Tauriko Network Connections

Detailed Business Case

Final Report

June 2023

Volume 1

WAKA KOTAHI NZ TRANSPORT AGENCY

Te Kāwanatanga o Aotearoa New Zealand Government

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Document Approval

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Approved by	Waka Kotahi Board	17 August 2023

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List Of Acronyms

ACRONYM	DESCRIPTION
BOPRC	Bay of Plenty Regional Council
DBC	Detailed Business Case
DSI	Deaths and serious injuries
CVA	Cultural Values Assessment
FDS	Future Development Strategy
GoTO	Waka Kotahi Governance of Transport Outcomes Committee
GPS	Government Policy Statement on Land Transport
HUE	Household Unit Equivalent
IBC	Indicative Business Case
IO	Investment Objectives
LOS	Level of Service
MCA	Multi-Criteria Analysis
PBC	Programme Business Case
PT	Public Transport
PTNSP	Public Transport Network Service Plan
RPS	Regional Policy Statement
SH	State Highway
TAIP	Transport Agency's Investment Proposal
TBE	Tauriko Business Estate
TCC	Tauranga City Council
TCL	Tauranga Crossing Limited
TDM	Travel Demand Management
TNL	SH29 Takitimu Northern Link
TSP	Tauranga City Council Transport System Plan
TTSM	Tauranga Transport Strategic Model
UFTI	Urban Form and Transport Initiative
UGA	Urban Growth Area
VEPM	Vehicle Emissions Prediction Model
VKT	Vehicle Kilometres Travelled
WBOPDC	Western Bay of Plenty District Council

Executive Summary

Western Bay of Plenty faces growth challenges and opportunities.

- SH29 is a nationally significant freight route between Auckland-Waikato-Bay of Plenty. Freight demand is forecast to grow.
- The sub-region has grown significantly over the past 60 years and continues to be one of the fastest growth areas in New Zealand. This has put pressure on the sub-region's infrastructure and services, especially housing and transport.
- SmartGrowth Partners have approved the delivery of the Urban Form and Transport Initiative (UFTI) 'Connected Centres' programme; an integrated land use and transport programme for approximately 200,000 additional people, 95,000 new homes, and two million additional transport movements per day within the next 30 to 70+ years.
- As a result of SmartGrowth spatial planning, the Western Corridor has been identified for significant growth.

However, without appropriate integration into the transport system, planned land use development and growth in the Western Corridor is unlikely to proceed due to the scale of impacts on access, safety, and liveability.

The purpose of the Tauriko Network Connections Detailed Business Case (DBC) is to outline the need for investment in a long-term transport solution for the Tauriko Network, within the Western Corridor of Tauranga.

The DBC outlines:

- The Tauriko Network – a vision for integrated land use and multimodal transport development in the Western Corridor.
- The 7-year option iterative investigation process to determine a recommended way forward for investment with project partners and stakeholders.
- The recommended way forward with four Stages of investment over 30 years until 2050.
- The first stage of investment is proposed to be implemented in 2023/24 to 2026/27 and financed through NLTP funding.

The total project (non-staged) is estimated to be **$2.25B** (P50) in investment, yielding an expected benefit of **$2.44B** (Net Present Value), with an overall Benefit to Cost Ratio of 1.3.

This DBC [1] continued work from the Tauriko Network Programme Business Case (2017), a strategic commitment to invest in future transport needs in the Western Corridor of Tauranga.

The recommendation of this DBC is a result of collaborative efforts between Tauranga City Council, Western Bay of Plenty District Council, Bay of Plenty Regional Council, tangata whenua, Waka Kotahi New Zealand Transport Agency (Waka Kotahi), and stakeholders.

[1] Although referred to as a DBC, the project involved revisiting long and short list options, hence better aligns with the workstream of a Single Stage Business Case (SSBC).

Background

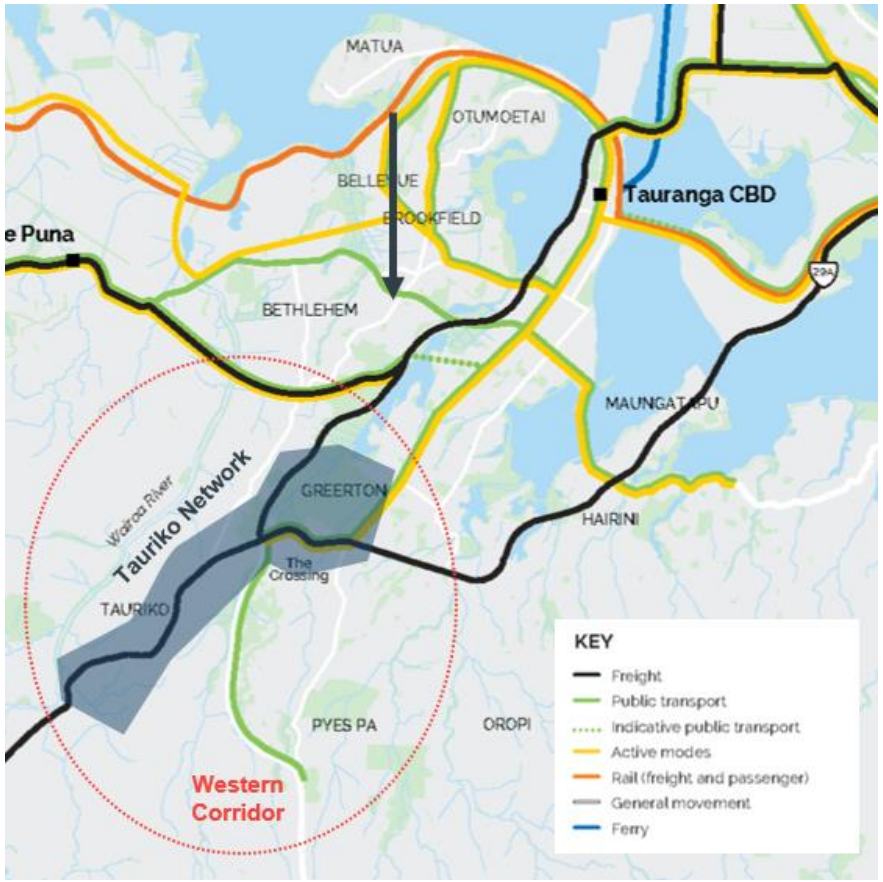
The Western Corridor is a significant future urban growth area in Tauranga, currently supported by State Highways (SH29, SH29A, and SH36), local road connections, public transport services, walking and cycling networks.

SH29 has a critical national freight journey function. However, forecasted urban, industrial, freight and inter-regional growth is likely to degrade this function.

- Over a third of New Zealand's exports go through Port of Tauranga. 40% of freight trips to Port of Tauranga use SH29 (UFTI, 2020).
- Freight movements are forecast to increase by 49-61% to Port of Tauranga and increase by 30-74% on SH29 in 2030 (Te Waka Waikato and Bay of Plenty Freight Action Plan, 2022).
- Existing high travel time variability from congestion and intersection delay particularly during weekday peak periods. However, journey reliability particularly for freight will degrade with greater demand and forecasted growth in the Western Corridor.

Residential, industrial and transport infrastructure growth will generate more travel demand. However, significant change is needed to the way people travel to ensure sustainable transport outcomes.

- The Western Corridor will significantly contribute to addressing demand for housing and business land in the western Bay of Plenty. Growth in the Western Corridor is anticipated to generate up to 226,744 additional trips per day by 2048+, depending on mode share.
- However, Tauranga has one of the lowest mode shares for public transport, walking, and cycling in New Zealand. This is worsened by limited active and public transport services and infrastructure in the Western Corridor.

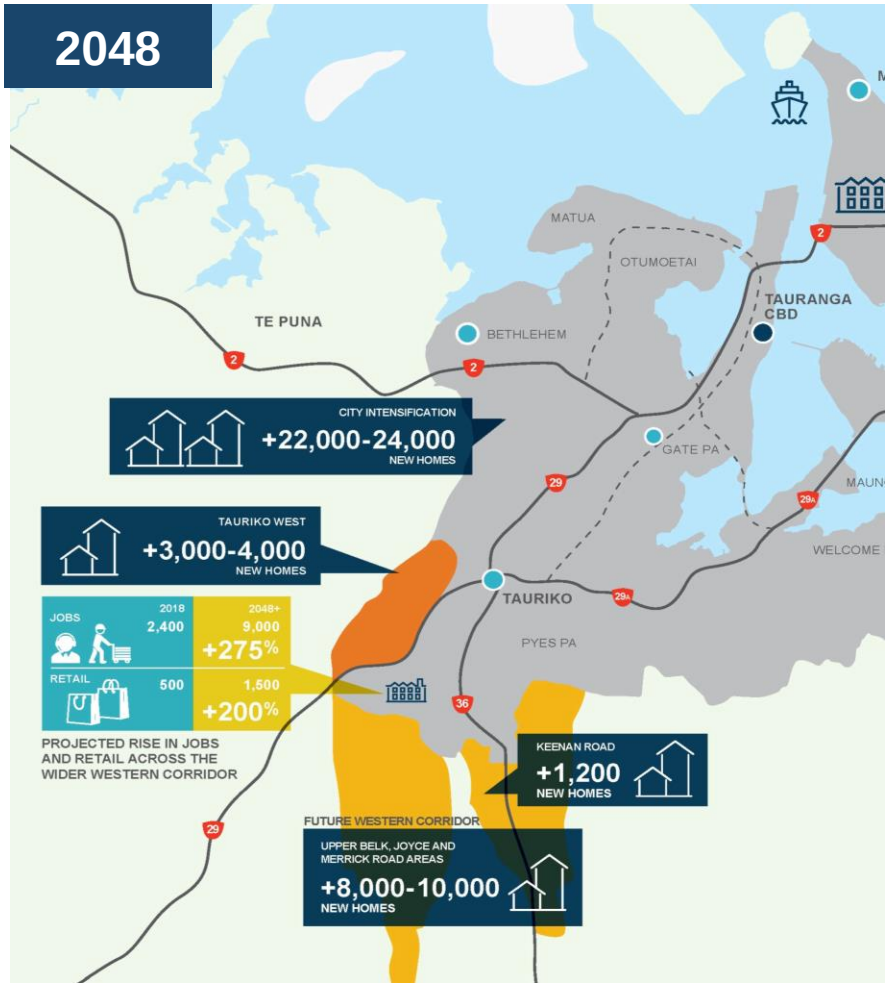


If unplanned, increased demand for travel will undermine accessibility, amenity, and climate change goals.

To support this growth, improve multimodal accessibility, maintain freight access, and address current safety issues, the transport network needs to be modified and enhanced. Without investment to provide multimodal access, development within the Western Corridor could become unviable.

To provide infrastructure to enable housing development in Tauriko West and further development of the Tauriko Business Estate, the Enabling Works Detailed Business Case was developed alongside this DBC. However, further investment is needed to address long-term needs.

- SH29 is an increasingly significant national interregional route that may be compromised particularly via the additional intersections that will be in place via the Enabling Works.
- The Enabling Works does not provide for a fully reliable, efficient, and frequent public transport service or safe walking and cycling facilities to attract people to these modes and out of private vehicles.
- Even with the Enabling Works in place, some sections of the Western Corridor, Takitimu Drive, and Barkes Corner will continue to face great safety risks, particularly for pedestrians and cyclists. This is due to high traffic volumes, numerous accesses, undivided roads, little separation between modes, lack of (or inadequate) facilities, poor geometry, and speeds higher than safe system thresholds.



The Case For Change

Based on the evidence, project partners have agreed to the following problems and weightings:

1 **Problem 1**–- If not appropriately integrated into the transport system, planned land use development and growth in the Western Corridor is unlikely to proceed due to the scale of impacts on access, safety, and liveability (70%).

2 **Problem 2**–- Poor geometry and negotiation of major intersections on SH29/29A through the Tauriko Network Connections leads to injury crashes and high severity outcomes (30%).

Investment in addressing these problems will generate these benefits:

1 **Benefit 1:** Better access to international and major domestic markets on this national strategic freight route linking to the Port of Tauranga (20%).

2 **Benefit 2:** The Western Corridor is better connected and accessible through a multimodal transport system which supports timely delivery of sustainable growth (40%).

3 **Benefit 3:** Improved safety within the Tauriko Network Connections Corridor (40%).

Option Investigation

The option development, evaluation, and refinement process for Tauriko Network Connections DBC spanned roughly seven years between 2017 and 2023. This iterative and complex option investigation journey was subject to changes to national strategic direction and project scope.

The long-term vision for the Tauriko Network was identified through two phases of DBC optioneering using Multi-Criteria Analysis (MCA) frameworks and an option longlist, shortlist, and refinement process.

Project partners navigated differences of opinions about how to best move people and freight, enable growth, support growth, and improve level of service through a multimodal approach. However, agreement was reached across project partners for a preferred way forward.

A Multimodal Approach

While developing this DBC, project partners agreed that this DBC would focus on the state highway of the Tauriko Network and feed into several multimodal components to be delivered through other work packages:

- Enabling Works Detailed Business Case – for short-term early works to unlock housing development in Tauriko West.
- Western Bay of Plenty Public Transport Services and Infrastructure Business Case – for a sub-regional approach to PT.
- Western Corridor Walking and Cycling Network Plan (concept stage) – for a strategic approach to walking and cycling in the Western Corridor.
- Regional Travel Demand Management and Behaviour Change Programme – for a regional approach to managing travel demand and behaviour change.

Engagement

The option development and assessment process has been supported by a robust engagement process involving the following partners, stakeholders, and community groups:

- SmartGrowth partners.
- Tangata whenua (Te Kauae a Roopu).
- Tauriko West developers.
- Redwood Lane residents.
- Directly affected landowners.
- Ministry of Education.
- Kāinga Ora.
- Tauranga Crossing Limited.
- Local community – via two community open days in May 2021 and May 2022.

Feedback from engagement has been consistently integrated in the option investigation process to determine a recommended way forward.

Long List Options

Several options were investigated to improve the state highway and local roading network. The intervention hierarchy was applied including consideration of making best use of existing infrastructure. In May 2020, three options were short listed for further development and evaluation.

Short List Options

The three short listed options were revisited upon request from project partners. This led to a total of four short list options (with some variations, such as the Southern Bypass) being developed and evaluated:

- Option 1/1A.
- Option 2 (with a variation of Option 2 Hybrid).
- Option 4/4A.
- Southern Bypass.

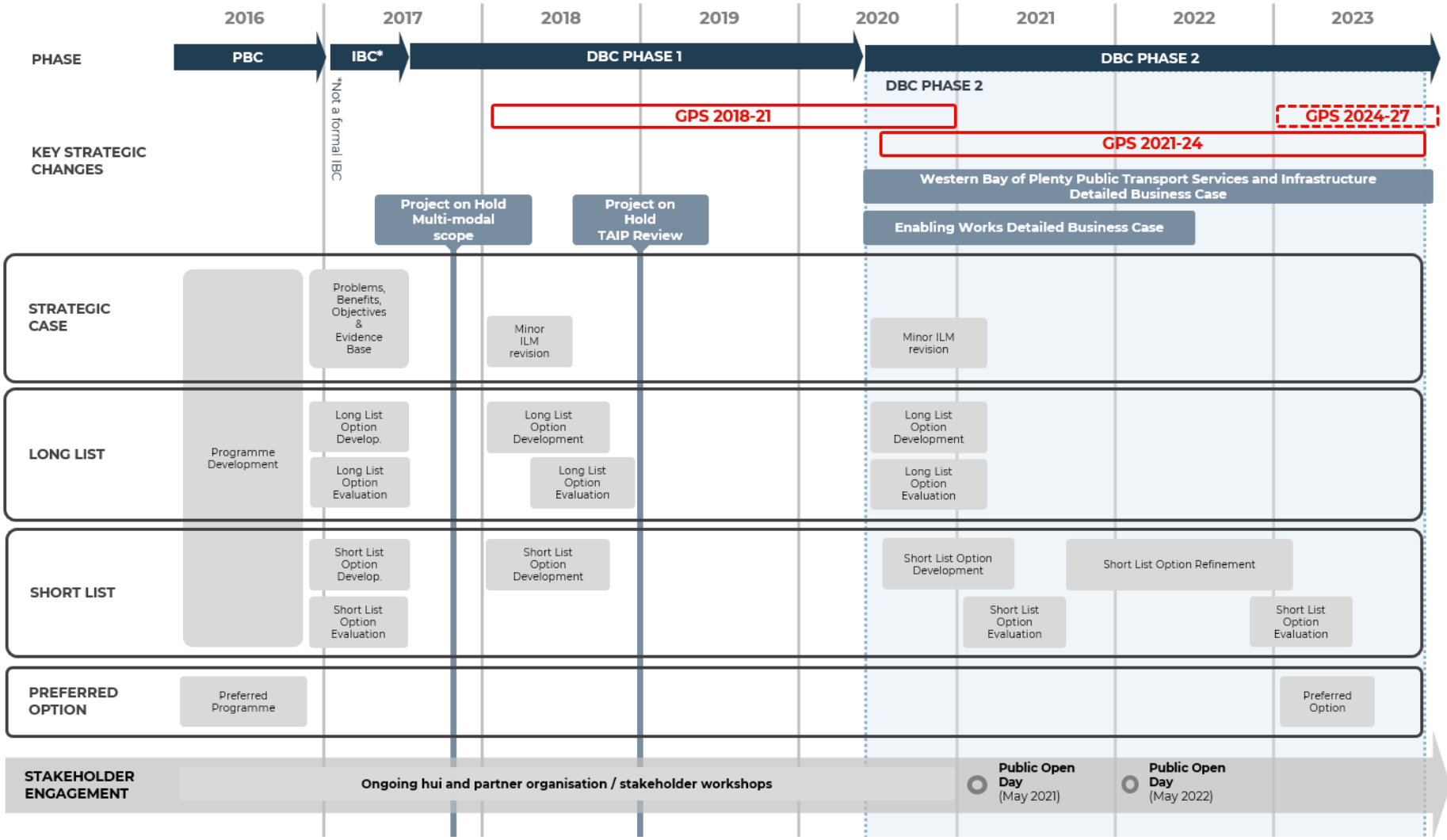
By May 2021, the short list option evaluation recommended Option 2.

Option Refinement

In September 2021, further variations to the recommended Option 2 were investigated, leading to a recommended ‘Option 2 Hybrid’.

In 2023, the approval of the Enabling Works DBC, public engagement, strategic changes requiring greater priority on climate change adaptation and emissions reduction) led to two refined short list options (Option 1V and Option 2V).

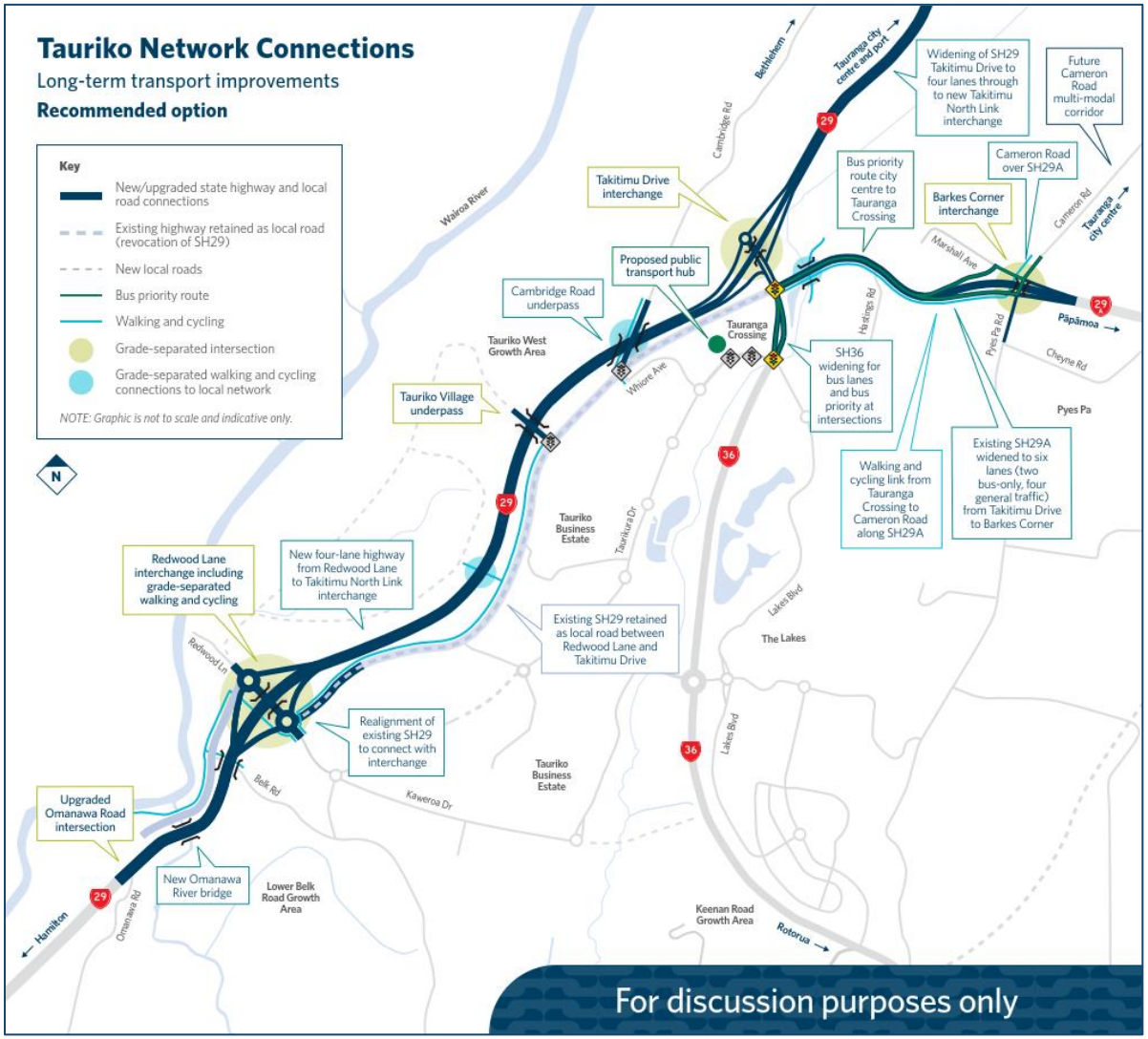
The two final refined short list options (Option 1V and 2V) were evaluated using an MCA framework and reviewed by project partners. This confirmed **Option 2V as the recommended option**. The journey to this point is shown below:


2016
2017
2018
2019
2020
2021
2022
2023
PHASE
PBC
IBC*
DBC PHASE 1
DBC PHASE 2
DBC PHASE 2
*Not a formal IBC
KEY STRATEGIC CHANGES
GPS 2018-21
GPS 2024-27
GPS 2021-24
Western Bay of Plenty Public Transport Services and Infrastructure Detailed Business Case
Project on Hold Multi-modal scope
Project on Hold TAIP Review
Enabling Works Detailed Business Case
STRATEGIC CASE
Problems, Benefits, Objectives & Evidence Base
Minor ILM revision
Minor ILM revision
LONG LIST
Programme Development
Long List Option Develop.
Long List Option Evaluation
Long List Option Development
Long List Option Evaluation
Long List Option Development
Long List Option Evaluation
SHORT LIST
Short List Option Develop.
Short List Option Evaluation
Short List Option Development
Short List Option Development
Short List Option Refinement
Short List Option Evaluation
Short List Option Evaluation
PREFERRED OPTION
Preferred Programme
Preferred Option
STAKEHOLDER ENGAGEMENT
Ongoing hui and partner organisation / stakeholder workshops
Public Open Day (May 2021)
Public Open Day (May 2022)

Recommended Option

The recommended option for the Tauriko Network Connections DBC is **Option 2V** which includes:

- Public transport network facilities and priority lanes, including a new public transport hub within Tauranga Crossing.
- An integrated walking and cycling network.
- Supporting travel demand management interventions.
- A new two-lane SH29 corridor between Omanawa Road and Redwood Lane.
- A new offline four-lane SH29 corridor between Redwood Lane and the Takitimu Northern Link.
- A new online six-lane SH29A corridor between SH36 and Barkes Corner.
- SH36 widening between Lakes Boulevard and SH29A to accommodate dedicated bus lanes.
- Revoked section of SH29.
- Seven intersection improvements, including three grade separated interchanges at Redwood Lane, Takitimu Drive and Barkes Corner.



Impacts Of Recommended Option

These impacts have been identified with adequate mitigation measures.

IMPACTS	PROJECT OUTCOME
Climate Change and Emissions	Climate change impacts consistent with large scale corridor improvements nationwide. Embodied emissions – several feasible opportunities for reduction of construction emissions (embodied emissions) currently quantified at 216,673 tCO2-e. Enabled emissions (VKT and CO2e) associated with the highway improvements are likely to increase long-term (by <2%) but are to be managed by complementary Travel Demand Measures.
Cultural Values	Recommended Option is supported by tangata whenua provided that a framework of cultural values is integrated into future project phases.
Movement and Place Function	Alignment to the desired multimodal 'transit corridor' functions and trip internalisation within Western Corridor.
Travel Time	Improved level of service, travel times and trip reliability for the next 30+ years for Strategic traffic, Freight, and Public Transport.
Mode Shift	Modelling suggests significant PT mode shift in future years until 2048, with a smaller cycling mode shift.
Equity and Distributional	The project is expected to largely benefit groups (including businesses and residents) in the immediate Tauriko area through to Tauranga CBD.
Health and Safety	All H&S risks can be managed through standard construction management plans.

Investment Outcomes

The recommended option is expected to deliver on the benefits of this investment:

INVESTMENT BENEFIT	PROJECT OUTCOME
Predictable Travel Time for Freight	**Fully achieves/exceeds target.**
Land Use reduces the need for travel	**Fully achieves target.**
Increase mode shift from private vehicles to walking, cycling and PT	**Fully achieves target.**
Reduce crashes by severity (all modes)	**Partially achieves target.**
Reduce DSIs	**Partially achieves target.**

Investment Priority

The recommended investment priority order for the recommended option for Tauriko Network Connections is priority order 2:

IPM ASSESSMENT		RATING
GPS Alignment	Better Travel Options and Climate Change	**VERY HIGH**
Scheduling	Criticality and Interdependency	**HIGH**
Efficiency	BCR	**LOW**

Adaptive Management Approach

An adaptive management approach is recommended to deliver the recommended Tauriko Network Connections programme of works.

This approach is being used due to the following factors that have heightened the complexity of the Tauriko Network Connections programme:

- The large scale/size of the programme.
- Mix of transport improvements (public transport, highway, PT hub on private land).
- Multiple parties involved (asset owners, investment partners, stakeholders) and their jurisdictions.
- Critical role of public and private programme partners including tangata whenua, Tauranga City Council, Bay of Plenty Regional Council, Western Bay of Plenty District Council, Kāinga Ora, Ministry of Education, Tauranga Crossing Limited, and associated developer/landowners.
- Long-term, multi-decade duration of the programme.
- Interrelated networks and infrastructure.
- Several interfacing projects in the Western Corridor.

Therefore, this approach is a suitable delivery pathway to:

- Manage uncertainties, constraints, and interdependencies over the lifecycle of the programme, such as when to respond to certain triggers (such as new land use development).
- Manage investment timing, risk and cashflow during the project.

Principles

Fundamental to the adaptive management approach are the programme principles, the ongoing monitoring of transport and urban development key performance indicators, and the development of Implementation Readiness Reviews.

The programme principles supporting the approach are:

1 Implementation of the whole Tauriko West Network Connections programme is necessary to realise the expected benefits and outcomes. The adaptive management approach does not avoid future investment.

2 Flexible and efficient programme packaging, staging, and delivery is necessary to respond to uncertainties. The phased design and ongoing monitoring will help deliver the programme in an efficient manner to maximise integration, minimise disruption, reduce re-work and cost, and delivery of improvements commensurate with need.

3 The programme leads with mode shift to support housing and transport outcomes. The balance of investment is efficient and recognises that dependencies are not always in the control of the public agencies involved.

4 Regular and ongoing monitoring of land use and transport indicators is required. Monitoring must be forward-looking to monitor trends and ensure existing assumptions and inputs remain accurate.

Recommended Delivery Programme

Four stages are recommended:

- Stage 1 critically enables delivery of subsequent stages, provides certainty for stakeholders and property owners, and significantly reduces the build out risks.
- Stage 2 is critical resilience work for end-of-life bridge replacement on the only heavy haul route into the WBOP.
- Stages 3 and 4 offer mode choice via public and active transport.

Indicative timing for each stage is based on current plans for land use development tested via the TTSM21 transport model. These timings are dependent on funding availability and outcomes of any readiness reviews.

Risks and Opportunities

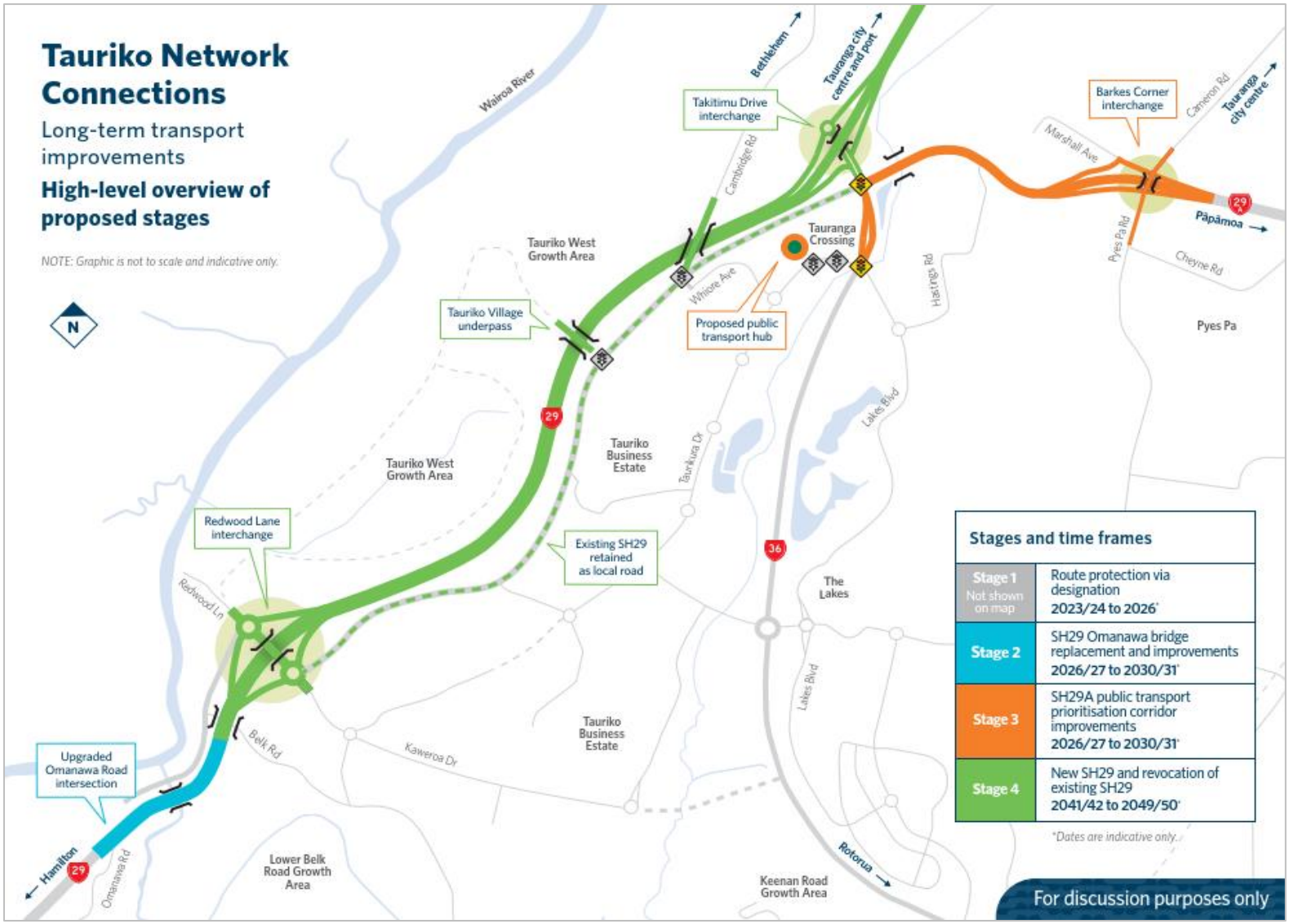
Key strategic opportunities for the programme include:

- Undertaking route protection for the whole programme to avoid build out and maximise certainty.
- Deliver Stages 2-3 early to support efficient movement of people and goods to destinations throughout the city and region.

However, key strategic risks include:

- Funding and financing.
- NoR is not secured ahead of Tauriko West Plan change and the alignment is built out.
- Growth of Western Corridor is not realised.
- Induced traffic demand results in heavier loading on the network than predicted.
- PT and active mode outcomes are not realised. The Programme does not meet emission reduction targets.

	Recommended Delivery Phases And Indicative Timing	
Stage 1	Route protection via designation. Set up ongoing delivery programme monitoring and evaluation.	2023/24—2026/27
Stage 2	SH29 Omanawa end-of-life bridge replacement and improvements, including: • Procurement, design, and consents • Property acquisition • Construction of a new Omanawa River bridge, upgraded seagull island SH29/Omanawa Road intersection, 2-lane corridor from Omanawa Road to Redwood, and walking and cycling improvements	2026/27—2031/32
Stage 3	SH29A PT prioritisation package from SH36 through to the Cameron Rd bus priority lanes including: • Procurement, design, and consents • Property acquisition • Construction of SH29A improvements, bus priority lanes, and Barkes Corner Interchange • PT Hub on the “The Crossing” site. • Construction of SH36 improvements and Lakes Boulevard Intersection signalisation for PT priority	2026/27—2031/32
Stage 4	SH29 Offline improvements from Redwood Lane to the TNL/Takitimu Interchange including: • Implementation readiness review (RR) • Procurement, design, and consents • Property acquisition • Construction of SH29 improvements, Redwood Lane, and Takitimu Drive Interchanges • Revocation of existing SH29 to a local road	2041/42 2042/43—2049/50


Tauriko Network Connections
Long-term transport improvements
High-level overview of proposed stages
NOTE: Graphic is not to scale and indicative only.
N
Waiorā River
Bethlehem
Tauranga city centre and port
Takitimu Drive interchange
Cambridge Rd
Tauriko West Growth Area
Tauriko Village underpass
Tauranga Crossing
Proposed public transport hub
Whiore Ave
Hairini
Barkes Corner interchange
Cameron Rd
Tauranga city centre
Marshall Ave
Pyes Pa Rd
Pāpāmoa
Cheyne Rd
Pyes Pa
29
Tauriko Business Estate
Taurikura Dr
Lakes Blvd
36
The Lakes
Redwood Lane interchange
Existing SH29 retained as local road
Redwood Ln
Belk Rd
Kaweroa Dr
Upgraded Omanawa Road intersection
Hamilton
Omanawa Rd
Lower Belk Road Growth Area
Keenan Road Growth Area
Rotorua
Stages and time frames
Stage 1 Not shown on map — Route protection via designation 2023/24 to 2026*
Stage 2 — SH29 Omanawa bridge replacement and improvements 2026/27 to 2030/31*
Stage 3 — SH29A public transport prioritisation corridor improvements 2026/27 to 2030/31*
Stage 4 — New SH29 and revocation of existing SH29 2041/42 to 2049/50*
*Dates are indicative only.
For discussion purposes only

Funding and Delivery

A higher level of investment for later phases is expected, resulting in a potential funding shortfall. Additional funding through the NLTP or other funding sources may allow further investment to deliver the complete long-term solution for Tauriko Network.

Economic Case

The project is economically feasible with a BCR (without staging) of **1.3** and **1.2** if staged using the forecast programme.

Economic Measures	Total NOT staged	Total when staged
NPV Total Cost of Recommended Option (P50)	$1,913M	$1,519M
NPV Total Benefit of Preferred Option	$2,438M	$1,838M
BCR (excl. Wider Economic Benefits)	1.3	1.2
First Year Rate of Return	2.9%	-
WEBs	$505M	-
BCR incl. WEBs	1.5	-

Financial Case

With staging, the recommended option is expected to cost $2.33B (P50) to $2.76B (P95). The proposed cost sharing arrangement between Tauranga City Council and Waka Kotahi is tabulated below.

Tauriko Network Connections		Agreed Cost Share (in $M)				
		Stage 1	Stage 2	Stage 3	Stage 4	Total Staged
Total Cost	P50	2.2	174.2	929.5	1229.5	2335.3
	P95	2.7	205.6	1099.8	1449.6	2757.8
TCC Share (49%)	P50	-	-	4.1	27.2	31.3
	P95	-	-	5.1	32.3	37.4
Waka Kotahi share	P50	2.2	174.2	925.4	1202.3	2304.1
	P95	2.7	205.6	1094.7	1417.3	2720.3

Next Steps

The recommended option for the Tauriko Network Connections DBC aligns well with the agreed investment objectives, provides an improved level of service for active and public transport modes, and is strategically important to land use demands and the national and regional freight network.

It is recommended that:

- Stage 1 (route protection and associated procurement) be progressed with funding approval based on the recommendations of this DBC.
- Stages 2-3 be considered and prioritised for future delivery in the next NLTP.
- Adopt the recommended adaptive management approach to determine timing of Stage 4.

PART A – CASE FOR CHANGE

1 BACKGROUND

1.1 OVERVIEW

The Tauriko Network Connections Detailed Business Case (DBC) discusses the issues, benefits, and needs associated with growth in the Western Corridor of Tauranga and integrated multimodal and freight transport measures for the Tauriko Network (Figure 1-1) needed to support that growth.

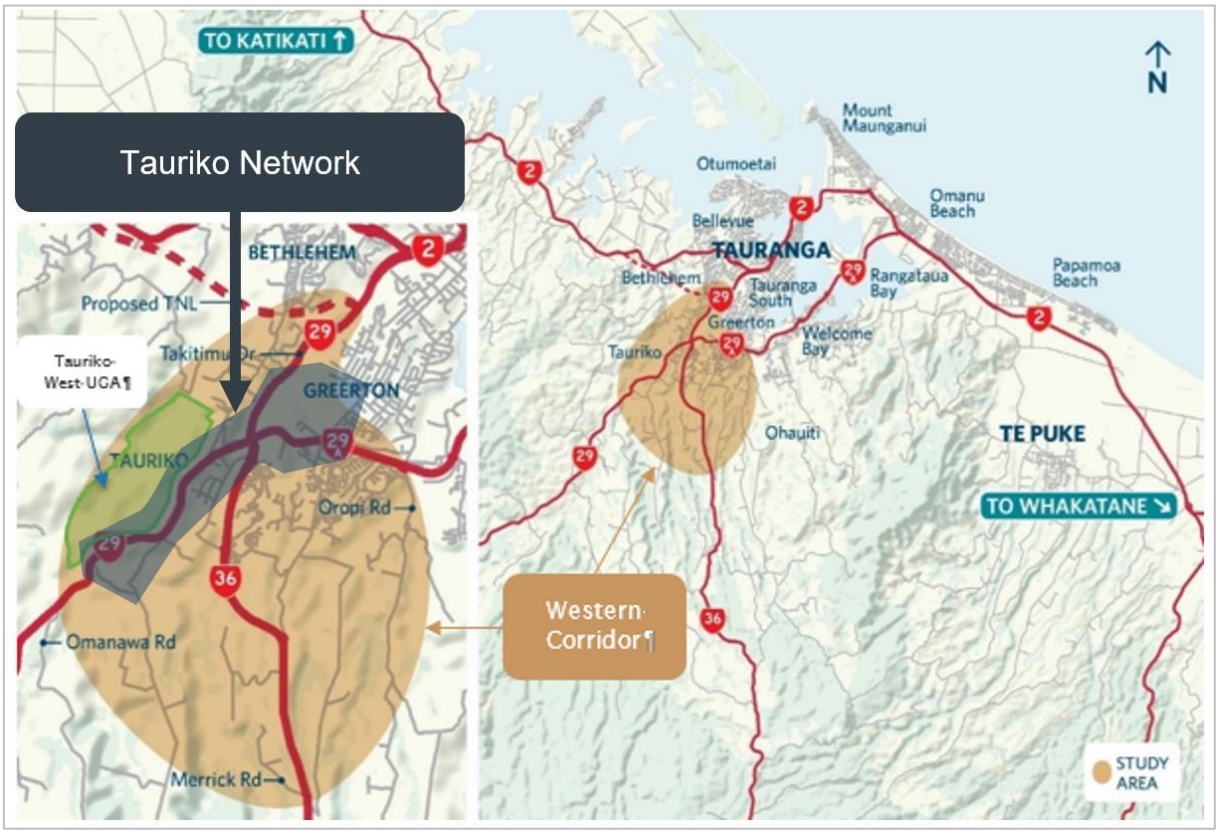


Figure 1-1. Location Plan of the Western Corridor Tauriko Network Connections

The DBC aims to achieve the following key investment benefits:

- Improve access to both international and domestic markets to the Port of Tauranga for freight.
- Provide a better connected and accessible multi modal system which provides choice and supports the timely delivery of sustainable growth.
- Improve safety within the Tauriko area.

This DBC builds on investigations completed through the Programme Business Case (PBC) phase, "Indicative Business Case" (IBC) phase[2] the Urban Form and Transport Initiative (UFTI) PBC, the Western Bay of Plenty Transport System Plan (TSP) and documents the background, processes, investigation, and decisions to provide for an integrated multi modal transport options for the medium and long term.

[2] The "IBC" phase was not a formal IBC process but functioned like an IBC.

Some of the issues and opportunities for land use, housing, and transport integration affect and/or are impacted by the wider Western corridor, while some issues are more localised within the Tauriko Network i.e., road safety.

This DBC and associated investigations have been prepared in collaboration between Waka Kotahi New Zealand Transport Agency (Waka Kotahi) and Tauranga City Council (TCC), with support from Bay of Plenty Regional Council (BOPRC), Western Bay of Plenty District Council (WBOPDC) and Tangata Whenua (Te Kauae o Roopu).

1.2 PURPOSE OF THIS REPORT

The purpose of the Tauriko Network Connections DBC is to confirm that the Recommended Option will successfully deliver the desired investment outcomes and offer an effective solution for identified problems in the Tauriko network.

The objectives of this DBC report are to outline:

- The recommended long-term option for Tauriko West and how it will deliver strategic outcomes.
- The implementation strategy to guide future delivery of the recommended option.

To frame this DBC, this section of the report summarises the context of Tauriko West and the Western Corridor, by discussing constraints, opportunities, and outcomes determined and agreed to in workshops with the project partners and stakeholders including Waka Kotahi, Bay of Plenty Regional Council, Tauranga City Council, Western Bay of Plenty District Council, tangata whenua, and other government agencies.

This DBC report is structured as follows:

- Part A – Case for Change (Strategic Case)
- Part B – Option Investigation and Economic Case
- Part C – Implementation Readiness and Assurance (Financial, Commercial and Management Case

1.3 URBAN GROWTH AND TRANSPORT IN WESTERN CORRIDOR

Tauranga is one of New Zealand's fastest growing cities. As more people move in, associated transport corridors to support the city's growth are needed. The Western Corridor of Tauranga has been identified through the Bay of Plenty Regional Policy Statement (RPS), SmartGrowth, the Tauriko Network Plan Programme Business Case, and the UFTI Programme Business Case as a key corridor for housing and urban development (including commercial and industrial) to support the growth of the city over the next 50 years. The development of the Western Corridor will contribute significantly to addressing demand for housing and business land in an integrated manner across the western Bay of Plenty sub-region.

The transport outcomes for the Western Corridor have been comprehensively considered alongside the land use planning to ensure the area can be serviced effectively and efficiently to meet SmartGrowth and UFTI land use occupancy objectives and deliver a well-functioning multi modal transport network.

The Western Corridor has some challenges from a transport system perspective given its position on the key inter-regional freight corridor to the Port of Tauranga. Balancing these demands will be important to ensure provision of access to residential and business growth areas, while maintaining efficient inter-regional freight access to the Port and other destinations.

The Western Corridor will benefit from planned investment in public transport and active modes infrastructure and priority on the Te Papa peninsula via the Cameron Road multimodal corridor, which is proposed to be extended to Tauriko. The area also has the advantage of multiple east/west and north/south connections (including State Highways 29, 29A and 36 along with existing and planned local roads) enabling resilience and allocation of different functions for different corridors.

The large areas of existing and planned employment land that are establishing in the Western Corridor (particularly logistics and Port-related businesses) as part of the ongoing development of Tauriko Business Estate (TBE) align with Waka Kotahi's strategy to promote State Highway 1 (SH1) and SH29

as national significant freight routes. These are part of the 'Golden Triangle' and the key Upper North Island freight route into the Bay of Plenty.

The existing urban growth areas (UGAs) in the Western Corridor – Pyes Pa, Pyes Pa West (i.e., The Lakes) and TBE are either complete or nearing completion. Tauriko West UGA, the extension of TBE into lower Belk Road, and Keenan Road are planned growth areas for the next 30 years, with infrastructure planning well underway by TCC. Beyond the 30-year timeframe, current planning needs to consider the connectivity of additional urban growth areas at Merrick Road, Joyce Road, and upper Belk Road, to ensure that short- and medium-term interventions do not compromise potential future growth options.

To support the ongoing development of housing and business land in the Western Corridor, improve multimodal accessibility, maintain freight access, and address current safety issues, the transport network needs to be modified and enhanced. Without investment to provide multimodal access, development within the Western Corridor could become unviable.

The Western Corridor will significantly contribute to addressing demand for housing and business land in the western Bay of Plenty sub-region.

1.4 STRATEGIC DIRECTION

1.4.1 SmartGrowth

The 'SmartGrowth' strategy, established in 2004, uses a 50-year planning horizon and promotes consideration of environmental, social, economic, and cultural matters and a balanced approach to growth management across the western Bay of Plenty sub-region. The SmartGrowth partners[3] have worked to plan for sustainable and coordinated urban growth such as the development of a clear settlement pattern, objectives, and policies through the Bay of Plenty Regional Policy Statement (RPS) for managing urban growth – including managing environmental values.

SmartGrowth (and later UFTI and TSP) identified a need for investigations of highway upgrades and development of a corridor strategy for the Western Corridor. This has resulted in a series of investigations including the Western Corridor Strategy document, PBC, IBC (highway phase), the Enabling Works DBC (to allow early access to housing – see Section 1.5.2), and this DBC to provide a recommendation for an integrated multimodal transport system that considers the planned land use in the future.

The sub region's settlement pattern has been progressively reviewed and updated since then, with updates in 2013 and 2016 – the most recent of which was informed by the Western Corridor Strategic Study, which identified the appropriateness of and confirmed urban development within the Western Corridor study area beyond the current extent of urban limits in the RPS. Tauriko West UGA was subsequently progressed as a new proposed growth area following resolutions in 2016 by the SmartGrowth partnership. The vision for Tauriko West, planning framework, technical investigations, landform modification and structure planning are outlined in the recently developed Enabling Works DBC (see Section 1.5.2).

Detailed structure planning has identified the need for Waka Kotahi to provide clarity on the alignment, high level design and designation for SH29 and other key routes, SH29A and SH36 in the Western Corridor.

[3] The SmartGrowth Partnership consists of Bay of Plenty Regional Council, Tauranga City Council, Western Bay of Plenty District Council, and tangata whenua together with non-voting implementation partners (including Waka Kotahi and Bay of Plenty District Health Board)

The Tauriko Network transport infrastructure improvements are critical to not only help unlock urban and commercial growth areas in the Western Corridor, but also to accommodate an increasing demand of users from this growth.[4] This critical infrastructure provides an opportunity to improve the integration between land use changes and transport needs and requires a staged investment programme that improves safety, provides more travel choice, and improves access to social and economic opportunities. This is shown in Figure 1-2[5].

The SmartGrowth Strategy 2023 is currently being developed, with expected publication in October 2023.[6]

Infrastructure improvements in Tauriko are needed to help unlock urban and commercial growth areas in the Western Corridor and accommodate an increasing demand of users of that growth.

[4] SmartGrowth Housing Development Capacity Assessment for Tauranga and Western Bay of Plenty (July 2021).

[5] https://assets.website-files.com/639c0b75c31ac6442f8d9994/63ed3bb04ef1a92bb45a4789_smartgrowth-hba-housing-assessment-20212.pdf

[6] https://www.smartgrowthbop.org.nz/smartgrowth-strategy-2023#:~:text=About%20SmartGrowth%20Strategy%202023,together%20to%20achieve%20effective%20growth

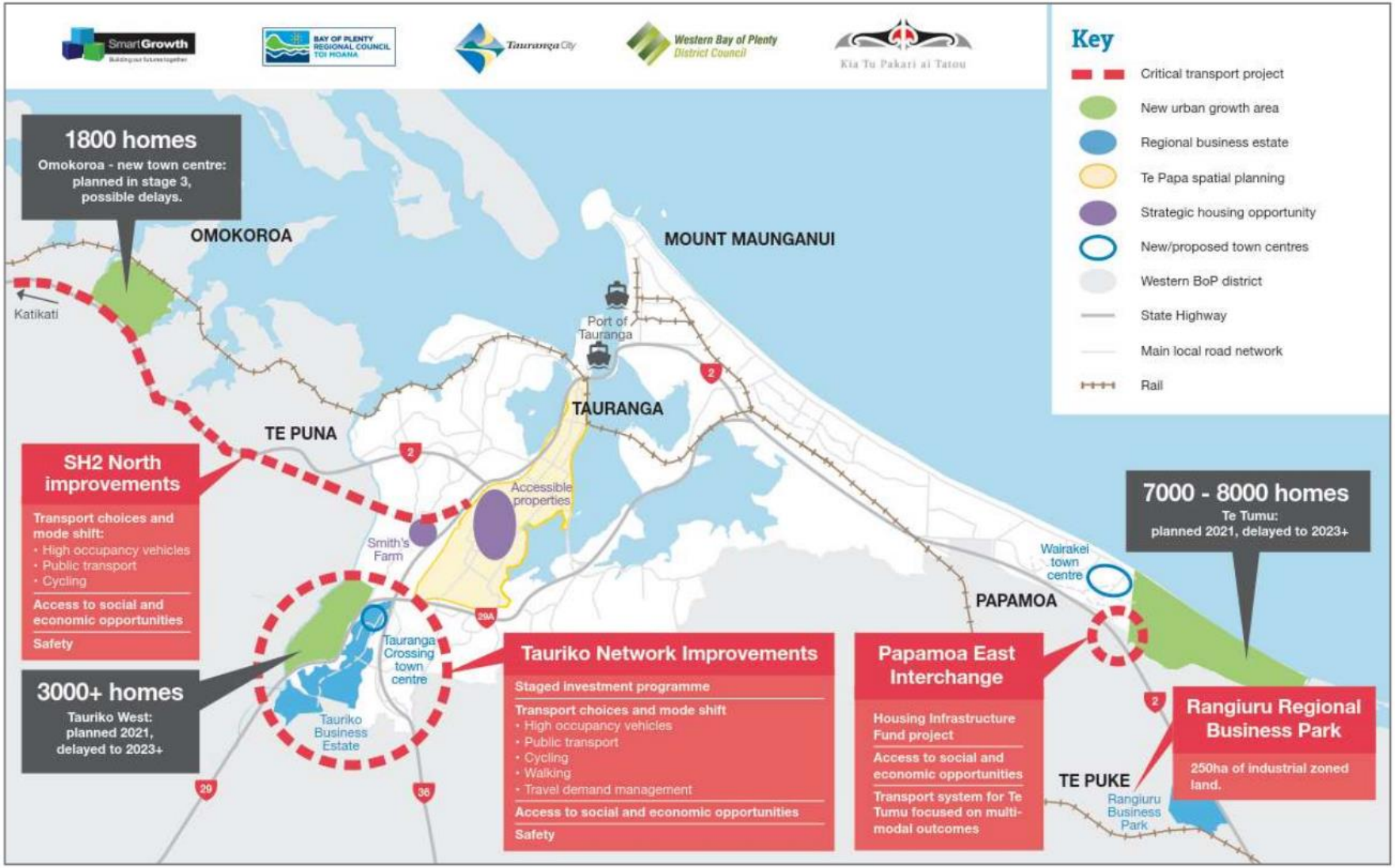


Figure 1-2. Critical Transport Infrastructure (to unlock UGAs in the Bay of Plenty)

1.4.2 Urban Form and Transport Initiative (2020)

In 2019, the SmartGrowth partners started the Urban Form and Transport Initiative (UFTI) to help find answers for the sub-region's land use, housing, and transport issues, and set a plan for long term growth. Later in 2020, SmartGrowth partners agreed the Connected Centres programme through the UFTI PBC, as set out in the UFTI Final Report. An overview of the UFTI Connected Centres programme is shown in Figure 1-3.

Western Corridor growth areas such as Tauriko, Keenan Road, Upper Belk and Merrick are needed to help deliver on sub region urban housing development targets.

The Connected Centres programme sets out an integrated land use and transport programme and delivery plan for the western Bay of Plenty. It caters for the approximately 200,000 additional people, 95,000 new homes, and two million additional transport movements per day expected within the next 30 to 70+ years.

The Connected Centres Programme effectively updated the previous SmartGrowth settlement pattern but had accepted the already provided priority development areas in the next 30 years. These priority areas include Te Tumu, Tauriko West, Ōmokoroa, Lower Belk Road (TBE Extension), and Keenan Road, which are necessary to help meet the targets. The Connected Centres Programme also excluded some areas that were previously identified in the settlement pattern, but further investigation has shown, are not viable/preferred at this stage (e.g., Pukemapu/Neewood).

To achieve the strategic direction agreed to within UFTI, SmartGrowth are developing the joint spatial plan based on the endorsed Connected Centre Programme. The joint Spatial Plan will then become the Future Development Strategy (FDS) required under the NPS-UD. The SmartGrowth Priority Development Area Task Force is focusing on several sites in the 2021/22 work programme. This SmartGrowth urban partnership work stream indicates the partners' commitment to progressing the following areas:

- Ōmokoroa – greenfield development
- Te Papa – Intensification area within existing urban area
- Tauriko/Tauriko West – greenfield development
- Wairakei-Te Tumu – greenfield development
- Short term development opportunities (including in Te Puke and Katikati)

UFTI also identified envisioned growth areas – 30+ years which have been agreed through SmartGrowth projects. Processes will be included in the next Future Development Strategy 2023 for full community engagement[7].

As part of the UFTI implementation, one of the first steps (within 12 months) is to complete the Tauriko business cases (i.e., the Tauriko Network Connections DBC (this DBC) and the Enabling Works DBC – already approved) to support multimodal transport and freight outcomes and enable housing. Of relevance to this DBC, is that the endorsed UFTI Connected Centres programme is based on achieving an average of 30 dwellings/ha for each new greenfield growth area, including those in the Western Corridor. UFTI also acknowledges that housing densities could be lower in the first ten years (20-25 dwellings/ha) but will reach an average of 30 dwellings/ha over time. Latest total land use figures show 17,650 dwellings and 8,739 jobs predicted by year 2048+ within the Western Corridor.

The impact of this level of housing density is an increase in travel demand on a transport network that does not cater for alternative modes of transport and has capacity and safety issues during peak periods. This Tauriko Network Connections DBC addresses this increased demand by catering for a higher number of walking, cycling and public transport trips.

7 SmartGrowth Priority Development Area Task Force documentation

Figure 1

Overview of the Connected Centres programme for a 400,000 population scenario

KEY

- State highways
- Roads
- Railway
- Public transport
- Cycle
- Freight
- Ferry
- Park and ride
- Public transport hub
- Public transport interchange
- New or improved major intersection
- Existing urban areas
- Planned urban growth areas
- Envisioned growth area – 30+ years
- Potential intensification areas
- Indicative area for multimodal crossing
- Waterways
- Parks, reserves, public conservation areas
- No go
- (ONFL) Outstanding natural features and landscapes (PostAppeals)

Planned Envisioned

Figure 1-3. Overview of UFTI Connected Centres programme (Source: UFTI Final Report)

1.4.3 Arataki (2021-2031)

Arataki is Waka Kotahi New Zealand Transport Agency's 10-year view (2021 to 2031) for the land transport system in New Zealand. Arataki identifies the SH29 corridor as being a "'nationally significant" connection for freight (see Figure 1-4). It establishes that the "road and rail routes between Tauranga and Auckland (via Hamilton) form the country's most important freight corridor. Some of the key points of that Strategy and the importance of SH29 for freight and links to the port are:

SH29 is a nationally significant freight route – part of New Zealand's primary freight corridor connecting Auckland, Hamilton, and Tauranga.

- Forecast growth in population and freight is placing increasing pressure on this connection. The existing road corridor has a poor safety record.
- Connection between Tauranga and Hamilton and on to Auckland is the country's primary freight corridor and the key connection between two of New Zealand's fastest growing cities.
- Identification of existing and emerging levels of service deficiencies for resilience, safety, and journey reliability.

Also shown in Arataki, State Highway 29A (SH29A) is also an important inter-regional link providing an important western access to the eastern Bay of Plenty region.

The intention of this DBC is to consider and maintain those important freight linkages, improve safety, and enable urban development.

Figure 1-4. Upper North Island Strategic Connections (Arataki)

1.4.4 Overall Alignment with Strategies and Policies

The Tauriko Network Connections DBC has strong alignment with national, regional, and local strategies and policies, as it:

- Aligns to all the priorities in the **Government Policy Statement on Land Transport** (GPS) through the development of the investment objectives and evaluation criteria.
- Seeks to contribute to the **Climate Change (Zero Carbon) Amendment Act 2019** by delivering a multimodal transport system and encouraging mode shift.

- Considers **Arataki** – Waka Kotahi NZ Transport Agency's 10-year view for this corridor – in terms of maintaining freight linkages, improving safety, and enabling urban development.
- Aligns to Bay of Plenty Regional Land Transport Plan, the Western Bay of Plenty Transport System Plan and regional council public transport plans.

The relationships between Tauriko Network Connections DBC and these strategies is shown in Figure 1-5**.**

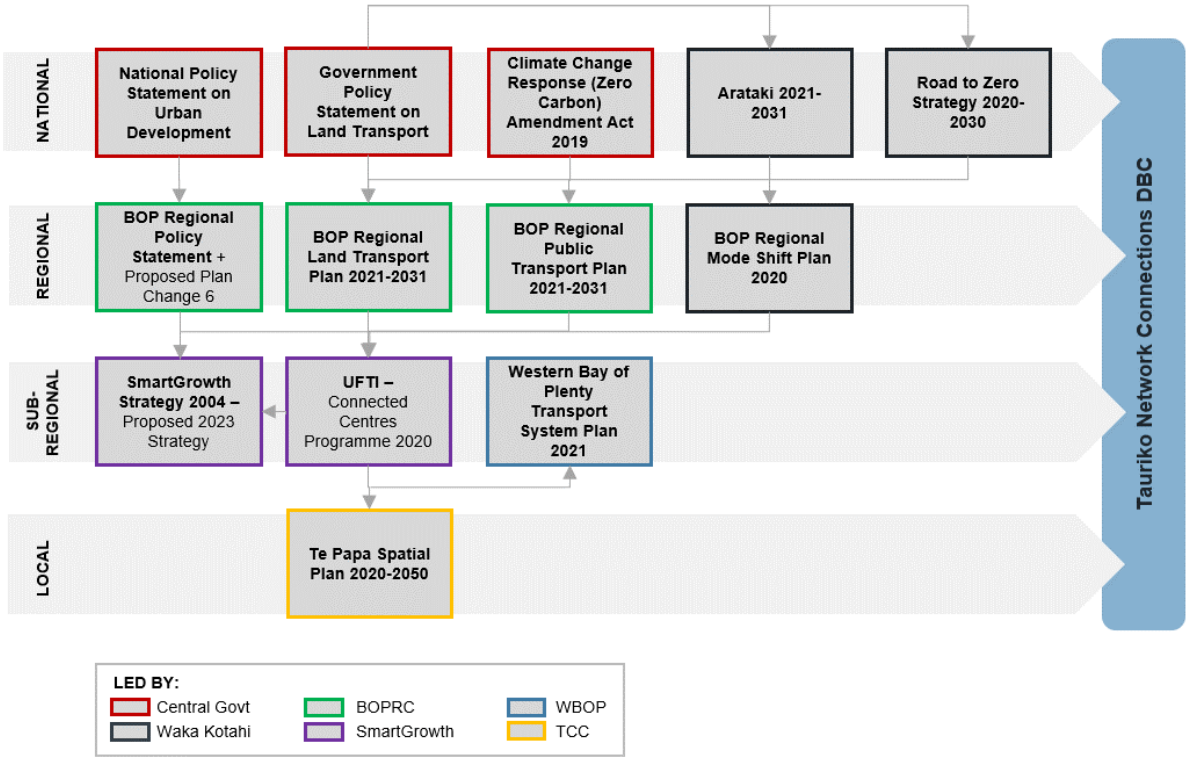


Figure 1-5. Strategic Document Linkages

For further information on the relevant strategies and policies that provide direction for this project and how the DBC seeks to align with these, refer to **Appendix A.**

1.5 RELEVANT INVESTIGATIONS AND PROJECTS

This multimodal and freight project was informed by several interdependent investigations that contribute to the overarching Tauriko Network programme. These investigations provided assumptions and confirmed baselines during this DBC's option investigation. Several technical assessments (including various scenarios, safety audits, and phases of traffic modelling) have also been completed. References to these separate investigations are provided where relevant throughout this DBC report.

The relationship between the Tauriko Network Connections DBC and these separate investigations is outlined below in Figure 1-6**.**

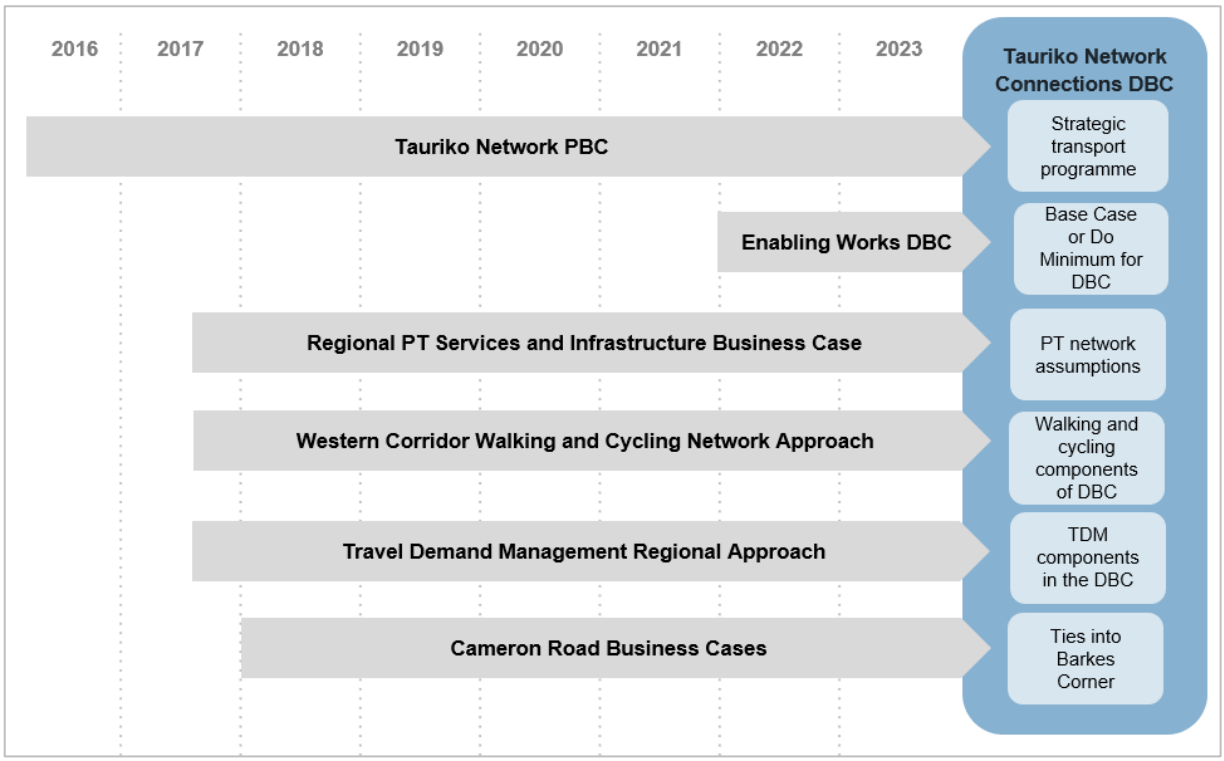


Figure 1-6. Relationship with Relevant Investigations and Projects

1.5.1 Tauriko Network Programme Business Case (2016)[8]

The Tauriko Network Programme Business Case (PBC) was developed to identify the future transport needs in the Western Corridor of Tauranga. This PBC was led by Waka Kotahi and supported by project partners, TCC, WBOPDC and BOPRC. The PBC determined a preferred transport programme for the Western Corridor area that focused on:

- Enhancement of the local network, including development of a local ring road linking SH29 through to SH36 and on to Oropi Road.
- Investment in public transport, walking and cycling, and effective travel demand management to support modal shift.
- State Highway upgrades on or near the existing alignment, including substantial capacity improvements and grade separation of intersections.

The PBC envisaged significant growth in employment, housing, and freight movement in the Western Corridor. The recommended programme proposed a set of transport investments (cycling, walking, public transport, local road, state highway) that provide protection of SH29's strategic role as part of the preferred Auckland-Hamilton-Tauranga national high volume freight route, while supporting the agreed settlement pattern for sustainable housing and urban development in the Western Corridor. The recommended programme also included local roads within Tauriko West, with a spine connecting the southern and northern areas of the UGA and linking to the local ring road between SH29 and SH36 through TBE.

The PBC provided the strategic transport programme for multimodal inputs into the Western Corridor and included several new active travel routes. The preferred programme is shown in Figure 1-7.

8 https://www.nzta.govt.nz/assets/About-us/docs/oia-2017/Tauriko-Network-programme-business-case.pdf

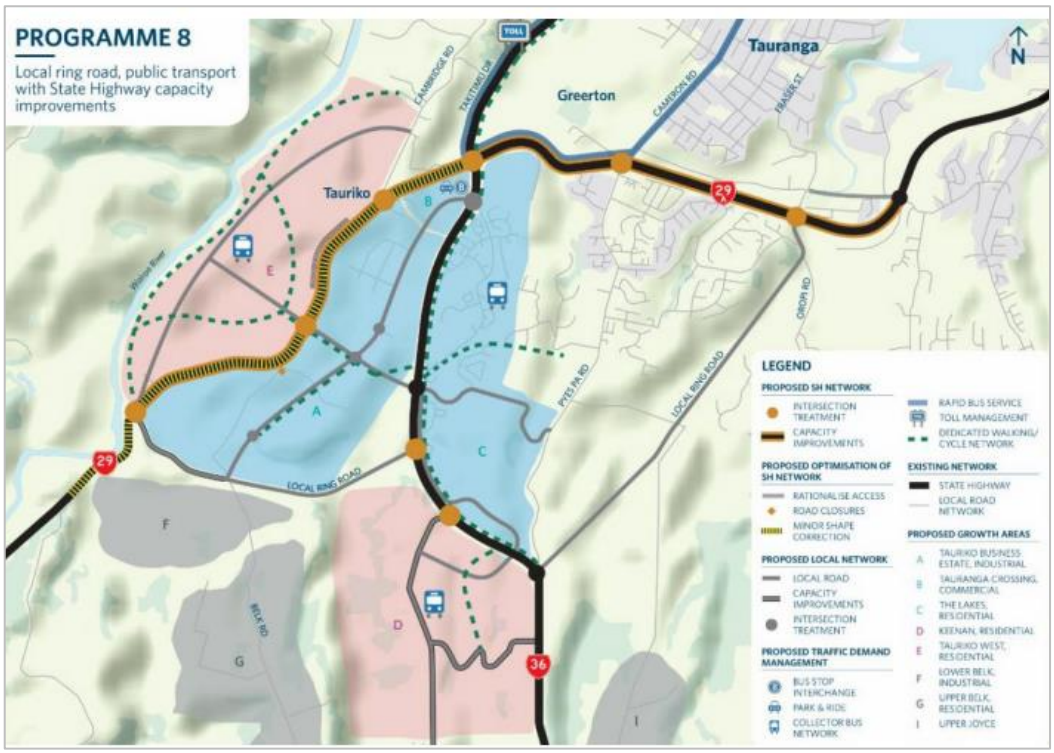


Figure 1-7. PBC Recommended Programme 8

1.5.2 Tauriko West Urban Growth Area Tauriko Enabling Works Detailed Business Case (2022)

The Tauriko Enabling Works DBC was developed alongside the Tauriko Network Connections DBC, with the intention of providing infrastructure to enable housing in Tauriko West. The recommended option includes:

- Walking, cycling and public transport infrastructure improvements.
- Highway intersection and midblock upgrades including:
  - A roundabout at Redwood Lane/Kaweroa Drive.
  - New signalised intersection at Tauriko West to provide access in to the new UGA (with potential to move this further north subject to property constraints).
  - Intersection upgrade to traffic signals at Cambridge Road with access to Whiore Avenue for Public Transport, Walking and Cycling modes.
  - Upgrade corridor between Tauriko West and Cambridge Road with walking and cycling facilities.
  - Grade separated walking facility in the vicinity of Redwood Lane and Kaweroa Drive.
- Speed Management along the corridor (between Redwood Lane and Takitimu Drive).
- Local Road improvements at Whiore Ave for walking, cycling and Public Transport.
- Travel Demand Management measures.

The Tauriko Enabling Works DBC and its funding has been approved and committed in 2022. Therefore, the Tauriko Enabling Works project forms the baseline (or Do-Minimum) for the Tauriko Network Connections DBC.

The Tauriko Enabling Works project for implementation is illustrated in Figure 1-8. Note that pre-implementation works are now underway, so some elements of the DBC have been further refined or progressed.

For further information on the Tauriko Enabling Works project, refer to the specific DBC.

Figure 1-8. Recommended Option for Tauriko Enabling Works DBC

1.5.3 Western Bay of Plenty Public Transport Services and Infrastructure Business Case (Ongoing)

During the development of this DBC, Public Transport service concepts (e.g., hub-and-spoke and frequent connection models) were developed and used for the purposes of option development and evaluation phases. These were developed by both TCC and BOPRC. However, a separate **Reference Case** was developed as an interim product to a Business Case in partnership with Bay of Plenty Regional Council, TCC and Waka Kotahi for regional public transport and infrastructure services, during the development of this DBC.

This Reference Case forms the basis for any future development of public transport network services in the WBOP sub-region. The Reference Case is subject to confirmation or modification through the Business Case process. The Reference Case is an input into this DBC forming part of an integrated multimodal solution to address the issues and deliver on the agreed investment benefits.

The Reference Case:

- Establishes the preferred high-level PT network structure for reference year 2048.
- Builds upon existing strategies such as UFTI and TSP.
- Has been developed in alignment with the Bay of Plenty Regional Public Transport Plan 2022 which includes policies and actions relating to fares and supporting behaviour change.
- Identifies concept-level bus route alignments, frequencies, and infrastructure requirements.
- Identifies physical improvements to the network to support the agreed service model.
- Has a 10-year horizon and 30-year outlook.
- Is customer focussed.
- Focuses on VKT and Emissions Reduction with the wider network designed for a PT mode share of 20%.

It does not include the development of strategies or measures for fares, parking and behaviour change which are covered by separate projects.

A hybrid through route and hub and spoke model was determined to provide the best outcome. Key routes were to provide a direct trunk service, such that they were frequent, likely high-capacity vehicles and high average loadings from large residential catchment to the city and through routed through key destinations. This model includes routes through to Tauriko West, and Tauriko Business Estate (TBE) and the Lakes with a PT hub within the Tauranga Crossing Limited (TCL) property. This hybrid model is illustrated in Figure 1-9.

The Western Bay of Plenty Public Transport Services and Infrastructure Reference Case is provided in **Appendix A**.

As of May 2023, this Business Case is being developed with completion expected January 2024. It is currently in the option development phase with short list option evaluations to be completed by mid-2023. A preferred option is expected to be identified by October 2023.

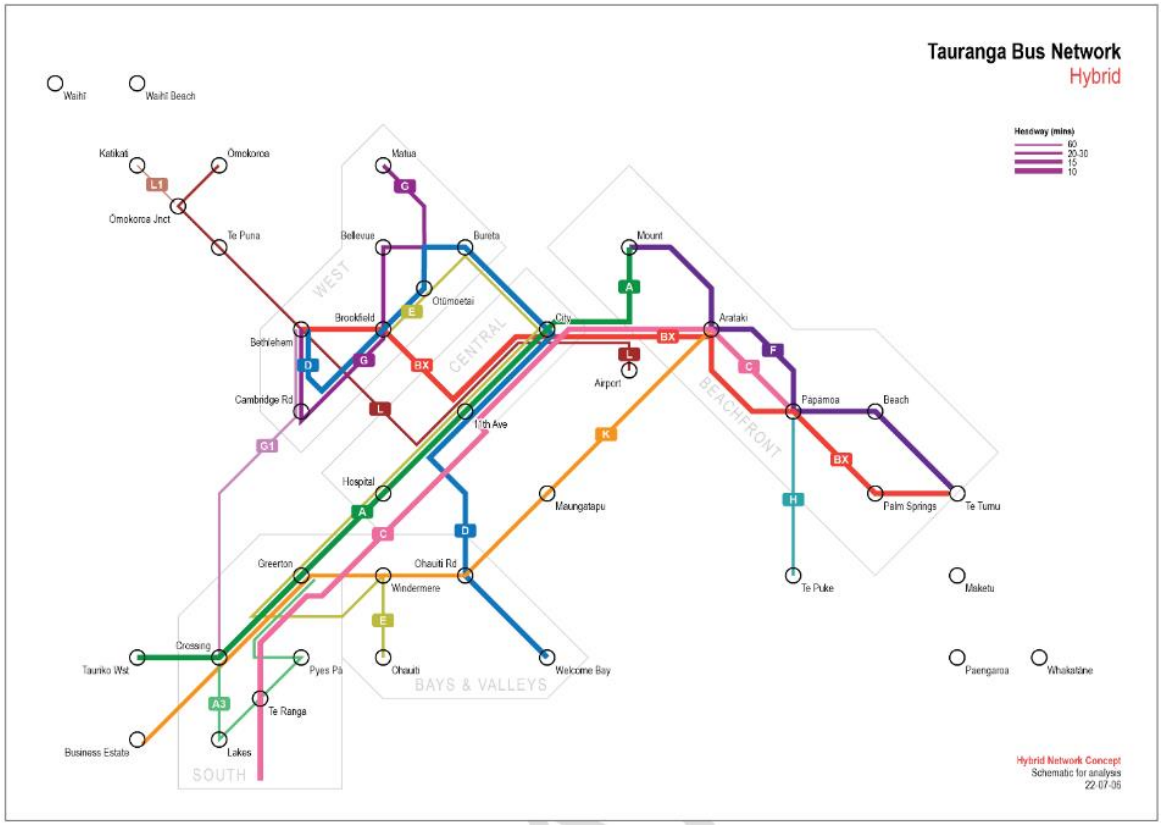


Figure 1-9. Reference Case Recommended PT Hybrid Mode

1.5.4 Western Corridor Walking and Cycling Network Plan

Walking and cycling components are part of the multimodal approach to the Western Corridor.

The Tauriko Network Connections DBC builds on the foundations of the Tauriko Network PBC (see Section 1.5.1) and the Tauriko West Enabling Works DBC (see Section 1.5.2) to provide a higher level of detail on relevant active travel components. Currently, there are several off-road shared paths, footpaths, and cycle lanes within the Tauriko area.

TCC also developed aspirational walking and cycling networks for the wider Western Corridor. These aspirational networks were based on origins and destinations, alignment with network spacing, existing facilities, routes identified through UFTI Connected Centres programme, TSP and Tauranga's Accessible Streets Programme, work/live/play principles for growth areas, and future development areas.

Overall, the Western Corridor Walking and Cycling Network Plan is relevant to this DBC because:

- It provides the walking and cycling components of the DBC.
- The DBC supports TCC's aspirational network and reduces the severance effects of SH29 between TBE and Tauriko West.

The Western Corridor Walking and Cycling Network Plan also requires the following matters to be resolved in the Tauriko Network Connections DBC:

- Modifications required to the Redwood Lane Roundabout option to respond to the long-term SH29 alignment and form.
- The need for any additional crossings between Redwood Lane and Whiore Avenue to service housing developments in the centre of the upper plateau of the Tauriko West Growth Area.
- Modifications required to the Cambridge Road /Whiore Avenue intersection to maintain safe and appropriate walking and cycling connections.
- North-South connections along SH29.
- Safe and appropriate walking linkages between Tauriko West Growth Area and Te Papa Peninsula connections between Tauriko West Growth Area and Cameron Road, and between Tauriko West Growth Area and Kopurerea Valley.

The Western Corridor Walking and Cycling Network Plan is described in **Appendix A**.

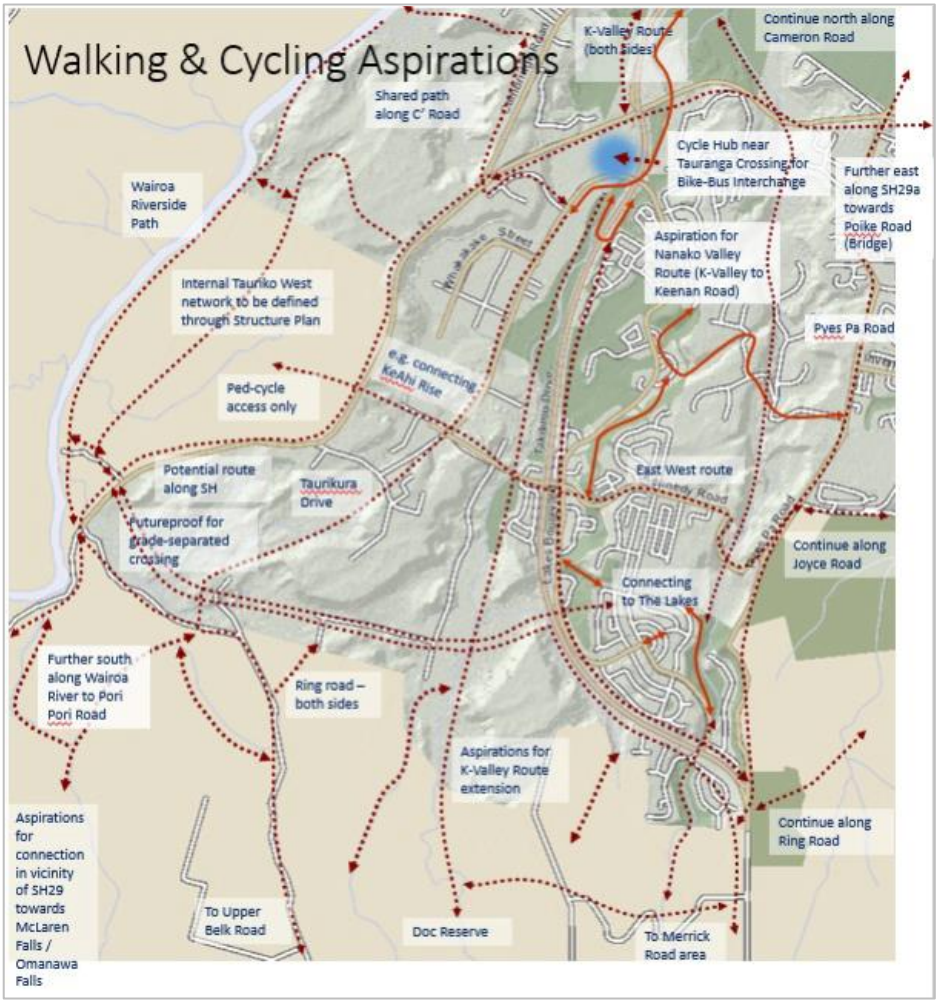


Figure 1-10. Western Corridor Walking and Cycling Aspirational Plan[9]

1.5.5 Regional Travel Demand Management and Behaviour Change Programme

During the earlier option investigation phases of this DBC, Travel Demand Management (TDM) measures were developed by the project team and TCC and BOPRC. However, towards the end of this DBC, an agreement was made that TDM measures are to be applied from a regional perspective and not a project-by-project basis. As a result, the project partners agreed to develop a sub-regional TDM programme to ensure TDM is delivered consistently and in a well-integrated manner, to be led by BOPRC.

As a result of this, Waka Kotahi developed a TDM approach memo which describes the principles of TDM to be considered for this project and the approach for ownership, planning, costs, and monitoring in the next phases.

TDM is a critical component of the overall transport system investment to meet project partner goals of mode share and emissions reduction. Therefore, it has been agreed with project partners that the Tauriko Network Connections DBC Management Case identifies the key triggers, management structures, accountabilities, and next steps to ensure an appropriate focus on TDM remains as a part of the overall project.

The Travel Demand Management Regional Approach is further described in a Waka Kotahi memo in **Appendix A**.

9 Provided by TCC

1.5.6 Western Bay of Plenty Transport System Plan (March 2021)[10]

The Western Bay of Plenty Transport System Plan (TSP) was jointly developed by TCC, WBOPDC, BOPRC, Waka Kotahi, tangata whenua, Port of Tauranga, Priority One and KiwiRail. The TSP takes UFTI's Connected Centres vision and focuses on the first 30 years of transport planning required to make it happen. It prioritises and decides what projects need to begin in 0-3 years, 3-10 years, and 10-30 years.

The TSP has two packages which are of relevance to the Tauriko Network Connections DBC:

- Public Transport and Mode Shift Package (see Figure 1-11) – particularly activities 32 and 33 on Cameron Road (see Section 1.5.7).
- SH29A Package (see Figure 1-12).

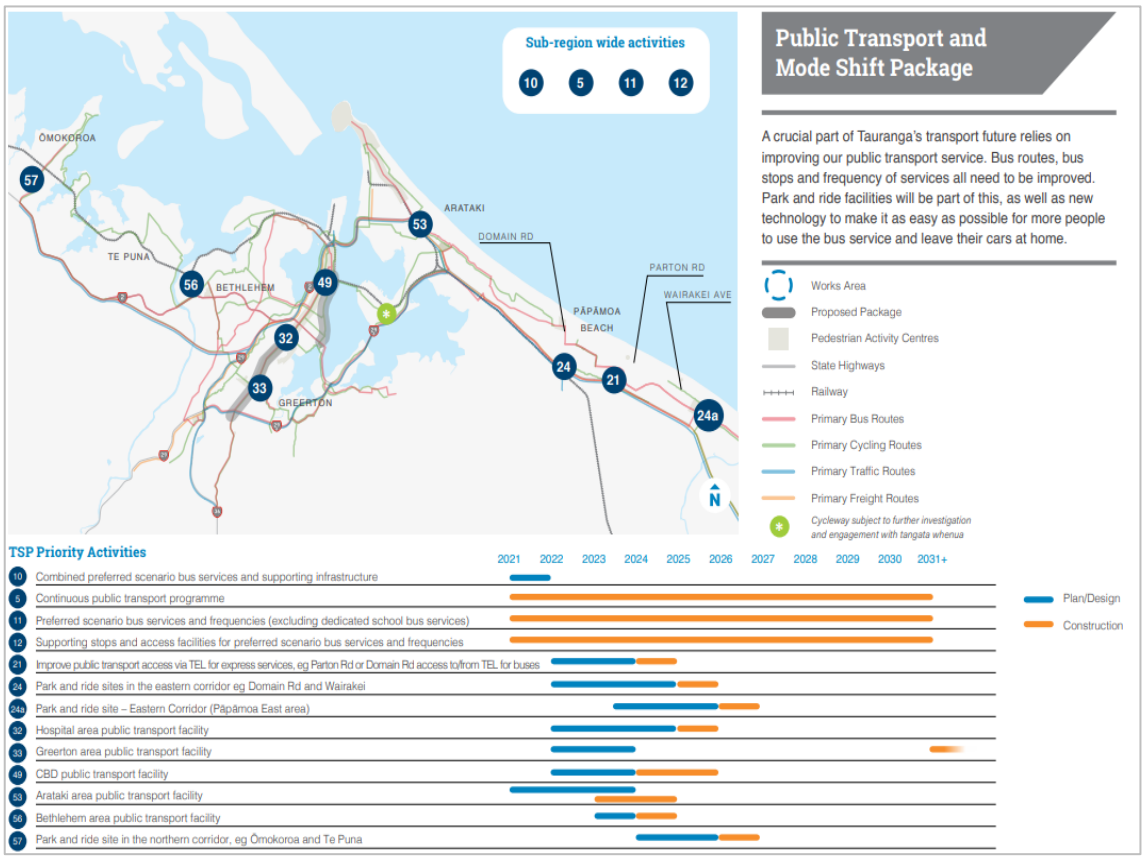


Figure 1-11. Public Transport Mode Shift Package

10 https://www.tauranga.govt.nz/Portals/0/data/future/growth/files/transport-system-plan-executive-summary.pdf

Figure 1-12. SH29A Package

1.5.7 Cameron Road Business Case (Ongoing)[11]

As part of the TSP priority activities, TCC are investigating a two-stage Business Case for Cameron Road – one of Tauranga city's main arterial links:

- Stage 1 (between Harington Street and 17th Avenue) is currently underway in construction.
- Stage 2 (between 17th Avenue and Cheyne Road/Pyes Pā).

All Cameron Road options being considered are expected to provide for one general traffic lane in each direction and cycling facilities all the way along Cameron Road. Other features are being considered such as dedicated bus lanes in both directions.

Figure 1-13. Cameron Road Business Case Stage 2 area

The outcome of Stage 2 is relevant to this DBC as it connects to the Barkes Corner intersection, the eastern extent of the Tauriko Network Connections DBC project area (see Figure 1-13). Furthermore, the Tauriko Network Connections DBC makes a critical assumption that PT priority is delivered along the full length of Cameron Road.

The two project teams have been in contact during the development of the Tauriko Network Connections DBC and noted that the Cameron Road team have based their business case assumptions on 50%-60% modelled future demand whereas the Tauriko Network Connections DBC assumes 100% modelled demand. This difference in base assumptions is due to different expectations for the major arterial road network (SH29A). Furthermore, the Cameron Road Business Case team advised in May 2023 that the emerging way forward would have one general traffic lane and one bus priority lane in each direction north of Maleme Street.

Stage 2 and the Final Business Case are expected to be complete by late 2023.

1.5.8 Ruakura Superhub

Ruakura Superhub in east Hamilton is one of New Zealand's largest integrated commercial developments, including 30ha Ruakura Inland Port, being jointly delivered by Tainui Group Holdings and Port of Tauranga.

The Ruakura development is projecting an increase in rail freight between Waikato and Bay of Plenty and a reduction in road freight up to 1,000 vehicles per day.

11 https://www.tauranga.govt.nz/exploring/transportation-and-roads/transportation-projects/building-our-future-cameron-road-te-papa

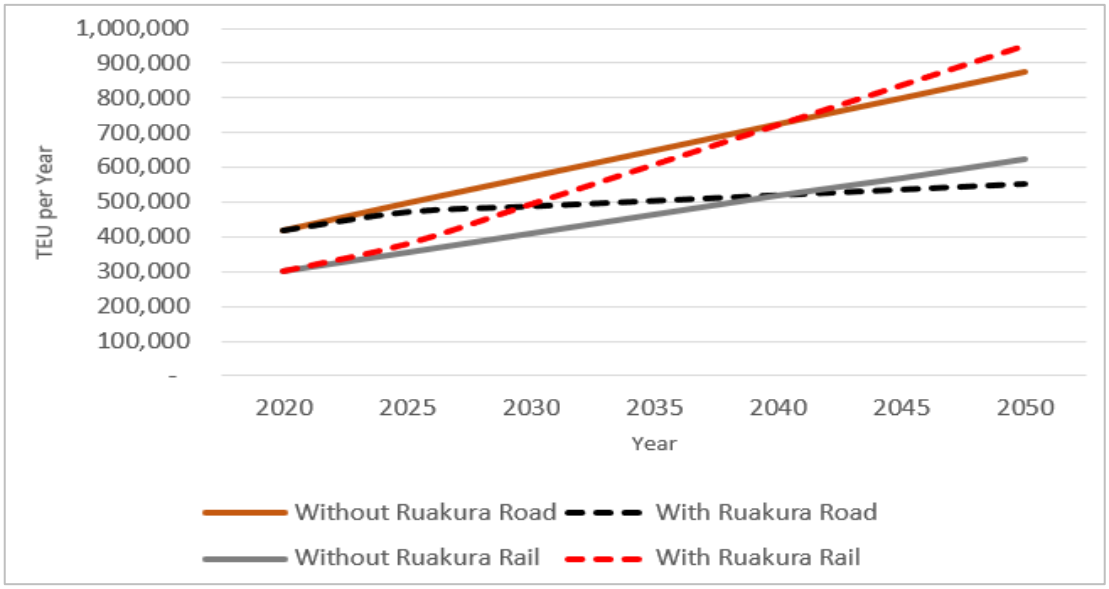


Figure 1-14. Freight transfer impact[12] of Ruakura on Port of Tauranga container transport mode

However, predicted growth in container movements at the Port of Tauranga shows at least a 50% increase in the next 30 years. Based on current modal share, this is likely to decrease road freight by almost 1,000 trucks per day travelling on SH29 over the Kaimai Ranges or along SH2 through Katikati as shown in Figure 1-15.

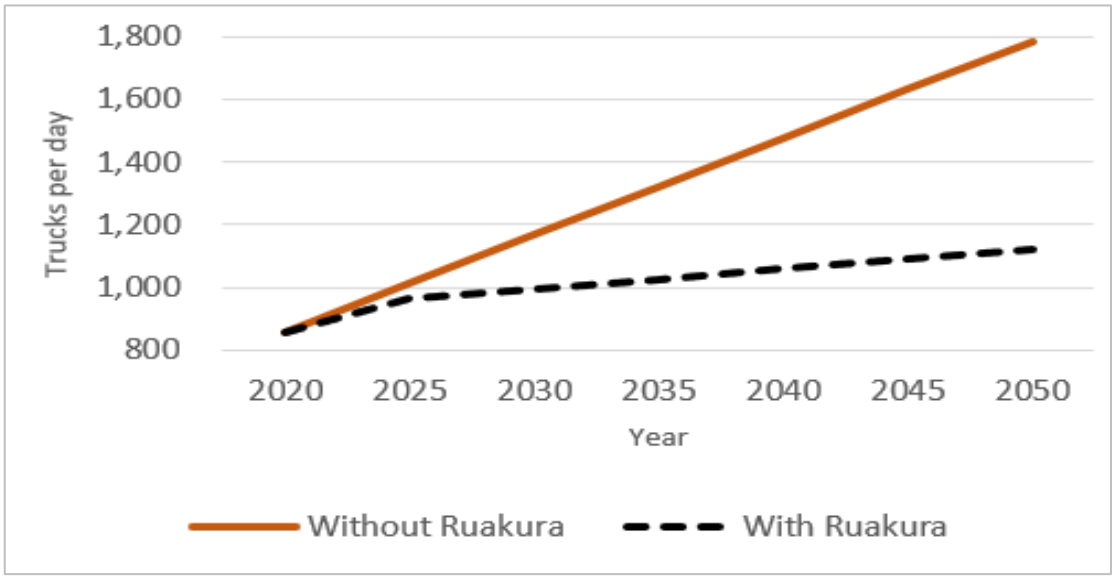


Figure 1-15. Estimated daily truck[12] movements from Port of Tauranga

Therefore, while the impacts of the Ruakura Superhub are yet to be seen, it is expected to be relevant to Tauriko Network Connections DBC due to its potential impact on freight travel patterns in Bay of Plenty. Although it is noted that truck movements on SH29 are expected to increase from 3400/day to 6500/day by 2048+ without the Ruakura Inland Port impacts.

12 Source – Ruakura Draft Business Case, Waka Kotahi

2 ENGAGEMENT APPROACH

The Tauriko Network Connections DBC has been underpinned by wide engagement since 2016 with a range of engagement partners (including project partners, stakeholders, and community). This section summarises the overall engagement approach including:

- Engagement methods outlined in the Engagement Plan (see Section 2.1).
- Engagement partners (see Section 2.2).
- Tangata whenua partnership (see Section 2.3).

Engagement outcomes during option investigation are provided in Section 5**.**

2.1 ENGAGEMENT PLAN

The Stakeholder and Community Engagement Plan is a 'living document' developed for the DBC, using the IAP2 Public Participation Spectrum and Waka Kotahi Public Engagement Guidelines[13]. The Engagement Plan outlined the proposed engagement approach and provided an implementation plan for engagement activities, which was regularly revised to respond to project circumstances.

Overall, the Plan defined the primary purpose and objectives of engagement being to:

- Shape project decisions or actions based on the perspectives and needs of the partners and stakeholders.
- Identify problems and opportunities to address through the project.
- Manage risk of stakeholder or community opposition to the Recommended Option(s).
- Generate alternatives, new ideas, and options.

Engagement for the DBC was coordinated with Project Partners (Tauranga City Council, Western Bay of Plenty District Council, Bay of Plenty Regional Council) through the 'Tauriko for Tomorrow' project[14] for the successful coordinated delivery of the wider Western Corridor programme.

2.2 ENGAGEMENT PARTNERS

The Engagement Partners have been grouped by the roles that they play and the potential influence that they have on the project, as outlined below.

- **Project Partners:** Project partners are those that have a critical influence over the success of the Project, and/or a statutory or funding role in aspects of the Project. Representatives of the Project Partners may also form part of the Project Team itself.
- **Stakeholders:** Stakeholders are those with a vested interest in the project (including affected landowners) that is greater than the public and potentially have greater influence over project outcomes.
- **Community:** The wider community includes the public and other interested parties and groups that have an interest in the project, want to be kept informed, and provided with an opportunity to participate in engagement.

The five levels of engagement in the IAP2 spectrum along with the engagement partners are shown in Table 2-1.

13 https://www.nzta.govt.nz/assets/resources/public-engagement-manual/docs/nzta-public-engagement-guidelines.pdf
14 https://www.taurikofortomorrow.co.nz/

Table 2-1: Engagement Partners and IAP2 Level of Engagement

ENGAGEMENT PARTNER	IAP2 LEVEL OF ENGAGEMENT
Project Partners ('Tauriko for Tomorrow')	
• Waka Kotahi • Tauranga City Council • Western Bay of Plenty District Council • Bay of Plenty Regional Council • Tangata Whenua - Te Kauae a Roopu Partnership - Ngāti Ranginui Iwi Authority	Collaborate
Stakeholders	
Affected Landowners/Occupiers/businesses (depending on options)	Involve
Ministry of Education (MoE) and Tauriko School	Involve
Tauriko West developers and landowners	Involve
Tauranga Crossing Limited	Involve
Heritage NZ	Consult
Department of Conservation	Consult
NZ Police	Consult
Kāinga Ora	Consult
Community	
Advocacy Groups, including: • Forest & Bird • Eastern Fish & Game • Priority One • Tauranga Chamber of Commerce • Tourism Bay of Plenty	Inform and Consult
Industry Groups, including Employers & Manufacturers Association (EMA), Federated Farmers, Port of Tauranga	Inform and Consult
Transport and Freight Representatives, including Freight Logistics Action Group, Public Transport Operators/School Bus, Road Transport Forum (Road Transport Association, NZ Trucking, National Road Carriers); NZ Heavy Haulage, Automobile Association (AA) Bus and Coach Association	Inform and Consult
Bay of Plenty District Health Board	Inform and Consult
Local MPs	Inform
Network Utility Operators	Inform and Consult

2.3 TANGATA WHENUA

A project-specific tangata whenua partnership group, Te Kauae a Roopu, was set up in 2017. The purpose of the partnership is to provide a framework to work collaboratively as equal partners for the Tauriko for Tomorrow projects.

This group includes six hapū with ancestral links to the area, and who, whakapapa to Ngāti Ranginui and Ngai Te Rangi Iwi of Tauranga Moana:

- Ngāti Kahu
- Ngāti Rangi
- Ngāti Pango
- Pirirakau
- Ngāti Hangarau
- Ngai Tamarawaho

Te Kauae a Roopu hui also involve representatives of TCC, WBOPDC, BOPRC, Waka Kotahi and the Ministry of Education (MoE). The format included meeting regularly on a six-weekly basis (generally) to work in partnership on the assessments and investigations required for technical aspects, heritage, and cultural values. TCC are now the lead agency for managing the relationship and organising hui.

3 STRATEGIC CASE

3.1 INVESTMENT LOGIC MAPPING SUMMARY

The problems and benefits for this DBC have been developed and modified via stakeholder engagement over the last ten years when a Strategic Case was developed in 2013. The problems and benefits that have been used for the development of this Tauriko Network Connections DBC have built on and updated the work undertaken for previous phases.

The two problems and agreed weightings for the Tauriko Network Connections DBC include:

- **Problem 1**–- If not appropriately integrated into the transport system, planned land use development and growth in the Western Corridor is unlikely to proceed due to the scale of impacts on access, safety, and liveability (70%).
- **Problem 2**–- Poor geometry and negotiation of major intersections on SH29/29A through the Tauriko Network Connections leads to injury crashes and high severity outcomes (30%).

Problem 1 refers to the integration of the transport system and land use in the Western Corridor. With this traffic growth from planned urban development in the Western Corridor (i.e., approximately 17,640[15] planned residential dwellings, and commercial and industrial development in TBE and Tauranga Crossing) and freight movements, and no or little planned integration, the current highway network is unlikely to be able to cater for this growth in the future. All this additional growth and limited travel choice means people are likely to choose to drive private vehicles, putting pressure on an already constrained network and resulting in reduced accessibility to core services.

Problem 2 reflects the poor safety record of SH29 and SH29A in relation to its high national function and movement and place expectations. Particularly with regards to the infrastructure (i.e., two lanes with very limited safety features and less than desirable geometric alignments). There are also several at grade intersections and accesses directly on to the highway which results in highway traffic conflicting with local traffic resulting in crashes and a high potential for risk given the high traffic volumes. Some safety risks are being reduced due to the proposed implementation of the Tauriko Enabling Works, but this will not address all safety issues nor the future functional needs for all modes.

The evidence to validate the Tauriko Network Connections DBC problems is provided in Section 3.2 and Section 1.1. Along with two problems, there are three stakeholder agreed investment objectives (IO):

1 **Benefit 1:** Better access to international and major domestic markets on this national strategic freight route linking to the Port of Tauranga (20%).

2 **Benefit 2:** The Western Corridor is better connected and accessible through a multimodal transport system which supports timely delivery of sustainable growth (40%).

3 **Benefit 3:** Improved safety within the Tauriko Network Connections Corridor (40%).

Benefit 1 recognises that having better integration for all users but still maintaining efficient and resilient road freight access to the Port through the Tauriko Network Connections area (i.e., SH29) is an important contribution to New Zealand's economy.

Benefit 2 captures the desire to support growth, both residential and commercial areas and develop a multi modal transport system that provides accessible and attractive mode choice for all users within the Western Corridor.

Benefit 3 links to both problem statements and captures the need to improve road safety through this area at the same time as accommodating residential and commercial growth across a rationally planned network.

The Investment Logic Map (ILM) identifies the problems, benefits, and investment objectives to be achieved through the Tauriko Network Connections DBC.

15 Includes those land use areas described in Section 3.2.1

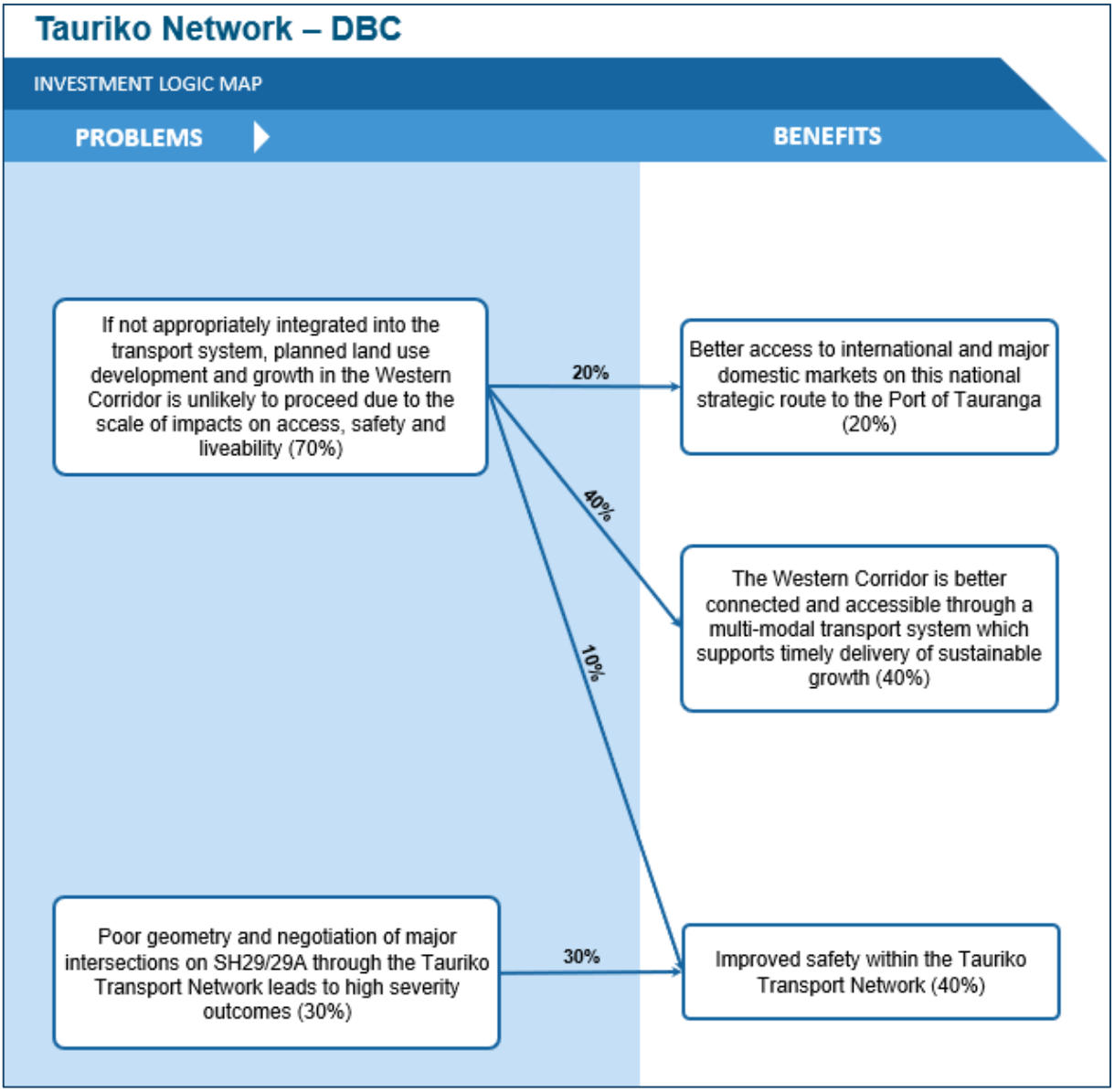


Figure 3-1. Investment Logic Map for Tauriko Network Connections DBC

3.2 PROBLEM 1 – LAND USE TRANSPORT INTEGRATION

Problem 1: If not appropriately integrated into the transport system, planned land use development and growth in the western corridor is unlikely to proceed due to the scale of impacts on access, safety, and liveability (70%).

Planned land use in the Western Corridor without an integrated transport network will negatively impact safety, accessibility and liveability.

By 2048+, growth in the Western Corridor will result in the population increasing from 5,343 to 42,494 people, an additional 17,640 dwellings, and 10,202 jobs resulting in around 226,744 total daily trips needing to use the existing transport network. Car dependency is high due to a lack of or unsuitable facilities for other modes of travel. In Tauranga for example taking a bus can take 3.3 times as long as a journey by private vehicle and walking and cycling mode share of around 1% in the Western Corridor.

In the long term, without significant and staged intervention such as improving services and linkages to offer a widertravel choice, people will still choose to drive. With an already congested network, vehicular traffic conditions will continue to deteriorate unacceptably for both the through function element on the key inter-regional journey (i.e. freight to the Port of Tauranga), for commerical operaters and for local movements between the growth areas and places of work, education and recreation.

The following section describes Problem 1 for the Tauriko Network Connections DBC. If future land use is not well connected to the transport system, then the impacts are more difficult to manage and/or mitigate which can affect the viability of future development and peoples' ability to access places to work, live, learn and play.

The Tauriko Enabling Works provides opportunities for some improvements to access and safety for the Tauriko West development to Tauranga Crossing and TBE. However, if nothing else is done, land use and transport systems within the wider Western Corridor will not be well integrated nor multi modal, and inter-regional freight traffic will be affected. For a large part of the existing Western Corridor, walking, cycling and public transport routes are hardly available and local trips would still have to utilise the state highway network. This results in transport users having to interact with significant volumes of freight accessing international and domestic markets via the port.

As the Western Corridor is being developed there will be significant impacts on the transport network already under pressure particularly at major intersections on SH29 (Takitimu Drive/SH36) and SH29A (Barkes Corner). With this project, there is a considerable opportunity to:

- Better manage the impact of growth on the transport system.
- Significantly enhance access, safety, and liveability with a more fully integrated transport system.
- Allow the predictable and efficient movement of freight and commercial users.

The evidence to validate Problem 1 is provided in the following sections and includes two parts:

1. The significant demand on the transport network from **future land use** (both residential and commercial) (Section 3.2.1).
2. How that demand and lack of fully integrated transport system will affect **accessibility and liveability** (Section 3.2.2).

3.2.1 Future Land Use

The evidence for the future land use focuses on three aspects:

3. SmartGrowth and Connected Centres.
4. The growth challenge.
5. Commercial and retail development.

3.2.1.1 SmartGrowth and Connected Centres

The strategic context and drivers (SmartGrowth and UFTI Connected Centres) are described in Section 1.4. Those Connected Centres principles most relevant to this DBC include:

- Macro-urban form–- urban form presents good quality, compact mixed-use urban development with density and destinations focussed on public transport nodes and along corridors.
- Mode shift and micro mobility- shared and active modes (including micro-mobility) are the most popular choices for local trips, enhancing travel choice and mode share throughout the sub-region.
- Social equity – infrastructure and urban form improve all peoples' access to opportunities necessary to satisfy essential needs and advance wellbeing.
- Strategic corridor function – a sub-regional network of strategic transport corridors integrates the purpose and context of each corrido by balancing place and link functions and user profiles.
- Hierarchy of interventions – optimise the use of existing infrastructure before committing to construct new infrastructure.
- Climate change – greenhouse gas emissions from transport achieve net zero by 2050 through a combination of urban form, street design, technology changes and public transport services that allow people to drive less within the sub-regional, while strategic transport corridors are made reliable and efficient for freight and inter-regional travel.

3.2.1.2 The Growth Challenge

Tauranga is the fifth-largest city in New Zealand, with over 140,000 residents. The endorsed UFTI Connected Centres Programme outlined the requirement to plan for approximately 200,000 additional people, 95,000 new homes, and two million additional transport movements per day across the western Bay of Plenty sub-region within the next 30 to 70+ years (see Section 1.4). The Western Corridor is included within this sub region, *and, with a total of 17,640 dwellings predicted, the Western Corridor will contribute almost 20% of those new homes within the wider western Bay of Plenty sub region.*

The Enabling Works project (Section 1.5.2) is included in the Western Corridor growth, which is set to deliver the first 2,000 houses at Tauriko West and 40% of the TBE extension. Further transport improvements are required to deliver the full build out of Tauriko West (3600-4000 homes) and the remainder of the TBE extension. The Western Corridor growth also provides an opportunity for improved access, travel choice and safety for those residents. For the longer-term growth, areas in the Western Corridor include Merrick, Joyce, Upper Belk Roads all being possibilities to provide sufficient housing out to 2043.

The Western Corridor will provide for almost 20% of the new homes planned for the wider Bay of Plenty sub region.

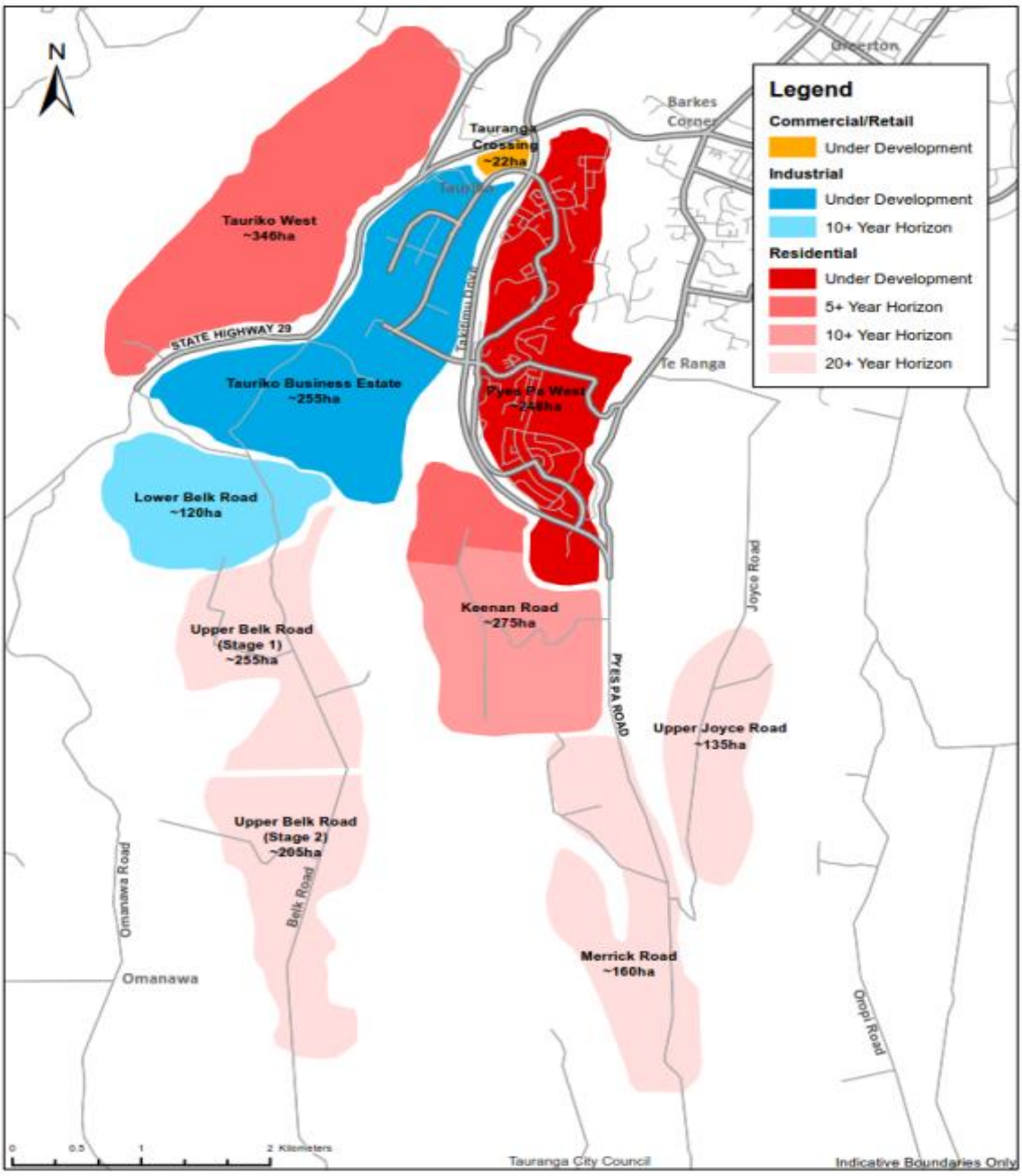


Figure 3-2. Indicative Sequencing schedule to deliver growth in Western Corridor [16]

The land use yield and dwellings for the Western Corridor is shown in Table 3-1. The SmartGrowth Western Corridor study is a 50-year plan for the development of between 12,500-15,500[17] dwellings, a commercial centre, and an industrial estate. Grouping the land uses promises the 'live, learn, work and play' pillars of the SmartGrowth Strategy. This DBC is focused on delivering outcomes to the 2048+ horizon.

[16] Indicative sequencing plan informed the BOP RPS https://www.boprc.govt.nz/your-council/plans-and-policies/policies/regional-policy-statement/change-4-tauriko-west-urban-limit

17 https://www.smartgrowthbop.org.nz/media/1639/may-western-corridor-strategic-planning-study.pdf

Table 3-1. Western Corridor Expected Population, and Dwellings to 2048+[18]

AREA NAME	POPULATION			DWELLINGS			EMPLOYMENT (UNADJUSTED)			DAILY TRIP GENERATION
	2031	2048	2048+	2031	2048	2048+	2031	2048	2048+	2048+[19]
Western Corridor										
Tauriko Business Estate (TBE)	134	134	134	101	101	101	3,630	4,938	4,938	72,616
Pyes Pa West	6,389	6,490	6,490	2,170	2,207	2,207	184	188	188	16,389
Keenan Rd	349	4,293	4,293	146	1,620	1,620	48	59	59	15,178
Tauriko West	2,787	7,427	7,427	1,269	3,212	3,212	176	222	222	27,829
TBS Extension + Upper Belk	535	536	13,800	184	184	6,000	1,521[20]	3,202	3,202	62,169
Merrick Road	479	1,178	5,750	161	390	2,500	74	76	76	17,869
Upper Joyce	624	626	4,600	218	218	2,000	93	53	53	14,693
Pyes Pa										
Pyes Pa	7,478	7,519	7,519	2,524	2,538	2,538	2,335	2,728	2,728	-
Total	18,775	28,203	50,013	6,773	10,470	20,178	8,061	11,466	11,466	226,743

Table 3-2. Industrial Employment Data for Tauriko Business Estates and Extension[21]

AREA NAME	AREA	INDUSTRIAL BUILD-OUT %			
		2018	2031	2048	2048+
TBE	213 ha (net)	35%	73%	100%	100%
TBE Extension	100 ha	7%	43%	100%	100%

3.2.1.3 Commercial and Retail Development

To establish a high quality of liveability for the new community in the Connected Centres programme and the Western Corridor, TBE and Tauranga Crossing are planned to provide the community with commercial and retail spaces and places to work.

TBE is a comprehensively planned industrial and commercial business land development of approximately 195 hectares, which forms part of the Western Corridor. The existing zoned growth area is approximately 300 hectares and largely developed. The expansion of TBE into the lower Belk Road UGA (within the existing urban limits of the RPS) by approximately 120ha is underway via a private plan change process to zone the land for industrial use.

The development of existing and future stages of TBE is governed by a structure plan, supported by Kaweroa Drive which provide access across the TBE[22], and collector road route, with the key corridors aligning with the PBC. This includes the planned connection from Redwood Lane (Tauriko West UGA) and Kaweroa Drive to SH29, which forms part of the Tauriko Enabling Works package (Section 1.5.2). This connection provides not only an opportunity to improve safety, but it also provides an alternative route through to the industrial area and Pyes Pā and SH36, and the only connecting link between the

18 Beca Transport Modelling Report. Refer Appendix B.

19 Created by WSP from Beca Modelling Outputs October 2022 (TTSM 21 (Y2018/ME and Y2048+/CycleOn/DM) spreadsheet. It is noted that the 2023 TSP Refresh Model may produce slightly different results to those presented in this table.

20 Employment projections from Market Economics Ltd in June 202 for 2031 and 2048

21 Beca Transport Modelling Report. Refer Appendix B.

22 The Spine Road is being developed by TCC as part of the Tauriko Structure Plan and is not in the scope of this DBC.

SH29 and the future lower and upper Belk Areas. However, the Tauriko Enabling Works does not provide adequate facilities for walking and cycling across to TBE, and PT services are expected to be minimal whilst the development is ongoing. Should users want to access TBE by anything other than private vehicles, there is limited choice. *There is an opportunity to provide improved and more connected facilities for walking and cycling both along and across SH29 into schools, commercial and retail areas.*

3.2.2 Accessibility and Liveability

Planned residential and commercial growth will create significant demand on the transport network, place pressure on infrastructure, restrict accessibility to core services and liveability. However, without improvements to the transport network, there will still be limited travel choice and car dependency.

Cities [such as Tauranga] are typically characterised by low density, dispersed and uncoordinated development that prioritises travel by car .[23] Current dependence on private vehicles also means that owning and regularly using a car has become a pre-requisite to fully participating in society. This contributes to several problems like congestion, poor quality urban environments, pollution and carbon emissions, poor public health, and high travel costs. **Therefore, reducing dependence on private vehicles is critical to deliver positive outcomes, specifically accessibility and liveability, in cities like Tauranga.**

Accessibility is "the ease with which people are able to reach key destinations and the transport networks available to them – includes land use access and network connectivity".[24] For this project, key destinations are places where we go to school, access core services (e.g., medical), work, play and live.

Liveability is generally measured by factors that provide quality of life, such as access to fresh water, food, housing, transport, health care, education, and a safe and stable environment.[25] Also, that:

- "The liveability of a place is generally measured by a number of different factors relating to quality of life".
- This depends on people's "age, income, cultural background, lifestyle choices, values and beliefs"; and,
- Can be measured by using both objective (climate, environmental quality, infrastructure, safety and stability, access to health care and education) and subjective factors (such as personal likes and dislikes, feelings of connections to friends and family and traditions/spiritual connections).

In summary, most factors making places liveable and accessible are impacted by traffic congestion, lack of travel choice, and lack of safe and connected facilities. Factors impacting accessibility and liveability in the Western Corridor are provided in Table 3-3.

Planned land use in the Western Corridor will place pressure on an already constrained transport network and increase carbon emissions. With limited travel choice, these constraints will restrict accessibility to core services and reduce liveability.

23 Waka Kotahi Keeping Cities Moving: Increasing the wellbeing of New Zealand's cities by growing (nzta.govt.nz)
24 Waka Kotahi ONRC Framework
25 Oxford University Press

Table 3-3: Impacts on Factors of Accessibility and Liveability in the Western Corridor

Factor	How Accessibility and Liveability are impacted in the Western Corridor
Structure Planning	• Structure planning provides the basis for land use demands and need for accessible and equitable transport choices (to live, work, play). This is a measure in the Waka Kotahi intervention hierarchy in ensuring land use is planned and developed to maximise the use of the existing network to reduce travel demand and support choice.
Infrastructure	• Traffic growth and *high car dependency without alternatives creates congestion, which worsens access to services and facilities.* However, a truly multimodal road system performs better, and is less susceptible to extreme peaks and, when they occur, a multimodal system is more robust to incidents and delays, as many people have options for alternatives. • *The current transport system infrastructure does not meet the form for its intended function, particularly the recognition that highways need to shift freight and people need to get across and along those routes safely in other modes.*
Safety and Stability	• Low levels of walking and cycling can restrict perceptions of safety. Perceptions of safety can be improved through more street activity and passive surveillance from people walking and cycling. • The *current layout of the transport system and highway form creates the potential for high risk and deaths and serious outcomes and is not a safe system*. National high-volume highways such as SH29 and SH29A are expected to have much better infrastructure in place to address that risk, and this is not currently provided.
Access to healthcare and education	• Without alternatives to driving, those unable to drive (e.g., for age or ability) or cannot afford a car are unable to access these services/opportunities. If these opportunities are located outside of a residential community, *then some parts of the community will struggle to access those opportunities without a range of alternative modes of transport available.*
Climate	• *There is an opportunity to improve climate impacts in terms of carbon emissions with this project by providing more and improved travel choice.* Government policies encouraging electric vehicle use will also provide reductions and this too would be outside the control of this project. However, there is an opportunity to provide specific infrastructure such as EV charging to further encourage use. In addition, whilst electric vehicles reduce emissions, they still use the network and contribute to reduced accessibility. There are also constraints such as flooding which will affect how the network is used and will direct how the interventions developed to address these issues.
Health	• Air quality affects health outcomes and quality of life. *High levels of pollution from traffic congestion will negatively impact liveability.* More time driving (journey to work and local trips) results in less time at home, exposure to air and noise pollution impacting on health, personal stress, and safety. Although some contributors to pollution are outside the control of this project there are opportunities within the project to improve the natural and built environment to reduce transport-related pollution. A New Zealand study found that transferring just 5% of short urban car trips (of up to 7km) to cycling would result in 5.6 fewer deaths annually across New Zealand due to reductions in local air pollution from vehicles.[26] • A multimodal transport network encourages an active lifestyle (e.g., via walking and cycling) which improves physical and mental health and wellbeing.

26 Lindsay, G., Macmillan, A., & Woodward, A. (2011). Moving urban trips from cars to bicycles: impact on health and emissions. University of Auckland. Australian and New Zealand Journal of Public Health. Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/j.1753-6405.2010.00621.x/pdf

This section on accessibility and liveability discusses key issues resulting from the growth in the Western Corridor and recognises the significant opportunity to reduce those impacts through this project. These issues include:

1. Limited transport modes.
2. Freight.
3. Transport impacts – traffic flows, intersections, and trip reliability.
4. Local access and side roads.
5. Form and function – One Network Framework.

Safety is also a key part of this and is discussed separately in more detail in Problem 2 (Section 3.3).

3.2.2.1 Limited Transport Modes

Tauranga has a *high car use percentage at around 84%* of trips to work by car.[27] Even in households with access to a car, young people, elderly people and those with mobility and visual impairments are especially disadvantaged by a lack of real alternatives to travel by car and therefore resulting in restricted access to community services and reduced liveability. Current limited mode choice contributes to high car dependency.

Currently public transport (bus) use in Tauranga is the lowest of the main urban centres in New Zealand.[28] Furthermore, Tauranga PT mode share is well below even the expected target of >15%[29] during peak periods by 2030. One of the factors contributing to this is average PT travel time compared to the private vehicle. *Current time comparisons[30] show that the time spent on a bus compared to a private vehicle in Tauranga is worse than other cities. In fact, taking a bus in Tauranga can take 3.29 times as long as a journey by private vehicle, making it an unattractive travel choice* (see Figure 3-3**).**

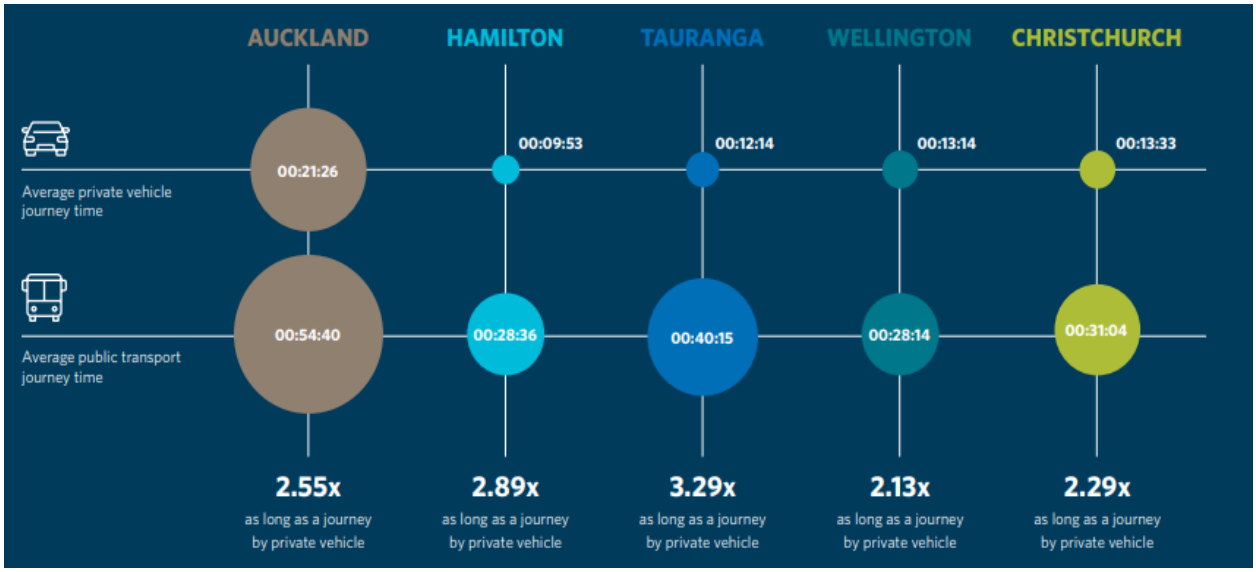


Figure 3-3. Time comparison between Public Transport and Private Vehicle Journeys [30]

In Tauriko, 2018 Census data indicates the following current mode shares for travel to work and education:[31]

- Public bus 2% and school bus 7.4%. Note: The school bus share is skewed by 36% school bus arrivals to Pyes Pā south. Without this, the overall figure is closer to 3%.

27 Arataki Report, Waka Kotahi

28 https://www.nzta.govt.nz/assets/resources/keeping-cities-moving.pdf

29 This target is based on the UFTI (2048) model.

30 https://nzta.govt.nz/assets/resources/sustainable-urban-mobility-benchmarking/sustainable-urban-mobility-benchmarking-report.pdf

31 Overall average mode share of 'Tauriko Area' (defined as SA2s Pyes Pā North and South, The Lakes, and Tauriko) from 2018 Census Stats NZ Commuter.Waka.

- Walking 3% and cycling is 1.6%. Note: Pyes Pā south also has a very high percentage walking and cycling for those departing the area, skewing the average for these two modes.

Current mode share in Tauriko is illustrated in Figure 3-4**.**

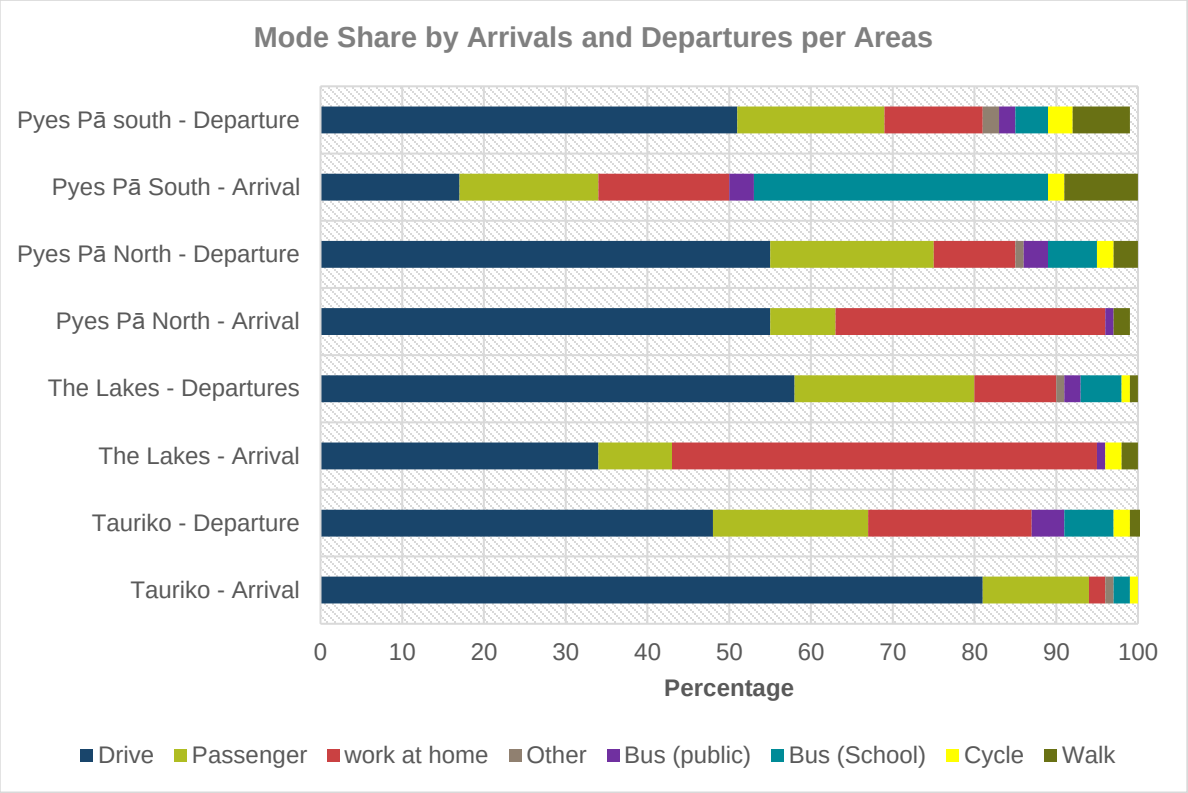


Figure 3-4. Western Corridor Mode Percentages (Commuter Waka, 2018 Census)

Bus services and travel times are impacted by limited bus priority along routes and at intersections. Residential areas like The Lakes have indirect bus routes resulting in the walking distance to bus stops being greater than the desired distance of 500m.[32] Bus infrastructure in Tauriko is underdeveloped, hence over 80% percentage of people driving and/or are a passenger in a vehicle. These factors limit bus mode share and the potential for mode shift.

There is limited travel choice in Tauriko and Tauranga.

In the Western Corridor, expected PT mode share in 2048+ is circa 1%, equating to about 950 **trips daily.**

While the Tauriko Enabling Works may contribute to safer and greater transport choice from the new Tauriko Growth area, it caters only for these additional 2000 households in this UGA – not the full build out of this UGA nor the wider Western Corridor. The Tauriko Enabling Works also does not provide for a fully reliable, efficient, and frequent public transport to attract people to buses and out of private vehicles. Without intervention, recent modelling[33] predicts around 1% PT daily mode share for the Western Corridor in 2048+. This equates to about 950 trips daily. *If nothing is done, people living within the Western Corridor will have limited transport choice impacting on both accessibility and liveability.*

32 500m is consistent with the target of 500m identified in UFTI targets and Waka Kotahi Benefits Framework. TCC's Street Design Guide also identifies that the average walking distance in about 10 minutes (short trips) is around 400m-600m. This helps measure the potential catchment of PT services as it influences the potential for mode shift.

33 Beca Modelling Report 2023 – Appendix F Table F-1

3.2.2.2 Freight

Import and export activities at the Port contribute around 9% of New Zealand's GDP. The *Port of Tauranga is New Zealand's largest export port by volume, and this is expected to continue to grow.* For all highways to the Port, SH2 and SH29 are identified as being the main road corridors for movements from Northland, Auckland, Taranaki and Northern Waikato, part of the golden triangle' reflected in Waka Kotahi Arataki (section 1.4.3), *State Highway 29 is the source of 40%[34] of all freight traffic to/from the Port*.

SH29 is the preferred freight route from Auckland, Hamilton to Tauranga.

With additional inter-regional freight growth and increased local trips expected, travel time reliability is expected to decrease.

SH29 route supports the economic success of the Bay of Plenty region and enables growth to continue. However, growth is not viable without considering liveability, traffic safety and efficiency. Maintaining efficient and resilient road freight access to the Port of Tauranga through the Western Corridor is an important contribution to New Zealand's economy. A recent study[35] shows a *predicted increase of HCV traffic of between 56% and 64% between 2018 to 2043 on the SH29 Kaimai Route*, an increase of 2,300 to 3,600 HCVs per day through this area. With growth occurring in the Western Corridor and the need to provide access, freight reliability will be compromised particularly via the additional intersections that will be in place via the Enabling Works.

Although there is likely to be a greater focus on shifting freight to other lower carbon methods such as rail, this is difficult based on topographical constraints and infrastructure between Auckland, Waikato and Tauranga, the need for flexibility in trips for commercial operators and operational capacities at the Port. Therefore, road freight is still expected to continue to be the dominant form of transport for these routes. Although outside the scope of this project, hydroelectric cells are more likely to be applicable for freight than private vehicles. Using lower emission fuels is likely to have more impact.

35 https://ufti.org.nz/wp-content/uploads/2020/02/ufti-regional-freight-flows.pdf

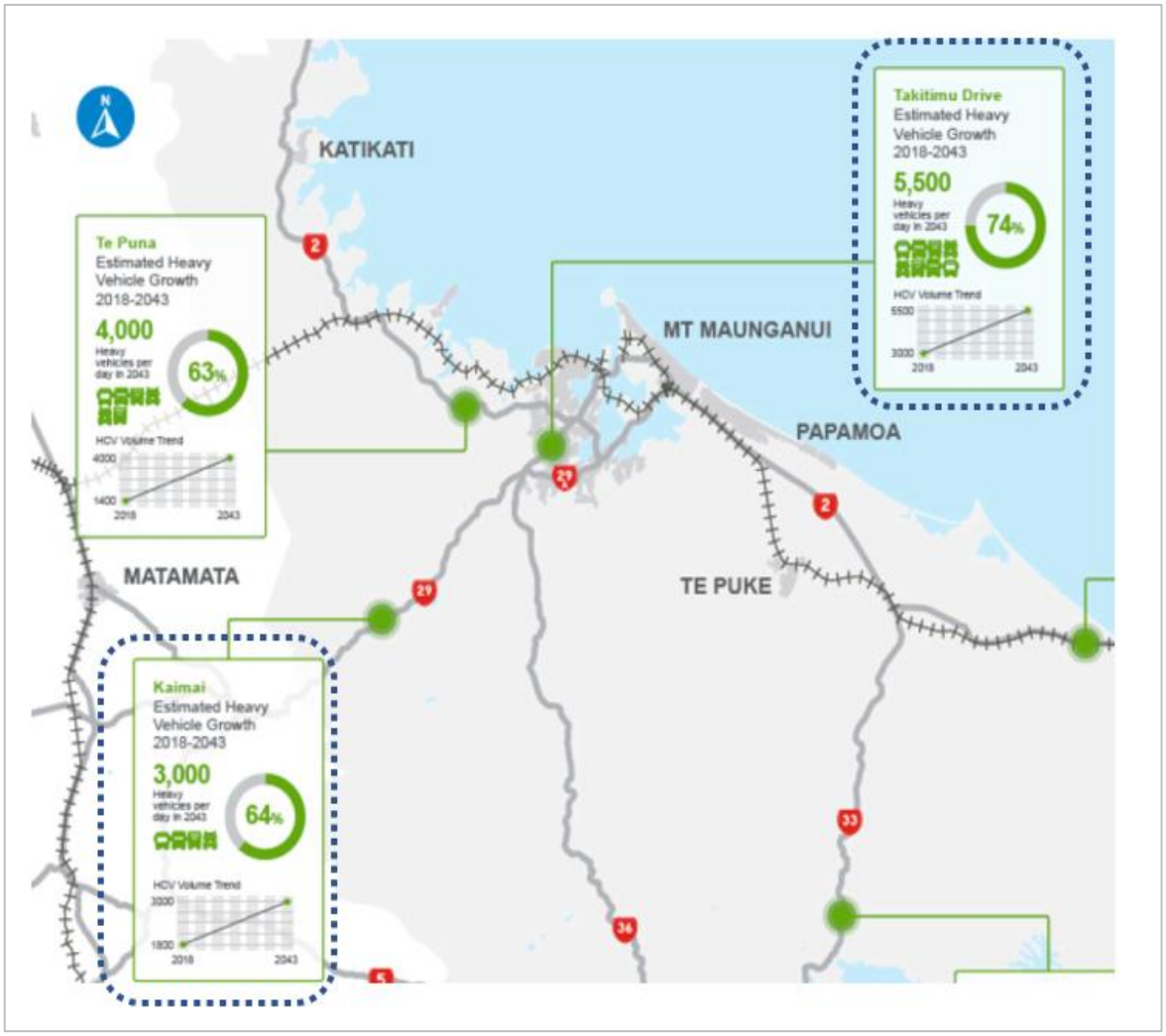


Figure 3-5. Estimated Freight AADT[36] from 2018 to 2043

3.2.2.3 Traffic Volumes

Without intervention, traffic conditions may further exacerbate accessibility and liveability concerns in the Western Corridor and Freight reliability times.

State Highways in the Western Corridor have experienced rapid traffic growth with around a 5% annual growth rate between 2011 and 2020[37]. The State Highway network also experiences significant traffic volumes, with the following volumes recorded in 2021[38]:. These volumes are also shown in Figure 3-6**.**

- SH29 (west of Takitimu Drive/SH36 intersection) with over 25,200 vehicles per day, with 17.1% heavy commercial vehicles (HCV).
- SH29A (east of Takitimu Drive) with around 26,680 vehicles per day with 10.8% HCV.
- SH36 (south of Lakes Boulevard) with around 11,700 vehicles per day with 11.0% HCV.

With the Tauriko Enabling Works in place, this is expected to result in a 10% reduction in traffic flow in 2031 on SH29 west of Takitimu Drive as traffic destined for the Lakes area can use Kaweroa Drive as an alternative to SH29[39].

[36] Bay of Plenty Regional Freight Flows Study – page 6

[37] Based on NZTA State Highway telemetry data https://www.nzta.govt.nz/resources/state-highway-traffic-volumes/

[38] Based on NZTA State Highway telemetry data https://www.nzta.govt.nz/resources/state-highway-traffic-volumes/

39 refer Beca Aimsun modelling report - March 2022

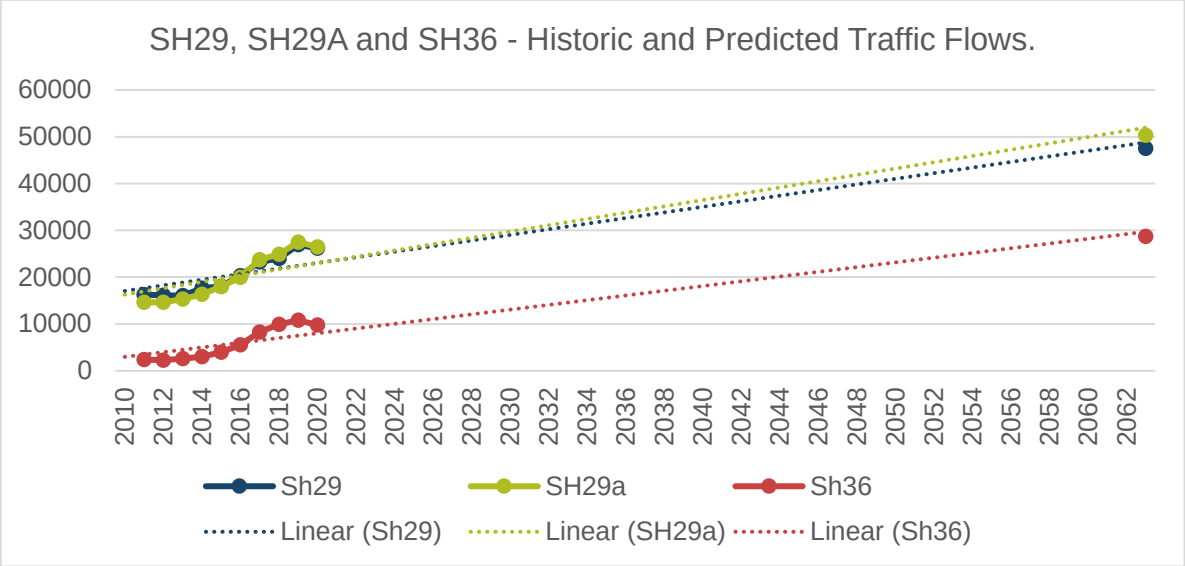


Figure 3-6. SH29, SH29A and SH36 Historic and Predicted Traffic Flows (Waka Kotahi Telemetry Data)

Without intervention, the additional trips are expected on an already constrained network with limited walking, cycling and PT facilities. The result of which will be *that people will have to rely on using private vehicles and drive on an already congested network, resulting in reduced accessibility and delays in getting to core services, education, and jobs – and worsened liveability.*

Additional traffic also increases emissions when the Emissions Reduction Plan (ERP) has a national target of reducing vehicle kilometres travelled by 20% by 2035. The latest modelling report (2023) shows that although carbon dioxide will reduce by almost 50% per person by 2031 and beyond, this is largely due to the assumptions of changes in the vehicle fleet (from light vehicles to electric vehicles). However, with the Tauriko Enabling Works in place, emissions are shown to have a very minor increase in all the years modelled.

Planning for this growth is necessary to ensure the right traffic is on the right road, and the through efficiency of the state highway network is not jeopardised by local trips, nor should any local trips by any mode be jeopardised by this regional traffic. Investment in viable alternative transport modes is also required to relieve the added pressure on the road network because of this growth. In addition to this, the full connection between SH29 and SH36 via Kaweroa Drive is required as per the PDB Programme 8 to support growth in the western corridor.

3.2.2.4 Intersections

Even with the Tauriko Enabling Works in place[40], key existing intersections in Tauriko will become less functional in the long term as trip demand increases. Two particular sites are:

- Takitimu Drive Intersection (Takitimu Drive/SH36/SH29/SH29A), and.
- Barkes Corner (SH29A/Cameron Road/Pyes Pa intersection).

These key intersections (Takitimu and Barkes) will become major bottlenecks to traffic and trip reliability for freight in the next 10-20 years (see Table 3-4**)**.

Traffic Modelling forecasts[41] indicate the following potential levels of congestion:

40 The Enabling Works is expected to reduce high delays at the existing Cambridge Rd intersection and slightly reduce delays at Takitimu intersection largely due to a result of reassignment of vehicle trips, based on previous traffic modelling (Beca Report 2022)

41 2000 household modelling memo – WSP 2021

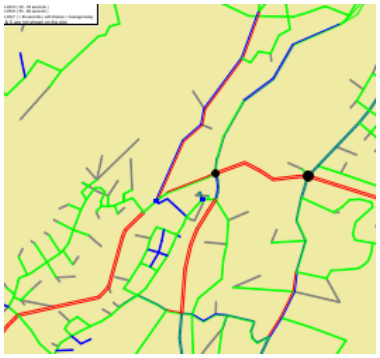
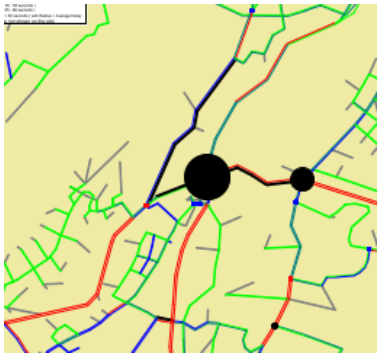
- At Takitimu Drive Intersection: High levels of congestion for freight on the Takitimu Drive Toll Road approach as early as 2031. During the PM 15minute peak period this is likely to result in approach delays up to 16.5minutes/vehicle with queue lengths of 1.5km. Even the average 2hour peak period delay is considered excessive at 11mins/vehicle.
- At Barkes Corner Intersection: On the Pyes Pa Road approach in 2031 during both the AM and PM 15minute peak period, delays could be as high as 23minutes/vehicle with queue lengths of greater than 1.5km. Although the approach delay during the average 2hour AM and PM periods is likely to be less it is still forecast to be in the order of 13.5minutes/vehicle.

Even with the Enabling works in place, there will be significant delays in 2031 of up to 11mins at Takitimu Intersection and up to 13.5mins at Barkes Corner during weekday peak periods.

The existing SH36/Taurikura Drive/Lakes Boulevard roundabout is also forecast to suffer significant congestion in the future (post 2040) as forecast growth using the intersection exceeds the available capacity. The resulting queues on the network will impact negatively on bus movements from the Lakes and The Tauranga Crossing to the CBD and vice versa.

While the Enabling Works will address some of the current level of service and accessibility issues on SH29 at Redwood Lane and Cambridge Road intersections, as the Western Corridor develops, the above intersection forms are expected to become less appropriate for the increased traffic, transport users, and expected function (see Section 3.3.2.6)

Table 3-4: Level of Service for Do Minimum with Enabling Works in place (2031, 2048 and 2048+)

2031 Do Min (PM Peak)	2048 Do Min (PM Peak)	2048+Do Min (PM Peak)
		

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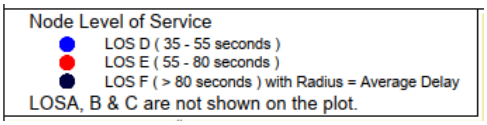

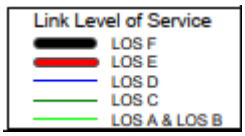

Note: LOS plots shown are based on growth assumptions which may change and alter the LOS shown.

3.2.2.5 Trip Reliability

The expected traffic issues in Tauriko of limited transport modes, increasing traffic volumes and poor intersection operation are compounded by potentially worsening travel time and trip reliability. This is likely to impact the economic efficiency of freight and other transport users' access to core services.

Earlier modelling for the Tauriko West growth area, prior to the development of the ITA to support re-zoning of these areas, identified that 2,000 houses for Tauriko West alone are expected to generate an additional 700 vehicles eastbound in the AM and 380 vehicles in the PM during the two-hour peak

period.42 It is expected that SH29 will carry most of this traffic. With growth expected from both interregional traffic from freight and the Tauriko West UGA, travel time variability is expected to increase, and reliability will worsen.

Currently, trip reliability on SH29 between Omanawa Road and the TNL connection is a concern. *Trip reliability between Omanawa Road to TNL is already a potential concern during the weekday afternoon peak periods, as all trips after 3pm experience high fluctuations in travel time (+50% of the mean).* Travel time fluctuates (50th to 95th percentile) greatly along the corridor:

- SH29 Eastbound between Omanawa Road to TNL varies between 11 to 27 minutes during AM peak, and 15 to 48 minutes during PM peak.
- SH29 westbound between TNL to Omanawa Road varies between 8 to 16 minutes during AM peak, and 12 to 28 minutes during PM peak.

This is shown in Figure 3-7.

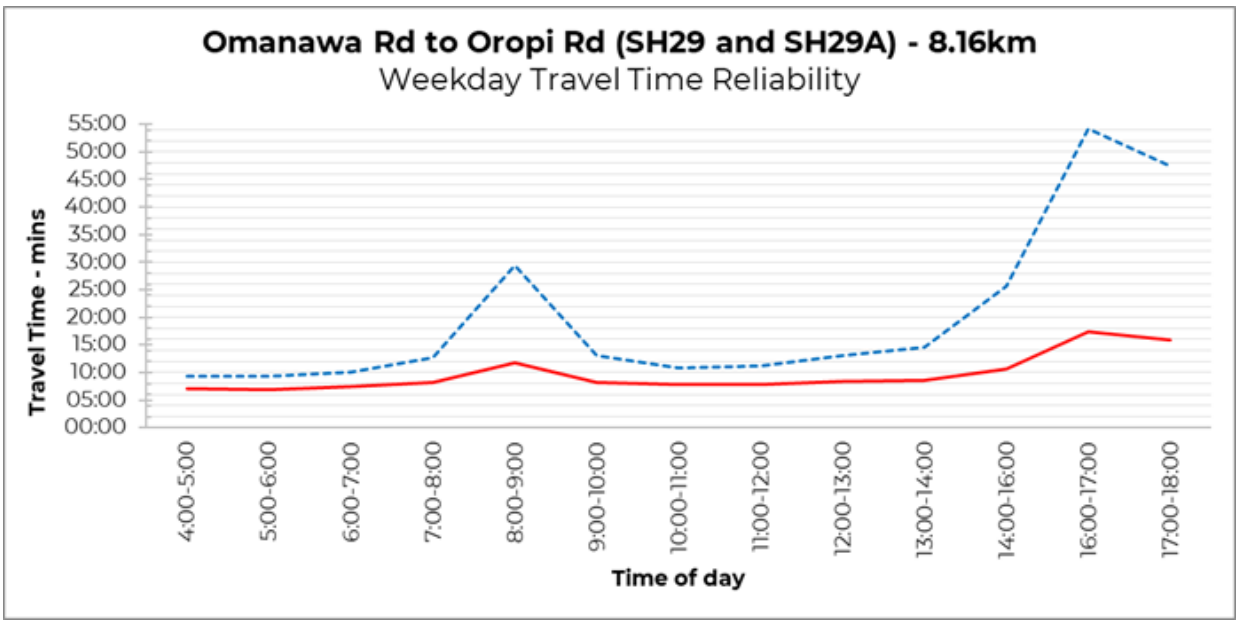

Figure 3-7. Weekday Travel Time Reliability SH29 Northbound (WSP, 2022)

42 Based on Tauriko Aimsun Early Works Testing Phase 2 – Oct 2019. It is worth noting that the Aimsun modelling indicates that SH29 does not carry the total expected flow, as some vehicle trips take an alternative route through the Tauriko Business Estate.

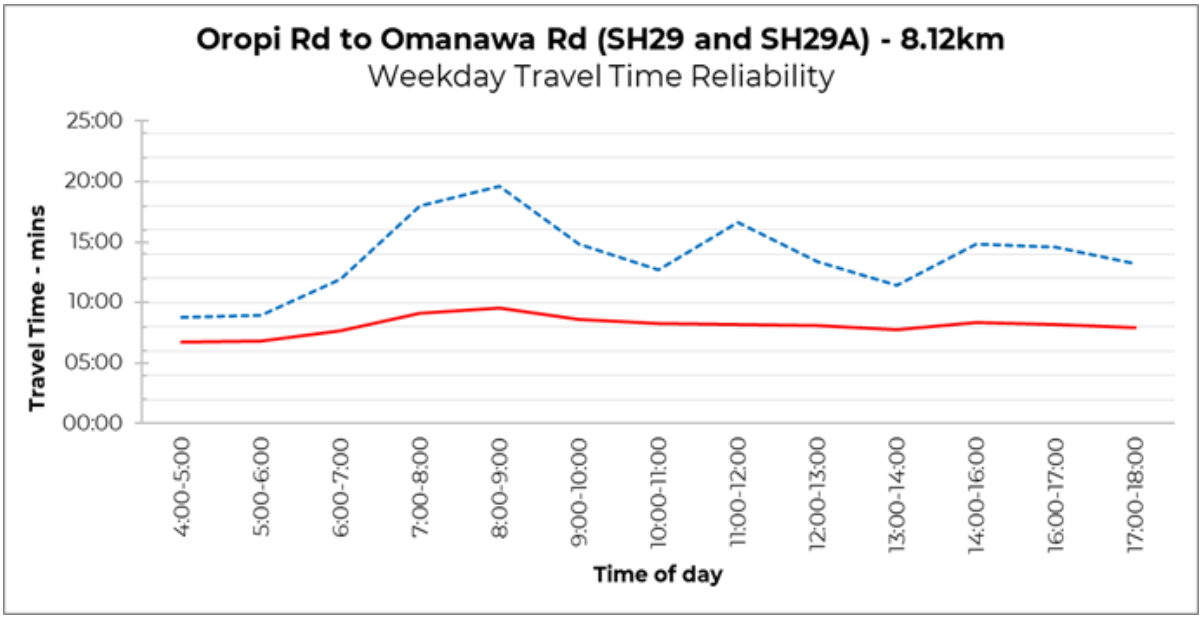

Figure 3-8. Weekday Travel Time Reliability SH29 westbound (WSP, 2022)

3.2.2.6 Local Access and Side Roads

There are a significantly high number of local accesses along the nationally significant existing SH29 and SH29A corridor. Between Omanawa Road and Barkes Corner there are 51 known side road/access points, which is significant for the role of the route as a national high volume state highway with a posted speed limit of 100km/h and a high movement and low place function (Section 3.3.2.7). The desired outcome for accessibility of a national high-volume state highway is that "*land use access for road users [are] rare and highly engineered with infrequent connection*"[i].

The Tauriko Enabling Works project will remove some accesses such as Tauriko School from SH29 and improve the form of some of these accesses, provide an additional access into Tauriko UGA and provide improvements across road facilities for active road users along with reduced speeds limits. Traffic at some of those intersections and on side roads such as Cameron Road are predicted to be close to 30,000vpd by 2048+. *Every additional access creates disruption to not only freight movements to the port but also for the ability for people to be able to get on and off the network.*

SH29 is not providing its expected function as a high-volume national corridor with the existing number of at-grade side roads and accesses.

3.2.2.7 Form and Function

Due to current demand and high traffic volumes along SH29, SH29A and SH36 there are existing safety, access, and travel time reliability issues both along and across the highway. These issues will be partially addressed by the Tauriko Enabling Works in the short term for parts of the Western Corridor i.e., Tauriko West UGA. However, in the long term, corridor access and safety will still be affected given the increase in housing and demand within the wider western corridor but does not provide a fully connected transport system that provides travel choice for those projected increase in users. Any additional trips generated by these housing and commercial developments will reduce accessibility and liveability.

In early phases of this project, the **One Network Road Classification (ONRC)** was used to provide several indicators for the level of service to be provided on each class of road (such as safety, efficiency,

SH29 and SH29A do not meet the ONRC requirements for safety, resilience, amenity, travel time reliability and accessibility.

amenity (travel comfort, ride quality, aesthetics, convenience, etc.), reliability, accessibility, and resilience[43].

There are certain characteristics which remain relevant for providing evidence to support the problems, particularly for safety, resilience, and travel time reliability. The ONRC for the wider state highway network is shown in Figure **3-9** and summarised in Table 5-3 showing the performance of SH29 and SH29A (defined as both a national high volume state highway[44]) and SH36 that currently exists and what it should be in the future.

In summary SH29 and SH29A do not meet the requirements for safety, resilience, amenity, travel time reliability and accessibility.

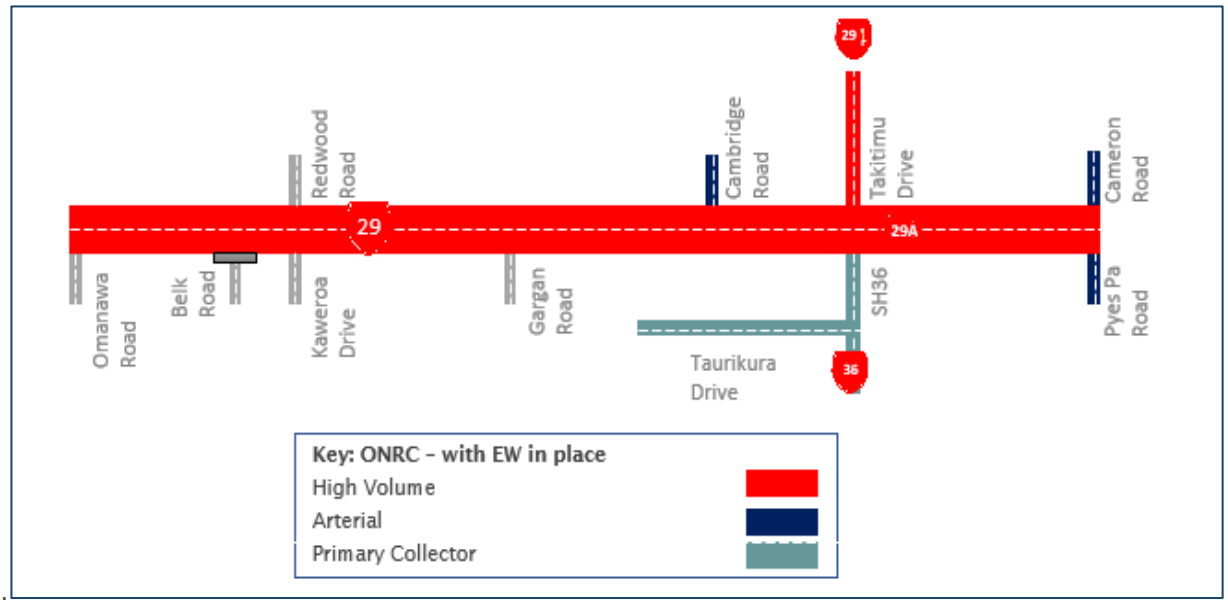

***Figure** 3-9. ONRC Classification of Key Routes in Tauriko Network*

43 Applying the One Network Road Classification Guidelines - December 2013 (nzta.govt.nz)

44 Defined within the ONRC as "roads that make the largest contribution to the social and economic wellbeing of New Zealand by connecting major population centres, major ports or international airports and have high volumes of heavy commercial vehicles or general traffic" (NZ Transport Agency, ONRC).

Table 3-5: ONRC Performance Measures–- Now and Desired

ONRC PERFORMANCE MEASURE	WHAT DO WE HAVE NOW – THE EVIDENCE	WHAT SHOULD WE HAVE IN THE FUTURE AS PART OF THE TAURIKO NETWORK CONNECTIONS?
Safety	SH29 – has a varied risk profile from a medium-high collective risk in the southern end (by Omanawa Rd) to a medium risk between Belk Rd and Cambridge Rd and a high collective risk through to Takitimu Drive. The IRR range from medium-low through to high IRR[45] rating of 1.64 (between Belk Rd and Cambridge Rd) on SH29. SH29A – Med-High collective and medium personal risk. Currently has a 'low' IRR rating of 2.04 (which algins to a low RPS[46] score and therefore a higher star rating i.e., 3-4 star road[47])	Not high risk. No higher than medium collective risk and equivalent to KiwiRAP 4-star rating. With these traffic volumes, a 4-star road would have to be at the least, median divided. *This indicates that SH29 and SH29A does not meet these requirements.*
	SH36 – Low-medium collective risk and Medium Person Risk. Most of the risk is at the intersection on either end of this corridor section.	Primary collector – Variable standards, lower speeds and extra care required. *This section of SH36 currently meets the requirements.*
Resilience	As a result of the Enabling Works a local road alternative will be available through Kaweroa Drive. However, until the ring road is completed (from SH29 to SH36) vehicles will have to use local roads such as Taurikura Drive which is not expected to carry this level of traffic. Further south on SH29, Poripori Road is an alternative route to the north and is an additional 27km route. However, Poripori Road is not suitable for large volumes of freight traffic. There are no ITS systems in place to provide information and suitability of those routes. For SH29A, there is no direct access, so should a crash occur between Barkes Corner and Takitimu Drive there are no desirable alternative routes. Alternative routes are available, via SH36/Pyes Pa Rd (10km), or Takitimu Drive/SH2/Cameron Road (12km). Alternative routes not necessarily suitable for large volumes of freight. No, ITS. For SH36 – there is no direct access between Taurikura Drive and Takitimu Drive. For westbound traffic to TBE and Tauranga Crossing, traffic would to be diverted through to Kaweroa Drive or use the Pyes Pā/Kennedy Road Link.	Route or viable alternatives is always available. Rapid restoration. Road uses are advised well in advance of issues affecting the network. Whilst alternatives are available for all routes, they are not well communicated to customers or fit for purpose for the level of traffic and proportions of HCVs. Having to use these detours would negatively impact freight travel time reliability.
Amenity	Poor journey quality, comfort, and security.	High level of comfort, no discernible roughness. The evidence[48] *suggests that there is currently an amenity problem on the State Highways in Tauriko*.
Travel Time Reliability	In 2022 data showed average freight travel times on SH29 between Omanawa Rd and the TNL connection vary between 8 to 10 minutes with 8 to 15 minutes variability during the AM Peak and 12 to 15 minutes average travel time with 16 to 33 minutes variability in the PM. The Transport Model indicates an average PM peak travel time for 2031 (with the Tauriko Enabling works in place) at 7.7mins in the AM peaks, and 8.9mins in the PM peak. In 2048+ this increases to 15 minutes and 16.7 minutes respectively. (Note, the traffic model cannot provide the variability in travel times). The evidence confirms that there is a merging problem now during the PM peak which is expected to get significantly worse as traffic growth increases, particularly on the Takitimu Toll Road approach to SH29. This variability in travel times will have a significant impact on freight trips between Omanawa Road and the Port of Tauranga (and in the reverse direction).	Target is 10 mins with < 5 mins variability.
Accessibility	Many cluttered residential accesses, with Cambridge Road being a high-risk intersection mixed with high traffic volumes. The evidence confirms that there is currently a significant accessibility problem onto SH29.	Land use access for road users is rare and highly engineered, usually only to highway service centres. High volume traffic will be unimpeded by other traffic at junctions. As described in the traffic section, *even with the Tauriko Enabling Works in place several intersections will have a very low LoS, and accessibility will be impacted.*

45 Infrastructure Risk Rating (refer to Section 3.3.2)
46 Road Protection Score
47 https://nzta.govt.nz/assets/resources/high-risk-rural-roads-guide/docs/high-risk-rural-roads-guide.pdf- Table 4-4
48 As per the Opus Consultants Problems, Opportunities and Constraints Report, November 2017

However, the ONRC does not cover land use integration and the desire for movement of people – this is covered under the One Network Framework (ONF).

The One Network Framework (ONF) replaces the former ONRC and is more closely aligned with the Government Outcomes focus areas.49 The ONF classifies roads and networks by movement (M) and place (P) and ensures integration with strategies and land use.

While the ONF was being developed, TCC also developed its own Street Design Guide, which (like the ONF) also recognises 'link' and 'place' principles for the development of local roads and streets in Tauranga50. This Street Design Guide is of relevance to local roads such as Taurikura Drive which have been investigated in this DBC.

Under the ONF Assessment51 SH29, SH29A and SH36 are largely classified as a 'transit corridor' with a primary movement function (M1) and a low place function (P5). SH29 between Omanawa Road and Belk Road is classified as an interregional connector. This means that the function is to the move traffic. Meanwhile, the section between Belk Road (which will be closed under the Tauriko Enabling Works) to Barkes Corner is classified as a transit corridor. Whilst the intention of these routes is still to move traffic, the important consideration is the safe movement of other modes and place function. Therefore, the form does not match the function on the highway routes and even with the Tauriko Enabling Works in place.

Local roads within the Western Corridor have different functions to state highways, with urban connector and local street classifications. However, these generally provide for mixed use, and increasing volumes across other modes, and connections to main transport corridors. Therefore, there is an opportunity to improve walking distances to bus stops (Section 3.2.2.1) and provide more frequent and reliable services.

The ONF assessment for state highways in the Tauriko Network is shown in Figure 3-10 and Table 3-6.

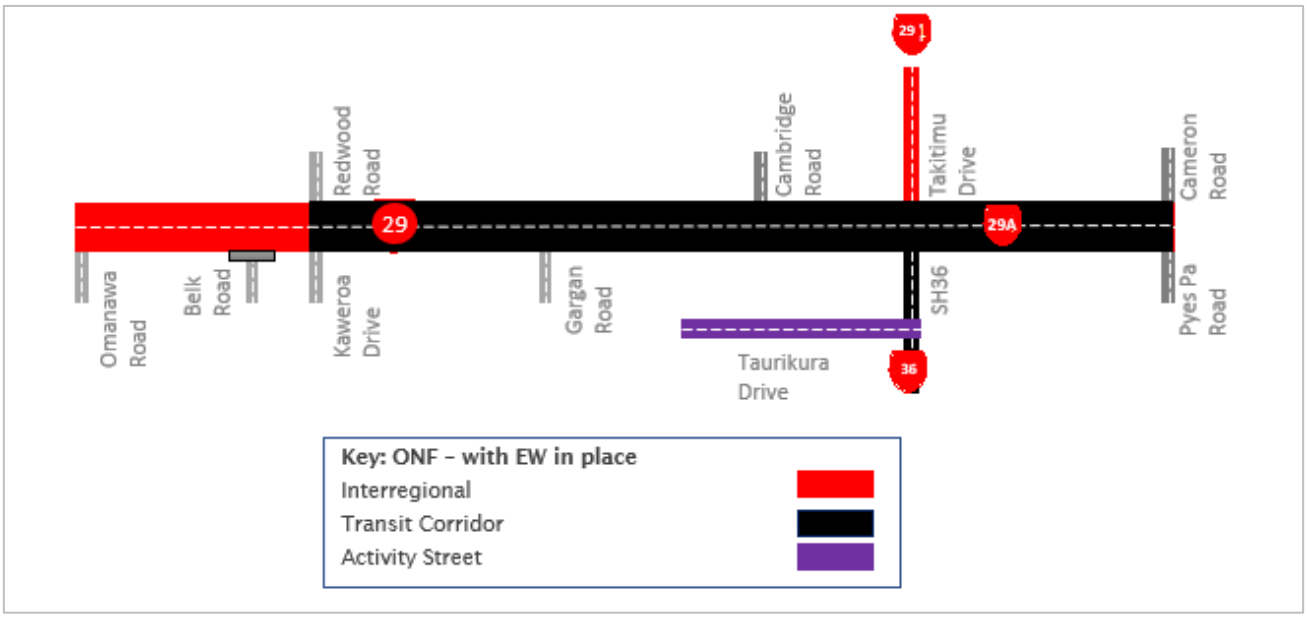

Figure 3-10. ONF Classification for Main Roads

[49] ONF must be implemented fully from the 2024/2027 NLTP period, although it is voluntary for 2021-2024 NLTP.

[50] https://www.tauranga.govt.nz/our-future/strategic-planning/infrastructure-development-code/street-design-toolkit

[51] Note that these classifications have been defined by the using the RAMM outputs.

Table 3-6: ONF Classifications[52]

ONF Street Family 2021 Road[53]	M	P	Proposed Street Family	What should it look like	Does it meet the intended function[54]? why?
SH29 – Between Belk Rd and Takitimu Drive SH29A – Takitimu Drive to Barkes Corner SH36 – Between Takitimu Drive and Taurikura Drive	**M1**	**P5**	**Transit Corridors**	Strategic transport corridor providing critical connections and moving high volumes. Often with separated mode and competition for space (expressways, cycleways, bus lanes etc). Movement of people and goods the primary function. Limited on street activity and requirement for access (SH29 and SH29 East of Tauriko Village).	NO–- *These corridors move high volumes of traffic and freight (particularly on SH29) which will now be further disrupted with new intersections as part of the Tauriko Enabling Works.* With the Tauriko Enabling Works in place some facilities or priorities (separated or otherwise) for other modes are provided on SH29 at Redwood Lane and Tauriko, however these are still not fully separated and this risk along SH29A is still not addressed.
Taurikura Drive	**M3[55]**	**P3**	**Activity Streets**	Corridor for moving people and goods around a city. Increasing volumes across modes and local movement connecting to main corridor and increased levels of mixed use. Increasing levels of on-street activity and access to adjacent land.	NO – *This road moves goods and people but does not cater very well for all modes* as it does not provide footpaths and cycle facilities.

Overall, according to both the ONRC and ONF, the current form and function required for highways and local roads within the Western Corridor is lacking, not well integrated and provides little travel choice. In terms of function, SH29A and SH36 provide a critical function in providing multimodal accessibility. However, its form has not evolved to match this as SH29A and SH36 have limited shoulder width and provide no facilities for those who want to travel by anything other than a private or motorised vehicle. While the Tauriko Enabling Works address this in the short term for the new UGA at Tauriko West, the form needs to be adapted to meet longer-term functional needs such as moving high volumes of traffic, increased freight to the port, and separated multimodal facilities. Furthermore, local roads within the Tauriko Network Connections have a range of features that currently do no promote or attract walking and cycling to main corridors (which also have limited connections to dedicated PT facilities.

The SH form does not match the function, even with the Tauriko Enabling Works in place.

[52] These ONF classifications have been sourced from RAMM not MegaMaps.

[53] Not all roads included, but the key ones and a cross section of others located between SH36 and SH29 in TBE have been to show range of street families.

[54] Assumes the Tauriko Enabling Works are in place.

[55] Some of Taurikura noted as having M2 and M4 categories but majority are M3.

3.3 PROBLEM 2 – SAFETY

Problem 2: Poor geometry and negotiation of major intersections on SH29 from Belk Rd to Cambridge Rd is contributing to injury crashes and high severity outcomes (30%.)

There is a safety problem within the Tauriko Network. Even with the Enabling Works in place there are still some high risk sections of corridor and a high number of crashes occuring at Takitimu Drive and Barkes Corner, with the latter defined as a high risk intersection. High traffic volumes, numerous accesses, undivided roads, little separation between modes, lack of (or inadequate) facilities, poor geometry, and speeds higher than safe system thresholds all contribute to risk, particularly for pedestrians and cyclists.

Whilst some safety improvements have been undertaken on the highway over the past decade such as the installation of a wide centre line, removal of passing lane and right turn bay at Gargan Road, the biggest impact in helping to address the current safety risk on SH29 will come from the Enabling Works project (see (Section 1.5.2) being in place. The Tauriko Enabling works project will improve safety along the corridor with a reduction in speed and at SH29 intersections with Belk Road, Redwood Lane, and Cambridge Road. However, even with the Tauriko Enabling Works in place this will not address safety issues in the long term.

In validating the crash history and base line data set for the Tauriko Network Connections it has been assumed the Tauriko Enabling Works are in place and any crashes that would potentially be addressed or added have been considered[56].

The following section describes Problem 2 for the Tauriko Network Connections DBC and includes two parts:

- Poor geometry (Section 3.3.1).
- Crashes and risk (Section 3.3.2).

3.3.1 Poor Geometry

There is a known safety problem within the Tauriko state highway network. There are several geometric deficiencies, inadequate sight distances, and multiple accesses and intersections on SH29/SH29A, which inform the actual and the anticipated road safety problem.

SH29 between Omanawa Road and Takitimu Drive forms the western approach to Tauranga and is posted with a speed limit of 100km/h except for a 500m section either side of Tauriko School. This section is posted 70km/h speed limit. SH29A between Takitimu Drive and Cameron Road (Barkes Corner) is posted at 100km/h except on the approach to Barkes Corner. *These posted speeds do not meet the safe system requirements for either side impact risk or pedestrians and cyclists. This is still the case with proposed speed limits with the Tauriko Enabling Works being in place.*

From a geometric perspective and using the standard design criteria, for posted speed limits of 100km/h and 70km/h on SH29 between Gargan Road and Cambridge Road, there are no geometric issues; however, from Omanawa Road to west of Redwood Lane, East of Redwood Lane to Gargan Road, and Takitimu Drive to Barkes Corner, there are some issues with horizontal curves falling below the desired minimum radius of 437m. *This means safe intersection and stopping sight distance is compromised on this section because of the low standard of geometry.* With increased levels of congestion, gaps in traffic

56 Crashes from the 2018-2022 CAS dataset that will likely be addressed by the Enabling Works were removed. Additional crashes were added as synthetic data with the addition of a new intersection at Tauriko West. Therefore, this crash analysis is completed on a semi-synthetic dataset.

become smaller, increasing delays. If there are significant delays on side roads and accesses for those road users trying to get on to and off the highway, people start to take risks.

There have been 15 speed related crashes on either SH29 or SH29A, consisting of one fatal, one serious, two minor, and 11 non-injury crashes. These crashes resulted in a total of two Deaths and Serious injuries (DSIs). Five of the speed related crashes coincide with sections of road having a poor standard of geometry – SH29 between Omanawa Road and Gargan Road or SH29A between Takitimu Drive and Barkes Corner.

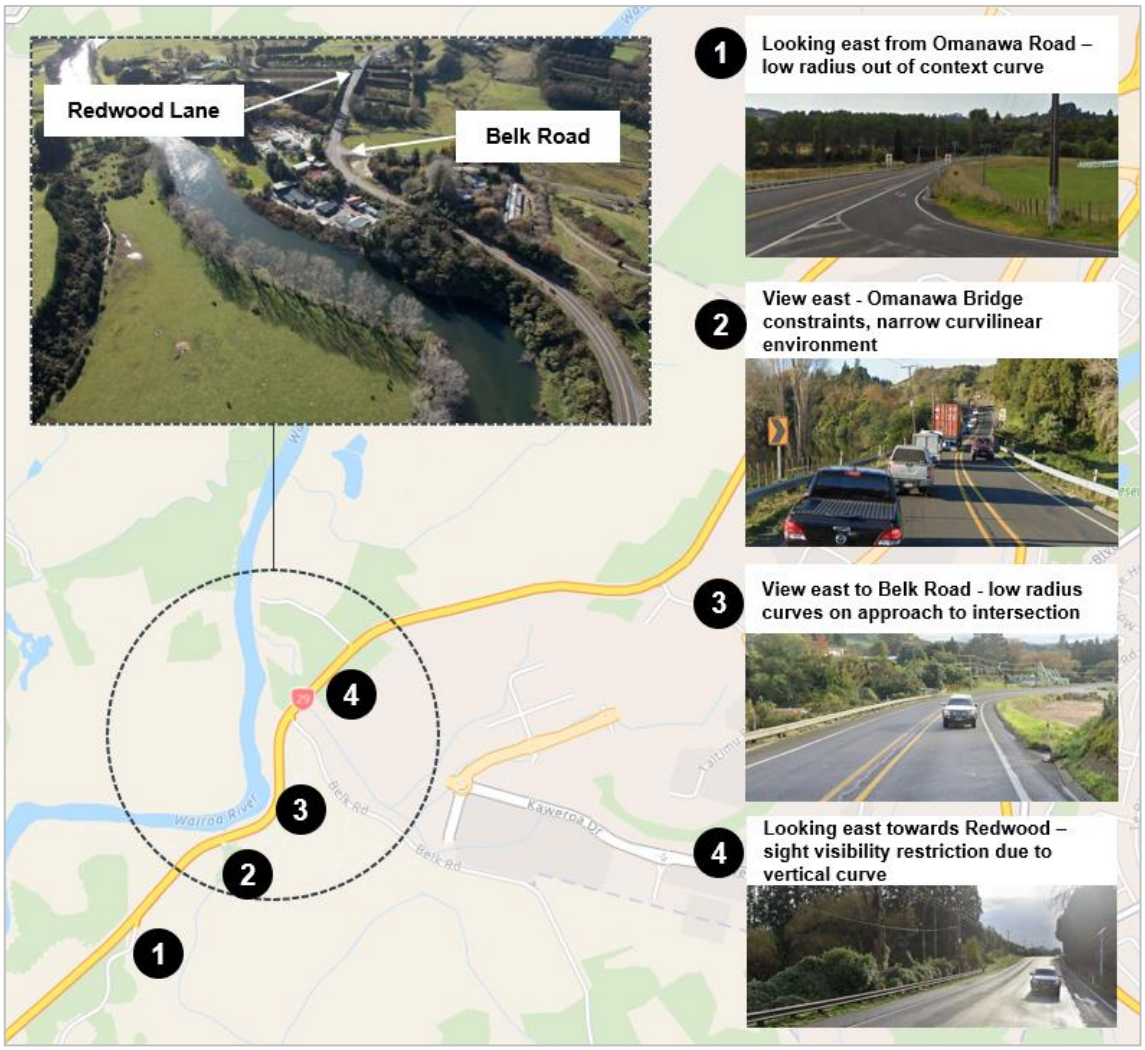

Figure 3-11. Existing Geometric Issues along SH29

3.3.2 Crashes and Risk

There is a safety problem within the Tauriko Transport network, particularly along some sections of State Highway 29 and there are a high proportion of crashes at several intersections.

Overall, the road form for state highways is not reflective of a safe system and has areas of high collective and personal risk. With development planned in the Western Corridor the number of vehicle trips is predicted to rise significantly (see Section 3.2). Safety issues and risk will increase as a result.

3.3.2.1 2018-2022 Crashes

In the last five years (2018-2022), there have been 274[57] crashes within the Tauriko Network including one Fatal, 12 Serious, 47 minor, and 214 non-injury crashes. This resulted in a total of 13 DSIs.

Figure 3-12 shows that crashes increased to a high in 2019 but showing an overall decreasing trend in after 2019. This lower value could be attributed to the Covid-19 pandemic lock down in New Zealand which between March and May 2020 resulted in a reduction of 80% of road deaths and 74% reduction in traffic across the country during this period. The number of crashes in 2022 has dropped substantially compared to the previous 4 years data, however it also the highest proportion of injury crashes compared to the previous 4 years. A third of those crashes occurred at Takitimu Drive intersection with SH29.

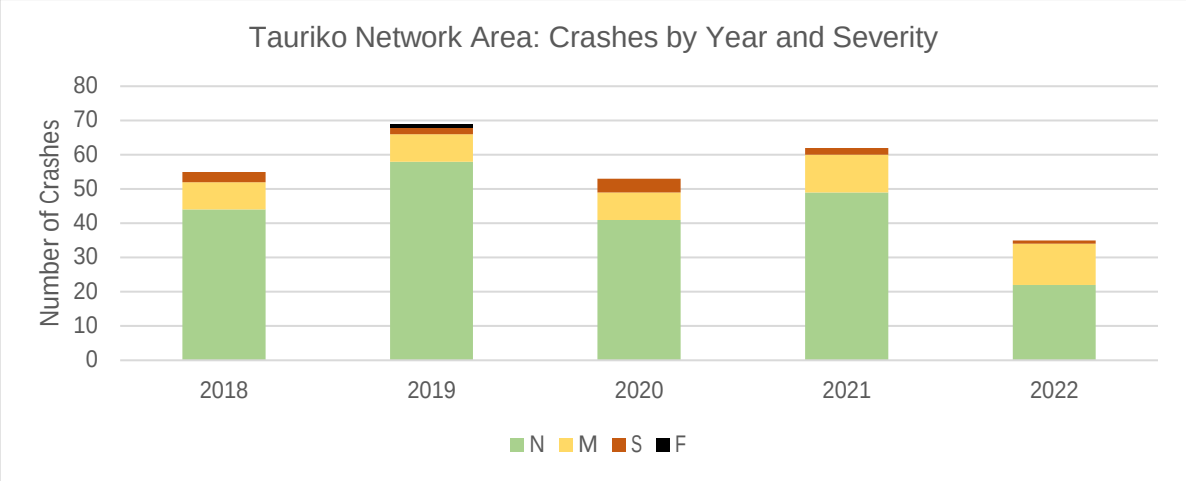

Figure 3-12. Relevant Crash Data for Tauriko Network Connections 2018-2022

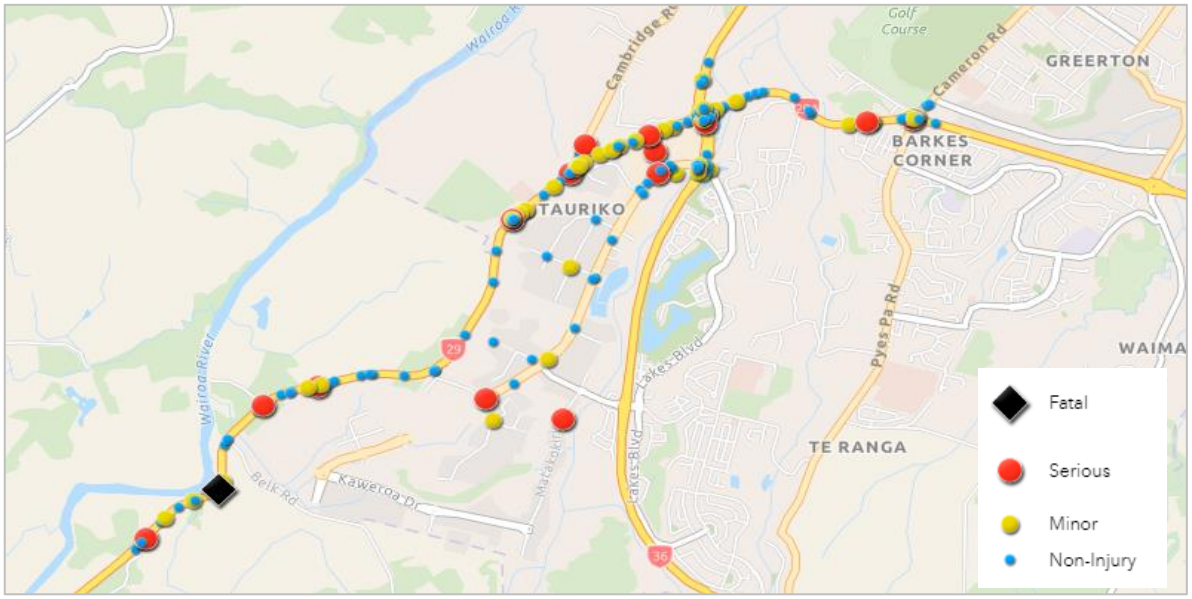

Figure 3-13. Location of Crashes in Tauriko Network Connections 2018-2022

3.3.2.2 Crashes and Severity by Location

In terms of the Severity and DSIs, these have also been broken down in to whether they occurred on the highway or local road, with slightly more high severity crashes occurring on highways compared to local roads. Seven of the high severity crashes have occurred on highways. Although the numbers are much

57 Total number of crashes left after the effects of the Enabling Works have been taken into consideration. That is the introduction of a new intersection at Tauriko West, Roundabout at Redwood Lane, new intersection at Tauriko West and speed management along the SH29 corridor.

higher for the highway in general, the proportion of higher severity crashes are greater on the local roads within the project area.

Crash numbers and proportions by severity and road type (highway or local road) are shown below:

Table 3-7. 2018-2022 Crashes By Severity and Location

Crash Type	Highway		Local Roads		
	Number	% of all Crashes	Number	% of all Crashes	Total
Fatal	1	0.5%	0	0.0%	**1**
Serious	6	2.7%	5	9.4%	**11**
Minor	38	17.1%	7	13.2%	**45**
Non-Injury	162	73.3%	41	77.4%	**203**
Tauriko Enabling Works Crashes Added	14	-	-	-	**14**
Total Crashes	**221**	**-**	**53**	**-**	**274**
Total DSIs	8	-	5	-	13

3.3.2.3 Intersection Crashes

70% of the crashes in the Tauriko Network occurred at intersections[58]. These intersection crashes accounted for around a quarter of the high severity crashes, with the majority (86%) occurring on State Highways.

On State Highways, intersection crashes within the higher speed areas (i.e., 70km/h and above) account for 56% of the crashes. There is overrepresentation of State Highway intersection crashes in Tauriko Network compared to *nationwide where 23% of total crashes occur on two-lane highways with speed limits of 70km/h.*

In the past five years, 75% of all intersection crashes in Tauriko Network occurred at three intersections:

- Takitimu Drive /SH29A/SH36.
- Taurikura Drive/SH36.
- Barkes Corner.

All three of the intersections mentioned above are roundabouts which are largely noted as being a safe system form, however with multiple lanes, speeds can still be high. As noted in MegaMaps[59], Barkes Corner is defined as a high-risk intersection and the intersection of Takitimu Drive, SH29 and SH29A has had 81 crashes over the last 5 years but these are largely non-injury. This is shown below:

[58] Including the synthesized crashes at the new Tauriko West intersection

[59] https://maphub.nzta.govt.nz/megamaps/

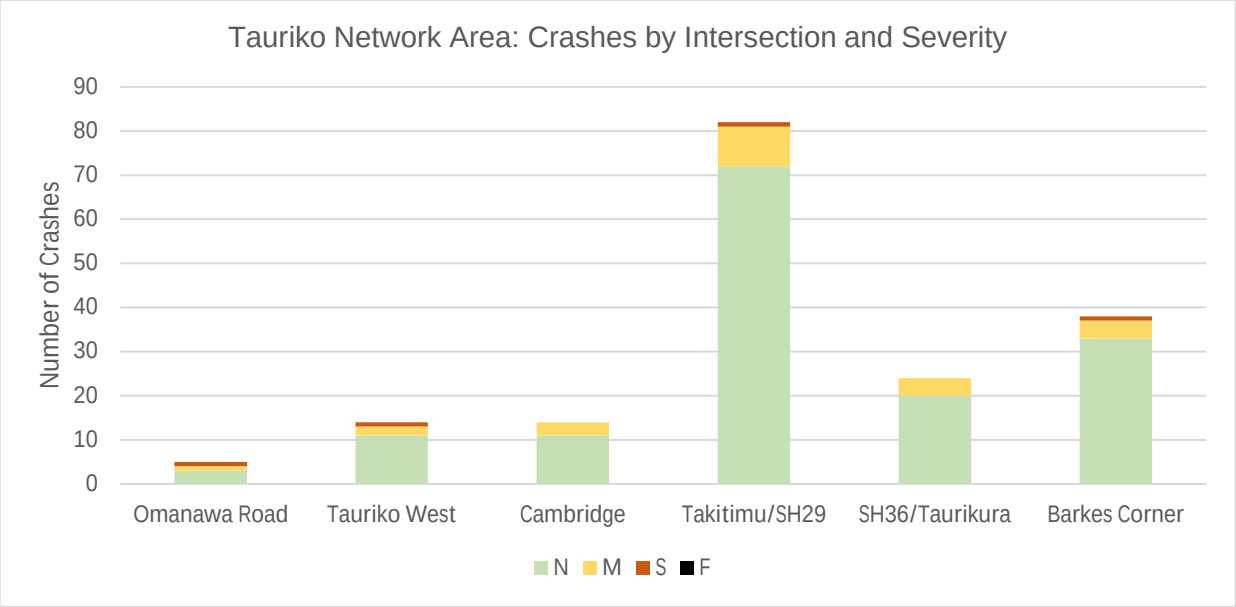

Figure 3-14. Number and Severity of Crashes at Intersections 2018-2022

3.3.2.4 Crash Types

Most common movement types at intersections are rear end (F), turning in same direction (G) and crossing (H), with all three accounting for 57% of all intersection crashes. For the midblock sections, 55% of crashes consist of two movement types, rear end crashes (F) and loss of control crashes (D).

There have been three active user crashes[60] reported within the study area. Two occurred at roundabout intersections on a highway. Specifically, these included:

- One serious cyclist crash at Barkes Corner, involving a SUV turning in front of a stationary cyclist.
- One minor injury crash at SH36/Taurikura roundabout, involving a cyclist and a van/ute with the driver failing to see cyclist on the roundabout.

3.3.2.5 Crash Risk Profiles

Traffic growth in key areas has exceeded road capacity earlier than expected in certain locations. This means the ability for the current road network to cater for predicted future volumes will continue to be compromised. With increased traffic flows and therefore reduction in available gaps in traffic, drivers trying to get on to, or off roads may start to take risks.

Crash risk profiles are provided for the existing SH29 and SH29A sections. As these risk factors are sourced off MegaMaps, the impact of the Tauriko Enabling Works is not included within these outputs. The Tauriko Enabling Works project is expected to reduce some risk in some locations. However, the highest risk sites i.e., in the vicinity of Omanawa Road, SH29 Cambridge Road to Takitimu Drive and the intersection at Barkers Corner, are not within the Tauriko Enabling Works scope and are unlikely to be largely affected by those works. This is shown in Table 3-8**.**

[60] pedestrians/ cyclists/ skateboards/ wheeled pedestrian

Table 3-8: Crash Risk Profiles

Midblock Road Section	Collective Risk	Personal Risk	Current Posted Speed	Safe and Appropriate Speeds (SaAS)	Infrastructure Risk Rating (IRR)
SH29 - Omanawa Road to Belk Road	MH	M	100km/h	80km/h - high benefit corridor	M-H Rating of 2.10
SH29 - Belk Road to Gargan Road	M	M	100km/h	80km/h - high benefit corridor	L-M Rating = 1.64
Gargan Road to Tauriko Village	L	L	100km/h	80km/h	L-M Rating = 1.47
Tauriko Village Area	M	Medium	70km/h	40km/h - high benefit corridor	L-M Rating = 1.72
SH29 - Cambridge Road to Takitimu Drive	MH / H / LM	MH / L / MH	100km/h	80km/h - high benefit corridor	M Rating 2.0 – 2.13.[61]
SH36 - SH29 to Taurikura Drive/Lakes Blvd	LM / L	M / L	50km/h	50km/h	Low Rating 0.65 – 1.13[14]
SH29A - Takitimu Drive to Barkes Corner	M	LM	100km/h	80km/h - high benefit corridor	M Rating = 2.04
Cambridge Road *(assuming Tauriko Enabling Works in place)*	M	M	60km/h	40km/h - high benefit corridor	L-M Rating = 1.95

As part of this potential risk, there are several geometric deficiencies and inadequate sight distances, number of accesses (see Figure 3-15) and intersections from Omanawa Road to Barkes Corner which can be linked to the actual and the predicted road safety problem.

The number of side road/access points represent a safety risk by creating potential conflict points between varying customers. *The safety risk is increased by 2% for each additional access location[62] as its presence adds side friction and speed differentials between through and access traffic.*

61 This section uses urban IRR Bands rather than rural.
62 SH1 Strategic Corridor Study – 2010, Opus Consultants

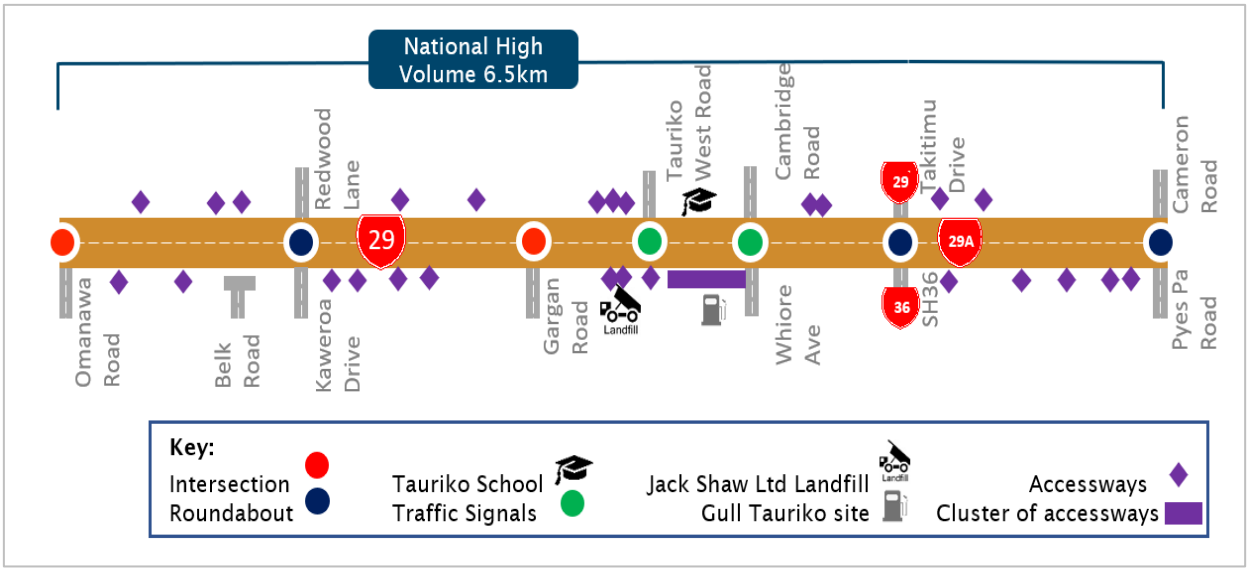

Figure 3-15.Existing Access along SH29 and SH29A[63]

3.4 INVESTMENT OUTCOMES

As described in the Strategic Case, the Tauriko Network Connections DBC directly aligns with strategic outcomes. The project has strong links to national and regional policies including giving direct effect to UFTI by delivering on growth areas for housing and GPS for delivering on safety, provision of better travel options and improving freight connections all of which help enable delivery of those strategic outcomes.

3.4.1 Benefits

Project partners and stakeholders agreed that there would be several investment benefits from addressing the problems outlined in Section 3.2 and Section 1.1. The benefits fall into three categories (access to markets, multimodal connection/accessibility, and safety) and are described below with their significance/weighting:

- **Benefit 1:** Better access to international and major domestic markets on this national strategic route to the Port of Tauranga (20%).
- **Benefit 2:** The Western Corridor is better connected and accessible through a multimodal transport system which supports timely delivery of sustainable growth (40%).
- **Benefit 3:** Improved safety on within the Western Corridor (40%).

3.4.2 Objectives

While the three investment benefits provide general investment objectives for the project, the following detailed SMART investment objectives have been developed:

1. Better access to international and major domestic markets on this national strategic freight route to the Port of Tauranga by providing a predictable freight travel time of 10 minutes with < 5 minutes variability (50%) by 2030 until 2063 from Omanawa to Takitimu Northern Link (TNL).
2. The Western Corridor is better connected and accessible through multimodal transport system which supports timely delivery and sustainable growth by reducing the need to travel and a >10% PT/Active Journey to Work Trips during peak periods to/from/within Western Corridor by 2030 and increasing to 15% by 2063.
3. The Western Corridor is better connected and accessible through multimodal transport system which supports timely delivery and sustainable growth by having 80% of population within 500m walking, cycling services and 80% of residents within 500m of high frequency PT services by 2030 maintained to 2063.

63 Side Road forms and accesses updated with the Tauriko Enabling Works in place.

4. The Western Corridor is better connected and accessible through multimodal transport system which supports timely delivery and sustainable growth by having >250K per annum PT boardings by 2030 increasing to 1,500,000 by 2063.
5. The Western Corridor is better connected and accessible through multimodal transport system which supports timely delivery and sustainable growth by having express PT (peak) travel times better than driving (between Tauriko to Cameron Road and Tauriko to Takitimu Drive by 2030 and maintained until 2063.
6. Improve safety within the Tauriko Transport Network by reducing crashes by severity on transport facilities (SH and LR) by 30% on opening for 5 years.
7. Corridor by reducing DSIs on transport facilities in the Tauriko Transport Network (SH and LR) by 50% on opening for 5 years.

3.4.3 Summary

Investment benefits, and key performance indicators (KPI) measures and targets have been developed and agreed with project partners and in alignment with the Waka Kotahi Benefits Framework. These also consider KPI baselines and targets for the Tauriko Enabling Works (see Section 1.5.2). This is shown in Table 3-9, including the rationale behind their use.

Table 3-9: Benefits, Measures and Targets of Investment

INVESTMENT BENEFITS	KPI MEASURE		BASELINE	TARGET[64]	RATIONALE FOR KPI	LINK TO WAKA KOTAHI BENEFITS FRAMEWORK
Better access to international and major domestic markets on this national strategic freight route linking to the Port of Tauranga (20%).	Predictable travel times for freight.		15 minutes with 33 minutes variability PM Peak. 11 minutes with 16 minutes variability in AM Peak. (2022)	Improve travel times on SH29 (Omanawa Road to TNL): PM peak travel time to 10 minutes with 9 minutes variability. AM peak travel time from 10 minutes with <5 minutes variability. By 2030 until 2063.	WBOP TSP targets are from Travel time variability for freight from Redwood Lane to the Port of Tauranga – interpeak – 14-20 minutes baseline. Noting no future targets supplied except for to 'improve on 'up to 2050. This measure and target used to measure how this project supports freight to the Port (Via SH29).	5.1.2 Travel time reliability (freight).
The Western Corridor is better connected and accessible through a multimodal transport system which supports timely delivery of sustainable growth (40%).	Land use planning reduces the need for travel.		4.9% multimodal journey to work trips. (2013 Census)	Mode shift from 4.9% to >10% of PT/Active trips during peak periods to/from/within Western Corridor by 2030 increasing to 15% by 2063.	Consistent with UFTI which has mode share targets of PT>10%, Active Modes >15% for 2050. This aims to reduce private vehicle use and measure the outcome of this project on Mode shift.	10.2.10 Traffic mode share.
	Increase mode shift from private vehicles to walking, cycling and PT.	Population in proximity to Walking, Cycling and PT facilities in Tauriko.	N/A – future residential population in Tauriko West does not currently exist.	Increase % of population to 80% within a 500m walk to a bus stop by 2030, maintained to 2063.	Consistent with the target of 500m identified in UFTI targets and NZTA Benefits Framework. TCC's Street Design Guide[65] also identifies that the average walking distance in about 10 minutes (short trips) is around 400m-600m This helps measure the potential catchment of PT services as it influences the potential for mode shift.	10.2.6 Spatial Coverage – PT resident population.
		No. of annual PT boardings in Western Corridor.	6,500 boardings Route 52 (2017)	Increase number of annual boardings from 6500 pa to >250,000 pa by 2030 increasing by 1.5M by 2063 (for Route 52 or equivalent journeys)	2063 targets are consistent with the TSP 2048 targets[66] of 1,324,301 PT annual Boardings for Tauriko, Pyes Pā and Omanawa Sectors. Noted as a secondary KPI in UFTI. Increases from 20 bus loads per day to 80 bus loads per day. Route 52 or equivalent journeys used due to likely route changes to 2030 according to BOPRC.	10.1.1 People throughput – PT boardings.
		PT (Peak) Travel Time from Tauriko to Barkes Corner or Takitimu Drive.	3-7 minutes: Tauriko to Cameron Rd 4-7 minutes: Tauriko to Takitimu Dr (2017)	Express PT (peak) travel times better than driving (between Tauriko to Cameron Road and Tauriko to Takitimu Drive by 2030 and maintained until 2063.	Used to measure the potential for mode shift on to PT as a more attractive means of travel than driving by private vehicle.	5.1.3 Travel time delay.
Improved safety within the Western Corridor (40%).	Reduce all crashes by severity (all modes).		274 crashes (1 fatal, 12 serious, 47 minor, 214 non-injury) occurred in 2018-2022 that are not addressed by the Tauriko Enabling Works (see Section 3.3).	Reduce all crash by severity by mode from 274 to 192 (30%) on opening 5 years.	This DSI target aims to achieve more than the Road to Zero target of 40% reduction in DSIs. A lower rate was used for all crashes recognising that any introduction of new infrastructure or facilities whilst looking to improve safety could still result in more overall crashes albeit lower severity.	1.1.2 Crashes by Severity.
	Reduce deaths and serious injuries.		13 DSI crashes occurred in 2018-2022 that will not be addressed by the Tauriko Enabling Works (see Section 3.3).	Reduce DSIs from 13 to 6.5 (50%) on opening for 5 years.		1.1.3 Deaths and serious injuries.

[64] AS set during the ILM in 2017. BOPRC in parallel to Tauriko DBC have placed greater emphasis on PT mode share in the region.
65 https://www.tauranga.govt.nz/Portals/0/data/future/strategic_planning/idc/files/street-design-guide.pdf
66 Figure referenced from the UFTI – 2048 TSP modelling results based on PT programme 8.4.

3.5 THE CASE FOR CHANGE

The evidence proves that:

- If not appropriately integrated into the transport system, planned land use development and growth in the Western Corridor is unlikely to proceed due to the scale of impacts on access, safety, and liveability.
- Poor geometry and negotiation of major intersections on SH29/29A through the Tauriko Network Connections leads to injury crashes and high severity outcomes.

Consequently, project partners have agreed that investment is needed to deliver the following benefits:

- Better access to international and major domestic markets on this national strategic freight route linking to the Port of Tauranga.
- The Western Corridor is better connected and accessible through a multimodal transport system which supports timely delivery of sustainable growth.
- Improved safety within the Tauriko Network Connections Corridor.

While the Tauriko Enabling Works addresses some of the problems that drive this need for investment, this project does not sufficiently address longer-term needs because:

- The Tauriko Enabling Works does not provide for a fully reliable, efficient, and frequent public transport or safe walking and cycling facilities to attract people to these modes and out of private vehicles.
- SH29 is an increasingly significant national interregional route that may be compromised particularly via the additional intersections that will be in place via the Tauriko Enabling Works.
- Even with the Tauriko Enabling Works in place there are still some high-risk sections of corridor and a high number of crashes occurring at Takitimu Drive and Barkes Corner, with the latter defined as a high-risk intersection. High traffic volumes, numerous accesses, undivided roads, little separation between modes, lack of (or inadequate) facilities, poor geometry, and speeds higher than safe system thresholds all contribute to risk, particularly for pedestrians and cyclists.

However, the evidence demonstrates that the need for intervention relies on factors or triggers. This includes when interdependencies will be delivered, such as land use development and growth areas. Therefore, to guide option investigation and determine the recommended option, this DBC investigates the staging or phasing of interventions based on certain triggers. This is explained further in Section 4 and Section 9.

PART B – OPTION INVESTIGATION

4 OPTION INVESTIGATION

4.1 INVESTIGATION PROCESS SUMMARY

The option development, evaluation, and refinement process for Tauriko Network Connections DBC spanned roughly seven years between 2017 and 2023. This iterative option investigation journey was subject to several high-level changes including changes to project scope, creating two distinct option investigation phases (DBC Phases 1 and 2). This has added to the complexity of the DBC option development and evaluation process.

Due to this complexity, the DBC report explains **DBC Phase 2 (2020 – 2023)** following a project hold from the Transport Agency's Investment Proposal review in 2018.

For more detail on the entire option investigation to date, please refer to **Appendix B.**

4.1.1 Previous Option Investigations

The option investigation for this DBC began by building on previous option investigations:

- Programme Business Case (PBC) in 2016.
- "Indicative Business Case" (IBC) in 2017 – Note: this was not a formal IBC phase as there was no official IBC document. However, this functioned like an IBC through further investigation of the PBC's Preferred Programme 8 and further option development.

4.1.2 Key Strategic Changes

During the development of the DBC, it was informed by key strategic and guidance changes including:

- Changing Government Policy Statements for Land Transport (2018-21 and 2021-24) – and has considered the draft GPS for 2024-2027
- Project hold in 2017 to incorporate multimodal scope.
- Project hold in 2018 because of the Transport Agency's Investment Proposal (TAIP) review.
- Introduction of Waka Kotahi Business Case Approach standardised guidance (such as Multi-Criteria Analysis, Appraisal Summary Tables in 2020).

4.1.3 Phases of Option Investigation

The DBC option investigation uses a Multi-Criteria Analysis (MCA) methodology. This utilised specialist input, partner organisations, and stakeholder workshops. The DBC option investigation is characterised by two phases:

1. DBC Phase 1 between 2017 and 2019:

- Revisiting "IBC" short list option development and evaluation.
- Project Hold: Multimodal scope change.
- DBC long list option development and evaluation
- DBC short list option development.
- Project Hold: Transport Agency Investment Proposal (TAIP) review.

2. **D**BC Phase 2 between 2020 and 2023:

- Long list option development and evaluation.
- Project Change: Enabling Works DBC.
- Short list option development and evaluation (discussed in this DBC report).
- Short list option refinement and final evaluation (discussed in this DBC report).
- Emerging Recommended Option (discussed in this DBC report).

4.1.4 A Multimodal Approach

While the option investigation for Tauriko Network Connections DBC is centred on the scope of highway and roading works, the following matters form an integral part of option development:

- Public transport.
- Active transport (walking and cycling).
- Travel demand management.
- Local road safety improvements.
- Local road improvements to support growth (e.g., Spine Road Ara Turuā and Kaweroa Drive)

This has required working across several projects and processes to ensure a well-integrated solution is enabled and delivered for the Tauriko Network. These separate but interdependent projects include:

- Tauriko Enabling Works Detailed Business Case (see Section 1.5.2).
- Western Bay of Plenty Public Transport Services and Infrastructure Business Case (see Section 1.5.3).
- Western Corridor Walking and Cycling Network Plan (see Section 1.5.4).
- Regional Travel Demand Management and Behaviour Change Programme (see Section 1.5.5).

4.1.5 Engagement

The DBC phase involved ongoing hui, partner organisation, stakeholder, and public engagement. This included two community open days in May 2021 and May 2022. Outcomes of these engagements can be found in Section 5.

Project partners navigated differences of opinions about how to best move people and freight, enable growth, support growth, and improve level of service through a multimodal approach. However, agreement was reached across project partners for a preferred way forward.

4.1.6 Overall Process to Date

Figure 4-1 illustrates the iterative option investigation process of the DBC.

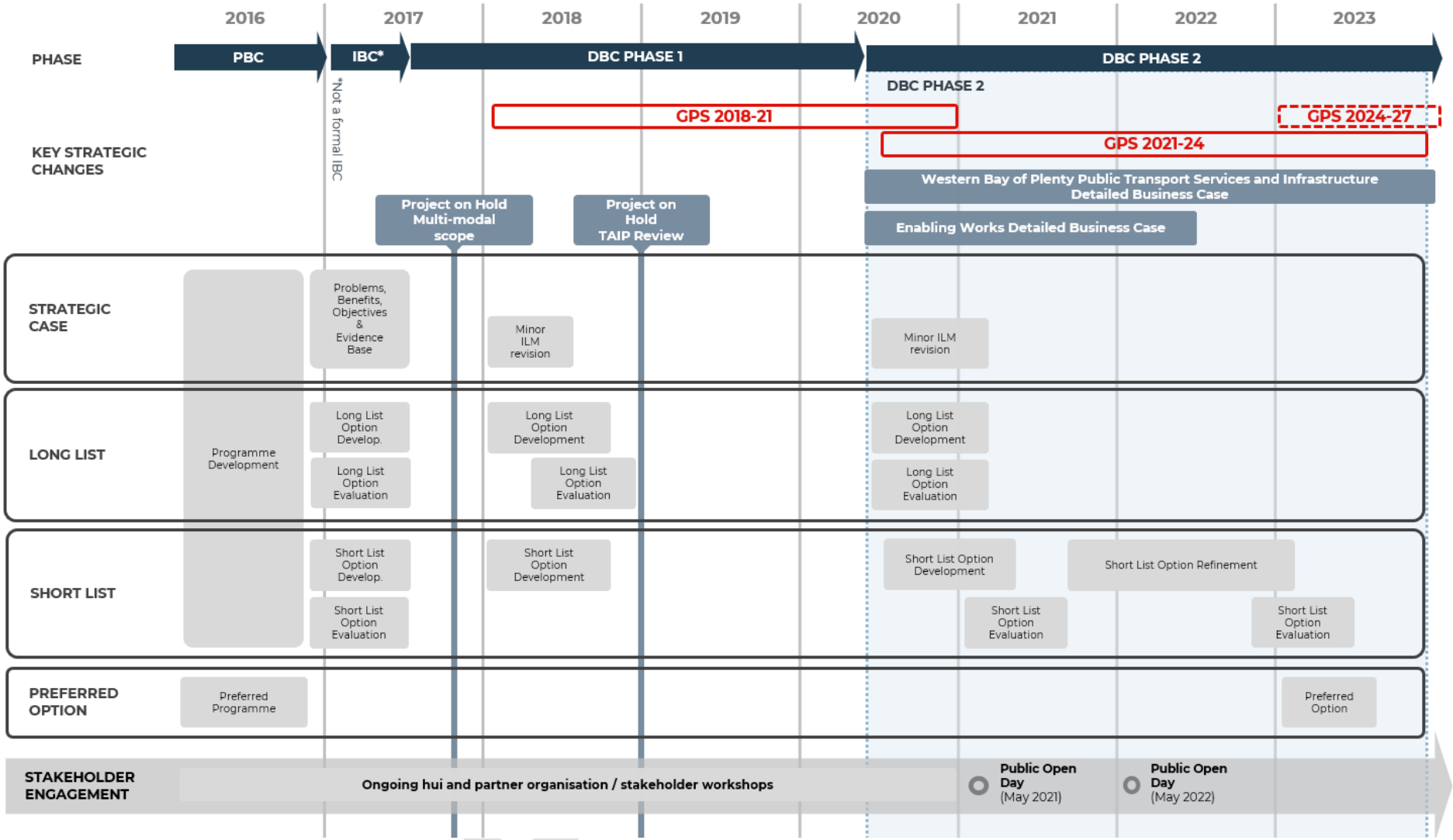

Figure 4-1. Option Development Process for Tauriko Network Connections DBC

4.2 EVALUATION METHODOLOGY

This section summarises the overarching methodology used for the DBC option evaluation through the Tauriko Network Connections DBC. For more detail, see **Appendix B.**

4.2.1 Multi Criteria Analysis (MCA) Approach

A Multi-Criteria Analysis (MCA) Framework was established for option investigation during the DBC phase. The approach ensured that a robust and transferable process has been undertaken. This is consistent with requirements of the Waka Kotahi Business Case Approach and Resource Management Act 1991 (RMA). This is because:

- MCA is a widely accepted formal method to assist in clearly and logically presenting a range of competing information and identifying what is favourable and unfavourable about a particular option so a decision can be made about ranking any preferred option.
- MCA involves technical specialists assigning scores a scale (see Section 4.2.4 and 4.2.5) to a set of chosen criteria or attributes for each option (see Section 4.2.3). Criteria were chosen and reassessed at the start of each project phase to reflect updated project information or changes.
- The MCA approach has been informed by Waka Kotahi guidance.67 However, there remains no standard legislative or regulatory evaluation criteria.
- Decisions are informed by the MCA and consensus reached between partners and stakeholders. MCA is initially informed by professional judgement through technical experts then followed by robust discussion and evaluation of the MCA outputs from key partners and stakeholders (including tangata whenua, Waka Kotahi, TCC, BOPRC, and WBOPDC). Feedback was regularly sought to inform the decisions via a robust engagement process (see Section 2 and Section 5). The consensus approach demonstrates that the recommended option is generally a compromise between achieving the greatest benefits, in the presence of some uncertainty, within the constraints and limits of the options available.
- The recommended option must seek endorsement by the Waka Kotahi Board as the Project Investors and final decision makers. The Board may have other factors to consider alongside the MCA when deciding on a recommended option, such as option cost and ensuring a solution maximises benefits for the investment being made (see Section 7).
- Sections 171(1)(b) and 168A(3)(b) of the Resource Management Act 1991 (RMA) require adequate consideration of alternatives; including sites, routes, or methods, when making a recommendation in any subsequent Notice of Requirement (assuming an option seeks a designation or alteration to an existing designation).

Options are evaluated against three sets of MCA criteria. This is detailed in Section 4.2.3**.**

4.2.2 Base Case and Assumptions

- The Base Case for the Tauriko Network Connections DBC was determined to be the Tauriko Enabling Works DBC package (see Section 1.5.2) – i.e. when assessing the Tauriko Long Term options, the Tauriko Enabling Works package is assumed to be in place.
- A regional approach to travel demand management (TDM), public transport, and active transport interventions have been and continue to be developed, and ultimately implemented via a wider Western Bay of Plenty approach. For more, refer to Section 1.5.

4.2.3 Criteria for Option Evaluation

Options are evaluated against three sets/categories of MCA criteria. Generally, the same criteria were used in different phases. However, some criteria may have been used earlier in the phasing and not carried through to other phases such as contaminated land. This is because these criteria either did not help provide any differentiation between the options or were later combined or split off into separate

67 https://www.nzta.govt.nz/resources/multi-criteria-analysis/

criteria. Some criteria have been added in the latter phases of the project and this is mainly due to changes in the government policy, such as climate change adaptation and mitigation criteria.

The final criteria set used for the short list option to the recommended option phases between 2020 to 2023 are shown in Table 4-1**.**

Table 4-1. Final MCA Criteria for Tauriko Network Connections DBC

FINAL MCA CRITERIA – SHORT LIST TO RECOMMENDED OPTION (2020-2023)	
Investment Objectives	• See Section 3.4.3
Critical Success Factors	• Technical • Safety in Design • Constructability • Consentability • Customers/Public (Acceptability to Public/Key Stakeholders) • Financial Fundability • Scheduling/Programming • Land Transport Integration (Transport System/Land Use) • Housing
Opportunities and Impacts (Also referred to as Risks and Effects in early option evaluation phases)	• Social • Traffic and Safety • Ecological (freshwater & terrestrial) • Water (Surface) Quality • Visual • Urban Design and Landscape • Impacts on Te Ao Māori (Cultural) • Heritage and Archaeology • Human Health (noise, vibration, air quality) • Property • Climate Change Mitigation • Climate Change Adaptation

4.2.4 Alignment to Investment Objectives

Each stage of the option evaluation assessed alignment to the Investment Objectives (IO) (formerly referred to as Investment Benefits). All options had positive alignment to the benefits so a 4-point scale for assessment (0,1,2,3) has been used. The scoring system can accommodate flexibility within each range, and although percentages are shown in the table below, this was to help the specialists define the scoring level and raw data values which were used within the MCA spreadsheet. The scoring scale for Investment Objectives is shown below:

Table 4-2. Scoring Scale for Investment Objectives

	None (0)	Low (1)	Moderate (2)	High (3)
Achieving I/O	0%	<50%	50% to 80%	80% to 100%

4.2.5 Critical Success Factors, Opportunities, and Impacts

Options were assessed to determine whether they resulted in an outcome with high technical complexity or presented outcomes with high levels of perceived risk that could inhibit progression of the option. For most of the criteria, a small technical working group which included stakeholder representatives were developed to help undertake the assessment and agree on the outcome.

For each of the options, a score was applied that compared the option to the Base Case. The scoring is a 7-point scoring system and allows for differentiation between options. The scoring system can be used to rate both quantitative and qualitative measures within the MCA assessment.

Table 4-3. Scoring Scale for Critical Success Factors, Opportunities, and Impacts

Magnitude	Definition	Score
Large positive (+ve)	Major positive impacts resulting in substantial and long-term improvements or enhancements of the existing environment.	3
Moderate positive (+ve)	Moderate positive impact, possibly of short-, medium- or long-term duration. Positive outcome may be in terms of new opportunities and outcomes of enhancement or improvement.	2
Slight positive (+ve)	Minimal positive impact, possibly only lasting over the short term. May be confined to a limited area.	1
Neutral	Neutral – no discernible or predicted positive or negative impact.	0
Slight negative (-ve)	Minimal negative impact, possibly only lasting over the short term, and definitely able to be managed or mitigated. May be confined to a small area.	-1
Moderate negative (-ve)	Moderate negative impact. Impacts may be short, medium or long term and are highly likely to respond to management actions.	-2
Large negative (-ve)	Impacts with serious, long-term and possibly irreversible effect leading to serious damage, degradation or deterioration of the physical, economic, cultural or social environment. Required major rescope of concept, design, location and justification, or	-3

4.3 PHASE 1 OPTION INVESTIGATION (2017-2019)

4.3.1 Summary

DBC Phase 1 began in mid-2017, following review and confirmation of the short list options in the IBC phase. This was an iterative process including revisiting the original supplied short list highway options from the IBC phase. This was mainly because no low-cost solutions were previously investigated; the 2017 short list options all included grade separated interchanges and an off-line alignment for SH29.

Other components of the PBC recommended Programme 8, such as Public Transport (PT), multimodal and Travel Demand Management (TDM) were still part of the business case but were investigated as separate processes alongside the strategic highway development process. The role of the DBC 'Highway' project team during this phase was to coordinate the outcome of the other elements and technical processes into an overarching DBC report.

Late in 2017, project partners investigated Public Transport (PT), Walking and Cycling and Travel Demand Management (TDM) inputs to the optioneering. This has informed the development of other business cases outside the Tauriko Network Connections DBC. Please refer to Section 1.5 for further detail.

DBC Phase 1 involved:

- Revisiting "IBC" short list option development and evaluation.
- Project Hold: Multimodal scope change.
- DBC long list option development and evaluation.
- DBC short list option development.
- Project Hold: Transport Agency Investment Proposal (TAIP) review.

4.3.2 Outcome

Overall, Phase 1 developed a range of short list options for the DBC which included:

- Public transport network services with a preferred hub and spoke service model – now part of the Regional Public Transport Services and Infrastructure Business Case (see Section 1.5.3).
- Public transport interchange options.
- Travel demand management measures – now part of a regional approach (see Section 1.5.5).
- Walking and cycling network – now part of a Western Corridor wide approach (see Section 1.5.4).
- Highway and local road (on and offline) improvements including intersection and corridors.

However, in 2018, the Final GPS 2018-21 was released. Consequently, the Tauriko Network Connections DBC was one of 16 projects assessed nationally by the Transport Agency's Investment

Proposal (TAIP) review to ensure that projects in the 2018-2021 NLTP delivered on the GPS 2018-21. As a result, the DBC was put on hold for this review.

The TAIP review supported the completion of the DBC at the time. The TAIP review recognised:

- The project had not yet identified a preferred multimodal suite of measures at the time.
- The project remained mode neutral and that all elements of the PBC were developed on an equal basis to ensure an optimal system solution.
- A long-term solution is being identified which integrates with current and future land use development.
- Attention is given to staging to ensure short/medium term investment supports growth but is targeted to current government priorities.
- The strategic freight corridor is protected for the future.

Following the review, the project proceeded to Phase 2, with the three agreed short list options (Options A2, C, and J).

4.4 PHASE 2 OPTION INVESTIGATION (2020-2023)

4.4.1 Summary

DBC Phase 2 began in mid-2020, following the project being on hold for the TAIP review in 2018. This phase began when Waka Kotahi and TCC agreed to revisit the three short listed options in October 2018 and the evaluation methodology. These were revisited because TCC completed work on the Tauranga Urban Form and Transport Initiative (UFTI) and the Transport System Plan (TSP), which provided strategic guidance on the option development and evaluation criteria.

Consequently, DBC Phase 2 re-developed and re-evaluated an updated long list of options, then developed, evaluated, and refined a short list of options, to eventually reach a recommended option. DBC Phase 2 was completed in mid-2023.

Ultimately, DBC Phase 2 resulted in the following investigations being separated from the Tauriko Network Connections DBC (see Section 1.5):

- Tauriko Enabling Works (owned by TCC)
- Public Transport (owned by BOPRC)
- Travel Demand Management (owned by TCC)
- Active Transport (owned by TCC)
- Local Road Safety (owned by TCC)

4.4.2 Application of Intervention Hierarchy

To this point, a variety of interventions were considered given the scale and complexity of the problems to be addressed. The Waka Kotahi Intervention Hierarchy has been applied during all phases of option development, to help drive value for money by considering low-cost investment, integrated planning, demand management and more costly physical infrastructure investment.

Table 4-4 shows how different levels of intervention were considered during option development.

Table 4-4: Intervention Hierarchy through the Phases

INTERVENTION	APPLICATION
Land use Planning	• With all phases (PBC/IBC and DBC) the timing, location, and scale of growth in the Western Corridor is a key driver in terms of the option development and timing of investment. Coordinated policies such as SmartGrowth, UFTI, connected communities and structure planning are developing land use strategies to help with encouraging a reduction in private vehicle use and an increase in mode shift. • The Tauriko Enabling Works project (Section 1.5.2) was split off to help enable housing to get underway in an earlier phase rather than being included as part of the longer-term option development. Areas such Pyes Pā,

INTERVENTION	APPLICATION
	and lower and upper Belk are included with the modelling undertaken to determine impacts and mode shift. • Focussing growth around and within these connected communities such as the Western Corridor will help reduce travel demand and support mode shift to walking, cycling and public transport. The DBC long list options includes the provision of interventions such as PT priority lanes and a hub at Tauranga Crossing along with a range of TDM measures to help encourage that shift away from private vehicles.
Demand Management	• Structure planning and growth development of both commercial, services and retail in the Tauranga Crossing and TBE along with new schools in the Tauriko West area will help reduce demand for trips outside of the Western Corridor. • The development of walking and cycling facilities, PT service plans and a PT hub at Tauranga Crossing as part of any of the options also encourages a shift away from private vehicles for those that want to travel both within and outside of the Western Corridor area. Consideration and Integration with other projects such as the Cameron Road bus priority system has also been included within this DBC. • In terms of options to help reduce demand and in addition to other modes provided, interventions such as access restrictions including full closures of intersections have been considered in the PBC, IBC and DBC phases.
Best Use of Existing infrastructure	• Optimisation programmes were developed within the PBC including testing the current highway with demand management (such as access restrictions) and freight priorities, including double lanes on SH29 and SH29A. • Programme 8 which was the preferred programme includes state highway capacity improvements with PT and local road connections and additional lanes. This is effectively Option 1 in the Long List of options within the DBC. • The IBC phase developed several online options including ranges of access restrictions and full closures to reduce demand and intersection treatments such as grade separated interchanges. Additional offline and realignment arrangements were also tested between Cambridge Road and Barkes Corner. • This DBC investigated staging of transport interventions based on certain triggers (such as land use development). This ensures that interventions are only in place once they are needed. • Protecting the function of the highways as transit corridors means an option provides that critical North Island freight link from Auckland, Hamilton through to Tauranga.
New Infrastructure	• Throughout all phases both online and offline highway and intersection options along with new local roads connections have been considered. This has included upgraded and prioritised PT routes and priorities at intersections and, upgraded, safer and better-connected walking and cycling facilities. • All upgrades have considered a form that matches movement and place functions.

4.4.3 Long list Option Development (May 2020)

A kick start workshop with project partners was held in May 2020 regarding changes to the DBC option development process. The workshop discussed:

- Minor changes to the Investment Objective to consider business and commercial growth.
- Changes to the MCA Framework due to TCC design philosophy concerns.

In summary, six revised long list options were developed based on:

- 2018 long list options from DBC Phase 1.
- The option numbering was changed from an alphanumerical system to numerical values to provide clarity of the differences between DBC Phase 1 and Phase 2.

- Consideration of an emerging early works package - some 2018 Options (A1, F and H) were not progressed but included as part of a separate early Enabling Works package.
- Lost opportunity to divert SH29 across Tauriko Business Estate (TBE) land in the Belk Road area.
- GPS 2018-2021.

While the six long list options focused on the state highway network, a multimodal approach (public transport, travel demand management, and walking and cycling) was applied across all options.

4.4.3.1 Public Transport

As agreed by stakeholders through the earlier option development and evaluation phases, a hub and spoke frequent connection model was chosen as the preferred PT service option for Tauriko and Western Corridor with a likely interchange within or near the "The Crossing". This is now superseded by the Western Bay of Plenty Public Transport Services and Infrastructure Reference Case hybrid network (see Section 1.5.3).

4.4.3.2 Travel Demand Management

Travel demand management (TDM) measures were considered across all options to deliver on mode shift targets and a desire to reduce emissions. An initial set of TDM measures were recommended by TCC, including interventions such as travel planning policies, street design principles, cycling, pedestrian and wayfinding initiatives, support for public transport, shared services, demand management measures, travel behaviour change, and monitoring. There was an intent to 'build upon' any TDM measures identified as part of an early Tauriko Enabling Works package.

4.4.3.3 Walking and Cycling

The PBC set the framework for walking and cycling for the wider Western Corridor area and an aspirational walking and cycling network plan was developed with project partners during this long list option development phase.

4.4.3.4 Highway Options

The six long list options are shown in Table 4-5.

Table 4-5: Long List Options (May 2020)

LONG LIST OPTION	KEY FEATURES
Option 1	• An online highway upgrade with four lanes between Belk Road and Takitimu Drive and six lanes (with PT lanes) between Takitimu Drive and Barkes Corner. • Intersections were at grade between Omanawa Road and Takitimu Drive (upgrading the earlier Tauriko Enabling Works improvements) with grade separated interchanges at Takitimu Drive and Barkes Corner.
Option 2	Two variations of this option were investigated. • **2A:** An offline four lane highway upgrade for the entire corridor. The existing highway to become local roads including a primary PT connection between Barkes Corner and Takitimu Drive. A full interchange to be provided at Takitimu Drive and partial interchanges at Tauriko and Barkes Corner. With this option, the Tauriko Enabling Works intersection upgrades were retained. • **2B:** The same option as Option 2a but with an alternative intersection, new alignment, and without retaining the Tauriko Enabling Works upgrades.
Option 3	• An offline and online combination option. • From Belk Road to Tauriko, this was offline switching to online between Tauriko Village and Barkes Corner. Secondary PT links were provided between Redwood Road, Tauriko Village and Takitimu Drive on local roads with Primary PT movements included within a six-lane connection between Takitimu Drive and Barkes Corner. Full interchanges provided at Redwood Lane, Tauriko Village and Barkes Corner with free flow movements to the Port at Takitimu Drive.

Option 4	• An offline and online combination option. • From Belk Road to Tauriko Village, this was online switching to offline between Tauriko Village and Barkes Corner. Between Tauriko and Barkes Corner, the old highway revokes to a local road with four lanes, two lanes being the primary PT link. • At grade intersection are provided at Redwood Lane, partial grade separated interchanges at Tauriko Village and Barkes Corner, and a full system interchange at Takitimu Drive.
Option 5	• A combination of on and offline. • Offline from Belk Road to Tauriko Village, then online to Barkes Corner. This Option is similar to Option 3. Takitimu Drive to Barkes Corner, local road becomes the primary PT link with secondary links from Redwood Lane to Tauriko Village. Tauriko Enabling Works Intersection upgrades at Tauriko Village and Cambridge Road are to be retained and upgraded. • Full interchange at Takitimu Drive and partial interchange at Barkes Corner, with full PT priority measures on new local road intersections.
Option 6	• The option is similar to Option 4 but retains and upgrades Tauriko Enabling Works Intersection upgrades at Tauriko Village and Cambridge Road. • Takitimu Drive to Barkes Corner (on old highway), includes 4 lanes (including two bus lanes) becoming the primary PT corridor. Full interchange at Takitimu Drive and partial interchange at Barkes Corner with full PT priority measures on new local road intersections.

4.4.4 Long List Option Evaluation (May 2020)

4.4.4.1 MCA Evaluation

The project team evaluated the six long list options using the MCA framework (see Section 4.2). Following an initial assessment by specialists, specialty areas were divided into five workshop groups with the relevant stakeholder specialists from partner organisations to discuss the initial assessments, consider effects post-mitigation and agree on a final MCA score. Stakeholder specialists were also given the opportunity to individually assess each of the options to help with the discussions at these workshops.

4.4.4.1.1 Sensitivity Testing

The base MCA assumed standard equal weighting across all the MCA criteria categories. To confirm the short list options, MCA sensitivity testing was undertaken. This involved the following tests:

- Test 2 – more weight given to risks to a total of 50%. The remaining 50% split between investment objectives and effects.
- Test 3 – more weight given to effects to a total of 50%. The remaining 50% split between risks and investment objectives.
- Test 4 – more weight given to investment objectives to a total of 70%. The remaining 30% split between risks and effects. An earlier test of 50% for Investment objectives (Test 1) was initially presented at the workshop but this was modified on the day to a higher weighting at the request of TCC.

The MCA and sensitivity results indicated that both Options 1 and 2 are mostly top ranked unless a significant emphasis is placed on investment objectives (Test 4). When investment objectives are weighted more heavily, Option 1 (online, low cost, low risk option) becomes the worst ranked option. The rest of the options changed rankings depending on the test, although Option 5 consistently placed in the bottom two ranked options irrelevant of the test.

4.4.4.2 Outcome – Emerging Short List Options

A stakeholder workshop was held on 29th June 2020 to discuss the long list option evaluation and determine an emerging short list of options.

Three options (Options 1, 2, and 4) were recommended to proceed to the short list phase. These provided a range of corridor and intersection options PT, walking and cycling, and TDM, as well as a

good range of low cost to high-cost investment. Of these three options, Options 1 and 2 tended to score most favourably.

The outcomes of the long list option evaluation are summarised in Table 4-6**.**

Table 4-6: Long List Options Evaluation Outcome (May 2020)

Long List Option	Reason/Rationale	Outcome
Option 1	• Although identified as the lowest ranked option for investment objectives due to low alignment for freight and safety compared to other options, it did not have any significant risks or effects so scored better where risks and effects were weighted higher. • Waka Kotahi confirmed that under the Business Case process, a lower cost solution needs to be amongst the short list options. • The stakeholder group also agreed that some of the intersection treatments for Option 1 may need to be upgraded as the option is developed further during the short list development stage.	Proceed to Short List
Option 2	• Consistently scored high under all sensitivity testing. Represents a higher cost solution with good transport benefits as SH29 and SH29A are off-line with grade separated interchanges. • This option provides a separated network for regional and local transport users and has a significant positive outcome for traffic. This option provides a good benefit for freight, however there are some significant risks and effects (such as ecological, visual, urban design and landscape and property) which will need to be managed in subsequent phases.	Proceed to Short List
Option 3	• Discarded as an on-line corridor between Tauriko and Barkes Corner which is a heavily trafficked corridor. • Limited ability to cater for around harbour options at Takitimu Drive intersection. The option has local and highway traffic sharing the same highway corridor between Tauriko Village and Barkes Corner. • Only moderate alignment to investment objectives, and some significant effects such as ecological and property which would need to be managed.	Discard
Option 4	• Provides good flexibility at Takitimu Drive interchange using a range of interchange forms. It is different to Options 1 and Option 2, provides good network connectivity opportunities between Tauriko Village and Barkes Corner and therefore has significantly positive traffic outcomes. • This option provides the best benefit for freight but has some significant risks and effects (such as Ecological, Visual, and Urban design and landscape) which will need to be managed in subsequent phases.	Proceed to Short List
Option 5	• Discarded as the option scored the worst for all weighting combinations and had second lowest alignment to investment objectives particularly for benefits for freight compared to other options. • This option also had significant adverse effects for property and is close to the river so had cultural implications.	Discard
Option 6	• Discarded as the option has similar components to both Option 2 and Option 4, hence no need to include a similar option that did not deliver as many benefits as Option 2 and 4, particularly from a freight, safety, and traffic perspective. • However, components of this option could be used as a staging or either Option 2 or Option 4.	Discard

4.4.5 Short List Option Development (June 2020 – September 2021)

The short list of options went through two different phases of development between June 2020 and September 2021. Several elements were specifically investigated upon request from partner organisations:

- Southern Bypass (October 2020).
- Highway and Roading Options (April – May 2021).

This phase of short list option development led to public engagement in May 2021.

4.4.5.1 Tauriko Enabling Works

After the long list workshop and during the modification of the short list options, the project partners confirmed the need for an early works package to quickly enable housing into Tauriko West UGA and meet national requirements for housing growth. This led to the establishment of an early Tauriko Enabling Works package that would form the baseline (i.e., the 'Do Minimum') for any comparison of the options in the DBC.

The Tauriko Early Works package was confirmed at that stage to be:

- Roundabout at Belk Road/Redwood Lane.
- Traffic Signals at Tauriko West.
- Traffic Signals at Cambridge Road, with Whiore Avenue Bus/Walking/cycling connection.
- Kaweroa Drive connecting into TBE.
- Speed Management between Omanawa Road and Barkes Corner (likely to involve a speed reduction well below 100km/h).

As a result of this staging split, a separate business case (led by TCC) commenced for the early **Tauriko Enabling Works Detailed Business Case** (see Section 1.5.2) on collective understanding that this was borne out of the long term works but needed to be able to stand alone to seek investment.

4.4.5.2 Southern Bypass Option

In June 2020, a new option, Southern Bypass, was introduced upon request from TCC. This option included a new four-lane alignment that diverted from SH29 at Omanawa Road and connects to SH36 south of Kennedy Road. The Southern Bypass was initially assessed in the PBC as Programme 5 and Programme 7. However, it was discarded through the PBC optioneering process due to low alignment to some of the investment objectives, high risks for stakeholder acceptance, and community severance.

TCC highlighted the need to ensure all options were tested with up-to-date information. Initial traffic modelling results indicated that SH36 would need to have at least six lanes to ensure acceptable level of service. However, corridor widths were constrained around Kennedy Road, Foley Grove/Awataha Crescent, and Taurikura Drive and Takitimu Drive interchanges. Furthermore, dedicated public transport, walking, and cycling paths, and additional stormwater infrastructure would need to be considered.

Following TCC's request, updated traffic modelling indicated that four lanes would provide adequate levels of service to 2063. Therefore, project partners agreed to investigate the Southern Bypass further as a potential option.

Consequently, a revised Southern Bypass option was developed. This revised 2020 option is shown in Figure 4-2**.**

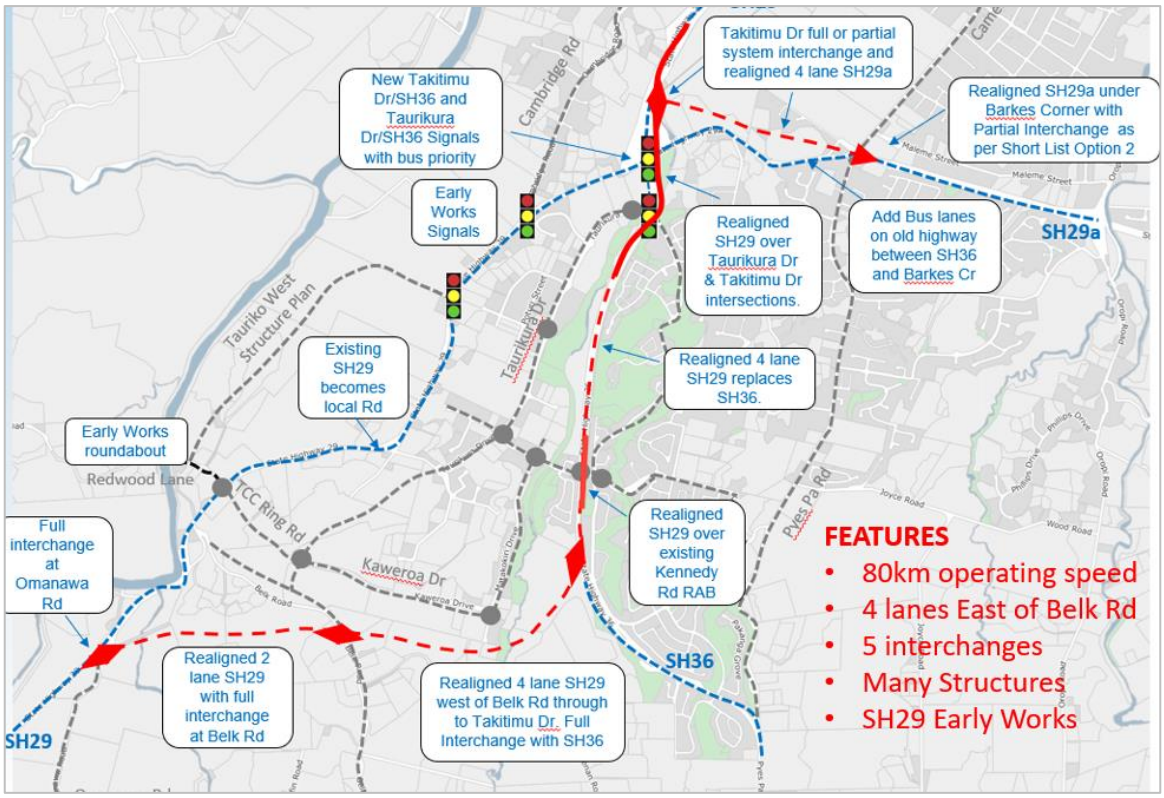

Figure 4-2. Revised Southern Bypass Option

4.4.5.2.1 MCA Evaluation

Before proceeding to the short list, the revised Southern Bypass option was assessed using the Long List MCA in May 2020, alongside the other long list options.

This demonstrated that the Southern Bypass option was a potentially viable option with:

- High alignment with investment objectives.
- Operates with acceptable level of service with four lanes to 2063 based on modelling.
- Ranked between 2nd and 5th in the MCA evaluation and sensitivity tests.
- Highest cost of all long list options – about 20% higher than the next highest costing option.

To gain direction regarding the revised Southern Bypass option, these results were presented to the Waka Kotahi Governance of Transport Outcomes (GoTO) Committee. The Committee noted:

- Estimated costs were highest of all long list options.
- No significant improvement over and above other shortlisted options that make the Southern Bypass a standout option.
- The positive traffic outcomes of the Southern Bypass did not support the desired mode shift to non-car modes, which should be the main future focus.
- Estimated costs and time involved to progress the Southern Bypass option would delay the project and was not deemed acceptable given the cost-benefit ratio of the option.
- Given the funding and affordability environment at the time, the significant cost was not sufficiently offset by its associated performance.

Overall, Waka Kotahi did not support the Southern Bypass option being taken forward and was ultimately **discarded from the option investigation**.

4.4.5.3 Highway and Roading Options

As a result of the long list workshop in June 2020, three multimodal options (Options 1, 2, and 4) had been recommended to proceed to the short list. Project partners agreed after the workshop that some additional low-cost roading options with alternative intersection forms should be included in the short list of options.

Consequently, two additional alternative options were identified, totalling to five multimodal short list options:

- Option 1.
- Option 1A (like Option 1 but with a smaller footprint for a signalised Barkes Corner intersection)
- Option 2.
- Option 4.
- Option 4A (like Option 4 but retains the Enabling Works at Cambridge Road intersection and avoids any realignment proposed in Option 4).

The same multimodal approach as the long list option phase was applied. All options included public transport, travel demand management, and walking and cycling.

4.4.6 Short List Option Evaluation (May 2021)

4.4.6.1 MCA Evaluation

In May 2021, the project team specialists, and stakeholder specialists evaluated the five short list options. The same evaluation method was used as the long list option evaluation in May 2020. An updated MCA Framework was used following more detailed investigations, the latest GPS, and climate change objectives.

A one-page evaluation sheet was developed for each specialist to assess each option against the 'Tauriko Enabling Works' package as the base case. Specialists were asked to undertake an initial assessment on each of the options, then discuss their assessment in one of eight mini technical workshops. All specialists at these mini workshops were to review the assessments and agree on a final MCA score for each of the options. The results of these mini workshops were presented back to the wider stakeholder group.

4.4.6.1.1 Sensitivity Testing

To ensure the MCA evaluation represented the interests of each partner organisation, sensitivity test parameters were provided by each partner organisation. This is shown in Table 4-7.

Table 4-7. Partner Organisations MCA Sensitivity Test Weightings (2021)

	WBOPDC			TCC			Waka Kotahi			BOPRC		
Test	I/O	CSF	O&I	I/O	CSF	O&I	I/O	CSF	I & O	I/O	CSF	O&I
Test (0) – Base	50%	40%	10%	60%	25%	15%	40%	40%	20%	40%	30%	30%
Test (1)	40%	30%	30%	50%	40%	10%	25%	50%	25%	34%	33%	33%
Test (2)	50%	30%	20%	50%	35%	25%	20%	40%	40%	30%	40%	30%
Test (3)	20%	50%	30%	34%	33%	33%	34%	33%	33%	30%	30%	40%

Overall, Option 2 was the top ranked option regardless of the test. The results of the sensitivity tests from each partner organisation indicate similar results (T0, T1, T2, T3). The outcomes of the base sensitivity test (T0) are shown below:

Table 4-8: MCA Sensitivity Tests Results and Ranking – Each Organisation (May 2021)

Tauriko Short List MCA Evaluation Outcome - May 2021					
	Opt 1	Opt 1a	Opt 2	Opt4	Opt 4a
WBoPDC Ranked (T0)	4	5	1	3	2
	0.80	0.77	1.40	1.01	1.07
TCC Ranked (T0)	4	5	1	3	2
	1.31	1.26	1.69	1.52	1.56
NZTA Ranked (T0)	4	5	1	3	2
	0.75	0.65	1.13	0.79	0.90
BoPRC Ranked (T0)	3	5	1	4	2
	0.62	0.56	0.82	0.59	0.65

4.4.6.2 Outcome – Emerging Recommended Option

After the MCA evaluation, an independently facilitated workshop was held with stakeholders on 19 May 2021 to determine a preferred option. To help inform the decision, investment outcomes achieved by each of the options and their estimated costs were presented.

Key points raised at the short list to emerging preferred workshop include:

- Overall, Option 2 ranked first in all MCA tests.
- Options 4 and 4A were closely ranked and followed behind Option 2.
- Option 1 and 1A were the worst performing options.
- Option 2 performed best in meeting DSI targets as most traffic was using higher quality intersection forms. Meanwhile, Option 1 and 1A provided some safety benefits but have large online at-grade intersection forms particularly Redwood Lane and Takitimu Drive.
- All options met the freight reliability targets except there was more uncertainty with Options 1 and 1A in 2063.
- All options achieved mode shift, however Options 1 and 1A are slightly better than Options 2, 4 and 4A. This is largely due to more congestion forcing people to use other non-car modes.
- Project partners supported the MCA process. However, climate change and financial fundability criteria were debated between partners. Consequently, these specific assessments and scoring were reviewed and provided to project partner's post-workshop.
- Staging was an important consideration for the preferred option. For instance, project partners agreed the need to consider delivering specific components such as Takitimu Drive interchange and Barkes Corner intersection in the shorter term.
- Furthermore, Option 2 and Option 4A were specifically compared in detail due to their largely similar outcomes, using the latest data available at the time. This comparison demonstrated that Option 2 provides slightly better safety outcomes and less carbon emissions, as shown below:

Table 4-9: Option comparison between Option 2 and Option 4a

	Option 2	Option 4a
Mode Shift	55% Confidence[68]	49% Confidence
Safety	5.6 DSIs	5.2 DSIs
Loss of Land for Housing	33.4ha	16.5ha
Carbon Emissions	499,000 tCO2e	658,000 tCO2e
Could be Tolled	Yes	No
Indicative high level Physical Works cost	$800M	$790M
Construction time	4 years	5 years
BCR	<1	<1

To assist in decision-making, the three short list options (Option 1, 2 and 4) where subjected to a high-level economic assessment[69] . All options have alignment to the investment objectives, national benefit framework and GPS. Most monetised benefits are from improvement to travel times–- with Option 2 delivering almost twice the travel times benefit compared to Option 1/1A.

Table 4-10: Monetised Benefits and BCR–- Short List Options (May 2021)

High Level Assessment results	Option 1/1A	Option 2	Option 4/4A
Total Capital Costs (NPV)	$363M	$638M	$641M
Total Monetised Benefits (including Webs[70]) NPV	$312M	$602M	$512M
BCR including WEBs	0.9	0.9	0.8

Following the workshop, further assessment of the scoring process was undertaken to ensure the evaluation process was robust. The additional checks did not change the results of the original evaluation or sensitivity tests. This was communicated back to the project partner group.

Overall, the project partners agreed with the MCA evaluation and the recommendation to progress Option 2 as the emerging recommended option. Therefore, **Option 2 was progressed as the recommended option.**

[68] Confidence is likelihood of reaching mode shift targets.
[69] Early Tauriko Transport Modelling Results – AST 2021.
[70] Webs assessed as 20% of Travel Time benefit.

4.4.7 Short List Option Refinement (2021-2023)

Several refinements were made to the short list options 1 and 2 between September 2021 and early 2023. As a result, these modifications were tested through an option evaluation process and compared to the emerging recommended option at the time (Option 2).

- In September 2021, the project team investigated a 'hybrid option' with the variations to elements of the preferred option, Option 2:
  - Takitimu interchange.
  - Redwood Lane and Tauriko West interchange.
- In 2023, several new updates (including the approval of the Tauriko Enabling Works DBC, updated traffic modelling and community engagement in 2021 and 2022) led to refined short list options:
  - Option 1V.
  - Option 2V.

4.4.7.1 Takitimu Interchange Hybrid Option

A Takitimu Interchange Hybrid Option was developed and considered by the project team to reduce impacts around Kopurererua Valley. This Takitimu Interchange Hybrid Option is the same as Option 2, except at Takitimu Drive. Instead of a diamond interchange with roundabouts at the ramp terminals, this hybrid option layout at Takitimu Drive seeks to improve efficiency between the connecting state highways. It includes:

- SH36 to Takitimu Drive onramp being a long structure above the main SH29 alignment.
- SH29 to SH29A eastbound off-ramp above the main SH29 alignment.
- SH29A to SH29 westbound on-ramp.
- Takitimu Drive to SH36 off-ramp.
- SH29A westbound and eastbound ramps above Takitimu/SH36 twin signalised intersections.
- SH29A being located on existing alignment with two dedicated bus lanes and four lanes for traffic.

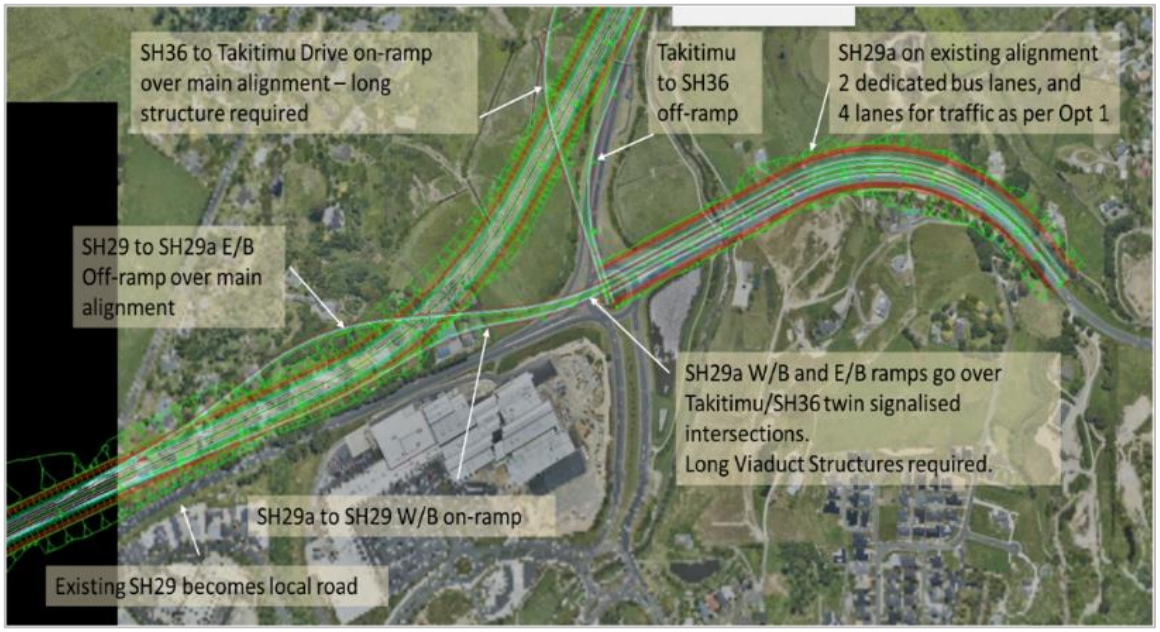

Figure 4-3. Takitimu Drive Hybrid Option

The hybrid option was assessed by specialists using the MCA Framework, specialist ratings for Option 1 to Option 4, and engineering judgement. This was later presented, discussed, and agreed with TCC and Waka Kotahi. When compared to Option 2, the following benefits and risks were identified:

4.4.7.1.1 Benefits of Takitimu Drive Hybrid Option:

- More efficient route choice – direct link for 'around' and 'cross' harbour movements.
- Simpler road network layout.
- Minimises total conflicting traffic movements with the removal of the twin roundabouts.
- Less land requirements east of Takitimu Drive due to smaller footprint.
- Reduces the impact on the flood plain around Kopurererua Valley due to smaller footprint.
- Direct link between SH36 and Takitimu Drive Toll Road.

4.4.7.1.2 Risks of Takitimu Drive Hybrid Option:

- Traffic connectivity issue – SH29 west traffic to Cameron Road must exit at Redwood Lane interchange and use the local road network (old SH29 corridor) to access Cameron Road, and vice versa, including all traffic to The Crossing and surrounding areas.
- Higher structures risk with three additional structures of considerable lengths and some with high skew angles.
- Higher safety risks due to some with high skew angles of proposed structures.
- Mixes highway, local road, and PT traffic in the same corridor between Takitimu Drive and Barkes Corner with 50,000vpd predicted in 2063.
- Requires weaving movement on SH29A over a short distance.
- Requires significantly more and longer structures and increased carbon footprint.
- Requires additional land from previously unidentified landowners.
- Significant constructability risk and impacts.
- Costs approximately $15M - $20M more.

4.4.7.1.3 MCA Evaluation

An updated MCA evaluation was undertaken, including the Takitimu Drive Interchange Hybrid Option as shown in **Table 4-11.**

Table 4-11: Takitimu Hybrid Option MCA assessment outcomes

Tauriko Short List MCA Evaluation Outcome - May 2021					
	Opt 1	**Opt 1a**	**Opt 2**	**Opt4**	**Hybrid**
WBoPDC Ranked (T0)	4	5	1	3	2
	0.80	0.77	1.40	1.01	1.36
TCC Ranked (T0)	4	5	1	3	2
	1.31	1.26	1.69	1.52	1.66
NZTA Ranked (T0)	4	5	1	3	2
	0.75	0.65	1.13	0.79	1.12
BoPRC Ranked (T0)	3	5	1	4	1
	0.62	0.56	0.82	0.59	0.82

Following the assessment and a stakeholder workshop on 23 September 2021, the project team accepted that modifications to the Takitimu Drive intersection (for this Hybrid Option) are not favourable due to a significant increase in costs, which provide no additional benefit from an MCA perspective.

Overall, the Takitimu Interchange Hybrid Option was Discarded as a short list option.

4.4.7.2 Redwood Lane and Tauriko Interchange

In September 2021, TCC also requested that the old (revoked) section of SH29 should be a local road connecting Redwood Lane and Gargan Road, as shown below:

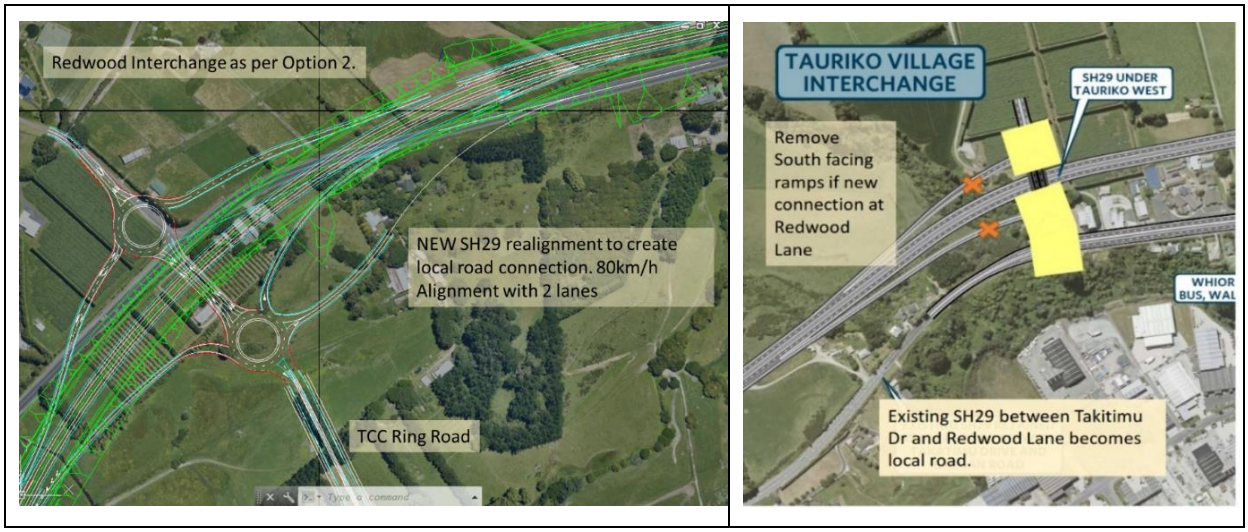

Figure 4-4. Redwood/Tauriko West Interchange – Local Road Connection Option

An early assessment was completed by the project team to identify key potential opportunities and impacts of this option:

4.4.7.2.1 Opportunities:

- Enabling tolling with the provision of an alternative free route.
- Removing Tauriko West access south facing ramps, therefore reduced land requirements, footprint, and cost.
- Removing the need to reopen Gargan Road to freight traffic.
- Avoiding the need to upgrade the old SH29 to four lanes. With the installation of north facing ramps at Redwood Lane.

4.4.7.2.2 Impacts:

- Reduction in available industrial land in the Tauriko Business Estate.
- Mixed highway use – with the direct link between Redwood Lane and Barkes Corner and all eastbound traffic destined for Tauranga Crossing.
- Tauriko, Cambridge Road will use Redwood Lane interchange and travel along local roads rather than the State Highway.

These opportunities and impacts were presented to stakeholders on 23 September 2021. TCC agreed[71] with these changes as shown in Figure 4-5**.** Furthermore, it was agreed with Waka Kotahi that the design speed between Omanawa Road and Redwood Lane would need to cater for 100km/h (with a posted speed of 80km/h), rather than previously agreed design speed of 80km/h[72], due to vertical and horizontal clearances. Consequently, the alignment in the southern portion of the route shifted slightly east. This change would also have had to occur on the other short list of options due to this design speed decision.

[71] Email from TCC to WSP, Waka Kotahi and Rep for BOPRC – 28/09/21

[72] Noting between Redwood Lane and Barkes Corner, the Design speed is still 80km/h.

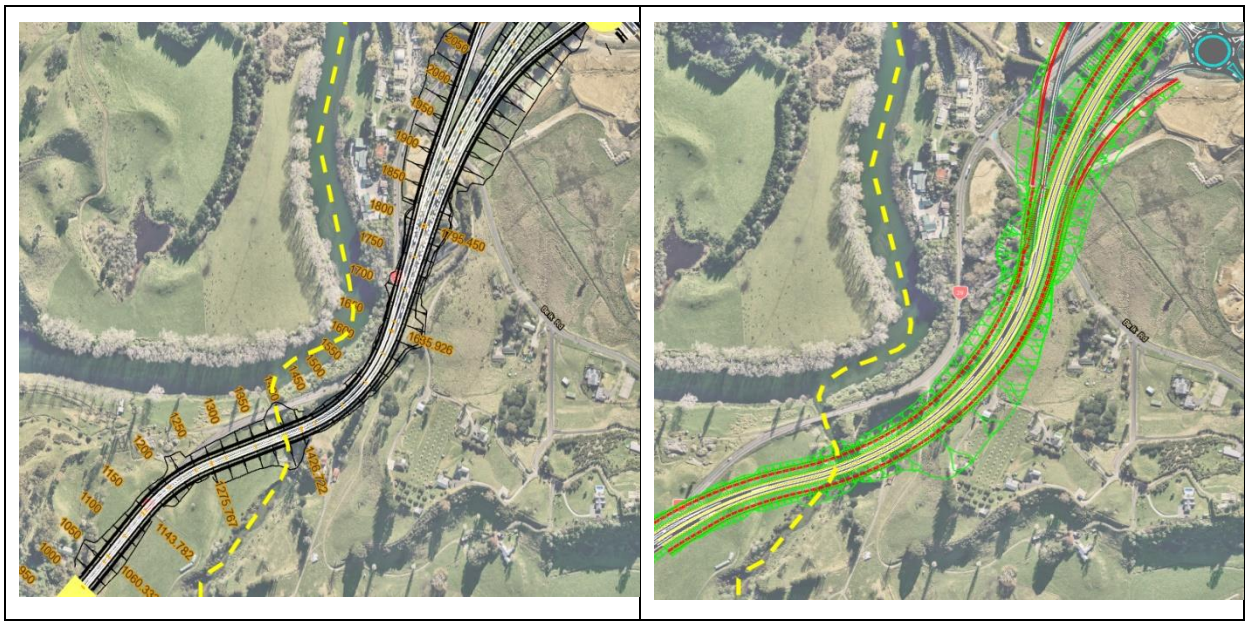

Figure 4-5. Omanawa Stream Alignment – Difference between Option 2 (left) and Hybrid Option 2 (right)

4.4.7.2.3 MCA Evaluation

To test whether these design changes impact the last MCA evaluation in May 2021, the project team undertook a comparison of the original MCA assessment for Option 2 and an 'Option 2 Hybrid' with the two hybrid components at Redwood Lane and Tauriko West and Omanawa Stream.

The project team considered no measurable difference in the scores. This is largely to do with the fact that the changes are relatively small in comparison to the total project impacts and opportunities. The project partners agreed to progress Option 2 Hybrid following the option opportunities and changes discussed above.

Overall, the Redwood Lane/Tauriko West Interchange Option 2 Hybrid was **taken forward as the emerging recommended option.**

4.4.7.3 Refined Options 1V and 2V

Further refinement of the short list options was needed between 2022 and 2023 due to new information:

- Finalisation and approval of the Tauriko Enabling Works DBC (approved in 2022).
- Updated traffic network performance and safety assessment of options.
- Community Open Days in May 2021 and May 2022 - outcomes of that consultation are summarised in Section 5.
- Significant escalation in construction and property costs.

This resulted in refined or 'value engineered' short list options with the following design amendments:

- Option 1V (referred to as Option A during public consultation):
  - Uphill climbing westbound lane north of Redwood Lane.
  - Full dedicated bus lane between Northern Access intersection and Whiore Ave in both directions.
  - Reprioritised interchange layout at Takitimu Drive Interchange (prioritised movement for SH29-TNL).
- Option 2V (referred to as Option B during public consultation):
  - Combined Option 1 and 2 between Takitimu Drive and Barkes Corner Interchange.

These design changes led to a significant change to the indicative costs given new interchange designs and updated land costs. The indicative costs presented to project partners are (P50 – P95 based on Q1/2022):

- Option 1V: $1.4B to $1.7B
- Option 2V: $2.0B to $2.3B

Key refinements made to Option 1V and 2V are indicated below:

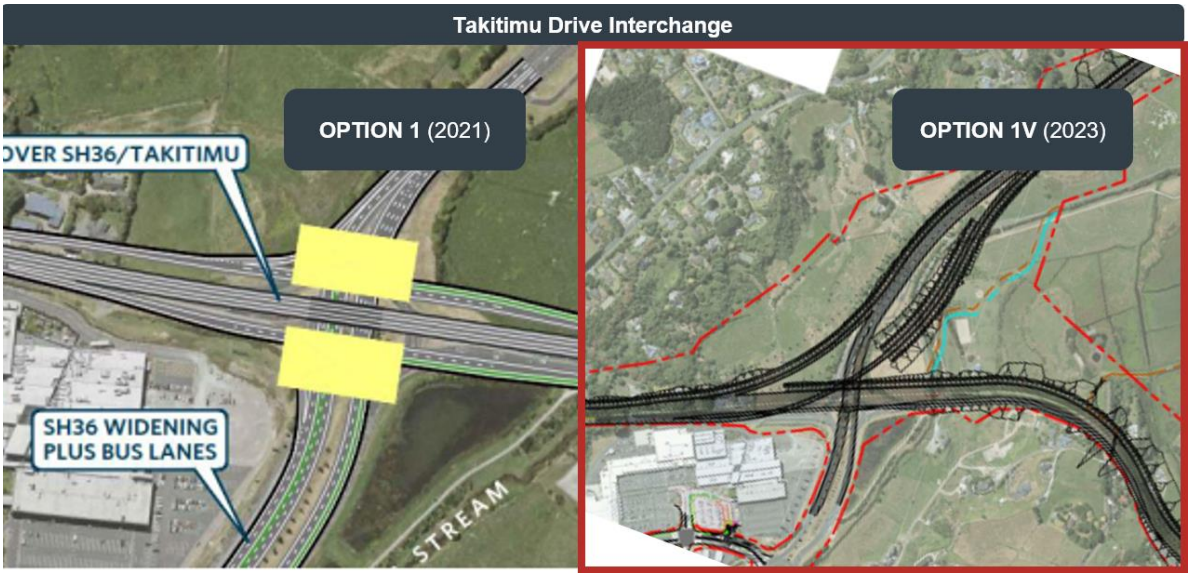

Figure 4-6. Option 1V Refinement to Takitimu Drive Interchange

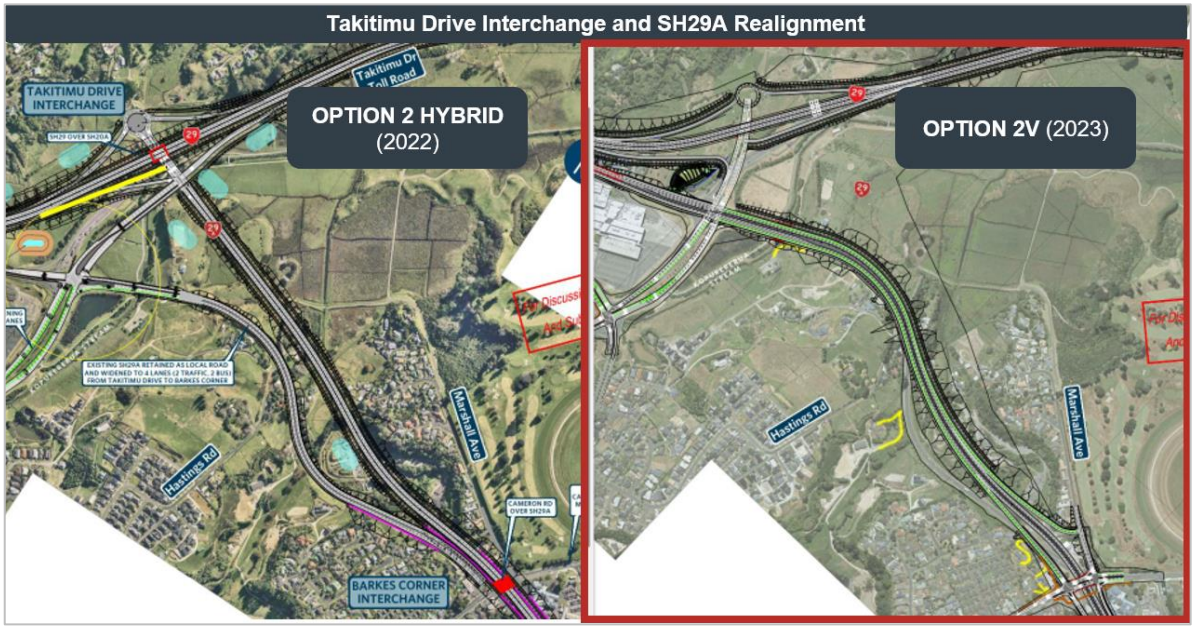

Figure 4-7. Option 2V Refinement.

4.4.8 Final Short List Option Evaluation (April 2023)

Given all the refinement done between 2021 and 2023, the final two refined short list options were re-evaluated in 2023. This was to test whether the latest option evaluations for the earlier versions of these options (undertaken in 2021 for Option 1 and 2022 for Option 2 Hybrid) were still relevant with the refined Options 1V and 2V.

Furthermore, Option 4 was not re-investigated. This is because:

- Option 4 is a combination of Option 1 and 2.
- Option 1 ranked second after Option 2 (and variations) in past MCA evaluations, whereas Option 4 had historically been ranked lower than these two options in previous MCA evaluations, indicating that it is not a feasible/favourable option to explore further.
- A lower cost 'do minimum' option (i.e., Option 1 and variations) was needed to compare against the emerging recommended Option 2 Hybrid.

4.4.8.1.1 Strategic Changes (GPS and Climate Change)

Furthermore, the project team and partner organisations noted the need to account for changes in strategic priorities around climate change and carbon emissions:

- Potential impact of indicative priorities of GPS 2024-27, which signal greater importance on reducing carbon emissions.[73]
- Aotearoa New Zealand Emissions Reduction Plan released in May 2022.

Due to the strategic context at the time, previous option development and evaluation addressed climate change and carbon emissions through the 'Opportunities and Impacts' criteria. Therefore, new MCA sensitivity tests were undertaken to ensure that these were accounted for adequately in this emerging strategic context, without substantially changing the integrity of the MCA methodology.

4.4.8.2 MCA Evaluation

In April 2023, the project team evaluated Options 1V and 2V using an updated MCA Framework. The updated MCA Framework was informed by detailed investigations, the latest GPS, and climate change objectives.

The MCA evaluation methodology remained similar to the previous MCA evaluations undertaken for Option 1 in May 2021 and Option 2 Hybrid in February 2022. Due to the similarities of these refined options with their earlier versions, a simpler process was undertaken than previous MCA evaluations.

A one-page evaluation sheet was developed for each specialist to assess each option against the 'Enabling Works' package as the base case. Specialists were asked to undertake an initial assessment on each of the options, largely based on their previous MCA assessments in 2021 and 2022. The scores for each option were combined into one table to provide an indication of an emerging preferred option. These MCA results have been communicated back to the partner organisations for information purposes.

Furthermore, a comparison of the original MCA assessment for the previous versions Option 1 (May 2021) and Option 2 Hybrid (February 2022) against Options 1V and 2V was undertaken. Overall, there were very few measurable differences in the scores. However, these were relatively minor changes, largely due to the design changes being relatively minor in comparison to the total project impacts and opportunities.

4.4.8.2.1 Sensitivity Testing

The updated MCA scores were re-tested using the original MCA sensitivity tests for each partner organisation in May 2021 (see Section 6.6.1). These MCA results have been communicated back to the partner organisations for information purposes.

No changes were made to the original parameters in 2021 except for the Waka Kotahi tests. These changes requested by Waka Kotahi reflected the strategic changes around carbon as discussed in Section 6.8.1:

- Weighting climate change mitigation higher (40% of the Opportunities and Impacts criteria section, compared to 25% originally).

[73] https://www.transport.govt.nz/area-of-interest/strategy-and-direction/government-policy-statement-on-land-transport-2024

- Weighting impacts on Te Ao Maori higher (20%, compared to 6% originally).
- Weighting impacts on land transport integration lower (20%, compared to 25% originally).

The updated MCA sensitivity tests for Option 1V and Option 2V recommend **Option 2V** as the top ranked option. The outcomes of the base MCA result and base sensitivity tests (T0) for each organisation are shown in Table 4-12**.** The other sensitivity tests (T1, T2, T3) demonstrate consistent results; that Option 2V is the top ranked option regardless of test.

Table 4-12. Short List MCA Results Against Organisational Priorities (April 2023)

Tauriko – Shortlist to Preferred MCA Assessment – April 2023		
	Opt 1V	**Opt 2V**
Base (3 sections equal weighted)	2	1
	0.76	1.02
WBOPDC Ranked (T0	2	1
	1.13	1.45
TCC Ranked (T0)	2	1
	1.44	1.70
NZTA Ranked (T0)	2	1
	1.06	1.34
BOPRC Ranked (T0)	2	1
	0.88	1.11

4.4.8.3 Appraisal Summary Tables and BCR

To support decision-making, finalised Appraisal Summary Tables (AST) for the final two short list options (Option 1V and 2V) were prepared from the TTSM21 model and cost-benefit analysis. The ASTs provide an overall view of the monetised, quantitative, and qualitative benefits and costs associated with each of the options. Both options have alignment to the investment objectives, national benefit framework and GPS.

A copy of the modelling and economics report and peer reviews is in Appendix C. The economics were determined using the NZ Transport Agency's Monetised Benefits and Cost Manual (MCBM), April 2023. This has resulted in a significant improvement in the perceived benefit values, when compared to the earlier assessments.

The national BCR[74] for Option 1V is 1.6 and Option 2V is 1.3. Both options are therefore considered economically feasible. Although Option 2V benefits are higher than Option 1V (+$400M) its additional NPV costs of $685M mean it does not have an incremental benefit over Option 1.

These results are further discussed in Section 7.

74 Based on year 2048+ land use demands, applied at year 2063.

Table 4-13: Monetised Benefits and BCR–- Short List Options (May 2023)

Economic Summary	Option 1V	Option 2V
Total NPV Costs ($M)	$1,263	$1,948
Total NPV Benefits (excl. WEBs) ($M)	$2,032	$2,439
Base BCR (excl. WEBs)	1.6	1.3
Sensitivity Tests		
Discount rate increased from 4% to 6%	1.1	0.9
Discount rate reduced from 4% to 3%	2.0	1.7
Using P95 cost instead of P50	1.4	1.2

4.4.9 Recommended Option (May 2023)

As explained above, the emerging recommended option in May 2021 (Option 2) was refined further through a robust short list option refinement process between 2021 and 2023. Table 4-14 below summarises the evaluation outcomes for the Do Minimum and Option 1V and 2V. Through the updated short list option evaluation process, it was agreed that Option 2V is the recommended option for Tauriko Network Connections DBC.

The engagement outcomes that supported the option investigation are outlined in Section 5.

The Recommended Option is detailed in Section 6.

Table 4-14: Summary of Evaluation Results for Do Minimum and Option 1V and 2V

	Objectives	Baseline (includes Enabling Works)	Do Minimum (modelling)			Option 1V (modelling)			Option 2V (modelling)			Option 2V Staged		
			2031	2048	2048+	2031	2048	2048+	2031	2048	2048+	2031 Stage 2 & 3	2048 Stage 2 & 3	2048+ Stage 4
IO: Freight Travel Time (Omanawa to TNL)	*Reliability*	16mins AM 33mins PM	unknown	unknown	unknown	unknown	unknown	unknown	minimal	minimal	minimal	unknown	unknown	minimal
	Travel time	11mins AM 15mins PM	10.2mins AM 12.7mins PM	13.4mins AM 14.1mins PM	15.2mins AM 16.9mins PM	7.2mins AM 7.2mins PM	7.8mins AM 7.8mins PM	8.1mins AM 8.5mins PM	5.9mins AM 6.0mins PM	6.0mins AM 6.1mins PM	6.1mins AM 6.2mins PM	8.2mins AM 8.2mins PM	12.6mins AM 12.9mins PM	6.1mins AM 6.2mins PM
IO: PT and Active mode share	*From Western Corridor to all destinations*	4.90%	7.1% AM 3.0% PM	8.6% AM 4.6% PM	9.2% AM 5.7% PM	9.8% AM 4.8% PM	11.3% AM 6.0% PM	11.4% AM 6.3% PM	9.6% AM 4.7% PM	10.9% AM 5.9% PM	11.1% AM 5.8% PM	n/a	n/a	n/a
	Daily PT Patronage on SH29A	n/a	720	820	1050	1770	2200	2950	1760	2190	2910	1710	2160	2910
	From Western Corridor to CBD peak direction	n/a	6.9% AM 11.9% PM	14.1% AM 16.4% PM	19.9% AM 22.5% PM	22.8% AM 20.2% PM	22.4% AM 17.2% PM	23.1% AM 19.5% PM	22.8% AM 19.9% PM	22.2% AM 16.6% PM	22.3% AM 17.6% PM	n/a	n/a	n/a
IO: Safety DSIs/Crashes	*Annual DSIs (TTSM)*	n/a	123	142	158	119	137	153	120	138	153	n/a	n/a	n/a
	Annual Crash Cost (TTSM)	n/a	$373M	$433M	$485M	$361M	$418M	$471M	$363M	$421M	$472M	n/a	n/a	n/a
Peak PT Travel - AM Tauriko Crossing to Maleme St	*Cars*	3-7 mins	n/a	n/a	n/a	n/a	n/a	n/a	5.6mins	n/a	6.8mins	n/a	n/a	n/a
	buses	3-7 mins	5.6mins	7.1mins	12.0mins	4.0mins	4.5mins	4.7mins	4.2mins	4.5mins	4.8mins	4.2mins	4.3mins	4.8mins
Project Cost ($Billions)	*P50*	*n/a*	n/a	n/a	n/a	$1.40B			$2.23B			$2.30B		
	P95	*n/a*	n/a	n/a	n/a	$1,687B			$2.66B			$2.72B		
Monetised benefits (NPV)	*total NPV*	*n/a*	n/a			$2,032M			$2,438M			$1,838M		
	BCR (exc WEB's)		n/a			1.6			1.3			1.2		
	Total WEB's	*n/a*	n/a			$406M			$505M			n/a		
VKT (kms/day)		4,969,000	6,170,000	7,491,000	7,941,000	6,162,000	7,594,000	8,068,000	6,162,000	7,603,000	8,086,000	6,155,589	7,503,796	8,086,600
Carbon emissions CO	kg/day	8,513	2,957	819	863	2,960	836	882	2,957	835	882	n/a	n/a	n/a
Carbon emissions CO2-eq	kg/day	1,125,430	1,276,027	767,502	802,297	1,274,338	776,762	813,256	1,272,837	776,636	813,160	n/a	n/a	n/a
Other Considerations	MCA Scoring								Highest ranked by all stakeholders					
	Techncial - Structures					Takitimu Interchange more complex								
	Constructability								Greater extent off-line - less disruption					
	Customers/Public					Doesn't meet public expectation								
	Land Transport Integration								Significant improvement over Opt 1V					
	Tolling					No available - not an option			Yes between Redwood and TNL					

5 ENGAGEMENT OUTCOMES

5.1 SUMMARY OF ENGAGEMENT

Engagement has been undertaken via an integrated 'Tauriko for Tomorrow' engagement approach. Therefore, engagement undertaken since 2016 for the Tauriko Network Connections DBC has been undertaken alongside other projects in Tauriko including the Enabling Works project (see Section 1.5.2), the TCC/WBOPDC boundary change, and Tauriko West plan change. This section outlines outcomes of engagement to date and how it has fed into the development of the options is provided in the following sub-sections.

A summary of the engagement approach which led to these outcomes is provided in Section 1.5.7. For more details on the engagement outcomes, refer to the Waka Kotahi website.75

Given that this project has morphed from one to two projects, engagement over the last five years with interested parties, landowners and the community has included material related to both the Enabling Works and Tauriko Network Connections projects. References to the Enabling Works have therefore been kept within this section as some parties were and are affected by both projects.

5.2 PROJECT PARTNERS

At an operational level, the project team has included representatives from TCC, Waka Kotahi and BOPRC working alongside the lead consultant, WSP, and involved in all aspects of the project. Strategic governance has also been provided by the Tauriko Governance Group, consisting of senior managers from the SmartGrowth partners. Key strategic decisions have been considered by this group, to provide direction to the project team where required.

The SmartGrowth partners (i.e. TCC, BOPRC, WBOPDC) have all been closely involved with the management of the Tauriko for Tomorrow project and the development of the DBC. Representatives of all partners participated in the various MCA workshops for the long- and short-term transport improvements.

5.3 TANGATA WHENUA – TE KAUAE A ROOPU

Tangata whenua engagement, including regular hui and other project wananga (workshops), has taken place since 2017 and will continue as the projects move from business case to implementation. Matters discussed include the change to the RPS, the change to the local government boundary, the structure planning and plan change for Tauriko West, and the short- and future improvements to the transport network.

The regular hui provided opportunity for the presentation of technical assessments, heritage and cultural reports commissioned for the structure planning of Tauriko West, as well as a forum for discussion strategic issues such as the city-wide transport network, climate change, wastewater disposal, and abstraction for municipal water supply. This has included consideration of the Tauriko Network Connections upgrade options for SH29/SH29A, the Tauriko West Enabling Works, and Tauriko West Ara Tuarā (Spine Road) alignment.

Te Kauae a Roopu[76] have been involved in the option evaluation and assessment process throughout. They have expressed in-principle, support for the short and future transport upgrades, in particular those that will increase safety, recognising the impact safety issues have on the local community. They have also expressed support for the development of additional housing in the Western Corridor, to help address housing supply and affordability issues. Te Kauae a Roopu highlighted the need for connectivity with the Wairoa River and sites of cultural significance, as well as walkable neighbourhoods and accessibility to social infrastructure, open space, commercial and business areas. Ara Tuarā is recognised as fulfilling a key role in this regard.

[75] https://www.nzta.govt.nz/projects/tauriko-network-plan/media

[76] Consisting of representatives of Ngāi Tamarawaho, Ngāti Hangarau, Ngāti Kahu, Ngāti Pango. Ngāti Rangi and Pirirakau.

In 2021, a Cultural Values Assessment (CVA) was prepared on behalf of Te Kauae a Roopu–- “Nga Hapu of Te Kauae a Roopu Cultural Values Assessment 2021”. The CVA sets out a conceptual framework developed in accordance with tikanga and key cultural values, which will be applied to the planning, design, and construction of the projects. The CVA is described in more detail under Section 6.2.6 of this DBC.

One of the key considerations for Te Kauae a Roopu was to restore and naturalise the Kopurererua Stream and Valley area. Short List Options 2 and 4 were modified to ensure this area was naturalized and planting/landscaping provisions allowed for. Similarly, the impact of Option 2 on the gully area within Ferncliffe Farms was avoided as much as practicable to minimize impact on the base of the wetland. Te Kauae a Roopu members were part of the workshop to select a Recommended Option and have agreed with the recommended option, Option 2. As the project heads into the next phase, further consultation with Te Kauae Roopu on the Recommended Option is to continue to ensure tanga whenua inputs are captured and ensure the CVA recommendations are applied in a practical way to ensure recommendations are captured in further design and space allowed.

In April 2023, Waka Kotahi presented to Te Kauae a Roopu specifically on the absence of Te Ao Maaori scoring in the MCA process to date. It was agreed that this was and continued to be a deliberate choice from Te Kauae a Roopu members as trying to shoehorn all issues of relevant to Māori into a single rating was seen as diminishing the importance and diluting their influence in an MCA.

The group also discussed the updated Option 2V plans and explained the minor changes from the previously endorsed Option 2. Te Kauae a Roopu agreed with the changes.

5.4 TAURIKO WEST DEVELOPERS

In 2017, the Tauriko West Developers Forum was set up by TCC to provide for proactive involvement of the three major landowners in the structure planning with all supporting technical investigations and specialist assessments. The forum has continued to meet regularly with TCC, generally on a fortnightly basis and discussed matters such as structure planning and design elements and requirements for all transport modes. Representatives from Waka Kotahi and MoE have also attended from time to time to present to the forum.

Other matters raised and traversed in this forum include the outcomes of traffic modelling supporting the earlier Enabling Works project, and how this identifies the need for a cap of 2000 dwellings – until such time as the Tauriko Network Connections upgrade for SH29/SH29A is implemented. More recently, the Kainga Ora purchase of Ferncliffe Farm has led to further discussion on the best way to serve the development of this block, to enhance the opportunity for active transport modes, public transport, and to enable modal shift for the future communities in the Western Corridor.

5.5 REDWOOD LANE RESIDENTS

In addition to the three major landowners within Tauriko West (see above), there is a small cluster of existing rural zoned properties accessed from Redwood Lane that are affected not only by the Enabling Works but also the long-term project. TCC has led engagement with this group, with support from Waka Kotahi where required.

Following the engagement in early 2021, a request for further discussion on roading and urban growth matters came from some of the existing residents in Redwood Lane. This group raised concerns about several matters, including:

- The future options for the SH29/SH29A upgrade options.
- An alternative southern bypass option.
- The proposed roundabout location at the Redwood Lane / SH29 intersection.
- The alignment of Redwood Lane between the roundabout and the Spine Road.

Further engagement with this group involved a combined TCC and Waka Kotahi meeting with residents on 7 July 2021, and then a further meeting on 13 October 2021.

The residents expressed their preference for an alternative southern bypass alignment for the Tauriko Network Connections options, however this option was assessed and discarded by Waka Kotahi, initially

as part of the PBC and then again in 2020 during the shortlisting phase for Tauriko Network Connections DBC (refer to Section 4.4.5).

5.6 DIRECTLY AFFECTED LANDOWNERS

5.6.1 Enabling Works – March/April 2021

The project team held 1:1 meetings with about 80 landowners between March and April 2021. Properties that would be directly affected by the Enabling Works and the Tauriko Network Connections DBC were identified by WSP in early 2021, based on the concept designs of the emerging recommended option.

Landowners were also briefed on the shortlisted options for the Tauriko Network Connections improvements, as in many cases these were also likely to impact their property in some way. The process for land acquisition and compensation under the Public Works Act was also discussed, along with project implementation timeframes.

5.6.2 Recommended Option – May 2022

In terms of this DBC, the Tauriko Network Connections medium and long-term transport improvements, the project team held 1:1 meetings in April 2022 with 43 directly affected landowners.

These meetings involved sharing the plan for the emerging Recommended Option for the Tauriko Network Connections improvements. The landowners met with, were affected through property acquisition or changes to their property access. The purpose of the project, along with implementation timeframes and the process for land acquisition and compensation under the Public Works Act was discussed.

While landowners were broadly supportive of works that would improve safety and better manage congestion, a number of owners where full or possibly partial property acquisition would be required by the project were concerned about impact on property values if they tried to sell before the project commences, or where no property acquisition is required, what will be done to ensure the effects of the new road on their property will be mitigated.

Whilst there is to be ongoing engagement as the DBC is finalised and for any future phases, landowners have been encouraged to keep in touch with the project team if they would like any additional information.

5.7 MINISTRY OF EDUCATION AND TAURIKO SCHOOL

Tauriko School is located on the western side of SH29 between Cambridge Road and the proposed new access into Tauriko West. Impacts of the enabling works projects have been discussed with the school.

In addition to the potential impacts on the existing school by the short-term and future transport projects, the current school site and buildings are not suitable for the future needs of the school considering the significant population growth planned for within the school catchment. The school and the MoE, supported by TCC, are therefore in the process of investigating alternative sites for Tauriko School within Tauriko West itself. The MoE are also investigating the establishment of a secondary school within Tauriko West.

TCC and Waka Kotahi representatives have engaged with the school Principal and Board and the MoE several times, to work through the plans for the short-term and future transport improvements, including timing and staging of the Enabling Works. As noted above, MoE representatives have also been attending hui with Te Kauae a Roopu to discuss the selection of new school sites and establishment of new schools.

5.8 KĀINGA ORA

Kāinga Ora functions as both a developer in the Western Corridor and Crown Agency.

Kāinga Ora has been informed as the Tauriko for Tomorrow project has progressed. Due to land acquisition processes around the Northern Access, they have been engaged with for the pre-

implementation phase of the Enabling Works project. Overall, Kāinga Ora has been generally supportive of the project.

In September 2022, Kāinga Ora selected the Tauranga Western Corridor for the Specified Development Project (SDP) Assessment. The SDP Assessment is currently underway.

5.9 TAURANGA CROSSING LIMITED

Tauranga Crossing Limited (TCL) have been engaged with, as the Tauriko for Tomorrow project has progressed. The relationship has been led primarily by TCC with support from Waka Kotahi.

Tauranga Crossing Limited have raised concerns about the lack of committed funding for the long-term upgrades, the effect of cut-through regional traffic on their Taurikura Drive frontage, and engagement is ongoing. Further discussion has been underway with specific reference to the timing of implementation for improved public transport services and the location of the bus interchange. Optioneering and assessments of improvements on Taurikura Drive in relation to both access to “The Crossing” and the proposed PT Hub has involved TCL as a stakeholder. This work identified that a PT Hub located within the “The Crossing” site was the optimum solution, with bus lane provisions on Taurikura Drive.

5.10 OTHER STAKEHOLDERS

As noted in Table 2-1 earlier in this DBC, there are several other stakeholders, including regulatory bodies, community organisations, industry bodies, emergency services and advocacy groups who have an interest in the project.

Engagement with these stakeholders on both the Tauriko Network Connections DBC and the Enabling Works DBC (i.e., for Whiore Avenue and Kaweroa Drive landowners and businesses) has been led by Waka Kotahi. Generally, stakeholders have been kept informed through regular email updates at key project milestones, with any feedback recorded and shared with the team. Stakeholders were invited to meet the project team in May and June 2022, with only some taking up the opportunity.

Overall, the stakeholders are generally supportive of the project.

5.11 COMMUNITY OPEN DAYS

5.11.1 May 2021

The first of the community open days for this phase of the DBC were held in May 2021 to present information to the community and obtain feedback on the proposals. The open days were supported by print, social media, and online campaigns to raise awareness. The open days were attended by representatives from Waka Kotahi, TCC, and WSP to help attendees understanding of the information presented and answer questions, and record feedback. The open days covered:

- Growth and transport within the western corridor and across the city.
- The proposed option for the Enabling Works.
- Proposed improvements to public transport services and walking and cycling.
- The short list of options for the Tauriko Network Connections improvements.
- Progress on the structure planning for Tauriko West.

People were able to provide feedback verbally to staff or place post-it comments on the information boards at the open days, submit written or online feedback forms, or follow up with staff by email or phone. Across five days at Tauranga Crossing, 1,044 people visited the open days. By the end of the four-week feedback period, there had been 11,500 views of the Tauriko for Tomorrow website (with an average time of 2.3 minutes spent on the site), and over 200 pieces of feedback received.

The feedback received generally shows that the community feels that the plans to improve the transport network and for the new community at Tauriko West are on the right track. Community feedback also highlighted the importance of continuing with a coordinated and integrated approach to planning for a safer community and growth in Tauriko West and Tauranga’s Western Corridor.

Some of the comments from the public:

- “That an improved transport network that supports multiple transport modes is important and should be implemented through dedicated lanes for buses, walking and cycling.”
- “Transport options should be built prior to housing.”
- “Keep future proofing for the long-term growth of Tauranga.”
- “Keep existing local roads separate to SH29 as commuter routes.”
- “Get heavy vehicles off local roads.”
- “Create more consistent speeds, less variation, reduce speeds.”
- “Support options that support current and future traffic flow.”
- “Move noise and congestion away from residential areas.”
- “Existing traffic cannot handle more trucks or contractors.”
- “Start works immediately – 10+ years is too long.”

In terms of the long-term upgrades, most expressed overall support for the long-term State Highway 29 and SH29A upgrade. In terms of those who provided a preference of the long-term options, 59% preferred Option B, then Option C. Only 10% preferred the online route upgrade, Option A. This feedback was used as part of the customers/public criteria assessment as part of the MCA evaluation process.

5.11.2 May 2022

Community open days were held between 22 and 28 May at Tauranga Crossing and were attended by representatives from Waka Kotahi, TCC, and WSP to help attendees understanding of the information presented and answer questions, and record feedback. The open days covered:

- Growth and transport within the western corridor and across the city.
- The funded option for the Enabling Works to be constructed.
- Proposed improvements to public transport services and walking and cycling.
- The emerging Recommended Option for the Tauriko Network Connections improvements.
- Progress on the structure planning for Tauriko West.

The public were able to provide feedback verbally to staff or place posted note comments on the information boards at the open days, submit written or online feedback forms, or follow up with staff by email. Across the ten days at Tauranga Crossing, 1,200 people visited the open days and left 52 posted note comments. By the end of the four-week feedback period there were 33 responses via the online survey and 3 email responses.

Similar to the 2021 open days, the feedback received shows that the overall project is on the right track with the plans to improve the transport network in the short and long term. Community feedback also highlighted the urgent need for these transport improvements to improve the safety of the network in specific areas of concern and reduce traffic congestion.

Some of the feedback from the public in terms of transport specific feedback is highlighted in the following selection of quotes, with specific reference to this DBC rather than the Enabling Works DBC:

- “Option B[77] [Option 2] should be started immediately.”
- “Public transport, cycling and walking needs to be the number one priority.”
- “SH29 roading infrastructure needs to happen before the 200+ homes are started. Kaimai residents are suffering now at peak and holiday traffic times.”
- “Local link roads need to be safe and useable for local pedestrians and cyclists.”
- “Don’t think the roads through the industrial estate will cope with all the expected truck movements Going to be very intense.”
- “Support this option as a regular user of SH29, will provide significant safety and travel time benefits.”
- “You’re putting thousands of additional cars onto already congested roads and then leaving everyone to deal with it for over 10 years. Unacceptable.”

There is overall support for the improvements to the transport network on the short and long term, as well as improvements to the walking and cycling connections. However, there was a lot of feedback on the

[77] For the purposes of community engagement, the numbering of the options was changed from numerical to alpha numerical, meaning Option 1/1A noted as Option A, Option 2 noted as Option B and Options 4/4A noted as Option C.

timing of the long-term transport improvements. There was concern from the public that the timing needs to be brought forward, given the number of houses to be built in Tauriko West and that the State Highway network is already congested. The earlier MCA assessment of the short list of options used public feedback (as part of the public/community criteria) showing positive outcomes for Option 2. With regards to other comments on doing the project earlier to cope with land use growth and increased volumes, this has been considered as part of the triggers, staging and timing of needs discussion (see Section 9).

6 RECOMMENDED OPTION – OPTION 2V

This section outlines the scope of the recommended option (Option 2V) in **Section 6.1**.

Assessment of the recommended option against factors for implementation, such as environmental, social, cultural, traffic and project risks are outlined in **Section 6.2**.

6.1 RECOMMENDED OPTION SCOPE

The recommended option for the Tauriko Network Connections DBC is **Option 2V** which includes:

- Public transport network facilities and priority lanes, including a new public transport hub within the "The Crossing".

  PT Interchange
  A PT interchange was initially investigated during the early stages of this DBC but was ultimately separated from this DBC and assumed by the Regional Public Transport Services and Infrastructure Business Case (see Section 1.5.3). The outcome of this investigation resulted in the inclusion of a PT interchange assessment back into this DBC's Recommended Option, to be located at or near "The Crossing", which is a natural hub where most roads in the area meet and a significant trip attractor and generator in the area.
  An optioneering phase considered the merits of an on-road facility using Taurikura Drive and an off-road PT Hub facility within the "The Crossing". Tauranga Crossing Limited were involved as key stakeholders in the process, that ultimately recommended a PT Hub be located within the site. While the PT interchange is a key part of this DBC's recommended option, it will be delivered through a different process (via the PTSI business case).
  PT Priority Lanes
  These will be linked to the dedicated bus priority expected along Cameron Road to be delivered by the Cameron Road Business Case. A joint-up approach with the proposed bus priority lanes in the Tauriko Network Connections DBC and the Cameron Road Business Case is critical to deliver the PT network benefits and mode shift outcomes of this DBC.

- An integrated walking and cycling network.
- Supporting travel demand management interventions.
- A new two-lane SH29 corridor between Omanawa Road and Redwood Lane.
- A new offline four-lane SH29 corridor between Redwood Lane and the Takitimu Northern Link.
- A new online six-lane SH29A corridor between Takitimu Northern Link and Barkes Corner.
- SH36 widening between Lakes Boulevard and SH29A to accommodate dedicated bus lanes.
- Revoked section of SH29.
- Seven intersection improvements, including three grade separated interchanges at Redwood Lane, Takitimu Drive and Barkes Corner.

The recommended option is depicted in Figure 6-1**.** The components of the recommended option are summarised in Table 6-1. Key components are detailed in the following sections.

Concept design drawings are provided in **Appendix D.**

The proposed delivery of these components is described in Section 9.

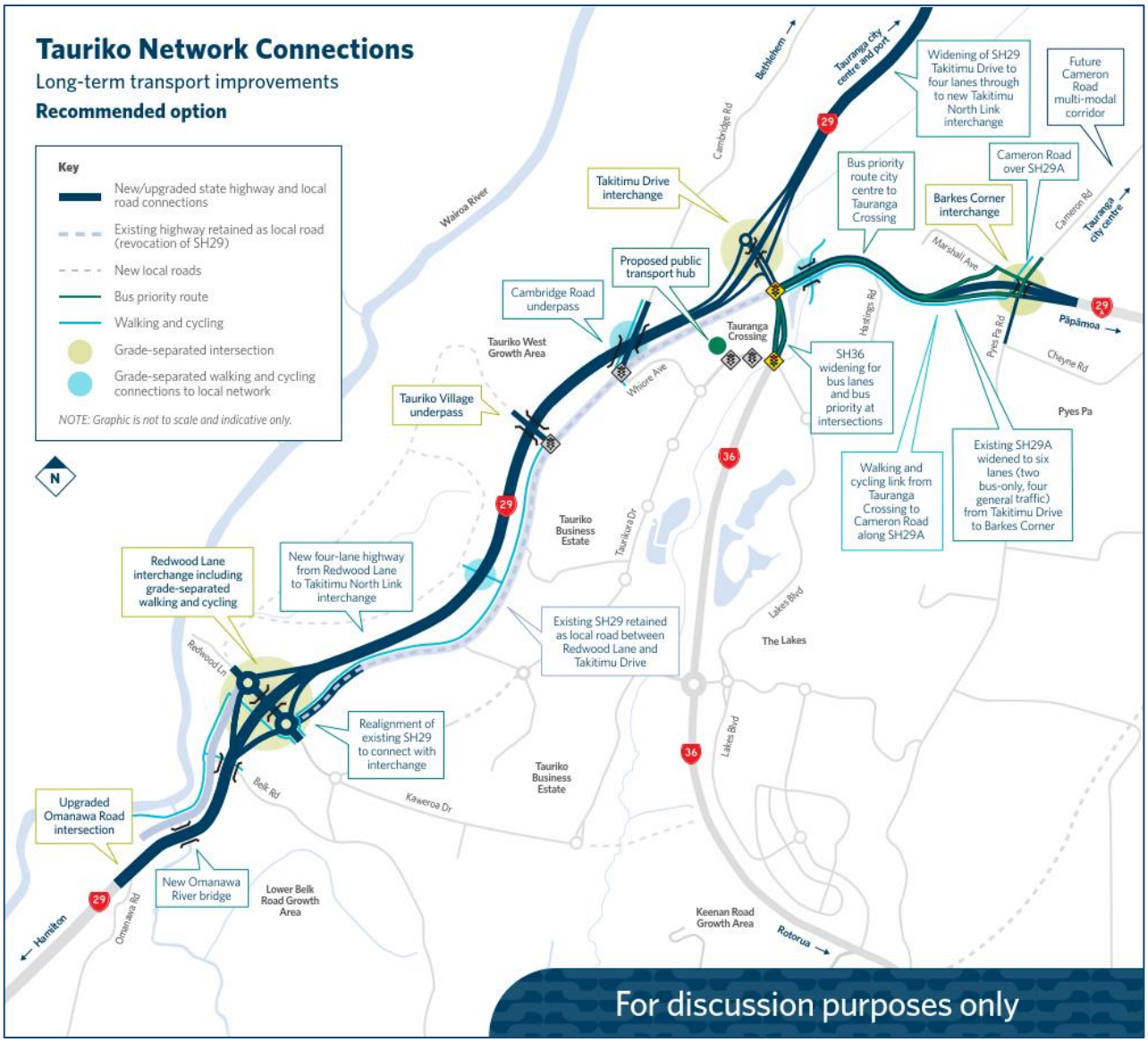

Figure** 6-1. **Recommended Option.

Table 6-1. Summary of Recommended Option Components.

Location	Base Case (including Enabling Works improvements)	Tauriko Network Connections DBC Recommended Option Improvements
General		
Public transport	PT on-street facilities included on Whiore Ave and on Taurikura Drive by Pak n Save. Whiore Ave/Cambridge Road bus priority at new Signals	New PT Interchange within the Tauranga Crossing site (to be delivered via Regional Public Transport Services and Infrastructure Business Case). Permanent full time bus lanes in both directions along SH36 and SH29A to Cameron Rd/Maleme Street connecting with Cameron Road Stage 2 improvements. PT priority measures at signalised intersections on Taurikura Drive between Whiore Ave and Lakes Boulevard. PT priority at Barkes Corner interchange.
Walking and cycling	• Planned cycling infrastructure and having schools and services within the walking/cycling catchments. • At-grade walking and cycling connections between Tauriko West and Cambridge Road and across SH29 to Whiore Ave. • Grade Separated walking and cycling facilities under SH29 in the vicinity of Kaweroa Road and Redwood Lane.	Grade-separated walking and cycling connections to local network at the following locations: • Redwood Lane. • Belk Road. • Connecting Tauriko West and TBE across the new SH29 alignment near Gargan Road. • Northern Access underpass. • Cambridge Road underpass. • Kopurererua Stream – SH29A east of Takitimu Drive Interchange. • Under the Barkes Corner Westbound on-ramp, over SH29 realignment and under Marshall Ave.
Travel demand management	Range of Measures including leadership and design TDM measures, modal TDM measures, private Vehicle Dependency TDM Measures etc. See complete list in Tauriko Enabling Works DBC.	Travel Demand Management (TDM) interventions have been developed as part of a regional approach, as explained in Section 1.5.5. The delivery of specific measures is included in the Recommended Option and outlined in the Management Case (see Section 12).
State Highway Corridor		
SH29 (Omanawa Road to Redwood Interchange)	• Proposed Speed Management	• New online two-lane SH29 corridor with 80km/h speed limit. • New Omanawa River Bridge – full bridge replacement with futureproofing to enable potential 4-laning in the future.
SH29 (Redwood to Takitimu Drive Interchange)	• Proposed Speed Management	• New offline four-lane SH29 corridor with 80km/h speed limit. • Revoked existing SH29 to become local road.
SH29A (Takitimu Drive Interchange to Barkes Corner)	• Proposed Speed Management	• New online six-lane SH29A corridor with 80km/h speed limit, including bus priority lanes.
SH36 (Takitimu Drive Interchange to Taurikura Drive)	• Proposed Speed Management	• Widen SH36 and provide bus lanes in both directions.
Intersections		
SH29/Omanawa Road	• Existing stop-controlled intersection.	• Upgrade existing intersection to a give-way priority-controlled seagull intersection.
Redwood Lane Interchange (SH29/Redwood Lane)	• Enabling Works - Roundabout with new Kaweroa Drive Connection with new tie in points.	• New full diamond interchange with roundabouts at off/on-ramps at existing location. • Grade-separated walking and cycling connections.
SH29/Gargan Road	• Existing seagull style give-way controlled intersection.	• Retain access to existing (revoked) SH.
SH29/Northern Access	• Enabling Works - New Traffic Signals Intersection with raised safety platform at Tauriko West south of Caltex Service Station.	• Retain Enabling Works signalised intersection. • New SH29 travels under Northern Access with no connection.
SH29/Cambridge Road	• Enabling Works - Cambridge Road upgrade to Traffic Signals with raised safety platform with PT priority connection with Whiore Ave.	• No connection to new offline highway alignment. • Retain enabling works traffic signals on existing highway. • Retain link to Whiore Avenue for PT and active modes.
Takitimu Drive Interchange (SH29/SH36)	• Existing four-leg dual lane roundabout.	• New full diamond interchange with either roundabouts or traffic signals at off/on-ramps. SH29 travels over the connection to SH29A/SH36. • Upgrade existing SH29A/SH36 roundabout to a large, signalised intersection with PT priority. • Widen SH29 Takitimu Drive between SH29a to the TNL connection. • Futureproofed for additional improvements in future.
Barkes Corner Interchange (Cameron Road/ Pyes Pa Road)	• Existing five-leg dual land roundabout with ramp metering.	• New full interchange with grade-separated walking and cycling connections.

6.2 ASSESSMENT OF RECOMMENDED OPTION

This section outlines the wider project impacts, risks, and opportunities of the recommended option.

6.2.1 Environmental Screen

An Environmental Screen (see **Appendix E**) has been prepared in accordance with the Waka Kotahi *Z/19 Taumata Taiao – Environmental and Sustainability Standard*. The outcomes of the screen have been incorporated into the MCA process to a recommended option in Section 4. The screen determined the following technical assessments required to address risks associated with the recommended option:

Table 6-2. Environmental Screen Results.

Technical Assessments Required	How has this been addressed in the DBC?
Ecology	Some risks and impacts are addressed through the Preliminary Design Philosophy Statement provided in Appendix F. Further assessment will be undertaken in the pre-implementation phase, where the Recommended Option will undergo a full assessment of environmental effects (AEE) required under the Resource Management Act 1991. Next steps (Consenting Strategy) are outlined in Section 11.6.
Groundwater	
Landscape and visual effects	
Natural hazards	
Contaminated land	
Noise and vibration	
Air quality	
Social impact assessment	
Historic heritage	
Climate change	Refer to Section 6.2.2
Construction sustainability	Refer to Section 6.2.2
Cultural assessment	Refer to Section 6.2.6
Urban design framework	A Preliminary Urban and Landscape Design Framework is appended to the Preliminary Design Philosophy Statement in Appendix F.
Other (Stakeholder and community engagement record)	Refer to Management Case

6.2.2 Climate Change and Emissions

6.2.2.1 Embodied Emissions – Construction Sustainability

Waka Kotahi is committed to demonstrating construction sustainability and carbon emissions reduction in transport projects, in accordance with the *Z/19 Taumata Taiao – Environment and Sustainability Standard*, P48 Specification (at early business case phase) and P49 Specification (at detailed design phase).

The Tauriko Network Connections DBC complies with these requirements by:

- Considering resource efficiency in the early business case phases by completing carbon assessments of short list options and integrating results into the MCA.
- Completing a detailed carbon assessment of the preferred option using Waka Kotahi's Project Emissions Estimation Tool (PEET).
- Identifying resource efficiency opportunities to be investigated in detailed design.

Embodied emissions were determined by a Whole of Life Carbon (tCO2e) assessment was undertaken for the Tauriko Network Connections project using the Waka Kotahi Project Emissions Estimation Tool (PEET) and material quantities provided by the WSP Cost Estimation team. The following assumptions were used:

- The assessment utilised the second and third order estimates in PEET.
- Several items were excluded, including general site clearance, ground improvements, environmental works, and traffic management. These were excluded to align with the initial options carbon

assessment, items not covered within Second Order estimate, or due to being de minimis for the project.
- Default values for fuel and energy use, and transport of materials to site are defined by PEET and included in the second order elements. These values have been utilised, with detailed energy inputs for the construction not estimated as part of this calculation.

Overall, the estimated construction emissions of the recommended option: **216,673 tCO_2-e.**

However, there are substantial opportunities to reduce embodied emissions through design. Whole-of-life embodied emissions reduction opportunities were determined using the PAS 2080 carbon reduction hierarchy framework. These opportunities are based on the identified top ten material emissions hotspots. Once the recommended option was selected, *Build Clever and Build Efficiently* principles were used to determine the following resource efficiency opportunities for reducing embodied materials and fuel during construction as shown below. These should be explored in the next phase of the project.

Table 6-3. Embodied Emissions Reduction Opportunities

Top Material Emissions	Embodied Emissions Reduction Opportunities
Bitumen	Use some Recycled Asphalt Pavement (RAP) to replace bitumen requirements.
Steel Reinforcing Bar	Reconsider the ratio of reinforcing steel specified in structures, to see if a reduction in steel can be achieved.
In-situ 40mPa	Specify supplementary cementitious materials (SCM) replacement in concrete mix designs to reduce carbon footprint, e.g., fly ash, blast-furnace slag, silica fume, volcanic glass, pozzolans from ash, silica, and pumice from volcano. Use lower strength concrete where appropriate.
Aggregate	Source aggregate locally, reducing transport emissions. Utilise cut to waste material for backfill to reduce requirement for virgin aggregates being transported in. Review use of recycled materials such as crushed glass to replace virgin sand.
Precast Concrete (generic)	Specify SCM replacement in concrete mix designs to reduce carbon footprint.
Cement (generic)	Use SCM to reduce cement requirement
Steel Reinforcing Mesh	Reconsider the ratio of reinforcing steel specified in structures, to see if a reduction in steel can be achieved.
Steel Structural	Look to decarbonise steel through use of recycled steel materials. Purchase steel with lower embodied carbon. Consider investment in innovative steel production partners.
In-situ 20 mPa In-situ 30 mPa	Specify SCM replacement in concrete mix designs to reduce carbon footprint. e.g., fly ash, blast-furnace slag, silica fume, volcanic glass, pozzolans from ash, silica, and pumice from volcano.

6.2.2.2 Enabled Emissions

Enabled emissions from the recommended option are based on modelled vehicle kilometres travelled (VKT) and carbon dioxide equivalents (CO_2-eq) for forecast years 2031, 2048 and 2048+ (see **Appendix C**).

Overall, the recommended option is expected to increase enabled emissions in the long-term:

- In 2031, the recommended option is predicted to reduce vehicle travel slightly across all metrics.
- However, in 2048 and 2048+, the option is predicted to increase VKT, which is a consequence of the new SH29 free flow corridor assumed in these scenarios.
- For CO_2-eq, the recommended option increases emissions compared to the Do Minimum in all forecast years, but largely maintains the same level in 2031.

This is not unexpected as the recommended option proposes new infrastructure. However, the recommended option is proposed as part of a wider package of works including PT, TDM, and walking and cycling. Therefore, the enabled emissions described here are for the highway/roading option alone.

Modelled enabled emissions are shown in Table 6-4.

Table 6-4. Modelled Enabled Emissions Summary.

Scenario	VKT	% Change in VKT in relation to Do Min	CO_2-eq (kg/day)	% Change in CO_2-eq in relation to Do Min
2018 Existing	4,969,000	N/A	1,125,430	N/A
2031 Recommended Option	6,162,000	0.1%	1,272,837	-0.3%
2048 Recommended Option	7,603,000	+1.5%	776,636	+1.2%
2048+ Recommended Option	8,086,000	+1.8%	813,160	+1.4%

6.2.2.3 Climate Risk

A high-level Climate Change Risk Scan was completed for the 2021 short list options, including an earlier version of the recommended option (Option 2 Hybrid). These results provide a high-level assessment of the climate risk of the recommended option.

Specific climate risk considerations for the recommended option (based on Option 2 Hybrid) include:

- Impervious surface may increase the runoff and mitigation measures.
- Road goes through a floodplain will decrease the resilience of the design and surrounding environment by reducing the floodplain and increasing impervious surfaces.
- Road level may have to be raised to provide resilience to higher water levels.
- Discharge during extreme rainfall events should not have backwater flooding issues.
- Widening and proposed cut/fill areas results in loss of vegetation, widening across watercourses, and impacts to several likely natural wetlands.
- Large footprint within Tauriko West Growth Area (particularly around Cambridge Road) and Kopurererua Valley wetland/watercourse areas requiring a high level of offset.

Table 6-5. Recommended Option Climate Change Risk Scan Summary

Climate Risk	Risks and Consequence for Tauriko Network Connections
Increase in average and maximum temperature and number of hot days.	• User overheating and discomfort when cycling, walking, and waiting for public transport. • User dehydration (active modes). • Increased surface temperatures. • Users looking for shade and water (active modes). • Reduced willingness to cycle, walk and wait on street (bus stop etc). • Dark surfaces painful to touch, uncomfortable to be near, material stress on asset.
Increase in dry days and drought.	• Fuel and pollutant accumulation on roads and drains. • Reduced water availability. • Increased need for vegetation watering and maintenance. • Increased risk of surface skidding in rain events after dry periods. • Increased cost of vegetation watering and maintenance. • Seasonal restraints on timing for works (e.g., AKL 2020 drought leading to Watercare turning off taps to construction).
Increase in average rainfall and rainfall intensity.	• Overland Flow Paths will have increased activity and flow, with increased instances of flooding. • Rain will increase its influence on safety risk due to increased rain days (autumn/summer) and more intense rain events. • Damage to Tauriko assets. • Reduced autumn and summer walking and cycling (due to rainfall). • Seasonal restraints on timing for works.

6.2.3 Transport

Transport impacts of the recommended option are based on outputs from the Tauranga Transport Strategic Model 2021 (TTSM21) with supplementary assessment. This work is captured in the Transport

Report, presented in Appendix G. This includes the TTSM21 Modelling and Economic Report and the external peer review.

The TTSM21 is the best currently available tool and has been peer reviewed by Flow Transportation Specialists as “fit for purpose” with regards modelling of the Tauriko DBC project. Detailed assessments of the Recommended Option intersections using SIDRA and TTSM21 turning flows for year 2048 and 2048+ have been completed to confirm expected intersection performance.

The TTSM21 modelling results are based on the following assumptions[78]:

- Models represent an average two-hour period covering the AM, IP, and PM peaks using the land use and employment information outlined in Section 3.2.1.2.
- Four yearly time forecasts are modelled (2031, 2048, 2048+ and a sensitivity test for 2063).
- Do Minimum is the existing situation with the Enabling Works in place.

The Transport outcomes are summarised in the following sections.

6.2.3.1 Freight and PT Travel Time

The recommended option is expected to improve and maintain an acceptable level of service for the next 30+ years for Freight and PT (project objectives) when compared to the existing 2022 situation and the future year Do Minimum, as shown by modelled travel times:

- Do Minimum 2031, 2048 and 2048+ freight travel times between Omanawa Road and TNL (and vice versa) are likely to be higher than predicted by TTSM21. This is based on a comparison79 of the TTSM21 Modelled 2031 Do Minimum travel times with existing 2022 TomTom data and Aimsum80 modelling predictions of intersection delays at Takitimu intersection in 2031.
- Freight travel times with the Recommended Option is expected to reduce during peak periods:
  - By more than 50% on SH29 between Omanawa Road to TNL connection (and vice versa) in all modelled years. In 2048+ reducing from 16 minutes on Do Minimum to just over 6 minutes with the recommended option.
  - By at least 20% on SH29A between Omanawa Road to Oropi Road (and vice versa) in all years. In 2048+ reducing from 15 minutes on Do Minimum to 9.5 minutes with the recommended option.
- With the Recommended Option all traffic during all years is expected to reduce travel time by more than 40% during peak periods between the TNL connection with Takitimu Drive Toll Road to Oropi Road when compared to the equivalent Do Minimum. In 2048+ reducing from 17.5 minutes to 7.5 minutes.
- PT travel times with the Recommended Option is expected to reduce during 2048+ peak periods by about 60% between Tauriko UGA to Cameron Road (4.8 minutes) compared to the Do Minimum (12.0 minutes).

6.2.3.2 Mode Share

The recommended option enables significant public transport mode shift in the next 30+ years. However active transport mode shift appears to be inconsistent with expectations.

- Active mode share in Do Minimum 2048 and 2048+ is forecast to significantly increase from 5% in 2031 Do Minimum to 19.7% in 2048+ although there is no improved cycling infrastructure modelled. This level of increase in cycling trips is most likely due to the TTSM21/TTHM22 moving vehicle trip demands to cycling in response to significant levels of modelled network congestion.
- Active mode share for the Recommended Option (8.7%) shows a modest increase over the Do Minimum (4.7%) in the PM 2048 and 2048+. The Recommended Option in the 2048+ AM period shows a similar trend but with 6.7%.
- In the Do Minimum, PT:

78 Refer to Beca Modelling report for a more comprehensive list.
79 Transport Report, WSP 2023
80 2000 Household memo, WSP 2021

- AM travel times between Tauriko UGA and Cameron Road doubles between 2031 and 2048+ resulting in a small reduction in PT mode share (2.2% to 1.8%).
- Mode share between the CBD and Tauriko UGA is expected to significantly decline between 2031 and 2048+ (7% to 2.8%), resulting from congested network conditions and increased travel times.

- In the Recommended Option, PT mode share:
  - between Tauriko UGA and the CBD is expected to significantly increase in 2031 AM (2.2% to 17.8%) over the Do Minimum and similarly in 2048+ (1.8% to 13.6%).
  - between the CBD and Tauriko UGA is expected to double (7% to 15.6%) in 2031 PM over the Do Minimum and more than double in 2048+ (2.8% to 10.9%).
- In the Recommended Option, Annual PT boardings[81], increases by 187,000 in 2031 over the 172,000 with Do Minimum, to an additional 667,000 in 2048+ over the 289,000 with Do Minimum.

The above transport outcomes[82] are summarised in Table 6-6**.**

[81] Route 52 for the Do Minimum and Route C1x for the Recommended Option

[82] Collated from KPI output tables provided by Beca 2023

Table 6-6. Transport Outcomes of the Recommended Option.

Measure	Peak	2022	Network 2031		Network 2048		Network 2048+		Network 2063
		Existing	**Do Min**	**Option 2V**	**Do Min**	**Option 2V**	**Do Min**	**Option 2V**	**Option 2V**
Freight travel time on SH29 (Omanawa Rd to TNL) and vice versa (in minutes).	AM	8.5	8.0 (10.2)	5.9	13.4	6.0	15.2	6.1	6.3
	PM	16.8	9.0 (12.7)	6.0	14.1	6.1	16.9	6.2	6.4
Travel Time on SH29 and SH29A (Omanawa Rd to Oropi Rd) and vice versa (in minutes).	AM	9.5	10.0	8.2	12.0	8.8	13.5	9.1	9.5
	PM	12.4	10.8	8.5	13.0	9.4	15.6	9.8	10.4
Travel Time (SH29 TNL to SH29a Oropi Road) and vice versa (in minutes).	AM	-	7.0 (8.6)	6.0	13.1	6.6	16.2	6.9	7.2
	PM	-	8.7 (12.2)	6.3	14.6	7.1	19.0	7.5	7.9
PT Mode Share Western Corridor to CBD.	AM	-	2.2%	17.8%	2.4%	13.3%	1.8%	13.6%	-
PT Mode Share CBD to Western Corridor.	PM	-	7.0%	15.6%	5.2%	10.1%	2.8%	10.9%	-
Cycle Mode Share Western Corridor to CBD.	AM	-	4.7%	5.0%	11.7%	8.9%	18.1%	8.7%	-
Cycle Mode Share CBD to Western Corridor.	PM	-	4.9%	4.3%	11.2%	6.5%	19.7%	6.7%	-
Annual PT boardings – Western Corridor	-	-	172,325	358,680	236,070	601,460	288,835	956,175	-
Peak PT Travel Time for Tauriko UGA to Cameron Rd/Malene St intersection (in minutes).	AM	-	5.6	4.2	7.1	4.5	12.0	4.8	4.6

6.2.3.3 Intersections

Outputs from the intersection modelling indicate a mixed level of intersection performance between 2031 and 2048+ with several intersections operating at Level of Service[83] F for some approach movements as roadway capacity is exceeded (V/C >1). Despite this, bus travel times through the intersections is considered acceptable with maximum intersection delays of 62 seconds/bus in year 2048+ (LoS E).

Table 6-7. Year 2048+ Predicted Intersection Performance for Recommended Option

INTERSECTION	HIGHEST MOVEMENT DELAY (SECS/VEHICLE)		LONGEST EXPECTED QUEUE (M)	COMMENT
	Vehicle	PT	All	
SH29/Omanawa Rd	360	-	134	Omanawa Rd right turn.
SH29/ Redwood Lane	22	-	70	Highest delay on SH29 eastbound off ramp.
Old SH29/ Northern Access	45	45	95	Longest queue on SH29 Westbound.
Old SH29/ Cambridge Rd	55	55	125	Highest vehicle delay and queues on Cambridge Road. Bus delay exiting Whiore Ave. Electronic advance detection would reduce bus delays.
Takitimu/SH36/29a	236	62	569	Longest queue and highest delay on SH29a westbound approach.
Taurikura Dr/SH36	79	34	193	Highest delay Taurikura Dr Eastbound, longest queue SH36 south approach.
Barkes Corner	314	32	460	Longest queue on Pyes Pa Rd approach. Highest queue Cameron Rd southbound approach.

As a sensitivity test, TCC land-use forecasts for 2063[84] were used to determine the potential traffic flows through the Takitimu Drive and Barkes Corner intersections. This indicated that:

- Vehicle delays on Cameron Road southbound approach to Maleme Street are likely to exceed 500seconds/vehicle with over 800m queues, although bus times are still no worse than 66 seconds/bus (SH29 eastbound off-ramp), (LoS E).
- Vehicle delays at Takitimu Drive intersection are over 300seconds/vehicle on three approaches (SH36, SH29a and Takitimu Drive). However, bus times are still considered acceptable at 63 seconds/bus, (LoS E).

Intersection performance can be improved by undertaking works outside of the Tauriko DBC. Options are discussed in the Transport Report in **Appendix G.**

6.2.4 Safety

The TTSM21 model, determines the annual crash cost and number of DSIs using the network links and speed environment. It does not consider the intersection form, hence does not adequately differentiate between a priority-controlled intersection and a grade separated interchange, which in reality have very different expected crash risks.

Despite this, the Recommended Option is expected to slightly reduce the network annual crash cost and number of death and serious injuries as tabled below, noting that if the assessment was undertaken using a Safe System Assessment process the benefits would increase.

83 Highway Capacity Manual defines LoS from A (<10secs) to F (>80seconds) for signalised intersections. For unsignalized intersections LoS F is >50second delay.

84 Using a 2063 Do Something network.

Table 6-8. Safety Outcomes of Recommended Option.

Measure	Network 2031		Network 2048		Network 2048+	
	Do Min*	**Option 2V**	**Do Min**	**Option 2V**	**Do Min**	**Option 2V**
Annual Crash Costs $M	373	363	433	421	485	473
DSi's	123	120	142	138	158	153

6.2.5 Equity and Distributional Impacts

Equity and distributional impacts are considered the ethical desirability of distributional effects among groups of individuals. While equity and distribution impacts have not been specifically investigated for this DBC, evaluation of agglomeration benefits for the recommended option are discussed through Wider Economic Benefits assessment.

Agglomeration benefits are considered the productive impact of new transport nodes resulting in businesses and residents to cluster in those areas. Therefore, this can be a proxy to determine equity and distribution impacts of the recommended option.

The Wider Economic Benefits assessment suggest the following distribution of agglomeration benefits:

- For the AM peak period, the agglomeration benefits are mainly focused between Tauriko and the Tauranga CBD, with the benefits generally declining as the distance from Tauriko increases. The recommended option distributes positive agglomeration benefits in the areas immediately to the north and east of Tauriko. However, there are some areas of negative benefits to the north-west of Tauriko and in the Matapihi Peninsula, reflecting the effects of traffic switching between routes.
- For the interpeak, there is a similar focus on the Tauriko to Tauranga CBD area. However, the reduced traffic flows and less congested conditions compared to the AM peak allow some benefits further afield to be generated in Mt Maunganui and areas to the north. However, there are some negative agglomeration benefits immediately to the east of Tauriko in the Pyes Pa area possibly reflecting minor changes in the costs of access via SH36.

Overall, the recommended option is expected to largely benefit groups (including businesses and residents) in the immediate Tauriko area through to Tauranga CBD.

This is shown below:

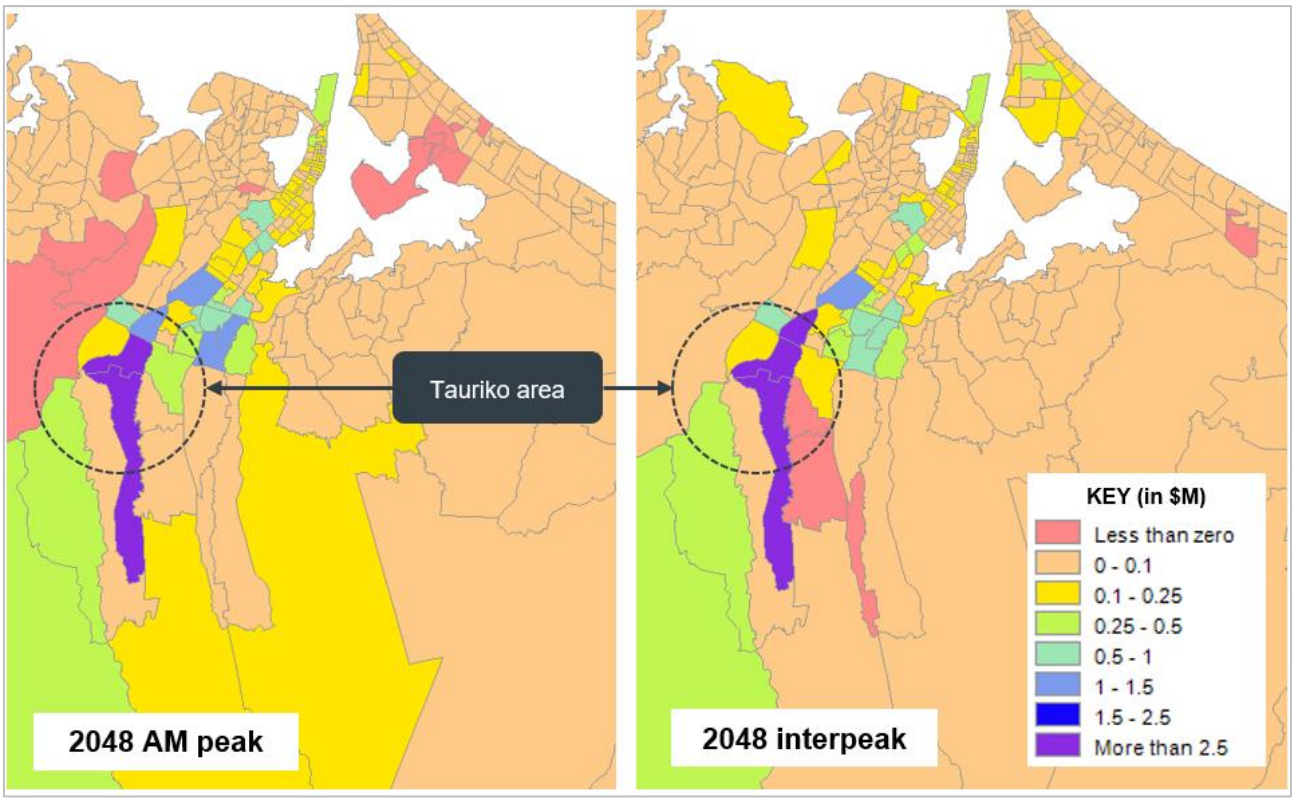

Figure 6-2. Distribution of Annual Agglomeration Benefits in 2048 Peak Conditions

6.2.6 Cultural Values

A Cultural Values Assessment (CVA) has been prepared on behalf of Te Kauae a Roopu (see **Appendix H**). This sets out a conceptual framework developed in accordance with tikanga based on seven key cultural values. The CVA also outlines requirements for cultural amenity treatments to be assessed through the planning, design, and construction of the projects. Specifically, the treatments apply to:

- The short and long-term transport improvements–- Waka Kotahi.
- The relocation of Tauriko School and establishment of a new secondary school–- Ministry of Education.
- The structure planning, change to the Tauranga City Plan, and three waters infrastructure (including a comprehensive stormwater consent) – TCC.
- The design of subdivision layouts, and delivery of infrastructure (including the spine road) and housing– Developers.

These matters are regularly traversed in the Te Kauae a Roopu hui held every six to eight weeks. While each matter is set out individually in the CVA, it is recognised that they need to be addressed holistically and in an integrated manner through the implementation of the projects. Some examples of key aspects recognised, discussed, and currently being considered are set out in Table 6-9 below noting many will not be implemented until future development actually commences, and that they have not been 'locked in' or fully agreed i.e., still subject of ongoing hui/discussions:

Table 6-9: Cultural Values and Cultural Amenity Treatments (Source–- CVA)

CULTURAL VALUE	TOPICS DISCUSSED / ONGOING DISCUSSIONS
Kotahitanga: Social and community connectivity and cohesion.	• Walkable community, neighbourhood reserves within 400m, river margin walkway/cycleway and open space with cultural recognition, social infrastructure provision, schools, playcentre, and sports fields.
Wairuatanga: Mauri embedded emotional and receptive connection to space, place, and people.	• Wairoa River margin to capture elements of cultural recognition, sight lines, and opportunities for cultural narratives. • At the confluence of Wairoa River and Ruangarara there is opportunity to enhance cultural recognition of history, ancestral links, taniwha (Poripori and Te Pura), iwi and hapu links, and there is a high point to be retained above what is recognised as the former Ruangarara Camp (1867), and near to sites recognised as Captain Tovey's house site and a shell midden, and terraced kainga (also to be retained). • Other measures to be adopted in recognition of Mauri and Wairuatanga in liaison with Te Kauae a Roopu and/or specific Hapu when development commences (sculptures, pou, cultural design, information boards and QR Codes).
Manaakitanga: Social care and responsibility.	• Linkage opportunities to open spaces, reserves, and enhanced wetlands/stream corridors for the community for aesthetics and cultural use. • Walkways, cycleways and public transport provision, easy walking distance to active reserves and opportunity outdoor fitness equipment. • CPTED (crime prevention through environmental design) environmental design, Health, safety, and wellbeing through urban design.
Whanaungatanga: Social and community interaction.	• Common spaces with opportunity to reflect cultural heritage and local narratives, and community facilities enabled, with access to public transport, and walkable distances to facilities and open space/places.
Kaitiakitanga: Protection and guardianship of the physical and cultural environment.	• Enhancement of waterways – Wairoa River and its margin, as well as wetland enhancement where required for offsetting purposes, and treatment of connecting streams. • Stormwater management / treatment, and opportunity for Water Sensitive Urban Design. • Escarpments, Wairoa River margin and stream corridors to provide for indigenous vegetation and encourage native wildlife.
Rangatiratanga: Assertion of authority, presence, influence, control,	• Traditional names for streets and spaces. Provide for naming opportunities that may include ancestors, events and flora/fauna species associated with the rohe. Restore place names to form knowledge of rohe narratives. • Built environment to create sense of presence and adopt a higher density with recognition of the high points to create stature. Memorials, heritage information boards and QR codes, signage. Protect culturally sensitive areas.
Turangawaewae: A sense of identity and independence associated with having a particular home base.	• Consideration of bilingual Te Reo Maori immersion in schools to be considered by Ministry of Education regarding the new primary school proposed. • Council can also consider bilingual Te Reo Maori and English for signage when development gets underway in the growth area.

These matters will be the subject of ongoing engagement through Te Kauae a Roopu and/or specific Hapu as the projects transition from DBC to implementation.

As described in Section 5.3, in April 2023, Waka Kotahi met with Te Kauae a Roopu and stepped through changes to the alignment.

6.2.7 Movement and Place Function

As explained in **Problem 1 – Land Use Transport Integration**, under the ONF Assessment (conducted via RAMM), the main corridors in Tauriko (i.e., SH29, SH29A and some of SH36) would be classified with a primary movement function and a 'transit' street family. This shows that the function of these routes is to provide fast and efficient long-distance movement of people and goods, with no provision for access and active modes are excluded from direct use. However, this system still needs to provide for all modes and provide separated facilities for non-vehicular modes.

The Recommended Option (particularly for the main corridors) provides total alignment to this desired 'transit corridor' function including:

- Recognition of the high volume and freight movement function on main highways with a separation of other modes. This is evidenced by:
  - Four-lane and six-lane corridor with few intersections to ensure freight can reliably travel through Tauriko to the Port of Tauranga and other parts of the region.
  - Bus priority lanes in each direction on SH29A.
  - Grade separated cyclist and pedestrian facilities whether a dedicated facility such as the Redwood Lane underpass or as a shared path on a grade separated local roads such as Cambridge Road, Tauriko West and Barkes Corner.
- Recognition of the movement of people and goods. This is evidenced in the recommended option by including improved and prioritised PT networks such as dedicated lane on the revoked SH29A, onto to SH36 and Taurikura Drive through to a dedicated PT interchange.

For form and function alignment on local roads and streets, the structure plans and TCC streets design[85] guidance provides an avenue for TCC to provide a consistent transport network that considers all modes.

6.2.8 Tolling

According to the Waka Kotahi Tolling Policy, tolling analysis is required for all new state highways and any significant upgrades to existing highways for suitability.[86] These can be assessed at DBC level or on approval for construction. The information below is for the purpose of the DBC. There are three gates or tests to be undertaken:

- Gate 1 – Legislative requirements and practicality tests.
- Gate 2 – (A) value for money and investment rationale tests, and (B) policy and project alignment tests. For this DBC, the tolling analysis on the recommended route has not been undertaken for this phase.
- Gate 3 – Public interest. Although tolling has been mentioned in the responses if asked by the public on community days, no specific consultation on tolling has been undertaken and is therefore not included in this assessment.

A preliminary high-level analysis has been completed against the criteria for Gate 1 shown below:

[85] https://www.tauranga.govt.nz/Portals/0/data/future/strategic_planning/idc/files/street-design-guide.pdf

[86] https://nzta.govt.nz/planning-and-investment/planning-and-investment-knowledge-base/202124-nltp/202124-nltp-principles-and-policies/tolling-policy/

Table 6-10: Gate 1 Tolling Analysis

Question	Response
Is the road new or an existing road undergoing significant upgrade?	Yes. This project is significant and includes a new offline four lane highway alongside local road improvements.
Is there a feasible, free alternative route available for use?	Yes. Alternatives could include the to-be-revoked SH29 alignment.
More than 10,000 vehicles are likely to travel the road per day.	Yes. Model forecasts indicate more than 18,000 vehicles per day post 2031 travelling on the realigned SH29 north of Redwood Lane intersection.
Tolling infrastructure can be installed in a manner that is cost-effective to the project and reasonable; and within time periods required by the Land Transport Management Act.	Yes. Details would need to be determined, but with current technology the infrastructure requirements could be less than current arrangements.

Overall, there is an opportunity for this project to be tolled according to a preliminary Gate 1 tolling analysis. For instance, initial discussions during the development of this DBC suggest that SH29 between Redwood Lane and Takitimu Northern Link could be tolled. Waka Kotahi, are therefore considering tolling parts of the Tauriko Western Corridor as part of a wider network tolling study.

6.2.9 Health and Safety in Design Risks

The key critical Health and safety in design (HSiD) issues for the Tauriko Network Connections DBC are shown below. For a complete list of HSiD risks, refer to **Appendix I.**

Table 6-11: Key Health and Safety in Design Risks of Recommended Option

H&S RISK	RISK	PROPOSED MITIGATION	RESIDUAL RISK
Working at height - new bridges are proposed creating risks to traffic disruption and working with live traffic.	Critical	Standard construction management plans to be developed in pre-implementation phase.	Medium
Working with underground utilities - Known and unknown underground utilities are at risk of being struck during excavation work could affect the safety of the construction workers and disrupt essential lifelines.	Critical	Standard construction management plans to be developed in pre-implementation phase.	Medium
Working with live traffic - Risk to construction personnel and the public of delays and crashes.	Critical	Standard construction management plans to be developed in pre-implementation phase.	Medium

6.2.10 Project Risks

Key risks following from the DBC are shown in Table 6-12 and provided in a project risk register in **Appendix J.** These risks shall be managed in the next phase of the project, which is further discussed in the Commercial and Management Cases.

Table 6-12. Key Project Risks for Pre-Implementation

RISK	RISK	PROPOSED MITIGATION	RESIDUAL RISK
Lack of funding for the NoR is not secured ahead of Tauriko West Plan change and the alignment is built out.	Critical	Staging is proposed for the Tauriko West plan change that will protect the corridor within this location in a staged fashion until a designation can be obtained.	Critical - The remainder of the corridor outside of this area remains at risk of build out.
Growth of Western Corridor is not realised.	Critical	Adaptive management plan and monitoring linking to proposed staging gives the ability to tailor investment to respond to development so over investment isn't undertaken should the growth not eventuate	High
Induced traffic demand results in heavier loading on the network than predicted.	Critical	Adaptive management plan and monitoring of the network will provide information to respond to this effect if it eventuates through travel demand measures or other measures in the future.	High
PT and active mode outcomes are not realised.	Critical	Adaptive management plan and monitoring of the network will provide information to respond to this effect if it eventuates through travel demand measures or other measures in the future.	High
The Programme does not meet emission reduction targets.	Critical	Staging prioritises PT initially to align with mode choice and emission reduction.	High

6.2.11 Uncertainties and Assumptions

Uncertainties have been identified for the recommended option, which have required the project team to agree to assumptions with limited information. These have determined the delivery approach for the project and clarified potential risks and factors that may impact the recommended investment, which is further discussed in Section 9**.**

Key uncertainties and assumptions, and their potential impact on the project, consider factors affecting demand for the project (such as land use development in the Western Corridor, traffic growth assumptions, and wider network improvements) and factors affecting supply such as cost/funding. These are outlined in Table 6-13.

6.2.12 Peer Reviews

External peer reviews are completed and resolved in accordance with Waka Kotahi requirements:

- Transport Modelling and Economic Evaluation Review (Flow Transportation) – see **Appendix C.**
- Road Safety Audit (Stantec) – see **Appendix K.**
- Business Case Document Review (Resolve Group) – see **Appendix L.**
- Wider Economic Benefits Analysis Review (Ascari Partners) – see **Appendix M.**
- Parallel Construction Estimate (BondCM) – see **Appendix N.**

6.2.13 Summary and Next Steps

Overall, the recommended option has several impacts and risks that have been assessed and managed through technical assessments and recommendations for the next phase of the project. Due to the complexity of the works needed to deliver the project, it is recommended that a staged or **adaptive management approach** is used. This is discussed further in Section 9.

Table 6-13: Uncertainty and Assumptions Register

Uncertainty	Likelihood	Impact on Project	Key Assumptions Made	Mitigation
Completion of future land use developments in the Western Corridor.	Likely	VERY HIGH – depends on factors including technological advancements, travel behaviour, economic. Compact mixed-use urban development with density is critical to support high frequency PT services needed to achieve the PT outcomes of this investment.	Future land use developments will be delivered as per Section 3.2.1 30 dwellings per hectare (net) is achieved to support high frequency PT services.	Ongoing monitoring (see Section 12).
Future freight traffic volumes, especially around the establishment of the Ruakura Superhub.	Likely	HIGH – Future freight volumes may be over or understated.	Freight is expected to increase as per Section 3.2.2	Ongoing monitoring (see Section 12).
Future traffic growth.	Likely	VERY HIGH – interdependent with land use development as above.	Future traffic growth based on UFTI agreed land use up to 2048+ model. Future traffic growth is described in Section 6.2.3.	Ongoing monitoring (see Section 12).
Delivery of Tauriko Enabling Works project (scope and timing).	Unlikely	HIGH – this project is reliant on the delivery of the Enabling Works project.	Enabling Works will be delivered to scope agreed by DBC although funding not yet committed.	Ongoing communication with Enabling Works project.
Climate change impacts.	Likely	HIGH – climate change impacts (e.g. flooding or land instability) may affect resilience of wider transport network and impact future traffic patterns.	Trip generation based on TTSM21.	Ongoing monitoring (see Section 12).
Future Public and Active Transport mode share is overstated/ understated.	Likely	VERY HIGH – depends on factors including technological advancements, travel behaviour, economic situation. Affects ability to deliver on investment objectives. Bus priority in the wider BOP network is necessary to deliver the expected PT outcomes. For instance, achieving bus priority on Cameron Road is critical to achieving PT outcomes expected from Tauriko Network Connections.	Expected mode shift outcomes based on TTSM21, which is the best available evidence to date. Cameron Road bus priority (see Section 1.5.7 is delivered by the Cameron Road Business Case.	Ongoing monitoring (see Section 12).
Capacity for project partners to deliver.	Likely	VERY HIGH – affects ability to deliver on investment objectives.	All project partners can deliver the recommended option.	Management Case (see Section 12).

7 ECONOMIC CASE

The Economic Case explains how the recommended option is the best value-for-money approach to addressing the issues identified in the Strategic Case in Section 3. Multiple inputs were used for this economic assessment:

- Economic evaluation to determine a benefit-cost ratio (BCR) was undertaken on the Recommended Option design described in Section 6 and cost estimates described in Section 10. For detailed economic evaluation, refer to **Appendix C**. For detailed cost estimates, refer to **Appendix N.**
- Wider economic benefits evaluation was undertaken by Richard Paling Consultants. For more detail, refer to **Appendix M.**

7.1 ECONOMIC SUMMARY OF RECOMMENDED OPTION

The national BCR, if the Recommended Option was completed without funding restrictions, is **1.3**. Therefore, it is considered economically feasible. The economic results are summarised in Table 7-1

Table 7-1. Economic Summary of Recommended Option (not staged construction)

Economic Measures	Total
NPV Total Cost of Recommended Option	$1,949M
NPV Total Benefit of Recommended Option	$2,439M
BCR (excl. Wider Economic Benefits)	1.3
First Year Rate of Return	2.9%
NPV WEBs	$505M
BCR incl. WEBs	1.5

7.2 ASSUMPTIONS

The economic assessment for the Recommended Option is based on the following assumptions:

- Do-Minimum is existing network with the inclusion of the Tauriko Enabling Works.
- Costs and benefits were assessed using NZ Transport Agency's Monetised Benefits and Cost Manual (MBCM), April 2023.
- Base Date of 1 July 2022.
- Time Zero of 1 July 2024.
- Discount rate 4% applied to all annual benefits and costs, and sensitivity tested at 3% and 6%.
- Construction start date of early 2027 with a 5-year construction period for Option 2V.
- Traffic and PT benefits come from the TTSM's economic module, using 2031, 2048 and 2048+ scenarios. Year 2048+ scenario costs/benefits were set to reflect year 2063 in this analysis.
- Analysis period of 60 years adopted to capture the benefit of significant infrastructure investment.
- Emission benefits assessed from TTSM VEPM 6.3 model and MBCM values (CO2 for middle shadow-price values).
- Cycling travel time benefits were estimated from the Tauranga Cycle Model (TCM) outputs.

7.3 BENEFITS

Monetised benefits of the recommended option (excluding wider economic benefits) are summarised below:

Table 7-2. Summary of Benefits for Recommended Option (not staged)

Monetised Benefits	Tauriko Network Connections Preferred Option	
	Net Present Value ($M)	% of Total Benefits
Base Travel Time Benefits	915.8	37.6%
Congested Time Benefits	836.4	34.3%
Reliability Time Benefits	62.1	2.5%
Vehicle Operating Benefits	64.4	2.6%
Public Transport Benefits	373.8	15.3%
Crash Saving Benefits	192.8	7.9%
Cyclist Benefits	-9.0	-0.4%
Emissions Benefits	2.3	0.1%
Total Project Benefits (excl. WEBs)	2,439	100%

This evaluation highlights:

- Significant benefits of this project stem from base travel time benefits and congested time benefits, which combined contribute over two-thirds of the total project benefits.
- Public transport benefits contribute just over 15% of total project benefits.
- Safety improvement benefits are a minor contribution of just under 8% of total project benefits. (Although as previous noted, these are underrepresented due to the TTSM21 assessment methodology).
- Emission benefits relate to air quality associated with vehicular traffic. As the Transport Model does not indicate a significant reduction in VKT, the emission benefits are a very small benefit.
- Cycling benefits are calculated as a negative benefit, primarily because the TTSM21 model over calculates the portion of cycling model share (19% in 2048+) in the 2048 and 2048+ Do Minimum due to a congested Do Minimum network.

7.4 SENSITIVITY ANALYSIS

A range of sensitivity tests have been undertaken on the non-staged BCR to determine the robustness of the BCR, including:

- Discount rate increased from 4% to 6% and discount rate reduced from 4% to 3%.
- Project Costs based on the P95 cost instead of P50.
- Effect of a slower growth in land use development in Tauriko West.

Regardless of the sensitivity test undertaken, the BCR is within between **0.9 to 1.7 as** shown below:

Table 7-3. Economic Sensitivity Tests Results

Economic Summary – Sensitivity Tests	Recommended Option BCR
Base BCR (no WEBs)	1.3
Discount rate increased from 4% to 6%	0.9
Discount rate reduced from 4% to 3%	1.7
Using P95 cost instead of P50	1.1
Slower Growth rate (2048+ refers to 2070, not 2063)	1.2
No further growth in benefits beyond 2048	1.1

This evaluation highlights:

- Even when costs are increased (from P50 to P95), the recommended option BCR remains largely the same at just over 1. This demonstrates that increased costs do not substantially impact the economic feasibility of the option.
- The only sensitivity test where the BCR is <1.0 and not economically feasible is when the discount rate increases from 4% to 6%.

Overall, the BCR for the Recommended Option is robust and is economically feasible regardless of the changes in input parameters.

7.5 WIDER ECONOMIC BENEFITS

According to the MBCM, wider economic benefits (WEBs) are impacts that can result from significant transport investment, associated with agglomeration. These have been used internationally to improve transport cost–benefit analysis and can be thought of as impacts that are additional to the conventional benefits to transport users.

The Recommended Option is considered a significant transport investment likely to contribute to the distribution or density of households and jobs in the Tauriko West area and deliver significant improvements in accessibility in the wider Bay of Plenty region.

7.5.1 Methodology

In accordance with the MBCM, WEB estimates are additional to the conventional monetised benefits in **Section 7.3** to avoid double counting.

Assumptions of this WEB assessment include:

- Benefits will be generated with the opening of the project assumed to be 2032.
- Evaluation period extends to 2085/6, in effect assessing the projects over 60 years.
- Benefits will be discounted to 2022 at 4 per cent.
- Benefits have been assumed to increase linearly between the model forecast years and before 2031 and by 1.5 per cent per year after the final modelled year of 2063.

Furthermore, three sensitivity tests were also completed:

- Sensitivity Test 1 – Lower agglomeration co-efficient.
- Sensitivity test 2 – Lower growth in productivity.
- Sensitivity Test 3 (3a/3b) – Different AM Peak/Interpeak weighting factors.
- Sensitivity test 3a assumes a higher weighting of 0.85 for the interpeak benefits (0.15 for the AM peak benefits).
- Sensitivity test 3b a lower weighting of 0.6 for the interpeak benefits and 0.4 for the AM peak benefits.

7.5.2 Summary of Results

The Recommended Option delivers **considerable agglomeration benefits of** circa **$505M** (NPV). The robustness of this is supported by sensitivity tests. The recommended option demonstrates an increase in agglomeration benefits greater than earlier versions of this option (i.e., Option 2). However, this increase in economic benefits appears to reflect the use of the new values in the recently released MBCM version 1.6, which have a more limited impact in the assessment of the agglomeration benefits.

With the updated analysis the agglomeration benefits for the Recommended Option would amount to about 37 percent of the conventional economic benefits, probably broadly within and at the upper end of the expected range. This seemingly reflects the importance of the proposed road investment in stimulating economic development in the Tauriko area, an element which is not really captured within the current evaluation framework.

The wider economic benefits of the recommended option are summarised in Table 7-4.

Table 7-4. Summary of WEBs for Recommended Option

Agglomeration benefits ($M per year)			
Base Case Tests	2031	2048	2063
Based on AM peak changes in generalised costs	11.2	35.6	64.8
Based on Interpeak changes in generalised costs	3.2	36.1	44.8
Weighted average: Peak 0.23 and Interpeak 0.77	5.0	36.0	49.4
Overall Benefits NPV	505.4		
Sensitivity Test	Overall		
Test 1	442.7		
Test 2	393.2		
Test 3	494.2		

7.6 PEER REVIEW

The economic evaluation of the Recommended Option has been peer reviewed by Flow Transportation Consultants. The peer review document is in **Appendix C.**

The wider economic benefits analysis was also peer reviewed by Ascari Partners. The peer review document is in **Appendix M**.

8 ASSESSMENT PROFILE

This section evaluates the alignment of the recommended option to the following key factors:

- Investment outcomes.
- Investment prioritisation factors as per the Waka Kotahi Investment Prioritisation Method for the NLTP 2021-24.

8.1 INVESTMENT OUTCOMES

The recommended option largely achieves each of the investment outcomes listed below. These are based on modelled outputs provided by Beca. Note, whilst the original ILM adopted 2063 as the target year, in 2021 the TCC Transport model adopted a further year planning horizon of 2048+ for the Tauriko Project. Hence project outcomes reference 2048+ and no longer 2063.

An Appraisal Summary Table (AST) for the recommended option is also included in **Appendix O.**

Overall, this project best delivers on the freight travel time reliability benefits.

Table 8-1: Tauriko Network Connections Project Outcomes

INVESTMENT BENEFIT	TARGET	PROJECT OUTCOME
Predictable Travel Time for Freight.	Improve travel times on SH29 (Omanawa Road to TNL): - PM peak travel time of 10 minutes with 9 mins variability. - AM peak travel time of 10 mins with <5 mins variability By 2030 until 2063	Fully achieves/exceeds target. Peak travel time is expected to vary between 5.9 mins (AM) to 6.0 mins (PM) in 2031, and 6.1 mins (AM) and 6.2 mins (PM) in 2048+. Peak travel time remains well below 10 mins. With expressway conditions travel time variability is expected to be minimal. *Note: While reliability/variability is the desired measure, freight travel time has been used as a proxy to indicate network efficiency for freight.*
Land use reduces the need for travel.	Mode shift from 4.9% to >10% of PT/Active trips during peak periods to/from/within Western Corridor by 2030 increasing to 15% by 2063.	Fully achieves target. PT: 2031 peak direction mode shares are expected to be 17.8% (AM) and 15.6% (PM) between Western Corridor and CBD. Mode share grows to 13.6% (AM) and 10.9% (PM) by 2048+. Cycling: 2031 peak direction mode shares are expected to be 5.0% (AM) and 4.3% (PM) between Western Corridor and CBD. Cycling mode share grows by around 2-3% to 2048+. While not specifically modelled, walking is likely to increase as indicated by improvements in cycling and PT mode shares. This is because walking is typically a complementary mode to these other modes. Overall, significant mode shift is achieved from cars to active modes.
Increase mode shift from private vehicles to walking, cycling and PT.	Increase % of population to 80% within a 500m walk to a bus stop by 2030, maintained to 2063.	Fully achieves target. 80% of population within 600m walk of a bus stop by 2030.
	Increase number of annual boardings from 6,500 pa (existing route 52 – 2017) to >250,000 pa by 2030 increasing by 1.5M by 2063.	Partially achieves target. Western Corridor achieves 358,680 annual boardings by 2031 increasing to 956,175 by 2048+. General traffic benefits from improved freight reliability. This makes driving an attractive mode choice, which impacts on PT boarding numbers.
	Express PT (peak) travel times are better than 3-7 mins driving time	Partially achieves target.

INVESTMENT BENEFIT	TARGET	PROJECT OUTCOME
	from: Tauriko to Cameron Rd by 2030 and maintained until 2063.	Express PT AM peak travel time is 4.2 minutes in 2031 and 4.8 minutes in 2048+ from Tauriko Crossing to Cameron Road. Average vehicle travel times for the same movement is 5.6 minutes in 2031 increasing to 6.8 minutes in 2048+
Reduce crashes by severity (all modes).	Reduce all crashes by severity by mode from 274 to 192 (30%) on opening 5 years.	Partially achieves target. The TTSM is not capable of providing this metric. Given the expected change in DSI's is relatively small at 2.5%, this target is not expected to be met.
Reduce DSIs.	Reduce DSIs from 13 to 6.5 (50%) on opening for 5 years.	Partially achieves target. TTSM modelling indicates a network reduction in DSIs from 123 to 120 in 2031, and 158 to 153 in 2048+. Since the original ILM targets were set in 2017, the crash rate on SH29 through the project site has reduced, limiting the ability to meet the specified target. In addition, the TTSM underpredicts crash savings as it only considers link and speed environment, and not the improvement in intersection form (priority-controlled intersections to grade separated interchange). A safe system highway form and significantly improved connection to local roads along with active user facilities will further ensure this outcome is met.

8.2 INVESTMENT PRIORITISATION ASSESSMENT

The recommended option was evaluated using the Waka Kotahi Investment Prioritisation Method (IPM) for the 2021-24 National Land Transport Programme. The IPM measures the project's alignment with:

- GPS 2021-24 priorities.
- Scheduling criticality and interdependence with other activities.
- Efficiency of the project as a return on investment and whole of life cost/benefits consideration.

This programme sits within 'state highway improvements' activity class. Based on the IPM assessment, the Tauriko Network Connections recommended option has a **priority order of 2**.

8.2.1 GPS Alignment

The overall GPS alignment for Tauriko Network Connections project is **VERY HIGH.**

The strongest alignment against a GPS strategic priority formed the overall rating of GPS alignment.

Table 8-2: Assessment against alignment with GPS 2021-24 Priorities

GPS PRIORITY	BENEFIT	GPS ALIGNMENT
Better Travel Options *and* Climate Change	Impact on mode choice.	VERY HIGH The project provides several facilities to enable demand for walking, cycling and public transport, further supported by regional travel demand measures to encourage mode shift. Furthermore, mode shift from the Western Corridor to the CBD (as well as all other work destinations) is expected to be >10% by 2030 and increasing past 2048.
Better Travel Options	Impact on access to opportunities.	VERY HIGH This project enables an additional 25% of jobs from the Do-Minimum Tauriko Enabling Works (about 5,000 jobs) to be accessible within 45 mins by public transport in the morning peak in 2031, which increases beyond 2048. This is due to the increased PT services within Western Corridor and the linkage not only to Tauranga Crossing but also into the CBD by bus. This project also has greater than 80% of the population within 500m walk of a bus stop by 2031. The option provides significantly improved access for non-vehicle users to key parts of the community including Tauranga Crossing and increases connections and availability to public transport links into the city including the development of a PT interchange in Tauranga Crossing.
Improving Freight Connections	Impact on network productivity and utilisation.	HIGH The project provides a safe system route with improved resilience in the case of unplanned events (crashes, environmental impacts) disrupting network freight flow. The project improves connections between nationally significant production and distribution points at the Port of Tauranga.
Improving Freight Connections *and* Climate Change	Impact on mode choice.	LOW This project does not provide alternative mode choice for freight such as changing to rail or coastal shipping. The project also includes building new infrastructure, which increases embodied and enabled emissions.
Safety	Impact on social cost. and incidences of crashes.	MEDIUM Targets areas of high to medium-high collective risk corridors, particularly between Omanawa Road and Belk Road, Cambridge Road and Takitimu Drive and will achieve a DSI reduction of >40% with the introduction of a safe system corridor (3 barrier system) and grade separated interchange over the whole project. 6.5 DSIs are expected to be saved. The high-risk intersection at Barkes Corner is being addressed by the introduction of a grade separated interchange. All through traffic will be separated from local road traffic, and active modes separated from general traffic. This will address a DSI reduction >40%.

GPS PRIORITY	BENEFIT	GPS ALIGNMENT
		However, some DSIs are located within TCC areas and are to be addressed through structure planning and TCC design guides to ensure safety requirements are considered. Between Omanawa Road and Belk Road is identified as a high-speed benefit corridor.
Climate Change	Impact on greenhouse gas emissions.	LOW This project is likely to maintain VKT levels when considering the highway/roading components. However, this project is interdependent with public transport and TDM measures that will ensure a multimodal approach.
	Impact of air emissions on health/impact of noise and vibration on health.	LOW This project is likely to provide no reduction to being exposed to elevated concentrations of land transport related air pollution. No reduction in traffic noise level expected (may increase).

8.2.2 Scheduling

Scheduling for Tauriko Network Connections is **MEDIUM** for criticality and **HIGH** for interdependency.

8.2.2.1 Criticality

Criticality of the project is understood through two components:

- Programming or need to undertake.
- Significance or network resilience.

In terms of programming, the Recommended Option forms a significant long-term part of the network needed to deliver support to other parts of the Western Corridor programme. Some aspects of the Recommended Option are unlikely to be needed to be fully implemented for more than 10 years. The short-term needs for access to housing, safety and mode shift in part are covered by the Tauriko Enabling Works project. However, in the short-term, critical resilience work is needed for Omanawa Bridge end-of-life replacement. In addition, infrastructure for increased PT services is likely to be required within a 10-year period to deliver desired mode shift. Therefore, core aspects of the project need to be undertaken in the short-term, thereby rating the project **HIGH** for programming.

However, the Recommended Option is critical for network resilience. While local access will be improved by the Tauriko Enabling Works and a planned local alternative route through TBE (via Taurikura Drive or a ring road through SH36 as part of a separate business case), the existing route through Poripori Road is not fit for purpose for either large volumes of traffic or heavy vehicles. Furthermore, the Recommended Option provides local or alternative routes in the Tauriko Network by enabling sections of revoked state highways. Therefore, if the project is not in place, then there are potentially severe outcomes due to overreliance on local roads for a nationally strategic traffic route. Therefore, the project is rated is **HIGH** for significance.

In summary, with a low programming and high significance rating, criticality is rated as **HIGH.**

Table 8-3: Criticality Assessment

CRITICALITY		
Low	Medium	High
Need to undertake this activity in order to deliver/ prepare for the remainder of programme/package where its implementation is to begin in the 2027–31 NLTP or beyond. Significance of the activity as part of the network, with risk of unplanned loss of service (≥2 hours) requires use of alternative routes or modes taking up to one-hour extra travel time for most users.	Need to undertake this activity in order to deliver/ prepare for the remainder of programme/package where its implementation is to begin in the 2024–27 NLTP. Significance of the activity as part of the network, where risk of unplanned loss of service (≥2 hours) requires use of alternative routes or modes taking one to two hours extra travel time for most users.	Need to undertake this activity in order to deliver/ prepare for the remainder of programme/package where its implementation is to begin in the 2021–24 or early 2024–27 NLTP. Significance of the activity as part of the network, where risk of unplanned loss of service (≥2 hours) requires use of alternative routes or modes taking >2 hours extra travel time for most users.

8.2.2.2 Interdependency

Interdependency of the project is rated **HIGH**.

This overall project contributes to the Western Corridor package of activities. Non-delivery will delay the programme and negatively impact the realisation of benefits, such as provision of future housing areas, safety improvements, fit-for-purpose function of the route, accessibility and liveability improvements, and significant mode shift opportunities for mode shift.

The Recommended Option delivers the DBC objectives of an overall multimodal transport project and the delivery of housing in Tauriko West. Aspects of the Recommended Option score highly in terms of staging, such as the connection between Takitimu Drive and Barkes Corner (PT priority routes). However, the 4-laning to Tauriko village may not be as important and would score lower. Therefore, the delivery of key components to enable longer-term components is critical to achieve project objectives.

Table 8-4: Interdependency Assessment

INTERDEPENDENCY		
Low	Medium	High
Activity/combination of activities is part of a programme or package, but non-delivery in the 2021–24 NLTP period will not hold up the overall delivery of other parts of programme, package, or another investment (e.g., housing development). The proposed activity is a standalone activity (not part of another programme or package). Non-delivery of the proposed activity in the 2021–24 NLTP has a negligible impact on realising the estimated benefits of the programme/package. *Non-delivery of the proposed activity will not impact negatively on benefits realisation of the programme/package	Activity/combination of activities is part of a programme, package, or another investment, but relies on the delivery of another phase or activity in the 2021–24 NLTP period before being actioned. Non-delivery of the proposed activity in the 2021–24 NLTP has a moderate impact on realising the estimated benefits of the programme/package, i.e., one or more benefits may not be achieved or may be reduced or may be delayed for up to three years.	Activity/combination of activities is part of a programme, package, or another investment (e.g., housing development), and its delivery in the 2021–24 NLTP period is required to enable further implementation of that programme, package, or investment. Non-delivery of the proposed activity in the 2021–24 NLTP has a significant impact on realising the estimated benefits of the programme/package, i.e., one or more benefits will not be achieved or will be delayed for more than three years.

8.2.3 Efficiency

As described in Section 7, the project has an indicative national BCR (excluding agglomeration) of 1.3, suggesting an overall efficiency rating of **LOW**.

8.2.4 Investment Priority Summary

Overall, the recommended investment priority for the Recommended Option for Tauriko Network Connections is **priority order 2**. This is shown on Table 8-5.

Table 8-5: Summary of Investment Prioritisation Decision

IPM ASSESSMENT		RATING
GPS Alignment	Better Travel options and Climate change	VERY HIGH
Scheduling	Criticality and Interdependency	HIGH
Efficiency	BCR	LOW

PART C – READINESS AND ASSURANCE

9 DELIVERY PATHWAY

9.1 ADAPTIVE MANAGEMENT APPROACH

The remaining sections of this DBC outline the components of the financial, commercial, and management cases. Critical to these cases is the **adaptive management approach** that will be applied to deliver the recommended Tauriko Network Connections programme of works (the 'Programme').

9.1.1 Rationale – Programme Complexity

The adaptive management approach is being used due to the following factors that have heightened the complexity of the Tauriko Network Connections programme:

- The large scale/size of the programme.
- Mix of transport improvements (public transport, highway, PT hub on private land).
- Multiple parties involved (asset owners, investment partners, stakeholders) and their jurisdictions.
- Long-term, multi-decade duration of the programme.
- Interrelated networks and infrastructure.
- Several interfacing projects in the Western Corridor.

Therefore, an adaptive management approach is a suitable delivery pathway to:

- Manage uncertainties, constraints, and interdependencies over the lifecycle of the programme, such as when to respond to certain triggers (such as new land use development).
- Manage the investment timing, risk and cashflow over the life of the project.

This is further explained in the Management Case (see Section 12).

9.1.2 Principles

Fundamental to the adaptive management approach are the programme principles, the ongoing monitoring of transport and urban development key performance indicators, and the development of Implementation Readiness Reviews.

The programme principles are outlined below and described more fully in the Management Case (see Section 12). The programme principles supporting the approach are:

1. Implementation of the whole Tauriko West Network Connections programme is necessary to realise the expected benefits and outcomes. The adaptive management approach does not avoid future investment.
2. Flexible and efficient programme packaging, staging, and delivery is necessary to respond to uncertainties. The phased design and ongoing monitoring will help deliver the programme in an efficient manner to maximise integration, minimise disruption, reduce re-work and cost, and delivery of improvements commensurate with need.
3. The programme leads with mode shift to support housing and transport outcomes. The balance of investment is efficient and recognises that dependencies are not always in the control of the public agencies involved.
4. Regular and ongoing monitoring of land use and transport indicators is required. Monitoring must be forward-looking to monitor trends and ensure existing assumptions and inputs remain accurate.

9.2 RECOMMENDED DELIVERY PROGRAMME

The recommended delivery programme is split into four stages (see Table 9-1)**.** The indicative timing for each stage (and phase) is based on current plans for land use development tested via the transport model, is dependent on funding availability to invest in the delivery stages, and outcomes of any readiness reviews.

**Implementation timing for Stage 4 (SH29 offline corridor) is dependent on land use changes, housing uptake in the Upper Belk, Merrick, and Joyce growth areas.

Table 9-1. Tauriko Network Connections Programme Stages

STAGES	SUMMARY DESCRIPTION	INDICATIVE TIMING	SIGNIFICANCE OF STAGE
Stage 1	Route protection via designation. Set up ongoing delivery programme monitoring and evaluation. Stages 2-4 depend on completion of Stage 1. Funding for each subsequent stage is independent.	2023/24—2026/27	Stage 1 critically secures delivery of subsequent stages, provides certainty for stakeholders and property owners, and significantly reduces the build out risks.
Stage 2	SH29 Omanawa Bridge end-of-life replacement and improvements, including: Procurement and design. Consents. Property acquisition. Construction of a new Omanawa River bridge, upgraded seagull island at SH29/Omanawa Road intersection, 2-lane realignment from Omanawa Road to Redwood Lane, and walking and cycling improvements.	2026/27—2031/32	Stage 2 is critical resilience work for end-of-life Omanawa Bridge replacement on the only heavy haul route into the WBOP.
Stage 3	SH29A PT prioritisation package from SH36 through to the Cameron Rd bus priority lanes including: Procurement and design. Consents Property acquisition. Construction of SH29A improvements, bus priority lanes, and Barkes Corner Interchange. Construction of PT Hub within the “The Crossing”. Construction of SH36 improvements and Lakes Boulevard Intersection signalisation for PT priority.	2026/27—2031/32	Stage 3 provides mode choice via public and active transport, enables full build out of growth areas: - Tauriko West, - Tauriko Business Estate (Stage 4), - Keenan Road (Note: More localised interventions may be required and will be informed by the respective rezoning Integrated Transport Assessments)
Stage 4	SH29 Offline improvements from Redwood Lane to TNL/Takitimu Drive including:		
	Implementation readiness review (IRR).	2041/42	
	Procurement and design. Consents Property acquisition. Construction of SH29 improvements, Redwood Lane, and Takitimu Drive/SH36 Interchanges. Revocation of existing SH29 to a local road.	2042/43—2049/50	

Figure 9-1 outlines the overall SH29 Network Connections Programme and the four stages to be delivered over time.

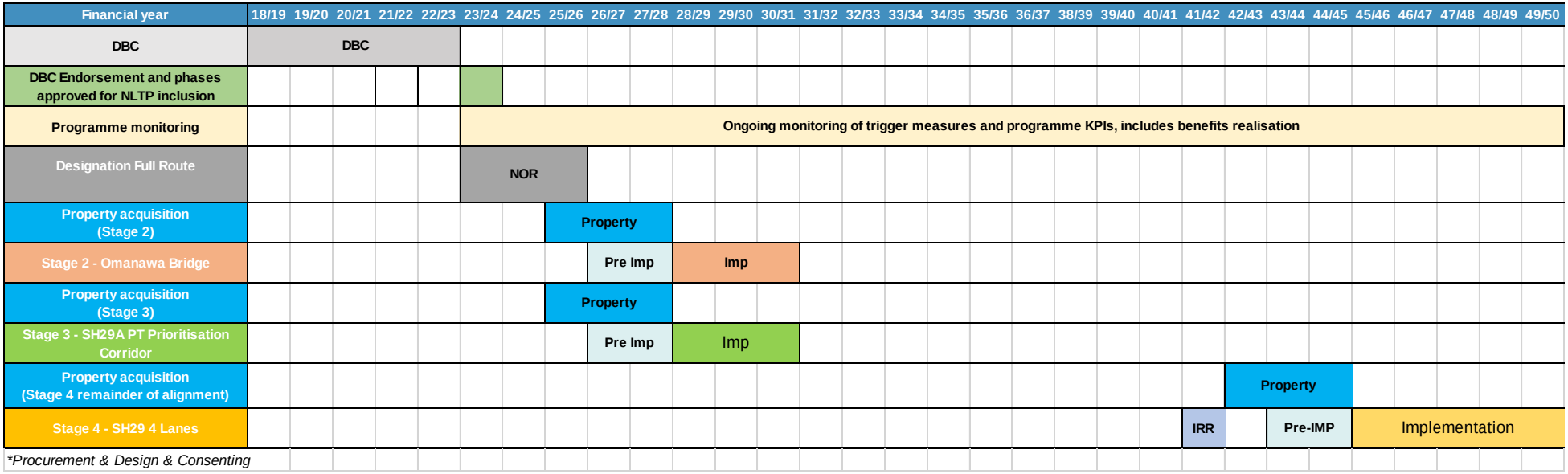

Figure 9-1. Recommended Programme Schedule.

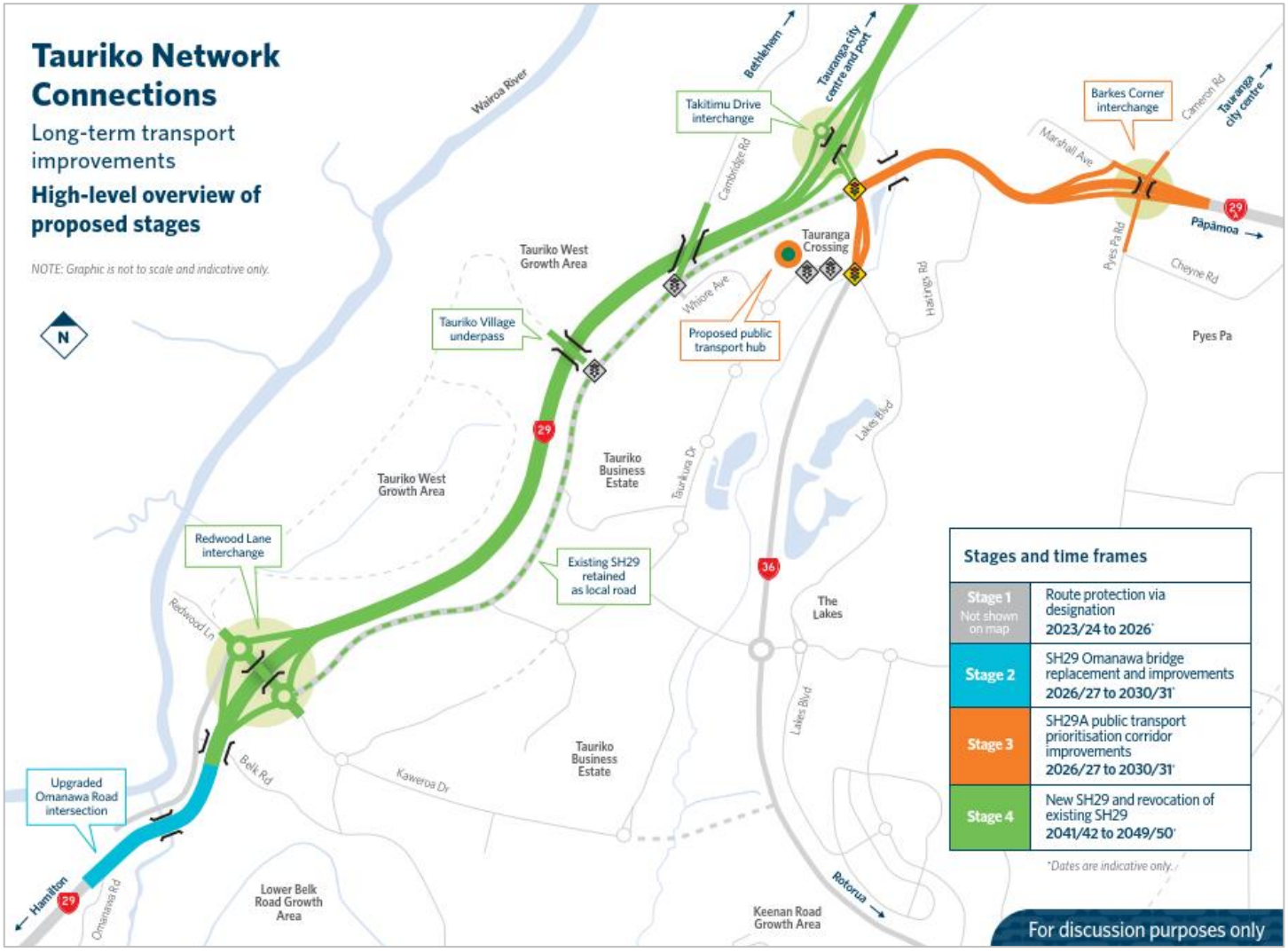

Figure 9-2. Staging Map

10 FINANCIAL CASE

The Financial Case demonstrates the affordability of the Recommended Option by outlining its financial implications and funding requirements.

For further detail, including cost estimation schedules, refer to **Appendix N.**

Funding of the extension of PT Services into Tauriko West is part of a separate PT Infrastructure and Services DBC being undertaken by BOPRC. The Tauriko Connections DBC project does however include the costs associated with provision of the physical infrastructure (bus lanes, intersection priority, etc).

10.1 PROJECT COSTS

The total estimated project cost (Q1/2023) to deliver the Tauriko Network Connections DBC package as a single project is between **$2.23 billion (P50) and $2.66 billion (P95)**.

If the project is delivered in stages (see Section 9), then the overall cost range increases due to the additional contracts. This would result in a total project cost range between **$2.33 billion (P50) to $2.76 billion (P95).**

Assumptions used are outlined in **Appendix N.**

The total project cost is itemised in Table 10-1 and excludes GST and escalation**.** This also applies to the land cost**.**

Table 10-1: Tauriko Network Connections Project Cost Estimate (Q1/2023)

Tauriko Network Connections Project Costs		Expected and 95%ile Out-turn Costs (in $M)				
		Total Project NOT staged	Stage 2	Stage 3	Stage 4	Total Project Staged
Land	P50	329	32	83	214	329
	P95	375	36	95	244	375
Pre-Implementation	P50	128	9	56	67	133
	P95	152	11	66	80	157
Implementation	P50	1,794	133	790	950	1,873
	P95	2,131	158	939	1,129	2,225
Total Cost	P50	2,251	174	930	1,232	2,335
	P95	2,658	205	1,100	1,453	2,758

10.2 PROPERTY COSTS

Gross total property acquisition costs are estimated to be **$734 million (P50) to $767 million (P95).** These are acquisition costs, inclusive of market appreciation (to year 2044), S66 costs, accommodation works & crown acquisition costs). They differ to the property values used within the SM014 Cost Estimation Summary Sheets and tabled in Table 10-1 (which do not include appreciation).

These high-level property costs are based on:

- Compensation for 117 affected properties based on early draft Land Requirement Plans.
- High premiums on rural land earmarked for future urban development being acquired, which contributes to higher than usual land rates.
- Higher contingency due to insufficient information on project impacts at the time of the estimate.

However, this estimate does not account for:

- Specific costs associated with affected lesser interests.
- Temporary occupation required for construction.
- Land required for local authority road realignments.
- Land required for ecological mitigation.

This property assessment was based on the superseded alignment of Option 2 Hybrid (emerging Recommended Option in 2022). However, there is very little difference between Option 2 Hybrid and the final Recommended Option, Option 2V. The key difference for property impacts is that Option 2V involves less land take around Kopurererua Valley than Option 2 Hybrid. Both options fit within the same designation and in effect have similar land requirements. Therefore, updates to the property assessment for Option 2V were not undertaken as the August 2022 property assessment is still considered relevant.

For further detail, refer to **Appendix P.**

10.3 REVOCATION COSTS

Revocation costs have been determined by Waka Kotahi in consultation with TCC. They are not included in the Project Estimate presented in Section 10.1. Total revocation costs (Q1/2023) are likely to be between **$1.5 million (P50) to $1.7 million (P95).** These costs are shown in Table 10-2**.**

Table 10-2. Estimated Revocation Costs

Tauriko Network Connections Project Components – Revocation Components	Cost (in $M)	
	P50	P95
Total Pre-Implementation Fees	0.05	0.11
Base Implementation Fees	0.10	0.15
Base Physical Works	1.38	1.52
Total Construction/Implementation Fees	1.48	1.67

10.4 MAINTENANCE AND OPERATION COSTS

Total annual maintenance and operation costs are shown in Table 10-3.

Table 10-3. Maintenance and Operation Costs Summary

Tauriko Network Connections Project – Maintenance and Operation Components	Asset Owner	Estimated Cost ($) per year	
		50%ile	95%ile
PT Services	BOPRC[87]	$6M	$8M
Walking and Cycling Facilities	TCC	<$1M	<$1M
Local Road general roading	TCC		
State Highway general roading (State Highway, pavement repairs, lighting, traffic signals, planting, line marking, bridge inspections, guardrail repairs etc.).	Waka Kotahi	$3.4M	$4.4M

10.5 FUNDING SOURCES

Project partners agreed that the total project cost will be funded from a range of funding sources:

- State highway and local road improvement activity classes of the National Land Transport Fund (NLTF).
- Walking and cycling and/or public transport infrastructure improvements projects.

However, due to the significant funding requirement for this project, alternative funding structures should be investigated in the next phases of this project. For instance, the GPS 2021-24 states that investment for large intergenerational projects over $100M should consider alternative financing approaches (e.g., new Infrastructure Funding and Financing tools) and alternative operational models (e.g., Public Private Partnerships).

The agreed funding sources for project are outlined in Table 10-4**.**

Table 10-4. Funding Sources for Tauriko Network Connections

Tauriko Network Connections Project Component		Agreed Funding Source	
		SH (NLTF) Funded	Other Funding
Omanawa Intersection Upgrade		100%	-
Redwood Lane Interchange	RAB on north.	-	100% Enabling Works
	Connecting Kaweroa Drive.	-	100% Enabling Works
	RAB on south side including walking and cycling.	-	100% Local Roads FAR
	Extension of existing SH29 to RAB including walking and cycling.	100%	-
	All on/off ramps.	100%	-
Gargan Road walking and cycling crossing of SH.		100%	-
Existing SH29	Any future walking/cycling along SH29.	100%	-

[87] Operational Costs have been provided by BOPRC.

Tauriko Network Connections Project Component		Agreed Funding Source	
		SH (NLTF) Funded	Other Funding
Tauriko West access	Overbridge including walking and cycling.	100%	-
Cambridge Road intersection		100%	-
Takitimu Interchange		100%	
PT Taurikura Drive	Local Road.	-	100% Local Roads FAR
	SH36 Intersection	100% for areas within SH designation	-
	PT Hub.	-	100% PT Infrastructure FAR
PT SH36 and SH29a		100% for areas within SH designation	-
Barkes Corner Interchange	On/off ramps and SH section.	100%	-
	Pyes Pa/Cameron Road overbridge.	100%	-
	Additional walking and cycling along Marshall Ave	-	100% Local Roads FAR

Table 10-5. Activity Class Cost Breakdown

Activity Class	Cost in millions	
	P50	P95
State Highway	2271.3	2681.4
Local Road	56.0	66.4
PT Infrastructure	8.0	10.0
Total	$2335.3	$2757.8

The PT Infrastructure Class covers the cost of the PT Hub located within the “The Crossing” site.

10.6 COST SHARING

The proposed cost sharing arrangement between Tauranga City Council and Waka Kotahi are shown in Table 10-6**,** based on a staged construction. Cost Split covers Waka Kotahi paying 100% of State Highway, 51% of Local Roads and 51% of PT Infrastructure (PT Hub). The TCC share covers 49% of Local Roads and 49% of PT Infrastructure (PT Hub).

Table 10-6. Cost Share between TCC and Waka Kotahi (Staged Construction).

Tauriko Network Connections		Agreed Cost Shares (in $M)				
		NoR	Stage 2	Stage 3[88]	Stage 4	Total Project Staged
Total Cost	P50	2.2	174.2	929.5	1229.5	2335.3
	P95	2.7	205.6	1099.8	1449.6	2757.8
TCC share (49%)	P50		-	4.1	27.2	31.3
	P95		-	5.1	32.3	37.4
Waka Kotahi share	P50	2.2	174.2	925.4	1202.3	2304.1
	P95	2.7	205.6	1094.7	1417.3	2720.3

10.7 PEER REVIEW

The original Option 2 DBC estimate has been peer reviewed by BondCM Limited and reconciled with the WSP Estimating team. A copy of the WSP Estimate report is attached in **Appendix N**, along with the reconciled DBE Estimate for Option 2 (Q1/2022).

The estimate for the recommended option (Option 2V) does not require an external review, as the original peer review findings have been applied to the latter estimates.

10.8 ECONOMIC CASE FOR STAGING

To confirm the economic viability of this staged delivery approach, further economic evaluations were completed and peer reviewed (see **Appendix C**). The economic evaluation assumed two construction stages.

- Stage 1' is the SH29a PT Prioritisation and is operational by 2029.
- Stage 2' is the remaining recommended option operational by 2050.

The national BCR of the recommended option when staged is **1.2**. Therefore, it is considered economically feasible. The economic results are summarised in Table 10-7**.**

Table 10-7. Economic Summary of Recommended Option Staged

Economic Measures	Total NOT staged	Total staged
NPV Total Cost of Recommended Option	$1,912.6M	$1,518.7M
NPV Total Benefit of Recommended Option	$2,438.3M	$1.837.7M
BCR (excl. Wider Economic Benefits)	1.3	1.2

Overall, this economic evaluation found that:

- Capital costs of the staged delivery of the programme are slightly higher than when not staged, but total NPV cost is lower due to the second stage starting construction mid 2040's.
- Benefits of the staged delivery of the programme are lower than when not staged. This implies that construction of Stage 4 may be economical sooner (than the assumed mid 2040's).
- While the BCR for staged delivery is incrementally lower than when not staged, the BCR of staged delivery remains largely the same.

[88] This includes the PT Hub on the "The Crossing" on TCL land.

11 COMMERCIAL CASE

This Commercial Case outlines the commercial deliverability of the recommended SH29 Network Connections improvement programme. The Commercial Case summarises the main elements of the following related to commercial deliverability and further detail is appended:

- Delivery risks and opportunities (see Project Risk Register in **Appendix J**)
- Consenting Strategy (see **Appendix Q**).
- Property Strategy (see **Appendix P**).
- Procurement Strategy (see **Appendix R**).

The Implementation Readiness Review (IRR) for Phase 4 will outline the procurement approach for the subsequent stages. Doing so will maximise flexibility to prepare the best procurement approach that delivers the stages and provides best value for money. As such the Commercial and Management Cases are closely aligned with the governance and project management structures and adaptive management approach providing a framework for working with and managing the programme uncertainties and risks.

11.1 ASSET OWNERS

The scope of works will connect with the Tauriko West Enabling Works that are already underway to develop Tauriko West and includes the revocation of the current SH29 alignment to be part of the local roading network within Tauriko. In addition, through an agreement Tauriko Crossing Limited will construct the Tauriko PT hub and enable TCC a licence to occupy the site.

There are multiple asset owners within the physical extent of the project. The main asset owners are:

- Waka Kotahi for the state highways.
- Tauranga City Council for the local roads, public transport infrastructure, and other community infrastructure such as three waters etc.
- Bay of Plenty Regional Council for the public transport services.
- Tauranga Crossing Limited for the Tauriko PT hub.
- Multiple utility services providers including power, telecommunications, and gas.

Whilst these are the main asset owners there are other asset owners involved such as Kāinga Ora, Te Tāuhu o te Mātauranga/ Ministry of Education who are currently involved in the planned urban growth area development and will need to be involved in the delivery phases. Additional, co-ordination will be required with property developers developing housing and commercial/ industrial developments in and around the programme extent.

11.2 PROGRAMME TIMING AND PHASING

The recommended Tauriko Network Connections programme is outlined in Section 9. This programme has been developed to address the identified problems and benefits, account for the various interdependencies, uncertainties, and known constraints of Government funding envelopes.

The recommended phasing programme does not intend to prescribe the exact delivery methods for the programme and recognises that specific stages and delivery methods may change depending on interactions with other projects (e.g., Cameron Rd improvements stage II, and development pace of Tauriko West and other growth areas within the Western Corridor), capital and operating budgets, and so forth.

11.3 THIRD PARTY UTILITIES

There are several utilities that intersect with the project area that have potential to be impacted by the proposed transport works. A lack of engagement with utilities is a risk to the designation and consenting processes and delivery. A third-party utilities engagement strategy and plan are required and will need to be developed as part of the pre-implementation phase for Stage 1.

The known utility providers within the project scope are:

- PowerCo
- Northpower
- First Gas
- Chorus
- One NZ
- Tauhahi First Fibre
- Vocus Communication

There has been initial engagement with most of these utility owners as part of the Tauriko West Enabling Works that are underway. Further engagement with these utility and network operators will be critical to the delivery of all programme stages and form part of the Route Protection and Resource Consent stage.

Processes and procedures for engagement are set out in the National Code of Practice for Utility Operators' Access to Transport Corridors and the Government Roading Powers Act 1989 (GRPA). Cost sharing arrangements and approaches to reaching agreements are provided in the Code of Practice and under the GRPA.

Works affecting utilities, particularly lifeline utilities, require long lead times to allow agreement to be reached with the utility owners and to settle cost share arrangements. There is sufficient time between Stages 1 and Stages 3 to reach agreement with utilities providers.

11.4 INTERFACING PROJECTS

Interfacing projects that are likely to be of relevance to the next phases include:

- Tauriko West Urban Growth area and Tauriko Enabling Works.
- Cameron Rd Stage II PT upgrade.
- Kōpurererua Valley Reserve Restoration.
- Tauriko Business Estate Stage 4.
- Future Western corridor urban growth areas as per the UFTI Connected Centres Programme.
- Greerton Maarawaewae Study.

Maintaining awareness of and integration with these interfacing projects will be critical throughout the delivery programme. Ongoing monitoring and management of these projects is necessary and a focus for the project management and governance. Connections between project governance bodies should be made and be part of the ongoing project governance discussions.

11.5 DELIVERY RISKS AND OPPORTUNITIES

As discussed in Section 6.2.10, a risk register (see Appendix J) has been prepared for delivery of the recommended programme. The register is a live document and will be maintained and updated throughout the lifecycle of the programme and delivery stages. The client's project manager supported by the professional services supplier will maintain and update the risk register.

The register identifies the risks and opportunities at the programme and project levels, outlines cause and consequence, notes established controls in place, connections to other risk items, and assesses threat and opportunity levels.

Key opportunities include:

- Undertaking route protection for the whole programme to avoid build out and maximise certainty.
- Deliver Phases 2-3 early to support efficient movement of people and goods through the corridors and to destinations throughout the city and region.

However, key strategic risks include:

- Funding and financing.
- NoR is not secured ahead of Tauriko West Plan change and the alignment is built out.

- Growth of Western Corridor is not realised.
- Induced traffic demand results in heavier loading on the network than predicted.
- PT and active mode outcomes are not realised.
- The Programme does not meet emission reduction targets.

The risk management approach is described in the Management Case along with the suite of processes and governance arrangements to mitigate and manage these risks.

11.6 CONSENTING STRATEGY

Gaining the necessary approvals under the Resource Management Act 1991 (RMA) and other regulations is a critical foundation for the delivery of the recommended option for the upgrade to SH29 and SH29A (the Project).

The Consenting Strategy recommends an approach for gaining statutory approvals within proposed timeframes for the Project. It outlines:

- Key planning and environmental matters relating to the Project.
- The technical supporting inputs required to obtain all relevant approvals.
- Statutory consents and approvals expected to be required.
- Consultation and engagement requirements.
- Pathways for seeking approval and recommended a preferable pathway.

The Consenting Strategy is a living document that should be revisited, reviewed, and updated should there be changes to the design, project footprint or status of land affected, along with changes to timing of the proposed Plan Change for Tauriko West (the Plan Change) and RMA Reform.

The full Consenting Strategy is included in **Appendix Q**.

11.6.1 Statutory Approvals Required

To enable the delivery of the recommended programme, the following RMA consents and statutory approvals are expected to be required:

- Notice of Requirement (NoR) to TCC and WBOPDC for new SH29/29A designations. Designating the corridor is required to meet the project objectives and provide for the required property acquisition.
- Resource consent from TCC under the National Environmental Standard Contaminated Soils (NES-CS) for the disturbance of contaminated soils as there are several HAIL sites identified within the project area.
- Resource consents from BOPRC under the Regional Natural Resources Plan (RNRP), Regional Air Plan (RAP) and National Environmental Standard for Freshwater (NES-F) for:
  - Erection of new structures (culverts, bridges, and erosion protection) in the bed of a watercourse under the RNRP and NES-F.
  - Temporary (i.e., during construction) and ongoing stormwater discharges under the RNRP and NES-F.
  - Earthworks and vegetation clearance under the RNRP and NES-F.
  - Diversion of watercourses and stormwater under the RNRP and NES-F.
  - Wetland modification and disturbance under the RNRP and NES-F.
  - Contaminated land disturbance under the RNRP.
  - Discharge of dust to air under the RAP.
  - Dewatering of excavated areas and take of water for dust suppression under the RNRP.
  - Drilling of land for ground improvements and structure foundations under the RNRP.
- Section 176A RMA approval will be required for any existing designations impacted by the proposed designation.

In addition to RMA approvals, the following are also required:

- An Archaeological Authority from HNZPT for the disturbance and destruction of recorded and unrecorded archaeological sites.
- Wildlife Permit(s) from the Department of Conservation (DOC) when physically disturbing or relocating wildlife.
- Approval of Temporary Traffic Management Plans (TTMPs) during construction.
- Asset Owner Approval for works affecting street trees and three waters infrastructure.

11.6.2 Approvals Pathway

Due to the scale of the Project and its potential effects on the surrounding environment, the most efficient approval method is to seek route protection for the entire recommended option through a Notice of Requirement ('NoR') for a new designation, along with resource consents for Phases 2 and 3 only. The consenting strategy also suggests the Outline Plan may be able to be included with the NoR documentation if sufficient design information is available, to avoid an additional approval process.

There are various options for processing of the RMA approvals, including the traditional council pathway, direct referral to the Environment Court, and a Board of Inquiry process administered by the Environmental Protection Authority (EPA). After analysis of the scale of the project, the potential impact of concurrent processing of the Plan Change, and the staged timing for construction our recommendation is the use of a Board of Inquiry processing pathway administered by the EPA. That pathway recognises the project as one of national significance and provides the most streamlined pathway for the Project. It will also provide certainty in decision timeframes and the project is more likely to be considered on its merits alone, avoiding the potential of becoming entangled in the Plan Change process.

There may also be merit, however, in including a NoR for part of the route in the Plan Change using section 170 of the RMA. This option is subject to alignment of timeframes and would need to be further explored when progress of the Plan Change (expected to be notified in mid-late 2023) is more clearly understood.

Regardless of the pathway chosen, it is anticipated that Waka Kotahi will establish a Consent Authorities Forum for the Project. The Forum would meet regularly to discuss designation and consenting matters, and likely include representatives from DOC, HNZPT, Te Kauae o Roopu (or specific hapu), BOPRC, TCC and Waka Kotahi. The benefits of the Forum are expected to include negotiation and incorporation of these parties' views into the project design and mitigation strategies wherever possible to reduce the likelihood of submissions in oppositions to the Project.

11.6.3 Key Planning Issues and Consenting Risks

Key planning issues and consenting risks for the project include:

- RMA reform - replacement of the RMA with the Strategic Planning Act and Natural and Built. Environment Act (which are currently before select committee and are expected to be passed into law in 2023) may result in the project being caught by transitional provisions.
- Land use change - rezoning of Tauriko West will change zoning and plan overlays for a large part of the project area and enable housing and urban development adjacent to the corridor.
- Plan Change - Identification of the future SH29 corridor in the Plan Change and route protection through plan provisions and staging may be challenged in the absence of a confirmed NoR.
- Tangata whenua acceptance of project - maintain partnership with hapu, engagement and consultation to facilitate their input into the project development.
- Landowner, stakeholder, and community engagement - possible opposition to project approvals or land acquisition.
- Existing and emerging national direction under the RMA - complex assessment of project against National Policy Statements (NPS-HPL, NPS-UD and NPS-FM) and National Environmental Standards (NES-F).
- Insufficient space within designation for mitigation and offsets to meet policy requirements or address effects.
- Assessment of Alternatives under s171 RMA - will rely on options analysis in the DBC.

- Designation and consent conditions - conditions attached to the designation and consents via the Board of Inquiry process do not provide flexibility for changes to the project in future and cannot be appealed except on points of law.
- Duration of approval process - while a Board of Inquiry process may result in faster processing times, preparation timeframes may be longer.

11.6.4 Technical Assessments

A comprehensive suite of technical assessments will be required to support the designation and consenting process, along with engagement of project partners, stakeholders, and the community. The scope and scale of these technical assessments will need to be commensurate with the anticipated project effects, the surrounding land use, and the nature of the receiving environment. Technical assessment areas include:

Amenity and character	• Noise and vibration • Traffic • Landscape • Lighting and glare
Infrastructure	• Transport (including public transport and walking and cycling) • Three waters • Network utilities
Natural environment	• Outstanding / significant natural features and landscapes • Wetlands, rivers, streams • Ground and surface water • Ecological areas, biodiversity, habitats • Highly productive land • Natural hazards • Stormwater • Contaminated land • Air quality
Cultural and historic heritage	• Cultural and heritage landscapes • Sites and values of significance to tangata whenua • Archaeological sites
Human health	• Air quality • Contaminated land
Social and economic	• Community facilities • Accessibility

11.6.5 Recommended Approach

After consideration of the relevant environmental and consenting risks, the expected staging of the Project, anticipated timing of the Plan Change, and efficiency within the application and processing pathways, the following key recommendations are made that:

- Waka Kotahi maintains korero with tangata whenua affected by the Project through Te Kauae a Roopu, building on relationships formed through the DBC process.
- Te Kauae a Roopu (or hapu) be invited to prepare or commission a Cultural Impact Assessment (or similar) for the project as soon as possible to influence further development of the Project.
- Investigations for technical assessment required for the designation and consenting process be staged to correspond with proposed construction timeframes, and in recognition of the potentially changing nature of the environment.
- A NoR be lodged for all stages of the recommended option to protect the land area needed for the whole of the Project.
- The NoR for all stages is lodged in combination with consent applications and draft management plans for Stage 2 and 3, and that conditions attached to the NoR and consents for the Tauriko Enabling works to be used as a reference.
- The NoR also addresses s176A (3) RMA requirements for Outline Plans, subject to sufficient design information being available.

- Resource consents for Stage 4 of the Project are lodged at least 2 years prior to the expected construction start date.
- Waka Kotahi continues to seek route protection through plan provisions and staging requirements under the plan change for rezoning Tauriko West, including utilising section 170 RMA if timeframes align.
- Waka Kotahi request public notification of the NoR and consent application and that they are lodged with the EPA for processing by a Board of Inquiry prior to end of 2026 to avoid being caught by transitional provisions of RMA reform.

This position will be reviewed regularly as the project progresses and the timing of the Plan Change and the implications of RMA reform are fully understood. The consenting pathway is also subject to final Waka Kotahi endorsement post-approval of the DBC, and approval by the Project Steering Committee that will be set up post-DBC.

11.7 PROPERTY STRATEGY

Given the nature of the affected properties and the transition of this area from a rural to urban profile, this project will impact a substantial number of privately and publicly owned properties. Waka Kotahi will lead the property acquisition for the Programme on behalf of relevant Programme partners. All property acquisition will be conducted under the Public Works Act (PWA) 1981 and be governed by the UNZ Standards and Guidelines LINZS15005 and LINZG15703.

Key dates for the purposes of the cost estimates are an active acquisition programme commencing in year2026/2027 for Stage 2 and 3 and year 2042/2043 for Stage 4. However, given aspects of the Programme are several years away from construction, a detailed property acquisition strategy has not been developed. Rather a high-level acquisition programme (see Appendix P) has been prepared. This programme is based on the following aspects:

- A three-year acquisition programme is required given the nature of the affected properties and the transition of this area from a rural to urban profile. The Acquisition programme determines the level of market appreciation required for the cost estimates from today's value to the point at which they will be acquired in the future.
- This indicative acquisition programme does not allow for any objections or delays so final completion of negotiations could be another 12-24 months.
- There are 117 affected properties[1] and 10 businesses[2].

The following key actions will support the property acquisition:

- Once the alignment has been confirmed (and designated ideally), deal with any early purchase requests from landowners based on hardship on a reactive basis. This will be in accordance with Waka Kotahi's Advance Purchase Policy for Property Acquisitions, deferring wherever possible.
- Identify any strategic purchases in case those properties come onto the open market and can be purchased from a willing seller. A strategic property is where a property is on the proposed alignment for the Programme (or nearby and has other potential purposes) and can be purchased early to assist with project planning, land for land compensation, or to reduce the risk of acquisition.
- Review the Property Cost Estimate once the designation consent has been lodged, and if Tauranga City Council do change the zoning for part or all of the alignment.
- Prepare a detailed Property Acquisition Strategy and updated Property Cost Estimate once the construction start date is confirmed.

11.7.1 Key Property Risks

Key property acquisition risks are outlined below.

The quantum of rural land being acquired to construct the long-term improvements, given that the project is located on the periphery of Tauranga, is largely all earmarked for future urban development. A premium for the future potential of this land (as demonstrated from recent sales and valuation advice) combined with large land requirements results in high compensation estimates.

Lack of funding. Property acquisition is estimated to commence in late 2026 with limited funding for early property acquisition to support route protection through any early requests from property owners due to hardship, or to allow Waka Kotahi to respond to any objections to the NoR from a property perspective.

A full review of the properties with affected registered interests will be required as part of the property acquisition strategy to determine the nature and potential implications for these interests because of the project. This will also inform the compulsory acquisition process to understand what other rights are affected other than the registered owners.

11.8 PROCUREMENT APPROACH

The focus of the procurement approach is on the earlier programme stages of the project (Stages 1-3) whilst outlining indicative approaches for Stage 4. While later delivery stages are subject to future Implementation Business Cases, initial indications of procurement options are provided. The recommended Procurement Strategy is provided in **Appendix R**.

A summary of the proposed Delivery Model is provided below.

Table 11-1. Proposed Procurement Delivery Model

Package	Estimated Contract Value ($m)	Recommended Delivery Model	Estimated Start Date	Estimated Completion Date
Stage 1 – Route protection via designation: a) Designation b) Ongoing programme monitoring & Evaluation	3	Traditional Professional Service Engagement QB Evaluation Method	ASAP following funding approval 2023/24	2026
Stage 2 – SH29 Omanawa Bridge replacement and improvements	170	Early Contractor Involvement	ECI 2026 (subject to funding being available) Construction Start late 2026	2030
Stage 3 - SH29A PT Prioritisation Corridor improvements	950	Design Engagement: Traditional: QB Evaluation Method	ASAP following funding approval	12 months (2026)
		Head Contractor: Traditional: QB Evaluation Method	ASAP following funding approval 2026/27	2030/31
Stage 4 - SH29 Offline a) Implementation & Readiness Review b) improvements from Redwood Lane to the Takatimu interchange	1100	*To be confirmed* Potential for a Collaborative / Shared-Risk Model	a) 2041/42 b) 2042/43	a) 2041/42 b) 2049/50

11.8.1 Procurement Risks

The main procurement risk along with the proposed mitigation are included in Table 11-2:

Table 11-2. Procurement Risks.

Key risk or opportunity	Comment	Mitigation
Resource availability and capabilities	• The ability of the market to deliver the project based on size and timeframes. • Lack of internal resourcing to manage the project.	• Early market engagement to inform suppliers. • Hire staff/ outsource work to consultants.
Conflicting stakeholder/project partner outcomes	• Key project outcomes could differ resulting in perceived poor delivery of outcomes.	• Regular conversations and engagement to ensure everyone is aligned. Provide regular updates.
Funding	• Funding is multiparty. Funding not provided by Tauranga City Council, Bay of Plenty Regional Council or Waka Kotahi. • Developer contributions will not be sufficient for actual costs.	• Need to prioritise the different procurement packages based on importance in terms of freight movement, public transport, walking and cycling access and

Key risk or opportunity	Comment	Mitigation
	• Mistiming in terms of funding from one of the partners.	minimising the travel time impact. • Cost effective design. • Partners must ensure funding is available for the same year based on the LTP and NLTP.
Housing developers	• Urban development and staging of houses being built are occurring a lot quicker than what was originally anticipated/modelled and there is no supporting transport infrastructure. • Potential for housing to be slower than anticipated due to constraints. • Structure plan is not yet finalised and has not gone through public consultation.	• Liaise closely with the housing developers and Kainga Ora. Obtain their masterplans for the area to understand the staging of the development areas. • Liaise closely with housing developers and Kainga Ora. • Developers to be informed of this programme and complete their structure plan.
Aggregate and fill material	• Key constraints for the project. • There is a known shortage of suitable aggregate in central north island. • The project will also require a significant amount of compliant fill material for earthworks. The site is in a flood plain and has several steep escarpments.	• Enabling early contractors' involvement. • Advance purchase of material (being currently explored by Waka Kotahi). • Having fit for purpose standards to allow use of local aggregate.
Steel and concrete	• National supply of materials, such as steel and precast concrete are currently constrained because of COVID economic effects. • Constraints should be alleviated by 2025 but this will still remain a key risk element for the project.	• Can be managed with early and careful planning during pre-construction phase.
Bitumen and fuel	• Current cost escalation and supply chain issues should subside by 2025 however escalation will still remain a high risk over a 5-year construction period.	• Will need to carefully consider escalation index and consult with the industry on this.
Embodied carbon solution	• Potential barriers to implementing new solutions for lower embodied carbon solution have been identified as: • *Current policies and standards may lack flexibility required.* • *Rapid demand growth putting pressure on availability of new material.* • *Available funding*.	• Early work with Subject Matter Experts (SMEs) to understand where opportunities are and where we can build more flexibility. • Early collaboration with designer and contractors to unlock opportunities early and consider impact on cost.

11.8.2 Market Capacity

Current market capacity across the transport professional service and physical works contractors is low with multiple and extensive competing demands. Relevant for the Bay of Plenty area and this Programme is the considerable works happening to recover the transport network in Northland, Coromandel/Hauraki, Tairāwhiti and Wairoa, and Hawkes Bay/Napier post the weather events in January and February 2023.

However, the scale and duration of the Programme are likely to be enticing for the market if capacity and capability can be achieved.

11.8.3 Indicative Procurement Programme

An indicative procurement programme has been developed for all four stages and shown in Figure 11-1.

Phase	Type of Engagement	Proposed Delivery Model	Estimate	Estimated Construction Completion Date	2024				2025				2026				2027				2028				2029				2030				2031			
					Jan-Mar	Apr-Jun	Jul-Sept	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sept	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sept	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sept	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sept	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sept	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sept	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sept	Oct-Dec
Stage 1 - Designation - Route Protection Full Alignment: a) Designation b) Ongoing Monitoring & Evaluation c) Stage 4 Readiness Reviews	Professional Services Planner	Traditional	$3m	n/a			Funding Decision Due no earlier than September 2024	Procurement	Approvals & Award																													
Stage 2 – Omanawa Bridge Replacement with SH29 upgrades to Belk Road	Construction Contractor	ECI	$170m	2030											Procurement	Approvals & Award	ECI																		
Stage 3 - SH29A PT Prioritisation Corridor Improvements	Professional Services and Construction Contractor(s)	Design and Construct	$950m	2031											Procurement	Approvals & Award			Procurement	Approvals & Award														
Stage 4 - SH29 Offline Construction from Redwood Lane to Takatimu Interchange from Redwood Lane to the SH29/SH2 interchange	Professional Services and Construction Contractor(s)	Shared Risk / Collaborative Approach	$1100m	2050													TBA																	

	Procurement
	Approvals/Award
	ECI
	Professional Services
	Construction

**This programme identifies that no Procurement activity can proceed to market without prior funding approval.

Figure 11-1. Indicative Procurement Programme.

11.9 REVOCATION PATHWAY

As part of the Recommended Option, SH29 between Redwood Lane and Takitimu Drive will be revoked and handed back to TCC as the road controlling authority. Refer to Figure 11-2.

In accordance with the Waka Kotahi State Highway Revocation Policy and Guidance (2021), this DBC has considered the need to revoke these existing state highways at a high-level based on:

- The intervention hierarchy.
- A whole of system and network approach.
- Key assumptions to develop high-level estimated costs of revocation.

The estimated costs of revocation (including investigation to implementation) are shown in Section 10.3. A Revocation Plan will be detailed in pre-implementation phase of this project to address other revocation matters, including:

- Agreement of fit-for-purpose form and function and future conditions of the revoked sections of state highway. This includes agreeing what the function of the road is under the ONF.
- Handover processes with TCC including consultation with stakeholders.
- Consenting and designation processes required.
- Confirming costs of revocation.

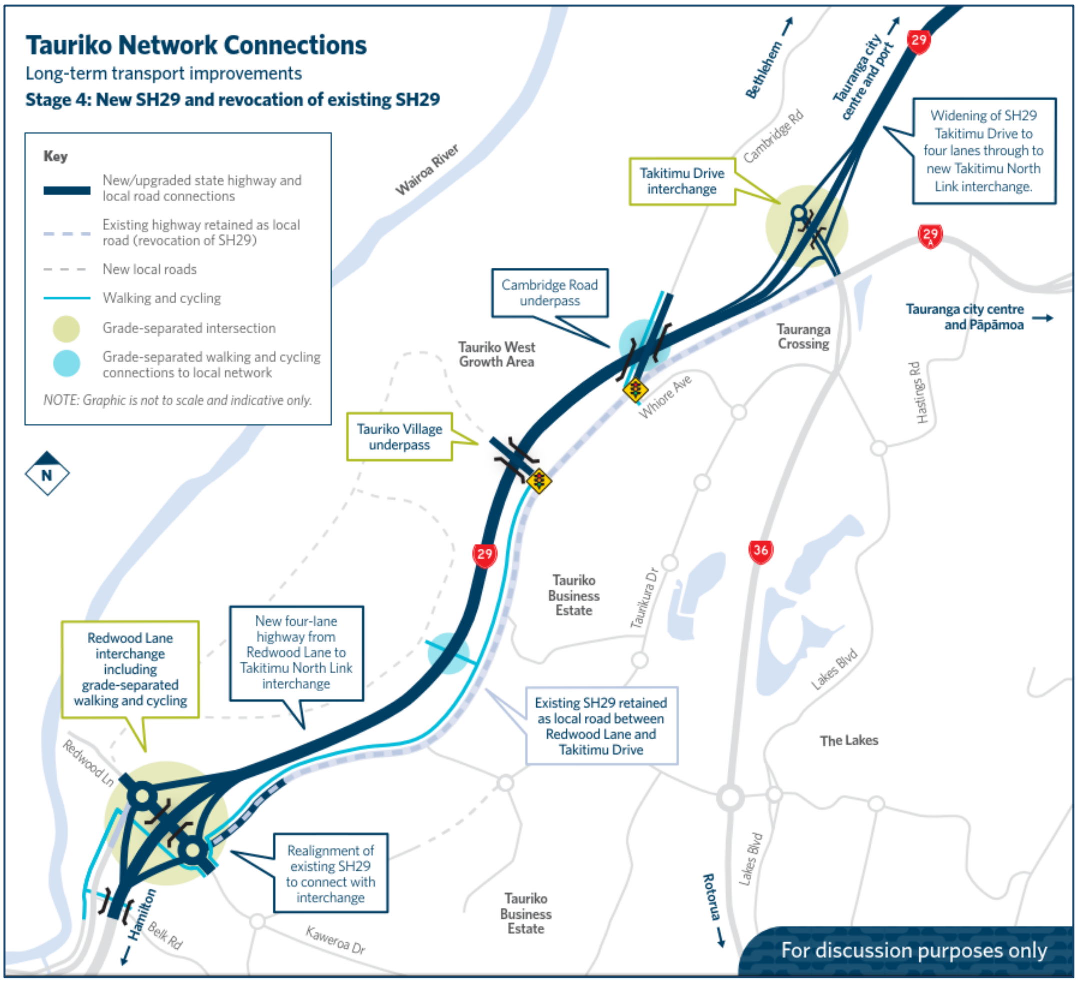

Figure 11-2. SH29 Revocation

12 MANAGEMENT CASE

The Management Case addresses the delivery roles and governance approach for the pre-implementation and implementation phases for the Tauriko Network Connections programme. This section addresses all phases of the programme, with broad recommendations for later phases of implementation.

As described in Section 9, the Management Case is underpinned by an adaptive investment management approach based on the recommended programme principles. These principles are supported by ongoing monitoring of transport and urban development key performance indicators, and the development of Implementation Readiness Reviews to help enable the phases to be delivered when required.

The Management Case is made up of the following parts:

- Investment management using an adaptive management approach.
- Governance arrangements (supporting agreements, risk management and assurance framework).
- Delivery roles.
- Delivery structure and programme for Stages 2–3, and the indicative delivery programme for Stage 4.
- Stakeholder engagement and programme communications.
- Benefits realisation plan.
- Next steps to address key risks and opportunities.

12.1 ADAPTIVE INVESTMENT MANAGEMENT APPROACH

As described in Section 9, an adaptive management approach and phased delivery programme has been developed. This does not intend to prescribe the exact delivery method for the project as aspects in later phases may change depending on various factors and triggers. This approach allows for the governance and risk management arrangements to have the flexibility necessary to respond to changes in the staging if and when they occur. These arrangements will also need to evolve over time to suit the differing needs of each stage.

Given the long timeframes in the programme, the detailed governance arrangements for Stage 4 have not been prescribed. These arrangements will be outlined in the Implementation Readiness Reviews prepared prior to the pre-implementation phase. Furthermore, any programme investment decisions will be subject to the Implementation Readiness Reviews which will consider the capital and operating budgets and organisational responsibilities and priorities.

Therefore, this Management Case details Stage 1 and Stages 2–3 as illustrated below:

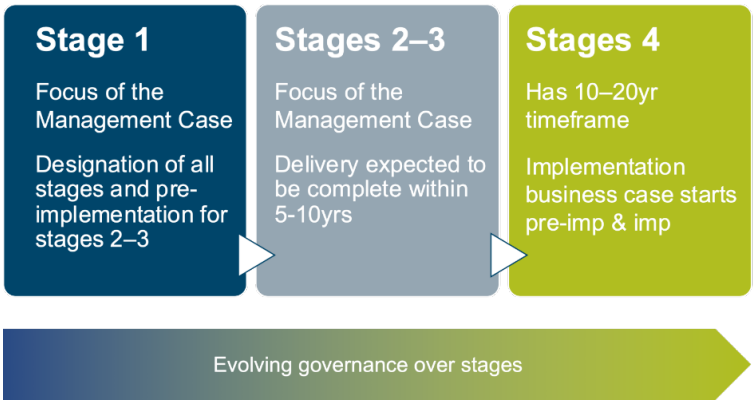

Figure 12-1. Overview of the Management Case.

12.1.1 Ongoing Monitoring to Inform Future Investment and Delivery

The adaptive management approach is highly dependent of regular and ongoing monitoring and evaluation of forward-looking measures to help understand the changes occurring in the Western

Corridor and within the programme area. Without regular monitoring, the adaptive approach cannot be successfully applied.

As per the benefits realisation framework for the programme (see Section 12.5), at least annual monitoring of transport and housing key performance indicators and measures are required. Aside from monitoring for benefits realisation, monitoring will support the adaptive management approach and identify when the triggers have been reached.

Overall, the Programme will set up and undertake monitoring of:

- Transport network performance within and adjacent to the programme scope.
- PT information and data include annual boarding and survey to indicate latent demand.
- Land use development (housing, industrial and commercial) within the SmartGrowth defined Western Corridor and adjacent areas via building consent information and data.

The governance group will review the monitoring and evaluation undertaken and depending on the information consider and agree whether there is need to bring forward or push back on the timing of investment for Stage 4.

12.1.1.1 Monitoring Dashboard

To undertake the monitoring, as part of Stage 1 professional service requirements, Waka Kotahi shall commission the development of a dashboard for the ongoing monitoring of transport and development measures within the Western Corridor.

This dashboard will enable the Programme Steering Group to receive at least annual monitoring reports highlight the key trends. Based on these reports the Steering Group will need to determine whether the monitoring and trends support changes to the Programme Staging particularly in regard of whether the staging can be delay or needs to be brought forward.

12.1.2 Recommended Land Use Triggers

Transport investment to enable effective inter-regional movement is required to support the proposed land use changes and developments in the Western Corridor. Based on the information available at the time of this DBC, the following land use triggers are recommended.

- Tauriko Enabling Works package supports the development of Tauriko West, existing TBE, and future Stage 4 (c.50ha).
- Stage 3 (PT prioritisation package) unlocks and supports the development of Tauriko West 2400-4000 HUEs, Keenan Road, and Merrick Road urban growth areas up to an estimated total of 7,932 HUEs across these growth areas. It supports further industrial development enabling full buildout of the TBE extension area.
- Stage 4 (SH29 offline improvements) unlocks and supports the development of Upper Belk, Merrick Road, and Upper Joyce UGAs up to an estimated total of 17,640 HUEs.
- Additional transport improvements will be necessary to support an estimated total of 30,000 HUEs in the Western Corridor and Pyes Pa (to be determined through the Specified Development Project (SDP) process[89]).

Although traffic modelling has helped to estimate these land use triggers to maintain an acceptable network performance, it is recognised that TCC may choose to develop land areas in a different sequence to that outlined above or distribute HUEs to create different reallocate the HUE intensities. Noting that the sequencing and yields of each growth area will be developed through the Plan Change process the full build out HUE may vary within growth areas from the current land use projections. Either way, this would require completion of a Transportation Assessment to demonstrate that network performance is still acceptable to Waka Kotahi.

For further details on the land use and growth area locations, please refer to Section 3.2.1.2.

[89] https://www.hud.govt.nz/our-work/urban-development-act/

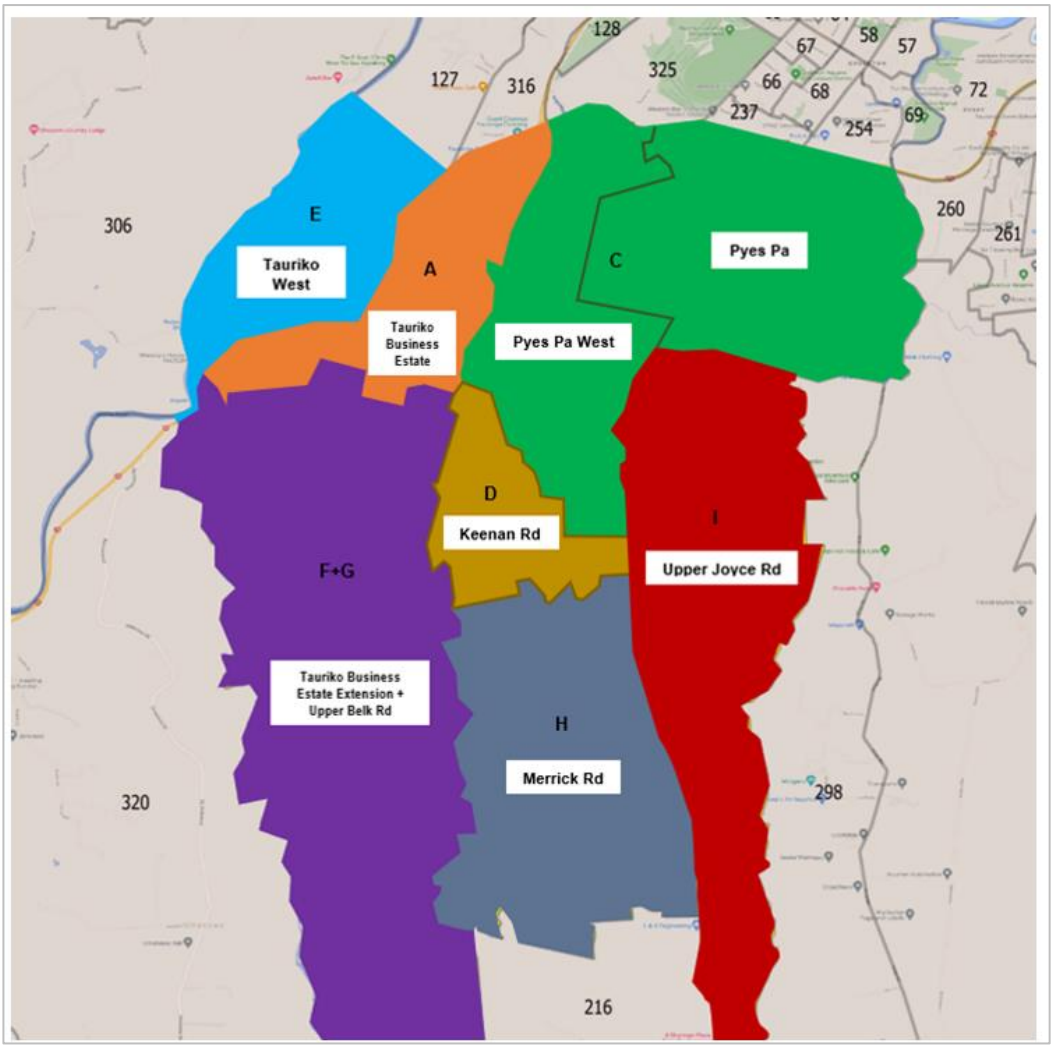

Figure 12-2. Land Use Development Areas to be triggered by transport investment.

12.1.3 Implementation Readiness Reviews for Stage 4

Before embarking on the pre-implementation and implementation activities associated with Stage 4, Implementation Readiness Reviews (IRRs) need to be undertaken. The main elements to be completed as part of the Implementation readiness review are:

- Reconfirm/update the strategic context as set out in the DBC and confirm the conditions are similar to what was expected.
- Confirm the outcomes of each preceding phase are being achieved in line with general expectations.
- Confirm the underlying assumptions used to develop the DBC and phasing are still valid. This would include confirming the housing growth and transport demand are in line with assumptions.
- Confirm the recommended option is still relevant and required particularly considering other transport improvements undertaken, underway, or planned. Notes this does not mean that a review of optioneering will take place unless there is a substantive change identified in strategic context or underlying assumptions.
- Update the Financial Case and cost estimates (capital, property, and operating) for remaining phases and economics to confirm value for money, and the appropriate national investment priority.
- Develops the Commercial and Management Cases for the upcoming phase and updates the project risks and the risk management approach.

Professional services (if required to undertake the IRR) will be commissioned and managed by Waka Kotahi. The IRR report will be considered via the Programme Steering Group then the Waka Kotahi Board for endorsement, for investment to complete Stage 4 of the Programme. It is expected the given the size of the investment required, an external peer review of the IRRs will be required.

12.2 GOVERNANCE ARRANGEMENTS

The recommended governance arrangements for all Programme phases have been developed to reflect the programme's complexity (see Section 9.1.1) and the programme partners involved (see Section 12.2.1).

12.2.1 Programme Partners

Recommended governance arrangements reflect the roles of the organisations involved and the importance of coordination among the partners. There are several primary programme partners to the SH29 Network Connections project:

- Hāpu (Ngai Tamarawaho, Ngāti Hangarau, Ngāti Kahu, Ngāti Pango, Ngāti Rangi, and Pirirakau).
- Tauranga City Council.
- Western Bay of Plenty District Council.
- Bay of Plenty Regional Council.
- Waka Kotahi.

Other partners and stakeholders will also be involved in specific elements of the programme, such as the design and construction of the Tauriko PT hub.

Specific supporting arrangements are in place for these partners as described in Section 12.2.3.

12.2.2 Proposed Governance Structure

The proposed governance structure for the Programme is outlined in Figure 12-3.

This structure is based on the current Tauriko Enabling Works governance that is already in place. Bay of Plenty Regional Council have been added reflecting the significant PT package of works and how these works will need to incorporate additional PT services components. An Independent Programme Chair is included.

To be successful the Programme governance arrangements need to support and enable:

- Joint decision-making and co-ordination on common interests among programme partners, particularly for components that have a critical path.
- A point of escalation for risk that cannot be managed or mitigated at the programme management or project levels.
- Efficient and engaged oversight on behalf of each organisations' corporate governance.
- An approval pathway where programme partners' board approvals are required (i.e., decisions above delegations).
- An assurance pathway to the programme partners' decision making for aa (i.e., Waka Kotahi Board, Local Council).
- Governance level co-ordination with interfacing projects.

The proposed arrangements will be reviewed and may develop further following input from specialist advisors and as the Programme progresses. As such the proposed governance structure may continue to be suitable for Stage 4; however, the most relevant governance structure for these stages will be identified via the IRR to be prepared.

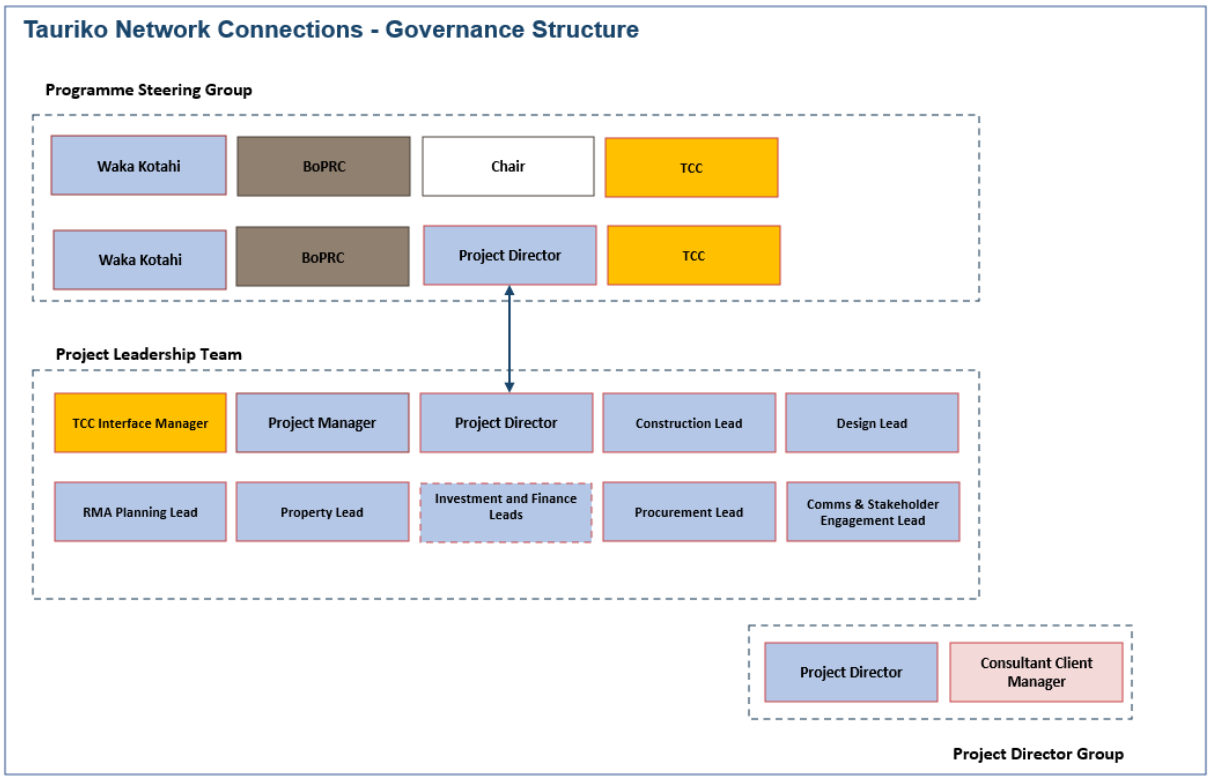

Figure 12-3. Proposed Governance Structure for Stages 1-3

12.2.3 Agreements to Support Governance

Several agreements between Programme partners have been identified to support the governance arrangements and delivery of the programme particularly for Stages 1–3. For Stage 4, it is highly likely these agreements will be utilised; however, the IRR will confirm the agreements necessary.

The supporting agreements include:

12.2.3.1 Te Kauae a Roopu

Te Kauae a Roopu which is a partnership between Ngai Tamarawaho, Ngāti Hangarau, Ngāti Kahu, Ngāti Pango, Ngāti Rangi, Pirirakau, and project partners such as Waka Kotahi, TCC, and Bay of Plenty Regional Council.

This agreement provides a framework to work collaboratively as equal partners specifically for the Tauriko for Tomorrow Project. The intent of the agreement is to establish a solid foundation to build enduring working relationships. It does not set a precedent for remuneration.

The Tauriko for Tomorrow Project comprises two final stages:

- Tauranga City Council's rezoning of Tauriko West Urban Growth Area for residential development.
- Waka Kotahi NZTA's roading improvements to the state highway SH29/SH29A.
- Tauriko for Tomorrow commenced in late 2017. The earlier stages of the project included:
- Bay of Plenty Regional Council's plan change to the Regional Policy Statement to extend the urban limits to include Tauriko West.
- Western Bay of Plenty District Council's boundary reorganization to include the southern area of Tauriko West within Tauranga City Council.

The partnership shall be referred to as Te Kauae a Roopu. Te Kauae a Roopu is committed to engaging and working in the spirit of good-faith and cooperation based on the relationship principles listed below. It is a twelve-month fixed term agreement renewable annually upon agreement from Te Kauae a Roopu, to be determined at the last hui of the year.

The principles are:

Mana	Recognition and respect for each partner's mana and authority; acknowledging hapū autonomy.
Whakapono	Acting with integrity, respect and being open and transparent.
Whānaungatanga	Fostering meaningful relationships and being respectful of each partner's perspective.
Korero a kanohi	Engaging on issues face to face; being upfront and honest.
Rangatira ki te Rangatira	Recognising respective leaders and involving key decision makers where and when appropriate.
Kaitiakitanga and Te Ao Māori	Providing for kaitiakitanga; valuing mātauranga Māori; integrating Tikanga and Te Reo Māori where appropriate.
Kotahitanga	Meeting agreed milestones; seeking solutions and looking for ways to mitigate challenges.

12.2.3.1.1 Relationships

Te Kauae a Roopu acknowledge the importance of building and maintaining enduring relationships to give effect to this agreement. The Treaty landscape has elevated the importance of tangata whenua and their relationship to Te Ao Māori (Māori worldview), Te Ao Wairua (celestial realm) and Te Taiao (physical and natural environment). Recent RMA reforms provide impetus for councils to enhance tangata whenua participation in RMA decision-making processes. Aside from legal responsibilities to Māori, there is a collective aspiration to do the right thing.

The Ngāti Ranginui Treaty settlement articulates the autonomous nature of their respective hapū and supports their aspirations for rangatiratanga. Of particular note is the intimate relationship of the hapū to Te Awa o Wairoa (Wairoa River). Te Awa o Wairoa is a taonga, a tupuna and provides an umbilical connection to many hapū. The following extract from Te Awaroa the Ngāti Kahu Hapū Management Plan (2011) reiterates this "Ka rere atu nga awa o Kaimai ki te whakakotahi o te awa rongonui a Wairoa toku kainga, Wairoa toku turanga, Wairoa toku ukaipo, Wairoa toku moemoea".

12.2.3.1.2 Agreement Scope

Te Kauae a Roopu recognises the spiritual and cultural significance of Te Awa o Wairoa, the significant relationships, connection, and whakapapa of the Wairoa River.

Te Kauae a Roopu also recognises that there are other Hapu/Iwi with an interest in the state highway upgrades for SH29/SH29A beyond the Tauriko West urban growth area.

12.2.3.2 Other relevant agreements

Other agreements will be developed and in place to support the governance, management, and delivery of the Programme. The agreements are shown in Table 12-1.

Table 12-1. Other supporting agreements for programme delivery.

Supporting Agreements	Purpose
Heads of Agreement (HOA) between Waka Kotahi, TCC, and BOPRC	Sets out the governance, co-ordination, dispute resolution, escalation, and engagement arrangements. Details future investment and funding processes.
Memorandum of Understanding between Waka Kotahi and TCC	• Documents how Waka Kotahi and TCC will jointly undertake their components of the route protection required. • Details the project level governance arrangements, decision-making processes, and dispute resolution and escalation procedures. • Details the cost sharing arrangements. • Document joint 'best for programme' decision making principles. • Confirms that each party retains decision making for scope, standards and conditions related to elements of the transport infrastructure and operations that they will own and maintain.

As the Programme progresses further agreements maybe necessary to support the governance, management, and delivery of the Programme. As such the above agreements are not exhaustive and will need to be considered as part of the IRR completed prior to Stage 4.

12.2.4 Stage 1

12.2.4.1 Role of Programme Partners

The partner roles for Stage 1 to designate the requirements for the whole SH29 Network Connections Programme and set up for implementation are discussed below.

12.2.4.1.1 Waka Kotahi

- Waka Kotahi is the Road Controlling Authority (RCA) for SH29 and SH29A. As such, Waka Kotahi will be the requiring authority and resource consent holder for any state highway infrastructure within the project scope.
- Waka Kotahi are the primary investor and lead agency for all stages of the SH29 Network Connections Programme. This means Waka Kotahi will be accountable for the delivery of all stages of the Programme on behalf of the agencies and organisations involved.
- Waka Kotahi will prepare the necessary NoRs. Waka Kotahi will also hold the resource consents relevant the state highway improvements when consents are required.

12.2.4.1.2 Tauranga City Council

- TCC is the RCA for local roads within the project scope area and Tauranga City. TCC will be the requiring authority and resource consent holder for any local road infrastructure. TCC are the primary investor for all local road improvements (see Section 0).

12.2.4.2 Organisational Responsibilities

Waka Kotahi and TCC have agreed the following in relation to the delivery of Stage 1 to complete the route protection for the agreed Tauriko Network Connections Programme:

- Professional Services to support the NoR and regional consents applications will be engaged and managed by Waka Kotahi with support from TCC where required.
- While the NoR applications for the Programme will be prepared by a single and co-ordinated team, the applications will be lodged by the appropriate requiring authority based on who will own and operate the facility enabled by the designation or consents.
- Property acquisition will be managed and undertaken by Waka Kotahi on behalf of each party based on the land impacted by each requiring authority's NoR. The Programme property team will liaise and work with TCC to ensure a consistent best practice approach is used.
- TCC and Waka Kotahi have joint responsible for setting up and undertaking the necessary monitoring of KPIs and metrics to inform the adaptive management approach. Depending on the monitoring, the delivery of Stage 4 could be brought forward or pushed out.

Where other roles are required, these will be identified, discussed, and confirmed via the Programme Governance group.

12.2.4.3 Delivery Programme

The proposed programme for Stage 1 is based on completing the NoR and associated activities, and the initial pre-implementation (procurement and design etc) required for Stages 2–3. Once the professional service supplier is appointed and onboard, the programme will be reviewed and potentially updated to reflect current circumstances and progress made with associated and related projects such as the Tauriko West Enabling Works.

12.2.5 Stages 2 – 3

12.2.5.1 Role of Programme Partners

The partners roles in delivering Stages 2–3 is outlined below. These are subject to change to fit the pre-implementation and implementation requirements of these stages.

12.2.5.1.1 Waka Kotahi

- Waka Kotahi is the Road Controlling Authority (RCA) for SH29 and SH29A. As such, Waka Kotahi is the lead agency responsible for the design, procurement, and implementation of the construction works required.
- In addition, Waka Kotahi as the primary investor and lead agency for all stages of the Programme. means Waka Kotahi are accountable for the delivery of all Stages 2–3 behalf of the agencies and organisations involved.
- Waka Kotahi will also hold the resource consents relevant the state highway improvements when consents are required.

12.2.5.1.2 Tauranga City Council

- TCC is the RCA for local roads within the project scope area and Tauranga City. TCC will be the requiring authority and resource consent holder for any local road infrastructure. TCC are the primary investor for all local road improvements.
- To help ensure connection between relevant Council led projects and the land use development, TCC will provide an Integration Manager who will be part of the overall Programme Team responsible for the associated pre-implementation and implementation activities associated with Stages 2–3.

12.2.5.2 Organisational Responsibilities

Organisational responsibilities are yet to be fully established for Stages 2–3, but the following is likely:

- Physical works contractors and related professional services to support the pre-implementation and implementation of Stages 2–3 will be engaged and managed by Waka Kotahi with support from TCC where required.
- As per Stage 1:
  - Property acquisition for Stage 2–3 will be managed and undertaken by Waka Kotahi on behalf of each party based on the land impacted by each requiring authority's NoR. The Programme property team will liaise and work with TCC to ensure a consistent best practice approach is used.
  - TCC and Waka Kotahi have joint responsible for setting up and undertaking the necessary monitoring of KPIs and metrics to inform the adaptive management approach. Depending on the monitoring, the delivery of stages 4 could be brought forward or pushed out.

Other organisational responsibilities relevant to deliver Stage 2–3 will be documented in the project documentation and managed by the Waka Kotahi Programme Manager and/or their representative(s).

12.2.5.3 Delivery Programme

The proposed programme for Stage 2–3 is designed to start construction as soon as possible whilst managing access through the corridors. With the extent of works proposed, managing throughput

through the site for the duration of the physical works will require well-planned traffic management and ongoing management.

When the physical works contractor is appointed, the programme will be reviewed and potentially updated to reflect current circumstances and progress made with associated and related projects such as the Tauriko Enabling Works.

12.2.6 Stage 4

12.2.6.1 Role of Programme Partners

The roles and responsibilities of each programme partner will be identified and confirmed through the Implementation Readiness Review. It is expected that the roles and responsibilities will be similar to those established for Stage 1–3.

As part of Stage 4, a revocation pathway will need to be established for revoked sections of SH29 to be handed back to TCC as the RCA. The roles and responsibilities for the revocation will need to be considered in the IRR to be undertake and align to the most current Waka Kotahi State Highway Revocation Policy and Guidance or equivalent.

12.2.6.2 Indicative Delivery Structure and Programme

The delivery structure for Stage 4 is most likely to be based on the structures used for Stage 1–3. However, through the Implementation Readiness Review (IRR) the structure to best support the required pre-implementation, and implementation activities will be confirmed.

The indicative programme for Stage 4 is outlined in Figure 12-4. Depending on the outcome of the regular monitoring of key indicators and monitoring this programme can be brought forward or pushed back to response to development growth and transport demand in the Western Corridor.

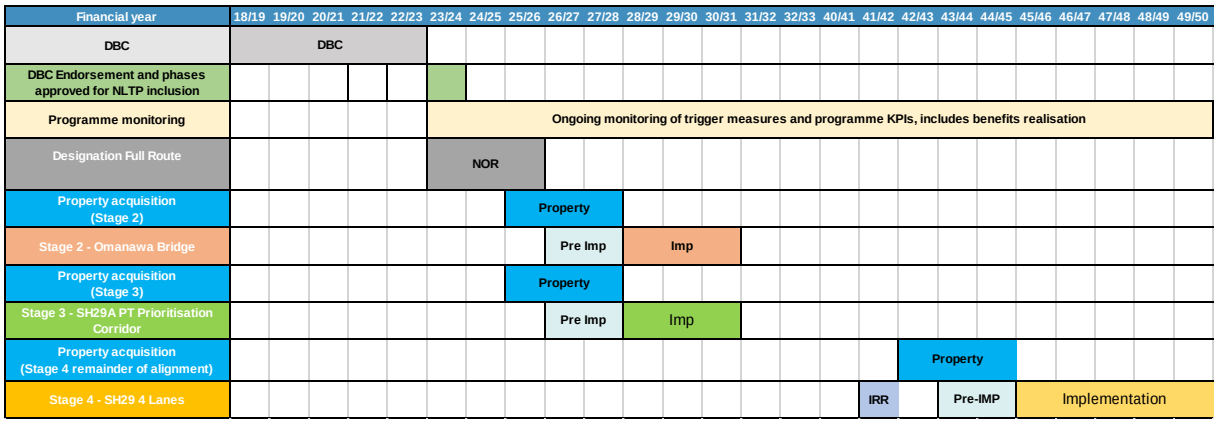

Figure 12-4. Stage 4 Indicative Delivery Programme.

12.2.7 Designing travel demand management initiatives in the Western Corridor

The specific timing and sequence for developing the growth areas in the Western Corridor beyond Tauriko West and Tauriko Business Estate has not been determined with the degree of certainty necessary to start structure planning. Many of the initiatives that support infrastructure based TDM such as bus stops, bike stands, wayfinding and so forth within each new growth area will be developed as part of the local transport network which will be designed via the structure planning process. The absence of structure plans makes it difficult to design specific and effective TDM responses at this time.

Therefore, TDM principles to guide the inclusion of TDM initiatives in future transport system design and structure planning have been developed and outlined as part of this DBC. The TDM principles are based on the SmartGrowth endorsed UFTI Connected Centre programme and implementation principles.[90]

When developing TDM initiatives via the structure plan investigations and analysis for designing the local transport network, the principles outlined in Table 12-2 are applicable and must be applied. These principles should be considered in the context of the One Network Framework and Tauranga City Council's Street Design Guide.

Table 12-2. Principles for TDM initiatives in Western Corridor

UFTI Connected Centres principles to support ~15,000 additional dwellings	Intent
A target of 30 dwellings per hectare (nett) is sought to support high frequency public transport (PT) in new (greenfield) and existing (intensification) growth areas. The urban form needs to focus on good quality, compact mixed-use urban development with density and destinations focussed on public transport (PT) nodes and along corridors. Dwelling densities around key dedicated multimodal corridors and centres will be greater than 30 dwellings per hectare.	High frequency PT benefits from density concentrated along corridors and nodes in areas of high access to PT services. Density done well and in the right place supports agglomeration benefits which enhance the economy, wage improvements, and relative housing affordability to incomes. The urban form needs to enhance the transport system's role in providing access and transport choices.
People should all be able to access local social and economic opportunities within a 15-minute journey time, and sub-regional social and economic opportunities within 30-45 minutes, encouraging concepts encourage strong local centres and connected neighbourhoods.	There is a high reliance on private vehicles to access employment, education, and community services. Mode shift to shared and active travel has positive social and economic outcomes, as well as reducing GHG emissions. The urban form needs to support and enable urban mobility and help shift reliance on single-occupancy vehicles to more sustainable transport solutions for the movement of people.
Create self-contained communities with improved accessibility, and trip containment within corridors where dwellings are allocated in relation to jobs, amenities, and services.	To reduce vehicle kilometres travelled, structure planning should support for at least half of trips to be for local destinations in each community, reducing the need to travel elsewhere.

TDM initiatives that require on-going management and resourcing (e.g. school and work travel planning or other education and behaviour change initiatives) and those outside of the Structure Plans will be developed by TCC and delivered via the sub-regional TDM programme that is being developed (see Section 1.5.5).

As new growth areas come on board, funding to resource these areas can be sought as part of the Regional Land Transport Plan (RLTP) and National Land Transport Programme (NLTP) development. Bay of Plenty Regional Council and Waka Kotahi as project partners will need to consider and approve the TDM initiatives via the Project Steering Group.

12.3 RISK MANAGEMENT AND ASSURANCE FRAMEWORK

Key strategic risks for the programme (see Section 6.2.10) are matters that will need to be considered and addressed via the Programme Steering Group. These strategic risks include:

- Funding and cost sharing arrangements.
- Addressing future uncertainties.

90 The implementation principles to enable the delivery of the UFTI Connected Centres Programme are available in the UFTI Final Report, pages 75–78. The UFTI Final Report is available at https://ufti.org.nz/wp-content/uploads/2020/07/22527_UFTI-Final-Report.pdf accessed in August 2022.

- Managing interfaces with other major programme and projects across the transport network and land development in the Western Corridor.
- Co-ordinated wider partner and stakeholder engagement.

To aid the management and mitigation of the Programme risks, a structured, disciplined, and documented risk management framework will be set up for Stage 1–3. The risk management framework will:

- Set up a purpose-driven risk identification process focussed on the critical success factors for the Programme and targeting those risks that can impede the realisation of success.
- Establish ongoing risk monitoring and reporting processes for the project level for Stage 1 which will continue for Phase 2–3, and if applicable Stage 4.
- Set up the processes for reporting project risk to the Programme-level governance.
- Design in cultural enablement within operational team to ensure risk are elevated early.
- Establish thresholds and reporting requirements for programme-level risk reporting to Programme Partners' organisational governance.

The outcome of the risk framework is that risks are actively identified and managed throughout all phases of the Programme. The risks identified in the DBC (current risk register) will be carried and managed through the Route Protection and then into future Programme Stages.

12.4 STAKEHOLDER ENGAGEMENT AND COMMUNICATIONS

A stakeholder engagement and communications plan for Stage 1–3 will be developed by Waka Kotahi and TCC. This plan will use the communications record from the DBC for a relatively seamless transition.

Once developed, the engagement and communications plan will outline the key steps for the Programme communications and the roles and responsibilities for each of the partners involved. Critically, the plan will continue to utilise the Tauriko for Tomorrow structures in place.

12.5 BENEFITS REALISATION

A Benefits Realisation and Monitoring Plan is recommended to monitor delivery of the Tauriko Network Connections programme as its components are implemented over time. The benefits to monitor are based on the Waka Kotahi Benefits Framework, agreed investment objectives of the project (see Section 3.4) and measures identified in during the development of this DBC. Targets may be updated to reflect timeframes and any policy or strategic direction changes.

Stages 2-3 are envisioned to be implemented by 2029/30. Therefore, benefits realisation targets are focused on the modelled forecast year of 2031. An updated plan is required for Stage 4.

The benefits realisation and monitoring plan is shown in Table 12-3.

Table 12-3. Recommended Benefit Realisation and Monitoring Plan.

Benefit (Waka Kotahi Benefits Framework)	Benefit Measure (Waka Kotahi Benefits Framework)	Tauriko Network Connections KPI	Related to	Baseline	Recommended Target	Responsibility	Recommended monitoring method
5.1 Impact on system reliability	5.1.2 Travel time reliability (freight)	Predictable travel times for freight	DBC Investment Objectives	15 minutes with 33 minutes variability PM Peak. 11 minutes with 16 minutes variability in AM Peak. (2022)	Improve travel times on SH29 (Omanawa Road to TNL): PM peak travel time 10 minutes with 9 minutes variability. AM peak travel time 10 minutes with <5 minutes variability. By 2030 until 2063	Waka Kotahi	Confirm reporting method in pre-implementation phase. Use Transport Model to review travel times on opening and every five years for 15-20 years.
	5.1.3 Travel time delay	PT faster than vehicles	DBC Investment Objectives	3-7 minutes: Tauriko to Cameron Rd 4-7 minutes: Tauriko to Takitimu Dr (2017)	Express PT (peak) travel times are better than 3-7 minutes driving time from: Tauriko to Cameron Rd by 2030 and maintained until 2063.	Bay of Plenty Regional Council	Using model, surveys. Quarterly/Annual through ticketing data and vehicle tracking system.
10.2 Impact on mode choice	10.2.10 Traffic mode share	Land use planning reduces the need for travel	DBC Investment Objectives	4.9% multimodal journey to work trips. (2013 Census)	Mode shift from 4.9% to >10% of PT/Active trips during peak periods to/from/within Western Corridor by 2030 increasing to 15% by 2063.	Tauranga City Council	Confirm reporting method in pre-implementation phase. Use Transport Model and at least annual walking and cycling volume surveys.
	10.2.6 Spatial Coverage – PT resident population	Spatial Coverage – PT resident population	DBC Investment Objectives	N/A – future residential population in Tauriko West does not currently exist.	Increase % of population to 80% within a 500m walk to a bus stop by 2030, maintained to 2063.	Waka Kotahi	Confirm reporting method in pre-implementation phase. GIS based. 3 years and 5 years after start of construction.
10.1 Impact on user experience of the transport system	10.1.1 People throughput – PT boardings	People Throughput – Annual PT Boardings	DBC Investment Objectives	6,500 boardings Existing Route 52 (2017)	Increase number of annual boardings from 6500 pa to >250,000 pa by 2030 increasing by 1.5M by 2063 (for Western Corridor)	Bay of Plenty Regional Council	TBC however separate report to be developed. Using surveys. Quarterly/Annual through ticketing data.
1.1 Impact on social cost of deaths and series injuries	1.1.2 Crashes by Severity	Reducing all crashes by severity	DBC Investment Objectives	274 crashes (1 fatal, 12 serious, 47 minor, 214 non-injury) occurred in 2018-2022 that are not addressed by the Tauriko Enabling Works (see Section 3.3).	Reduce all crash by severity by mode from 274 to 192 (30%) on opening 5 years.	Waka Kotahi	Confirm reporting method in pre-implementation phase CAS: Maphub. Post Construction – CAS and Risk Review, 1 year after opening, and every 5 years.
	1.1.3 Deaths and series injuries	Reducing DSIs	DBC Investment Objectives	13 DSI crashes occurred in 2018-2022 that will not be addressed by the Enabling Works (see Section 3.3).	Reduce DSIs from 13 to 6.5 (50%) on opening for 5 years	Waka Kotahi	Confirm reporting method in pre-implementation phase CAS: Maphub. Post Construction – CAS and Risk Review, 1 year after opening, and every 5 years.
8.1 Impact on greenhouse gas emissions	8.1.1 CO2 emissions	Tonnes of CO2 equivalents emitted	GPS 2021-24 Priorities	1.125M kg/day (2018 base – see Section 6.2.2).	Limit CO2-eq emissions generated by to 1.273 M kg/day for vehicle trips by 2031	Waka Kotahi	Monitor actual VKT and input into latest VEPM model to determine CO2 emissions.
9.1 Impact on resource efficiency	9.1.2 Embodied carbon	Greenhouse gas emissions (CO2 equivalents)	GPS 2021-24 Priorities	N/A – project has not been built.	Limit construction emissions to estimated 216,673 tCO2-e by completion of project (2050).	Waka Kotahi	Monitor construction emissions during construction phases and undertake carbon assessments.

13 RECOMMENDATION

The recommended option for the Tauriko Network Connections DBC aligns well with the agreed project objectives, provides an improved level of service for active and public transport modes, and is strategically important to housing demands and the national and regional freight network. The DBC fulfils a vision for integrated land use and multimodal transport development in the Western Corridor.

The Tauriko Network Connections DBC recommends:

- The recommended way forward with four stages of investment over 30 years until 2050 (indicative).
- The first phases of investment are proposed to be implemented in 2023/24 to 2029/30 and financed through NLTP funding.

The DBC recommends the following next steps:

- Proceed to Investment Quality Assessment for Waka Kotahi Board approval of the DBC and funding for Stage 1.
- Appoint the necessary professional services to work with Programme Partners to complete the work necessary for getting the route protection in place for the whole programme.
- As part of this work, the design and procurement necessary to embark on Stage 2–3 will also be undertaken to enable a competitive tender process for the physical works to take place.