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Report

Western Bay of Plenty Public Transport Blueprint - Programme Business Case

Prepared for Bay of Plenty Regional Council

Prepared by (Beca)

9 February 2017

Revision History

Revision Nº	Prepared By	Description	Date
0	**Craig Richards**	Working draft for client review	30/09/2016
1	**Craig Richards**	Draft for stakeholder review	28/10/2016
2	**Craig Richards**	Draft for peer review	12/12/2016
3	**Craig Richards**	Final	09/02/2017

Document Acceptance

Action	Name	Signed	Date
Prepared by	**Craig Richards**		30/09/2016
Reviewed by	**Andy Lightowler**		01/02/2017
Approved by	**Andy Lightowler**		01/02/2017

Executive Summary

This Programme Business Case (PBC) has been prepared to guide investment in public transport services and capital improvement in the Tauranga City and Western Bay of Plenty (Western Bay) region over the next ten years. Public transport (PT) in the region is provided in the form of bus services on the Tauranga Urban (Bay Hopper), Regional routes connecting Tauranga with Katikati, Omokoroa and Te Puke and School Hopper networks. The PBC has been informed by regular engagement with the lead stakeholder group consisting of; Bay of Plenty Regional Council (BoPRC), Tauranga City Council (TCC), Western Bay of Plenty District Council (WBoPDC) and the New Zealand Transport Agency (the Transport Agency).

The PBC has established that the Strategic Context set out in the Strategic Business Case (SBC) is still valid. Key findings are that:

- The region is experiencing rapid population growth which is leading to increased demand for travel that is in turn impacting on the level of service achieved on the road network. Travel time reliability is decreasing as congestion worsens (travel times and congestion levels are increasing).
- The current mode share of bus to car travel is approximately 5% in peak periods and less outside of peak times. In most cases bus journey times are considerably longer than travel by car and in many locations all day parking charges are less than the cost of a two way bus fare.

Changes are necessary in order to make bus travel a more acceptable alternative to private car use and by doing so increase the mode share of bus travel, which will in turn assist in reducing congestion and improve the efficiency of the local transport network.

The PBC provides evidence that the problem statements formulated in the SBC are valid. The three problem statements and the associated evidence base is summarised as follows:

Problem one: *The current urban land form and topography makes it difficult to support a more effective and efficient PT system across the whole network* (35%). Evidence shows that the existing bus network is circuitous due to the topography of the sub-region. Employment densities are highest in the City centre but new residential growth is occurring in urban fringe locations. Tauranga and the Western Bay of Plenty have lower population densities than other New Zealand cities, so buses have to travel further to collect passengers.

Problem two: *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%). Evidence shows that on average it takes two and a half times longer to travel by bus than by car on strategic routes. Current off-street parking charges result in average daily parking costs less than the cost of a two-way bus ticket.

Problem three: T*he 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%). Evidence shows that there is a significant amount of support for PT investment in established policies and plans, however this support has not translated to increased PT investment.

The Investment Logic Map is included in Appendix B. Six SMART investment objectives were formulated by the lead stakeholder group through a series of workshops to achieve the benefits identified in the SBC. The investment objectives aim to increase bus passengers and fare box recovery, improve bus service speed and reliability and to increase investment in PT projects.

A long list of seven possible programme options was formulated and evaluated by the lead stakeholder group using a multi criteria assessment. From this, a short list of three preferred programmes was identified. The shortlisted options are:

- High Performance Plus: focus on improving services and infrastructure in Tauranga City with high frequencies on key urban bus routes and express buses to growth areas, e.g. Papamoa East and Tauriko possibly supported by bus priority on the main corridors. Minor improvements to services and facilities in regional areas such as Omokoroa and Te Puke.
- Growth Enabler: focus on improving services to new growth areas in Tauranga and the Western Bay. This option would deliver frequent bus services to regional areas such as Katikati, Omokoroa and Te Puke, possibly supported by new or improved park and ride facilities. Less emphasis on high frequency services and improved infrastructure in the City centre.
- Balanced Plus: provide some high frequency services in the City balanced with increased levels of service to regional areas such as Katikati, Omokoroa and Te Puke. Infrastructure investment is balanced between City and regional network improvements

Diagrams showing the indicative network changes under each of the three shortlisted programmes are provided in Appendix E.

The three shortlisted programmes were evaluated using the Transport Agency's multi-criteria evaluation tables. This evaluation concluded that the High Performance Plus (HPP) programme performs better than the two alternative options against most of the investment objectives, it has a high strategic fit and a higher benefit cost ratio than the alternative options. As such High Performance Plus is the recommended programme.

The recommended programme focusses investment in the Tauranga urban area where there is a higher customer base and avoids higher costs associated with increasing service to regional centres. The option includes new bus routes and changes to existing routes that will reduce journey times and make bus travel a more attractive option. New routes will include a high frequency 'city to surf', western and eastern connectors and express buses to Papamoa East. The option includes the following infrastructure measures:

- Bus priority on Cameron Road,
- New or upgraded interchange facilities at key nodes,
- Improvements to high use bus stops, e.g. better facilities at the stop and on pedestrian access routes,
- Improved park and ride facilities at Omokoroa.

In addition the option includes changes to School Hopper bus routes where urban services can provide an adequate service, investigating zone ticket pricing, and upgrades that have already been committed such as; Realtime information, Wifi on buses, and ticketing upgrades.

The preferred option does not limit future options but provides direction for prioritising the most effective solutions in the first instance. Additional investment can be examined through the individual activity business case's and additional measures will be examined as opportunities arise or conditions change.

A summary of the financial implications of the option compared with the do minimum (existing) is tabulated below:

	Existing	High Performance Plus
Capital investment (10yrs)	$0	$8.9M

	Existing	High Performance Plus
Operational cost (per annum)	$12.6M	$14.8M
Indicative benefit to cost ratio	0.63	1.29

When considering the benefit to cost ratio of the additional costs and benefits (the incremental BCR) the ratio increases to 3.5.

Other benefits of the recommended programme include:

- Higher anticipated passenger growth than the two alternative options, which may save up to 6M private vehicle kilometres travelled per year after 10 years.
- Greater PT revenue with a fare box recovery above 40% anticipated.
- Less demand on the road network will reduce congestion and improve journey time reliability for all road users, possibly allowing future investment in road network capacity to be deferred.
- Lower vehicle kilometres travelled has environmental benefits through reduced emissions and noise.
- Health and social benefits for bus users who walk to/from stops and also for the wider population through reduced car emissions.

Assessment of the recommended option has found that increased investment will attract more people to use the bus, reducing the effect of private car use on road capacity, the environment and public health. The assessment profile of the preferred option is High, High, Low. There is a clear case for increased PT investment in the region following the principles defined in the recommended option.

The key risks to the programme are financial uncertainty and negative stakeholder reaction to the changes. It is possible that actual passenger uptake will not be as high as anticipated, resulting in less revenue than expected. There is also a risk that the costs assumed in this PBC will be higher than anticipated. Changes to the network may mean that some existing passengers are disadvantaged, and the increased use of urban services by school children may not be popular to some peak period bus users.

The programme owner is the BoPRC. An Activity Business Case (ABC) will be prepared to define detailed route and scheduling changes for the recommended programme. Stakeholder consultation is ongoing and public consultation will be carried out in 2017. It is anticipated that network changes will be implemented from mid-2018 onwards. The effectiveness of the changes will be monitored and reported to the lead stakeholder group through regular reporting.

Contents

Appendices

1 Introduction

This Programme Business Case (PBC) has been prepared by Beca Limited (Beca) between July and October 2016 to guide investment in Public Transport (PT) within the Western Bay of Plenty (Western Bay) and Tauranga City over the next ten years.

PT in Tauranga City and the Western Bay is provided in the form of urban and regional bus services which are managed and funded by the Bay of Plenty Regional Council (BoPRC). Bus stop infrastructure and on road facilities are provided and maintained by Tauranga City Council (TCC) and Western Bay of Plenty District Council (WBoPDC). The New Zealand Transport Agency (the Transport Agency) provide funding for bus operations, infrastructure and are responsible for management of the state highway network (including stops and priority measures).

These organisations comprise the lead stakeholder group for this PBC and have overseen the "Western Bay of Plenty PT Blueprint" work, which incorporates the Point of Entry and Strategic Business Case (SBC) development as well as this PBC.

1.1 Purpose

This PBC further develops the strategic context presented in the SBC and presents a range of options that have been developed to achieve the benefits of investment with a fully appraised recommended programme.

In doing so the PBC:

- Defines the strategic context and the current operational characteristics of the bus network,
- Presents the evidence base for the problems and the rationale for investment,
- Outlines the long list of programme options and the evaluation of options to short list,
- Describes the recommended programme to achieve the outcomes and benefits identified in the SBC.

The PBC will establish the need and priorities for future investment in public bus services in Tauranga City and the Western Bay District.

1.2 Related Strategies and Workstreams

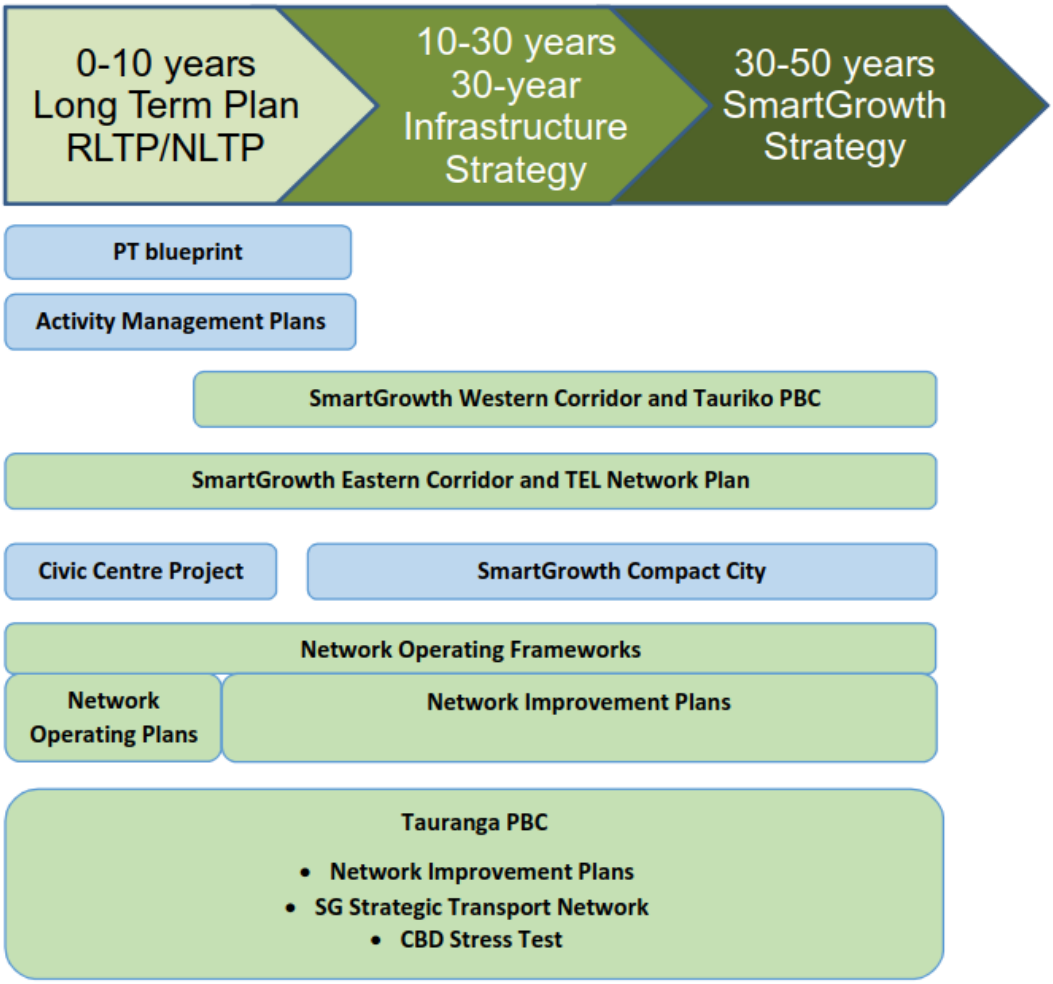
The PBC is one of a number of transportation strategies and work streams currently being progressed in the region, other complementary projects include Network Operating Plans[1] (NOP) for Tauranga City, the TCC Civic Heart campus project[2] and Smartgrowth settlement pattern[3] review. The following diagram shows the key interrelated programmes and their respective planning horizons. More information about the complementary programmes is provided in **Appendix A**.

[1] A Network Operating Plan is a multimodal transport strategy that seeks to improve level of service where deficiencies exist depending on an agreed mode hierarchy by location and time of day.

[2] The Civic Heart Campus project is a TCC led business case for Council facilities (offices, library, performance venue, car parking) in the Tauranga City Centre.

[3] The "Settlement Pattern" is the agreed Blueprint for growth in the region.

Figure 1: Complementary Strategy Programmes



1.3 Report Structure

This PBC report is structured in two parts:

- **Part A: The Strategic Case** – builds on the work undertaken as part of the SBC and provides quantitative information about the social, economic and transport context in which the PBC has been developed. Provides evidence to the problem statements developed in the SBC and describes the SMART (i.e. Specific, Measurable, Achievable, Relevant and Timebound) investment objectives prepared by the lead stakeholder group.
- **Part B: Developing the Programme** – Outlines a long list of programme options and the assessment undertaken to identify a short list of preferred programmes. It describes the detailed assessment of the three short listed options undertaken to conclude on a recommended programme, and defines the recommended programme in detail including the management and financial case.

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PART A – THE STRATEGIC CASE

2 Strategic Context

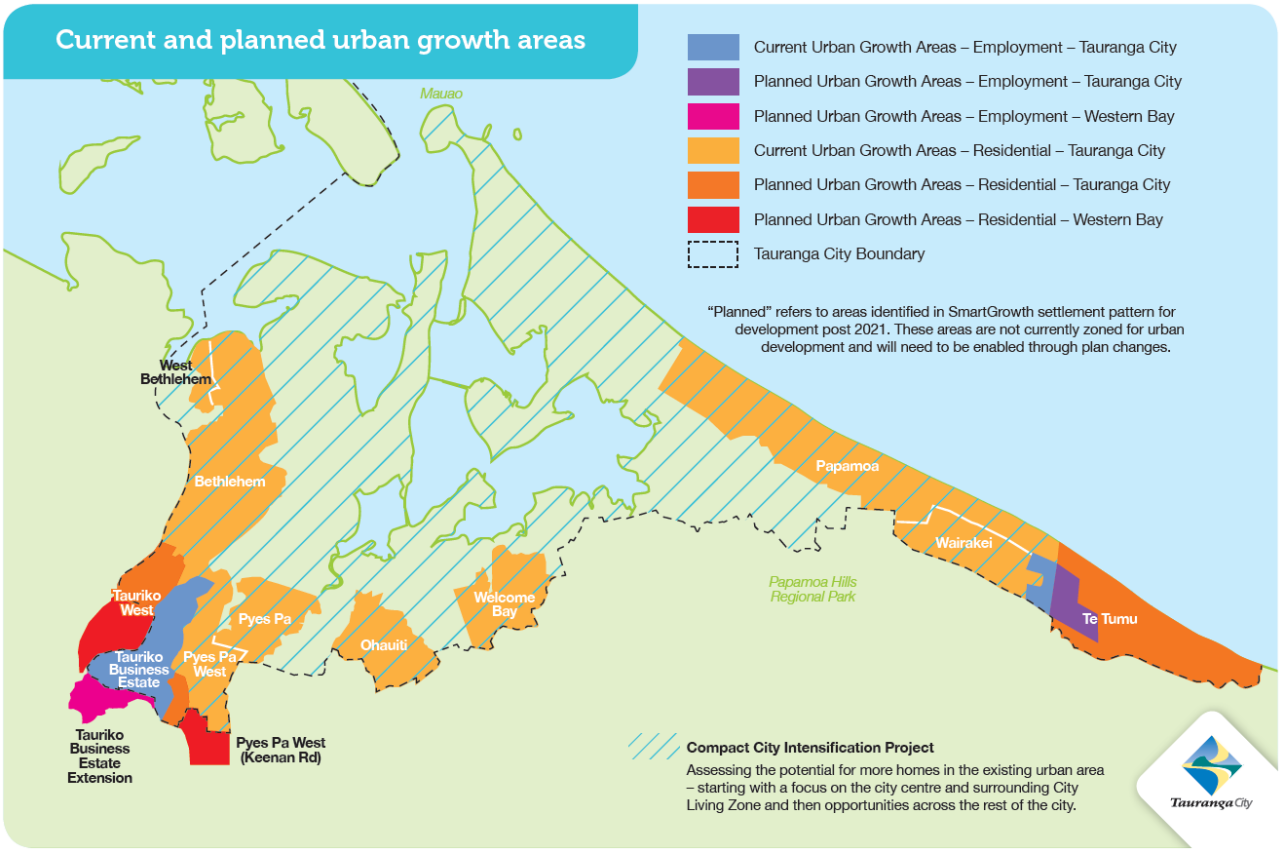
This chapter provides a high level summary of the geographical, social, transport and economic context provided in the SBC, together with additional supporting information relevant to the PBC. This chapter confirms the context in which any programme arising from the PBC will be delivered.

2.1 Geographic Context

The Tauranga City boundary is shown in **Figure 2** and includes the established urban area and new growth areas such as the Wairakei and Te Timu suburbs in Papamoa East and Tauriko to the West (shown in **Figure 3**). The Western Bay of Plenty Region is largely rural lard area but includes the urban centres of Katikati and Omokoroa to the north and Te Puke to the east of Tauranga City, also shown in **Figure 2**.

Figure 2: Tauranga City and Western Bay of Plenty Region

Figure 3: Tauranga Urban Growth Areas



2.2 Social and Economic Context

Tauranga and the Western Bay are currently experiencing a period of rapid growth that is influenced by high levels of international migration into New Zealand, low interest rates and the relatively high price of real estate in the Auckland area encouraging national migration to more affordable regions such as the Bay of Plenty.

Consents for new residential development have increased in Tauranga by approximately 20% per year on average since 2010. A graph of building consent data for Tauranga and the Western Bay District on a quarterly basis since 2010 is provided in **Figure 4**.

Whilst it is difficult to predict when the current population boom period will end, and what will happen to growth beyond this period, estimates from Statistics New Zealand show the Tauranga population increasing on a steady trajectory for the next 30 years (**Figure 5**). This provides a major growth market for PT in the future.

Figure 4: Residential Building Consents for New Builds by Quarter Year

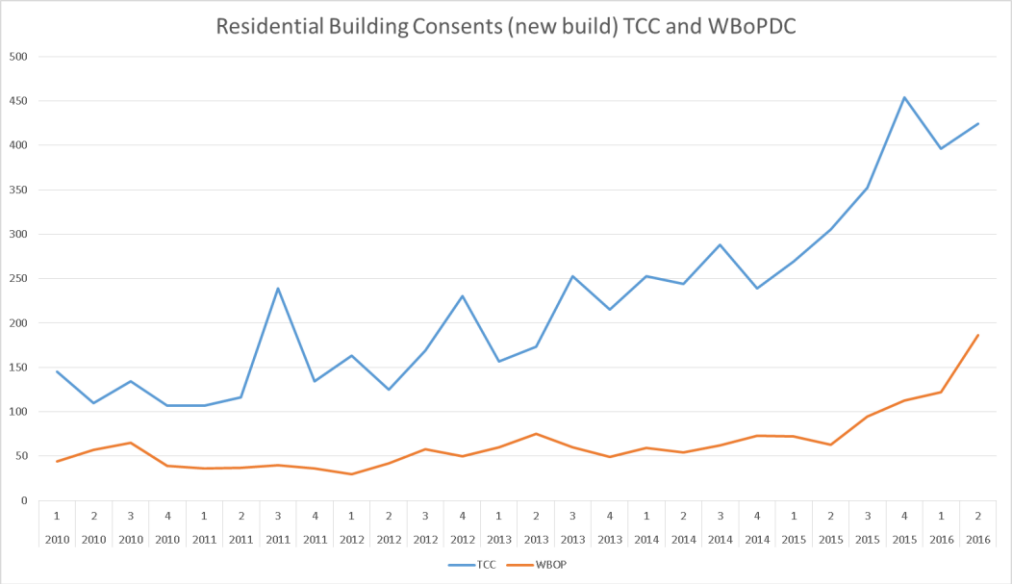
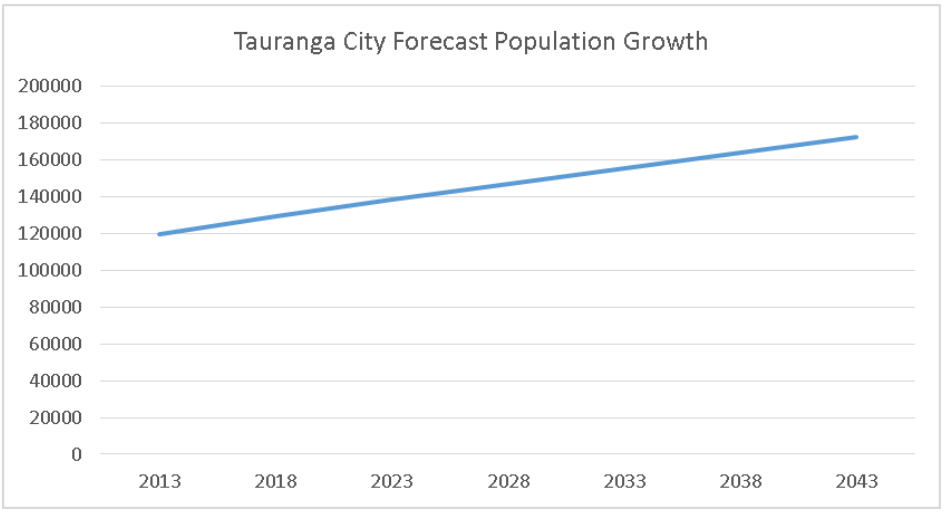


Figure 5: Statistics New Zealand Population Forecast for Tauranga City



The Tauranga population has an older than typical average age. At the time of the 2013 Census the proportion of the Tauranga population over the age of 65 was 19%, whilst the New Zealand average was 14%. This proportion is expected to increase over the next 30 years, which presents opportunities (elderly people have higher propensity to use the bus[4]) and challenges (good bus network coverage is required as elderly people are less likely to walk long distances to access a bus and have different travel patterns than commuter travellers) for the PBC.

A University Campus is proposed for Tauranga and may attract younger people to the City when it opens in 2018. The University is expected to accommodate up to 2,000 students, will be located in the CBD and will have very little on site car parking. As people of University age typically have a higher propensity to use PT

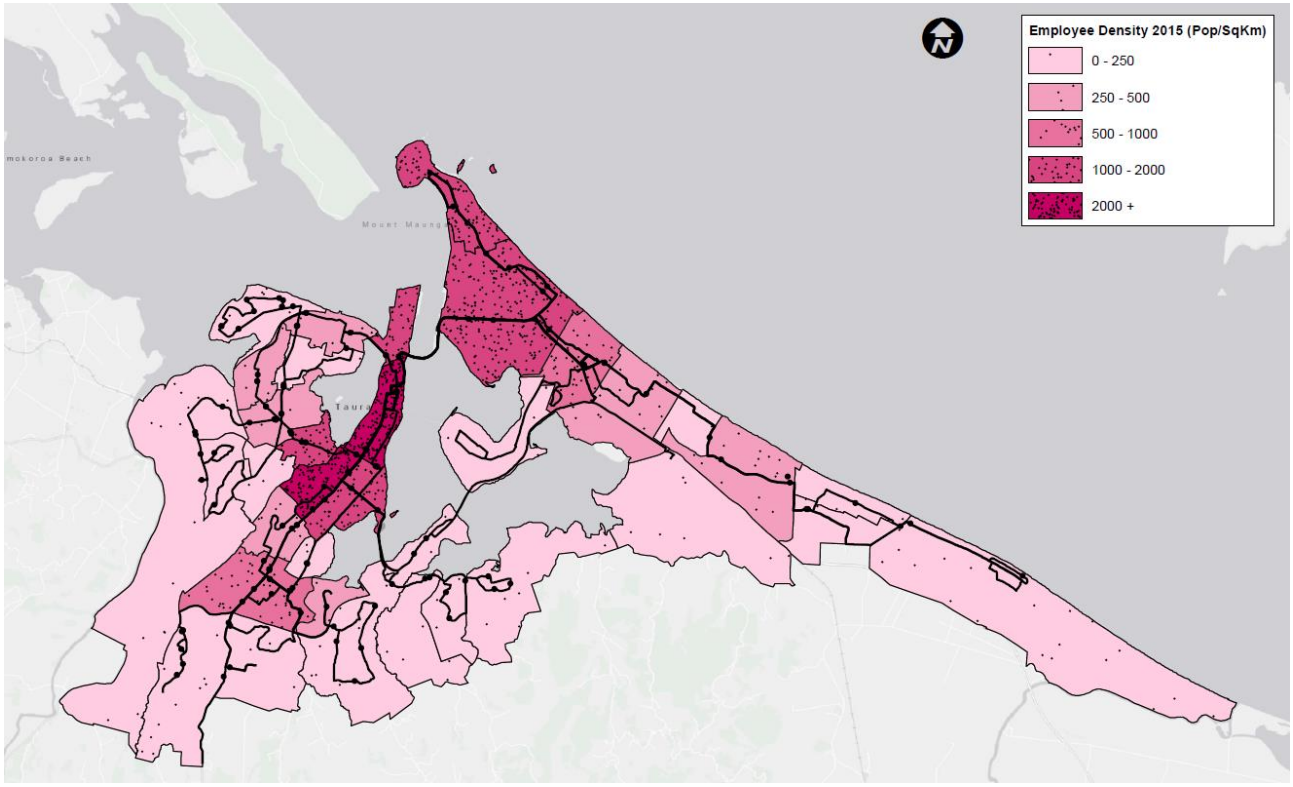
[4] Comparing Travel Modes NZ Household Travel Survey, 2015, Ministry of Transport.

than older people in employment[5], the University presents an opportunity for increasing PT mode share in Tauranga.

Tauranga and the Western Bay economies have also grown strongly in recent years indicating that there is strong job growth in the region. The Bay of Plenty contribution to national GDP had the second highest growth between 2010 and 2015 of all New Zealand's regions (more than 20% growth)[6], the Western Bay sub region was New Zealand's fastest growing regional economy in the year to March 2015[7].

The following figure shows employment densities in Tauranga City with the greatest concentrations of employed persons working in the CBD / Cameron Road and Mt Maunganui areas.

Figure 6: Tauranga City Employment Densities



2.3 Transport Context

High levels of population growth appear to be having an effect on transport network demand across the region. Traffic volumes on State Highway 2 (SH2) north of Tauranga (observed at Te Puna) show a distinct increase in the last three years. Traffic volumes on Cameron Road have also increased over the last five

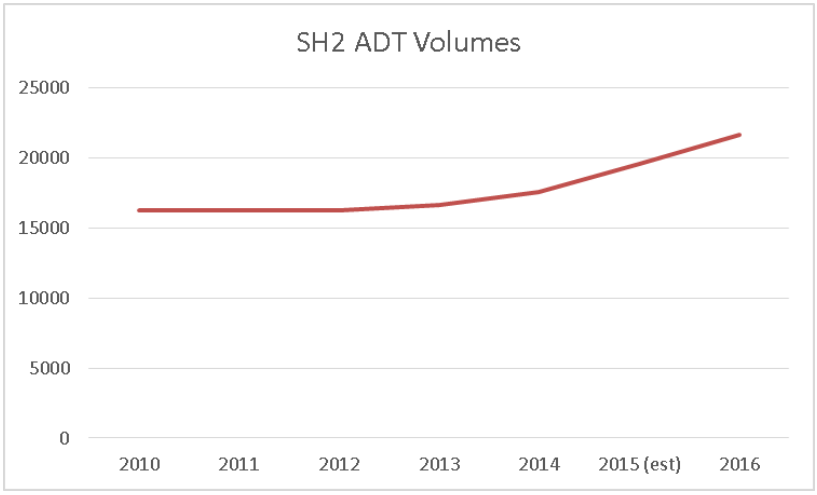
[5] NZTA Research Report 569, Public Transport and the Next Generation, June 2015.

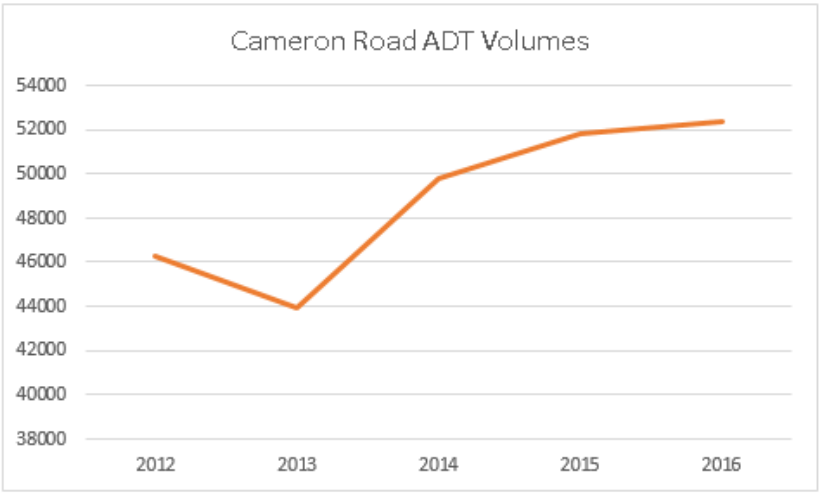
[6] Statistics New Zealand http://www.stats.govt.nz/browse_for_stats/economic_indicators/NationalAccounts/RegionalGDP_HOTPYeMar15.aspx

[7] Priority One Annual Report 2015, http://www.priorityone.co.nz/vdb/document/632

years. Annual Average Daily Traffic (ADT) Volume comparisons for SH2 and Cameron Road are shown in **Figure 7.**

Figure 7: SH2and Cameron Road Annual Average Daily Traffic Volumes

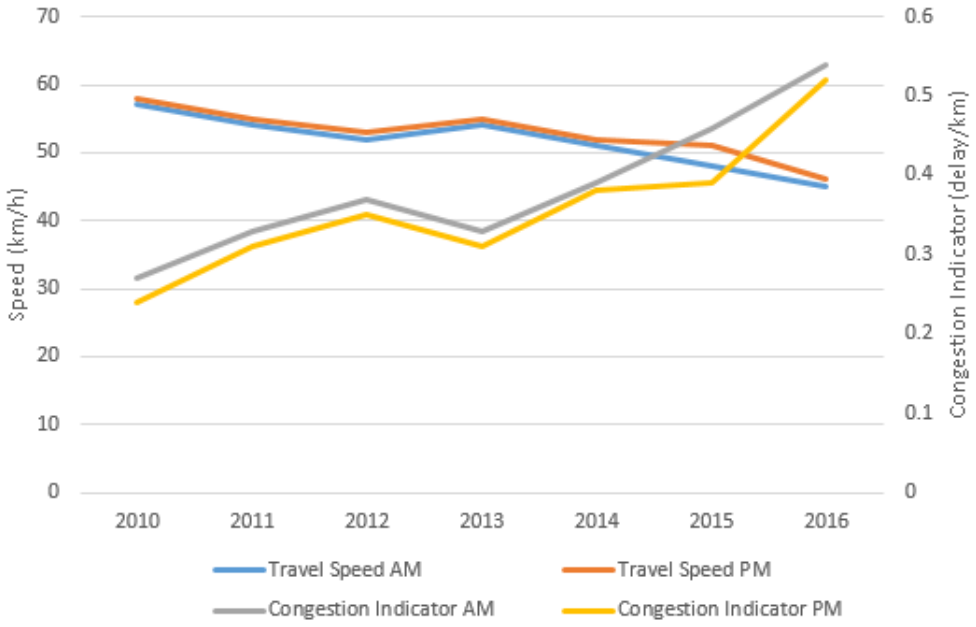




The level of service for car travel on the road network is worsening more rapidly than it has in the past. **Table 1** and the corrosponding graph below show average travel speeds and congestion indicators recorded by floating vehicle travel time surveys carried out in the region annually. These surveys use GPS transponders to track vehicles travelling on the main urban routes in Tauranga over a one week period in March every year. Travel speed is measured in Km/h and the congestion indicator is a measure of delay experienced per kilometer travelling.

Table 1: Travel Time Survey Speed and Congestion Indicator Data

Indicator	Peak Period	2010	2011	2012	2013	2014	2015	2016
Travel Speed (km/h)	AM	57	54	52	54	51	48	**45**
	PM	58	55	53	55	52	51	**46**
Congestion Indicator (delay/km)	AM	0.27	0.33	0.37	0.33	0.39	0.46	**0.54**
	PM	0.24	0.31	0.35	0.31	0.38	0.39	**0.52**



The travel survey data shows that, apart from a slight improvement in 2013, travel speeds have consistenly reduced in the six years since 2010. At the same time the congestion indicator has consistenly increased. It is also apparent that the greatest annual change (reduction in travel speed and increase in congestion) has occurred between 2015 and 2016. There are a number of factors that may be contributing to this increase in congestion / redcution in travel speed including population growth. The spike from 2015 to 2016 corrosponds with the larger increase in building consents issued over this period (Figure 4).

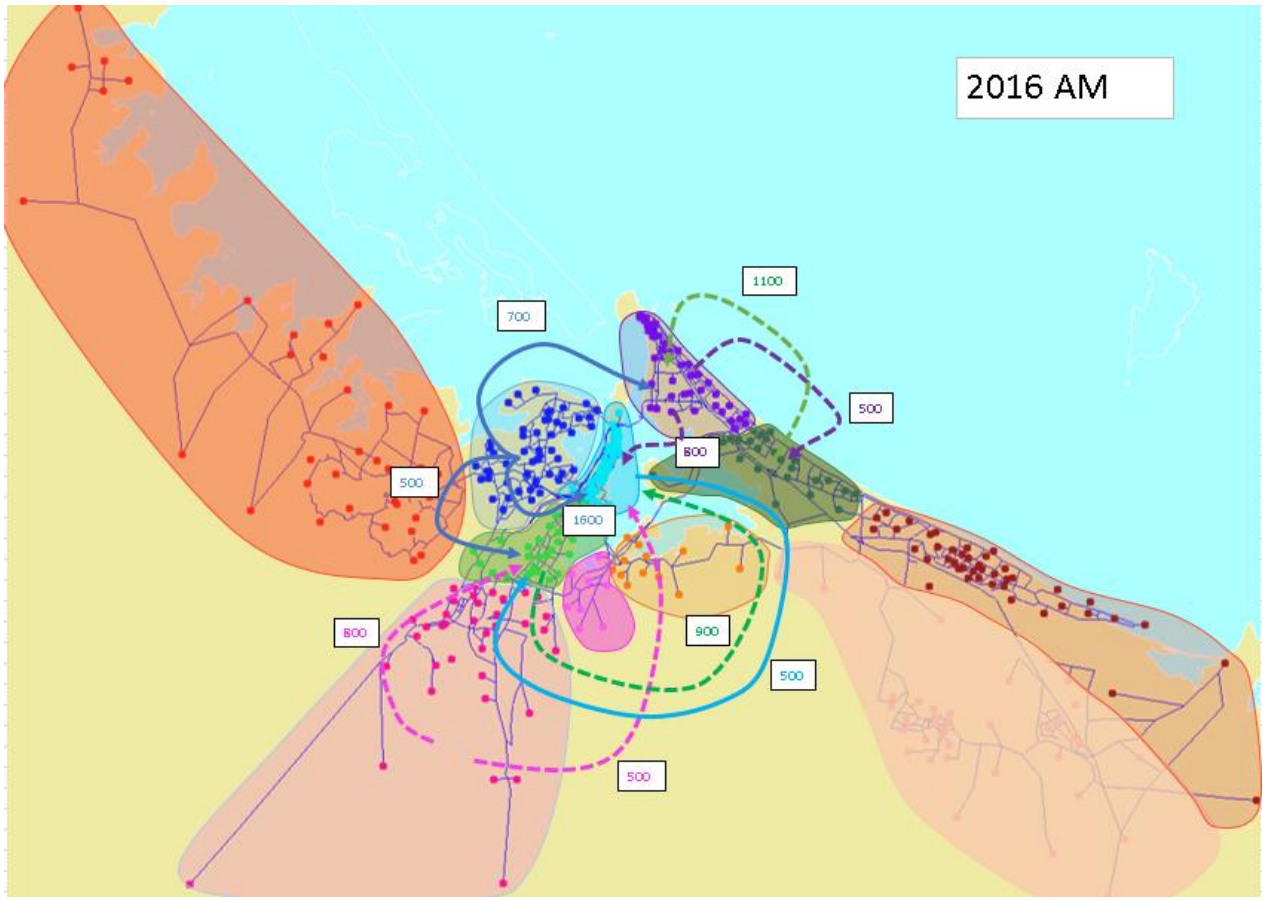
2.3.1 Travel Demands

The Tauranga Traffic Model (TTM) is a regional traffic model that has been used by the Transport Agency, the WBOPDC and TCC for many years to assist in planning and design of road networks and other transport projects. The TTM has been examined to identify the key transport movements within Tauranga City during peak periods. In summary:

- The central CBD area attracts the largest number of vehicle trips during the AM peak period, following this the southern end of Cameron Road and Mt Maunganui also attract a high proportion of trips.
- The origins of trips are more dispersed. The area with the highest departures is the Otumoetai, Matua, Brookfield, Bethlehem area. Following this the Papamoa, Cameron Road south, CBD and Mt Maunganui areas generate a relatively high number of trips.
- There is a high number of trips between the Papamoa and Mt Maunganui sectors, both ways.
- The central corridor of Cameron Road south, CBD and Mt Maunganui generates and attracts a high number of trips, both ways.

The highest ten vehicle trip demands between key Tauranga City sectors during the 2016 AM peak are shown in **Figure 8** and the corresponding table below. The arrows represent the travel demand direction, e.g. between Mt Maunganui and the CBD and the values represent the volume of trips e.g. 800.

Figure 8: Top 10 Cross Sector Vehicle Trip Demands during the AM Peak Period



Origin/ Destination	Cameron Rd South	CBD	Mt Maunganui	Papamoa
Otumoetai, Matua	500	1600	700	
Pyes Pa South	800	500		
Cameron Rd South		900		
CBD	500			
Mt Maunganui		800		700
Papamoa			1400	

2.3.2 Road Network Levels of Service

The TTM also provides Level of Service (LOS) information across the road network which gives an indication of where congestion is occurring and how this may change over time. The following two figures show LOS plots from TTM for the PM peak periods in 2016 and 2026 (the AM peak shows a similar pattern).

In 2016 the most obvious LOS deficiencies are occurring on SH2 north of the City and SH29 to the south / east. Additionally there is poor LOS on 15th Avenue, Hewletts Road and Cameron Road.

By 2026 two major infrastructure upgrades, the Tauranga Northern Link and Welcome Bay roundabout underpass have improved LOS on SH2 north and SH29. However the LOS remains poor on Hewletts Road and Cameron Road.

Figure 9: **2016** PM Peak LOS

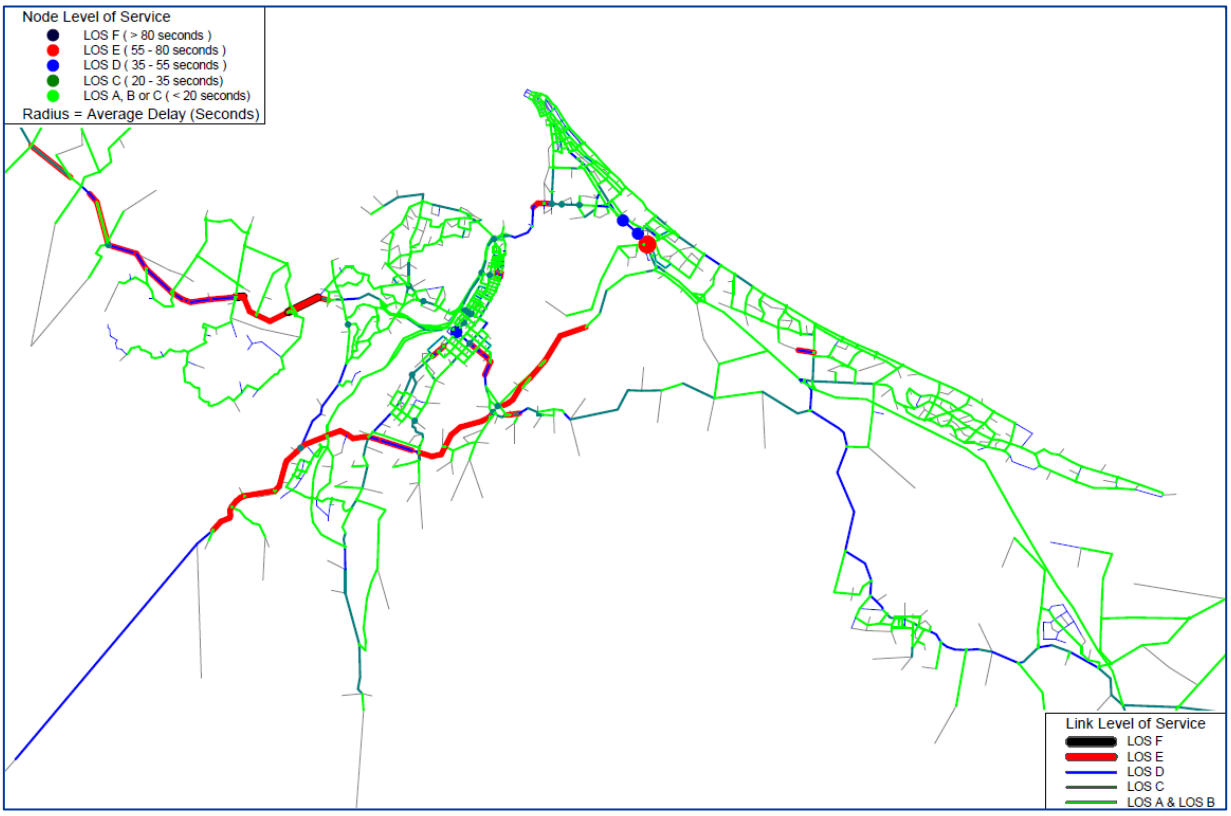
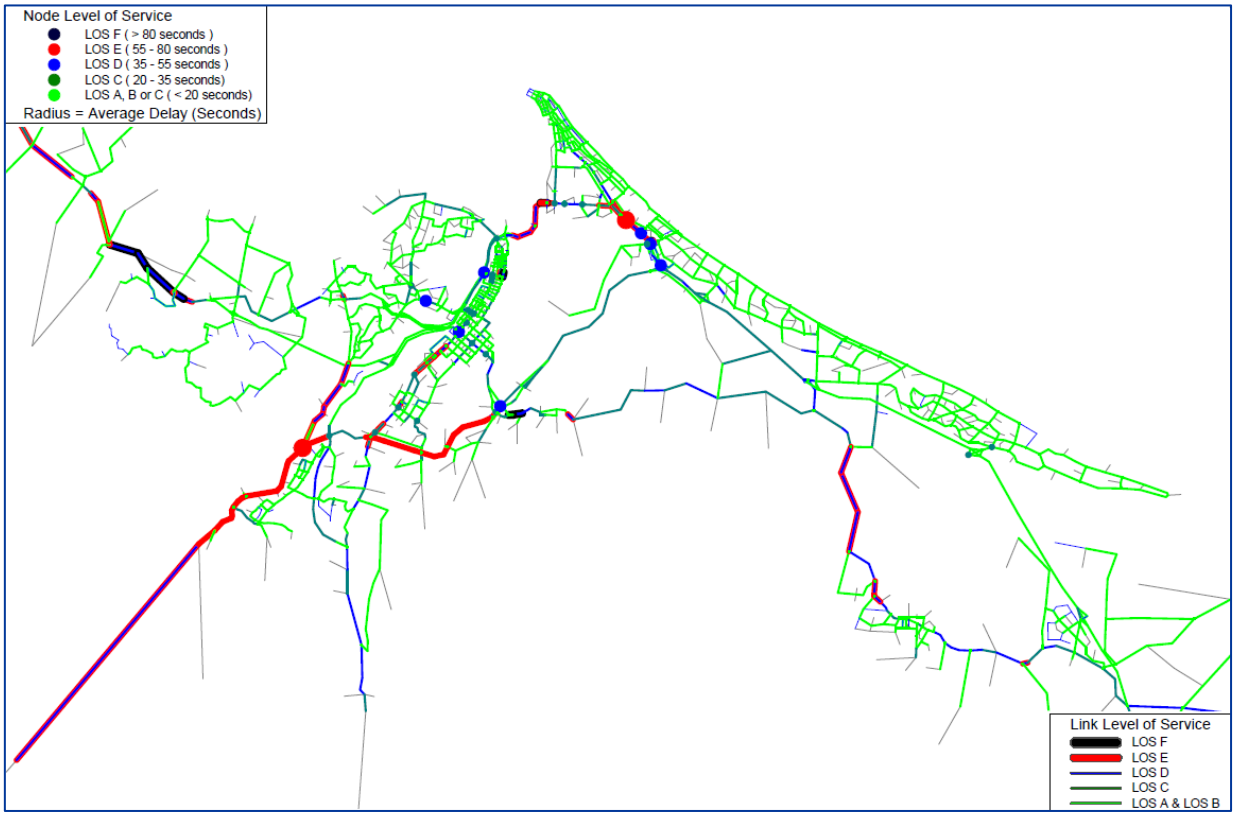


Figure 10: **2026** PM Peak LOS



2.3.3 Existing Bus Service Provision

The current Tauranga urban bus network is shown in **Figure 11**. The urban network consists of twelve core routes and two off-peak only routes (78 and 79). Most bus services operate on a 30 minute frequency during the week and hourly during weekends and public holidays. In addition to the urban bus services, regional bus services considered in this PBC operate between Tauranga, Waihi, Katikati, Omokoroa and Te Puke (**Figure 12**). These regional services generally operate two or three services per day, i.e. one trip in the AM and PM peaks. Some routes have occasional 'shopper' services during the day but the timetable is irregular.

More detail on the existing bus networks including frequency information is provided in **Appendix B**.

Figure 11: Current Tauranga Urban Bus Network

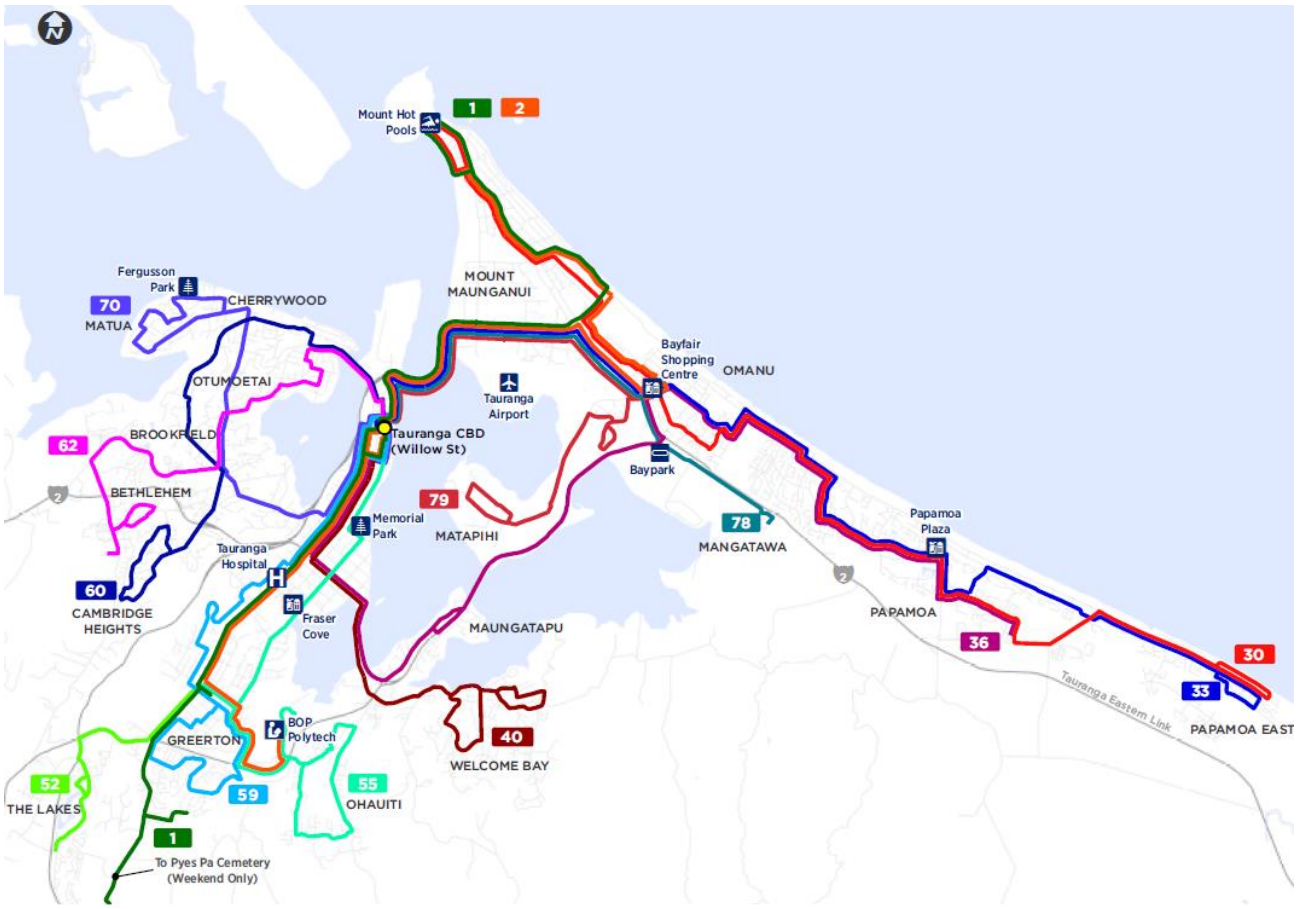
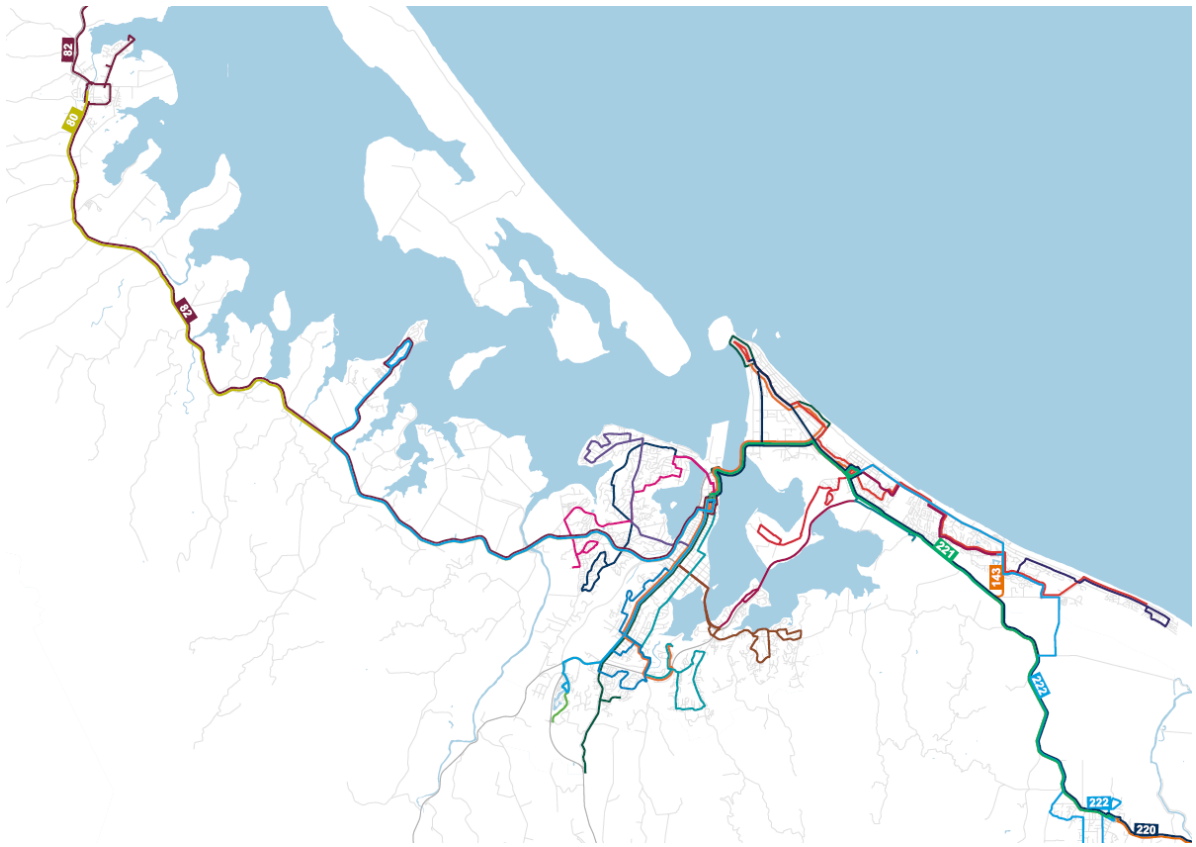
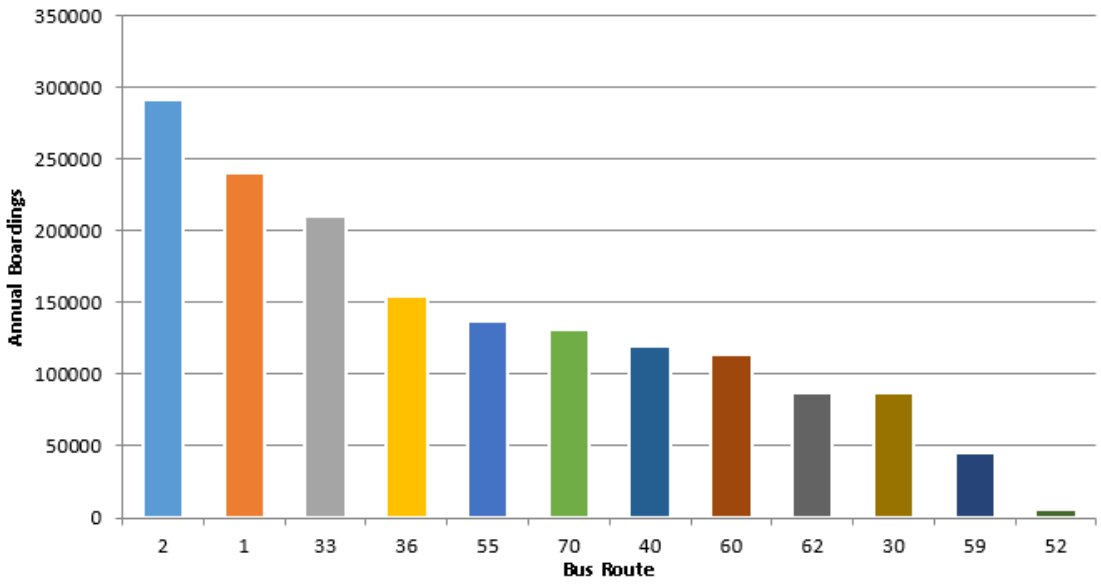


Figure 12: Bus Network with Regional Services (Katikati, Omokoroa, Te Puke)



Approximately 1.86 million trips are made on the Tauranga urban bus network every year. Patronage grew strongly (more than 15% per annum) between 2006 and 2010 but has levelled off since. The following graph illustrates the proportion of passenger demand by bus route on the Tauranga urban network.

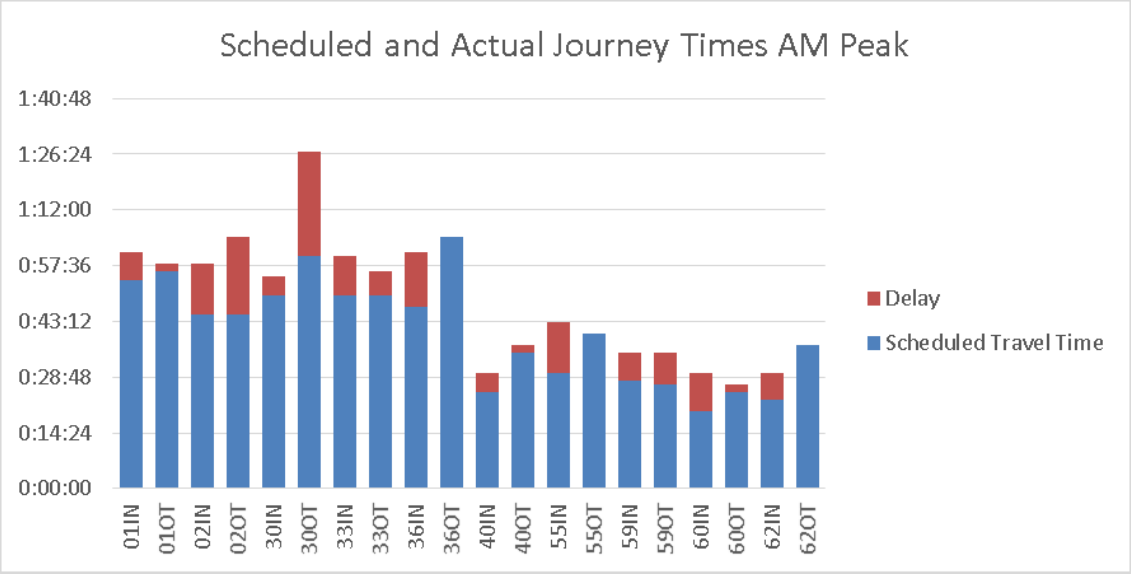
Figure 13: Proportional Passenger Demands by Bus Route



Of the urban services, route 2 (Bay Polytech – CBD – Mt Maunganui) has the highest passenger use with over 290,000 annual passenger boarding's (both directions) between May 2015 and April 2016. Routes 1

(Pyes Pa – Greerton – CBD – Mt Maunganui) and 33 (CBD – Bayfair – Papamoa) have the next highest levels of use, both attracting over 200,000 annual boardings. Routes 36, 55, 70, 40 and 60 all had between 100,000 and 150,000 annual passenger boardings.

The following graph shows the scheduled and average actual journey times for bus services on the Tauranga urban network during the AM peak period (7am to 9am). This data is based on ticket machine start / stop times which relies on drivers manually triggering the changeovers. It provides an indication of the amount of delay typically experienced by direction for each route, and shows that routes 2, 30 and 33 have the greatest delays. The label "01IN" denotes the inbound journey to the CBD, whilst "01OT" denotes the outbound journey.



2.3.4 School Hopper

The School Hopper school bus network consists of 46 bus routes serving Tauranga schools with one inbound service in the morning and one outbound in the afternoon. The School Hopper service carries approximately 580,000 passenger trips per year. The Public Transport Subcommittee has agreed design principles for the School Hopper as follows:

- Service contracts should be flexible, and responsive to changing demand,
- Intermediate and Secondary school students will be served by the public BayHopper network except where capacity constraints exist,
- Primary students will be served by the SchoolHopper network where practical,
- Pick-up and Drop-off times will remain largely unchanged,
- Services to include stops to within 2 kilometres of schools unless capacity constraints exist,
- Students living further than 8 to 10 kilometres from their school will not be served by SchoolHopper, and
- Schools not currently served by SchoolHopper, but within Tauranga City Council boundaries, may be added to the SchoolHopper network when requested by the school and where this can be achieved cost effectively.

Redesign of the School Hopper network in line with the design principles is included in all options considered within this PBC.

2.4 Summary – The Need for Investment

Population growth in Tauranga and the Western Bay has accelerated in recent years with corresponding growth in traffic volumes and a resulting decrease in average travel speeds, indicating that congestion is worsening. There are high travel demands to and from the Tauranga CBD and whilst many bus routes stop in the City Centre the uptake in bus travel is low and has not increased in recent years. Bus journey times are long and variable on many routes. There is a clear case for additional investment in PT services and infrastructure to attract more people to travel by bus which will improve the efficiency of the road network.

3 Investment Partners

3.1 Bay of Plenty Regional Council

BOPRC is responsible for planning and managing PT networks in the Bay of Plenty including the Rotorua, Tauranga, and Whakatāne urban networks as well as regional services. The Regional Council also prioritises investments in the land transport system through the Bay of Plenty Regional Land Transport Plan.

3.2 Tauranga City Council

TCC provides, maintains and upgrades their local transport network infrastructure (roads, bridges, footpaths, bus shelters and vehicle parking areas). TCC also sets policies and planning regulations that have a significant impact on the utilisation of PT.

3.3 Western Bay of Plenty District Council

WBoPDC provides, maintains and upgrades their local transport network infrastructure (roads, bridges, footpaths, bus shelters, and vehicle parking areas). WBoPDC also set planning regulations that have the potential to impact on the utilisation of PT.

3.4 New Zealand Transport Agency

The NZ Transport Agency does not directly provide public transport, but enables the provision of these services through its planning and investment role, which includes:

- Providing guidance for regional councils in planning their networks and developing regional public transport plans,
- Approving procurement procedures for public transport services,
- Investing in public transport through the National Land Transport Programme,
- Monitoring public transport performance and are evaluating the Public Transport Operating Model.

3.5 Key Stakeholders

Key Stakeholders	Focus Areas
Local Councils	Authorities tasked with operations, delivery and maintenance. Elected members representing community priorities.
Bus users / public (ratepayers, taxpayers)	Bus users want regular services going where they want to go in an efficient manner. Ratepayers and taxpayers want considered investment that delivers value for money.
Schools / School BOT	Ensuring students can access their school in a safe and efficient manner. Board of trustees are a contact for parents who are also stakeholders in regard to school travel.
Smartgrowth	PT needs to support growth into new neighbourhoods identified by the Smartgrowth settlement pattern. Growing PT use at a rate in line with growth ensures that residents have a viable alternative to car travel when new neighbourhoods are established.
Bus operators	Bus operators need a manageable system and timetabling that allows efficient scheduling of buses and staff.

4 Confirming the Need for Investment

This chapter outlines the rationale for investment which is informed by the information and data presented in the previous chapter and work undertaken during the SBC stage. Problem statements and benefits, targets and investment objectives has been developed / confirmed collaboratively through a number of workshops involving the key project partners (BoPRC, WBoPDC, TCC and the NZ Transport Agency).

4.1 Defining the Problem

The lead stakeholder group identified and agreed the following key problems and weightings as part of the SBC:

- **Problem one:** The current urban land form and topography makes it difficult to support a more effective and efficient PT system across the whole network (35%).
- **Problem two:** 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%).
- **Problem three:** 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%).

An investment logic map (ILM) was developed for the SBC to summarise the main problems. This is attached as **Appendix C**.

The information and data collected to date has confirmed the problem statements are valid. Further analysis of these problems and development of SMART investment objectives is explored later in this chapter.

4.2 Benefits of Investment

The three most significant benefits identified by the lead stakeholder group for the SBC were:

- **Benefit one:** Improved optimisation of the transport network (55%).
- **Benefit two:** Improved travel choice (25%).
- **Benefit three:** Greater alignment of planning and investment (20%).

The further analysis undertaken for the PBC (including discussion with project partners through the workshop process) has identified no significant reason to change any of the benefits or weightings identified in the SBC.

4.3 Investment Benefits (KPI's) and Targets

An Investment Benefit Map was drafted as part of the SBC and has been updated through the lead stakeholder meetings for the PBC. The key changes were the addition of baseline and target information and revision of the measures used to assess benefit three to make the measures more achievable.

SMART investment objectives were defined by the lead stakeholder group during project workshops following a review of the evidence base against each problem. The following sections outline the problem / evidence correlation and SMART investment objectives. The Benefit Map is provided in **Appendix D** and includes baseline and target information.

4.4 Problem 1

"*The current urban land form and topography makes it difficult to support a more effective and efficient PT system across the whole network*" (35%).

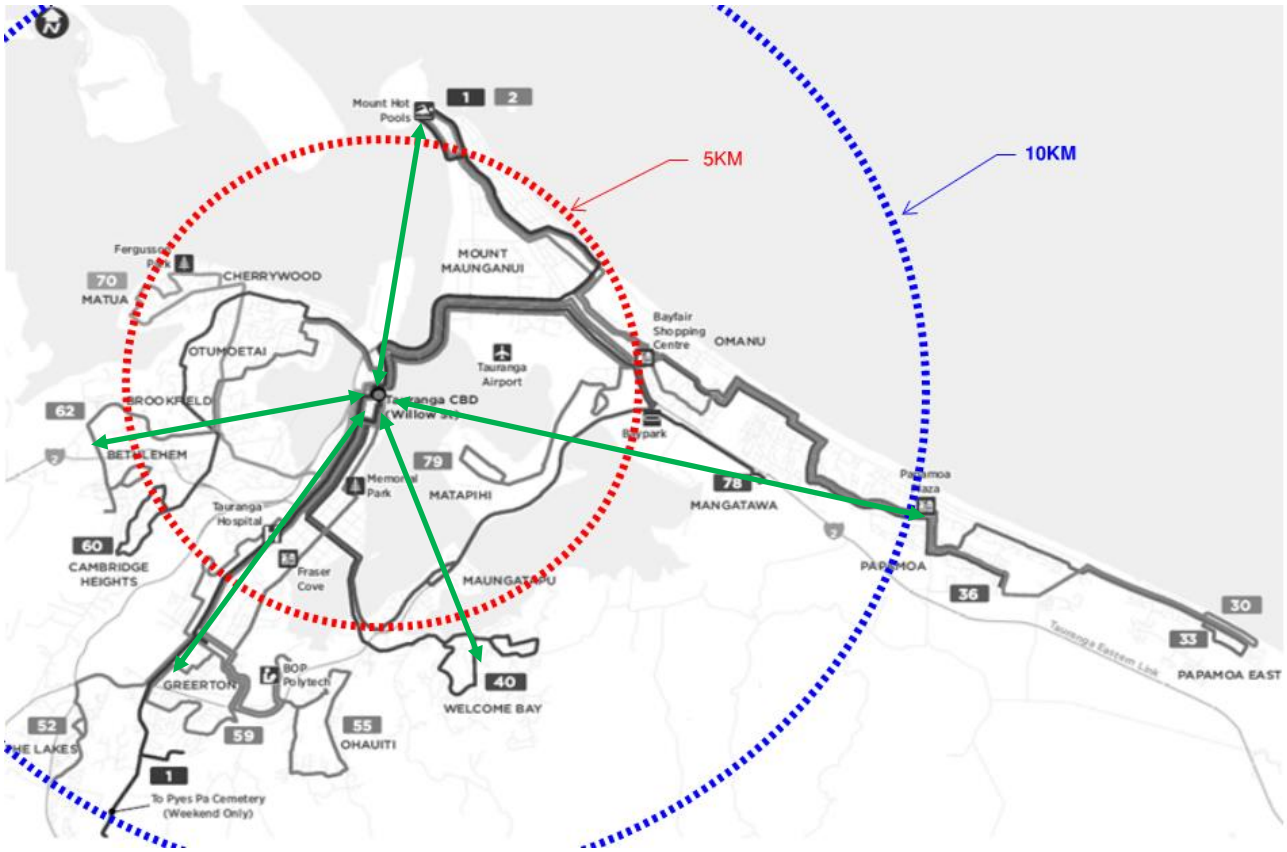
Problem one identifies that the physical environment PT network operates in isn't optimal for providing an effective and efficient PT system. This incorporates issues such as:

- Tauranga's bus network currently operates as a hub and spoke system only with all services terminating in the city centre,
- Lack of connectivity in the road network that results in more turns and longer routes,
- Lack of pedestrian permeability in residential and commercial areas that reduces the effective passenger catchment at bus stops,
- Corridors and networks that are principally designed to accommodate high-speeds and vehicle capacity ahead of active modes including elements such carriageway widths, lack of crossing points and pedestrian priority, speed environment,
- Consistently low-density housing across the Western Bay reduces the number of people within the catchment area for stops and routes, consequently reducing patronage per km travelled and increasing cost of providing services, and
- Topography in the form of hills, valleys, rivers and the harbour that prevent direct connections and limits connectivity within the PT and pedestrian networks.

4.4.1 Evidence

It is clear to see that the topography of the region makes it difficult to provide direct bus services. This is evidenced by the following map that shows, 5 and 10km radii lines from the CBD along with the existing bus routes and some direct line comparisons to key destinations. Bus routes are forced to take the Hewletts Road, Chapel Street of Cameron Road corridors to the CBD due to the surrounding harbour and lack of alternative routes. Only services to the south of the City, e.g. Greerton, take reasonably direct routes.

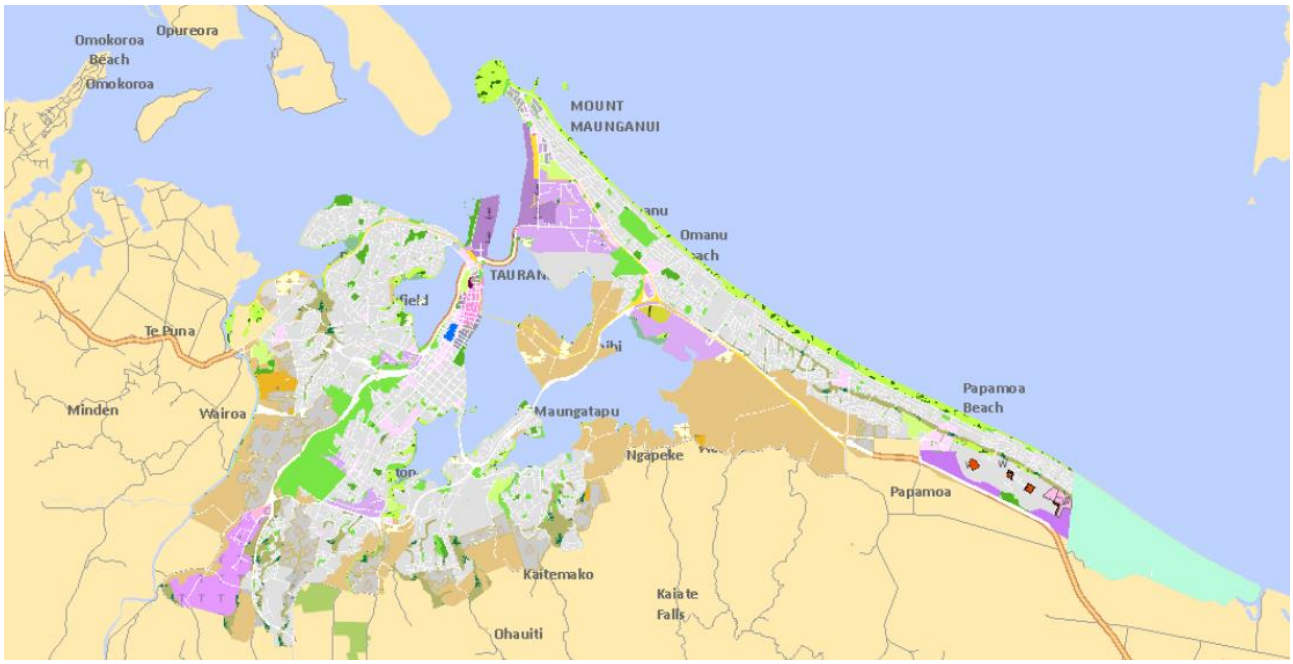
Figure 14: Tauranga Bus Routes and Direct Line Comparison



The Tauranga City Plan land zoning map (**Figure 15**) shows that the significant majority of residential land in Tauranga is zoned as Suburban (grey areas in Figure 15) or Rural (brown areas in Figure 15). These zones typically have larger lot sizes which results in less density and requires buses to travel further to collect passengers. There are patches of City Living and High Density Urban Residential zones in the City Centre and Mt Maunganui areas. The Western Bay has significantly larger lot sizes with a high proportion of rural land (even less density and larger catchments).

The population density of Tauranga City based on the 2013 Census was 7 persons per hectare, in the Western Bay it was 0.2 persons per hectare. The same densities for Auckland, Wellington and Christchurch were 27, 21 and 21 respectively.

Figure 15: TCC City Plan Zoning Map



Whilst the existing bus network has a reasonable coverage based on an assumed 400m walking distance isochrones to a bus stop, in future without improvements to the bus network this coverage will lag behind urban expansion. Analysis undertaken by TCC in 2012 shows that without upgrades to the bus network the proportion of the population living within 400m of a bus stop will reduce from 66% to 40%.

Figure 16: TCC Analysis on Bus Stop Accessibility (2012)

Year	Total Dwellings	Dwellings within 400m of a bus stop	Dwellings more than 400m from a bus stop
2011	46,865	30,930 (66%)	15,935 (34%)
2041	76,865	30,930 (40%)	45,935 (60%)

4.4.2 Implications of the Evidence

The evidence confirms that the regions topography does make providing direct bus services difficult, however this is not an uncommon problem as many Cities will have similar constraints. The relatively low residential densities in Tauranga make it difficult to deliver an efficient PT service and this is a local disadvantage when compared with other cities. As the region's population expands to new growth areas (many of which area further from the City Centre than existing residential locations) travel by bus will become less attractive unless the bus network is expanded and improved.

4.4.3 SMART Investment Objectives

The benefits investing in this problem will be improved optimisation of the transport network and greater alignment of planning and investment. The stakeholder group have agreed the following SMART investment objectives for this benefit:

Improve bus travel times on key corridors through shorter frequencies and bus priority measures etc to reduce the effect of distance on the attractiveness of bus travel. Target a bus passenger mode share of 10% by 2026. This will be measured via annual surveys of mode share on strategic bus /

traffic routes, e.g. Cameron Road, Chapel Street and across the Harbour Bridge inbound during the weekday AM peak period. Progress will be monitored annually.

And;

Increase the fare box recovery ratio to 45% by 2026. Progress will be monitored annually.

4.5 Problem 2

"*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%).

Problem two identifies that to date, the focus has been on providing a PT network that covers a wide area with sometimes circuitous routes. Under these conditions it is hard to provide services that are both frequent and fast (from origin to destination) that would make PT competitive with cars and an effective tool to increase PT mode share and reduce congestion.

4.5.1 Evidence

This bus travel disadvantage is apparent when comparing bus and car journey times between the CBD and key destinations as summarised in **Table 2**.

Table 2: Bus vs Car Travel Times

Origin	Scheduled Bus Journey Time (min)	Car Journey Time (min)
Mount Hot Pools	44	16
Papamoa Plaza	42	28
Welcome Bay Shopping Centre	33	26
The Lakes Shopping Centre	43	11
Bethlehem Town Centre	34	10
Katikati	40 (one service per day)	30

On average it takes approximately two and a half times longer to travel between the CBD and the urban locations shown above by bus than by car, this analysis excludes waiting times which would further disadvantage bus users. Travelling between two locations outside the CBD is likely to be significantly slower by bus as it would likely require transfer between at least two bus routes. For example travelling between Bethlehem and Mt Maunganui by bus would require a bus transfer in the CBD.

The existing urban network covers a distance of just over 252km, of this, only 1.5km (less than 1%) of the network has any form of bus priority (bus lanes on Hewletts Road). This is indicative of the level of investment in PT infrastructure in the region.

At present there is also not a significant, if any, cost advantage of travelling by bus and in many cases bus travel may come at a cost disadvantage. The cost of a bus ticket on the urban network is $3.20 or $2.52 if travelling with a Smartride card. Assuming a Smartride card is used, a return ticket will cost just over $5.00. There are over 500 off street car parking spaces in the Tauranga CBD and the price for all day parking ranges from $2 to $6 depending on location. The weighted average cost of all day parking in the Tauranga CBD is $4.50. In addition, regular commuters can purchase parking concession cards for $80 per month

which equates to $2 per day in parking charges on average. Whilst the cost of owning and running a car must be considered in addition to parking charges, in many cases the direct daily cost of bus travel ($5.00 return) will be higher than travelling by car and parking in the CBD ($4.50 or less on average).

Outside the CBD parking is generally free and not time constrained in many areas. Key destinations such as Bayfair, Mt Maunganui, Greerton, Papamoa and Bethlehem have little or no parking charges or restrictions, which puts bus travel at a significant cost disadvantage. People using the bus every day to travel to and from these areas with little or no parking controls will incur much higher personal costs than car drivers.

4.5.2 Implications of the Evidence

The evidence confirms that at present it would be unlikely for travellers to choose to travel by bus rather than car on a travel time basis exclusively. Travel by car will in nearly every case be more direct and take less time than travelling by bus. There is very little bus priority on the network and parking costs will be lower than ticket prices for many commuter travellers.

4.5.3 SMART Investment Objectives

The benefits investing in this problem will be improved optimisation of the transport network and improved travel choice. The stakeholder group have agreed the following SMART investment objectives for this benefit:

Improve the competiveness of bus travel times. Target a reduction in bus journey time between key destinations of 20% over existing schedules by 2026. This will result in PT being a more competitive alternative to private cars and could be achieved by implementing bus priority, increased frequencies and express services for example.

And

95% of bus services will operate within five minutes of schedule during the 7am to 9am AM peak by 2026 during normal operating conditions.

4.6 Problem 3

"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%).

Problem three identifies that in the past we have evaluated the value of PT in a manner that doesn't fully recognise the contribution PT can make to the wider transport network, to urban form, to social wellbeing and the prosperity of the Western Bay of Plenty sub-region. An inability to demonstrate and express these contributions to stakeholders and decision-makers has resulted in less incentive to align policies and planning that would allow PT to play a significant role in the optimised transport system.

4.6.1 Evidence

On review of this problem it has been found that key guiding policies within the region do include support and measures which prioritise travel by PT but this does not appear to be resulting in greater investment in PT in the region. **Table 3** summarises the key local planning documents and the identified support for PT investment.

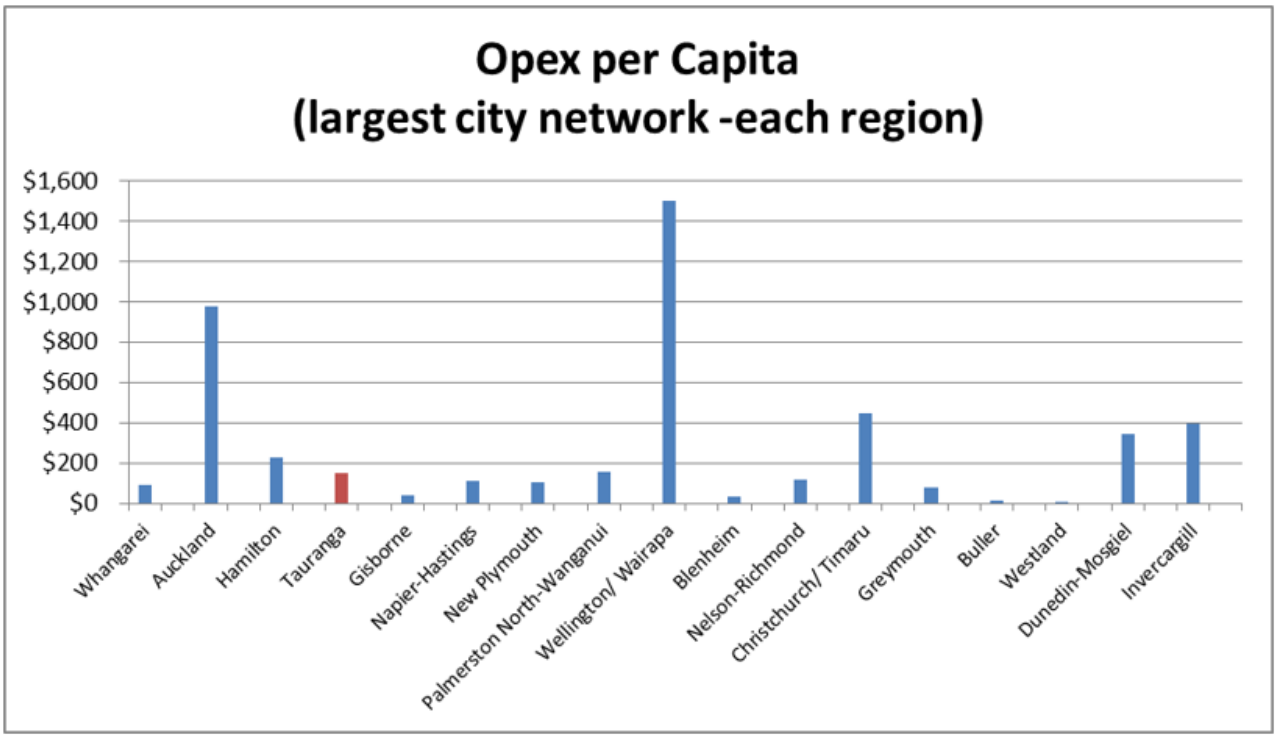
Table 3: Key Policy Support for PT Investment

Policy Document	Identified Support for PT Investment
Regional Public Transport Plan	Main Objective: Reliable and integrated PT services that go where people want to go. Other Objectives: ■ Fares, ticketing and information – fares, ticketing and information systems that attract and retain customers while covering a reasonable proportion of operating costs. ■ A procurement system that enables efficient and effective delivery of the desired network of PT services. ■ Infrastructure – high quality and accessible PT infrastructure that supports safe and comfortable travel. Other Policies: ■ Provide high quality (frequent, reliable, convenient, and efficient) urban services on Regional Strategic corridors to support urban accessibility. (BOPRC) ■ Provide PT services on Urban Connector routes to support Regional Strategic corridors. (BOPRC) ■ Regularly review service levels on Urban Connector routes to support areas demonstrating high demand for PT. (BOPRC) ■ Provide PT services on Rural Connector routes that link to Regional Strategic corridors and maintain access to essential community goods and services. (BOPRC). ■ Consider providing PT services to urban growth areas with at least 15 dwellings per hectare over a developed area of at least 10 hectares. (BOPRC). ■ Work with rural or isolated communities to develop targeted, innovative transport services to improve access to essential community goods and services. (BOPRC, City and district councils, the NZ Transport Agency) The investment priorities for PT in the RPTP are: 1. Maintain service levels. 2. Deliver target peak time service levels. ■ 3. Deliver target off-peak service levels and targeted services.
Regional Land Transport Plan	■ PT service becoming increasingly important. Enhance services. ■ Improved PT – investment to increase levels of service on urban networks, particularly strategic corridors. Promote travel options like PT, active modes and ride share. ■ Multi modal connections to improve the integration of PT. ■ Investments to be focused on improvement of urban services. ■ Continued support for rural bus services. ■ Improve quality and encourage usage of PT across the region. ■ 10 year expenditure close to $200 million.
TCC Long Term Plan	■ Improve bus bays and shelters. ■ Review City Centre bus interchange and develop Bayfair bus interchange.

Policy Document	Identified Support for PT Investment
	■ Provide an optimised and balanced Transport Network. ■ Invest in alternative modes (Walking, cycling, PT).
Tauranga Transport Strategy	■ Agree a future network of bus priority measures on key corridors, focussing on locations that provide maximum benefit to the largest number of services. ■ Bus priority through key intersections along SH2 Hewletts Road. ■ Bus priority on Totara Street. ■ Make modal share for PT and walking closer to national average. ■ Create more PT hubs. ■ Provide fully accessible PT infrastructure to support accessible services being introduced in Tauranga by Bay of Plenty Regional Council. ■ Integrate PT with other transport systems. ■ Where possible, minimise parking within new developments to support PT.
Tauranga City Plan	■ Bus Stops on Arterial Roads. ■ Reduced parking requirements where PT accessibility is high.
Western Bay of Plenty District Plan	■ To encourage the use of alternative modes of transport including PT. ■ Encourage multi modal transport use and improve infrastructure (bus lanes, road widening etc.).

Despite the strong policy support for PT investment, the Bay of Plenty region has only applied for approximately $300,000 in PT capital expenditure funding over the last five years. This is significantly less than all other main centres in New Zealand (Auckland, Wellington, Christchurch, Dunedin and Hamilton), and also less than all of these cities apart from Hamilton on a per capita basis. Operational expenditure per capita funding for Tauranga is also lower than all of the other main centres mentioned above, this funding comparison is shown in **Figure 17**.

Figure 17: Comparison Opex Spend (last 5 years)



4.6.2 Implications of the Evidence

The evidence shows that there is clear support for investment in improved bus services and infrastructure across the region within the key policy documents, however to date this has not translated to an increase in spending on operational or capital expenditure projects.

4.6.3 SMART Investment Objectives

The stakeholder group have agreed the following SMART investment objective for this problem:

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.

And:

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.

4.7 Alignment to Existing Strategies / Goals

Table 3 has outlined the existing strategies and goals in key planning documents which support increased investment in PT for the region. In summary these documents are:

- Tauranga Transport Strategy,
- Regional Land Transport Plan,
- Regional PT Plan,
- Tauranga City Plan, and

- Western BoP District Plan.

In addition to the above, the Government Policy Statement on Land Transport identifies a need for PT to help unlock the potential of our urban areas by providing additional capacity on key corridors and a choice of ways to move around, particularly during peak commuting periods.

4.8 Issues and Constraints

At a broad level the key economic, social, environmental, transport, stakeholder issues and constraints which could have an effect on the project outcomes and outputs are considered to be:

- The effect of new infrastructure on the attractiveness of public transport, in particular the Tauranga Northern Link and additional CBD car parking, may make driving to and parking in the CBD easier and discourage people from using public transport.
- Smartgrowth has identified new areas of residential development in Papamoa East and Tauriko, the PBC seeks to support this growth through bus provision. If growth occurs elsewhere or the timing of development in these areas changes this may have an effect on the expected uptake of PT. Additionally, if commercial growth occurs outside the CBD where there is less bus coverage and lower parking charges / higher parking availability this may also have an effect on bus patronage.
- To achieve cost effective bus priority (bus lanes) it is likely to be necessary to remove or relocate car parking. There may be resistance from some stakeholders such as business owners that could delay or possibly impede the deliverability of such bus priority, and therefore any patronage gains expected due to the priority time savings will be lost.
- Other studies developing concurrently with the PBC such as the NOPs and Tauranga PBC may identify alternative options or priorities which influence the deliverability of the PBC programme. Although this is managed through combined stakeholder inputs to all projects.
- Rationalising school hopper services with the aim of encouraging more school students onto the urban network could result in more antisocial behaviour on buses (by students) which could discourage other travellers from using the bus.
- Additionally, reducing school bus services with the aim of providing school travel on the public bus network may in fact lead to higher private vehicle use if parents decide to drive their children to school rather than them catching the bus.
- Developing a bus network that is more direct than the existing network, while reducing travel times, may reduce coverage and make buses less accessible for some people. This may be a particular concern for elderly passengers who require bus stops close to their origin and destination.
- Factors such as fuel price changes can influence the uptake of PT and are outside the control of the problem owners.

4.8.1 Uncertainty Log

Factor	Time	Uncertainty	Impact on programme	Comments
Factors affecting demand				
Population Growth / Demographic Change	2017	More than likely	Low	Strong population growth provides a larger potential customer base for PT but also increases the number of cars on the road and impacts on bus journey times by increasing congestion. An aging population may present an opportunity to increase mode share as elderly people have greater propensity to travel by bus.
Tauranga University	2019	More than likely	Medium	The Tauranga University development presents an opportunity to increase bus mode share as university students typically have higher rates of bus use than other sectors of the population.
Vehicle Travel Time	2017	Reasonably foreseeable	Medium	Increasing congestion could impact on bus journey times but could also encourage bus use if priority measures can be provided.
Cost factors such as fuel price	2017	Reasonably foreseeable	Low	Fuel price not likely to reduce significantly. Increase would have a positive effect on patronage.
Factors affecting supply				
Increased frequencies will require more buses and bus drivers etc	2017	Reasonably foreseeable	Low	Bus operator will plan in advance for additional bus provision.
Factors affecting cost				
Local integrated ticketing scheme	2018	Reasonably foreseeable	Low	Business case is under preparation for funding of a national scheme.
Operational costs	Ongoing	Reasonably foreseeable	Low	Increasing fuel costs could increase bus operating costs. Increasing labour costs may have an impact in future.

PART B – DEVELOPING THE PROGRAMME

5 Programme Development

Part B of the PBC maps the path from identifying a broad range of alternatives and options through to considering a range of programmes (combinations of alternatives and options) to identifying a recommended programme.

5.1 Alternatives and Options

5.1.1 Interventions Not Considered

In developing the long list a number of options were not considered as they are outside the scope of the PBC. These included:

- Interventions considered highly unachievable inside the ten year timeframe, e.g. a network of dedicated busways.
- Demand management,
- Non bus public transport options, e.g. Ferries and Rail. Bus based public transport is considered to have significant potential for growth without the need to invest in other public transport modes which have higher operating and capital costs ie rail, ferry. Outside the 10-year Blueprint timeframe alternative public transport modes will likely be more feasible and will consequently be examined through the Tauranga PBC which has a 30-year planning horizon.

5.1.2 Long List Options

Seven programmes including a Do Minimum (no change) were initially identified for consideration by the lead stakeholder group. **Table 4** describes these programmes.

Table 4 - Long list Programme Descriptions

Programme	Description
Do minimum	Minor tweaks to the existing network to improve service reliability, speed and coverage.
Balanced	Similar network structure to existing with any additional services being balanced between serving existing and new areas. May include some cross city and express services, park and ride facilities, or higher frequency services.
Balanced PLUS	As per Balanced but with increased service levels to some / all areas. Also includes priority infrastructure for busses.
High performance Network	May see rationalisation of routes to allow higher frequencies on key corridors. May require transfers from connector services to rapid/frequent services. Likely to see a 15 minute frequent service in both directions between CBD, Mt Maunganui and Bayfair. May include express services to satellite communities.
High performance Network PLUS	As per high performance network but with additional investment in 15 minute frequency service to Greerton and Tauranga Hospital and additional investment in Intelligent Transport Systems (ITS) and access to stops.

Access for Everyone	Will see additional services to improve cross-city travel and improve coverage whilst extending operating hours. Some provision of park and ride (park and ride) facilities for satellite communities
Growth Enabler	Similar network structure to existing with the addition of park and ride services to growth areas satellite communities. Priority infrastructure provided on key corridors.

5.2 Long List Assessment

A short list of options was defined from the long list by the lead stakeholder group. The objectives of the short listing process was to:

- Evaluate programmes to determine which are most likely to deliver the benefits outlined in the strategic case,
- Evaluate programmes to identify risks and opportunities associated with each programme,
- Reduce the number of programmes that require detailed analysis to three,
- Ensure that a broad range of options are taken forward for more detailed analysis,
- Ensure that the short-listed programmes are different enough to provide meaningful choice prior to selecting preferred programme.

5.2.1 Evaluating Programmes against Strategic Case Benefits

The evaluation of the programmes against each of the benefit measures identified in the SBC was done using a five point scale, one being much worse than current conditions, three being similar to current conditions, five being a significant improvement. The scores for each measure were than weighted according to the benefit weightings developed in the strategic case.

The project stakeholders assessed the programmes based on a qualitative process which was rigorously debated to score each of the programmes. The results of this process are shown below in **Table 5**.

Table 5 - Programme Scores against the Strategic Benefit Measures

	Weight	No significant change	Balanced Investment	Balanced Investment PLUS	High performance	High Performance PLUS	Access for Everyone	Growth Enabler
Increase people throughput	22.5%	2	3.5	4	4	5	2.5	4.5
Reduced cost per trip/km	22.5%	3	3	3.5	4.5	5	3	3.5
Reduced journey time	12.5%	2	3.5	4	4	5	3.5	4
Increase reliability	12.5%	2	2.5	3.5	4	4.5	3	4.5
Improved integrated planning across stakeholders	10%	4	3	4	4	4	4	5
Improved transport system understanding	10%	3	3	4	4	4	3	4
Benefits Score		**8.6**	**10.5**	**12.7**	**13.8**	**15.8**	**10.1**	**13.9**
Programme Rank		7	5	**4**	**3**	**1**	6	**2**

The do minimum (no change) was the lowest scoring outcome of the evaluation. The scoring identified that the three programmes most likely to deliver the desired benefits were:

1. High Performance Plus;
2. Growth Enabler; and
3. High Performance.

However, the objectives of the short listing exercise were to ensure a wide variety of options for evaluation and consequently the “High Performance” programme was replaced with the next best performing programme, “Balanced Investment Plus”.

The option ranking is considered a fair evaluation of the long list. It would not be practical to include both High Performance and High Performance Plus in the short list as these options are very similar so replacing high performance with Balanced Plus is considered appropriate.

5.3 Short List Assessment

5.3.1 Shortlist Option Details

Option diagrams were prepared with input from the lead stakeholder group to describe the key activities under each of the shortlisted programmes. Proposed route changes have been informed by consultation and feedback received in the past. The option diagrams are provided in **Appendix E**.

The following summaries provide more detail about the key activities in each of the shortlisted options.

High Performance Plus (HPP)

The focus of the HPP option is to improve bus services within Tauranga with less emphasis on providing high frequency services on regional routes. Limited improvements to Katikati, Omokoroa and Te Puke services are included. Key improvements are:

Services

- Improved frequencies with services every 15 / 20 minutes on most urban routes,
- A 'city to surf' bus route connecting the CBD with Mt Maunganui and Bayfair with a target frequency of 15 minutes
- An 'eastern connection' service between Bayfair and Tauriko with interchange at key connection points such as Hairini, Bay Polytech (Windermere Campus), and Greerton,
- A 'western connection' service between Tauriko and Otumoetai, possibly extending to the CBD,
- Tauriko and Papamoa East express services to the CBD operating during peak periods,
- All existing bus routes will be reviewed and redesigned if necessary to achieve investment objectives.

Infrastructure

- Bus priority on Cameron Road from Greerton to 15th Avenue and bus lanes from 15th Avenue to the CBD,
- Limited increase in park and ride (park and ride) facilities at Omokoroa and increased level of service for Katikati, Omokoroa and Te Puke,
- Improved access to high use bus stops, e.g. better facilities, improved lighting, safer crossings, etc.

Policy

- Changes to car park pricing to better reflect the cost of car travel and bus fares (parking fees no less than 120% of adult bus fare) and more time restrictions (less all day parking) in areas within 800m of high frequency bus routes,
- District plan changes to support more intensive development along bus routes, e.g. within 600m of a bus route and even greater density around bus interchanges.
- A zone based fare structure with lower fares for travel within 5km (approx.) of the CBD.

Growth Enabler (GE)

The GE option focuses on providing a higher level of service to growth areas and regional centres such as Katikati, Omokoroa and Te Puke. There will be improvements to the urban network but less significant than

the HPP option. The GE urban network is similar to the HPP network but has lower frequencies. Changes in the GE option include:

Services

- Minimum frequencies in line with existing headways on most urban routes,
- Additional regular all day services to Katikati, Omokoroa and Te Puke supported by significant park and ride facilities in these areas,
- A Papamoa growth area route serving the Wairakei residential growth area supported by park and ride facilities,
- A peak period park and ride service from Greerton or other nearby location to the CBD,
- All existing bus routes will be redesigned. School Hopper services will be rationalised where urban services can provide a similar function,

Infrastructure

- Bus priority on Cameron Road from Greerton to 15th Avenue and bus lanes from 15th Avenue to the CBD,
- New or upgraded park and ride facilities in Katikati, Omokoroa and Te Puke,
- Bus priority (shoulder running) on SH2,

Policy

- Changes to car park pricing to better reflect the cost of car travel and bus fares (CBD parking no less than 120% of adult bus fare) and more time restrictions (less all day parking) in areas within 800m of high frequency bus routes,
- District plan changes to support more intensive development along bus routes, e.g. within 800m of a bus route and even greater density around bus interchanges.

Balanced Plus (BP)

The BP option includes activities from both the HPP and GE options to deliver improvements to the urban network as well as a good level of service improvement to growth areas and regional centres of Katakati, Omokoroa and Te Puke. The key changes in the BP option are as follows:

Services

- Minimum frequencies of 20 minutes on key urban routes but 30 minute frequencies on other routes,
- Park and ride services during peak periods from Katikati and Omokoroa,
- ‘city to surf’ route extends to Tauranga Hospital and possibly the Airport,
- Tauriko and Papamoa East express services operate during peak periods only,

Infrastructure

- Bus priority (bus lanes) along Cameron Road from 15th Avenue to the CBD,
- All existing bus routes will be redesigned. School Hopper services will be rationalised where urban services can provide a similar function,

Policy

- A zone based fare structure with lower fares for travel within 5km (approx.) of the CBD.
- Improved access to bus stops in Tauranga.

5.3.2 Common Elements

A number of committed improvements are common to all options including changes to School Hopper service. Key common elements include:

- School Hopper services will be rationalised where urban services can provide a similar function,
- Funding for a project manager to manage delivery of programme,
- Real time information and Wifi on buses,
- National ticketing project,
- Committed Bayfair and CBD interchange upgrades,
- Special event services,
- Increased marketing, communication and analysis budgets,
- Alternative transport provision for small communities to be investigated.

The following table provides a summary of the key inclusions in each option.

Table 6: Summary of Inclusions for each Option

	High Performance Plus	Growth Enabler	Balanced Plus
Redesign of existing routes	Yes	Yes	Yes
High frequency urban routes	Most	No	Some
School Hopper Redesign	Yes	Yes	Yes
Tauriko Express	Yes – peak periods	Yes – all day	Yes – peak periods
Papamoa East Express	Yes – peak periods	Yes – all day	Yes – peak periods
Park and ride – Urban	Tauriko	Tauriko, Papamoa	Tauriko, Papamoa
Park and ride – Regional	Omokoroa	Katikati, Omokoroa	Katikati, Omokoroa
Bus priority on Cameron Road	Greerton to CBD	Greerton to CBD	15th Avenue to CBD
Bus priority other roads	Possibly	SH2 to CBD	No
District plan changes	Yes	Yes	Yes
Parking price / time changes	Yes	Yes	Yes
Zone based fare structure	Yes	No	Yes

All options also include increased funding for programme management, analysis and planning tools and marketing budgets.

5.3.3 Opportunities and Risks

The opportunities and risks identified for the three shortlisted programmes are shown in **Table 7**.

Table 7 - Opportunities and risks for shortlisted programmes

Programme	Opportunities
Balanced Plus	No significant opportunities.
High Performance Plus	Residents who get a better service are likely to increase support for PT, making it more acceptable to expand services in future. Network will better cater for large scale events without the need for substantive changes or planning.
Growth Enabler	Establishment of park and ride sites now may provide opportunities in the future for transit orientated housing and business development.
Programme	**Risks**
Balanced Plus	No significant risks.
High performance Plus	Some stakeholder groups and public may oppose if there are reductions in service levels to some areas.
Growth Enabler	Requires growth areas to be developed with in anticipated time frames to be effective, susceptible to a Global Financial Crisis type event.

5.3.4 Pros and Cons

The main ‘Pros’ and ‘Cons’ of the three shortlisted programmes are summarised in **Table 8**.

Table 8 - Pros and cons identified for shortlisted programmes

Programme	Cons
Balanced Plus	Spreading service improvements evenly may result in no one area receiving a substantive increase in level of service.
High Performance Plus	Some residents may see a reduced level of service. Best results will require significant investment in infrastructure from TCC and the NZ Transport Agency.
Growth Enabler	More expensive to deliver services to growth areas could have negative impact on fare box recovery. Patronage growth may be slower and consequently congestion relief less pronounced. Disincentives density increases in central areas. Investment in park and ride facilities will require significant investment from TCC, WBoPDC, and the Transport Agency.
Programme	**Pros**
Balanced Plus	No losers – everyone should see the same or increased levels of service.
High performance Plus	Most competitive with car journeys on key routes, increasing patronage and mode share. Will see the largest increase in seat capacity to the CBD and other key employment destinations reducing the need for parking capacity and road capacity. May encourage infill and denser development close to high frequency

	services.
Growth Enabler	Will provide transport capacity to growth areas enabling increased development levels.

5.4 Programme Assessment

An assessment of the alternative options has been undertaken following the NZ Transport Agency's template. The following table summarises the findings of the assessment with each short listed option compared against expected patronage, benefit / cost and each of the investment objectives (IO) developed in Chapter 4. The full assessment tables are provided in **Appendix F**.

Table 9: Summary Assessment of Alternatives

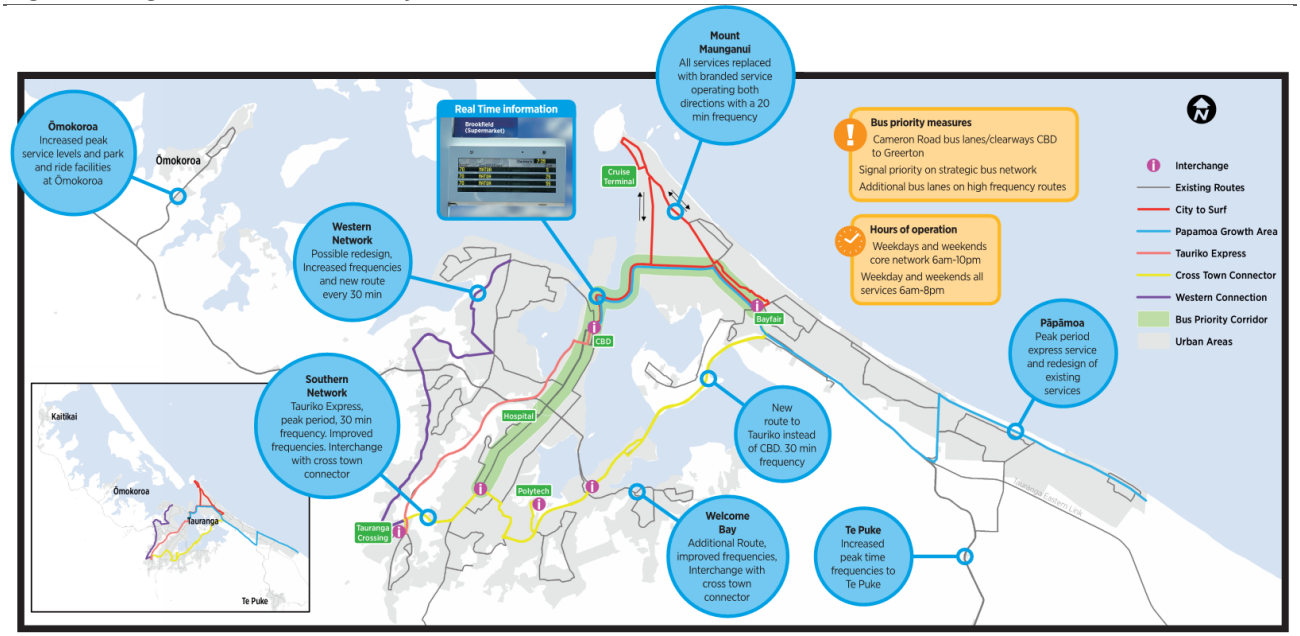
	Status Quo	High Performance	Growth Enabler	Balanced Plus
Annual Trips	2,437,000	3,087,000	2,983,000	2,732,000
Benefit Cost Ratio	0.63	1.29	0.89	0.97
IO1 - Strategic Corridor Mode Share of 10%	5.40%	8%	6%	7%
IO2 - Farebox recovery of 45%	28%	40%	35%	32%
IO3 - Journey times reduced by 20%	Unlikely	likely	possible	possible
IO4 - 95% of bus services arrive on time	Unlikely	likely	likely	possible
IO5 - Implementation of projects	0%	Lowest Risk	Some risk	High Risk
IO6 - Funding committed to projects		Lowest Risk	Some risk	High Risk

The indicative benefit cost values provided in the table above have been defined through an indicative BCR assessment, excel tables from this assessment are provided in **Appendix G**.

5.5 Recommended Programme

High Performance Plus is the recommended programme. The following diagram summarises the key initiatives under the High Performance Plus option.

Figure 18: High Performance Plus Key Initiatives



The main reasons for this being the recommended option are:

- The option has the best economic performance (BCR) of the three shortlisted options,
- The option should achieve the highest uptake of additional passenger trips by focusing additional services close to higher existing population densities, this should also help the option to achieve a higher fare box recovery than the alternative options,
- The option has higher frequencies in the urban network with bus priority on Cameron Road, these factors give the option a better chance of improving the car / bus travel ratio than other shortlisted options.
- The option aligns well with established policy objectives, for example the Tauranga Transport Strategy objective to "*agree a future network of bus priority on key corridors focussing on locations that provide maximum benefit to the largest number of services*".
- The option has lower capital and operational costs due to there being less emphasis on providing long distance services to regional areas and less emphasis on park and ride facilities which require land and capital cost investment. With a lower cost there is more likelihood that the full funding requirement will be achievable.

5.6 Implementation Strategy and Trigger Points

Following completion of the PBC, an Activity Business Case (ABC) will be developed to define the detailed changes to bus routes, scheduling and frequencies arising from the recommended programme.

The implementation strategy will be developed as part of the ABC as timing for the key activities will need to align with changes to the existing network and this will be programmed at the ABC level.

Implementation of route changes will follow as part of the new operator contracts to be initiated in late 2017. A schedule of investment is included in Section 7.

When developed the implementation strategy will consider how the SMART investment objectives will be reviewed after delivery of each activity in the programme.

6 Recommended Programme Assessment

This section assesses the performance of the recommended programme against three key criteria:

- Programme outcomes,
- Programme risks,
- Value for money.

6.1 Programme Outcomes

The key outcome of the recommended programme is increased uptake of bus travel and a comparable reduction in private vehicle kilometres travelled.

The programme is expected to increase bus patronage to approximately 3.1M trips per annum after 10 years, up from 2.5M currently. The following activities contribute to the expected increase in patronage:

- Improved frequency of services on key routes makes bus travel a more realistic alternative to car travel as passengers are not restricted as by timetables,
- Bus priority measures reduce journey times for bus users and make bus travel more favourable especially in peak periods when bus users could have an advantage over car speeds,
- Improved interchange facilities and better bus stops encourage people to use the bus and ensure users feel safe and comfortable,
- Changes to parking policies lead to increased parking charges once bus improvements are in place which make bus travel a realistic alternative to driving (carrot and stick approach),
- Network changes make existing bus services more direct leading to shorter travel times and improved bus / car travel time ratios. New networks go places people want to go regularly with interchange at key notes to the wider bus network.

Based on an assumed average trip length of 9.5km[8] an additional 600,000 bus trips per year will avoid over 6M kilometres of private car travel annually. There are a number of benefits associated with reducing vehicle kilometres travelled by private car, such as:

- Less emissions resulting in a cleaner atmosphere, lessening the impact of pollutants on public health,
- Less demand on the road network and less congestion resulting in improved travel times for vehicles that need to use roads, such as freight vehicles,
- Less demand on the road network may mean that future investment in infrastructure to increase road capacity or provide additional parking spaces can be deferred,
- Lower transport costs to bus passengers who avoid running a car and also to operators of vehicles that remain on the road but travel in less congested conditions.

Further work is required to confirm whether the programme can achieve the level of bus patronage and fare box recovery desired in the investment objectives. This will need to be further tested at the ABC stage.

[8] Statistics New Zealand, Household Travel Survey 2011 to 2014.

6.1.1 Impact on Existing Problems

Three problem statements were identified in the SBC and assessed in Section 4 of this PBC. Consideration of how the recommended program will address each of the problems is provided below.

Problem one: The current urban land form and topography makes it difficult to support a more effective and efficient PT system across the whole network (35%).

Response: Whilst the PBC cannot change the urban land form to enable more direct bus routes, the recommended option includes increased bus frequencies and more bus priority to reduce bus journey times and make bus travel more effective and efficient. The option includes express services to Papamoa East and Tauriko which will support growth in these areas. Policy changes such as encouraging higher densities around PT nodes and corridors will eventually increase passenger catchment densities.

The travel demand information from TTM (as discussed in Section 2) shows that there is a high number of peak hour trips made between Papamoa – Mt Maunganui, Otumoetai – CBD, Mt Maunganui – CBD and Greerton – CBD. The proposed bus network with the 'city to surf' frequent service and high frequency services along Camron Road supported by bus priority measures will cater well for these travel demands. The only deficiency in the option may be provision of a bus service from Papamoa to Mt Maunganui (the current option includes a Papamoa to CBD service and a Papamoa collector service with interchange at Bayfair to provide for travel to Mt Maunganui via the high frequency 'city to surf' route). This will be considered further as part of the detailed route design in the ABC.

Problem two: The focus on access to PT services across the sub-region may mean that it is not being best utilised as a competitive alternative mode to private cars (50%).

Response: The recommended option responds well to addressing this problem by providing more direct and higher frequency bus services on key routes. Whilst the detail of existing route changes will be defined as part of the ABC, the HPP option will lead to bus routes being more direct with shorter journey times. There is a risk that making routes more direct will reduce the coverage of the bus network, the effect of this will be considered further as part of the ABC stage.

Problem three: 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%).

Response: There will always be competing demands for transport funding and population growth in the region is likely to drive continued investment in roading infrastructure. However, the recommended option includes approximately $9M of capital investment in bus priority, bus stop improvements and park and ride facilities. Along with increasing the operational spend to deliver new routes and improved frequencies the HPP option will help to increase funding for capital expenditure.

The HPP option ticks many of the objectives identified within key planning documents listed in **Table 3**. This includes performing strongly in line with the following objectives:

- TCC Long Term Plan; "Provide an optimised and balanced transport network",
- Tauranga Transport Strategy; "Agree a future network of bus priority measures on key corridors, focussing on locations that provide maximum benefits to the largest number of services",
- WBOP District Plan; "Encourage the use of alternative modes of transport including PT",
- Regional PT Plan; "Reliable and integrated PT services that go where people want to go",

- Regional Land Transport Plan; “Improved PT investment to increase levels of service on urban networks, particularly strategic corridors”.

6.2 Programme Risk

6.2.1 Financial

The key financial risk is that passenger uptake is lower than predicted and this results in less fare box recovery than anticipated and a lower than expected return on investment. There are a number of factors that drive PT use and not all are within the control of the investors (e.g. petrol prices). Other cities have shown that provision of quality public transport services going places that people want to go in a timely manner can bring about the level of mode shift anticipated in this PBC.

It is also possible that operating costs and or infrastructure costs will be higher than expected in this PBC and this will impact on the benefit / cost ratio of the option and the feasibility of delivering the activities. Costs will be further refined as part of the ABC stage to continually monitor this risk.

It should also be noted that it is possible that passenger growth will be higher than expected and costs lower than the current estimates, resulting in a more favourable outcome than that anticipated in this PBC.

6.2.2 Stakeholders/Public

There is a risk that stakeholders or the public will not support the proposed option and this will reflect negatively on the investors. There are four key risks in this regard:

- Some existing passengers may find that the bus service they currently use do not follow the same routes in future and may not pass as close to their origin / destination as it does currently. This will be a negative experience for some people. The benefits of providing more direct services with shorter travel times should however provide a better overall service for customers. The coverage of the network will be considered in more detail during the ABC stage and this risk will be monitored.
- The objective to carry more school trips on the public service may be perceived negatively by some schools and school stakeholders (board of trustees, parents, students). Clearly communicating the changes and the reasons for change will be important to ensure that schools do not overly object to the new service.
- The option prioritises spending in the Tauranga urban area with less emphasis on providing improved levels of service to regional centres such as Katikati, Omokoroa and Te Puke. Communities in these locations may consider themselves disadvantaged and oppose the recommended option. It will be important to communicate that there will be some improvements to services to these areas and that the improvements in the urban area will benefit passengers travelling from these areas too.
- Users of urban bus services may be deterred at peak times by additional school pupils using these services as school bus services are optimised

6.3 Value for Money

Table 9 summarises the key findings of the indicative BCR assessment. Capital costs are incurred over the 10 year implementation period of the programme, benefits are evaluated over a 40 year horizon. The key benefits being:

- Increased revenue through higher passenger volumes,
- Travel time savings for bus passengers achieved through bus priority measures,

- Improved journey time reliability for bus passengers,
- A road traffic reduction benefit which accounts for reduced demands on the road network, reduced emissions etc.

Spreadsheet outputs of the indicative economic assessment are provided in **Appendix F**. A more detailed economic assessment will be undertaken at the ABC stage.

Table 10: Summary of Indicative Economic Assessment (HPP Programme)

Cost / Benefit	Do Minimum	High Performance Plus
Operating cost per annum	$12.5M	$14.7M
Capital cost over 10 years	$0	$8.9M
Net present value costs (40 years)	$183M	$222M
Revenue per annum	$3.5M	$6M
Network efficiency benefits[9] per annum	$4.4M	$11M
Net present value benefits (40 years)	$115M	$288M
Benefit Cost Ratio	**0.63**	**1.3**

The benefits of the changes from the existing situation to the proposed outcome (incremental benefit) i.e. the BCR of the difference between the existing benefits/costs and the option benefits/costs are more significant because the existing service has a low BCR, as summarised in **Table 10**.

Table 11: Summary of Indicative Incremental Economic Assessment

Cost / Benefit	High Performance Plus
Increased operating cost per annum	$2.1M
Increase in capital cost over 10 years	$8.9M
Net present value additional costs (40 years)	$39.7M
Revenue increase per annum	$2.3M
Network efficiency benefit increase per annum	$7M
Net present value benefits (40 years)	$138M
Benefit Cost Ratio	**3.5**

In summary the option is expected to achieve a BCR of around 1.3. However, considering the low BCR of the existing situation (0.6), when assessing the changes in cost and benefit from the existing situation to the option (the incremental BCR) the ratio would increase to around 3.5.

[9] Consists of: travel time savings, road traffic reduction benefit and reliability benefit.

6.4 Investment Profile

6.4.1 Strategic Fit

The strategic case found the assessment profile to meet both the medium and high investment criteria, resulting in a '**high**' strategic fit rating. The strategic case assessment is summarised below.

Medium Criteria

A medium strategic fit rating may be given if, in the short to medium-term, the problem, issue or opportunity is:

- A service provision that does not meet forecast demand, including in and to main urban areas, within a region, or
- Access to social and economic opportunities, particularly for those with limited access to a private vehicle, or
- A deficiency in reliability, or resilience in the transport system.

The current transport network in Western Bay is not able to meet the forecast demand in the short-term on either SH2 or SH29 within the next five years. The opportunity exists for public transport to assist in meeting this demand.

High Criteria

A public transport improvement activity must only be given a high strategic fit rating if in the short to medium-term, the problem, issue or opportunity is:

- A service does not meet forecast demand on networks or corridors in major urban areas, or
- There is a deficiency in journey time reliability in a major urban area.

The current transport network in the Western Bay is not able to meet the forecast demand in the short-term on either SH2 or SH29 within the next five years. The opportunity exists for public transport to assist in meeting this demand. Tauranga is considered a major urban area in regards to the Investment Assessment Framework.

The strategic case assessment resulting in a high ranking is considered valid and confirmed. The evidence included in Chapter 2 confirms that there is a deficiency in journey time reliability in Tauranga, peak period private vehicle travel speeds are decreasing and buses on the urban network are not operating to schedule, which means journey times are not reliable.

6.4.2 Effectiveness

The effectiveness of the proposed option has been assessed against the NZ Transport Agency's six criteria for effectiveness in the Investment Assessment Framework. At the PBC stage the effectiveness assessment is indicative and will be confirmed in the ABC. The effectiveness of the proposed solution is **high**.

Table 12: Effectiveness Evaluation

Component	Explanation	Rating and Assessment
Outcomes focused	Tangible change in addressing the problem, issue or opportunity identified in the Strategic Fit assessment.	**High**. Improving bus transport mode share will reduce congestion and improve travel reliability and Level of Service for all road users.

	Consistency with levels of service in an appropriate classification system.	
Integrated	Consistency with the current network and future transport plans. Consistency with other current and future activities. Consistency with current and future land use planning. Accommodates different needs across modes. Support as an agreed activity across partners.	**High**. There is strong regional support for additional investment in PT as defined in Table 3. The proposed option aligns with existing travel patterns and integrates with the existing network. The option includes services to growth areas in Tauriko and Papamoa East. There is cross agency support for the option which was developed with stakeholder input.
Correctly scoped	The degree of fit as part of an agreed strategy or business case. Has followed the intervention hierarchy to consider alternatives and options including low cost alternatives and options. Is of an appropriate scale in relation to the issue/opportunity. Covers and/or manages the spatial impact (upstream and downstream, network impacts). Mitigates any adverse impacts on other results.	**High**. The option has been developed through the business case process with stakeholder involvement. A long list and subsequent short list of alternative options was developed before the recommended option was selected.
Affordable	Is affordable through the lifecycle for all parties. Has understood and traded off the best whole of life cost approach. Has understood the benefits and costs between transport users and other parties and sought contributions as possible.	**High**. The option has the lowest cost of all shortlisted options and the additional investment is considered to be comparably low against investment in alternative forms of transport, e.g. roads and car parking.
Timely	Delivers enduring benefits over the timeframe identified in the justified strategy or business case. Provides the benefits in a timely manner.	**High**. The programme is expected to deliver PT uptake benefits from the initial stages of implementation with increasing uptake as new activities such as bus priority and ticketing upgrades are implemented.
Confidence	Manages current and future risk for results/outcomes. Manages current and future risk for costs.	**High**. A staged approach to the development of the bus network and infrastructure investment is the best way of managing costs against the expected outcomes. Costs will be managed well by fully implementing PTOM within the contract delivery and management.

6.4.3 Benefit Cost Appraisal

The benefit cost assessment described previously found the option likely to result in a BCR of one, this equates to a **low** benefit cost rating.

In summary the Investment Profile is **High, High, Low**.

7 Programme Financial Case

This section highlights the affordability of the programme, and what elements are to be funded by the partnering organisations.

7.1 Indicative Cost

The costs of the option are both operational costs (running buses) and capital costs (providing infrastructure to support bus travel such as bus lanes, bus stops etc.).

7.1.1 Operational

The following table summarises the existing and predicted future operational cost of the service under the HPP option. The annual cost increase is approximately $2.3M per annum. Note this assessment assumes a cost reduction for school hopper services and the actual achievable cost reduction will not be known until the ABC is completed.

Table 13: Indicative Operational Costs, Existing vs HPP Per Annum

Network component	Existing	Option	Cost Increase
Tauranga Urban Network	$9.6M	$12M	$2.4M
Katikati, Omokoroa and Te Puke services	$275K	$800K	$525K
School Hopper	$2.7M	$2M	-$700K
Total Operating Cost Per Annum	**$12.5M**	**$14.8M**	**$2.3M**

Operational costs are typically covered in thirds by the BoPRC, NZ Transport Agency and through fare box recovery.

In addition to the operating costs for running buses there will be costs to BoPRC / Transport Agency associated with delivering the programme, e.g. management, promotion and marketing, analysis tools etc. A cost of $800,000 to $1M over 10 years (51% funded by the Transport Agency) is assumed at this stage.

7.1.2 Capital

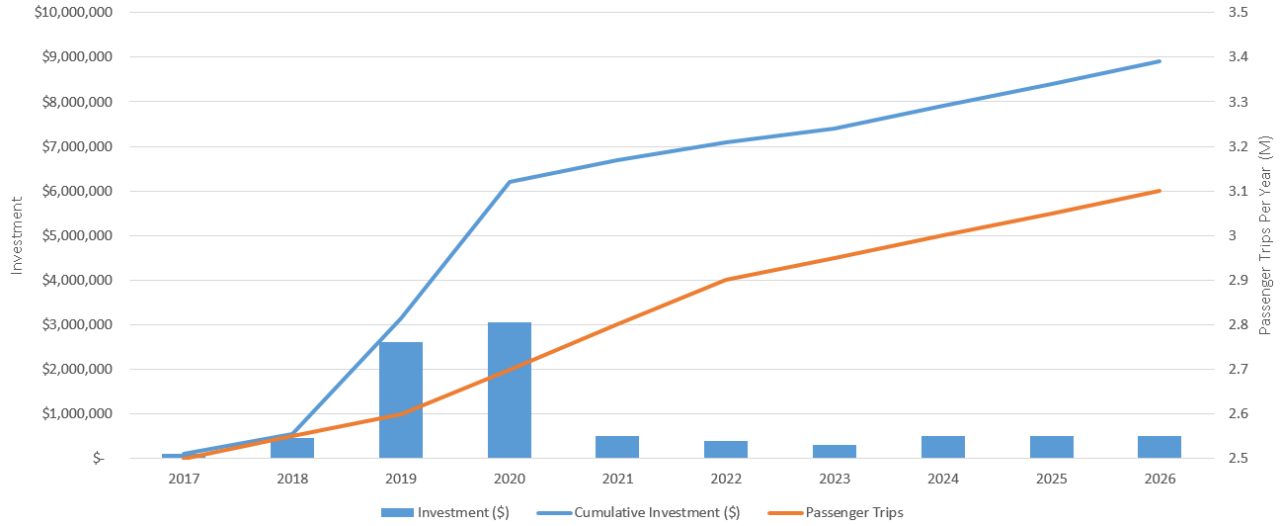
The option identifies a capital cost of approximately $8.9M over ten years. This cost is associated with the following activities:

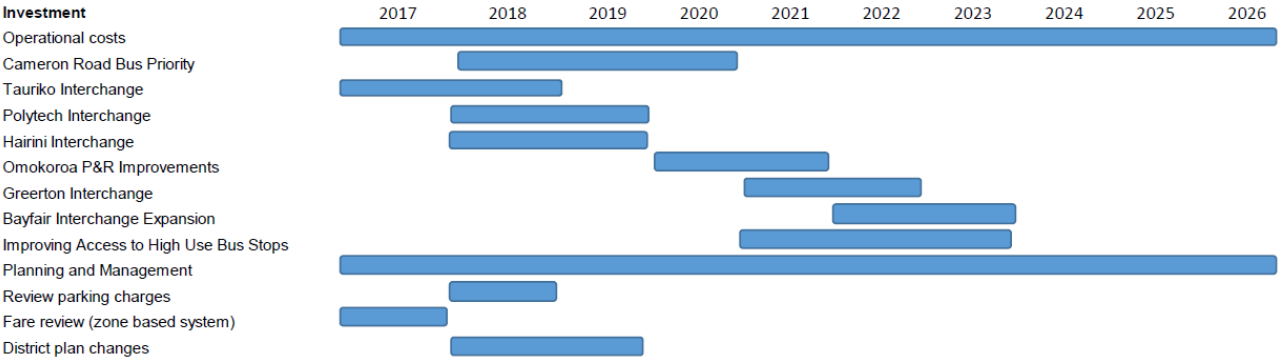
- Improving access to stops,
- Bus priority on Cameron Road from Greerton to the CBD,
- New/improved bus interchange facilities:
  - Bayfair expansion,
  - Tauriko,
  - Greerton,
  - Polytech,
  - Hairini,

- Improved park and ride facilities at Omokoroa.

The following figures show the anticipated timing of investment and corresponding forecast passenger growth over the ten year implementation period. Passenger growth is a function of the various new activities and population growth.

Figure 19: Estimated Cumulative Capital Cost Investment and Passenger Growth (2017-2026)





7.2 Funding Arrangements

As with other public transport projects the funding of the costs will be shared between the lead organisations. BoPRC and the Transport Agency fund operational costs. TCC, WBoPDC and the Transport Agency fund capital expenditure.

The following table further defines the predicted capital cost investment by controlling organisation. Estimated new/improved interchange costs assume development within public land, i.e. no land costs.

Table 14: Indicative Funding Requirements for Capital Costs by Controlling Organisation

				TCC	WBoPDC	NZTA
		Estimate	Year / FAR:	51%	51%	
Cameron Road Bus Priority	Investigation / design	$150,000	2017/18	$73,500		$76,500
	Construction	$5,000,000	2019/20	$2,450,000		$2,550,000
Tauriko Interchange	Investigation / design	$50,000	2017	$24,500		$25,500
	Construction	$250,000	2018	$122,500		$127,500
Polytech Interchange	Investigation / design	$50,000	2018	$24,500		$25,500
	Construction	$250,000	2019	$122,500		$127,500
Hairini Interchange	Investigation / design	$50,000	2018	$24,500		$25,500
	Construction	$350,000	2019	$171,500		$178,500
Omokoroa P&R	Investigation / design	$50,000	2020		$24,500	$25,500
(improvements)	Construction	$450,000	2021		$220,500	$229,500
Greerton Interchange	Investigation / design	$50,000	2021	$24,500		$25,500
	Construction	$350,000	2022	$171,500		$178,500
Bayfair Interchange	Investigation / design	$50,000	2022	$24,500		$25,500
(expansion)	Construction	$250,000	2023	$122,500		$127,500
Improving Bus Stops	Investigation / design	$50,000	2023	$12,250	$12,250	$25,500
	Construction	$1,500,000	2024-26	$367,500	$367,500	$765,000
		$8.9M		**$3,736,250**	**$624,750**	**$4,539,000**

7.3 Affordability

The operational and capital cost increases are considered affordable, provide a good BCR, and are relatively minor when compared with the investment made in other forms of transport, i.e. roads and car parking etc.

8 Delivery and Monitoring

8.1 Management Case

8.1.1 Governance and Reporting

BoPRC is the project sponsor and leads further development and delivery of the recommend option. BoPRC will lead the ABC for the network redesign as the first activity arising from this PBC. The incoming Councils will determine the governance structure for associated projects.

Other stakeholders may lead additional business cases for investment in PT infrastructure as an outcome of the PBC, i.e. an Indicative Business Case (IBC) for bus priority (and subsequent implementation) on Cameron Road would be sponsored by TCC as the lead agency whilst an IBC for a park and ride facility at Omokoroa would be led by WBoPDC.

8.1.2 Stakeholder Engagement and Communications

Key stakeholders have been involved in the development of the PBC and this engagement will continue through the development of the ABC.

Public consultation on the proposed option is planned to occur early in 2017.

8.1.3 Performance Review and Monitoring

The performance of the option will be reviewed by the BoPRC through its monthly PT patronage and revenue/farebox recovery reports and other forms of reporting, e.g. BoPRC PT subcommittee reports. Reporting will include indicators of mode share and travel time etc so the programme ongoing evaluation against the investment objectives can be carried out.

A full review of the network performance will be undertaken in year 5. This will ensure that the service can respond to land use changes / growth particularly in urban growth areas which are rapidly expanding at present. Additional services / route extensions or other improvements such as park and ride parking expansions etc may be necessary by this time.

Appendix A: Complementary Programmes

Tauriko Network Plan

The Tauriko Programme Business case has identified a preferred transport programme that enables the development of Tauriko over the next 30 years. It has identified public transport as having a key role in this programme, providing additional local services, interchange and park and ride facilities. The majority of this suggested investment falls outside the time frames of the Blueprint however should development of this area go ahead of schedule there may be a need for additional investment to support growth.

Smartgrowth Compact City Project

The Compact City project outputs have reinforced the need for a wider range of housing types to meet future needs. Tauranga City Council has commenced a project to achieve residential growth and intensification in Tauranga's existing urban area. The four workstreams are: activation of the city centre, refining the planning framework in the City living Zone, considering intensification opportunities in suburban areas, and a range of specific growth related projects.

Tauranga Network Operating Frameworks

The Tauranga Network Operating Plan (NOP) forms part of the evidence building and optimisation component of the Tauranga Programme Business Case which is being developed by Tauranga City Council, NZ Transport Agency and the Bay of Plenty Regional Council in collaboration with SmartGrowth and other stakeholders. The NOP is a short term 0-5-year document. The network operating framework will focus on the area within the Tauranga City Boundary with operating plans developed for specific areas identified as having more significant operating gaps or needs. The focus will specifically be on the State Highway network and on local roads with a status of collector or higher. Interventions of a larger scale that would fit within a Network Improvement Plan will be considered through the Tauranga Programme Business Case process.

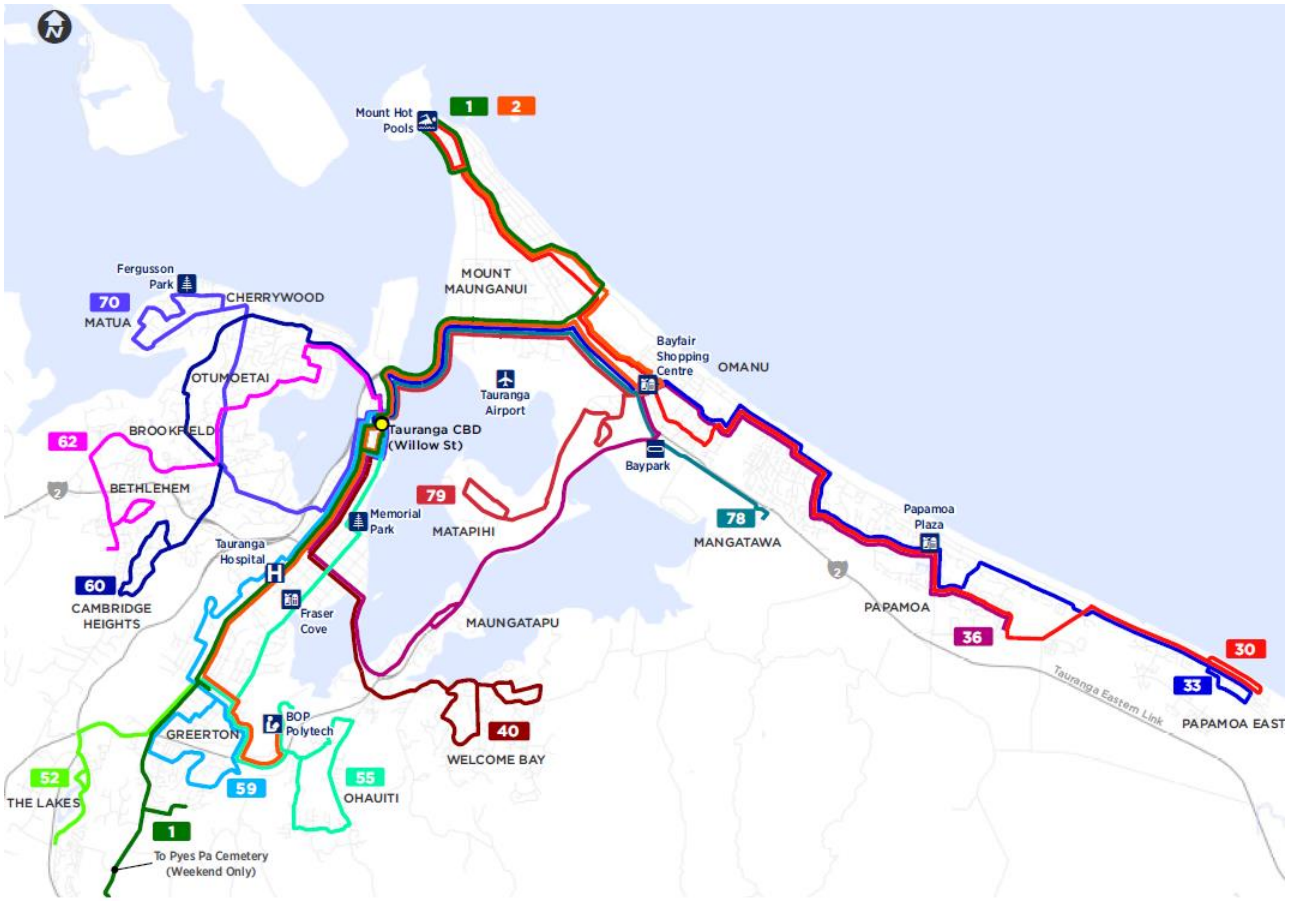
Civic Centre Project

The civic centre project has seen TCC commit to investing $23million in direct funding to develop new staff accommodation, $4.3Million to deliver open space and a series of business cases for a new museum, city library and multi-purpose performance venue located in with the Tauranga CBD. This is in addition to the development of the Harrington Street multi-level carpark which was already funded within TCC's long term plan.

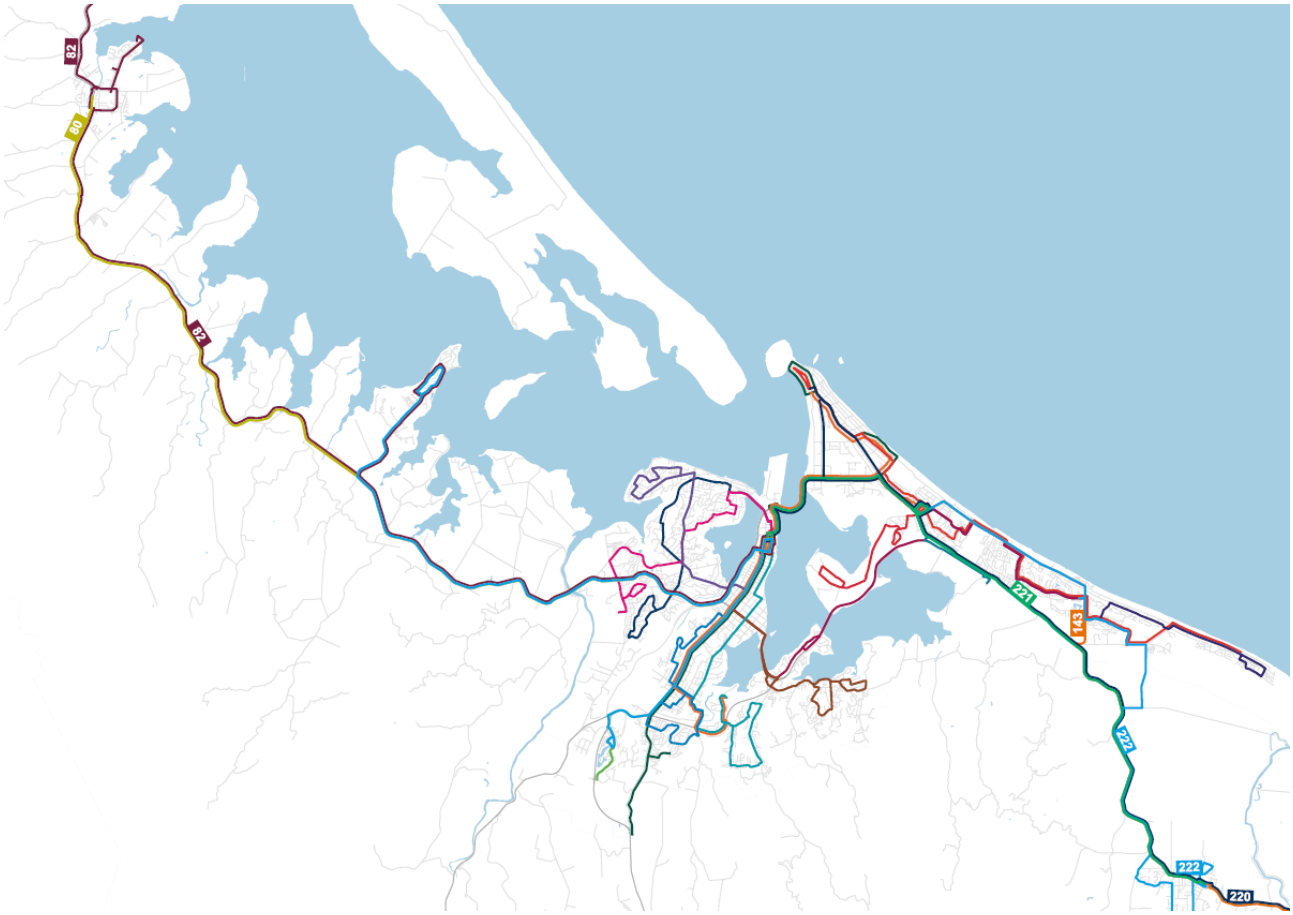
Tauranga Programme Business Case

The Tauranga Programme Business Case is a similar project to the Blueprint but is looking specifically at Tauranga and at all modes of Transport over a 30 year horizon The strategic case for this project identified car dependency as the major problem with the existing transport network and consequently this work is likely to support an increased investment in public transport.

Appendix B: Existing Bus Service Details



Route	Description	Weekday Frequency	Weekend Frequency
1	Pyes Pa – Greerton – City – Mt Maunganui	30 minutes	1 hour
2	Windermere – Greerton – City– Bayfair – Mt Maunganui	30 minutes	1 hour
30	Pāpāmoa – Bayfair – Mt Maunganui	1 hour	1 hour
33	City – Bayfair – Pāpāmoa	20 minutes	1 hour
36	City – Maungatapu – Bayfair – Pāpāmoa	30 minutes	1 hour
40	City – 15th Ave – Welcome Bay	30 minutes	1 hour
52	Greerton – The Lakes	30 minutes	1 hour
55	City – Fraser St – Greerton – Windermere – Ohauiti	30 minutes	1 hour
59	City – Sunvale – Greerton – Oropi	1 hour	1 hour
60	City – Bellevue – Brookfield – Cambridge Heights	30 minutes	1 hour
62	City – Pillans Pt – Brookfield – Bethlehem	30 minutes	1 hour
70	City – Brookfield – Cherrywood – Matua	30 minutes	1 hour



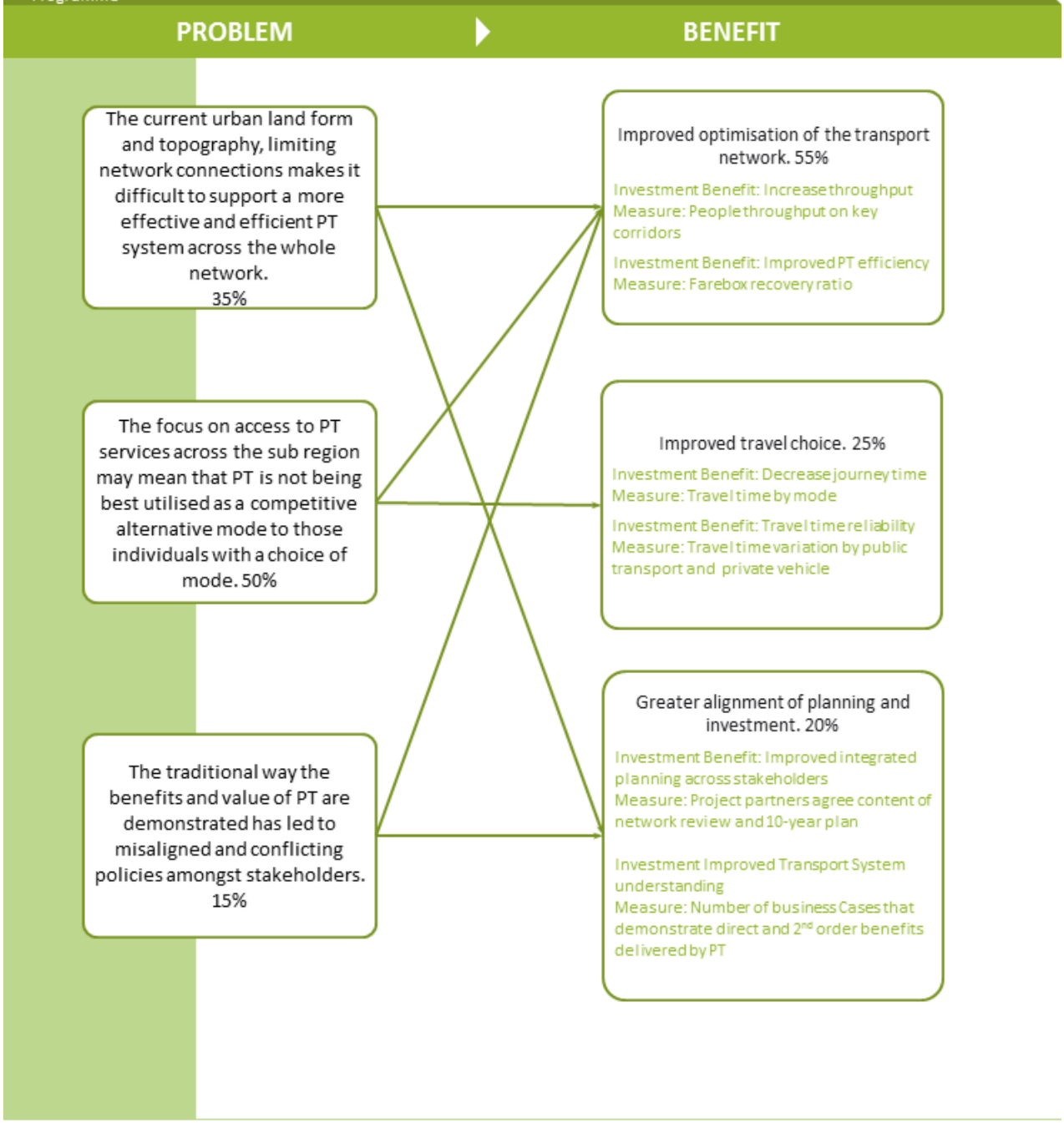
Route	Description	Weekday Frequency	Weekend Frequency
80	Katikati – Tauranga	3 services per day	No service
81	Omokoroa – Tauranga	2 services per day	No service
82	Waihi Beach – Katikati – Tauranga	2 services per day (Tuesdays, Thursdays and Saturdays only)	No service
221	Te Puke – Tauranga	3 services per day	No service
222	Te Puke – Tauranga	2 services per day (Wednesdays and Fridays only)	No service
222a	Maketu – Bayfair	1 service per day	No service

Appendix C: Investment Logic Map

Bay of Plenty Regional Council

Tauranga Passenger Transport Network Review

INVESTMENT LOGIC MAP
Programme



Business Problem Owner: Joe Metcalfe
Facilitator: Matt Barnes
Accredited Facilitator: No

Version no: 0.4
Initial Workshop: 29/04/2015
Last modified by: Joe Metcalfe 17/02/2016
Template version: 5.0

Appendix D: Benefits Map

Tauranga / Western Bay of Plenty PT Network Review PBC

BENEFIT MAP

BENEFIT	INVESTMENT BENEFIT	MEASURE	DESCRIPTION	BASELINE	TARGET
Improved Optimisation of the Transport Network 55%	Increase throughput	Mode share	Increased mode share on strategic PT network	6% (based on cordon analysis and boarding data)	8% by 2021 and 10% by 2026
	Increase PT efficiency	Farebox recovery	Increase farebox recovery ratio	Urban = 29% School = 25% Region = 32%	40% by 2021 and 45% by 2026
Improved Travel Choice 25%	Decrease journey time	Travel time by mode	Minutes travel time	The average bus journey between key nodes takes 49 minutes, bus travel on these routes takes 3.7 times longer than car travel (includes wait time).	Reduce bus /car travel time ratio below 2 times above by 2026.
	Increase reliability	Reliability - actual vehicles	Standard deviation of travel time	3.5 minutes above schedule daily, 8 minutes above schedule during AM peak.	95% of buses within 5 minutes of schedule during AM peak. No buses depart early.
Greater Alignment of Planning and Investment 20%	Improved integrated planning across stakeholders	Project partners agree objectives and content of PBC	Number of measures identified in PBC implemented by 2026	NA	50% by 2021and 100% by 2026
	Improved transport system understanding	Policies and strategic decisions	Policies and decisions consistent with PBC driving increased PT expenditure	Opex per capita $0.15. Capex per capita $0.54 per annum	Committed investment in LTP/SHAMP within the range identified in PBC by 2026

RESPONSIBILITY FOR DELIVERING THE BENEFITS		
Name	Position	dd/mm/yyyy

Business Problem Owner: Joe Metcalfe
Facilitator: Matt Barnes
Accredited Facilitator: No

Version no: 0.3
Initial Workshop: 05/05/2015
Last modified by: Craig Richards 15/08/2016
Template version: 1.0

Appendix E: Shortlist Programme Diagrams

WESTERN BOP PT BLUEPRINT
Key initiatives and indicative changes to existing services.

High Performance Plus "May see rationalisation of routes to allow higher frequencies on key corridors. May require transfers from collector services to express services. Likely to see a 20min frequency between the CBD, Mount, Bayfair, Tauranga Hospital and Greerton. May include express services to satellite communities. Additional investment in ITS, access to stops and bus priority infrastructure."

Omokoroa / Katikati services to be reviewed. Additional peak period services. Basic park and ride facility at Omokoroa

CBD - Mount - Bayfair (20 minutes)

Bus Priority Corridor

i Interchange

Existing Routes

Existing route changes

Western Connection (30 minutes)

Western suburbs network redesigned, more direct routes, increased frequency.

Routes 30, 33, 36 complete redesign. More direct routes.

Improved service levels for Matapihi and Mangatawa.

Papamoa East Express (30 minutes peak periods)

Tauriko Express (30 minute peak periods)

Cross Town Connector (30 minutes)

Te Puke / Maketu / Paengaroa services redesign. Increased frequency in peak periods.

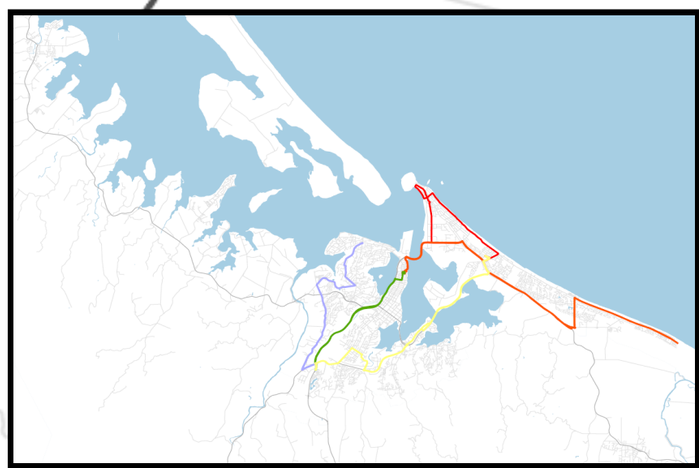
Welcome Bay two loops, increased frequency.

Polytech high frequency to CBD. Improved interchange.

Route 1 and 2 truncated at CBD, connecting to Mt Maunganui increased frequency.

Ohauiti coverage expanded with improved frequency.

Additional investment; Improved access to stops, ticketing upgrade, real time information, parking price changes, district plan changes, PT planning / analysis tools.



WESTERN BOP PT BLUEPRINT
Key initiatives and indicative changes to existing services.

Growth Enabler "Focus on improving services to growth areas and satellite communities with increased frequencies and all day services to these areas. Similar frequencies to existing within the Tauranga urban area. Park and ride facilities on strategic routes. Bus priority infrastructure on key corridors."

Omokoroa / Katikati circulating buses, greater coverage and increased frequency. All day services to Tauranga.

CBD - Mount - Bayfair - Airport - CBD (30 minutes)

Greerton Express P&R (30 minutes)

Katikati / Omokoroa Express P&R (all day)

Western suburbs network redesigned, more direct routes, increased frequency.

Routes 30, 33, 36 complete redesign. More direct routes.

Improved service levels for Matapihi and Mangatawa.

Papamoa Growth Area Express P&R (all day)

Tauriko Express (all day)

Cross Town Connector (30 minutes)

Welcome Bay two loops, increased frequency.

Te Puke Connector (30 minutes)

Te Puke / Maketu / Paengaroa services redesign. Greater coverage and increased frequency.

Polytech high frequency to CBD. Improved interchange.

Pyes Pa Route 1 truncated at CBD, connecting to Mt Maunganui route.

Ohauiti coverage expanded with improved frequency.

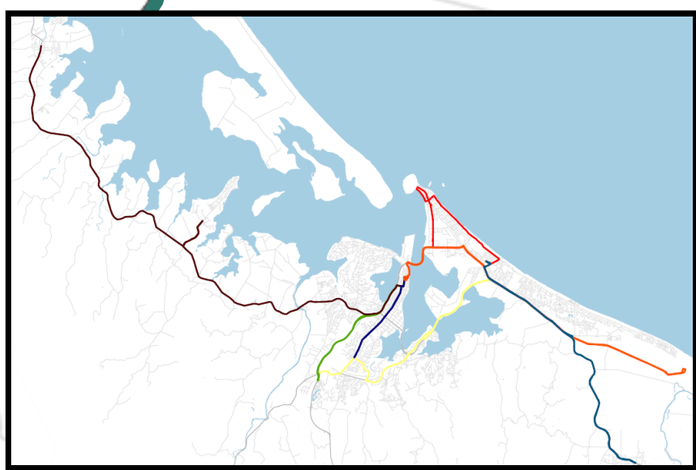
Additional investment; Ticketing upgrade, real time information, parking price changes, district plan changes.

Bus Priority Corridor

i Interchange

Existing Routes

Existing route changes



WESTERN BOP PT BLUEPRINT
Key initiatives and indicative changes to existing services.

Balanced Plus "Similar network structure to existing with and additional services being balanced between serving existing and new areas. May include some cross city and express services, park and ride facilities and higher frequency services. Will have increased level of service to some / all areas. Includes priority infrastructure for buses."

Omokoroa / Katikati services to be reviewed. Increased service levels. Park and ride at Omokoroa

CBD - Mount - Bayfair - Airport - Hospital (30 minutes)

Bus Priority Corridor

Interchange

Existing Routes

Existing route changes

Western suburbs network redesigned, more direct routes, increased frequency.

Katikati / Omokoroa P&R (peak periods)

Routes 30, 33, 36 complete redesign. More direct routes.

Improved service levels for Matapihi and Mangatawa.

Papamoa Growth Area P&R (peak periods)

Tauriko Express (peak periods)

Cross Town Connector (30 minutes)

Western Connection (30 minutes)

Welcome Bay two loops, increased frequency. Possible Waitao extension

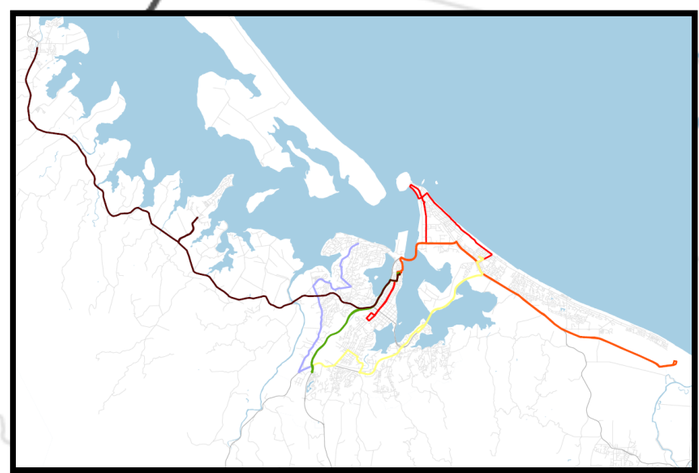
Polytech high frequency to CBD. Improved interchange.

Te Puke / Maketu / Paengaroa services redesign. Some interchange to express services from Bayfair.

Routes 1 and 2 truncated at CBD, connecting to Mt Maunganui high frequency.

Ohauiti coverage expanded with improved frequency.

Additional investment; Improved access to stops, ticketing upgrade, real time information, PT planning / analysis tools.



Appendix F: NZTA Evaluation Tables

Alternative:	High Performance Plus		
Estimated total public sector funding requirement:		Lower	Upper
	Total capital investment over 10 years ($m):	$8.5M	$9.5M
	Net property cost ($m):	n/a	n/a
	Opex ($m/40yr):	$14.5M	$15M
	Maintenance ($m/40yr):	Not assessed at this stage	Not assessed at this stage
	Present value of cost to govt. (40 years $m):	$215M	$225M
Estimated annual passenger trips (after 10 yrs)		3M	3.2M
Estimated BCR range:		1	1.5
Timing of need:	*Optimal programme:* 10 Years	*Likely:*	10 Years

Investment objectives	
Objective:	**Performance against investment objective:**
Achieve a bus passenger mode share of 10% by 2026.	The option is expected to achieve approximately 3.1M bus trips per year. This is expected to equate to a mode share of approximately 8% in peak periods. Therefore additional measures, e.g. marketing and promotion, will be required in addition to the identified programme actions to encourage bus use and achieve the desired target.
Increase the fare box recovery ratio to 45% by 2026.	This option is expected to achieve a fare box recovery of 40%. Again if increased uptake can be achieved through soft measures such as marketing and promotion the target may be achievable.
Reduce bus journey times between key destinations by 20% by 2026.	High frequency services delivered in this option with proposed bus priority on Cameron Road should improve bus travel especially between Greerton, CBD, Mt Maunganui and Bayfair. More direct routes and increased frequencies will also assist in reducing journey times.
95% of bus services will operate within five minutes of schedule during the AM peak.	Bus priority measures along Cameron Road should help to address key delays on the network and improve the punctuality of buses.
Implement at least 50% of the projects identified in the PBC by 2021 and 100% by 2026.	Implementation will depend on funding.
Commit 100% of the necessary funding as defined in the PBC by 2026.	This option has lower costs that the two alternative options and as such there is more certainty that the objective can be achieved.

Rationale for selection or rejection of alternative:	The option performs reasonably well against the investment objectives. Whilst the expected mode share and fare box recovery are below the desired levels, the results are not far off the targets and the option performs better than the alternative options in this regard. There is no strong reason to discount the option at this stage.
Implementability appraisal of option	
Feasibility:	Delivery of the option is expected to be feasible if the necessary funding is available. The option requires land for bus interchange including park and ride sites and the availability of land is the only apparent risk to the feasibility of the option.
Affordability:	The increase in cost is a relatively low proportion of existing costs and the additional investment should better align local spending with other regions in New Zealand, and is as such considered affordable.
Public/Stakeholders:	The lead stakeholder group was involved in development of the option. Public consultation will be undertaken in 2017.

Multi-criteria assessment of option

Criterion	Scale of impact	Significance of impact	Supporting information
Safety:	Minor benefit	Minor	By achieving mode shift the option will reduce private car use and in doing so reduce the risk of crashes. There may be increased personal safety risk with more people using the bus, but this would not be a significant risk and can be mitigated through safety in design principles.
Economy:	Moderate benefit	Moderate	By achieving a higher uptake of public transport use the option will save private vehicle transport costs and help to relieve congestion on the road network. This in turn may allow investment in additional road network capacity to be delayed or postponed.
Environmental and social:	Moderate benefit	Moderate	The option will increase PT use and thereby reduce private vehicle kilometres travelled and associated air quality and climate impacts. There are social benefits associated with higher PT uptake, inducing more activity around transportation nodes for example and increased physical activity, improving social wellbeing.

Alternative:	Growth Enabler		
Estimated total public sector funding requirement:		Lower	Upper
	Total capital investment over 10 years ($m):	$12.5M	$13.5M
	Net property cost ($m):	n/a	n/a
	Opex ($m/40yr):	$15.5M	$16M
	Maintenance ($m/40yr):	Not assessed at this stage	Not assessed at this stage
	Present value of cost to govt. (40 years $m):	$235M	$245M
Estimated annual passenger trips (after 10 yrs)		2.7M	2.9M
Estimated BCR range:		0.8	1.2
Timing of need:	*Optimal programme:*	10 Years	***Likely:*** 10 Years

Investment objectives	
Objective:	**Performance against investment objective:**
Achieve a bus passenger mode share of 10% by 2026.	The option is expected to achieve 2.75M bus trips per year which will not equate to a 10% mode share. The option achieves lower patronage uptake than the other two options which reflects the lower passenger catchments in the growth areas.
Increase the fare box recovery ratio to 45% by 2026.	The option is expected to achieve a fare box recovery of approximately 39%.
Reduce bus journey times between key destinations by 20% by 2026.	Proposed bus priority on Cameron Road will improve the journey time for bus travel especially between Greerton, CBD, Mt Maunganui and Bayfair. Lower frequencies in this option mean the option is less likely to achieve this objective than the HPP or BP option.
95% of bus services will operate within five minutes of schedule during the AM peak.	Bus priority measures along Cameron Road should help to address key delays on the network and improve the punctuality of buses.
Implement at least 50% of the projects identified in the PBC by 2021 and 100% by 2026.	Implementation will depend on funding.
Commit 100% of the necessary funding as defined in the PBC by 2026.	The option has the highest capital and operational costs due to the need to provide higher levels of service to locations further from the CBD therefore there is more risk that the necessary funding will not be achieved.

Rationale for selection or rejection of alternative:	The option should achieve some of the investment objectives and there is no reason to discontinue the option, but the option does not perform as well as the HPP option against the investment objectives.

Implementability appraisal of option	
Feasibility:	Delivery of the option is expected to be feasible if the necessary funding is available. The option requires land for bus interchange including park and ride sites and the availability of land is the only apparent risk to the feasibility of the option.
Affordability:	The costs associated with this option are higher than other options and the benefit cost ratio (BCR) is lower, with the BC likely to sit below one funding of the option will be less certain.
Public/Stakeholders:	The lead stakeholder group was involved in development of the option. Public consultation will be undertaken in 2017.

Multi-criteria assessment of option			
Criterion	**Scale of impact**	**Significance of impact**	**Supporting information**
Safety:	Minor benefit	Minor	By achieving mode shift the option will reduce private car use and in doing so reduce the risk of crashes. There may be increased personal safety risk with more people using the bus, but this would not be a significant risk and can be mitigated through safety in design principles.
Economy:	Moderate benefit	Moderate	By achieving a higher uptake of public transport use the option will save private vehicle transportation costs and help to relieve congestion on the road network. This in turn may allow investment in additional road network capacity to be delayed.
Environmental and social:	Moderate benefit	Moderate	The option will increase PT use and thereby reduce private vehicle kilometres travelled and associated air quality and climate impacts. There are social benefits associated with higher PT uptake, inducing more activity around transportation nodes for example and increased physical activity, improving social wellbeing.

Alternative:	Balanced Plus		
Estimated total public sector funding requirement:		Lower	Upper
	Total capital investment over 10 years ($m):	$11.5M	$12.5M
	Net property cost ($m):	n/a	n/a
	Opex ($m/40yr):	$15M	$15.5M
	Maintenance ($m/40yr):	Not assessed at this stage	Not assessed at this stage
	Present value of cost to govt. (40 years $m):	$225M	$235M
Estimated annual passenger trips (after 10 yrs)		2.9M	3.1M
Estimated BCR range:		0.9	1.3
Timing of need:	*Optimal programme:*	10 years	*Likely:* 10 years

Investment objectives	
Objective:	**Performance against investment objective:**
Achieve a bus passenger mode share of 10% by 2026.	The option is expected to achieve approximately 3M bus trips per year which should result in a bus mode share of approximately 8%. Therefore, additional measures e.g. marketing and promotion, will be required in addition to the identified programme actions to encourage bus use and achieve the desired target.
Increase the fare box recovery ratio to 45% by 2026.	This option is currently expected to achieve a fare box recovery of 45%.
Reduce bus journey times between key destinations by 20% by 2026.	This option should improve the bus journey time through bus priority on Cameron Road (although the length of this is shorter in this option than other options) and improved frequency (although again this option has lower average frequencies than the HPP option.
95% of bus services will operate within five minutes of schedule during the AM peak.	Bus priority measures along Cameron Road should help to address key delays on the network and improve the punctuality of buses although this option proposes less bus priority than other options.
Implement at least 50% of the projects identified in the PBC by 2021 and 100% by 2026.	Implementation will depend on funding. Implementability is discussed in the following section.
Commit 100% of the necessary funding as defined in the PBC by 2026.	This option has higher costs than the HPP option but lower than GE. Funding is therefore more likely to be achieved than the GE option, but may be less likely than the HPP option.

Rationale for selection or rejection of alternative:	The option performs reasonably well against the investment objectives with a reasonable likelihood of achieving the desired mode split and fare box recovery. There is no reason to discount the option.

Implementability appraisal of option	
Feasibility:	Delivery of the option is expected to be feasible if the necessary funding is available. The option requires land for bus interchange including park and ride sites and the availability of land is the only apparent risk to the feasibility of the option.
Affordability:	The costs associated with this option are higher than the HPP option and the benefit cost ratio (BCR) is lower, with the BCR likely to sit below one funding of the option will be less certain.
Public/Stakeholders:	The lead stakeholder group was involved in development of the option. Further stakeholder engagement will take place as the ABC is developed. Public consultation will be undertaken in 2017.

Multi-criteria assessment of option			
Criterion	**Scale of impact**	**Significance of impact**	**Supporting information**
Safety:	Minor benefit	Minor	By achieving mode shift the option will reduce private car use and in doing so reduce the risk of crashes. There may be increased personal safety risk with more people using the bus, but this would not be a significant risk and can be mitigated.
Economy:	Moderate benefit	Moderate	By achieving a higher uptake of public transport use the option will save private vehicle transport costs and help to relieve congestion on the road network. This in turn may allow investment in additional road network capacity to be delayed or avoided.
Environmental and social:	Moderate benefit	Moderate	The option will increase PT use and thereby reduce private vehicle kilometres travelled and associated air quality and climate impacts. There are social benefits associated with higher PT uptake, inducing more activity around transportation nodes for example and increased physical activity, improving social wellbeing.

Appendix G: Indicative Economic Assessment

High Performance Plus - Indicative Benefit Cost Analysis

Operating Costs - Future

			WEEKDAY								WEEKENDS AND PUBLIC HOLIDAYS										
Urban								Cost of in hour						total dist	Cost of km	Cost of	Cost of in hour	Cost per			
Route #	Length (km)	# of buses	Operating hours	# of trips per day	total dist travelled	Cost of km travelled	Cost of vehicles	service	Cost per weekday	Annual weekday cost	# of buses	Operating hours	# of trips per day	travelled	travelled	vehicles	service	Weekend day	Annual WE / PH cost	Total Annual Cost	Retain?
1	26.4	2	15	45	1188	$ 1,544.40	$ 272.00	$ 1,050.00	$ 2,866.40	**$ 716,600**	1	15	15	396	$ 514.80	$ 136.00	$ 525.00	$ 1,175.80	**$ 135,217**	**$ 851,817**	Y
2	25	2	15	45	1125	$ 1,462.50	$ 272.00	$ 1,050.00	$ 2,784.50	**$ 696,125**	1	15	15	375	$ 487.50	$ 136.00	$ 525.00	$ 1,148.50	**$ 132,078**	**$ 828,203**	Y
30	22	3	15	45	990	$ 1,287.00	$ 408.00	$ 1,575.00	$ 3,270.00	**$ 817,500**	1	15	15	330	$ 429.00	$ 136.00	$ 525.00	$ 1,090.00	**$ 125,350**	**$ 942,850**	Y
33	46	4	15	30	1380	$ 1,794.00	$ 544.00	$ 2,100.00	$ 4,438.00	**$ 1,109,500**	2	15	15	690	$ 897.00	$ 272.00	$ 1,050.00	$ 2,219.00	**$ 255,185**	**$ 1,364,685**	Y
36	0	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ -**	N
40	16.8	2	15	45	756	$ 982.80	$ 272.00	$ 1,050.00	$ 2,304.80	**$ 576,200**	1	15	15	252	$ 327.60	$ 136.00	$ 525.00	$ 988.60	**$ 113,689**	**$ 689,889**	Y
52	0	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ -**	N
55	36	2	15	30	1080	$ 1,404.00	$ 272.00	$ 1,050.00	$ 2,726.00	**$ 681,500**	2	15	15	540	$ 702.00	$ 272.00	$ 1,050.00	$ 2,024.00	**$ 232,760**	**$ 914,260**	Y
59	27.6	2	15	45	1242	$ 1,614.60	$ 272.00	$ 1,050.00	$ 2,936.60	**$ 734,150**	1	15	15	414	$ 538.20	$ 136.00	$ 525.00	$ 1,199.20	**$ 137,908**	**$ 872,058**	Y
60	16.1	2	15	45	724.5	$ 941.85	$ 272.00	$ 1,050.00	$ 2,263.85	**$ 565,963**	1	15	15	241.5	$ 313.95	$ 136.00	$ 525.00	$ 974.95	**$ 112,119**	**$ 678,082**	Y
62	17.5	2	15	45	787.5	$ 1,023.75	$ 272.00	$ 1,050.00	$ 2,345.75	**$ 586,438**	1	15	15	262.5	$ 341.25	$ 136.00	$ 525.00	$ 1,002.25	**$ 115,259**	**$ 701,696**	Y
70	14.7	2	15	45	661.5	$ 859.95	$ 272.00	$ 1,050.00	$ 2,181.95	**$ 545,488**	1	15	15	220.5	$ 286.65	$ 136.00	$ 525.00	$ 947.65	**$ 108,980**	**$ 654,467**	Y
78	20	1	2	2	40	$ 52.00	$ 136.00	$ 70.00	$ 258.00	**$ 64,500**	1	15	15	300	$ 390.00	$ 136.00	$ 525.00	$ 1,051.00	**$ 120,865**	**$ 185,365**	Y
79	24	1	2	2	48	$ 62.40	$ 136.00	$ 70.00	$ 268.40	**$ 67,100**	1	15	15	360	$ 468.00	$ 136.00	$ 525.00	$ 1,129.00	**$ 129,835**	**$ 196,935**	Y
Regional																					
80	74	2	3	4	296	$ 384.80	$ 272.00	$ 210.00	$ 866.80	**$ 216,700**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ 216,700**	Y
81	45.6	1	4	8	364.8	$ 474.24	$ 136.00	$ 140.00	$ 750.24	**$ 187,560**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ 187,560**	Y
82	80	1	4	2	160	$ 208.00	$ 136.00	$ 140.00	$ 484.00	**$ 121,000**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ 121,000**	Y
221	54	2	4	4	216	$ 280.80	$ 272.00	$ 280.00	$ 832.80	**$ 208,200**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ 208,200**	Y
222	58	1	4	3	174	$ 226.20	$ 136.00	$ 140.00	$ 502.20	**$ 125,550**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ 125,550**	Y
New Routes																					
City to surf	24	3	15	45	1080	$ 1,404.00	$ 408.00	$ 1,575.00	$ 3,387.00	**$ 846,750**	1	15	15	360	$ 468.00	$ 136.00	$ 525.00	$ 1,129.00	**$ 129,835**	**$ 976,585**	Y
Cross town connector	35	2	15	30	1050	$ 1,365.00	$ 272.00	$ 1,050.00	$ 2,687.00	**$ 671,750**	1	15	15	525	$ 682.50	$ 136.00	$ 525.00	$ 1,343.50	**$ 154,503**	**$ 826,253**	Y
Tauriko express	18	1	3	6	108	$ 140.40	$ 136.00	$ 105.00	$ 381.40	**$ 95,350**	1	15	15	270	$ 351.00	$ 136.00	$ 525.00	$ 1,012.00	**$ 116,380**	**$ 211,730**	Y
Pap east express	47	2	3	6	282	$ 366.60	$ 272.00	$ 210.00	$ 848.60	**$ 212,150**	1	15	15	705	$ 916.50	$ 136.00	$ 525.00	$ 1,577.50	**$ 181,413**	**$ 393,563**	Y
Western Connection	28	2	15	30	840	$ 1,092.00	$ 272.00	$ 1,050.00	$ 2,414.00	**$ 603,500**	2	15	15	420	$ 546.00	$ 272.00	$ 1,050.00	$ 1,868.00	**$ 214,820**	**$ 818,320**	Y
Greerton Express	0	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ -**	N
40A (Welcome Bay)	16.8	2	15	45	756	$ 982.80	$ 272.00	$ 1,050.00	$ 2,304.80	**$ 576,200**	1	15	15	252	$ 327.60	$ 136.00	$ 525.00	$ 988.60	**$ 113,689**	**$ 689,889**	Y
Wairakei express	0	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ -**	N
Te Puke, Katikati loop services	0	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ -**	N
City to surf to hosp	0	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ -**	N
Wairakei express	0	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ -**	N
Schoolhopper																					

Schoolhopper	$ 1,914,972.36
Sub Total	$ 13,655,656
Efficiency	$ 819,339
Total Op Cost	**$ 14,751,289**

Infrastructure Costs

	QTY	Cost	Year	NPV	
Bus priority	12350	$ 5,175,000	2019	**$ 4,345,000**	
Interchange	Type	Cost			Routes
Bayfair	Expansion	$ 250,000	2022	**$ 176,200**	City to surf,Cross town connector,Pap east express,2,30,33,36
CBD	Expansion		2025	**$ -**	City to surf,Pap east express,Tauriko express,Greerton Express,1,2,33,36,40,55,59,60,62,80,70,81,82,221,222
Hairini	Minor	$ 350,000	2020	**$ 277,200**	Cross town connector,40,36
Greerton	Minor	$ 350,000	2020	**$ 277,200**	Greerton Express,Cross town connector,1,2,55,59,52
Polytech	Minor	$ 250,000	2018	**$ 222,500**	Cross town connector,2,55
Tauriko	Minor	$ 250,000	2018	**$ 222,500**	Cross town connector,Tauriko express,Western Connection,52
Park and ride					
Omokoroa	100	$ 450,000	2020	**$ 356,400**	Spaces * cost + minor interchange
Access to stops	QTY				
Improve access to stops	10	$ 1,500,000	2017	**$ 1,415,100**	
Investigation Design Mgnt Planning		$ 1,300,000	2017	**$ 1,226,400**	
		$ 9,875,000	**Total**	**$ 8,518,500**	**NPV**

Total Costs

Annual Operating Costs	$ 14,751,289	
NPV Operating Costs (40 yrs)	$ 214,216,432	NPV
New Infrastructure Costs (10yrs)	$ 8,518,500	NPV
Total Option Costs (40 yrs)	**$ 222,734,932**	NPV

Passenger Growth

	Route	Existing	Network Changes	Frequency	Bus Priority	Interchange	Promotional Benefits	Parking Sensitivity	Park and Ride	Change	Forecast Patronage	Fare	Retain Factor	Increase due to priority
	1	270764	-50%	13%	29%	4%	2%	1%	0%	99%	268271	$ 1.50	1	79152
	2	328004	-50%	13%	31%	8%	2%	1%	0%	105%	343473	$ 1.50	1	101255
	30	97885	-10%	27%	0%	2%	2%	1%	0%	121%	118617	$ 2.00	1	0
	33	236100	-10%	0%	2%	4%	2%	1%	0%	99%	233255	$ 2.00	1	5387
	36	173250	-100%	40%	0%	0%	2%	1%	0%	43%	0	$ 2.00	0	0
	40	134624	-50%	13%	8%	4%	2%	1%	0%	78%	104544	$ 2.00	1	10514
	52	5999	-100%	40%	0%	0%	2%	1%	0%	43%	0	$ 2.00	0	0
	55	154514	10%	0%	0%	6%	2%	1%	0%	119%	183119	$ 2.00	1	0
	59	51137	10%	27%	7%	4%	2%	1%	0%	150%	76623	$ 2.00	1	3405
	60	127552	0%	13%	0%	2%	2%	1%	0%	118%	150315	$ 2.00	1	0
	62	98661	0%	13%	0%	2%	2%	1%	0%	118%	116268	$ 2.00	1	0
	70	147177	0%	13%	0%	2%	2%	1%	0%	118%	173443	$ 2.00	1	0
	78	190	0%	0%	5%	0%	2%	1%	0%	108%	205	$ 2.00	1	10
	79	635	0%	0%	4%	0%	2%	1%	0%	107%	678	$ 2.00	1	28
	80	6751	0%	0%	0%	2%	2%	1%	0%	105%	7056	$ 2.50	1	0
	81	6751	0%	0%	0%	0%	0%	1%	132%	230%	28036	$ 5.00	1	0
	82	6751	0%	0%	0%	2%	2%	1%	0%	105%	7056	$ 2.50	1	0
	221	6751	0%	0%	0%	2%	2%	1%	0%	105%	7056	$ 2.50	1	0
	222	6751	0%	0%	0%	2%	2%	1%	0%	105%	7056	$ 2.50	1	0
	Schoolhopper	576870									576870	$ 1.17	1	
	New Routes									**Growth (3%pa)**	73,114			
Y	City to surf	0								100%	179630	$ 1.50		
Y	Cross town connector	0								100%	89815	$ 2.00		
Y	Tauriko express	0								100%	60152	$ 2.50		
Y	Pap east express	0								100%	152171	$ 5.00		
Y	Western Connection	0								100%	112017	$ 2.00		
N	Greerton Express	0								0%	0	$ 2.00		
Y	40A (Welcome Bay)	0								100%	104544	$ 2.00		
N	Wairakei express	0								0%		$ 5.00		
N	Te Puke, Katikati loop services	0								0%		$ 2.00		
N	City to surf to hosp	0								0%		$ 2.00		

			Assumptions	
30%	of Routes 1 & 2			
50%	Estimated of C2S			
100%	of Route 52	20%	Route 1	
30%	All Papamoa Routes			
30%	All Western Routes			
0%	Route not in use			
100%	Route 40			
0%	Route not in use			
0%	Route not in use			
0%	Route not in use			

Total existing trips	**2,437,121**	Total future trips	**3,173,384**

Benefits

Revenue	Passengers	Revenue	NPV
Existing patronage	2,437,121	$ 3,561,847	$ 51,724,711
Estimated patronage	3,173,384	$ 5,908,899	$ 97,547,626
Increase in passengers	736,263	$ 2,347,052	$ 38,746,530

Bus priority				
Travel time saving	Time	Passengers		
Maunganui Road to Bayfair IB	1.5	1177684		
Maunganui Road to Bayfair OB	1.5	845882		
Marina IB	0.6	1177684		
Dive Crescent	0.9	1177684		
Elizabeth St to 15th Ave	5.1	465341		
Elizabeth St to Greerton	17.1	611745		
Bethlehem Shoulder Running IB	0.0	0		
Bethlehem Shoulder Running OB	0.0	0		
Total		291280	Passenger Hours	
Cost Saving		$1,272,893	Travel Time Savings (2002$)	
		$1,832,966	Annual Travel Time Savings	Undiscounted
PT user benefit				
Total Passengers	3173384	$5,864,415	(2008$)	
		$ 6,274,924		
Reliability improvement benefit		$ 3,434,359.06		
		$190,546,333	NPV	

Total Benefits	**$ 288,093,960**			
	Existing	Forecast	Incremental	
Operating Costs	$ 183,010,418	$ 214,216,432	$ 31,206,014	
New Infrastructure	$ -	$ 8,518,500	$ 8,518,500	
Total	$ 183,010,418	$ 222,734,932	$ 39,724,514	
Passenger Revenue	$ 51,724,711	$ 97,547,626	$ 38,746,530	
Benefits	$ 63,527,880	$ 190,546,333	$ 127,018,454	
Total	$ 115,252,591	$ 288,093,960	$ 165,764,984	
Indicative Benefit Cost Ratio	**0.630**	**1.293**	**4.173**	
Estimated fare recovery	28%	46%		

Growth Enabler - Indicative Benefit Cost Analysis

Operating Costs - Future

			WEEKDAY								WEEKENDS AND PUBLIC HOLIDAYS										
Urban	Route #	Length (km)	# of buses	Operating hours	# of trips per day	total dist travelled	Cost of km travelled	Cost of vehicles	Cost of in hour service	Cost per weekday	Annual weekday cost	# of buses	Operating hours	# of trips per day	total dist travelled	Cost of km travelled	Cost of vehicles	Cost of in hour service	Cost per Weekend day	Annual WE PH cost	**Total Annual Cost**	**Retain?**
	1	26.4	2	15	30	792	$ 1,029.60	$ 272.00	$ 1,050.00	$ 2,351.60	**$ 587,900**	1	12	12	316.8	$ 411.84	$ 136.00	$ 420.00	$ 967.84	**$ 111,301.60**	**$ 699,201.60**	Y
	2	25	2	15	30	750	$ 975.00	$ 272.00	$ 1,050.00	$ 2,297.00	**$ 574,250**	1	12	12	300	$ 390.00	$ 136.00	$ 420.00	$ 946.00	**$ 108,790.00**	**$ 683,040.00**	Y
	30	22	2	15	30	660	$ 858.00	$ 272.00	$ 1,050.00	$ 2,180.00	**$ 545,000**	1	12	12	264	$ 343.20	$ 136.00	$ 420.00	$ 899.20	**$ 103,408.00**	**$ 648,408.00**	Y
	33	46	4	15	30	1380	$ 1,794.00	$ 544.00	$ 2,100.00	$ 4,438.00	**$ 1,109,500**	2	12	12	552	$ 717.60	$ 272.00	$ 840.00	$ 1,829.60	**$ 210,404.00**	**$ 1,319,904.00**	Y
	36	0	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ -**	N
	40	16.8	2	15	30	504	$ 655.20	$ 272.00	$ 1,050.00	$ 1,977.20	**$ 494,300**	1	12	12	201.6	$ 262.08	$ 136.00	$ 420.00	$ 818.08	**$ 94,079.20**	**$ 588,379.20**	Y
	52	0	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ -**	N
	55	36	2	15	30	1080	$ 1,404.00	$ 272.00	$ 1,050.00	$ 2,726.00	**$ 681,500**	2	12	12	432	$ 561.60	$ 272.00	$ 840.00	$ 1,673.60	**$ 192,464.00**	**$ 873,964.00**	Y
	59	27.6	2	15	30	828	$ 1,076.40	$ 272.00	$ 1,050.00	$ 2,398.40	**$ 599,600**	1	12	12	331.2	$ 430.56	$ 136.00	$ 420.00	$ 986.56	**$ 113,454.40**	**$ 713,054.40**	Y
	60	16.1	2	15	30	483	$ 627.90	$ 272.00	$ 1,050.00	$ 1,949.90	**$ 487,475**	1	12	12	193.2	$ 251.16	$ 136.00	$ 420.00	$ 807.16	**$ 92,823.40**	**$ 580,298.40**	Y
	62	17.5	2	15	30	525	$ 682.50	$ 272.00	$ 1,050.00	$ 2,004.50	**$ 501,125**	1	12	12	210	$ 273.00	$ 136.00	$ 420.00	$ 829.00	**$ 95,335.00**	**$ 596,460.00**	Y
	70	14.7	2	15	30	441	$ 573.30	$ 272.00	$ 1,050.00	$ 1,895.30	**$ 473,825**	1	12	12	176.4	$ 229.32	$ 136.00	$ 420.00	$ 785.32	**$ 90,311.80**	**$ 564,136.80**	Y
	78	20	1	2	2	40	$ 52.00	$ 136.00	$ 70.00	$ 258.00	**$ 64,500**	1	12	12	240	$ 312.00	$ 136.00	$ 420.00	$ 868.00	**$ 99,820.00**	**$ 164,320.00**	Y
	79	24	1	2	2	48	$ 62.40	$ 136.00	$ 70.00	$ 268.40	**$ 67,100**	1	12	12	288	$ 374.40	$ 136.00	$ 420.00	$ 930.40	**$ 106,996.00**	**$ 174,096.00**	Y
Regional																						
	80	74	2	15	22.5	1665	$ 2,164.50	$ 272.00	$ 1,050.00	$ 3,486.50	**$ 871,625**	1	12	12	888	$ 1,154.40	$ 136.00	$ 420.00	$ 1,710.40	**$ 196,696.00**	**$ 1,068,321.00**	Y
	81	57	2	15	22.5	1282.5	$ 1,667.25	$ 272.00	$ 1,050.00	$ 2,989.25	**$ 747,313**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ 747,312.50**	Y
	82	0	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ -**	N
	221	54	2	15	22.5	1215	$ 1,579.50	$ 272.00	$ 1,050.00	$ 2,901.50	**$ 725,375**	1	12	12	648	$ 842.40	$ 136.00	$ 420.00	$ 1,398.40	**$ 160,816.00**	**$ 886,191.00**	Y
	222	0	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ -**	N
New Routes																						
	City to surf	24	2	15	30	720	$ 936.00	$ 272.00	$ 1,050.00	$ 2,258.00	**$ 564,500**	1	12	12	288	$ 374.40	$ 136.00	$ 420.00	$ 930.40	**$ 106,996.00**	**$ 671,496.00**	Y
	Cross town connector	35	2	15	30	1050	$ 1,365.00	$ 272.00	$ 1,050.00	$ 2,687.00	**$ 671,750**	1	12	12	420	$ 546.00	$ 136.00	$ 420.00	$ 1,102.00	**$ 126,730.00**	**$ 798,480.00**	Y
	Tauriko express	18	1	15	22.5	405	$ 526.50	$ 136.00	$ 525.00	$ 1,187.50	**$ 296,875**	1	12	12	216	$ 280.80	$ 136.00	$ 420.00	$ 836.80	**$ 96,232.00**	**$ 393,107.00**	Y
	Pap east express	0	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ -**	N
	Western Connection	0	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ -**	N
	Greerton Express	12	1	15	30	360	$ 468.00	$ 136.00	$ 525.00	$ 1,129.00	**$ 282,250**	1	12	12	144	$ 187.20	$ 136.00	$ 420.00	$ 743.20	**$ 85,468.00**	**$ 367,718.00**	Y
	40A (Welcome Bay)	16.8	2	15	30	504	$ 655.20	$ 272.00	$ 1,050.00	$ 1,977.20	**$ 494,300**	1	12	12	201.6	$ 262.08	$ 136.00	$ 420.00	$ 818.08	**$ 94,079.20**	**$ 588,379.20**	Y
	Wairakei express	44	2	15	22.5	990	$ 1,287.00	$ 272.00	$ 1,050.00	$ 2,609.00	**$ 652,250**	1	12	12	528	$ 686.40	$ 136.00	$ 420.00	$ 1,242.40	**$ 142,876.00**	**$ 795,126.00**	Y
	Te Puke, Katikati loop services	40	2	15	30	1200	$ 1,560.00	$ 272.00	$ 1,050.00	$ 2,882.00	**$ 720,500**	2	12	12	480	$ 624.00	$ 272.00	$ 840.00	$ 1,736.00	**$ 199,640.00**	**$ 920,140.00**	Y
	City to surf to hosp	0	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ -**	N
	Schoolhopper																			Schoolhopper	$ 1,914,972.36	
																				Sub total	$ 14,841,533	
																				Efficiency	$ 890,492	
																				Total Op Cost	**$ 15,866,013.47**	

Infrastructure Costs

	QTY	Cost	Year	NPV	
Bus priority	21350	9,675,000	2020	**$ 7,663,500**	
Interchange	Type	Cost			Routes
Bayfair	Expansion	125000	2022	**$ 88,100**	City to surf,Cross town connector,Pap east express,,2,30,33,36
CBD	Expansion	125000	2022	**$ 88,100**	City to surf,Pap east express,Tauriko express,Greerton Express,1,2,33,40,55,59,60,62,80,70,81,82,221,222
Hairini	Minor	250000	2020	**$ 198,000**	Cross town connector,40
Greerton	Minor	250000	2020	**$ 198,000**	Greerton Express,Cross town connector,1,2,55,59
Polytech	Minor	250000	2020	**$ 198,000**	Cross town connector,2,55
Tauriko	Minor	100000	2020	**$ 79,200**	Cross town connector,Tauriko express,Western Connection
Park and ride					
Katikati / Omokoroa P&R	100	700000	2020	**$ 554,500**	Spaces * cost + minor interchange
Papamoa Growth Area P&R	300	1600000	2020	**$ 1,267,300**	Spaces * cost + minor interchange
Access to stops	0	0	2021	**$ -**	
Investigation Design Mgnt Planning		$ 1,300,000	2017	**$ 1,226,400**	
		$ 14,375,000 Total		**$ 11,561,100.00** NPV	

Total Costs

Annual Operating Costs	$ 15,866,013	
NPV Operating Costs	$ 230,404,329.34	NPV
New Infrastructure Costs	$ 11,561,100	NPV
Total Option Costs	**$ 241,965,429**	NPV

Passenger Growth

	Route	Existing	Network Changes	Frequency	Bus Priority	Interchange	Promotional Benefits	Parking Sensitivity	Park and Ride	Change	Forecast Patronage	Fare	Retain Factor	Increase due to priority
	1	270764	**-50%**	0%	6%	4%	2%	0.51%		62%	168093	$ 1.50	1	15077
	2	328004	**-50%**	0%	6%	8%	2%	0.51%		66%	217771	$ 1.50	1	19287
	30	97885	**-10%**	20%	0%	2%	2%	0.51%		115%	112091	$ 2.00	1	0
	33	236100	**-10%**	0%	2%	4%	2%	0.51%		99%	233255	$ 2.00	1	5387
	36	173250	**-100%**	40%	0%	2%	2%	0.51%		45%	0	$ 2.00	0	0
	40	134624	**-50%**	0%	8%	4%	2%	0.51%		64%	86594	$ 2.00	1	10514
	52	5999	**-100%**	40%	0%	0%	2%	0.51%		43%	0	$ 2.00	0	0
	55	154514	**10%**	0%	0%	6%	2%	0.51%		119%	183119	$ 2.00	1	0
	59	51137	**10%**	20%	7%	4%	2%	0.51%		143%	73214	$ 2.00	1	3405
	60	127552	**0%**	0%	0%	2%	2%	0.51%		105%	133309	$ 2.00	1	0
	62	98661	**0%**	0%	0%	2%	2%	0.51%		105%	103113	$ 2.00	1	0
	70	147177	**0%**	0%	0%	2%	2%	0.51%		105%	153819	$ 2.00	1	0
	78	190	**0%**	0%	5%	0%	2%	0.51%		108%	205	$ 2.00	1	10
	79	635	**0%**	0%	4%	0%	2%	0.51%		107%	678	$ 2.00	1	28
	80	6751	**0%**	0%	0%	2%	2%	0.51%	130%	234%	15806	$ 5.00	1	0
	81	6751	**0%**	0%	0%	2%	2%	0.51%	130%	234%	15806	$ 5.00	1	0
	82	6751	**0%**	0%	0%	2%	2%	0.51%		105%	0	$ 2.50	0	0
	221	6751	**0%**	0%	0%	2%	2%	0.51%		105%	7056	$ 5.00	1	0
	222	6751	**0%**	0%	0%	2%	2%	0.51%		105%	0	$ 2.50	0	0
	Schoolhopper	576870									576870	$ 1.17		
	New Routes									**Growth (3%pa)**	73,114			
Y	City to surf	0								100%	179630	$ 1.50		
Y	Cross town connector	0								100%	89815	$ 2.00		
Y	Tauriko express	0								100%	114304	$ 2.50		
N	Pap east express	0								0%	0	$ 2.00		
N	Western Connection	0								0%	0	$ 2.00		
Y	Greerton Express	0								100%	84213	$ 2.00		
Y	40A (Welcome Bay)	0								100%	86594	$ 2.00		
Y	Wairakei express	0								100%	152171	$ 5.00		
Y	Te Puke, Katikati loop services	0								100%	3376	$ 1.50		
N	City to surf to hosp	0								0%	0	$ 1.50		
	Total existing trips	**2,437,121**								Total future trips	**2,864,017**			

	Assumptions		
30%	of Routes 1 & 2		
50%	Estimated of C2S		
100%	of Route 52	40%	Route 1
0%	Route not in use		
0%	Route not in use		
10%	Route 1	100%	all of route 52 and 59
100%	Route 40		
30%	All Papamoa Routes		includes PNR Demand
50%	Regional Routes		
0%	Route not in use		

Benefits

Revenue	Passengers	Revenue	NPV	
Existing patronage	2437121	$ 3,561,847	$ 51,724,711.48	
Estimated patronage	2864017	$ 5,446,276	$ 89,910,372.24	
Increase in Passengers	426896	$ 1,884,429	$ 38,185,661	
	Bus priority			
Travel time saving	Time	Passengers		
Maunganui Road to Bayfair IB	1.5	951804		
Maunganui Road to Bayfair OB	1.5	772173		
Marina IB	0.6	951804		
Dive Crescent	0.9	951804		
Elizabeth St to 15th Ave	5.1	426032		
Elizabeth St to Greerton	17.1	470077		
Bethlehem Shoulder Running IB	3.2	199706		
Bethlehem Shoulder Running OB	3.2	199706		
Total		256059	Passenger Hours	
Cost Saving		$1,076,729	Travel Time Savings (2002$)	
		$1,550,489.37	Annual Travel Time Savings	Undiscounted
PT user benefit				
Total Passengers	2864017	$4,989,117		
		$5,338,354.99		
Reliability improvement benefit		$ 2,253,798.13		
		$150,932,200	NPV Travel Time Savings	

Total Benefits **$ 240,842,572**

	Existing	Forecast	Incremental
Operating Costs	$ 183,010,418	$ 230,404,329	$ 47,393,912
New Infrastructure		$ 11,561,100	$ 11,561,100
Total	$ 183,010,418	$ 241,965,429	$ 58,955,012
Passenger Revenue	$ 51,724,711	$ 89,910,372	$ 38,185,661
Benefits	$ 63,527,880	$ 150,932,200	$ 87,404,320
Total	$ 115,252,591	$ 240,842,572	$ 125,589,980

Indicative Benefit Cost Ratio **0.630** **0.995** **2.130**

Estimated fare recovery 28% 39%

Balanced Plus - Indicative Benefit Cost Analysis

Operating Costs - Future

Urban

		WEEKDAY									WEEKENDS AND PUBLIC HOLIDAYS										
Route #	Length (km)	# of buses	Operating hours	# of trips per day	total dist travelled	Cost of km travelled	Cost of vehicles	Cost of in hour service	Cost per weekday	Annual weekday cost	# of buses	Operating hours	# of trips per day	total dist travelled	Cost of km travelled	Cost of vehicles	Cost of in hour service	Cost per Weekend day	Annual WE PH cost	**Total Annual Cost**	**Retain?**
1	26.4	2	15	45	1188	$ 1,544.40	$ 272.00	$ 1,050.00	$ 2,866.40	**$ 716,600**	1	12	12	316.8	$ 411.84	$ 136.00	$ 420.00	$ 967.84	**$ 111,301.60**	**$ 827,901.60**	Y
2	25	2	15	45	1125	$ 1,462.50	$ 272.00	$ 1,050.00	$ 2,784.50	**$ 696,125**	1	12	12	300	$ 390.00	$ 136.00	$ 420.00	$ 946.00	**$ 108,790.00**	**$ 804,915.00**	Y
30	22	2	15	30	660	$ 858.00	$ 272.00	$ 1,050.00	$ 2,180.00	**$ 545,000**	1	12	12	264	$ 343.20	$ 136.00	$ 420.00	$ 899.20	**$ 103,408.00**	**$ 648,408.00**	Y
33	46	4	15	30	1380	$ 1,794.00	$ 544.00	$ 2,100.00	$ 4,438.00	**$ 1,109,500**	2	12	12	552	$ 717.60	$ 272.00	$ 840.00	$ 1,829.60	**$ 210,404.00**	**$ 1,319,904.00**	Y
36	0	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ -**	N
40	16.8	2	15	30	504	$ 655.20	$ 272.00	$ 1,050.00	$ 1,977.20	**$ 494,300**	1	12	12	201.6	$ 262.08	$ 136.00	$ 420.00	$ 818.08	**$ 94,079.20**	**$ 588,379.20**	Y
52	0	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ -**	N
55	36	3	15	45	1620	$ 2,106.00	$ 408.00	$ 1,575.00	$ 4,089.00	**$ 1,022,250**	2	12	12	432	$ 561.60	$ 272.00	$ 840.00	$ 1,673.60	**$ 192,464.00**	**$ 1,214,714.00**	Y
59	27.6	2	15	45	1242	$ 1,614.60	$ 272.00	$ 1,050.00	$ 2,936.60	**$ 734,150**	1	12	12	331.2	$ 430.56	$ 136.00	$ 420.00	$ 986.56	**$ 113,454.40**	**$ 847,604.40**	Y
60	16.1	2	15	45	724.5	$ 941.85	$ 272.00	$ 1,050.00	$ 2,263.85	**$ 565,963**	1	12	12	193.2	$ 251.16	$ 136.00	$ 420.00	$ 807.16	**$ 92,823.40**	**$ 658,785.90**	Y
62	17.5	2	15	45	787.5	$ 1,023.75	$ 272.00	$ 1,050.00	$ 2,345.75	**$ 586,438**	1	12	12	210	$ 273.00	$ 136.00	$ 420.00	$ 829.00	**$ 95,335.00**	**$ 681,772.50**	Y
70	14.7	2	15	45	661.5	$ 859.95	$ 272.00	$ 1,050.00	$ 2,181.95	**$ 545,488**	1	12	12	176.4	$ 229.32	$ 136.00	$ 420.00	$ 785.32	**$ 90,311.80**	**$ 635,799.30**	Y
78	20	1	2	2	40	$ 52.00	$ 136.00	$ 70.00	$ 258.00	**$ 64,500**	1	12	12	240	$ 312.00	$ 136.00	$ 420.00	$ 868.00	**$ 99,820.00**	**$ 164,320.00**	Y
79	24	1	2	2	48	$ 62.40	$ 136.00	$ 70.00	$ 268.40	**$ 67,100**	1	12	12	288	$ 374.40	$ 136.00	$ 420.00	$ 930.40	**$ 106,996.00**	**$ 174,096.00**	Y
Regional																					
80	74	3	4	8	592	$ 769.60	$ 408.00	$ 420.00	$ 1,597.60	**$ 399,400**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ 399,400.00**	Y
81	57	3	4	8	456	$ 592.80	$ 408.00	$ 420.00	$ 1,420.80	**$ 355,200**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ 355,200.00**	Y
82	80	2	8	8	640	$ 832.00	$ 272.00	$ 560.00	$ 1,664.00	**$ 416,000**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ 416,000.00**	Y
221	54	2	4	4	216	$ 280.80	$ 272.00	$ 280.00	$ 832.80	**$ 208,200**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ 208,200.00**	Y
222	58	2	8	8	464	$ 603.20	$ 272.00	$ 560.00	$ 1,435.20	**$ 358,800**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ 358,800.00**	Y
New Routes																					
City to surf	0	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ -**	N
Cross town connector	35	3	15	30	1050	$ 1,365.00	$ 408.00	$ 1,575.00	$ 3,348.00	**$ 837,000**	1	12	12	420	$ 546.00	$ 136.00	$ 420.00	$ 1,102.00	**$ 126,730.00**	**$ 963,730.00**	Y
Tauriko express	18	1	6	12	216	$ 280.80	$ 136.00	$ 210.00	$ 626.80	**$ 156,700**	1	12	12	216	$ 280.80	$ 136.00	$ 420.00	$ 836.80	**$ 96,232.00**	**$ 252,932.00**	Y
Pap east express	0	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ -**	N
Western Connection	28	2	15	30	840	$ 1,092.00	$ 272.00	$ 1,050.00	$ 2,414.00	**$ -**	2	0	0	0	$ -	$ 272.00	$ -	$ 272.00	**$ -**	**$ -**	N
Greerton Express	12	1	15	30	360	$ 468.00	$ 136.00	$ 525.00	$ 1,129.00	**$ 282,250**	1	12	12	144	$ 187.20	$ 136.00	$ 420.00	$ 743.20	**$ 85,468.00**	**$ 367,718.00**	Y
40A (Welcome Bay)	16.8	2	15	30	504	$ 655.20	$ 272.00	$ 1,050.00	$ 1,977.20	**$ 494,300**	1	12	12	201.6	$ 262.08	$ 136.00	$ 420.00	$ 818.08	**$ 94,079.20**	**$ 588,379.20**	Y
Wairakei express	44	2	6	12	528	$ 686.40	$ 272.00	$ 420.00	$ 1,378.40	**$ 344,600**	1	12	12	528	$ 686.40	$ 136.00	$ 420.00	$ 1,242.40	**$ 142,876.00**	**$ 487,476.00**	Y
Te Puke, Katikati loop services	0	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	0	0	0	0	$ -	$ -	$ -	$ -	**$ -**	**$ -**	N
City to surf to hosp	32	3	15	45	1440	$ 1,872.00	$ 408.00	$ 1,575.00	$ 3,855.00	**$ 963,750**	1	12	12	384	$ 499.20	$ 136.00	$ 420.00	$ 1,055.20	**$ 121,348.00**	**$ 1,085,098.00**	Y
Schoolhopper																					

Schoolhopper $ 1,914,972.36

Infrastructure Costs

	QTY	Cost	Year	NPV	
Bus priority	21350	$ 9,675,000	2020	**$ 7,663,500**	
Interchange	Type	Cost			Routes
Bayfair	Expansion	$ 125,000	2022	**$ 88,100**	City to surf,Cross town connector,Pap east express,2,30,33
CBD	Expansion	$ 125,000	2022	**$ 88,100**	City to surf,Pap east express,Tauriko express,Greerton Express,1,2,33,40,55,59,60,62,80,70,81,82,221,222
Hairini	Minor	$ 250,000	2020	**$ 198,000**	Cross town connector,40
Greerton	Minor	$ 250,000	2020	**$ 198,000**	Greerton Express,Cross town connector,1,2,55,59
Polytech	Minor	$ 250,000	2020	**$ 198,000**	Cross town connector,2,55
Tauriko	Minor	$ 100,000	2020	**$ 79,200**	Cross town connector,Tauriko express,Western Connection
Park and ride					
Katikati / Omokoroa P&R	100	$ 700,000	2020	**$ 554,500**	Spaces * cost + minor interchange
Access to stops	5	$ 750,000	2021	**$ 560,400**	
Investigation Design Mgnt Planning		$ 1,300,000	2017	**$ 1,226,400**	
		$ 13,525,000	Total	**$ 10,854,200**	

Sub total	$ 14,049,533
Efficiency	$ 842,972
Total Op Cost	**$ 15,121,533.47**

Total Costs

Annual Operating Costs	$ 15,121,533	
NPV Operating Costs	$ 219,593,080.79	NPV
New Infrastructure Costs	$ 10,854,200	NPV
Total Option Costs	**$ 230,447,281**	NPV

Passenger Growth

	Route	Existing	Network Changes	Frequency	Bus Priority	Interchange	Promotional Benefits	Parking Sensitivity	Park and Ride	Change	Forecast Patronage	Fare	Retain Factor	Increase due to priority
	1	270764	-50%	13%	29%	4%	2%	0%		99%	266882	$ 1.50	1	79152
	2	328004	-50%	13%	31%	8%	2%	0%		104%	341791	$ 1.50	1	101255
	30	97885	-10%	20%	0%	2%	2%	0%		114%	111589	$ 2.00	1	0
	33	236100	-10%	0%	2%	4%	2%	0%		98%	232044	$ 2.00	1	5387
	36	173250	-100%	40%	0%	0%	2%	0%		42%	0	$ 2.00	0	0
	40	134624	-50%	0%	8%	4%	2%	0%		64%	85903	$ 2.00	1	10514
	52	5999	-100%	40%	0%	0%	2%	0%		42%	0	$ 2.00	0	0
	55	154514	10%	13%	0%	6%	2%	0%		131%	202928	$ 2.00	1	0
	59	51137	10%	27%	7%	4%	2%	0%		149%	76361	$ 2.00	1	3405
	60	127552	0%	13%	0%	2%	2%	0%		117%	149661	$ 2.00	1	0
	62	98661	0%	13%	0%	2%	2%	0%		117%	115762	$ 2.00	1	0
	70	147177	0%	13%	0%	2%	2%	0%		117%	172688	$ 2.00	1	0
	78	190	0%	0%	5%	0%	2%	0%		107%	204	$ 2.00	1	10
	79	635	0%	0%	4%	0%	2%	0%		106%	675	$ 2.00	1	28
	80	6751	0%	0%	0%	2%	2%	0%	130%	234%	15771	$ 5.00	1	0
	81	6751	0%	0%	0%	2%	2%	0%	130%	234%	15771	$ 5.00	1	0
	82	6751	0%	0%	0%	2%	2%	0%		104%	7021	$ 2.50	1	0
	221	6751	0%	0%	0%	2%	2%	0%		104%	7021	$ 2.50	1	0
	222	6751	0%	0%	0%	2%	2%	0%		104%	7021	$ 2.50	1	0
	Schoolhopper	576870									576870	$ 1.17	1	
	New Routes									**Growth (3%pa)**	73,114			
N	City to surf	0								0%	0	$ 2.00		
Y	Cross town connector	0								100%	97486	$ 2.00		
Y	Tauriko express	0								100%	60152	$ 2.50		
N	Pap east express	0								0%	0	$ 2.50		
N	Western Connection	0								0%	0	$ 2.00		
Y	Greerton Express	0								100%	84213	$ 2.00		
Y	40A (Welcome Bay)	0								100%	85903	$ 2.00		
Y	Wairakei express	0								100%	152171	$ 5.00		
N	Te Puke, Katikati loop services	0								0%	0	$ 2.00		
Y	City to surf to hosp	0								100%	194972	$ 2.00		

				Assumptions		
				0%	Route not in use	
				50%	Estimated of C2S2H	
				100%	of Route 52	20% Route 1
				0%	Route not in use	
				0%	Route not in use	
				10%	Route 1	100% all of route 52 and 59
				100%	Route 40	
				30%	All Papamoa Routes	
				0%	Route not in use	
				30%	of Routes 1 & 2 &59	

Total existing trips **2,437,121** Total future trips **3,133,976**

Benefits

Revenue	Passengers	Revenue	NPV
Existing patronage	2437121	$ 3,561,847	$ 51,724,711.48
Estimated patronage	3133976	$ 5,928,373	$ 97,869,117.85
Increase in Passengers	696855	$ 2,366,526	$ 46,144,406.36

	Bus priority Time	Passengers	
Travel time saving			
Maunganui Road to Bayfair IB	1.5	993767	
Maunganui Road to Bayfair OB	1.5	993767	
Marina IB	0.6	993767	
Dive Crescent	0.9	993767	
Elizabeth St to 15th Ave	5.1	856841	
Elizabeth St to Greerton	0.0	0	
Bethlehem Shoulder Running IB	0.0	0	
Bethlehem Shoulder Running OB	0.0	0	
Total		145194	Passenger Hours
Cost Saving		$622,518	Travel Time Savings (20025)
		$896,425.52	Annual Travel Time Savings Undiscounted
PT user benefit			
Total Passengers	3133976	$5,625,487	
		$6,019,270.65	
Reliability improvement benefit		$ 1,609,855.81	
		$140,744,901	NPV Travel Time Savings

Total Benefits **$ 238,614,019**

	Existing	Forecast	Incremental
Operating Costs	$ 183,010,418	$ 219,593,081	$ 36,582,663
New Infrastructure		$ 10,854,200	$ 10,854,200
Total	$ 183,010,418	$ 230,447,281	$ 47,436,863
Passenger Revenue	$ 51,724,711	$ 97,869,118	$ 46,144,406
Network Efficiency Improvements	$ 63,527,880	$ 140,744,901	$ 77,217,021
Total	$ 115,252,591	$ 238,614,019	$ 123,361,428

Indicative Benefit Cost Ratio **0.630** **1.035** **2.601**

Estimated fare recovery 28% 45%