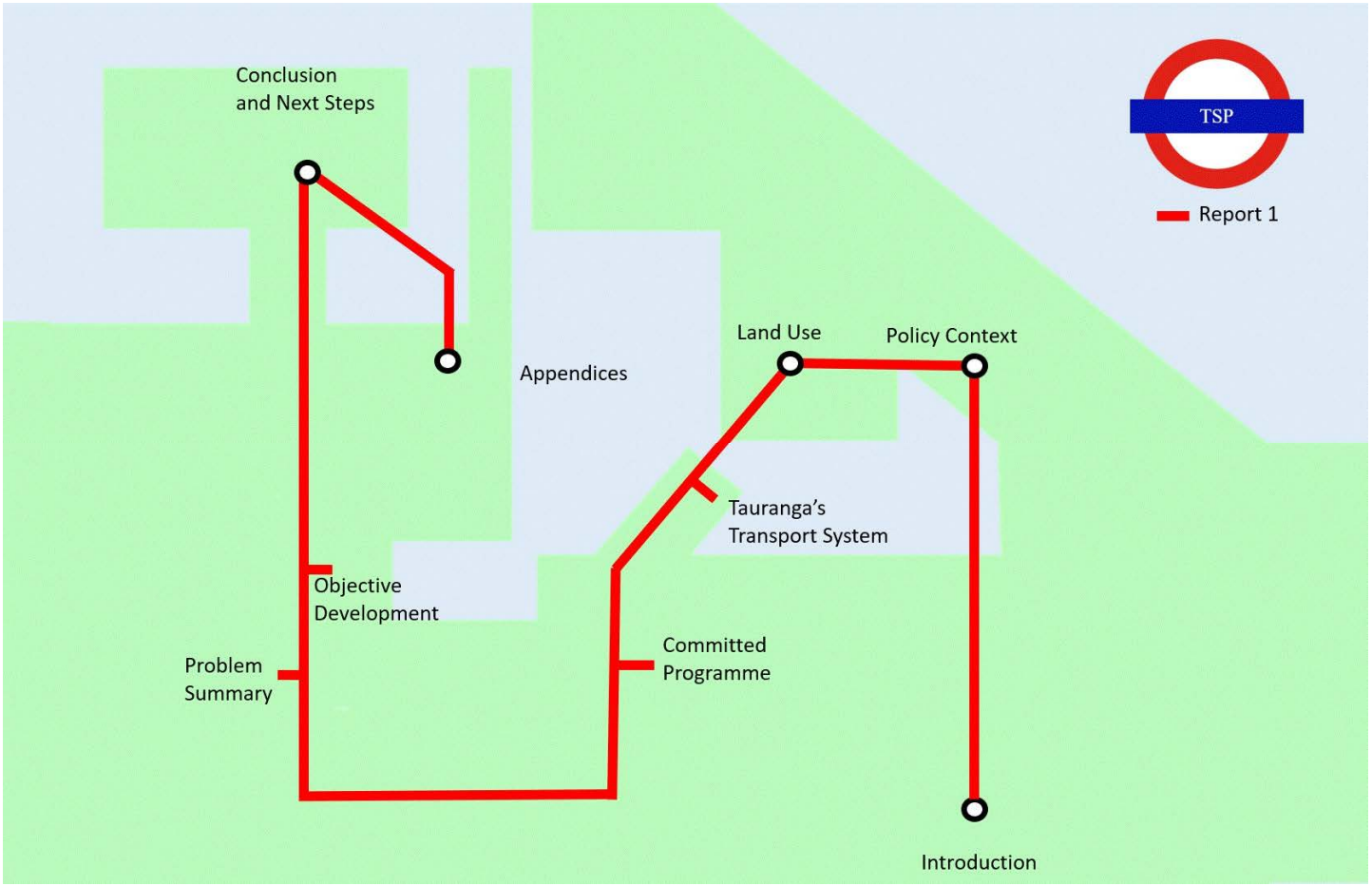
Western BOP Transport System Operating Framework

Report 1: Background Evidence and Strategic Objective Setting

Prepared for Western BOP TSP Partners

Prepared by Beca Limited

18 September 2020



Sensitivity: General

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Appendix C – UFTI and TSP Problem and Objectives Diagram

Key to the Golden Threads

Look out for the icons listed below that highlight the golden threads of key TSP themes followed in this report. The full list of themes can be found in a golden threads table, in the Executive Summary.

Government Policy Statement for Transport (GPS)

Connected Centres (UFTI)

The four well-beings of social, economic, environmental and cultural.

Revision History

Note this report was complied in March/ April 2020. The report and process has been dynamic in it's development, as other projects and studies have occurred concurrently. This report has collated information as it's been made available, e.g. UFTI Intermin Report was issued in December 2019 and the Final Report was released on 1 July 2020.

Revision Nº	Prepared By	Description	Date
1	Matthew Kilpatrick	Draft for objective setting workshop	9 April 2020
2	Matthew Kilpatrick	Draft for client and supplier B review	17 April 2020
3	Matthew Kilpatrick/ Craig Richards	Draft for Hold Point 1	29 April 2020
4	Craig Richards	Updated draft with partner comments	19 May 2020
5	Craig Richards	Further partner comments draft update	1 June 2020
6	Matthew Kilpatrick	Final including data provided by BOPRC	31 Aug 2020
7	Tania Hyde	Final	18 Sept 2020

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1 Introduction

This report follows the route set out below. Within the report, yellow dots show the current chapter.

The Western Bay of Plenty transport partners[1] (Transport Partners) are leading the development of the Western Bay of Plenty Transport System Plan (TSP) in partnership with key stakeholders. The purpose of the TSP is to determine how the partners can work towards the long-term vision defined by the Urban Form and Transport Initiative (UFTI) over the next 30 years. UFTI forms the Programme Business Case for transport and land-use in the sub-region.

The challenges currently facing the subregion, in regard to transport and land use planning are documented in UFTI. Rapid population growth and imbalanced investment and prioritisation in the transport system has resulted in a cycle of car dependency and auto focussed rather than people focused urban form. Our existing transport system has evolved with an emphasis on single, rather than multimodal transport prioritisation.

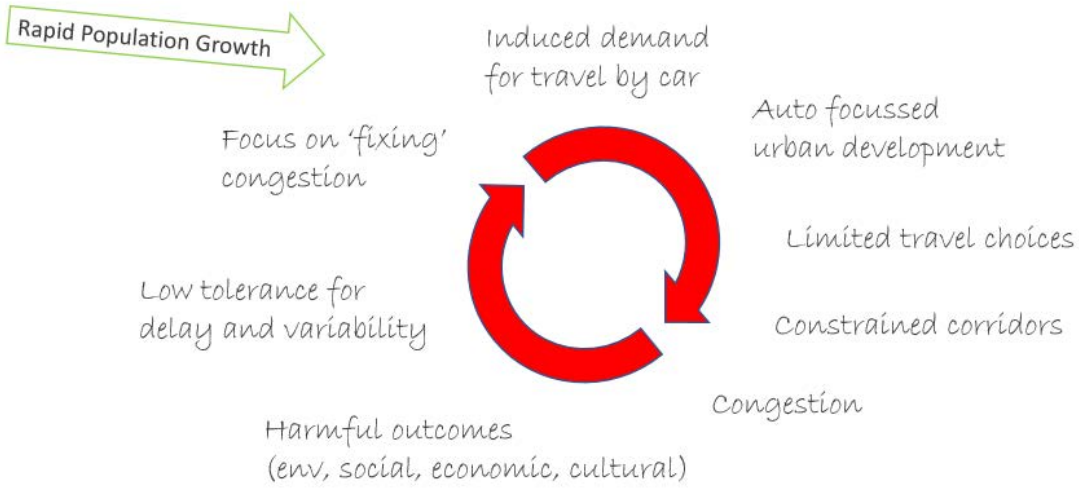


Figure 1: Existing transport and growth cycle

We need to plan for the future based on the transport system of today, but we must also be cognisant of how things could change and build adaptability into system planning and design.

The first stage of the TSP is to develop a Transport System Operating Framework (TSOF) to guide the development of projects for the 2021-31 planning cycle.

[1] Tauranga City Council, Waka Kotahi NZ Transport Agency, Bay of Plenty Regional Council and Western Bay of Plenty District Council.

The TSOF is developed over a five-step process illustrated by the diagram below. The boxed steps are described in this report.

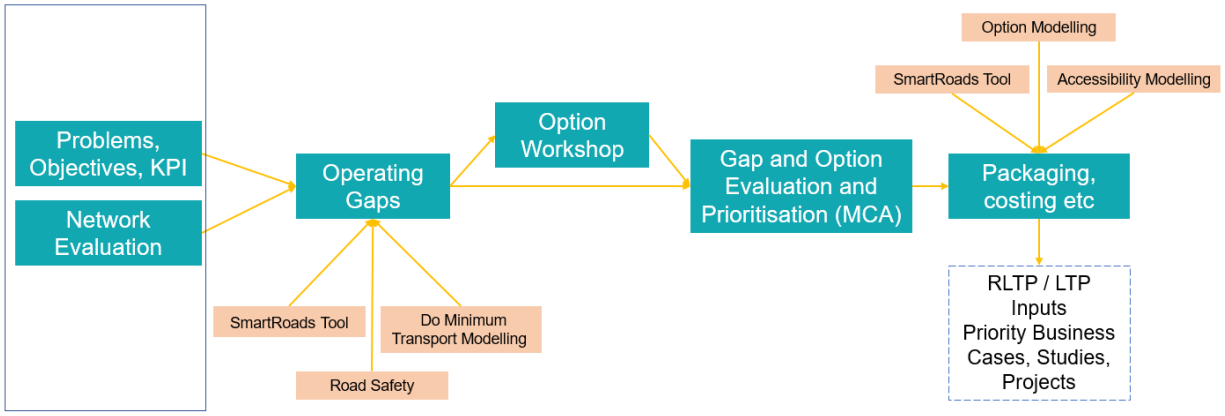


Figure 2: TSOF Five Step Process

This report (Report 1 of the TSOF phase) has been prepared at the end of the network evaluation step.

TSOF Step	Objective	We are here
1	Establish context and set strategic objectives	
2	Define network attributes and key performance indicators	★
3	Identify priority networks and places	
4	Identify network gaps and develop options	
5	Evaluate options and determine recommended programme	

Figure 3: Basic Outline of the TSOF Process

In addition to this report, the following technical reports contribute to the TSOF outputs:

- Report 2 – Network Evaluation and Gap Assessment
- Report 3 – Option Evaluation and Conclusions
- Executive Summary Report (summary of Reports 1, 2 and 3).

1.1 Study Area

The study area for the TSP considers the full Western Bay of Plenty sub-region, but concentrates on the Tauranga City area, plus the Takitimu North Link corridor between Takitimu Drive and Omokoroa Road. The study area is shown in Figure 4.

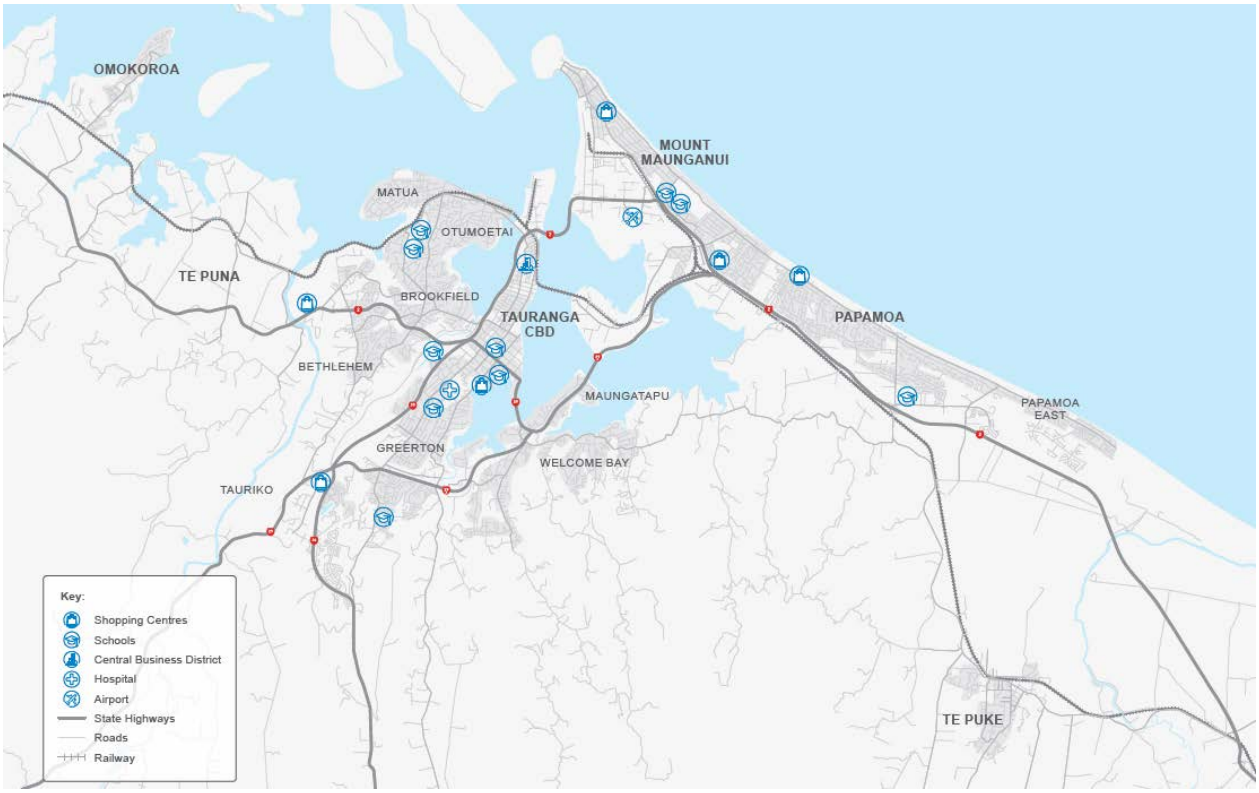


Figure 4: TSP Study Area

1.2 Purpose and Outline

The purpose of this report is to establish strategic objectives, mode principles and key performance indicators (KPIs) for the TSOF. This is achieved through a review of relevant established policies and studies, the land use planning context and current and forecast transport network characteristics. The arising problem themes and objectives have been informed by a workshop with project partners[2] (Project Partners), held on 14 April 2020.

This report covers the following key topics:

- Policy context
- Land use context
- Transport network context
- Committed programme
- Problem summary
- Strategic objectives and KPIs.

[2] Tauranga City Council, Bay of Plenty Regional Council, Western Bay of Plenty District Council, Waka Kotahi NZ Transport Agency, KiwiRail, Port of Tauranga

2 Policy Context

The key government policy, regional strategy and local delivery projects related to the TSP are shown in Figure 5. Key messages from established policy, strategies and studies informing the development of the TSOF are summarised in Table 1.

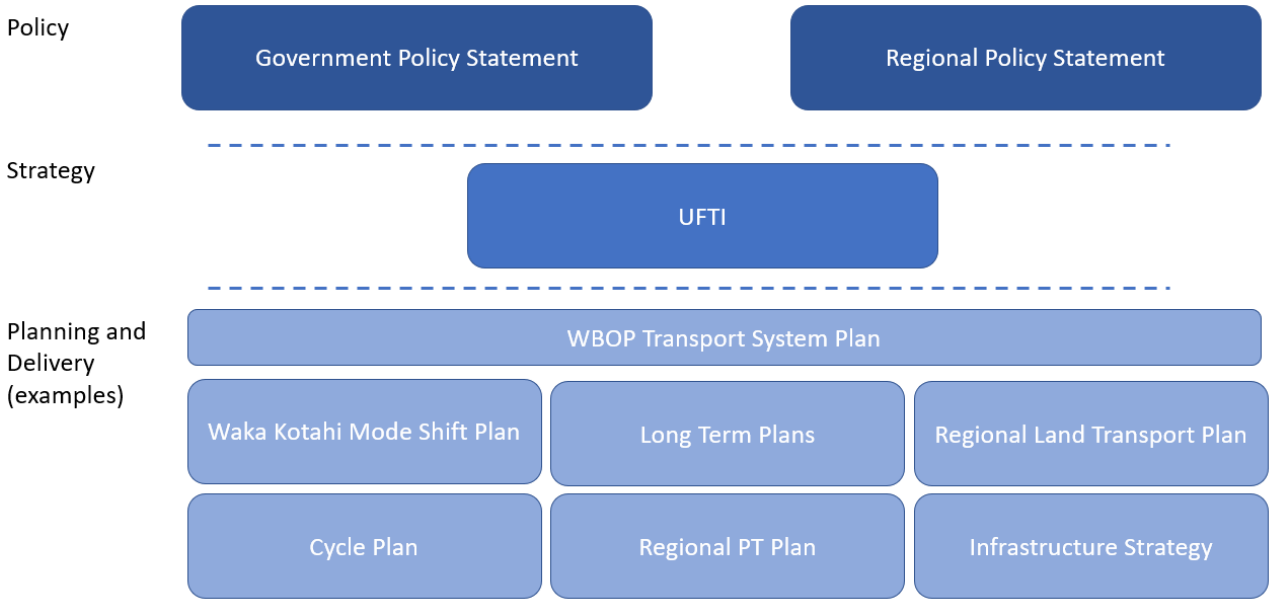


Figure 5: Relationship between key policy, strategy and projects

Table 1: Key Policy and Strategy Messages Informing the TSP

Policy	Key Messages Informing the TSP
Government Policy Statement on Land Transport	The Government Policy Statement (GPS) provides information on the outcomes Government wants to achieve through investment of the National Land Transport Fund (NLTF). The GPS (2018) defines four strategic priorities: safety, access, environment and value for money. Objectives within these priorities include; a safe system free of injury or death, increased access to economic and social opportunities, provide transport choice and resilience, reduce emissions and provide the right infrastructure and services to the right level at the best cost. The Government has recently released a new Draft GPS (2021) that revises the strategic priorities to be; better transport options, climate change, improving freight connections and safety. The strategic direction remains underpinned by the principle of mode neutrality. The GPS 2021 also brings rail into the planning framework as rail activities are now funded under the NLTF. The GPS notes that transport planning and investments need to be guided by a long term strategic approach, with a clear understanding of the outcomes the government is trying to achieve.
Regional Policy Statement	The Regional Policy Statement (RPS) provides a framework for sustainably managing the region's natural and physical resources.

Policy	Key Messages Informing the TSP
	The RPS recognises that ineffective integration between land use, regionally significant infrastructure and the region's transport network can result in development patterns that increase the need for travel, reliance on motor vehicles and inefficient movement of freight. This increases road congestion, emissions and energy use, makes infrastructure provision inefficient and expensive and limits the opportunities for more sustainable modes of transport. The RPS includes the following key relevant objectives and policies: • Objective: A compact, well designed and sustainable urban form that effectively and efficiently accommodates the region's urban growth • Objective: An efficient, sustainable, safe and affordable transport network, integrated with the region's land use patterns o Policy: Protecting the national and regional strategic transport network o Policy: Identifying a consistent road hierarchy o Policy: Promoting travel demand management across the region
Urban Form and Transport Initiative (UFTI)	UFTI is a Smartgrowth project tasked with identifying a strategic long term vision for land use and transport outcomes across the sub-region. UFTI provides the long term vision for the TSP to contribute to over the next 30 years. UFTI identifies challenges for the sub-region around the safe and efficient movement of people and goods, access to social and economic opportunities and infrastructure levels of service. As a key guiding strategy for the TSP, further discussion on UFTI is provided below this table.
Waka Kotahi Mode Shift Plan	Waka Kotahi (NZ Transport Agency) are in the early stages of preparing a mode shift plan for the Bay of Plenty. This has clear parallels with the TSP and the two projects will need to align on objectives, priorities and actions.

A summary of key messages within other related studies and plans is provided in **Appendix A**.

Of the documents included in Appendix A, the Tauranga City Cycle Plan will be replaced in time with a Programme Business Case for cycling currently being prepared by Tauranga City Council (TCC). The Tauranga Transport Programme, Tauranga Network Operating Plan and Tauranga Urban Network Strategy will effectively be replaced by the TSP. Whilst they provide useful context, they will have less relevance going forward.

2.1 UFTI

UFTI defines the long-term land use and transport vision for the sub-region, forming the Programme Business Case under which the TSP will be delivered. UFTI has released a foundation report and interim report which inform the TSP as well as a number of research reports, all available via the UFTI website (ufti.org.nz).

At the time of writing, the UFTI project is at the stage of comparing a shortlist of long term (30 year and beyond) land use and transport programmes to identify a preferred option.

The short list programmes are defined in the UFTI interim report as:

- **Dispersed growth**: Continuation of an 85% greenfield / 15% intensification development scenario, with growth in Tauriko, out to Waihi Beach to the north and Paengaroa to the east. Public transport system developed where it can to assist in movement of people and goods. Investment for significant additional roading capacity and infrastructure to manage growth.
- **Rail enabled growth**: Urban 'villages' based around the key transport hubs (passenger rail and bus). Additional housing and liveable communities via a mix of intensification and greenfield development. High frequency and convenient public transport via passenger rail and bus spines,

supported by easy active transport provides access to, and through, the 'villages'. Investment for intersection improvements, community amenities and facilities, Public Transport (PT) prioritisation, passenger rail, and some new transport connections.

- **Connected urban villages**: Distinct urban villages along core prioritised public transport corridors. Convenient and frequent bus access between Ōmokoroa-Te Puna-Bethlehem-CBD-Mount-Papamoa-Wairakei/Te Tumu-Te Puke and from the CBD to Tauriko. Low carbon buses (including double decker's) and safe and attractive cycling, walking and active transport access to, in and through the villages. Investment for intersection improvements, PT prioritisation, community amenities and facilities, and some new transport connections.
- **Two urban centres**: Tauriko to the CBD and new development in the east form the two main centres. New communities in Tauriko up to the Kaimais and in the East (Wairakei, Te Tumu, Te Puke, Rangiuru), with intensification in the Te Papa Peninsula enable growth. Core public transport spines provide frequent services, and the active transport network enables safer active mode access. Investment for intersection improvements, PT prioritisation, community amenities and facilities, and additional transport connections and freight capacity.

At the time this report was prepared, the UFTI project is in the stage of evaluating the above short list of programmes to determine the preferred programme. The preferred programme may be a variation on one of the short list programmes. The outcome of UFTI and how the TSP can contribute to the agreed outcomes will be described in Report 2 of the TSOF.

3 Land Use Context

3.1 Demographics

The sub-region is one of the fastest growing areas in New Zealand and Tauranga is the fifth-largest city. Tauranga's population has grown from 21,500 people in 1963 to a population today of approximately 145,000 people. The total Tauranga and Western Bay of Plenty sub-region population is approximately 200,000[3].

Population growth rates have consistently tracked above national averages and the sub-region experienced particularly high growth in the post global financial crisis (GFC) period.

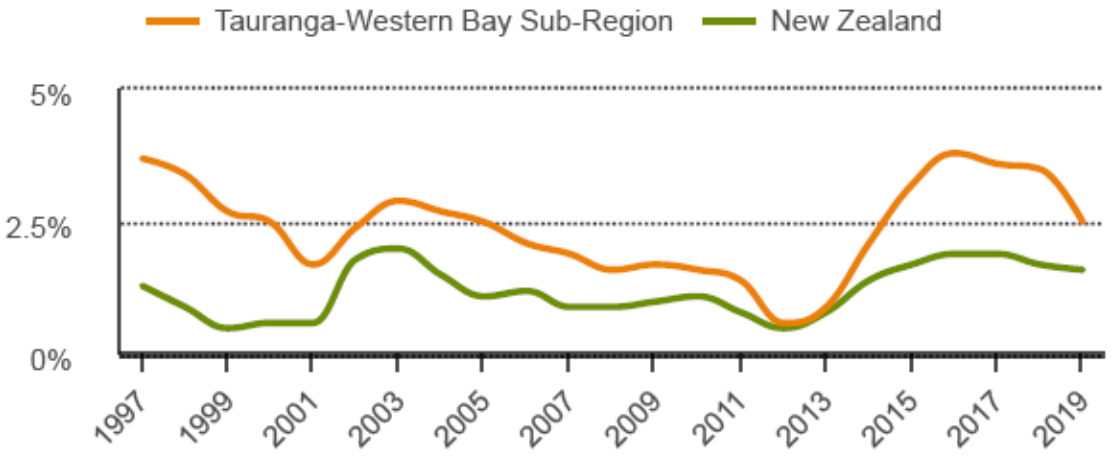


Figure 6: Sub-regional Population Growth Rate Compared to National Averages (Source: Priority One)

Growth has tracked close to the high end of the projections within the Tauranga Urban Network Strategy (TUNS) (2013). The 2016 'high' projection for Western Bay of Plenty was a population of 185,000 and the actual figure in 2018 was 189,000. The 'high' projection for 2021 was 203,000, which appears on track to be met.

Between 2013 and 2018, Tauranga City recorded population growth of 18.6%. The Western Bay District growth over the same period was 16.3%. These equate to annual increases of 3.7% and 3.3% respectively. The UFTI projection for growth to 2050 (around 30 years) is for a total sub-region population of 270,000. This is an increase of 70,000 over 30 years, or a 35% population increase at 1.2% per annum.

Significant planned urban growth areas in the next 30 years are assumed to be; Omokoroa, Tauriko, Pyes Pa, Te Tumu and intensification along the Te Papa Peninsula. This is illustrated in Figure 7. Longer term growth will be defined through the UFTI programme.

[3] Tauranga and Western Bay Infometrics Summary 2019, Priority One

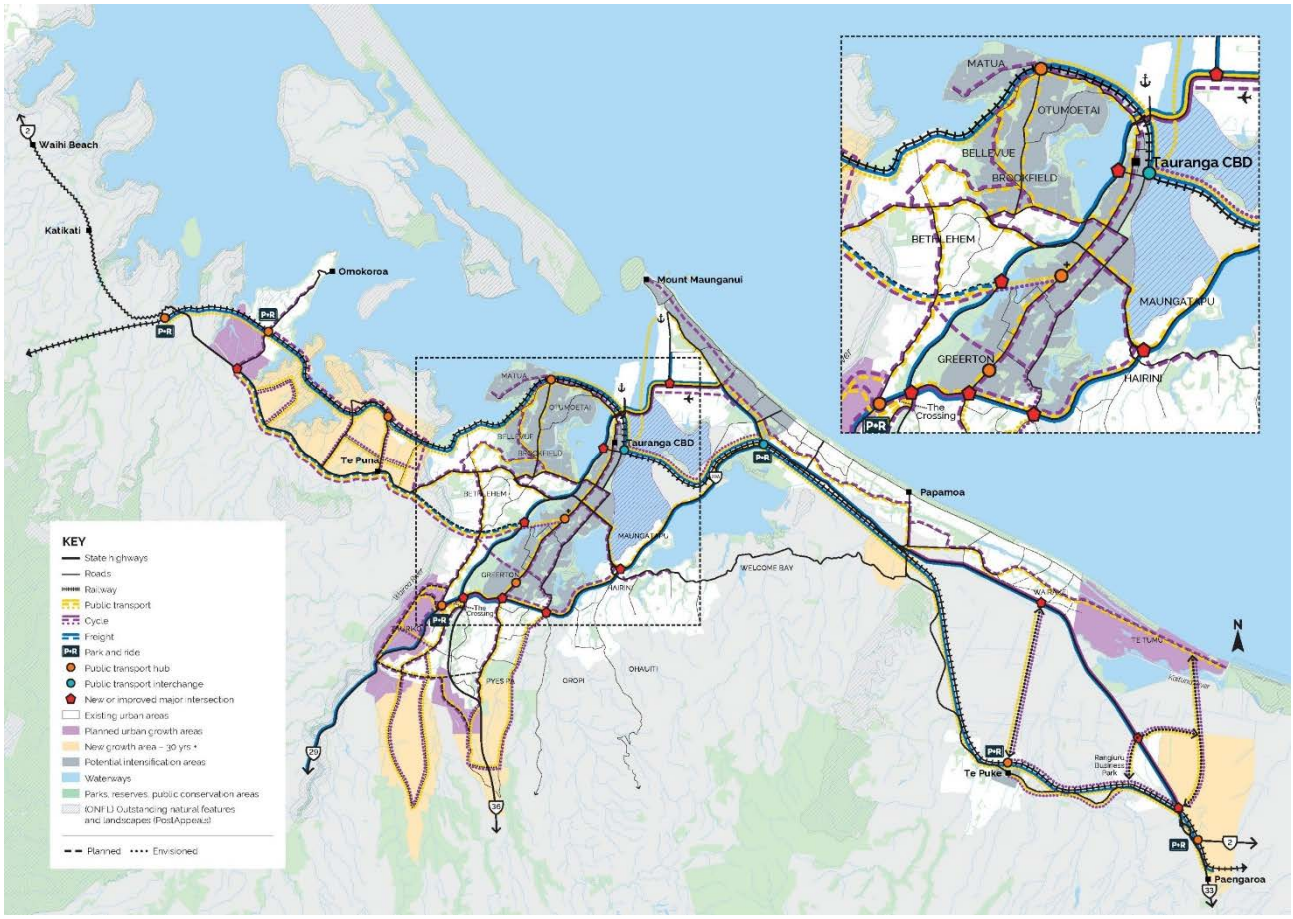


Figure 7: UFTI / Smartgrowth Future Development (first 30 years purple, longer term yellow)

3.2 Economy

Increasing population growth in the sub-region is contributing to the expansion of economic activity with increasing business and employment opportunities.

The sub-region has an annual economic growth change of 4.1% which is higher than the national average of 3.2%, as shown in Figure 8. Prominent industries include the Port of Tauranga, healthcare, social services, kiwifruit and horticulture. Kiwifruit is the largest contributor, with a total of $867 million per annum. This is anticipated to increase for kiwifruit with GDP rising to $2.04 billion by 2030. For the Western Bay of Plenty, agriculture, forestry and fishing account for 20% of GDP (2017). These industries are reliant on efficient transport connections to ensure businesses can move goods and services to meet demand.

For Tauranga City specifically, the economy has been growing strongly since 2011 and continues to grow. GDP has increased by 42% between 2001 and 2013, with employment growth increasing by 5.5% during 2017. Key drivers in the local economy include manufacturing, healthcare, construction, retail and wholesale trade, and elderly residential care[4].

[4] Tauranga Transport Programme Business Case

Figure 8: Tauranga City GDP Growth Compared to New Zealand as a Whole (Tauranga Transport Programme)

The sub-region's increasing and diversifying economic activity is expanding across several hubs away from the Tauranga Peninsula and CBD area. The following figure (Figure 9) shows employee density across the sub-region. Generally, Tauranga has low density employment spread across many parts of the city.

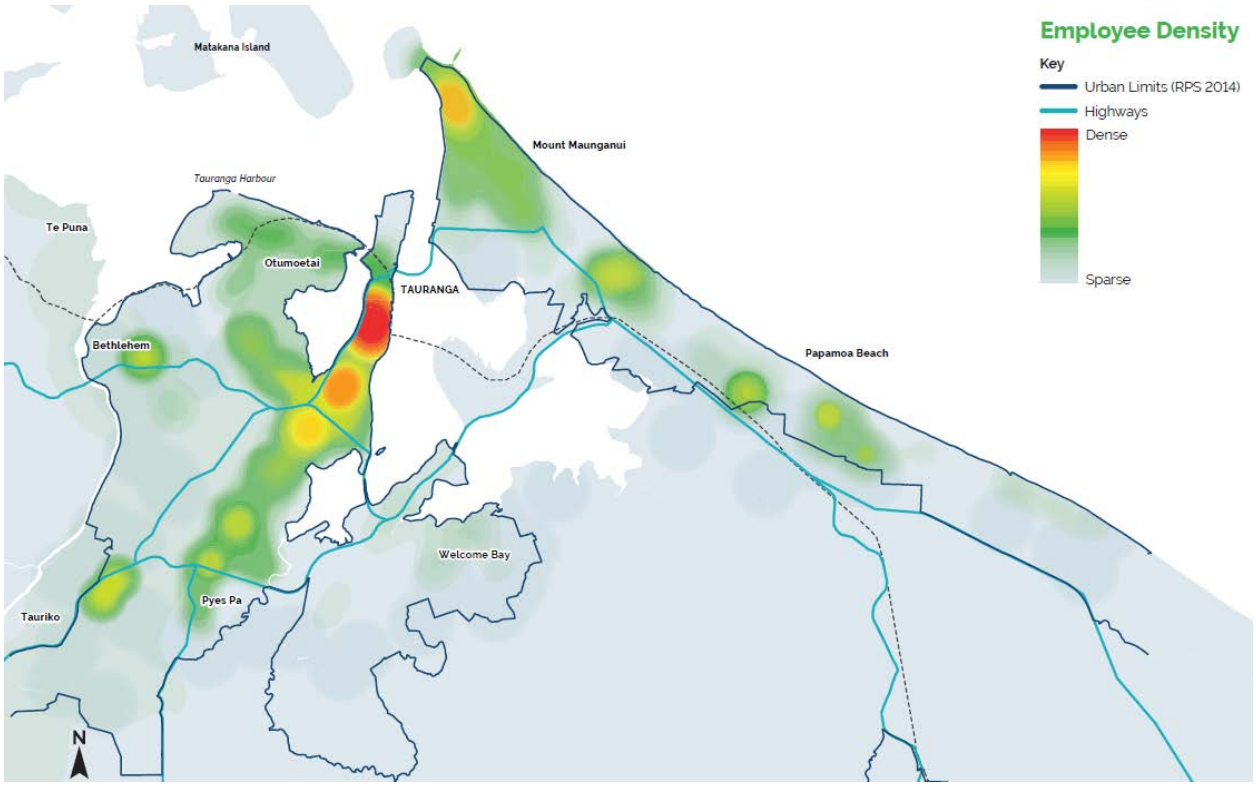


Figure 9: Employee density in 2018 (Source: UFTI Foundation Report)

At present, less than 20% of all AM peak period vehicle trips travel to the central Tauranga peninsula area between Sulphur Point and 15th Avenue[5]. These trips originate from across the sub-region. This dispersal of

[5] Tauranga Transport Model

destinations and origins makes providing an efficient and effective public transport service difficult under current land use patterns. This is because the network must cover a wide area to connect people with their intended destinations, and this typically results in longer journey times that impact on any travel time advantage over private vehicles.

Tauranga's urban centres to 2050 are identified in the Tauranga Urban Strategy as shown below in Figure 10.

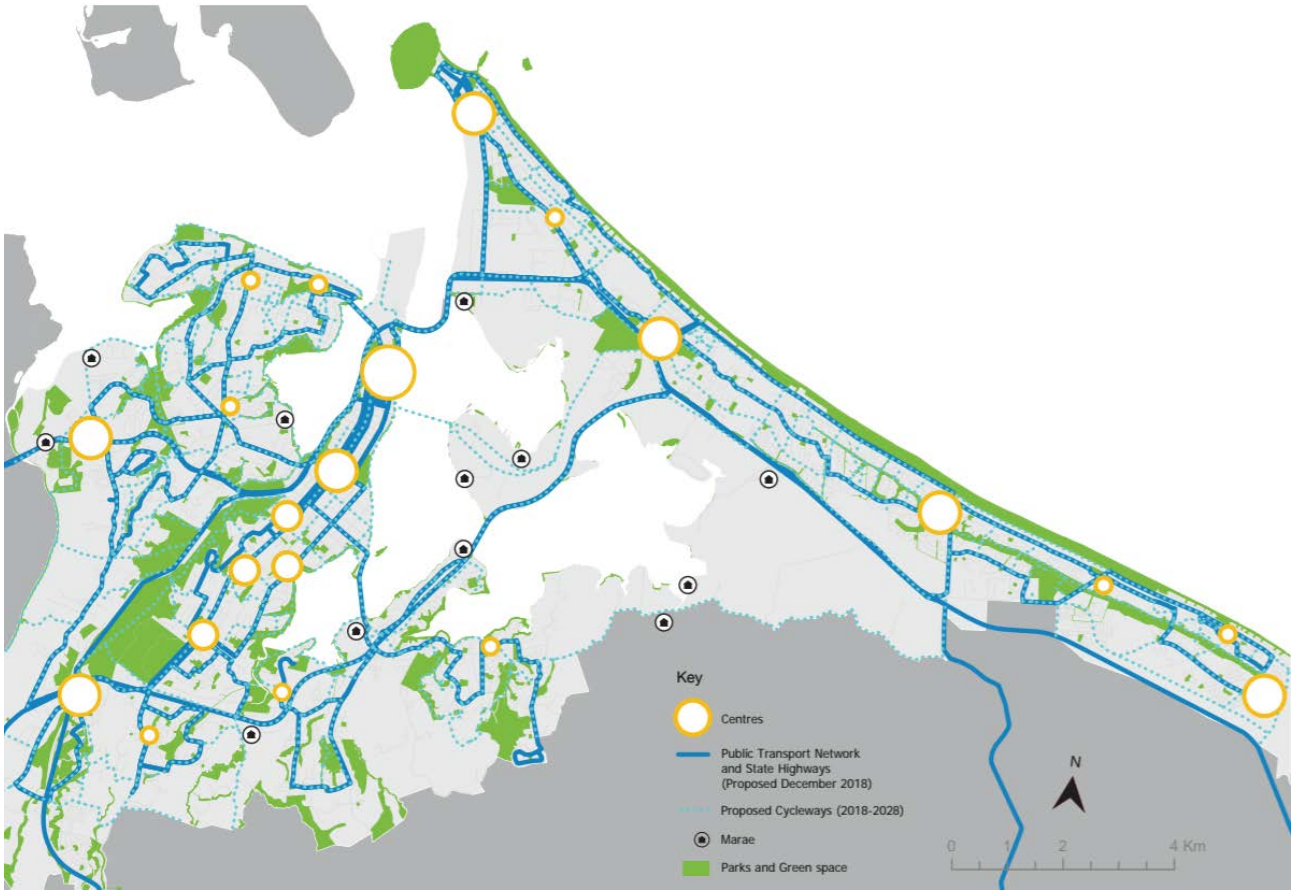


Figure 10: Tauranga Urban Strategy Centres Maps

3.3 Topography

Tauranga's topography imposes constraints on the transport network where movement is funneled across the Wairoa River, Tauranga Harbour and estuaries. Movement from Te Puke is constrained by the Papamoa hills, and the Kaimai Ranges influence the route to Tauranga from the west. These constraints apply to trips made to the Tauranga CBD along the Te Papa Peninsula and for cross town movements that generally travel via State Highway (SH) SH2, SH29 or across 15th Avenue. At pinch points, such as the SH2 Wairoa River Bridge, the Harbour Bridge and along SH29, cross town traffic and longer distance inter-regional trips have to mix with local traffic.

The following figure (Figure 11) shows land area and state highway connections diagrammatically. Drawing a line south from Mount Maunganui shows there are only two points on the road network where all east-west vehicle movements converge, either at the Tauranga Harbour Bridge or the Hairini Interchange area.

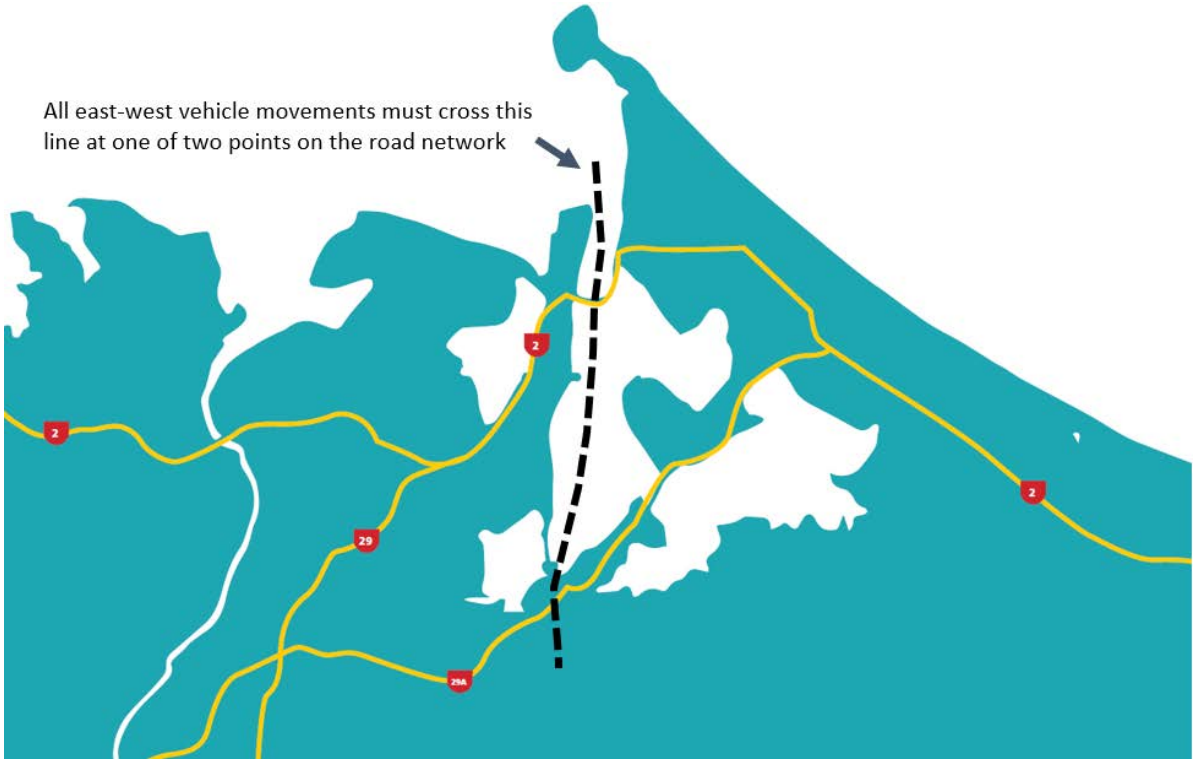


Figure 11: Tauranga Land and Sea Areas and State Highway Corridors

Some pinch points on the transport network are susceptible to environmental risks. Bridges such as SH29a Maungatapu, Turret Road and Chapel Street are potentially vulnerable in an earthquake. Sea level rise is expected to impact on key city access routes in the longer term. The following Figure (Figure 12) shows 100-year harbour inundation at Hairini Causeway, Chapel Street and Waihi Road respectively.

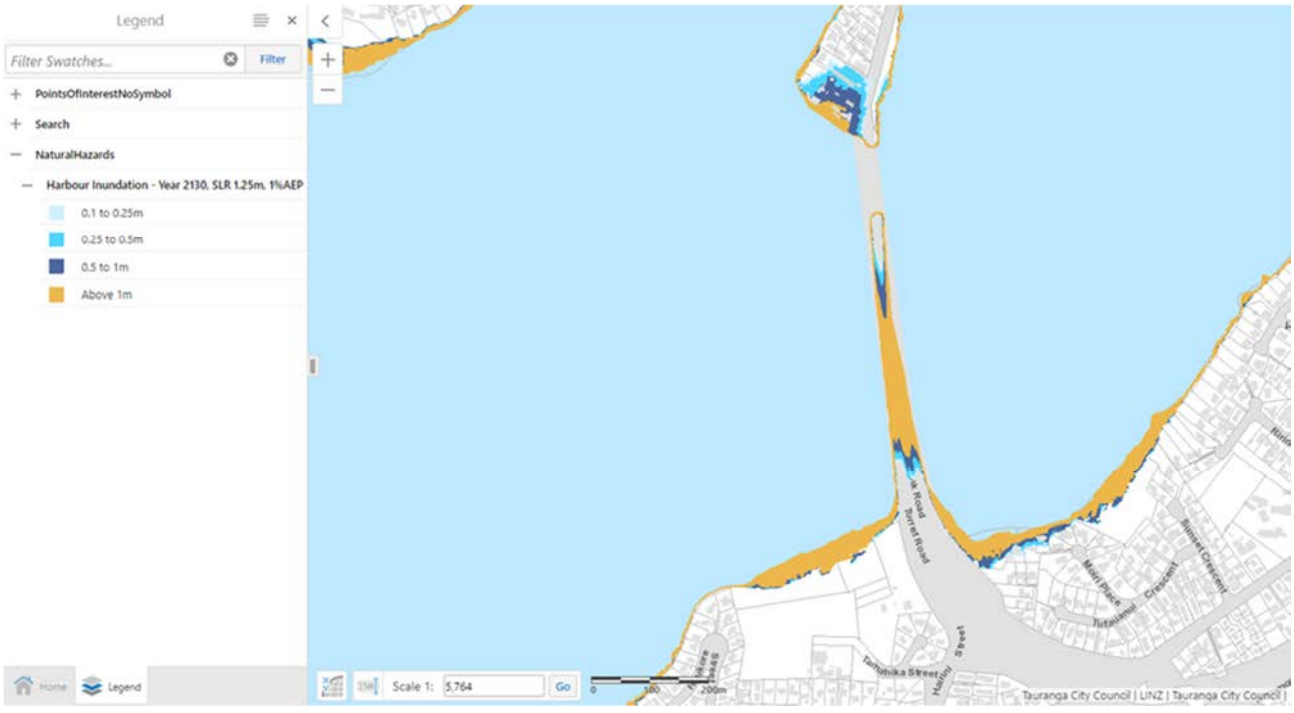


Figure 12: 100-year Harbour Inundation at Tauranga CBD Access Points

4 Tauranga's Transport System

The following figures (Figure 13 and Figure 14) show the Tauranga road hierarchy (City Plan) and the One Network Road Classification (ONRC) for the sub-region. Whilst the ONRC is not a planning tool it provides some context (since 2012) to historical state highway network planning by Waka Kotahi.

There is some conflict between the definitions in these maps. For example, the TCC road hierarchy classifies the around harbour corridor (SH29A) as an expressway and the Hewletts Road corridor as a lower level primary arterial. Whereas, the ONRC classifies the Hewletts Road route as 'high volume' and the SH29A route (between SH2 and Hairini) as a lower level 'regional' route.

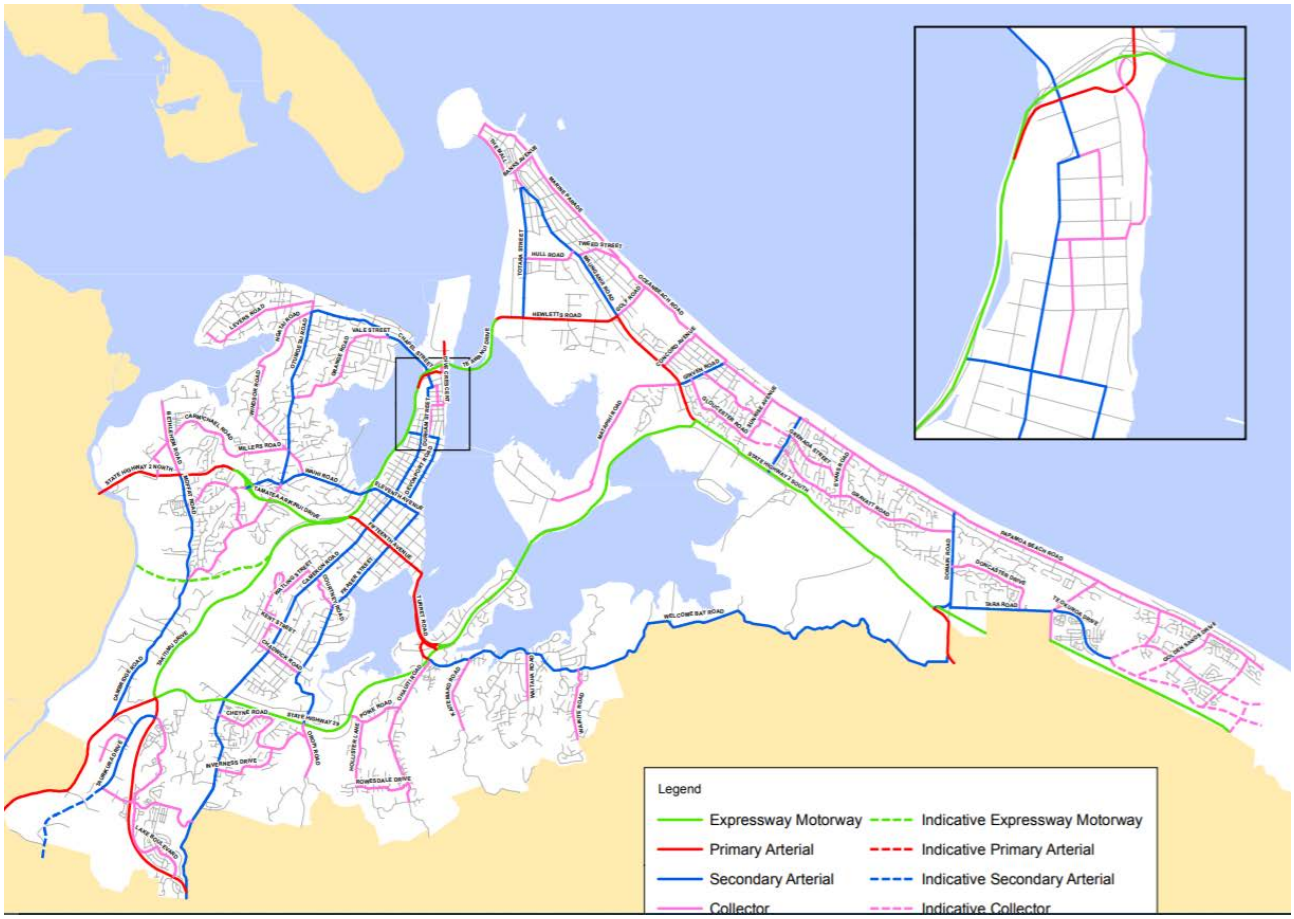


Figure 13: TCC Road Hierarchy Map

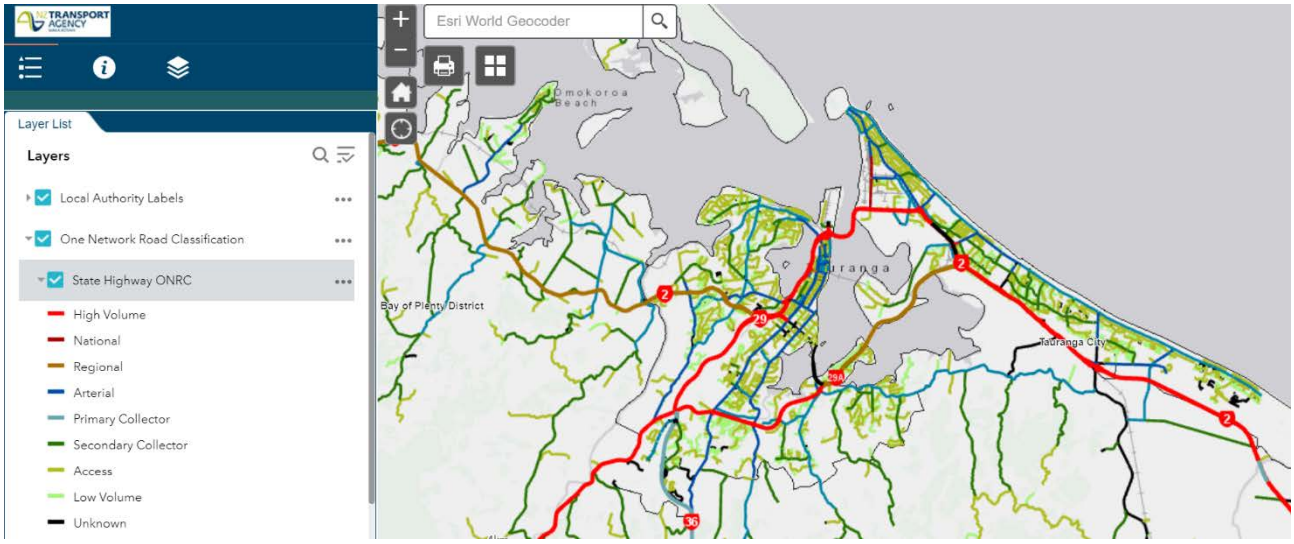


Figure 14: ONRC Road Hierarchy

UFTI Strategic Journeys

UFTI has classified key sub regional routes in terms of the primary mode priority to support movement and enable strategic land use outcomes. The UFTI strategic journeys map is shown in Figure 15.

Figure 15: UFTI Strategic Journeys

Recent / Ongoing Road Network Changes

Several significant projects have recently been completed or in construction at this time.

- Takitimu North Link; A new four lane connection (2 x general traffic and 2x 'managed lanes') from Takitimu Drive to Loop Road Te Puna is to be constructed as part of the NZ Upgrade Programme. Following this, a new four lane connection (2 x general traffic and 2x 'managed lanes') from the Takitimu North Link to Omokoroa Road will be constructed with an interchange at Minden Road and Omokoroa Road.
- Baylink; Grade separation of the Girven Road and SH29A intersections on SH2 is in construction and will provide a two-way flyover (one lane each way) over both intersections on the SH2 route and a pedestrian/cyclist underpass between Bayfair (Girven Road) and Matapihi Road. Completion is expected in 2022.
- Hairini Interchange; Grade separation of Welcome Bay Road below the SH29A signalised roundabout was completed in 2018.
- 15th Avenue; Widening to two outbound lanes south of 15th Avenue and a section of bus lane inbound is in construction. Includes a new signalised intersection at Burrows Street and improved walking and cycling connections.
- Domain Road; walking and cycling improvements and new signalised intersections has recently been completed.
- Maunganui Road; shared paths and traffic calming via new roundabouts. Initial stage complete.

4.1 Mode Share

Tauranga has a high reliance on private vehicle use when compared to other major cities in New Zealand. According to the 2018 census, approximately 91% of people travel by private vehicle to access employment, as shown in Figure 16. The dominating use of car travel significantly outweighs the use of alternative transport modes, such as public transport (2%), walking (4%) and cycling (3%). With a growing population in the sub-region, a continued reliance on private vehicle use is not sustainable, healthy or affordable.

Figure 16: Tauranga's mode share versus New Zealand Cities (Source: Statistics New Zealand)

Mode share of cycling and public transport is slightly higher when considering only trips made during the morning peak period (7am to 9am). The following figure (Figure 17) shows private vehicle mode share along key city corridors for AM peak period movements toward the CBD (pie graphs). On an AM peak period corridor basis, mode share is 85% to 94% private vehicles (as a proportion of car, PT and cycle movements). The figure also shows traffic growth over the last five years at available count locations.

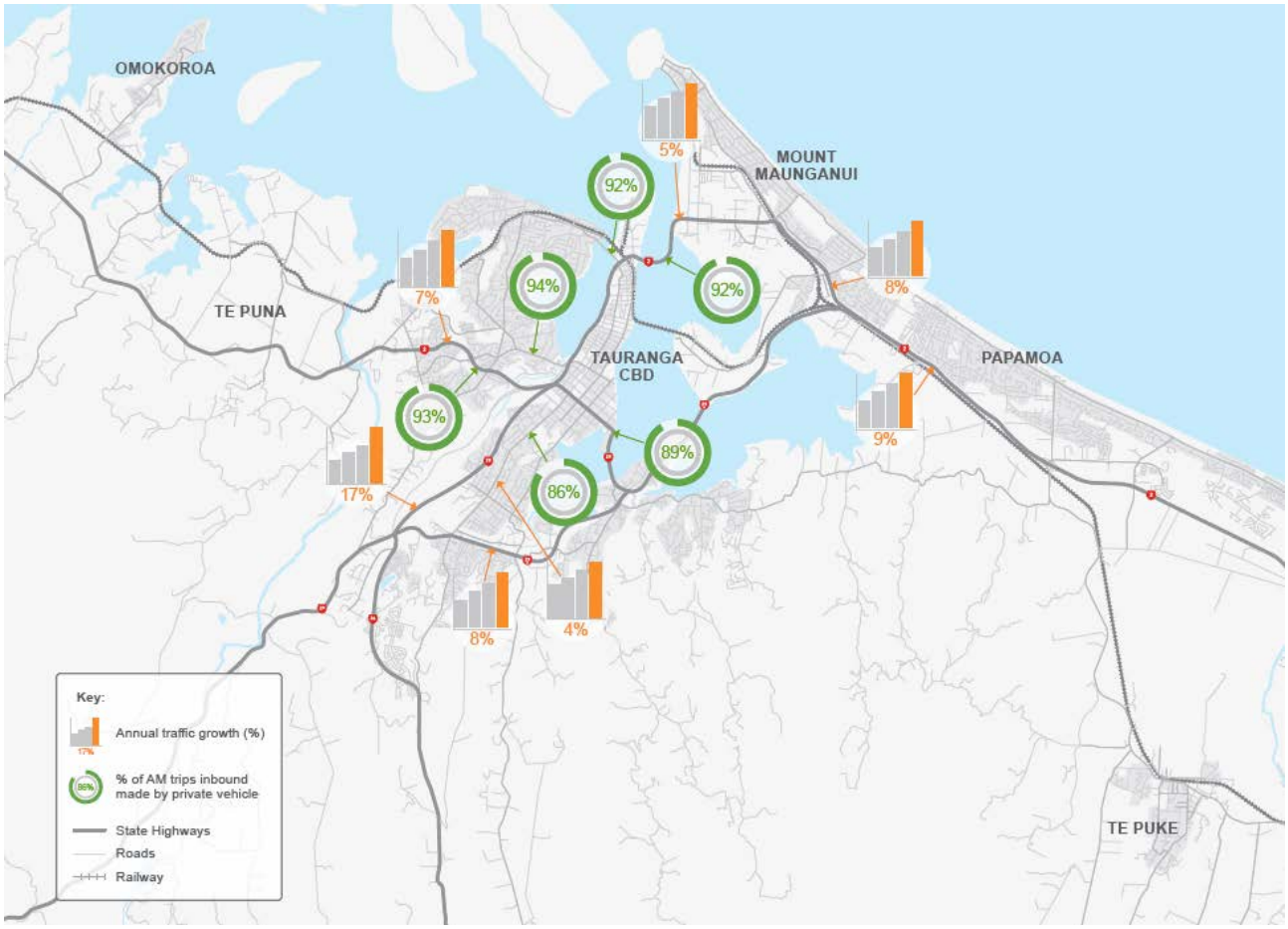


Figure 17: AM Peak Mode Share on Key Corridors and Recent Traffic Growth (last 5 years)

Private vehicle use is predominantly single occupant during peak periods. Data collection for the Tauranga Transport Model update in 2018 identified the proportion of single occupant vehicles (as opposed to vehicles with two or more people in the car) on key city corridors to be between 80% and 90%.

Other Modes

At present Tauranga has a low uptake of other new emerging transport modes such as e-scooters and other micromobility vehicles. Personal mobility company 'Lime' propose to initiate an e-scooter sharing system in Tauranga this year and the impact of this on mode share, be it a shift from cars or walking/cycling or PT use to e-scooters, should be monitored.

4.2 Public Transport

Network

The sub-region has an extensive public transport network with 25 urban and commuter services provided through the Bay Hopper network, as shown in Figure 18. The current network is primarily designed to maximise access opportunities and transport choice throughout Tauranga city and to key centres in the wider sub-region. The network also contributes to system efficiency by providing increased levels of service for commuters during peak travel times.

This network for the Tauranga and Western Bay area operates at varying times and frequency depending on the destination and day of the week. Inner-city link services generally operate at a 15 minute frequency on weekdays, with key commuter services on strategic corridors running every 30 minutes on weekdays.

Limited stop express commuter services also operate between the CBD and the outlying centres of Tauriko and Papamoa.

School students can travel on the Tauranga urban network or can access one of approximately 60 dedicated school bus routes. In 2020, Bay of Plenty Regional Council (BOPRC) is operating a trial of free bus fares for school children in Tauranga on weekdays before 9am and between 2:30pm and 6:30pm**.** Indicatively this has led to a significant increase in bus use in the early months of the school year, with some 60 to 70% increase in school children using buses on the Tauranga urban network.

In 2019, BOPRC also reviewed the free travel period for SuperGold Card holders, extending the hours to include free travel from 9am on weekdays and all day on weekends and public holidays. These new extended hours have currently been implemented on a trial basis until the end of June 2020.

Patronage and Data

Implementation of the Western Bay of Plenty Public Transport Blueprint and subsequent network adjustments and infrastructure improvements have resulted in recent patronage gains on the Tauranga urban network as shown in Figure 18. BOPRC will investigate further network enhancements to align with the outcomes of UFTI and the strategic direction in the Regional Land Transport Plan, Regional Public Transport Plan and Regional Mode Shift Plan.

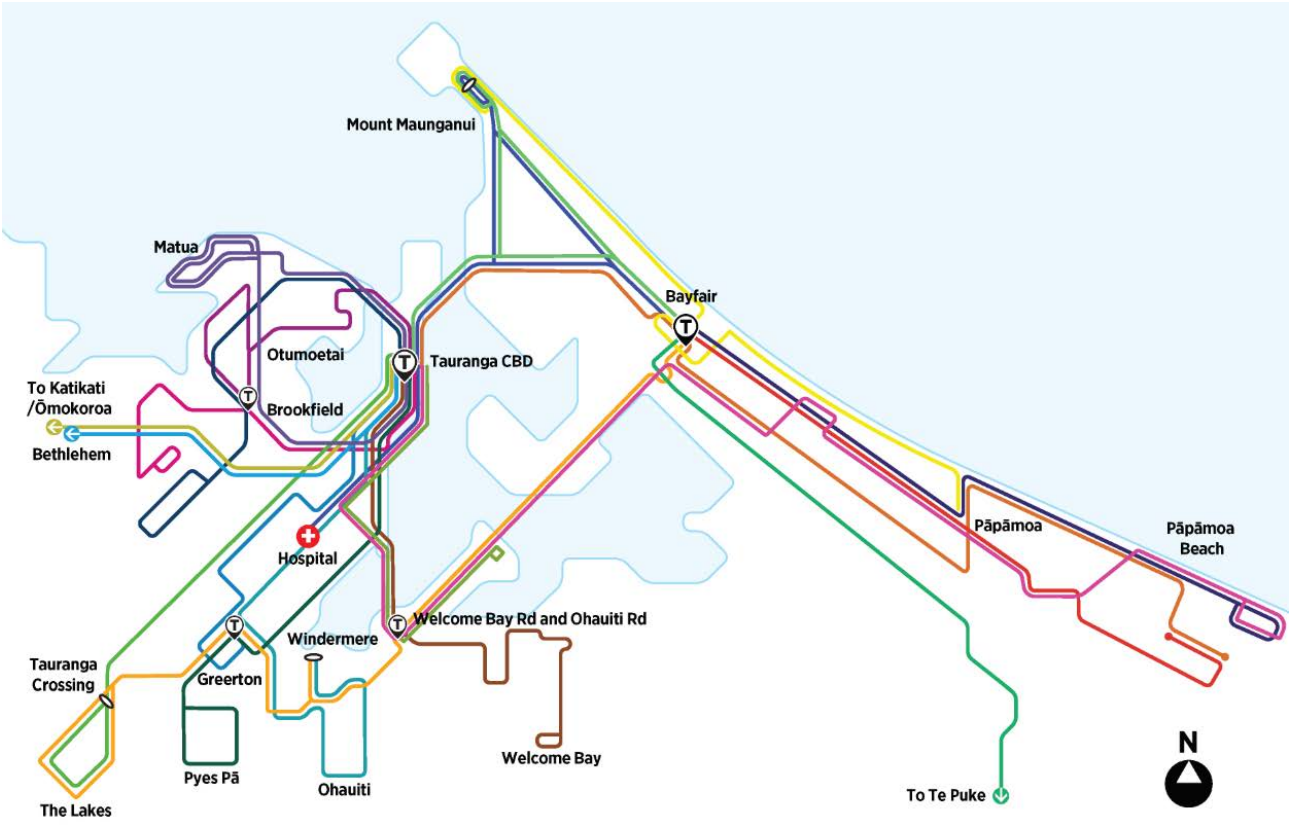


Figure 18: Current Public Bus Network (*Source*: Baybus website)

As is the case with travel in general, COVID-19 has significantly impacted on all travel by public transport. This has had a fundamental impact on Tauranga service provision and patronage levels in the short-term. It has also impacted on BOPRC's ability to monitor the outcomes of current trials. The medium and longer-term impacts of COVID-19 on public transport systems everywhere remain an area of uncertainty.

In partnership with other regions, BOPRC is working towards implementing a new regional integrated ticketing system (Bee Card). This new system will be more user-friendly and reliable. It will also record boarding and alighting locations, providing more comprehensive data on how customers are using the public transport system.

Bus Fares vs Parking Cost

Cost is a significant factor in determining personal mode choice, along with other factors such as convenience and travel time. The cost of a two-way bus fare in Tauranga is $5.40 with a Smartride card and $6.80 without, whilst the cost of all-day parking in Tauranga CBD ranges from $3.00 to $14.00. There is also a substantial amount of free car parking spaces near the CBD. According to the Tauranga Transport Model, approximately 35% of vehicle trips to the CBD do not pay for parking. In some instances, the bus fare may be cheaper than parking all day, but the current cost difference is not likely to offer a discernible benefit for public transport users.

Bus Priority and Infrastructure

The ongoing challenge of public transport in the sub-region is providing a system that competes with the convenience, comfort, speed, cost and reliability of private vehicles. To be competitive, a public transport system requires dedicated infrastructure that provides enhanced levels of service when compared with private motor vehicles because time to pick-up and drop-off passengers needs to be factored into the system.

Many services currently operating in the sub-region are using the same routes as private vehicles and therefore buses experience travel time delays in peak hours due to congestion. This is partly due to a lack of bus priority measures (e.g. bus lanes, busways, intersection priority) which can mitigate travel time delay.

Bus priority measures currently on the network include:

- Hewletts Road bus lanes each way
- Hairini Street bus link one way (inbound to CBD)
- Links Avenue bus lane one way northbound (inbound to CBD) which operates 7.30-10am.

Collectively these sections of bus priority contribute a very small proportion of the overall bus network. The total length of bus lanes is around 4.5km. The length of the public bus network is approximately 320km, so the proportion of the network with bus priority is approximately 1.5%. These existing bus priority measures also only operate for discrete sections of some bus routes, limiting their efficacy in terms of providing seamless end-to-end journeys.

Improvements to public transport facilities at stops and interchanges can provide an enhanced customer experience, improve accessibility and make a positive contribution to the urban realm. This in turn can improve the attractiveness and uptake of public transport as a travel option. Tauranga currently has on-street bus interchange facilities in the CBD and at Bayfair, and over 500 stops on the network, some with shelters. UFTI partners are developing a programme which provides for improved public transport facilities that will help achieve the desired outcomes.

Bus Level of Service

A wide range of factors can impact on bus service reliability. These include wider traffic conditions and network changes, planning and delivery of the public transport network itself, and supplier delivery of contractual arrangements.

BOPRC monitor bus travel speeds via GPS sensors in buses. This can help to ascertain locations on the network where buses experience delay. Examples of this analysis are shown below (Figure 19) for morning peak periods. This analysis shows buses experience low travel speeds on Farm Street, Golf Road to Hewletts Road, along Cameron Road and within Greerton.


Speed Map for Route CL
Tauranga Airport
SULPHUR POINT
BAYFAIR
26.0 km/h
16.0 km/h
25.2 km/h
27.8 km/h
11.5 km/h
9.5 14.5 19.5 24 40+ km/h
Dwell


Speed Map for Route 55
Tauranga
BELLEVUE
BROOKFIELD
JUDEA
TAURANGA SOUTH
MERIVALE
HAIRINI
WELCOME BAY
GREERTON
PYES PA
OHAUITI
MAUNGATAPU
19.2 km/h
35.2 km/h
16.8 km/h
26.1 km/h
9.5 14.5 19.5 24 40+ km/h

Figure 19: BOPRC Bus GPS Travel Time Analysis (AM Peak)

The GPS analysis is reflective of traffic congestion and the absence of bus priority lanes on these popular routes. Pre-COVID-19 data shows no improvement in general traffic demand and congestion, and with one in five buses arriving late there remains considerable room for improvement to increase travel time predictability of the bus service and achieved desired levels of service.

Another recent survey carried out by BOPRC has shown an improvement in bus reliability following the implementation of bus route and frequency changes in 2019, with the proportion of on time buses increasing from 56% to 63% and the proportion of late buses reducing from 31% to 21% (as shown in Figure 20). However, with one in five buses still arriving late there remains room for improvement to increase travel time predictability of the bus service.

Figure 20: Bus Reliability BOPRC PT Blueprint Phase 3

4.3 Walking and Cycling

Active transport connections are provided across the sub-region with a network including footpaths, shared spaces, on-road cycling facilities and off-road pathways. Figure 21 shows on road cycle lanes and off-road paths across Tauranga. The network provides valued off-road connections along the harbour, estuaries and reserves in particular, but has many gaps. This map does not include recent improvements, e.g. the Maungatapu underpass or the recently completed cycle path on Ngatai Road.

Figure 21: Existing Cycle Network

TCC is working on a Programme Business Case for cycling which aims to deliver a network of major cycleways connecting key origins and destinations, separated from traffic. Preferred cycle corridors have been defined in the Programme Business Case (PBC) and TCC are working on route selection in priority areas. The following map (Figure 22) shows key cycle corridors and forecast cyclist numbers for 2026.

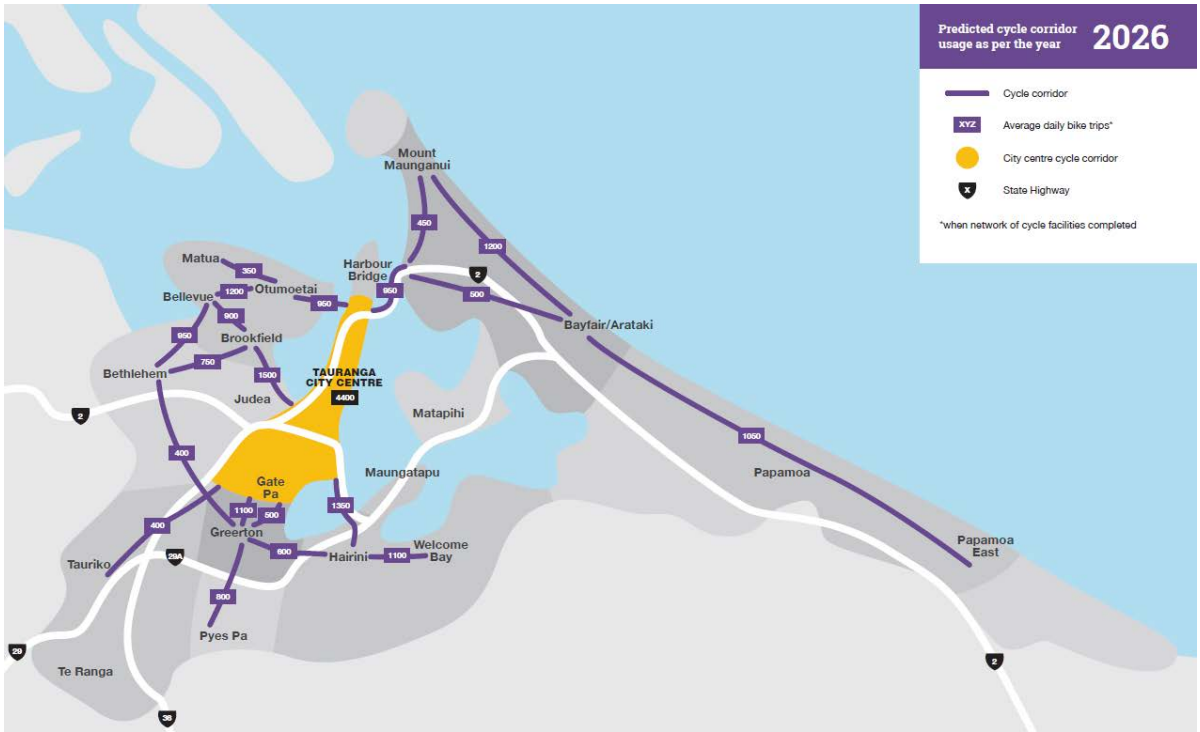


Figure 22: TCC Major Cycleways and Modelled Cycle Numbers

An off-road cycleway is currently under construction between Omokoroa and Tauranga and enters the Tauranga network at the Wairoa Bridge. This will provide a vital and safe link for users travelling from outer WBOP suburbs north of Tauranga.

Cyclist Volumes

Tauranga City Council use a range of sources to gather cycle count data from users around the sub-region. Counting stations have been set up to monitor cycle activity to help understand where people are riding and to monitor trends in usage over time. Figure 23 shows the location of urban count stations while the graph in Figure 24 shows trends in pedestrian and cycle activity over time.

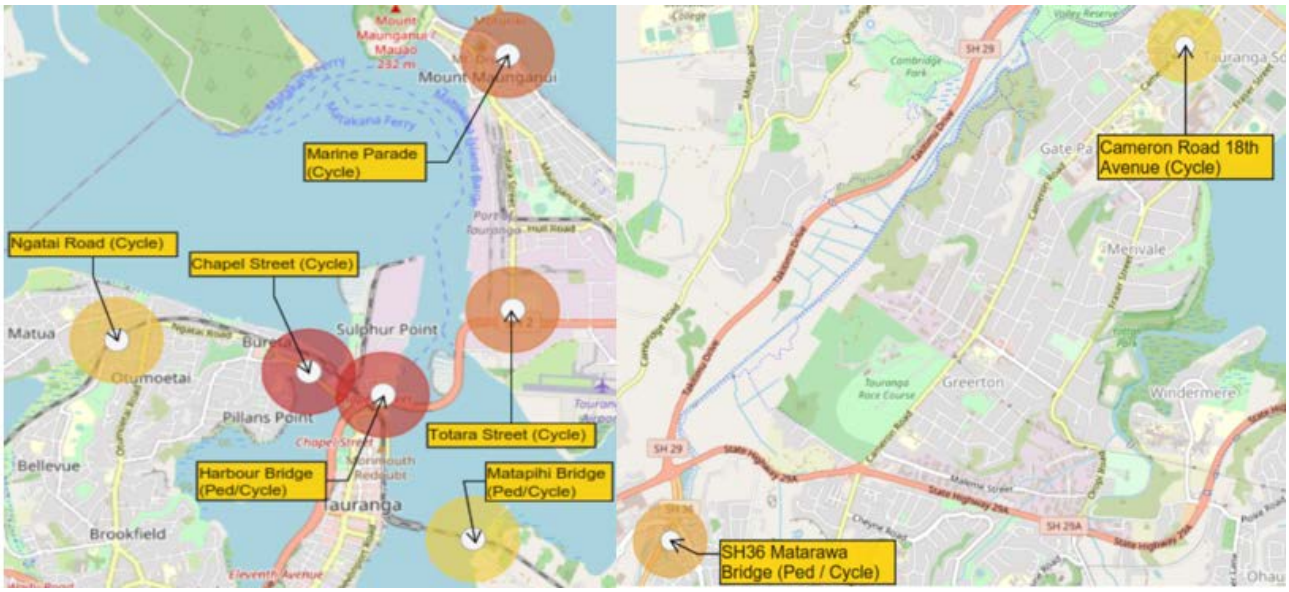


Figure 23: Location of Counting Stations

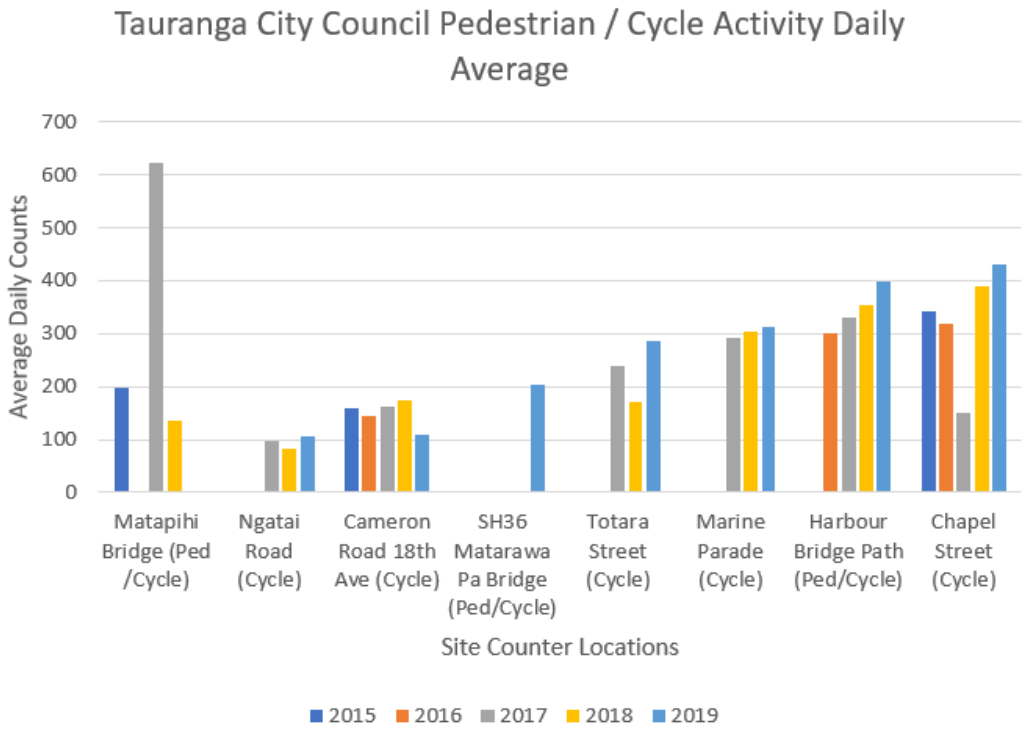


Figure 24: Tauranga City Pedestrian / Cycle Activity Daily Average

School Counts

School cycle count data was collected by TCC in 2017 to understand the number of students regularly cycling to school. Count information was collected from schools in the Tauranga City area and grouped into suburbs, as shown in Table 2.

Table 2: Tauranga City School Cycle Counts 2017

Suburb	No. of Schools surveyed	School's total roll	Cycle Count	% of suburb biking
Papamoa	5	3699	462 (4 of 5 schools)	12%
Mount Maunganui / Omanu / Arataki	6	3775	542	14%
Matapihi	1	146	4	3%
Bellevue / Matua / Otumoetai	6	4665	324	7%
Bethlehem / Judea	5	2519	6 (1 of 5 schools)	0.2%
CBD / Hospital / Gate Pa / Greerton	11	7407	343 (6 of 11 schools)	5%
Tauriko	1	360	-	-
Pyes Pa	1	764	10	1%
Welcome Bay / Ohauiti / Mangatapu	4	1598	15 (1 of 4 schools)	1%
Welcome Bay East	2	229	-	-
Total	**42**	**50324**	**1696**	**7.2%**

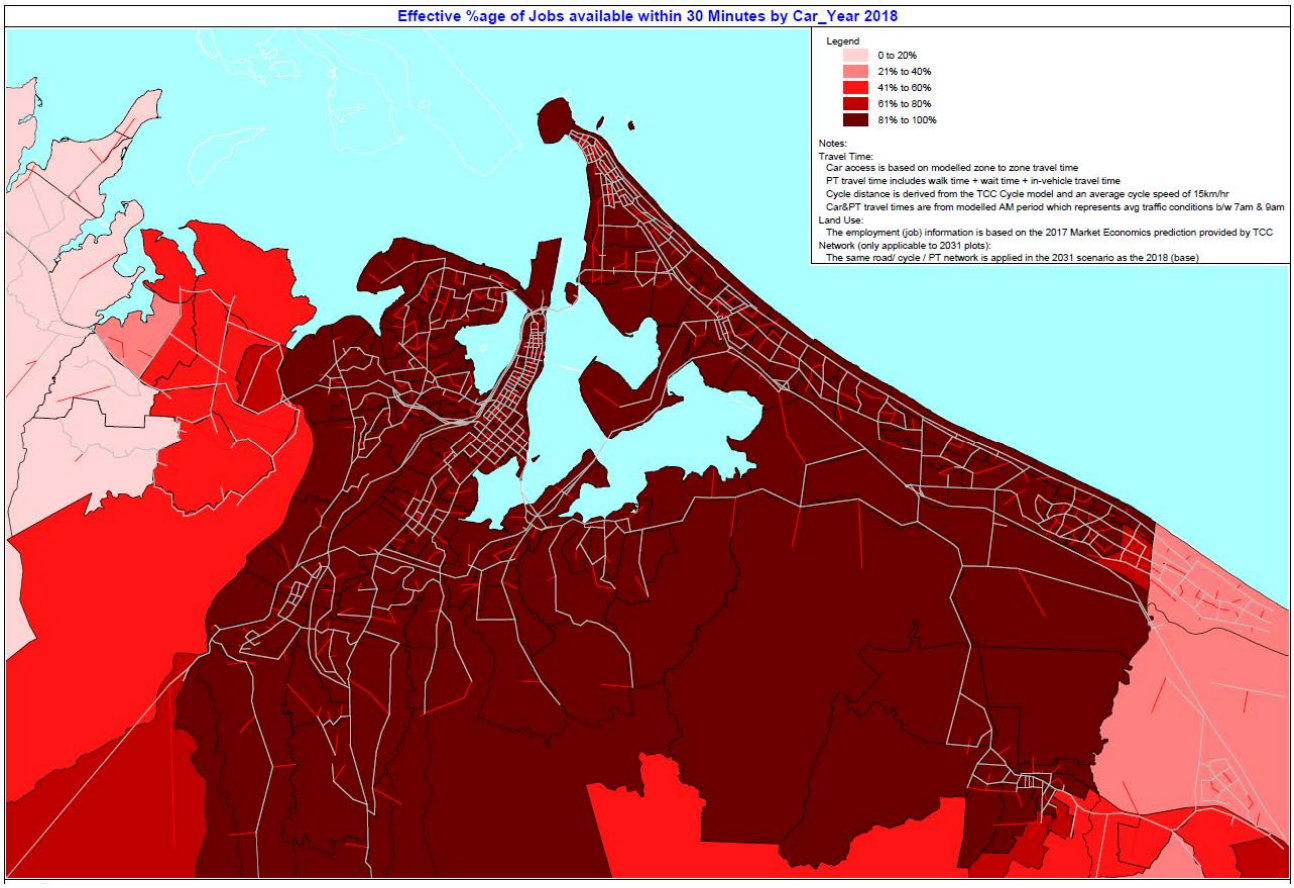
These findings indicate that 7.2% of students across all schools' regularly cycle to and from school. Notably, Papamoa and Mount Maunganui schools have higher cycling numbers, which may be influenced by the generally flat topography in the area, and possibly the relatively small school catchment areas.

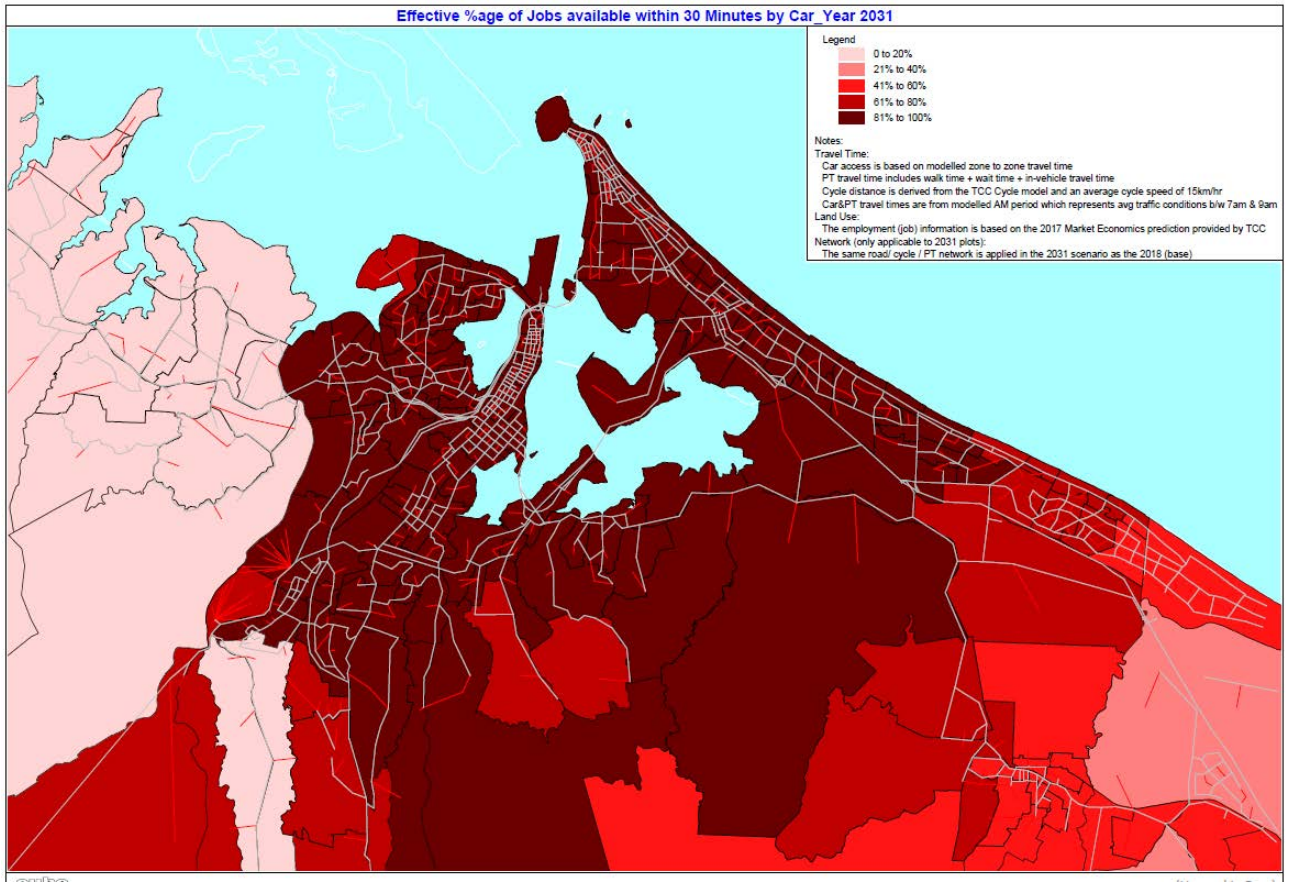
4.4 Accessibility

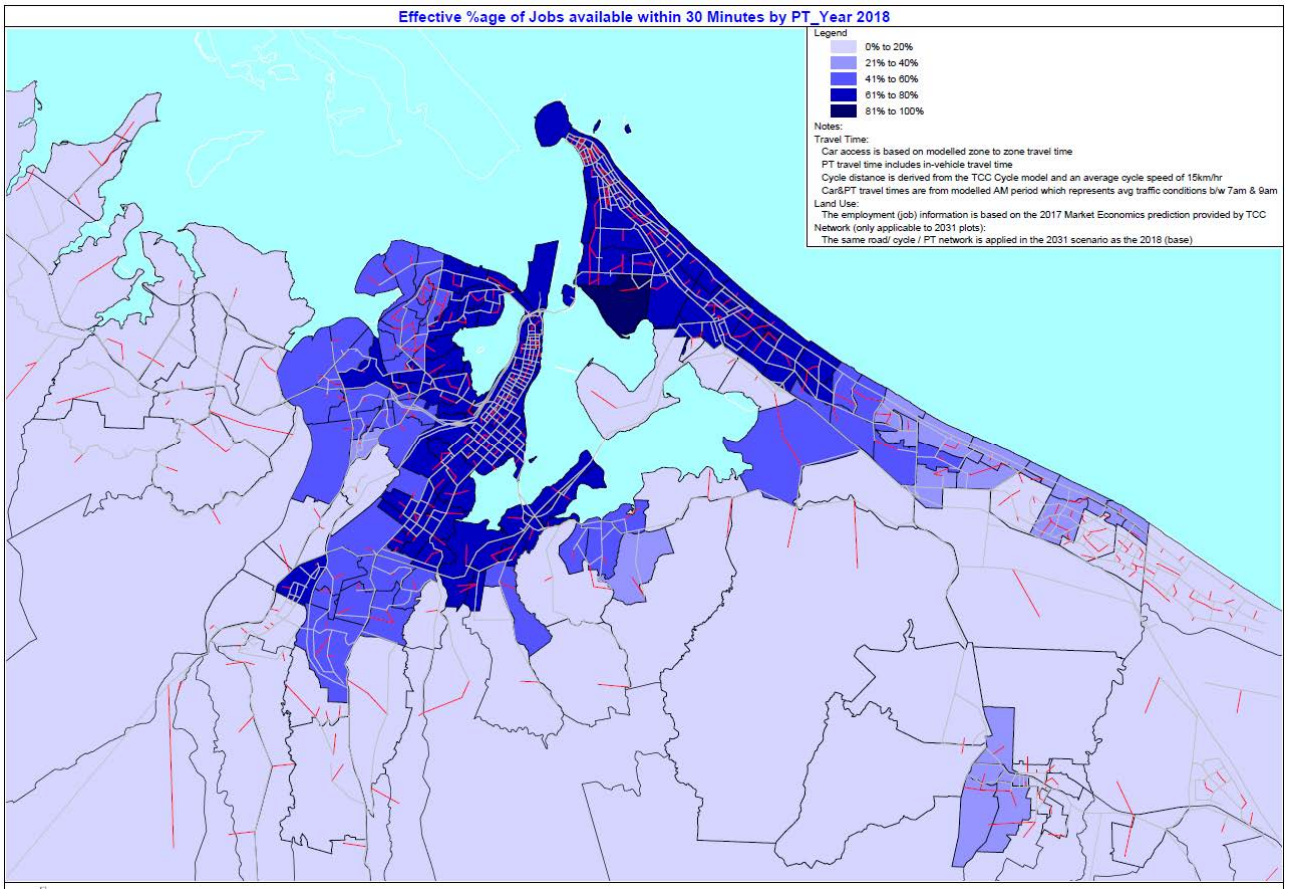
Accessibility is influenced by the transport networks (themselves influenced by topography) and services available (i.e. bus routes). The figures below from UFTI (Figure 25) show the percentage of jobs available for people travelling from their homes in 30 minutes (averaged across a typical 2-hour morning peak period) by car, public transport or bicycle. The figures present accessibility in 2018 and 2031.

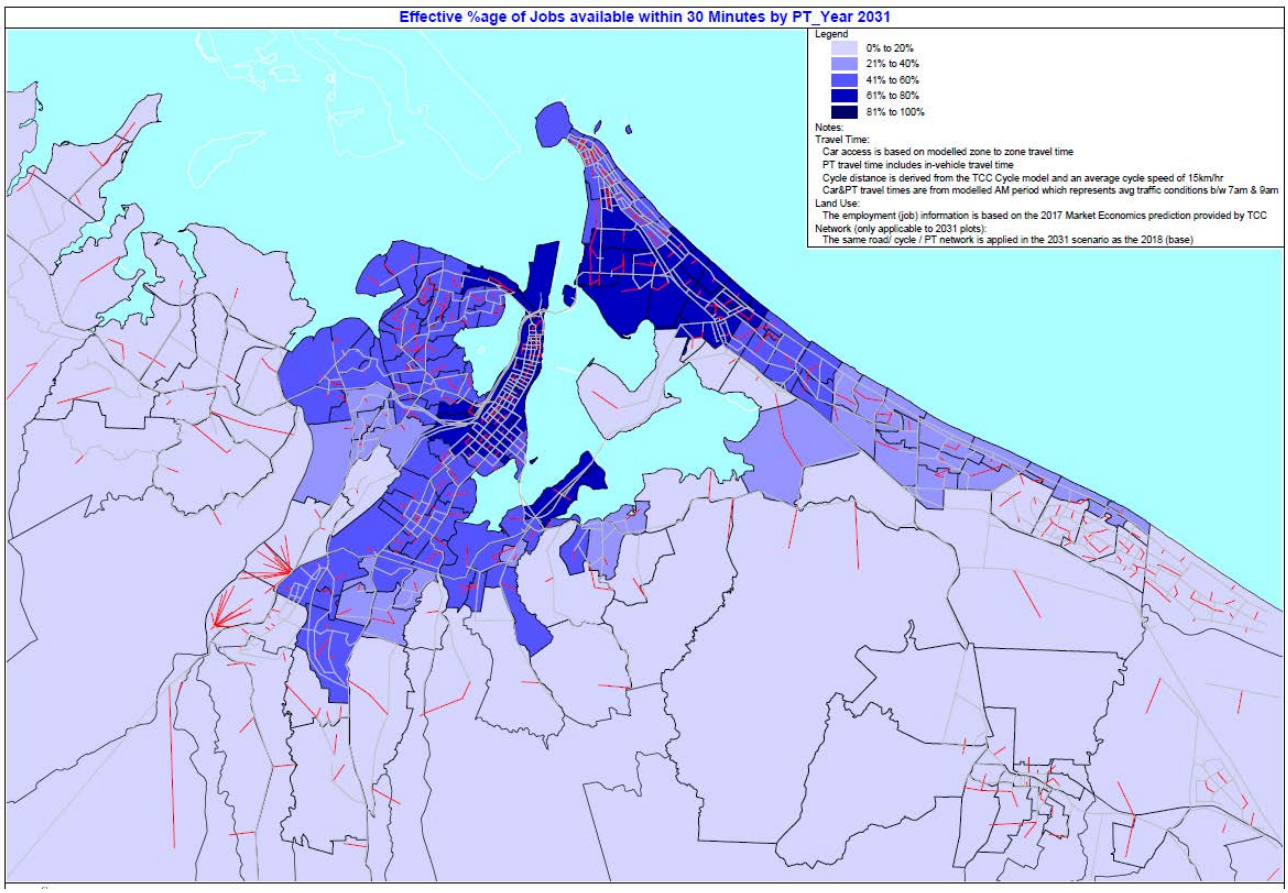
This analysis is based on the current land use pattern and transport networks and includes the effect of travel delays for both car and bus travel. No account of any first or last mile factors is made, e.g. walking to and waiting for buses, searching for and walking from a car park.

The 2031 maps assume no transport network or service improvements from existing, and generally show a deterioration in access for each mode.


Effective %age of Jobs available within 30 Minutes by Car_Year 2018
Legend
0 to 20%
21% to 40%
41% to 60%
61% to 80%
81% to 100%
Notes:
Travel Time:
Car access is based on modelled zone to zone travel time
PT travel time includes walk time + wait time + in-vehicle travel time
Cycle distance is derived from the TCC Cycle model and an average cycle speed of 15km/hr
Car&PT travel times are from modelled AM period which represents avg traffic conditions b/w 7am & 9am
Land Use:
The employment (job) information is based on the 2017 Market Economics prediction provided by TCC
Network (only applicable to 2031 plots):
The same road/ cycle / PT network is applied in the 2031 scenario as the 2018 (base)


Effective %age of Jobs available within 30 Minutes by Car_Year 2031
Legend
0 to 20%
21% to 40%
41% to 60%
61% to 80%
81% to 100%
Notes:
Travel Time:
Car access is based on modelled zone to zone travel time
PT travel time includes walk time + wait time + in-vehicle travel time
Cycle distance is derived from the TCC Cycle model and an average cycle speed of 15km/hr
Car&PT travel times are from modelled AM period which represents avg traffic conditions b/w 7am & 9am
Land Use:
The employment (job) information is based on the 2017 Market Economics prediction provided by TCC
Network (only applicable to 2031 plots):
The same road/ cycle / PT network is applied in the 2031 scenario as the 2018 (base)


Effective %age of Jobs available within 30 Minutes by PT_Year 2018
Legend
0% to 20%
21% to 40%
41% to 60%
61% to 80%
81% to 100%
Notes:
Travel Time:
Car access is based on modelled zone to zone travel time
PT travel time includes in-vehicle travel time
Cycle distance is derived from the TCC Cycle model and an average cycle speed of 15km/hr
Car&PT travel times are from modelled AM period which represents avg traffic conditions b/w 7am & 9am
Land Use:
The employment (job) information is based on the 2017 Market Economics prediction provided by TCC
Network (only applicable to 2031 plots):
The same road/ cycle / PT network is applied in the 2031 scenario as the 2018 (base)


Effective %age of Jobs available within 30 Minutes by PT_Year 2031
Legend
0% to 20%
21% to 40%
41% to 60%
61% to 80%
81% to 100%
Notes:
Travel Time:
Car access is based on modelled zone to zone travel time
PT travel time includes in-vehicle travel time
Cycle distance is derived from the TCC Cycle model and an average cycle speed of 15km/hr
Car&PT travel times are from modelled AM period which represents avg traffic conditions b/w 7am & 9am
Land Use:
The employment (job) information is based on the 2017 Market Economics prediction provided by TCC
Network (only applicable to 2031 plots):
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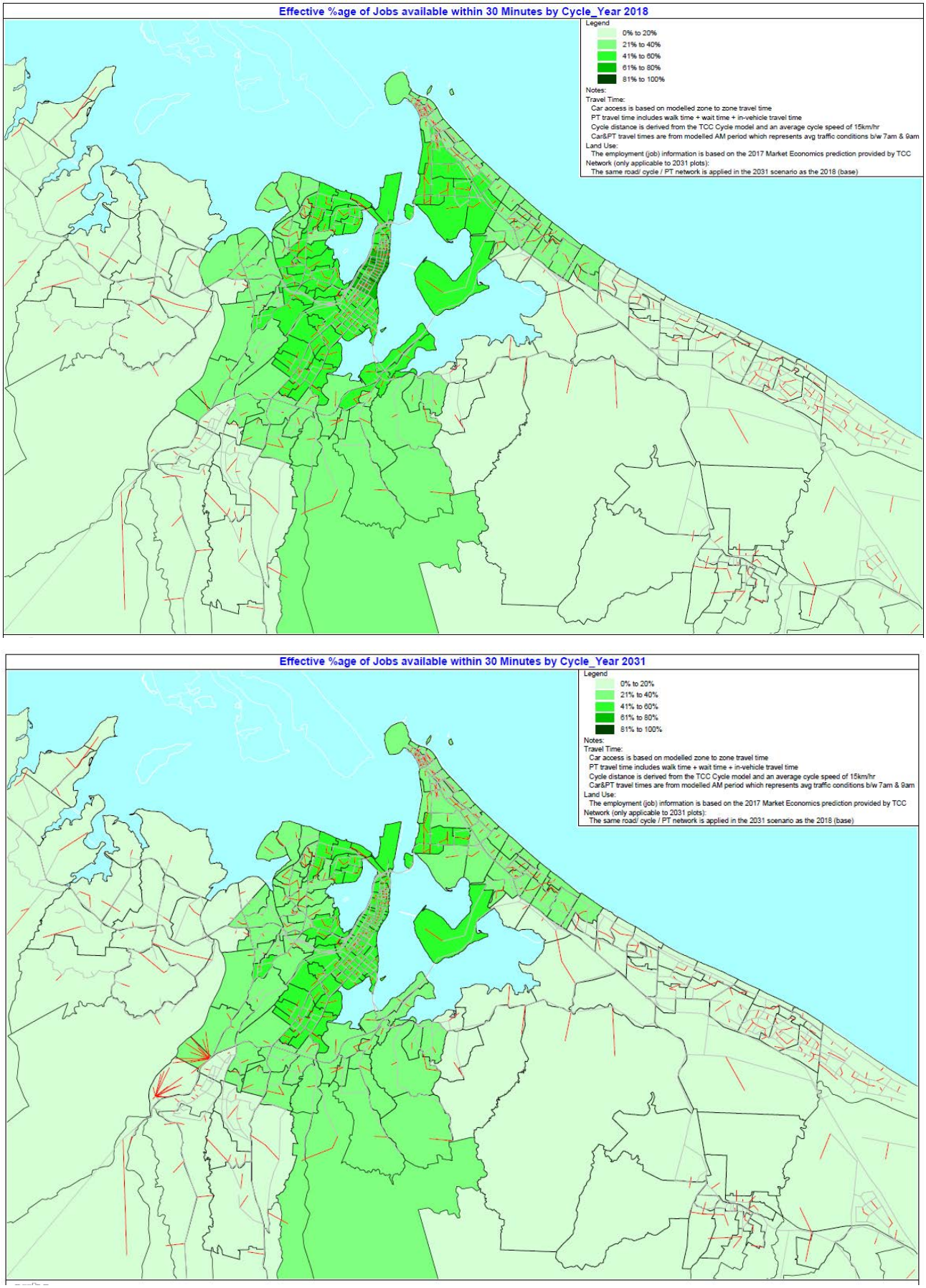

Figure 25: Car, PT and Cycle Accessibility Maps

The following table (Table 3) from UFTI compares the number and percentage of jobs available by car, bus and cycle between 2018 and 2031. Note that whilst there may be more jobs accessible within 30 minutes in 2031, this can be a result of new jobs and not necessarily reduced journey times. As shown in the figures above, general accessibility on a spatial basis reduces without transport network improvements.

Table 3: Average Modal Access to key services (by proxy) across the Western Bay of Plenty (UFTI)

Mode	No of Jobs Available		Percentage of Total Jobs	
	2018	2031	2018	2031
Car within 30 minutes	58,673	72,626	59	62
PT within 30 minutes	25,237	26,280	25	22.5
Cycle within 30 minutes	15,380	17,723	15	15
ALL modes within 30 minutes	**99,290**	**116,629**	**99**	**99.5**

4.5 Safety

Road crashes in Tauranga incur a cost to society of around $40M per annum[6].

The following maps from Waka Kotahi Safety Net (Figure 26) show collective and personal risk across the network. Collective risk considers the number of crashes only and highlights locations where total crash occurrence is high. Personal risk considers the number of crashes relative to the volume of road users, so the number of crashes may not be high but the risk to road users, or likelihood of being involved in a crash, can be.

There are areas of high collective risk particularly on the strategic network which is influenced by higher volumes on these roads. Heightened personal risk is noticeable in areas such as Arataki and across the Te Papa Peninsula.

[6] Based on CAS data for 2013 to 2018

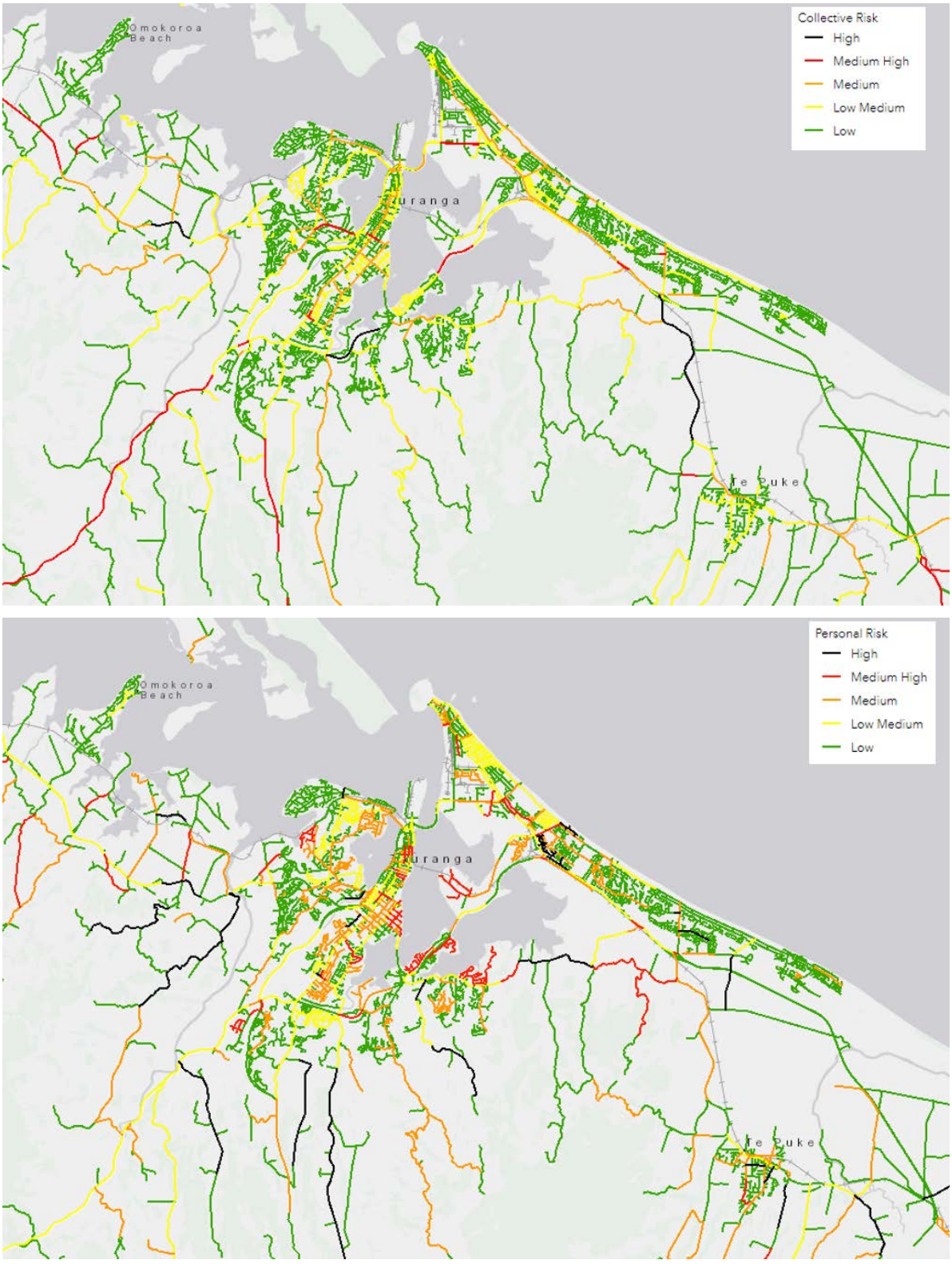

Figure 26: Safety Net Collective and Personal Risk Maps

Figure 27 shows the location of fatal (black) and serious (red) crashes in Tauranga over a five-year period (2015-2019). Clusters tend to follow busy roads with noticeable density of crashes along the Te Papa Peninsula.

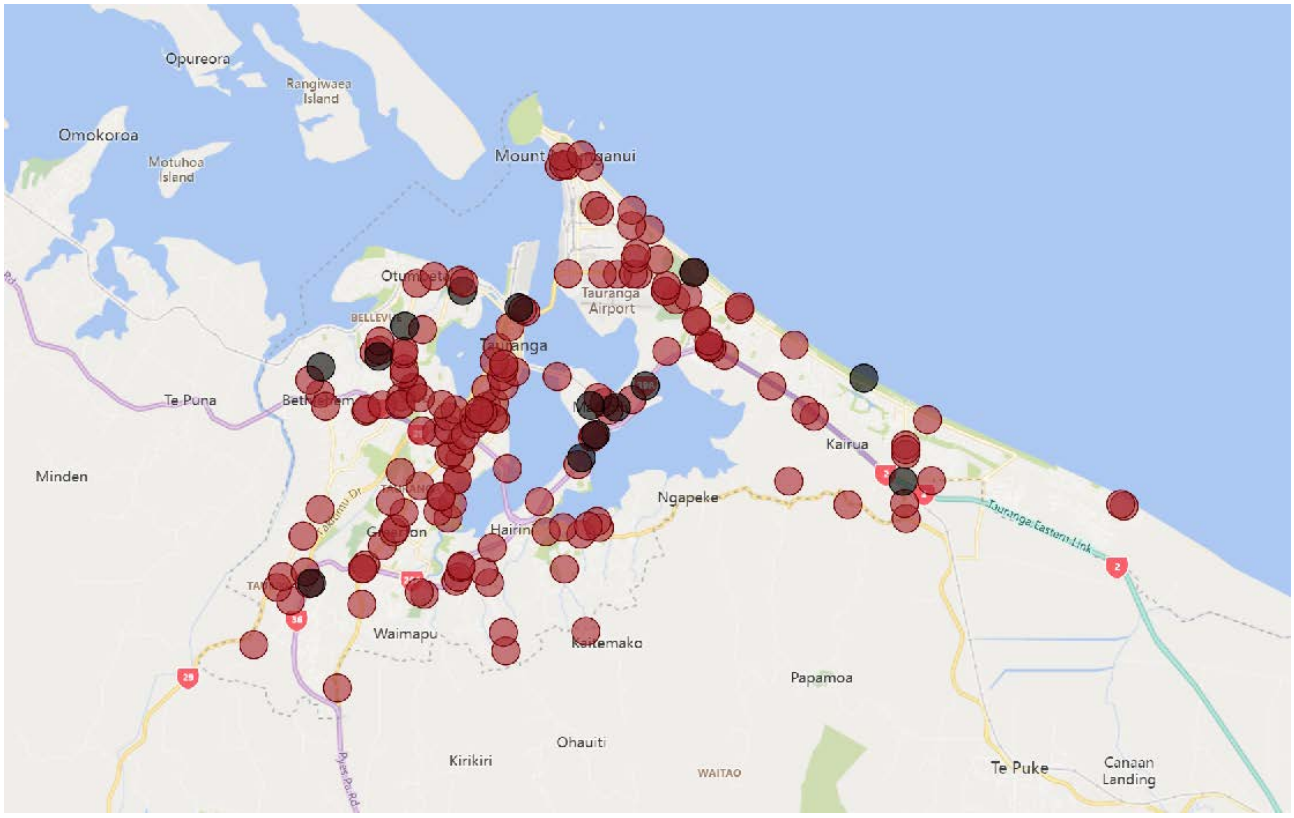

Figure 27: Fatal and Serious Crash Map

Crashes involving pedestrians and cyclists in the same five-year period are shown in Figure 28 as dispersed along the Te Papa Peninsula, and along main corridors in suburbs of Otumoetai, Matua, Welcome Bay, Mount Maunganui and Papamoa. Fatal and serious injury crashes involving pedestrians and cyclists make up 30% of all fatal and serious crashes in the same period. This is significantly higher than the proportion of pedestrian and cyclist trips, around three times higher.

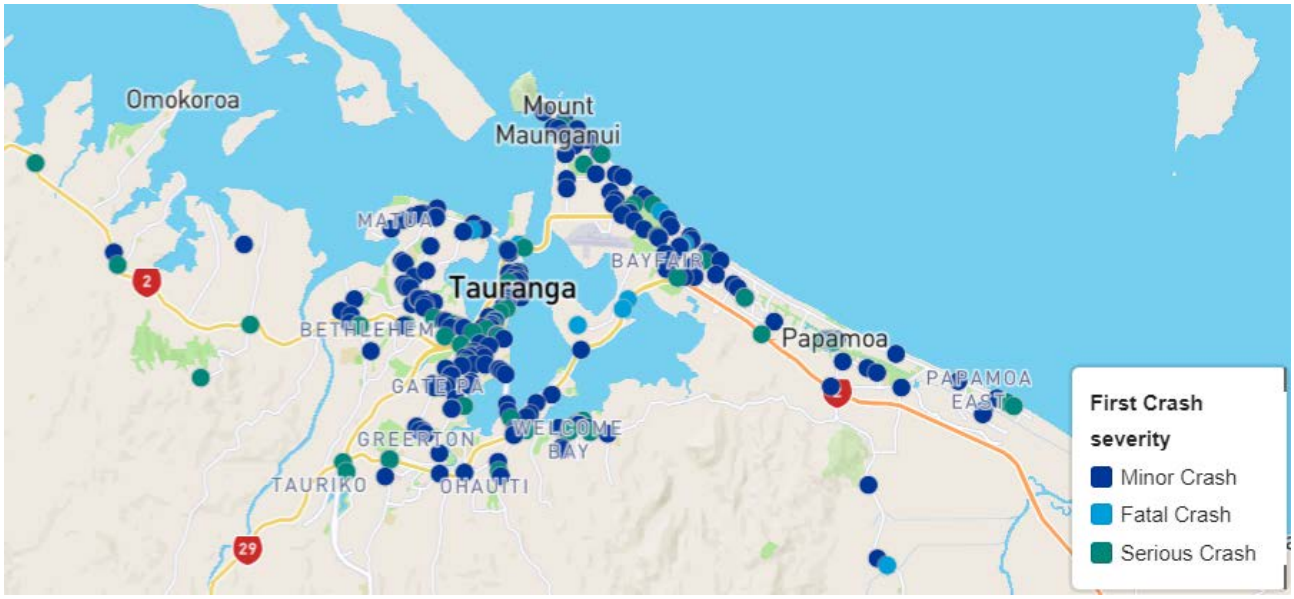

Figure 28: Walking and Cycling Crash Severity

4.6 Freight

The BOP Regional Freight Flow Study by UFTI outlines the existing context for freight movements in the Western Bay and wider BOP region, as well as potential changes in freight movements and how these will need to be recognised and incorporated into strategic planning.

The BOP State Highway network provides key road connections for both local and inter-regional freight movement. The Port of Tauranga plays a key role in facilitating freight activity. The heat map below (Figure 29) highlights the key freight corridors in the region; black lines represent corridors with the highest freight volumes.

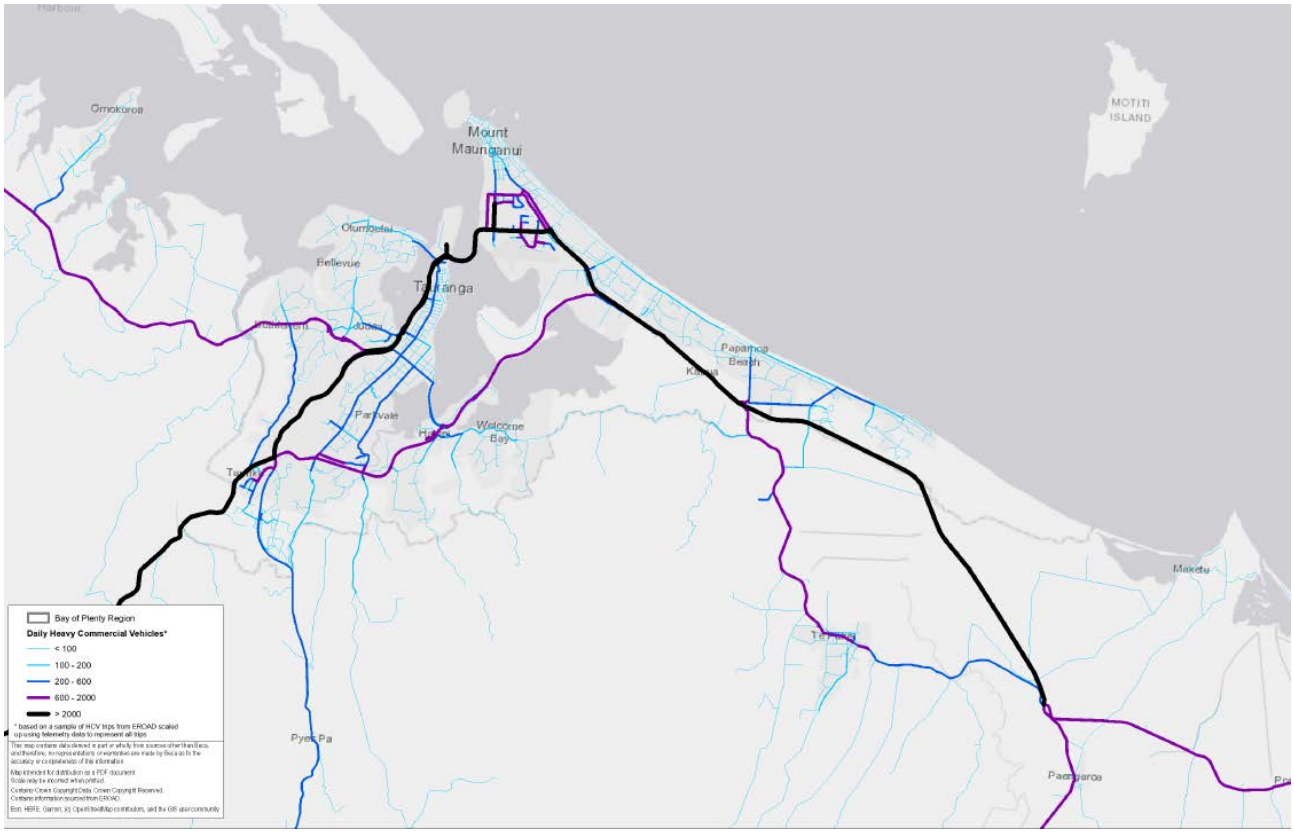

Figure 29: Freight Movement Heat Map (*Source*: UFTI)

Figure 30 shows the volume and growth of heavy goods on the State Highway network over the last five years. All sites have experienced growth in goods and vehicle movements, with the main routes into Tauranga (SH2 and SH29) experiencing the highest growth. Takitimu Drive has experienced the highest growth at 41% over the last five years due to strong growth at the Tauriko Business Estate and movements from Waikato and Rotorua.

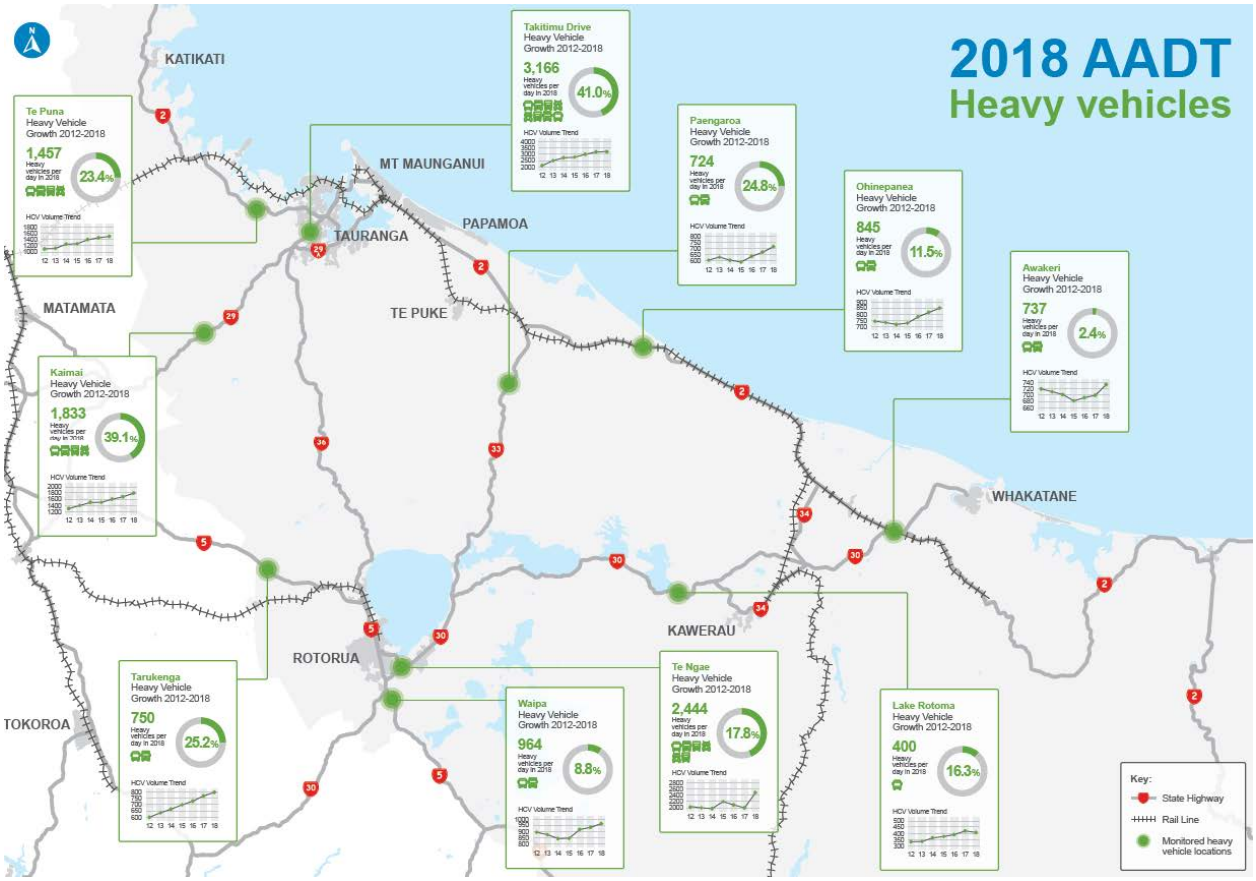

Figure 30: Change in HCV Volumes Last 5 Years (*Source: UFTI*)

Port of Tauranga

As New Zealand's largest export port by freight volume, the Port of Tauranga (the Port) plays a significant role in enabling economic growth and activity across the sub-region and upper North Island. Total trade through the Port has increased by 37% at 7% per annum over the last five years, as shown in Figure 31.

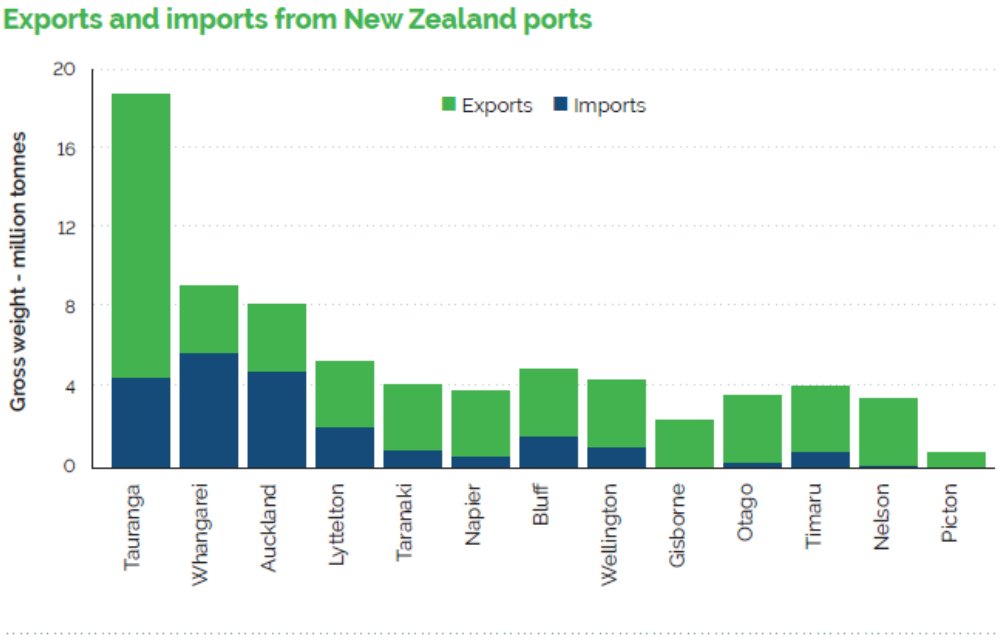

Figure 31: Exports and imports from New Zealand Ports (UFTI Foundation Report)

The Port is served by Road and Rail. The road distribution of freight movements to the Port is shown in Figure 32. Rail movements are distributed approximately 60% to and from the Waik ato and 40% to and from the Eastern Bay of Plenty.

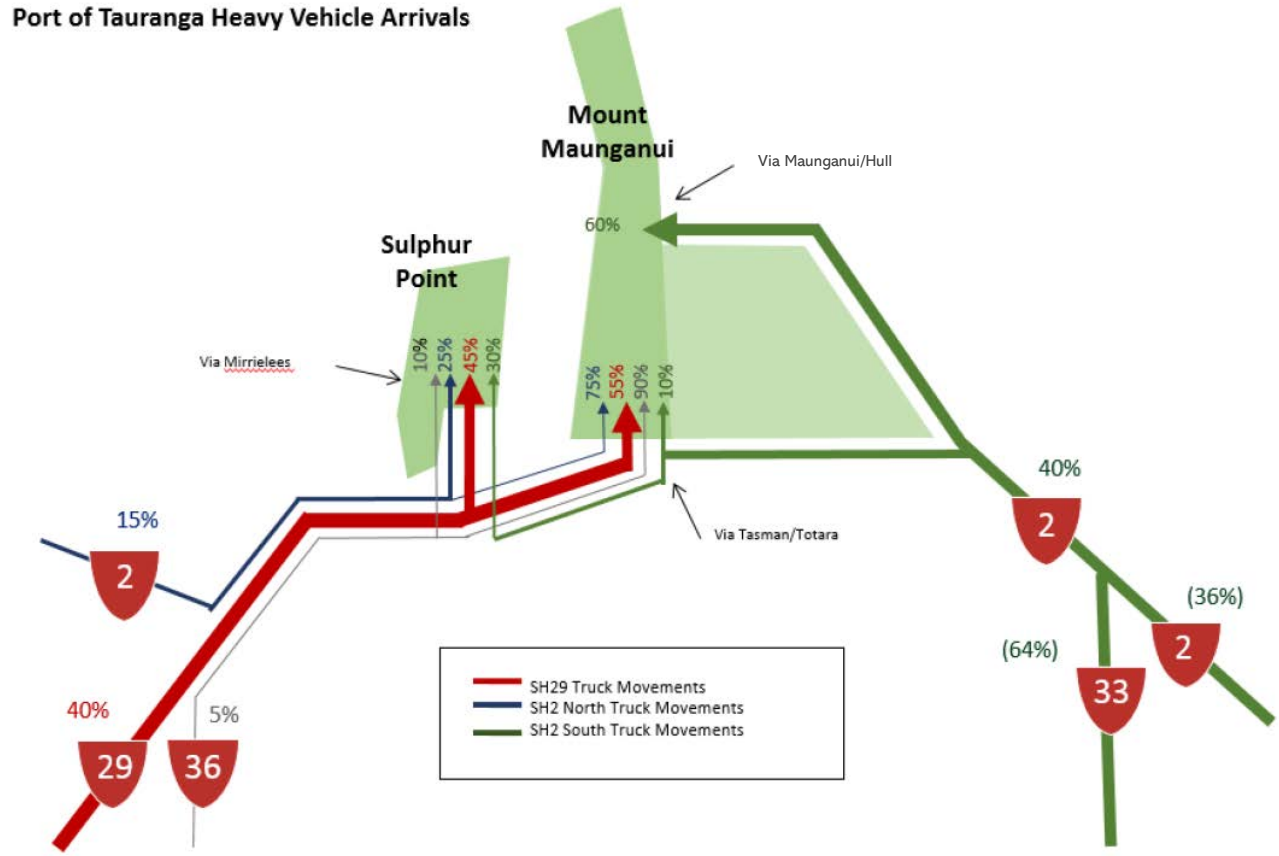

Figure 32: PoT Freight Movements by Road (UFTI Freight Flows Study)

4.7 Rail

The rail network in the sub-region operates under a single main line, namely the East Coast Main Trunk (ECMT) line which connects the Port of Tauranga to both Eastern and Western Bay of Plenty, as shown in Figure 33. The rail line is a major link for freight movement between Auckland, Hamilton and Tauranga, and from Kawerau to Murupara in the east. The ECMT line carries over a third of the country's rail traffic, with all lines on the network connecting to the Main Trunk through the Kaimai Tunnel.

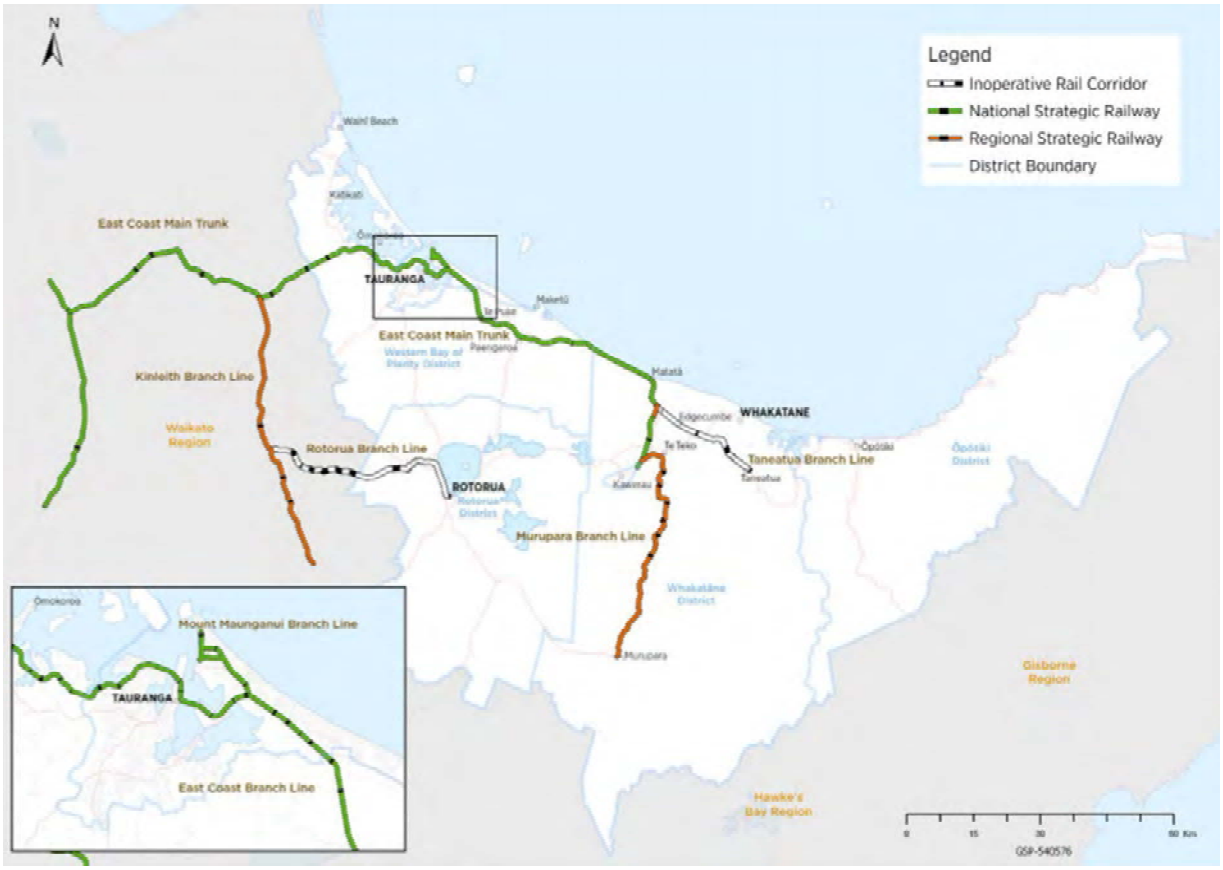

Figure 33: East Coast Main Trunk positioned in the Central North Island – Regional Land Transport Plan

Rail traffic falls in to three distinct groups (UFTI Freight Flows Report):

- Traffic from the Eastern Bay of Plenty to Mount Manganui which makes up 35% of all traffic, mainly being logs with pulp and paper.
- Traffic to and from the Sulphur Point terminal through the Kaimai tunnel which accounts for 50% of all traffic, mainly primary exports being travelled to and from Auckland.
- Traffic to and from West of the Kaimai tunnel to Mount Maunganui which accounts for 15% of the total traffic, mainly logs and pulp.

Rail Freight Growth

Rail freight has steadily grown over the past decade, with a 14% increase in tonnes transported by rail from 6.4m tonnes in 2012 to nearly 8m tonnes in 2017/18. This amount reflects approximately half of all rail traffic in New Zealand having an origin or destination with the sub-region. Table 4 shows the tonnes transported by rail in 2017/18 to, from and within BOP.

Table 4: Rail traffic to, from and within the Bay of Plenty 2017 / 2018 (m tonnes) (UFTI)

Rail Traffic to from and within the Bay of Plenty 2017/2018 (m tonnes)		
	Tonnes (m)	Commentary
To Bay of Plenty	3,654	Excluding internal BOP traffic
From Bay of Plenty	1,448	Excluding internal BOP traffic
Within Bay of Plenty	2,684	
Total	**7,785**	

Rail activity and growth can be displayed using two main types of freight capacity classification, net tonne kilometres (NTK's) and twenty foot equivalent (TEU). NTK classified freight movements account for the entire rail journey the freight has moved, and does not account for empty container movements. The TEU classification accounts for container freight movements only, and considers containers whether they are empty of loaded. Both classifications display continued freight activity growth over time in the subregion as displayed in the below figures.

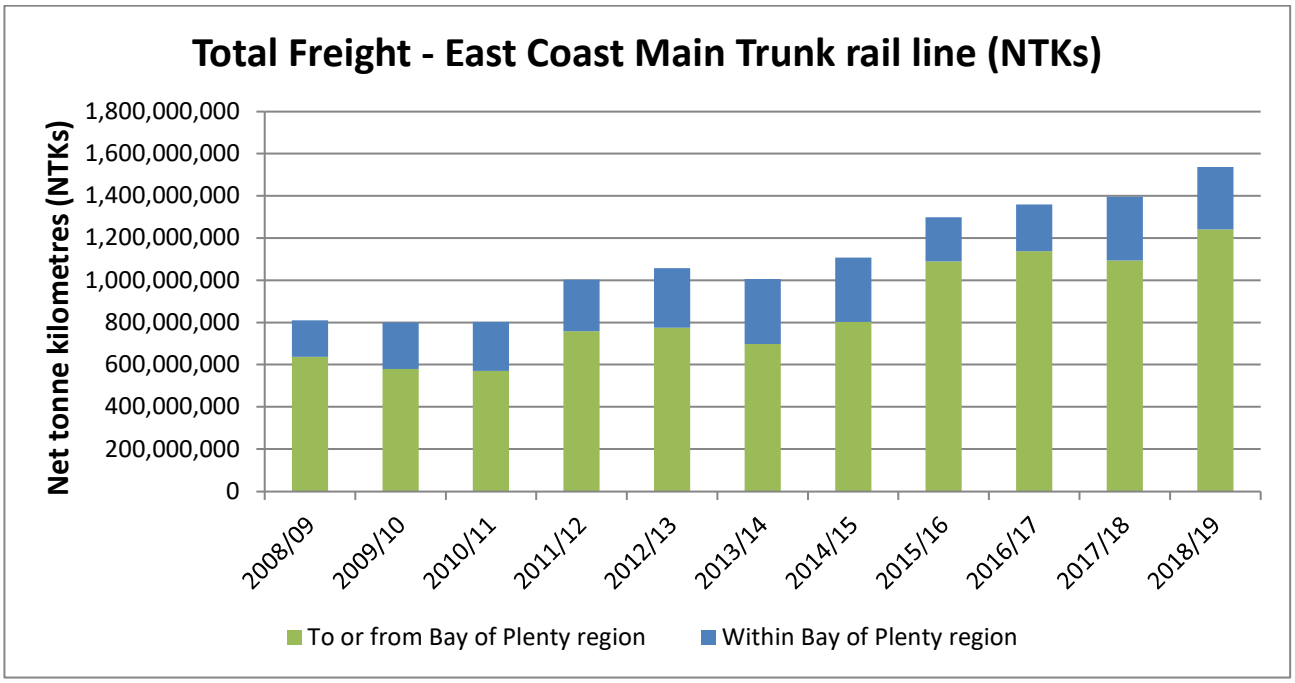

Figure 34: Total freight (NTKs)

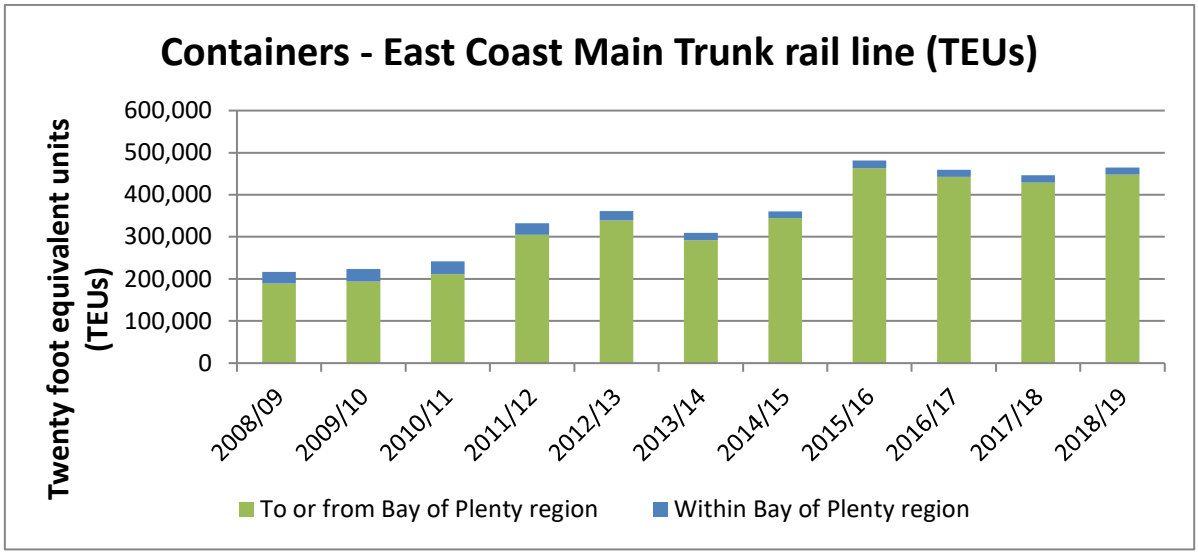

Figure 35: Total freight container movements (TEUs)

Level Crossings

There are approximately 16 level crossings on the sub-region's rail network, shown in Figure 36. Any significant increase in use of the rail system will place pressure on capacity and safety at these crossings.

Key crossings of note are located on:

- The Strand
- Totara Street
- Matapihi Road
- Hewletts Road (at Golf Road)
- Hull Road
- Kairua Road
- Bell Road.

Figure 36: Rail Network and Level Crossings in the sub-region

4.8 General Traffic

Traffic Volumes / Growth

Traffic volumes can be viewed in the web browser (gis.beca.com); Figure 37 shows an example.

Figure 37: Example Traffic Volumes GIS Map

On average traffic volumes at key city corridors have increased by around 5% per annum between 2013 and 2018, as shown in Table 5.

Table 5: Traffic Volumes and Growth (2013 to 2018)

Location	2018 Daily Volume and Annual Growth Rate Last 5 Years	Light Vehicles	Heavy Vehicles
SH2 – West of Snodgrass Road	21,289 (+5.1%)	19,832 (+5.2%)	1,457 (+3.9%)
SH2 – 80m E of Bethlehem Rd	29,291 (+3.9%)	27,037 (+4.1)	2254 (+14%)
SH2 – Takitimu Dr	42,327 (+6%)	39,161 (+5.9%)	3,116 (+6.8%)
SH2 – North of Aerodrome Bridge	54,123 (+3.4%)	48,374 (+4.5%)	5,749 (+7.5%)
SH2 – North of Spur Av	42,165 (+2.9%)	38,243 (+2.4%)	3,922 (+9.3%)
SH2 - Kairua	34,223 (+20%)	31,309 (+20%)	2,914 (+17%)
SH29 – Takitimu Dr Toll Gantry	11,076 (+38%)	9,439 (+39%)	1,637 (+30%)
SH29 – 120m W of Route K	23,972 (+8.1%)	19,876 (+6.5%)	4,096 (+20%)
SH29 – Kaimai Ranges	12,076 (+6%)	10,243 (+5.9%)	1,833 (4.7%)
SH92A – 205m after Maungatapu Bridge	27,351 (+4.5%)	24,552 (3.5%)	2,799 (+20.9%)
SH29A – 215m past Oropi Road	18,335 (+8.8%)	16,790 (+8.9%	1,545 (+8.1%)

General Vehicle Travel Speed / Level of Service

The Tauranga Transport Model (TTM) forecasts the expected level of service (LOS) for the transport network within sub-region based on predicted population and employment growth and considering some transport network upgrades. The TTM provides forecasts in five-year intervals to 2063. LOS is categorised into the following six categories from A (free flow) to F (severely congested), as shown in Figure 38.

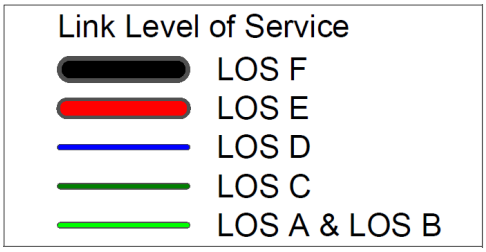

Figure 38: TTM LOS Key

Poor level of service will impact freight and public transport travel speeds and journey time predictability where priority measures are not provided.

The following maps (Figure 39 and Figure 40) show baseline level of service for 2018 (when the model was last calibrated) and a forecast for the 2031 scenario. It should be noted the forecast scenario has a number of transport network interventions that have been identified in past projects, this list is provided in **Appendix B.**

Figure 39: LOS Map 2018

Notable level of service issues in the 2018 map (existing) include:

- SH2 between Te Puna / Bethlehem displays LOS E and F delay
- 15th Avenue between Fraser Street / Turret Road bridge displays LOS E and F delay
- Hewletts Road displays some LOS E and F delay in the Tasman Quay area
- Cameron Road in the Gate Pa to 15th Avenue area displays LOS E and some F delay
- SH29 / SH29A Cambridge Road and Barkes Corner displaying LOS F delay.

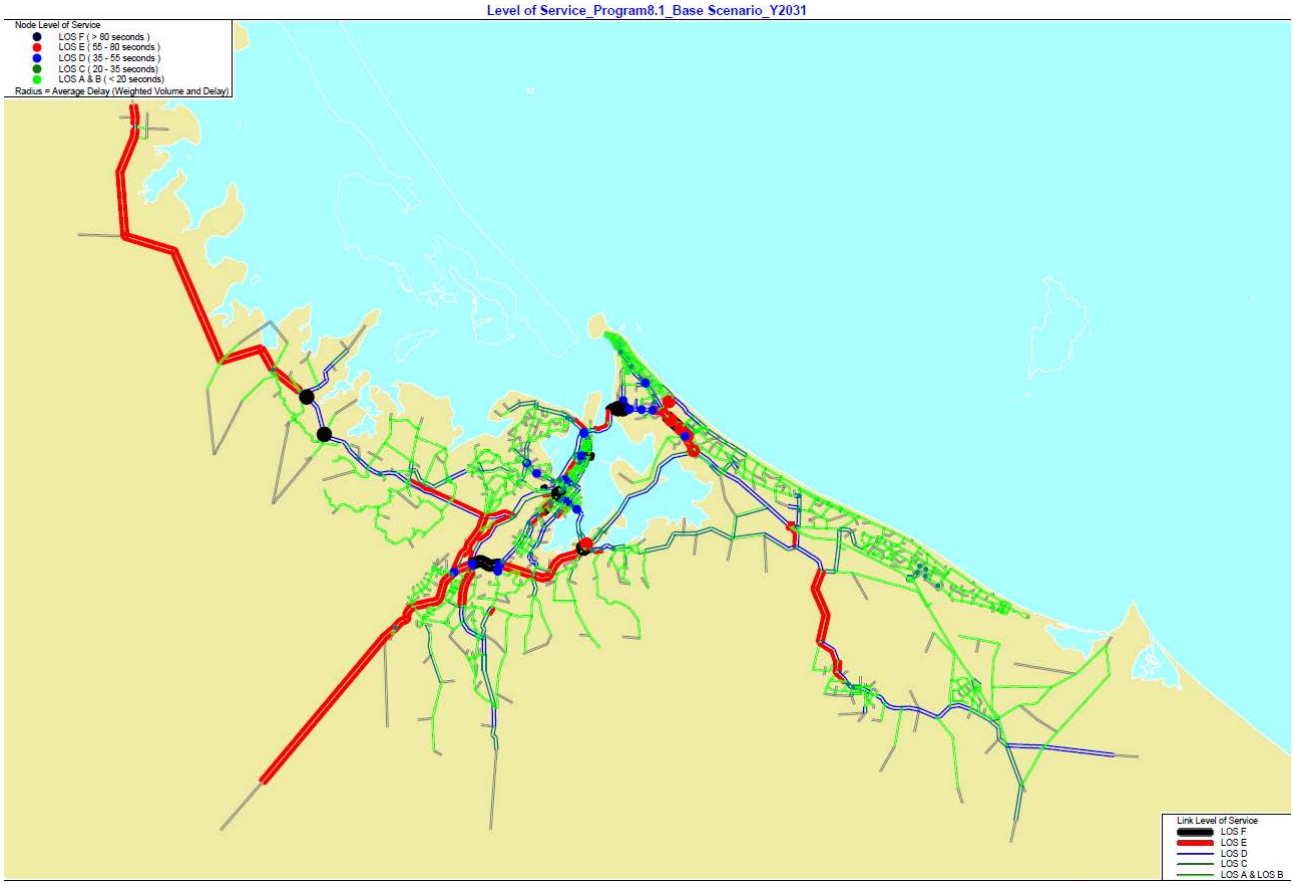

Figure 40: LOS Map 2031

Notable level of service issues in the TTM 2031 (forecast) include:

- Takitimu North Link displays LOS E toward Takitimu Drive and LOS F at Minden and Omokoroa
- SH29A LOS F between SH29/SH29A/SH36 roundabout and Cameron Road
- SH29A LOS F at Hairini interchange
- LOS F on Cameron Road at 15th Avenue
- Hewletts Road, Tasman Quay and Totara Street area LOS F.

For comparison, the following image (Figure 41) shows the same 2031 model output prepared for the TUNS in 2013. The Hewletts Maunganui corridor appears to have worsened in the 2031 projection above compared to the TUNS model output. Another factor influencing part of the strategic network is that the Tauriko (SH29 diversion) was not developed.

Map 7: Revised Network 2031 land use on 2031 network

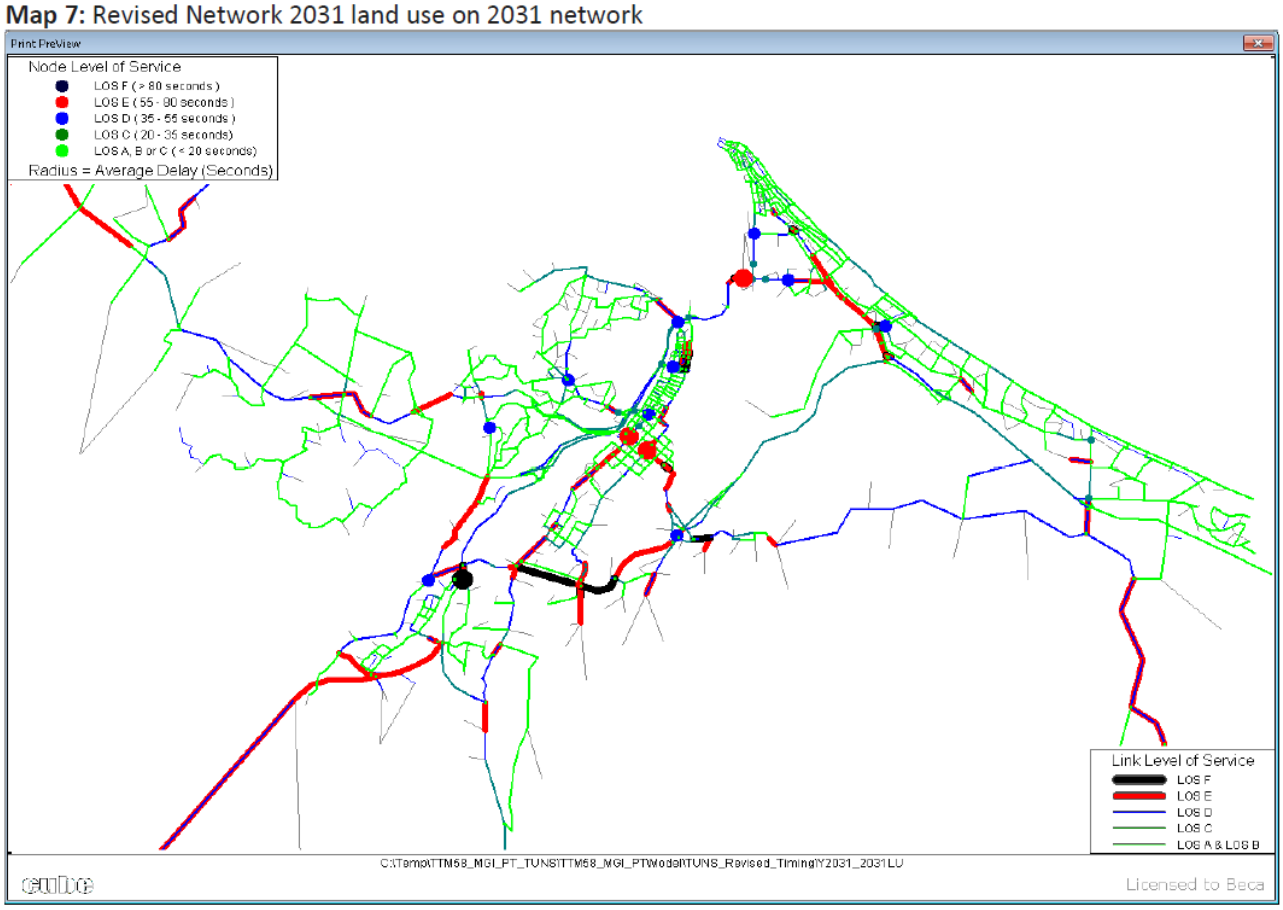

Figure 41: TUNS 2031 Model LOS Output

4.9 Emissions

The sub-region's uneven mode reliance has a negative impact on the environment by increased CO_2 emissions. Over 43% of greenhouse gas emissions in the sub-region are from transportation[7] with road transport accounting for 97% of overall transport emissions[8]. Transportation emissions (43%) account for pollutants that come from road transport through petrol, diesel and LPG use, as well air travel and rail.

The New Zealand Govermnent has established a target to achieve net zero carbon emissions by 2050. The TSP can contribute to this outcome through achieving mode shift, uptake of electric vehicles and other means of reducing the transport sector contribution to emissions.

4.10 Car Parking

Public car parking is provided in the form of paid on-street and off-street parking within the Tauranga City Centre across two zones; with inner parking area around Spring Street, Durham Street, Elizabeth Street and Devonport Road and an outer area from Brown Street to Second Ave. Figure 42 shows the on-street and off-street parking available in the Tauranga CBD.

[7] UFTI Foundation Report

[8] Tauranga Transport Programme Business Case

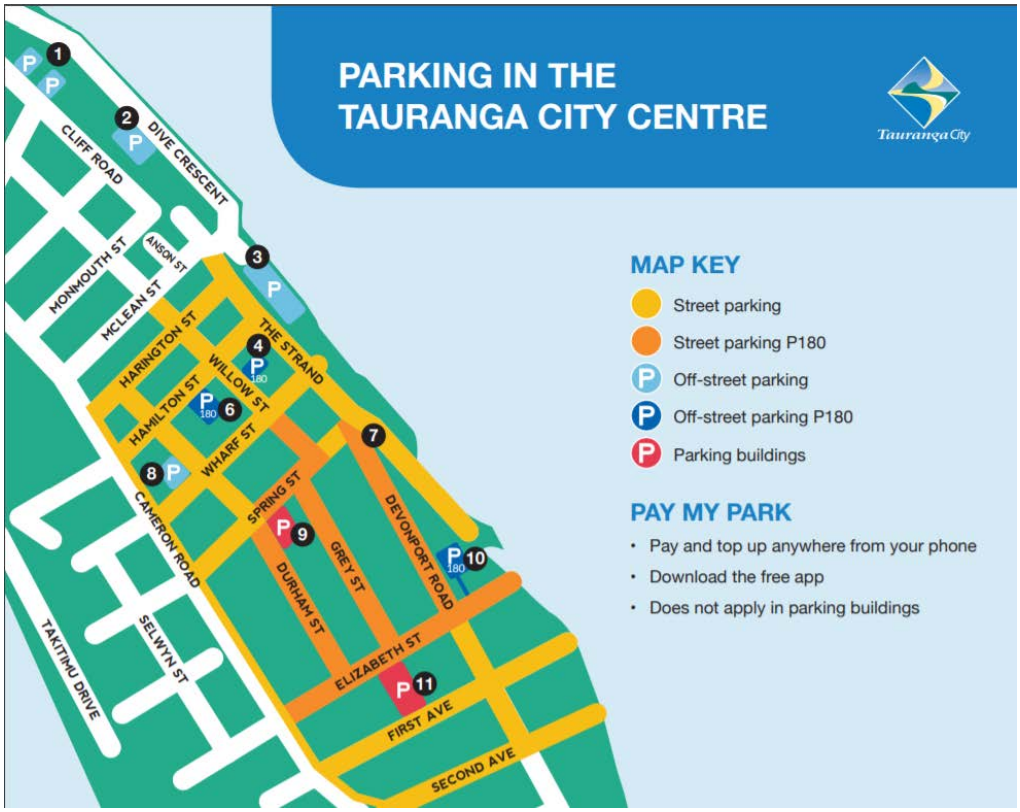

Figure 42: Tauranga City Public Parking Locations

Parking costs range from $3 to $14 per day depending on the location of the parking space and whether it is metered. Approximately 35% of trips to the CBD do not pay for parking (Tauranga Transport Model). There is also a considerable number of free parking spaces on the fringe of or near the CBD.

5 Committed Programme

The Project Partner agencies are investing in an existing programme of work within the Study area. The TSP examines the existing planned, budgeted and committed transport investments to:

- Understand the existing investment pattern and the primary outcomes sought from that investment.
- Provide commentary on the alignment between the existing pattern of investment and the investment objectives and targets committed to by the Project Partner agencies.

5.1 10-year Planned Investment Outcomes

Within the Study Area, the combined approved organisations planned to invest approximately $2B over the 10-year period of the 2018 RLTP. Although these investments provide multiple outcomes to the community, the primary outcome sought from each investment has been identified and the balance of the outcomes sought is presented below in Figure 43.

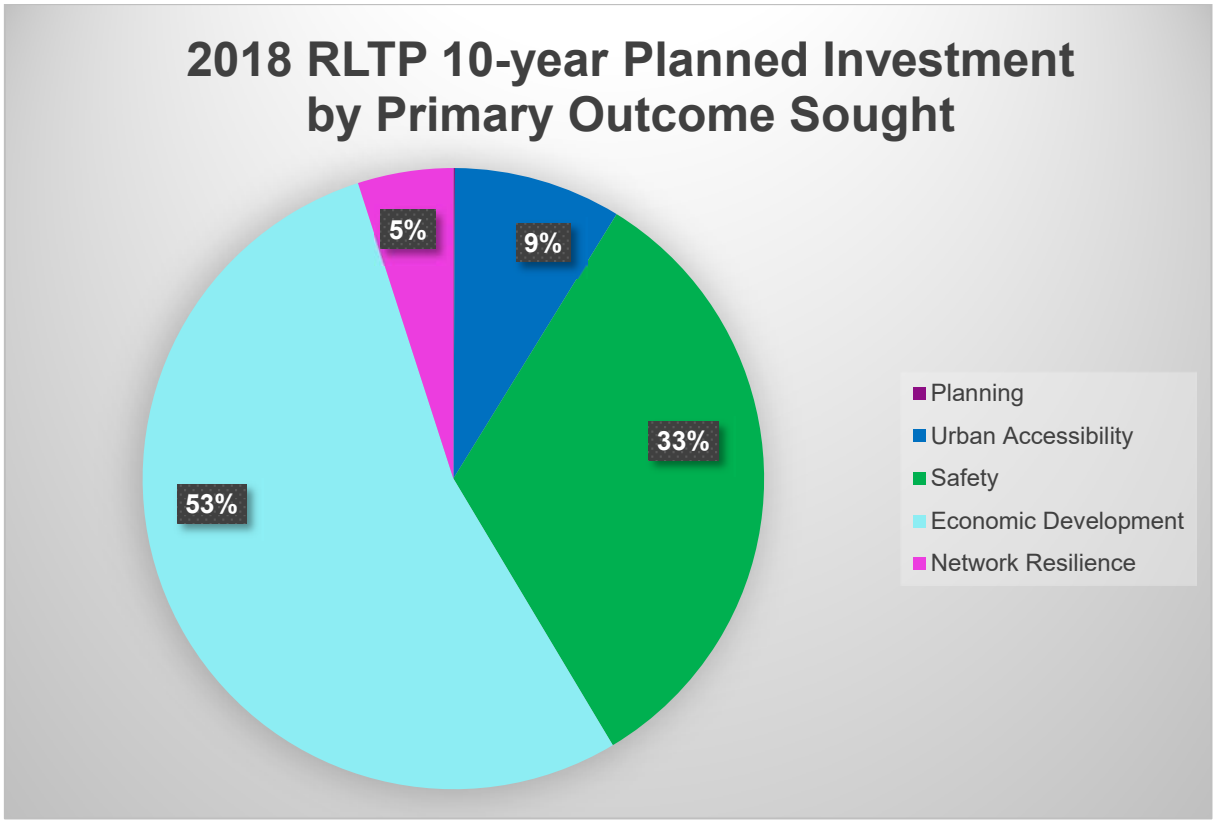

Figure 43: 2018 RLTP Planned Investment Outcomes

Investment in economic development and funding City growth is the primary focus for investment within the Study Area. Over half of all investment in the Study Area is directed to respond to the significant population and GDP growth the sub-region has experienced over the last 10 years. Typically, these investments are focused on supporting the new greenfield growth cells such as the Eastern and Western Corridor Growth projects,

Improving safety is also seen as important within the Study Area. A large proportion (33%) of all investment is targeted towards reducing deaths and serious injuries on the network. Safety is a core priority within the

GPS Land Transport and the recently adopted Vision Zero target means that investing in safety is likely to be a continued priority for investment in the next 10 years.

Urban Accessibility (public transport, walking and cycling) and Network Resilience account for the remaining planned investment within the study area.

It is important to note that not all the planned investments identified in the 2018 RLTP were included in the National Land Transport Programme.

5.2 Committed Investment to Date

The progress against planned investment outcomes within the Study Area can be identified by tracking progress and programmes that have secured funding as a committed phase (Business case, Design, Construction).

Since the adoption of the 2018 RLTP, approximately $0.5b (or around 25%) of all planned investment has been committed by way of contract into a delivery activity. The focus of that investment is provided in the chart below (Figure 44).

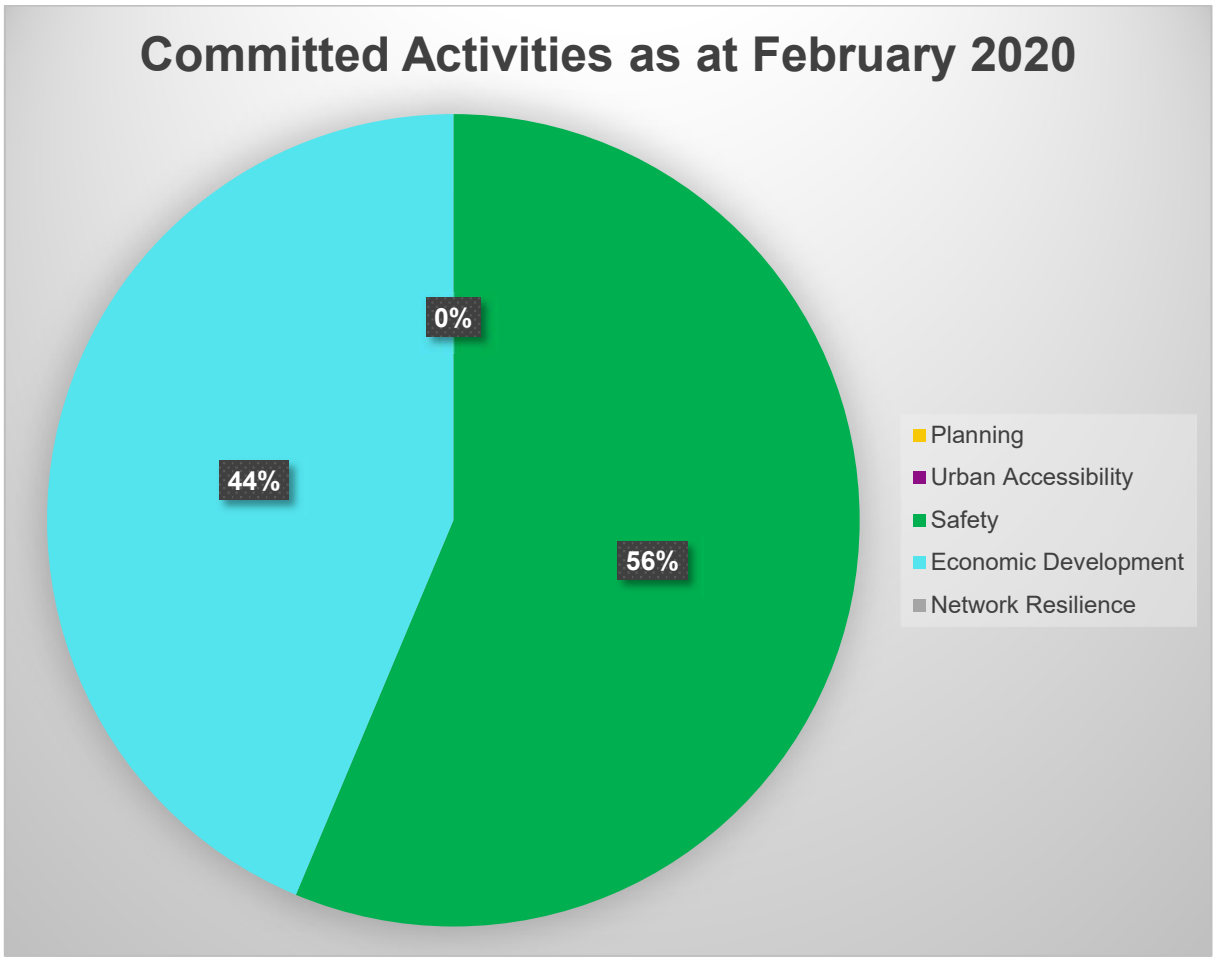

Figure 44: 2018 RLTP Committed Activities

The primary outcome sought in the 2018 RLTP was investing for economic development, the primary investment outcome undertaken since the RLTP was adopted has been investing in Safety. Aside from continued operation of the existing PT and cycling networks, no substantial committed investment has been made in these modes since 2018.

5.3 Progress Against RLTP Investment Outcomes

The 2018 RLTP was developed using business case principles, and the investment outcomes sought by the region were:

- Improved Safety (30%)
- Improved Economic Efficiency (20%)
- Improved Access and Network Resilience (15%)
- Land Use integration (10%
- Environmental Sustainability (10%)
- Energy Efficiency (5%)
- Affordability (5%).

The BOP Regional Council published report cards against the investment outcomes sought at a regional level. Progress for the 2018-19 year can be found here:

https://atlas.boprc.govt.nz/api/v1/edms/document/A3428181/content

Regional targets will differ to those within the study area; however, they provide a useful touchpoint on the contribution of the Study Area to achieving the regional investment outcomes.

6 Problem Summary

Several problem themes are apparent from the information described above and some of these are summarised in the following key factors and issues diagram (Figure 45). The diagram shows broad corridors and problem themes at this stage, more specific problems along routes and at locations within these corridors will be explored further in the network evaluation step of the TSOF.

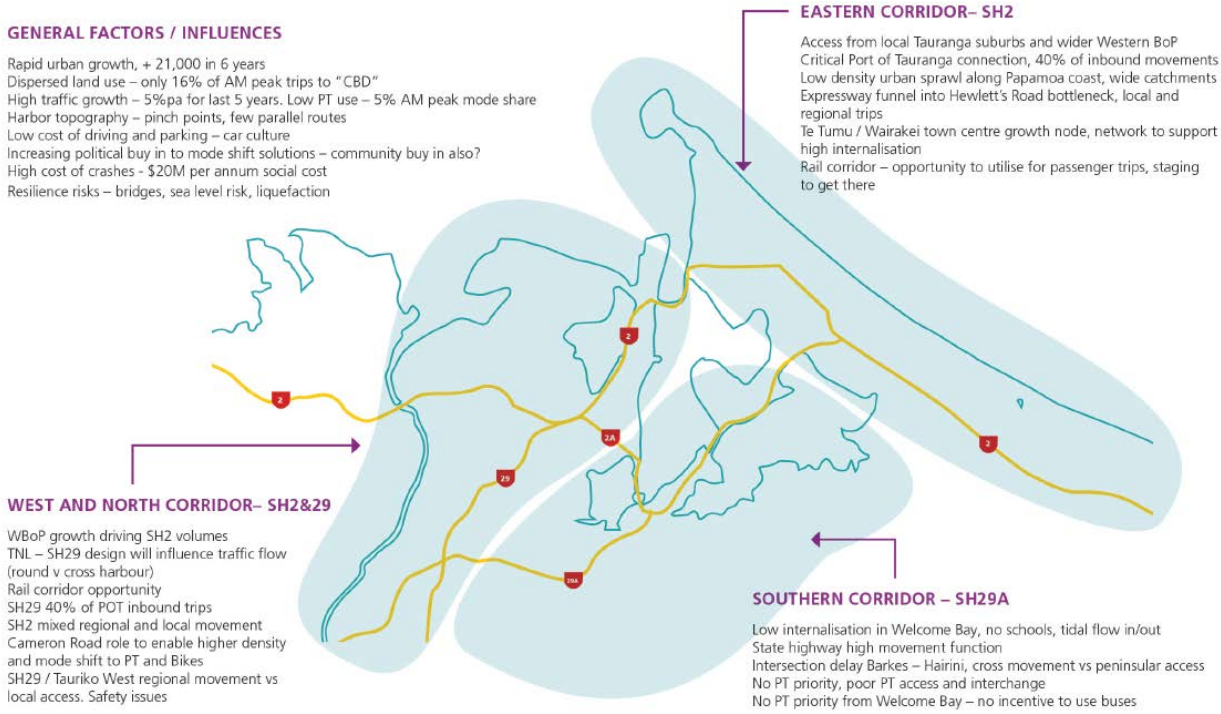

Figure 45: Summary of key themes and issues in the sub-region

Table 6 lists problem statements from relevant Business Cases and other projects in the Western Bay region over recent years. The purpose of the table is to compare the problems identified in similar studies to inform the objective setting for the TSP. Notably, many of the problems identified in the 2013 TUNS study are still evident in the context analysis summarised in this report.

Table 6: Past Project Problem Statements

Theme	UFTI (2020)	Te Papa Plan (2020)	Cameron Road SSBC (2020)	Cycle Plan PBC	WBoP School Bus Fares SSBC (2019)	Tauranga Transport Programme (2018)	P (2018) (edited)	PT Blueprint PBC (2017)	Tauranga Transport Strategy (2013)
Safety	Western Bay of Plenty's harbour geography and dispersed land use pattern (places of employment, education, and recreational locations), and increasing traffic volumes negatively impacts on the safe and efficient movement of people and goods.		Safety: existing form and legibility of the corridor results in perceived and actual risk of injury to corridor users (40%)	Perceptions of cycling safety risks acts as a disincentive to the uptake of people who want to bike more or try biking. And; The lack of protection for cyclists contributes to cycling related DSIs.		Tauranga has a high proportion of deaths and serious injuries (DSI) as a result of crashes involving intersections and vulnerable road users that lead to a high social cost to the community (20%)	Tauranga has a high proportion of death and serious injury crashes, many of which are located at intersections, and this represents a high social cost to the community.		Road crashes, particularly those involving young drivers, motorcycles, and intersections, are resulting in a high number of deaths and serious injuries.
Social and Environmental	The lack of housing supply, suitable housing, transport choice, and a high dependency on private vehicles in the western Bay of Plenty restricts access to social and economic opportunities and is leading to poor social and environmental outcomes.	A lack of good quality intensive housing is not meeting the needs of current and future residents (25%)	Environment and social: Existing form and function of the corridor does not support desired future land use (intensification) (25%).						Reduced attractiveness of non-car modes and increasing reliance on private car travel is in danger of marginalising the access of those without the use of a private vehicle to key local services and physically severing communities.
Access	The ability to access community facilities, and infrastructure levels of service are not aligned with community needs and expectations and are impeding the ability of people to fully enjoy the Bay of Plenty lifestyle.				The cost of bus travel and distance to school makes access to school less equal (this has negative social outcomes such as increasing truancy and resulting lower education levels).	Increased travel and reliance on few key routes threaten the future viability and productivity of the port and other commercial areas (40%)	Growth pressures and development constraints have led to a dispersed population and increased travel distances to key destinations and services.	The current urban landform and topography makes it difficult to support a more effective and efficient PT system across the whole network (35%).	Forecast housing and commercial growth will result in traffic congestion on key parts of the road network. This will undermine efficient access to the nationally significant Port of Tauranga and other commercial centres.
Mode Share		The current urban form and density, travel options and transport network do not support safe, accessible multi-modal transport options for all (25%)	Movement: Lack of facilities and safe and reliable service results in low active transport and public transport mode share while increasing the use of private vehicles (35%)		The cost of bus fares compared with driving and parking contributes to high private vehicle mode choice for all users	Land use and transport investment responses to growth reinforces the preference for travel by private vehicle which adds pressure to the transport network (40%)	This has reinforced a high reliance on travel by car and has added pressure to the city's transport network. This congestion has the potential to threaten the future growth, liveability and attractiveness of the Port of Tauranga, the Tauranga City Centre and other commercial centres.	The focus on access to PT services across the sub-region may mean that PT is not being best utilised as a competitive alternative mode to private cars (50%).	An increasingly dispersed population as well as low density around key centres is increasing trip distance, reducing attractiveness of non-car modes and increasing reliance on private car travel.
Amenity		A lack of good quality public realm and built form, combined with a need to enhance local culture and identity, is not attracting more people to live, work							

Theme	UFTI (2020)	Te Papa Plan (2020)	Cameron Road SSBC (2020)	Cycle Plan PBC	WBoP School Bus Fares SSBC (2019)	Tauranga Transport Programme (2018)	P (2018) (edited)	PT Blueprint PBC (2017)	Tauranga Transport Strategy (2013)
		and play in the Te Papa Peninsula (50%)							
Policy				Transport investment has historically focused on increasing roading capacity and less on other transport modes, which has contributed to a high private vehicle usage when travelling to work and education facilities				The traditional way the benefits of PT are demonstrated has led to policies, plans, and decisions amongst stakeholders that do not fully support the role of PT in the integrated transport network (15%).	
Resilience									The strategic road and rail transport networks are vulnerable to disruption at high risk locations. This undermines efficient access to the nationally significant Port of Tauranga and other key destinations.

Following a review of the evidence in this report by the Project Partners and a workshop (held on 14th April 2020) to discuss the arising problems and objectives, the following key problem themes were arrived upon by the project team:

- **Safety:** Increasing conflicts for all modes is causing harm in our communities. This is evidenced by the high social and economic cost of crashes as described in this report. The lack of appropriate levels of service and facilities results in the view that some modes are unsafe. Projected growth in travel demand will only increase crashes unless conflicts are mitigated and safety of the network improved.
- **Access**: A high dependence on cars for private travel and a constrained network is making it more difficult to achieve appropriate levels of access to key destinations for people and freight. Accessibility is predicted to worsen without transport network improvements. This is shown by the poor range of jobs accessible by public transport and cycling and the change over time as described in this report.
- **Growth / Efficiency**: Increasing traffic volumes from growth are causing congestion and negatively affecting the efficient movement of people and goods. This is shown by travel time and level of service information (that is influenced by a high single occupant vehicle use) described in this report.

7 Objective Development

A range of Investment Objectives have been identified over recent years to guide transport system planning in the Western Bay of Plenty. These are summarised below in Table 7 to show the consistencies and breadth of objectives considered in recent and relevant studies.

Table 7: Investment Objectives in Related Policy and Plans

Project	Investment Objectives
UFTI	• Inclusive access - Proportion of population living within travel thresholds (15, 30, or 45 minutes) of key social and economic opportunities (including education, health care, supermarkets) by different modes (walking, cycling, public transport, private motor vehicle) as benchmarked against the main NZ cities • Economic prosperity - Housing affordability (as measured by the ratio of average income to average dwelling purchase price/rent) in the WBOP is improving • Economic prosperity - The efficiency and effectiveness of the core freight network in the WBOP is improving • Environmental sustainability - Transport emissions in the western Bay of Plenty sub-region have reduced by 80% below 2005 levels by 2070 (30% below 2005 levels by 2030).
Te Papa Plan	The built environment reflects Te Papa's culture, heritage and identity • The quality of public life and use of public realm will continuously improve across Te Papa's neighbourhoods, as reported by residents in periodic Public Life surveys • Air and water quality, measured at key locations within Te Papa, will increase by 2050 • Average net density will be 30 dwellings per hectare across Te Papa, and higher in close proximity to centres and public transport, by 2050 • Employment numbers across Te Papa will increase by 60% by 2050 • Walking, cycling and public transport will represent 40% of all travel movements within Te Papa, and 25% of all travel movements into and out of Te Papa, by 2050
Cameron Road SSBC	• Improved road safety on the corridor by reducing deaths and serious injuries • Improved sense of place on the corridor by improved personal safety and cultural identity • Increased active and public transport mode choice and use
School Bus fares SSBC	• Influence a mode shift from private car use to bus use reducing the impact of the high car mode share in Tauranga. Increase school bus patronage by 40% and public bus patronage by 15% on 2019 levels • Improve access to jobs, communities, shops, services and other facilities. Improve perception of access by bus users and non-users and number of trips made compared with 2019 levels • Improve accessibility to education resulting in improved school attendance rates. Truancy rates reduce from 2019 levels as a result of the initiative.
Tauranga Transport Programme	• Provide travel time reliability and throughput by mode on key corridors on a resilient transport system • Enable transport and land use integration to support liveability and reduce vehicle emissions • Enable modal change during peak periods and connecting active mode networks

Project	Investment Objectives
	• Death and Serious Injury (DSI) reduction (including vulnerable road users) and improved safety perception
Tauranga NOP	The overarching goal is: To identify a 0-5 year programme of interventions that can provide an optimal balance in addressing existing modal LOS gaps whilst continuing to enable growth over a 30-50 year horizon, based on the Optimised Transport System approach. Making journeys safer - this addresses not only reducing car-based crashes (specifically focusing around intersections) but also other modes where perception of safety plays a factor in mode choice. This is given a high priority for several reasons: the cost to the economy, delay to other network users, journey reliability (resilience) and its function in facilitating mode choices. Increasing mode choice - through providing reliable, safe and convenient alternatives to private vehicle use. This includes, public transport, car sharing, cycling, walking and to rail. Convenience being addressed through accessibility. This objective incorporates reducing modal conflicts and the allocation of road space according to trip value. Developing a freight priority network - this can be time specific to maximise available corridor space use whilst enhancing freight efficiency in peak demand times, also reducing functional conflict. This also has a high priority, as it is critical to longer-term economic growth of the region. Investing in a high-quality bus networks integrated to other modes - this is critical to encouraging model shift away from a car-dominated environment. It will provide for population growth with a corresponding reduction in car-based travel leading to improvements in journey time reliability.
PT Blueprint PBC	1. Improve bus travel times on key corridors through shorter frequencies and bus priority measures to reduce the effect of distance on the attractiveness of bus travel. 2. Increase the fare box recovery ratio to 45% by 2026. Progress will be monitored annually. 3. Improve the competitiveness of bus travel times. Target a reduction in bus journey time between key destinations of 20% over existing schedules by 2026. 4. 95% of bus services will operate within five minutes of schedule during the 7am to 9am AM peak by 2026 during normal operating conditions. 1. Implement at least 50% of the projects identified in the PBC by 2021 and 100% by 2026. This may include part projects, i.e. initial phases of larger projects. The organisations responsible for investing in PT as guided by the PBC will commit 100% of the necessary funding as defined in the PBC by 2026.
Tauranga Transport Strategy	• Efficient: Economic Growth and Productivity • Effective: Land use and Transport Integration, Environmental Sustainability, Access and Mobility • Safe: Safety and Personal Security, Public Health.

Investment objectives were discussed at the stakeholder workshop on 14 April 2020. In particular it is noted the TSP needs to support UFTI by contributing to the UFTI investment objectives. Whilst the TSP focuses on a 30-year timeframe, improvements will need to support the longer-term UFTI vision so they don't become less effective or redundant beyond 30 years.

The following table (Table 8) shows the proposed investment objectives and their relationship to the UFTI investment objectives. Some of the measures and targets within the objectives will be refined when an accurate baseline is established.

Further to this, a diagram showing the relationship between the UFTI and TSP problems and objectives is provided in **Appendix C**.

Table 8: TSP Objectives

UFTI Objectives	Proposed TSP Objectives
Movement: Proportion of population living within travel thresholds (15, 30, 45 minutes) of key social and economic opportunities (including education, health care, supermarkets etc) by different modes (walking, cycling, public transport, vehicles)	Support quality urban growth by improving accessibility (dwellings within 15, 30, 45 minutes travel time) to key social and economic opportunities[9] by different modes (targets to be defined).
Environment: Transport related greenhouse gas emissions in the WBOP sub-region reach net zero by 2050 and maintain this level into the future	Increase mode share for public transport and active modes (targets to be defined).
Prosperity: The efficiency and effectiveness of the core freight network (road and rail) in WBOP is maintained	Maintain or improve travel time predictability for freight movements on the primary freight network (road and rail) interpeak (between 9am and 4pm).
Housing: Housing affordability (as measured by the absolute and relative to other high growth centres) ratio of average and median income to average dwelling purchase (price/rent) in the WBOP is improving to be below the median by 2070.	*This objective is not related to transport measures. The TSP has less ability to influence a housing objective than UFTI, as UFTI is a land use and transport programme. As the TSP can more directly influence safety and the evidence shows a high safety risk, a safety objective is proposed below, and not a housing objective.*
No specific Safety objective	Contribute to an outcome where no one is killed or seriously injured in road crashes (targets to be defined).

To provide further definition to the general objectives above, the following table provides examples of mode-based outcomes that could be expected from achieving each of the objectives.

Table 9: Example of Mode Based Outcomes for each Objective

Objective	Walk, cycle, mobility impaired, micromobility	Public Transport	Freight and Service Vehicles	Private Cars
Movement / Access	Amenity will be improved in key activity areas and the active modes network will be enhanced and expanded to improve access to key destinations and employment origin / destinations.	The bus network will be accessible to our communities, take people where they need to go and be balanced in terms of required road space based on people movements achieved across various modes.	Outside of primary freight routes, freight may be a secondary priority to people movement so that accessibility can be enhanced.	Single occupant vehicles may be a secondary priority to modes that shift people more effectively on some routes, so that accessibility is enhanced.
Environment	People will be encouraged to walk and cycle more often through system design and soft measures (e.g. Policy, TDM).	People will be encouraged to use PT, and this will compete with other modes on travel time, convenience and price.	Outside of primary freight routes, freight may be a secondary priority to PT, walking and cycling so that uptake of these	Single occupant fossil fueled vehicle users may pay more (through parking charges for example) and have lower priority on some routes to

[9] Such as; education, health care, major employers, activity centres, open space, green space, etc.

Objective	Walk, cycle, mobility impaired, micromobility	Public Transport	Freight and Service Vehicles	Private Cars
			modes can be enhanced.	encourage PT, walking and cycling/micromobility.
Prosperity	Active mode users may experience delay in crossing the primary freight network or will need to be safely separated to support predicable freight journey times.	Buses may need to share priority lanes with freight vehicles on the primary freight network to maintain freight travel time predictability.	Freight and service vehicles will have priority where appropriate so that businesses can rely on predicable travel times for freight movement.	Private vehicles may experience less priority on the primary freight network where priority will be given to commercial vehicles so that freight journey times are predicable.
Safety	Safe networks will support and encourage active travel modes (cycles, peds, mobility impaired).	Safety will be improved for PT users at high risk locations, e.g. stops and stations.	Safety at mode conflict points, e.g. dangerous roads and rail crossings, will be improved.	Road environments may change and travel speeds may be slower in some areas to provide safe environments for all modes.

7.1 Key Performance Indicators

Key performance indicators provide a means of measuring the success of the TSP against the proposed objectives. The proposed KPIs in Table 10 are informed by the draft KPI currently being developed for UFTI.

These overarching KPI will be used to inform option development, evaluation of options and in future to monitor the effectiveness of TSP implementation. To support the ongoing monitoring in future, the KPI need to be relatively concise (so monitoring is not too onerous) and be measurable from readily accessible data.

Through the TSP process more specific performance indicators will be defined for individual routes. For example, primary freight routes will have specific measures associated with achieving desired outcomes for this type of route, as will other routes/mode priorities. The KPI below are global KPI suitable for this stage of the TSOF.

Table 10: Draft KPI

Objective	KPI's
Contribute to an outcome where no one is killed or seriously injured in road crashes.	• Total road deaths and serious injuries within the Western BOP subregion (rolling average across five years).
	• Road deaths and serious injuries for active mode users within the subregion (rolling average across five years).
Support quality urban growth by improving accessibility (dwellings within 15, 30, 45 minutes travel time) to key social and economic opportunities by different modes.	• Percent or number of jobs accessible from all dwellings within the objective travel time thresholds by PT, walk, cycle and private vehicles in the AM peak (UFTI KPI). Assume 15min = walk & cycle. 30 and 45min = cycle, PT and private vehicle.
	• Percent of population or number of people within the objective travel time thresholds of 'sub-regional destinations' (CBD, town centres, hospital, university, secondary schools, major reserves) by all modes.
	• Percent of dwellings in an urban area within 500m (or 5min walk) of frequent PT services (combined 15min headway or less).

Objective	KPI's
	• Percent of dwellings in an urban area within 1Km (or 5min cycle) of high quality (AAA) cycle facility to key destinations.
	• Delivery of PT priority.
	• Delivery of 'AAA' cycle facilities as identified in the preferred cycle programme.
Increase mode share for public transport and active modes	• AM peak period mode share in the existing urban area.
	• Number of passenger journeys' using Western Bay of Plenty urban public transport services.
	• Tonnes of harmful emissions emitted per year from transport.
Maintain or improve travel time predictability for freight movements on the primary freight network (road and rail) interpeak (between 9am and 4pm).	• Travel time variability for freight movements between Tauriko and the Port.
	• Travel time variability for freight movements between Rangiuru Business Estate and the Port.

Baselines and targets for the above KPI are defined in TSOF Report 3.

7.2 Investment Objectives Compared to Committed Programme

Section 5 of this report highlights the committed, budgeted and planned programme of transport investment the Transport Partners developed as part of the 2018 Regional Land Transport Plan and respective Long Term Plan processes.

The Investment Objectives in Section 7 above were developed with relevant staff from the Transport Partners, and stem from the UFTI Investment Objectives developed at the sub-regional network level.

Comparing the draft investment objectives to the committed programme in Section 5, the following observations are made:

1. **Safety:** A strong emphasis on safety by adopting a 'vision zero' approach. The current investment pattern shows a high focus on safety, and over half of all committed investment since 2018 has been for improved safety outcomes.
2. **Urban Accessibility:** Public Transport, Walking and Cycling have a very high focus under the recommended investment objectives. By contrast, the committed 10-year programme has 9% of all total committed and planned investment into improvements for walking, cycling and PT. Pedestrians and cyclists account for 15-20% of all deaths and serious injuries in the past five years, and user rates in traditional target markets such as education and employment are low compared to national rates of walking, cycling and PT usage. This signals that funding priorities may change in the next 10- year period.
3. **Freight and Economic Development:** Investment in freight and economic development features as the most important outcome in the 2018 RLTP. Large parts of the committed programme provide for new roading investments on the outskirts of the city area reflecting that urban development is largely focused (95%) on greenfield development on the periphery of the existing urban form. Very limited investment within the committed programme is focused primarily on the needs of freight and the Port.
4. **Environment:** The environmental investment objective seeks a reduction in harmful emissions through reduced use of private vehicles and uptake of PT, walking and cycling. Other measures such as shift to electric vehicles, land use and local transport policies are important interventions to achieve this objective.

8 Conclusion and Next Steps

The review of existing evidence has identified the following key findings:

- Relevant policies and plans support an emphasis on mode shift, supporting improved transport choice, freight movement and improving safety.
- Access to opportunities by alternative travel modes is poor and expected to worsen as growth continues unless efficient and attractive alternatives are provided. Freight movement is predominantly by road and freight vehicles experience delay, especially at pinch points.
- UFTI is moving toward a programme that seeks to increase intensification in areas that are connected by reliable people movement networks
- A number of studies and plans have identified initiatives to improve the transport network, but the proportion of planned investment committed to date has been low in the last 10 years.

The 2018 committed and planned 10-year programme indicates a strong investment in economic development (supporting new greenfield growth areas) and road safety. This investment is driven by the settlement pattern adopted by the Project Partners over the last 20-years, where over 95% of all development has occurred in greenfield growth cells on the City periphery.

Going forward, investment will need to support the transport and land use pattern to be defined by UFTI. Achieving objectives around improving safety and increasing travel by PT, walking and cycling will not improve travel times or reliability for private vehicles. As corridor space is limited, in some areas it may take longer to travel by private car in future than it does now, but there should be an alternative travel option that competes on travel time and price.

Policies will also need to change to support the objectives. For example, the relatively low cost of car parking and application of paid parking does not support investment in bus priority or services at present. In the longer term, other levers like road pricing may need to be considered to encourage mode shift and promote route choice that supports desired network outcomes.

8.1 Next Steps

Broadly the following steps will be undertaken in the continued delivery of the TSP:

- The TSOF will be completed to provide the framework for evaluating gaps.
- As part of this, key transport network and policy initiatives will be developed for 0-3, 3-10 and 10-30 year timeframes.
- These initiatives will be evaluated using the framework to recommend a preferred approach.
- Single stage business case development will then further develop, refine and evaluate interventions and secure funding for implementation.

9 Appendices

Sensitivity: General

A

Appendix A – Summary of Related Projects

Policy	Key Messages Informing the TSP
Tauranga City Council Cycle Plan (2018) and PBC (2020)	The TCC Cycle Plan (finalised in 2018) identifies priority areas for cycling. The Cycle Plan states that on busy roads the Council will seek to provide cycleways that are physically separated from traffic, while on quieter roads the plan will ensure it is safe for people on bikes to share the road with other road traffic. TCC are developing a Programme Business Case (PBC) for cycling that will replace the Cycle Plan. The PBC identifies key cycling corridors and informs route selection.
TCC Street Design Guide	The street design guide replaces part of the TCC infrastructure development code and identifies the elements that should make up streets based on a place and movement framework. This guide outlines the outcomes and principles that underpin the development of great streets. The guide is focussed on informing street design but includes a method of street categorisation that informs the TSP.
Tauranga Public Transport Blueprint (2017)	The Bay of Plenty Regional Council (BoPRC) Public Transport Blueprint (2017) includes a programme and detailed business case (DBC) guiding investment in improved bus services and infrastructure in the short term. Recent bus network changes have been implemented following completion of the PT Blueprint. The recommended programme includes increased investment in bus priority measures and improved infrastructure, e.g. interchanges and pedestrian connections.
Draft Tauranga Programme Business Case (2018)	The draft Tauranga Transport Programme Business Case (PBC) identifies imbalanced investment in transport and safety as key problem areas. The PBC identifies an active mode (walking and cycling) mode share target for the city of 14% and a public transport mode share target of 10%. The existing mode shares for active mode and public transport are 7% and 2% respectively.
Tauranga Network Operating Plan (NOP) (2018)	The Tauranga Network Operating Plan (NOP) developed by TCCC in 2018 identified the need to reduce car-based crashes (specifically focusing around intersections). Other modes were also identified due to perception of safety playing a factor in mode choice as a priority. The NOP also prioritises increasing mode choice through providing reliable, safe and convenient alternatives to private vehicle use.
Tauranga Urban Strategy 2050 (2018)	Strategy for improving transport in Tauranga considering land use change and increased population growth. The strategy has a vision for the city to improve transport connectivity and reliance on the private vehicle. Reliance on car-based travel is listed as a key issue and causing the following problems: congestion, climate change and health impacts. The Strategy sets out four outcomes which are necessary to achieve this vision: • We use our land and resources efficiently while reducing our impact on the environment. • Our centres, neighbourhoods and marae are vibrant, thriving and accessible. • Our centres, neighbourhoods and marae support healthy, safe, connected communities. • Our streets and public spaces are distinctive and reflect the character and identity of the community.

Policy	Key Messages Informing the TSP
Infrastructure Strategy (2018 – 2028)	This Infrastructure Strategy was informed by the Tauranga Programme Business Case. The key issues facing the city are defined as: • Growth • Resilience • Amenity • Delivery. The following key priorities are defined: • Providing better transport choices: improved walking, cycling and public transport; • Reliable journey times for people and freight: lane and intersection capacity improvements; • Improving safety on our roads: targeted safety projects, speed management and minor improvements; • Creating well connected communities and local services, improved connections for all modes to local services or housing; and • Creating a transport network that enhances the attractiveness and liveability of the urban environment. Outcomes sought are: • Provided new infrastructure to provide for new urban growth areas • Provided an efficient network which promotes economic growth and productivity • Provided an effective network which supports transport integration, environmental sustainability, access and mobility • Provided a safe network for road users.

B

Appendix B – Projects in the TTM by Forecast Year

TSP Tauranga Transport Model Assumptions

Colour coded by year

Ref	Projects	Descriptions	What Model Period	Rationale
1	SH2 – Katikati Bypass	A 2 lane road bypassing Katikati township	2031	Insufficient capacity of single lane SH2 through Katikati for interregional movements
2	SH2 – Omokoroa to Te Puna Four Laning	A 4 lane expressway from the end of TNL to Omokoroa. TNL Omokoroa Rd grade separation. Existing SH between Omokoroa Rd and Te Puna remains as a local road. The new road will carry two lanes of general traffic and provide two dedicated lanes for bus priority, freight and vehicles carrying multiple people as managed lanes.	2031	NZ upgrade programme
3	SH2 – Tauranga Northern Link (TNL)	A 4-lane expressway from SH2 (Loop Road) to SH29 Takitimu Drive Toll Road. For each direction, one lane is for general traffic and the other is a managed lane to be used to prioritise public transport, vehicles carrying multiple passengers and/or freight.	2026	NZ upgrade programme
4		Roundabout connection at Takitimu Drive with a northbound flyover and southbound bypass lane on SH29 Takitimu Drive Toll Road		
5		A full diamond interchange at Minden		
6		Widening north of Takitimu Drive connection from 2 lanes to 4 lanes		
7		New link from 15th Avenue to Takitimu Drive.		
8	SH2 - Takitimu Drive / Elizabeth Street - grade separation	Grade separation of the southbound through movement and removal of the signalization at the at-grade roundabout.	2031	Priority freight route
9	SH2 – Papamoa East Interchange	New full diamond interchange connecting to Papamoa East.	2026	Access to housing
10	SH2 – Maunganui / Girven Intersection upgrade - grade separation[2]	2-lane grade separated flyover at MGI over Signalised intersection and diamond interchange over SH2 at Te Maunga (SH2/29) Intersection,	2026	In construction
11	15th Avenue	Four-laning of 15th Avenue and Turret Road between Cameron Road and Maungatapu roundabout;	2026	Four general traffic lanes unlikely. Consider tidal flow
12		Convert the existing one-way direction of Turret Road north of 15th Avenue from southbound to northbound only.	2026	Turret road closed
13	SH29A – Oropi Road Intersection – minor upgrade	Minor improvement of capacity.	2043	Minor upgrade
14	SH29A – Hairini to Maungatapu Bridge four laning	Widening of SH29A from 2 to 4 lanes from Maungatapu roundabout including Maungatapu bridge.	2026	Managed lanes with bus, HOV and freight priority provides for intraregional movement
15	Cambridge Road / Route J interchange - signals	Upgrade the interchange intersections from priority to traffic signals.	2026	Minor upgrade
16	Cameron Road / 3rd Avenue – signal upgrade	Upgrade the priority intersection to traffic signals.	2021	Minor upgrade safety and bus priority
17	Cameron Road / 15th Avenue - signal upgrade	Widening of the 15th Avenue approaches.	2026	Bus lanes provide PT priority
18	Cameron Road / Harington - signals	Upgrade the priority intersection to traffic signals.	2021	Access to from transport hub cars and cycles
19	Cameron Road / 9th Avenue – signal upgrade	Upgrade the priority intersection to traffic signal	2021	Minor upgrade safety and bus priority
20	Devonport Road / 11th Avenue - signal upgrade	Upgrade the priority intersection to traffic signal	2021	Te Papa IBC
21	Fraser Street / Courtney Road – signal update	Upgrade the priority intersection to traffic signal	2021	Link between cameron and fraser in this area.
22	Kaituna Link	New 2 lane link connecting Te Tumu Road across the Kaituna River to the Te Tumu residential development	2031	Te Tumu
23	Rangiuru Business Park Local Road Network (prior to full development)	New roundabout access on SH2 (at Affco site);	2026	Rangiuru. Access to industrial land
24		SH2 / Pah Road intersection remains open; and	2018	
25		Roundabout at the 4-legged Rangiuru Interchange.	2026	
26	Rangiuru Business Park Local Road Network (full development)	Closure of SH2 / Maketu Road intersection	2018	Rangiuru. Access to industrial land

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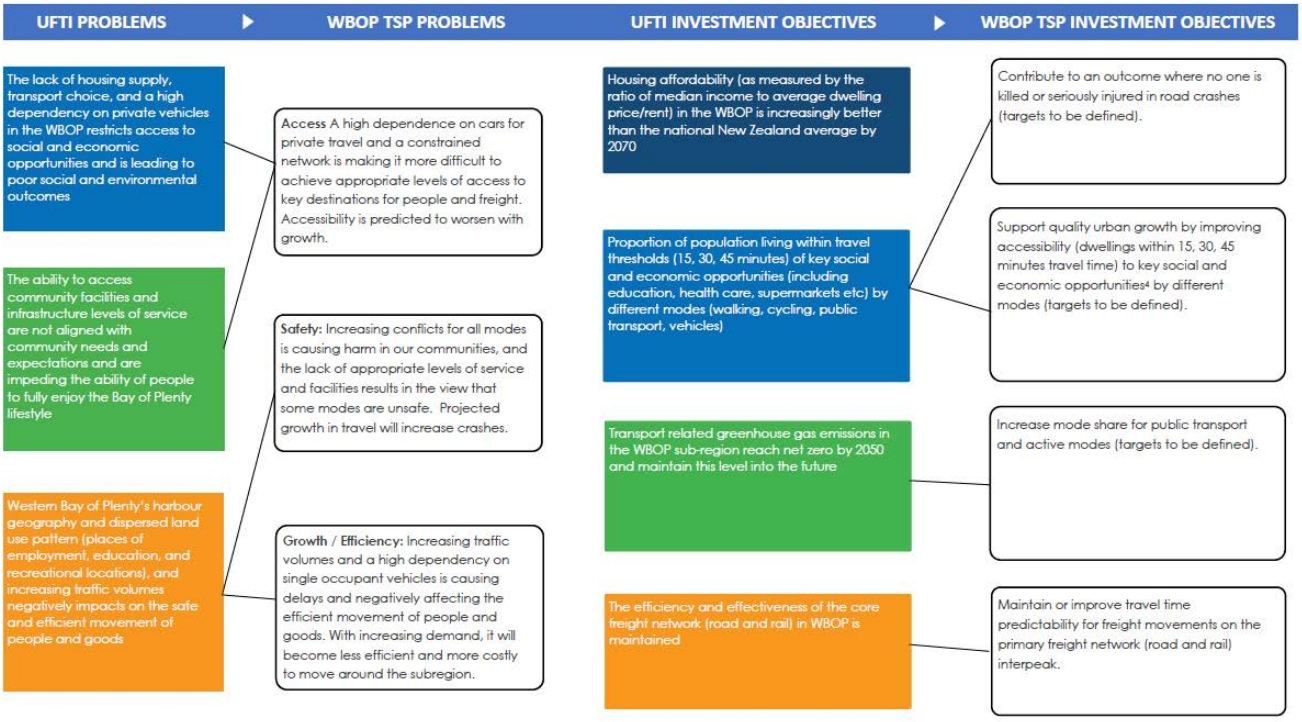
27	**In Tauriko/Western Corridor**			
28	Lakes Boulevard Extension to Keenan Road via a SH36 underpass		2026	To serve growth area in Tauriko
29	SH29A widening between Oropi and Pokie roads		2043	
30	SH29A widening between Barkes Corner and Oropi Road		2043	
31	A new east-west connection-between Poike Road and Oropi Road		2026	
32	A new north-south connection between Kennedy Road and Belk Road		2021	
33	Ring Road Connection (new Belk Road) from SH29 to SH36		2026	
34	SH29 Omanawa Road to Gargen Road: Speed Reduced to 80km/hr & 2 lane capacity		2021	
35	SH29 Gargen Road to Barkes Corner: Speed Reduced to 60km/hr & 2 lane capacity		2021	
36	SH29 Gargen Road to Barkes Corner: Speed Reduced to 80km/hr & 2 lane capacity		2026	
37	SH29 widening from Belk Road to Barkes Corner: Upgraded Capacity to 4 lanes with Speed 80km/hr, full diamond interchanges at Takitimu Dr and Barkes Corner		2043	
38	Takitimu Drive widening from the SH29/SH36 intersection to the TNL connection: Upgraded Capacity to 4 lanes with Speed 80km/hr		2043	Tauriko Network Plan
39	Takitimu Dr/TNL connection to Elizabeth Street: Upgraded Capacity with additional HOV lane		2043	Tauriko Network Plan
40	Ring Road Connection or Joyce Road extension to Oropi Road		2031	Western Corridor
41	Additional HOV lanes on SH36 between Ring Road Connection and Merrick Road		2031	Western Corridor. Encourage ride sharing
42	Additional HOV lanes on Poike Road between SH29A and Hollister		2031	Western Corridor. Encourage ride sharing
43	Traffic Signal at the SH29 / Cambridge Road intersection		2021	Capacity on strategic network
44	Two-lane roundabout at the SH29 / Redwood lane intersection		2026	Access to Tauriko
45	Traffic Signal at the SH29 / Tauriko West access intersection		2026	Access to Tauriko
46	Traffic Signals at the SH29 / Takitimu Drive and SH29 / Cameron Road intersections		2026 and 2031 only	Tauriko Network Plan. Capacity on strategic network
47	Taurikura/LakeBlvd Intersection: Upgraded from Roundabout to Signalised Intersection		2043	Western Corridor. Capacity on strategic network
48	**Programme 8.1 Bus and HOV Lane Assumptions**	**Description**	**Network Layout**	
50	Welcome Bay Road between the Hairini underpass and James Cook Drive	One Bus lane in westbound direction with existing traffic lanes	2031	Welcome Bay growth study
51	SH36 between Ring Route and Merrick Road Connection	One traffic lane and one HOV lane each way	2031	Welcome Bay growth study
52	Poike Road between SH29A and Hollister	One traffic lane and one HOV lane each way	2031	Welcome Bay growth study
53	Harini Bridge to 15th Ave/Cameron Road Intersection	One traffic lane and one HOV lane each way	2026	Welcome Bay growth study
54	SH36 between SH29 Takitimu Drive/SH36 to Lakes Boulevard Roundabout	Two traffic lanes and one Bus lane each way	2043	Western Corridor
55	SH29A between Maunganui Rd (SH2) (MGI) to SH29 Takitimu Drive/SH36 (Route K)	One lane Bus/HOV lane with Existing traffic lanes in each way	2043	Managed lanes with bus, HOV and freight priority provides for intraregional movement
56	SH29 between SH29 Takitimu Drive/SH36 to Tauriko West	Two traffic lanes and one Bus/HOV lane each way	2043	Tauriko Network Plan
57	Cameron Road from Chapel Street to Barkes Corner Intersection	One traffic lane and one Bus lane each way	2026	Cameron Rd key PT corridor
58	SH2 between Minden to Takitimu Drive	One traffic lane and one bus lane with no Bus lane on the Wairoa Bridge	2026	PT accessibility P8.1
59	Links Avenue from Concord Avenue to Golf Road	One Bus lane in northbound direction with existing traffic lanes	2018	As per existing bus priority
60	Totara Street from Hull Road to Hewlett's Road	One Bus lane in southbound direction with existing traffic lanes	2026	Bus routes to use maunganui road for catchment. P8.1
61	Chapel Street from Otumoetai Road to SH2	One Bus lane in southbound direction (towards CBD) with existing traffic lanes	2026	Bus priority access to CBD/ P8.1
62	SH2 between Girven Road/Matapihi Road to SH2/SH29A intersection	One Bus lane with existing traffic lanes	2026	P8.1 under investigation Baylink
63	Wairakei to TeTumu	One Bus lane with existing traffic lane each way	2043	Te Tumu structure plan
64	Parking assumption	77% increase cbd area		P8.1

C

Appendix C – TSP and UFTI Problems and Objectives

WBOP Transport System Plan Objective Setting v2 24/06/2020



Notes:
1. The TSP does not adopt the UFTI housing affordability objective as the TSP does not have as much ability to influence housing affordability outcomes as UFTI (UFTI being a broader land use and transport programme).
2. The TSP safety objective responds to the 3rd UFTI problem statement "*impacts on the safe and efficient movement of people and goods*". The TSP is a suitable programme to respond directly to road safety problems.
3. The TSP mode shift objective supports the UFTI emissions objective by targeting a shift to low emission travel choices. This also responds to the first UFTI problem statement "*a high dependency on private vehicles*".
4. Such as; education, health care, major employers, activity centres, open space, green space, etc.

Document Acceptance

Action	Name	Signed	Date
Prepared by	Matthew Kilpatrick		18 September 2020
Reviewed by	Craig Richards		18 September 2020
Approved by	Tania Hyde		18 September 2020
on behalf of	Beca Limited		

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