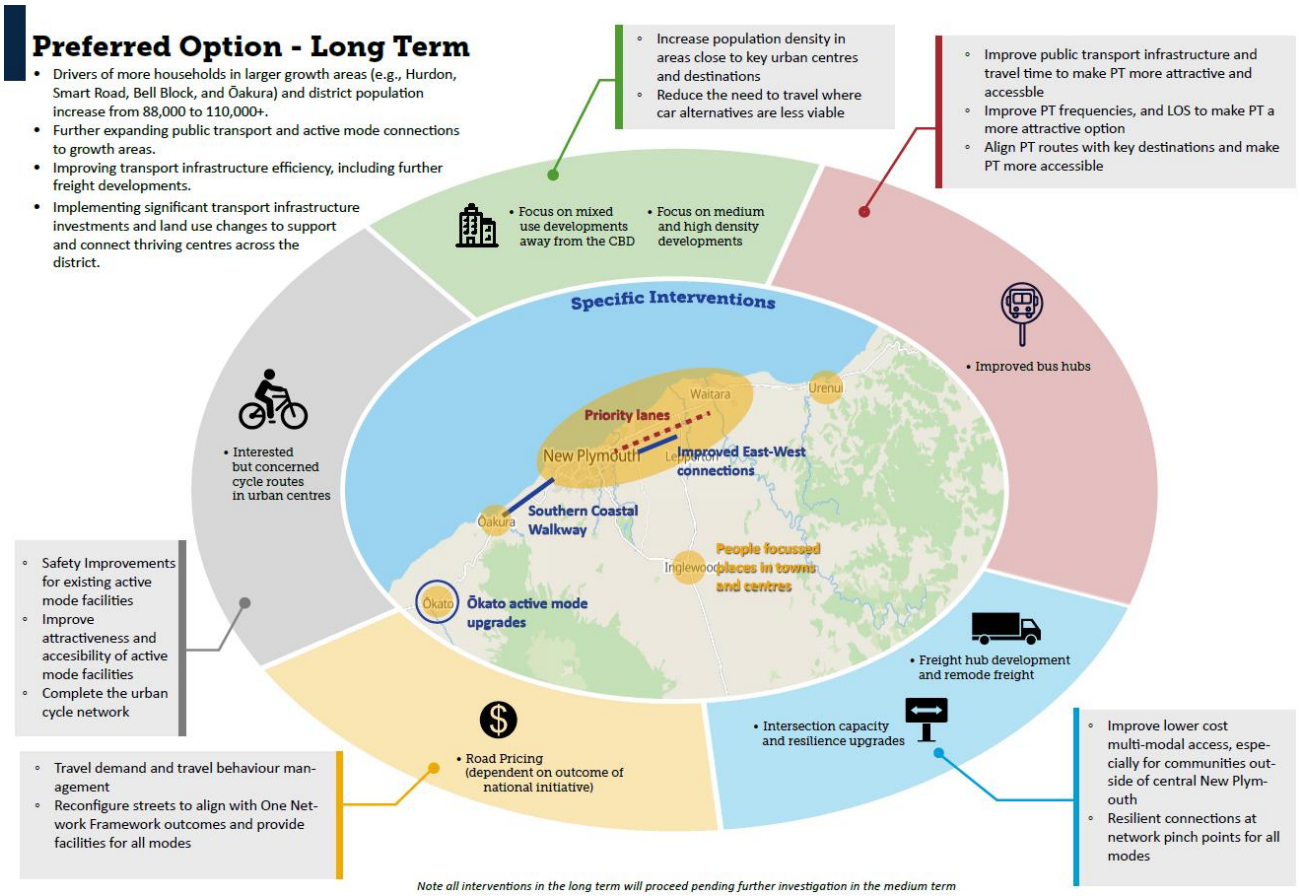

Fig. 22 – Long Term; Year 16-40

Significant growth across the district will require elevating the frequency of public transport further and extending priority measures on main corridors to support the increasing shift to frequent public transport. Through-traffic and freight traffic to the Port will be rerouted around the New Plymouth CBD as the City Centre placemaking improvements take effect. The main corridors (SH45) will be optimised and capacity increased to support the flow of freight and through-traffic.

The core programme assumes Central Government has introduced time-of-use charging for vehicles on key road corridors, which could significantly impact commuter travel decisions and support mode shift. Tactical improvements for cycling and walking will continue to create more liveable New Plymouth CBD and local centres, with more people choosing to live in or near these locations. Smaller centres will be better connected with a variety of transport options, which may include community-led passenger services.

An overview of the short-, medium- and long-term initiatives across the district can be found in the Ngāmotu ITF Programme Business Case: Appendix E – Intervention categorisation and scheduling.

4.4 Next Steps

We will do detailed studies to explore some of the higher-cost initiatives further. These studies will help decide on affordable investments for future growth, such as:

- A second crossing over the Waiwhakaiho River and heavy traffic bypass opportunities in Inglewood.
- A larger and more frequent bus network.

- More cycling and walking facilities in our city and towns.
- Optimising how freight and general traffic use the current road network to boost productivity and support the City Centre, New Plymouth.

The initiatives in the core preferred programme will be those recommended for future Long-Term Plans in the Ngāmotu district.

Collaboration between NPDC, TRC, NZTA, Te Atiawa, local hapu and the local community will be needed to deliver this programme, as funding priorities may change over time.

The ITF will be reviewed every 3-5 years to ensure that it remains current in terms of strategic priorities and supported forecast investment for new transport initiatives by the project partners.

Te Kaunihera-ā-Rohe o Ngāmotu
New Plymouth District Council

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