



ATTACHMENTS

**Ordinary Council meeting
Separate Attachments 1**

Monday, 7 November 2022

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Accessible Streets Area B

Alternatives and Options Assessment

Prepared for Tauranga City Council

Prepared by Haerenga Tahī

14th October 2022



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Revision History

Revision N°	Prepared By	Description	Date
A	Haerenga Tahī	Draft Alternatives and Options Assessment Report	09/09/2022
B	Haerenga Tahī	Final Alternatives and Options Assessment Report	14/10/2022

Document Acceptance

Action	Name	Signed	Date
Prepared by	Alice Mallon		14/10/2022
Reviewed by	Philip de Wet		14/10/2022
Approved by	Tania Hyde		14/10/2022
on behalf of	Haerenga Tahī		

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1 Introduction

Accessible Streets aims to deliver improvements on primary routes that provide people who live, learn, work, and play on the Ōtūmoetai Peninsula with better travel choices and enable them to connect to schools and the city centre. These improvements are aimed at helping people on the Ōtūmoetai Peninsula to be ready for continued growth by providing sustainable and people-focused options to get around.

The objective of the Accessible Streets Area B Business Case is to investigate and deliver a range of community benefits through walking, cycling, bus and micro-mobility improvements on key corridors in the Ōtūmoetai Peninsula.

1.1 Purpose of the Report

This report outlines the alternative and option assessment undertaken to respond to the problems identified. A set of options for change were developed and assessed to determine their ability to contribute to achieving the investment objectives and the outcomes sought.



2 Options Assessment

2.1 Overall Approach

Acknowledging the extensive amount of work undertaken as part of the Urban Form and Transport Initiative (UFTI), the Accessible Streets Programme Business Case (PBC), the Transport System Plan (TSP) and the Major Cycleway Routes – Route Selection Reports, the assessment approach was tailored to allow for the following components:

- Alternative and longlist assessment
- Additional assessment to confirm primary cycle route alignment
- Shortlist assessment

This approach was presented and agreed with the project partners, Tauranga City Council (TCC), Bay of Plenty Regional Council (BoPRC) and Waka Kotahi NZ Transport Agency (Waka Kotahi) on 24 May 2022. The assessment approach is summarised by Figure 2-1 below.

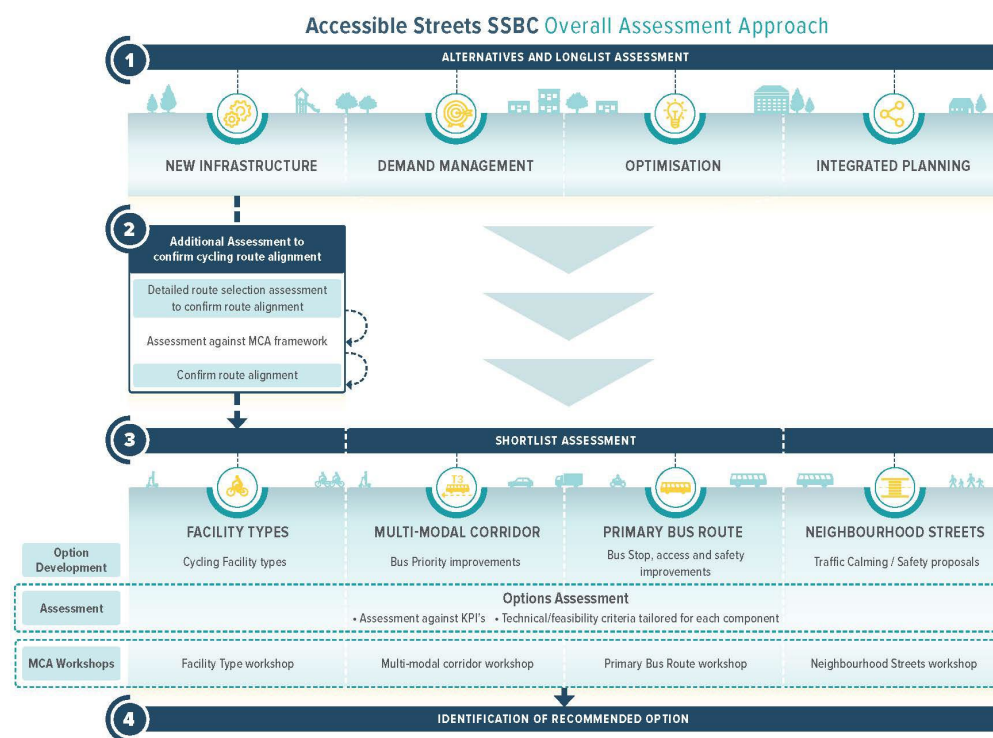


Figure 2-1: Overall Assessment Approach

2.2 Assessment Framework

A Multi-Criteria Analysis (MCA) Assessment Framework was developed based on Waka Kotahi's MCA user guidance. The framework connects the problems, benefits, and investment objectives to a suite of key performance indicators (KPI's) and includes a range of technical feasibility criteria tailored for each stage of

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the assessment process. All options were assessed against the Investment Objectives to allow a transparent assessment of the effectiveness of options in solving the problems identified.

Table 2-1: Benefit and Investment Objectives

Benefit	Investment Objective
Improved access to employment, education and social opportunities by active travel modes and public transport	Achieve mode shift (active travel and public transport modes) to work/education trips to/from/within the Ōtūmoetai peninsula
Improved cultural, environmental and health outcomes	Reduction in transport related CO ₂ e
Improved safety for people using active travel modes	Reduce annual walking and cycling DSIs within the Ōtūmoetai peninsula

During each phase of the optioneering process, options were also assessed against tailored technical and feasibility criteria agreed with stakeholders from TCC, BoPRC and Waka Kotahi during meetings held in July 2022. The tailored technical criteria included for each assessment are detailed in Appendix A and outlined in further detail in subsequent sections.

2.3 Do minimum

The do minimum for the project would involve making no improvements within the study area (areas identified in Figure 3.2) other than the improvements proposed as part of other projects / programmes including the Otumoetai Spatial Plan (OSP), TSP and the Brookfield intersection upgrade. The existing unprotected cycling lanes and bus stop locations and facilities would be retained.

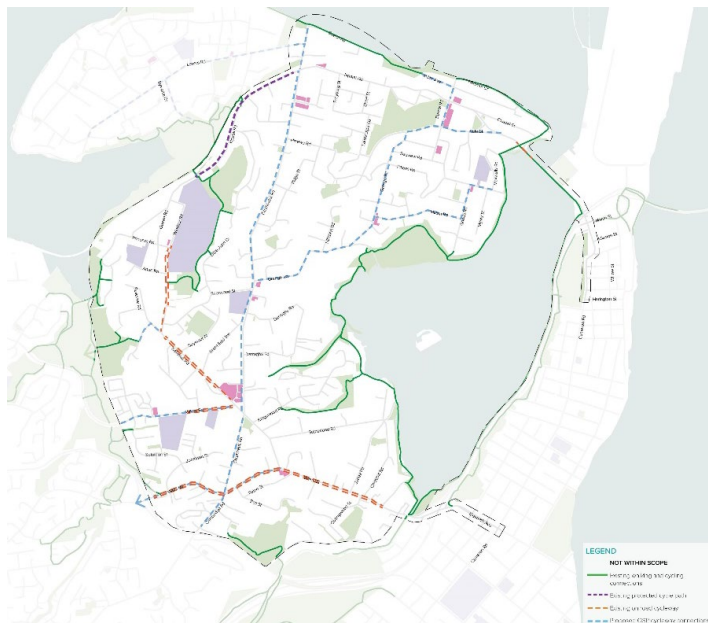


Figure 2-2: Do minimum

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3 Longlist Screening Assessment

This section details the longlist screening assessment undertaken to identify interventions and options for further investigation and consideration during the shortlist assessment.

In accordance with Waka Kotahi's intervention hierarchy, the longlist screening assessment considered a range of alternatives and options varying from system-wide interventions such as demand management to infrastructure approaches such as new cycling facilities. Options were derived from considering the widest possible range of interventions to address the identified problems and inclusion of all aspects of the intervention hierarchy (Figure 3-1).

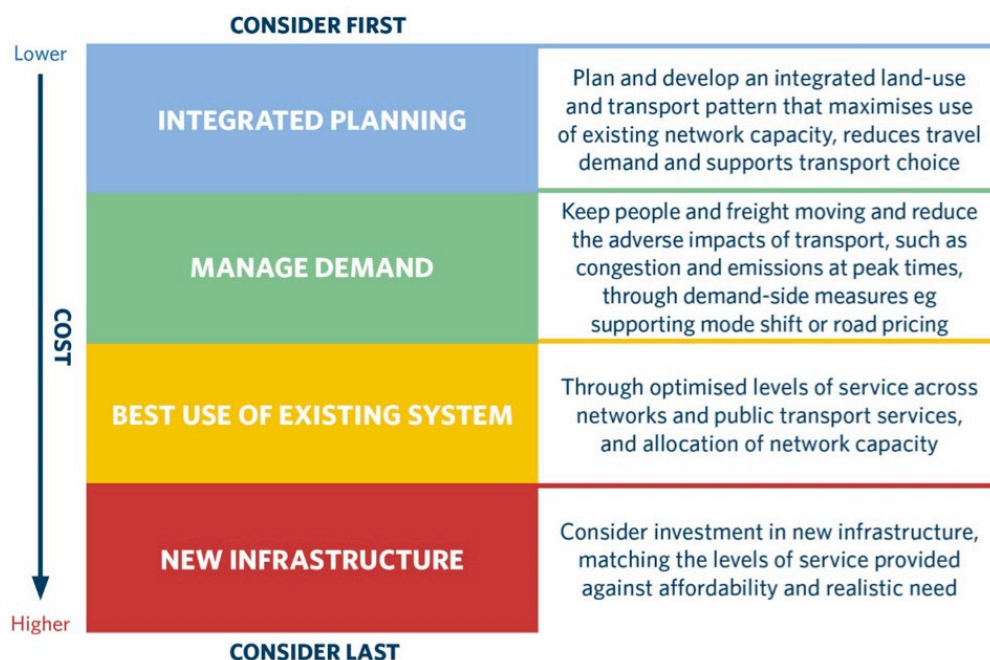


Figure 3-1: Waka Kotahi Intervention Hierarchy

These options were then assessed against a simplified screening framework developed based on Waka Kotahi's Early Assessment Shifting Tool and outcomes were agreed collaboratively with TCC, Waka Kotahi and BoPRC.

3.1 Alternatives and options developed

Alternatives and options were developed by the project team and project partners to ensure all logical alternatives and options were included in longlist assessment. Initial draft options were circulated to TCC and project partners for review and additional options proposed were incorporated. The longlist options were then reviewed and confirmed at the longlist workshop on 14 June 2022.

The confirmed options for assessment are summarised in Table 3-1 below.

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| Longlist Screening Assessment |

Table 3-1: Longlist options

Intervention hierarchy	Alternative	Options
Integrated planning	Land use and transport integration	
Manage Demand	Speed Management	Neighbourhood Streets
		Collectors / Arterials
		Outside schools
	Behaviour change initiatives	Project-level promotion
		Area-wide promotion
		School travel plans
	Parking management	Local area
		CBD
	Road Pricing	
	Filtered permeability	
	One-way circulation changes	
Best use of existing system	Road space reallocation	
	In-lane bus stops	
	Improvements via renewals	
	Bus stop location optimisation	
	Safety improvements / intersection upgrades	
	Upgrade existing cycling facilities	
	Traffic calming / neighbourhood streets interventions	
New infrastructure	Cycling facilities	On-road unprotected
		On-road protected
		Shared path
		Off-road bi-directional cycleway
		On-road bi-directional cycleway
	Public transport priority interventions	Bus lanes
		T2/T3 lanes
		Dynamic lanes
		Bus gates / jumps
	Bus stop facility upgrades	

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3.2 Longlist screening assessment framework

Alternatives and options were evaluated against the agreed criteria of the screening framework. The framework was developed using Waka Kotahi's Early Assessment Shifting Tool (EAST) which was refined to reflect the nature, type, and level of detail of the options considered.

Due to the level of detail included for the alternatives / options developed, it was agreed assessing each option against technical criteria (from the EAST) was not required. However, high level technical and feasibility evaluations were undertaken to inform decision making during the workshop held to identify options to be progress for further consideration.

The screening framework included an assessment against the investment objectives (Table 2-1) and the identified strategic success factors. Three strategic success factors were used:

- **Consistency with existing strategies** – to ensure options would not contradict the outcomes and direction established by UFTI, the TSP and the Accessible Streets PBC.
- **Implementation / Delivery** - Is the proposed intervention being delivered as part of a different programme / project (e.g., redefining the future urban form of the Ōtūmoetai area is not within the scope of this investment and is being investigated as part of the Ōtūmoetai Spatial Plan)
- **Within scope of this business case** - Intervention is part of the scope of this project / or able to be influenced by this project

Options were scored against the Investment Objectives using a four-point scale shown in Table 3-2. The strategic success factors were assessed on a pass / fail basis.

Table 3-2: Longlist assessment scale

Scoring	Rating
3	Major Positive
2	Positive
1	Minor Positive
0	Neutral

The following key pou (principles) were considered throughout the assessment so that the proposed options were sensitive to the needs of Mana Whenua:

- Mana Rangatiratanga – The knowledge base, network and systems of tangata whenua is protected, support and developed in the Ōtūmoetai area
- Mana Taiao – guardianship to ensure a sustainable future for all.
- Mana Tangata – the connection of people to place

These guiding pou informed the longlist screening assessment and were further incorporated during the development and assessment of all options throughout the subsequent assessment phases.

3.3 Longlist screening assessment

The Screening Assessment Workshop was held with TCC, Waka Kotahi, and BoPRC stakeholders on 14 June 2022. The workshop focused on the draft assessments undertaken by the Haerenga Tahī team, with additional stakeholder comments incorporated during the workshop to confirm and agree the assessment scores and outcomes. The results of the screening assessment are summarised in Figure 3-3. A detailed summary is included in Appendix B.

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Accessible Streets SSBC Screening Assessment

			INVESTMENT OBJECTIVE			CRITICAL SUCCESS FACTORS			OPTIONS PROGRESSED (YES / NO)
			Achieve mode shift (active travel and public transport modes) to work/ education trips to/ from/within the Ōtūmoetai peninsula	Reduction of transport related CO2e	Reduce annual walking and cycling DSI within the Ōtūmoetai peninsula from 7 annual DSIs (5-year annual average 2017-2021)	Consistency / Alignment with existing strategies	Implementation / Delivery	Within scope of this business case	
DO MINIMUM	Do Minimum	SCORE	0	0	0	0	0	0	0
INTEGRATED PLANNING	Land Use and Transport Integration	SCORE	2	1	0	✓	✓	✗	✗
MANAGE DEMAND	Speed Management	Neighbourhood Streets	1	0	2	✓	✓	✓	✓
		Collectors / Arterials	1	0	2	✓	✓	✓	✓
		Outside Schools	1	0	2	✓	✓	✓	✓
	Road Pricing		1	1	0	✓	✓	✗	✗
	Behaviour Change Initiatives	Project-Level Promotion	1	1	1	✓	✓	✓	✓
		Area-Wide Promotion	1	1	1	✓	✓	✓	✓
		School Travel Plans	1	1	1	✓	✓	✓	✓
	Parking Management	Local	1	1	0	✓	✓	✗	✗
		Cbd	1	1	0	✓	✓	✗	✗
	Filtered Permeability		1	0	1	✓	✓	✓	✓
	One Way Circulation Changes		1	0	2	✓	✓	✓	✓
			1	1	1	✓	✓	✓	✓
BEST USE OF EXISTING SYSTEM	Road Space Reallocation		1	1	1	✓	✓	✓	✓
	In-Lane Bus Stops		1	0	0	✓	✓	✓	✓
	Improvements Via Renewals (Amending Line Markings)		1	1	2	✓	✓	✗	✗
	Bus Stop Optimisation		1	1	0	✓	✓	✓	✓
	Bus Stop Access Improvements		2	1	2	✓	✓	✓	✓
	Safety Improvements/ Intersection Upgrades		1	1	3	✓	✓	✓	✓
	Upgrade Existing Cycling Facilities		2	2	2	✓	✓	✓	✓
	Traffic Calming / Neighbourhood Streets Interventions		1	1	3	✓	✓	✓	✓
NEW INFRASTRUCTURE	Cycling Facilities	On-Road Unprotected	1	1	1	✗	✗	✓	✗
		On-Road Protected	3	3	3	✓	✗	✓	✓
		Shared Path	3	3	2	✓	✗	✓	✓
		Off-Road Bi-Directional Cycleway	3	3	3	✓	✗	✓	✓
		On-Road Bi-Directional Cycleway	3	3	3	✓	✗	✓	✓
	Public Transport Priority Interventions	Bus Lanes	3	3	0	✓	✗	✓	✓
		T2/T3	1	2	0	✓	✗	✓	✓
		Dynamic Lanes	1	1	0	✓	✗	✓	✗
		Bus Gates / Jumps	2	1	0	✓	✗	✓	✓
	Bus Stop Facility Upgrades		2	1	0	✓	✓	✓	✓

RATING 3 Major positive 2 Positive 1 Minor positive 0 Neutral

Figure 3-2: Longlist screening assessment summary

As agreed during the workshop, the options progressed for further consideration are summarised in Figure 3-3 below. These alternatives / options were used to inform the development of the shortlist options discussed in Section 5.

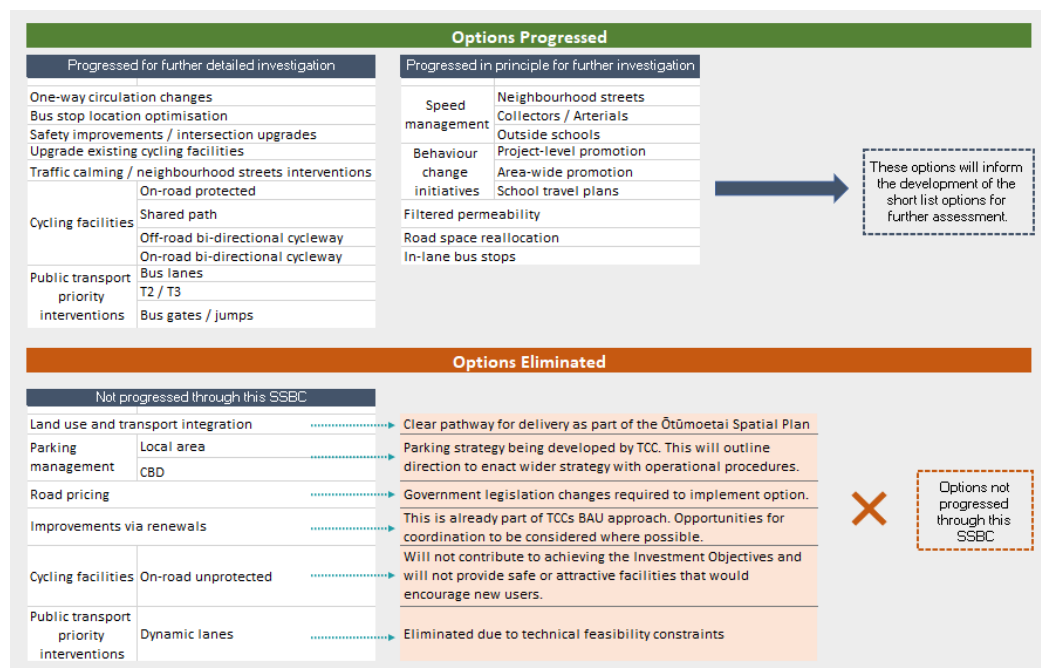


Figure 3-3: Longlist screening assessment outcomes

4 Primary Cycle Network Assessment - Route selection

The longlist screening assessment confirmed cycling facilities should progress to the shortlist for further investigation. This section details the assessment undertaken to confirm the primary cycle network.

In 2021, Haerenga Tahī and project partners undertook a detailed route selection assessment to investigate potential route alignment options for the Ōtūmoetai Peninsula major cycle route. Throughout this process a wide range of alternative route alignments were assessed and a recommended primary cycling route was identified. During the longlist screening workshop, it was agreed the previously identified primary cycle network needed to be re-confirmed before progressing directly to the shortlist assessment phase to ensure the recommended route alignment was assessed through the investment lens of this SSBC.

Acknowledging the extensive assessment undertaken previously, the purpose of the primary cycle network assessment as part of this SSBC was to confirm the outcomes of the previous assessment. This assessment was based on the Major Cycleway Routes – Route Selection Assessments carried out in 2021 and included an additional assessment of all route options against the Investment Objectives / KPI's developed for this SSBC.

The following sections should be read in conjunction with Appendix C which provides further details that informed the assessment.

4.1 Options Development

During the assessment undertaken in 2021, the Ōtūmoetai area was divided into sub-areas and a range of sub-sections were identified to ensure an exhaustive range of alternative route alignments were considered.

Initial assessments were undertaken to understand the opportunities and constraints of each area including existing facilities, road network operations and site topography to identify all possible route alignments. Route options were then agreed with TCC and project partners through a series of workshops held in 2021.

Full details of the options developed, and the process undertaken to identify options for assessment is included in Appendix C. The options assessed for each sub-area are shown in Figure 4-1.

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Figure 4-1: Route alignment options

4.2 Options Assessment

The following sections summarise the outcomes of the MCA assessment to identify the primary cycle network. Figure 4-2 provides a summary of the assessment undertaken by Haerenga Tahī in 2021 and includes an assessment of all options against the Investment Objectives.

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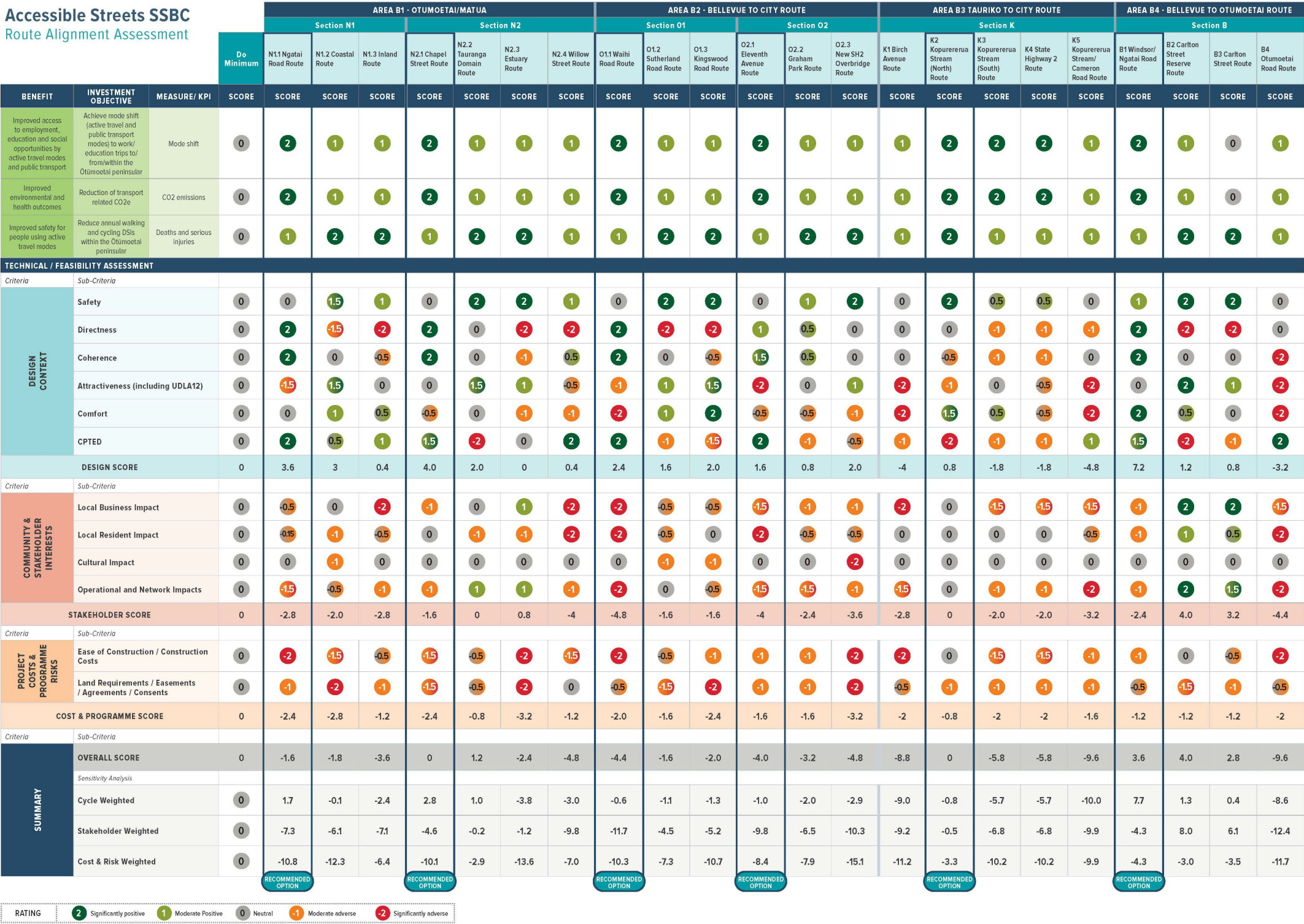


Figure 4-2: Primary cycle network MCA assessment summary



4.2.1 Area B1 – Ōtūmoetai to City

The Ōtūmoetai to City route was split into two sections for the purposes of evaluation:

- Section N1 - west of Chapel Street bridge
- Section N2 - east of Chapel Street bridge

As shown in Figure 4-1 and Figure 4-2, three routes in Section N1 and four routes in Section N2 were assessed against the MCA framework.

4.2.1.1 Section N1 – West of Chapel Street bridge

The Area B1, Section N1 route assessment process identified the Ngatai Road route option (N1.1) as the best performing option against the MCA framework. This option is the most direct and coherent route and links well with the existing cycle facilities on Ngatai Road. This route scored worst for local resident impact and operation/network impacts based on the potential loss of parking and the impact on bus routes using Ngatai Road.

The Coastal route (N1.2) scored second with the best score for safety, attractiveness, comfort and overall stakeholder impacts. This route scored worst for cost and programme impacts as well as Crime Prevention Through Environmental Design (CPTED). The route has a limited catchment which might discourage cyclists from the greater Ōtūmoetai area from using the route.

The Inland route option performed the worst across all criteria due to the poor directness, poor coherence, and significant business impacts of the route. This route will require a significant reduction in on-street parking in the Cherrywood shops area with limited opportunities to relocate parking and does not provide a connection to the existing Ngatai Road facilities. In addition, users will be required to weave through local residential roads and is less direct than the Ngatai Road route.

While both the Ngatai Road route (N1.1) and the Coastal route (N1.2) offer benefits to the AAA group, the Ngatai Road route offers a more direct route for commuters or students and provides better connectivity to schools and the continuation of the existing cycle facilities on Ngatai Road.

The Coastal Route would be an attractive choice for recreational cyclists however, the recreational group are already somewhat catered for in the area with existing facilities provided along the coast. While there are gaps along this route and improvements could be made, it is a relatively safe and established route. As the Coastal route length is longer and less direct it is unlikely to encourage a significant uptake in cycling by the those within the AAA group who are commuters, students or wanting better connectivity to the city in comparison to Ngatai Road. As a result, the Ngatai Road Route is recommended as the preferred route.

4.2.1.2 Section N2 – East of Chapel Street bridge

The Area B1, Section N2 route assessment process identified the Chapel Street route option (N2.1) as the recommended option for this section. While the Tauranga Domain Route option (N2.2) was the highest scoring option in most categories, both the Chapel Street (N2.1) and Tauranga Domain (N2.2) options offer benefits to the AAA group.

The Chapel Street route is the most direct route for a larger commuter catchment and provides good connectivity to the city centre. While there are impacts on safety, network operations and construction ease due to the high traffic volumes on Chapel Street, this option provides a high-quality connection for people living in Otūmoetai to and from destinations within Tauranga City Centre and is expected to encourage the most significant uptake in active mode travel.

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The Tauranga Domain route provides an attractive coastal route which connects well with tracks continuing south along State Highway 2 however it does not provide a direct connection into the city and there are significant CPTED concerns.

The Estuary and Willow Street options performed the worst. Willow Street scored the worst against most criteria resulting in the worst score for most design and stakeholders' impact criteria primarily due to the impacts associated with forming separated cycleways such as loss of parking. It is noted that cyclists already use Willow Street to access the city however the infrastructure required to attract AAA cyclists to use this route will impact both parking and access along this Road. The Estuary Route had high scores in safety and attractiveness due to being mainly off-road but scored the worst for overall cost and programme impacts due to the need to implement a suitable crossing over SH2 adjacent to the estuary.

The main differentiating factor between these routes in the MCA evaluation was the higher stakeholder, cost and programme impacts associated with Chapel Street options due to physical constraints associated with this route. As the Chapel Street option offers a more direct route and better connectivity to a greater area of the city centre it is recommended as the preferred route however should further investigations identify significant challenges associated with stakeholder impacts, cost and constructability then the Tauranga Domain route is considered a viable alternative.

4.2.2 Area B2 – Bellevue to City

The Bellevue to City route was split into two sections for the purposes of evaluation

- Section O1 - west of Kopurererua Stream Bridge
- Section O2 - east of Kopurererua Stream Bridge

As shown in Figure 4-1 three routes in Section O1 and three routes in Section O2 were assessed against the MCA framework.

4.2.2.1 Section O1 – West of Kopurererua Stream bridge

The Area B2, Section O1 route assessment identified the Waihi Road option (O1.3) as the recommended alignment option for this section. While the Waihi Road route did not perform as well as the Sutherland and Kingswood routes against several MCA criteria due to the high traffic volumes on Waihi Road and the constraints of the corridor, this route alignment provides the most direct, coherent route and offers great opportunities for AAA users as it serves a much larger catchment area.

While the Sutherland and Kingswood routes will only benefit the northern Bellevue area catchment, the Waihi Road route will also provide an improved connection to the large residential areas of Bethlehem and Judea providing greater network coverage and connection. Greater safety benefits and uptake of active travel are likely to be achieved through investment in safe, separated facilities on Waihi Road in comparison to the other route options in this section. Therefore, the Waihi Road option is the recommended option for this section.

4.2.2.2 Section O2 – East of Kopurererua Stream bridge

The Area B2, Section O2 route assessment identified the Eleventh Avenue option (O2.1) as the recommended option for this section as it provides the most direct, coherent, and attractive route alignment for AAA riders to improve active mode travel connectivity between Otumoetai and the city centre. There are however likely significant impacts on local residents, businesses and network operations anticipated due to the potential removal on parking and existing accessways and the high traffic volumes on Eleventh Avenue. The cost of implementing safe cycle facilities through the cutting just east of the SH2 overbridge on Eleventh

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Avenue may also require land or removal of a traffic lane to create space for a suitable AAA facility which is a significant risk and constraint of this option.

While the Graham Park option (O2.2) performed best against the MCA framework this route is less direct and does not provide the same level of connectivity to the southern areas of the city centre. There are also significant CPTED concerns associated with this alignment. The New SH2 Overbridge route option will be significantly complex due to the new structure required in the coastal area and has a significant associated cost. It is also more indirect and longer than the other route options considered. As a result, the Eleventh Avenue option was identified as the recommended route alignment in this section.

4.2.3 Area B3 – Tauriko to City

This evaluation only included the portion of the Tauriko to City route from the stream crossing opposite Humber Crescent in Gate Pa to Waihi Road. This section is referenced as Section K for the purpose of the assessment. Five routes were assessed against the MCA framework.

4.2.3.1 Section K

The Area B3, Section K route assessment identified the Kopurererua Stream (North) route option (K2) as the recommended option for this section as it is the most direct and coherent route for riders and is expected to provide the best connection to encourage mode shift and uptake of active travel. While there are issues related to CPTED and route attractiveness due to flood wall along the stream, lack of lighting and poor active surveillance this route is the most direct, coherent for riders and has the lowest impact on stakeholders. This route is already part of the Tauranga cycle network with an off-road cycle path provided along the length of route. The existing facility does not currently provide AAA facilities for cyclists however this route option provides the greatest opportunity to make use of the existing infrastructure to deliver a high-quality cycling connection.

The Kopurererua Stream (South) option (K3) follows a similar alignment to K2 however follows the Kopurererua stream south of the stream and connects at Waihi Road via Koromiko Street. Due to the commercial land use on Koromiko Street, there are additional safety concerns for riders travelling through this area reducing the attractiveness of the route. The State Highway 2 route option (K4) while also following the Kopurererua Stream is less direct, has associated constructability constraints and provides a less coherent connection for riders.

There is a significant safety risk associated with the Birch Avenue route (K1) due to the high commercial vehicle use through the commercial area. The demand for on-road parking is also high along Birch Avenue and the associated impact loss of parking may have a significant on local businesses.

While the K2 route provides a better connection in comparison to the other route options in this area there are, however, some impacts and constraints that have been identified with this route which may jeopardise the viability of this route to achieve the standard required for a AAA facility. These constraints relate to CPTED concerns, width constraints due to the concrete floodwall and the crossing of McCord Avenue. It was agreed with TCC that due to these concerns this connection will not form part of the Primary Cycle Network for further investigation as part of this SSBC. This section will be investigated separately by TCC. As such, facility type options were not assessed at the shortlist assessment stage. Connections to the existing off road path facility will be considered during the concept design stage and development of the recommended option for this SSBC.

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4.2.4 Area B4 – Bellevue to Ōtūmoetai

This sub-area included the links between Bellevue and Ōtūmoetai from Bellevue Road to Ngatai Road. Following the identification of all possible routes, four routes were identified as being most feasible for further evaluation.

4.2.4.1 Section B

The Area B4, section B route assessment identified the Windsor Road route option (B1) as the recommended route due to its superior scoring across the design criteria and the greater opportunities it offers for improving access to the nearby schools. This route achieves the objectives of the cycle route programme including connectivity, directness, coherence, attractiveness. It does not have any significant CPTED related issues and is likely to have a minimal network impact.

This route will likely best accommodate the AAA facilities and offer the most benefits to this group as well as link with existing facilities and committed projects. This route also presents the opportunity to connect to both the Gordon Carmichael Reserve and Matua Saltmarsh Reserve which will link to Bethlehem and Matua respectively. It has the advantage of making use of the recently constructed AAA facility on Ngatai Road linking Carlton Street Reserve to the Ōtūmoetai Road roundabout.

4.3 Recommended Primary Cycle Network - Route Alignment

The additional assessment undertaken confirmed the recommended primary cycle network alignment as shown in Figure 4-3 below.

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Figure 4-3: Recommended primary cycle network

The shortlist assessment focused on the cycle facility type options for the primary cycle route shown in Figure 4-3. The development of cycle facility options will build on the findings of the initial longlist screening outlined in Section 3 and will be informed by the assessment undertaken during the route selection process. The shortlist assessment undertaken is expanded upon in the following sections.

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Based on the outcomes of the longlist assessment, a range of targeted interventions for specific sections within the study area were developed and assessed separately. Techniques and approaches appropriate for each were used to allow for a robust assessment of all options.

The development and assessment of options were grouped into the following four separate components:

- Cycling Facility Types
- Neighbourhood Streets
- Multi-modal areas
- Primary Bus Route

The location and coverage of all proposed shortlisted options are illustrated in Figure 5-1.

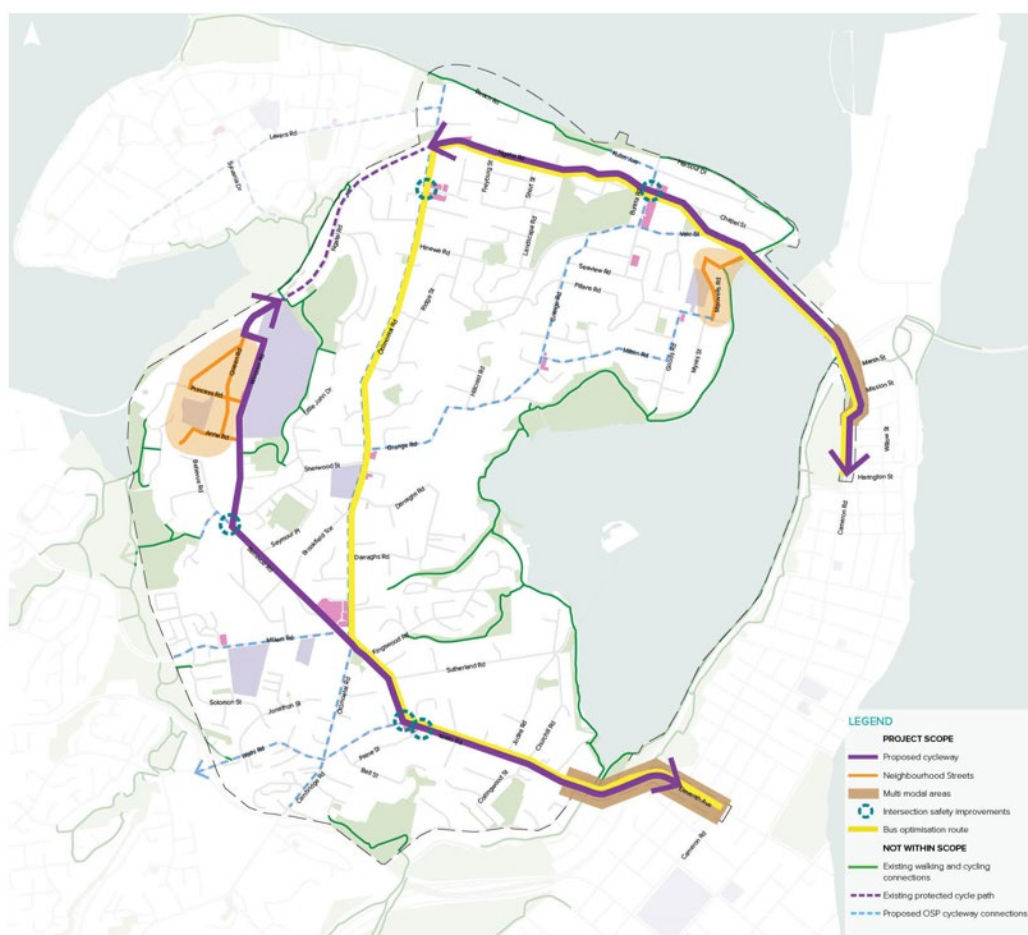


Figure 5-1: Accessible Streets Shortlist Options

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| Shortlist assessment |

The overall approach is detailed in Figure 5-2 below and discussed in further detail for each component in the subsequent sections. A detailed summary of the approach as agreed with TCC and Waka Kotahi is included in Appendix A.

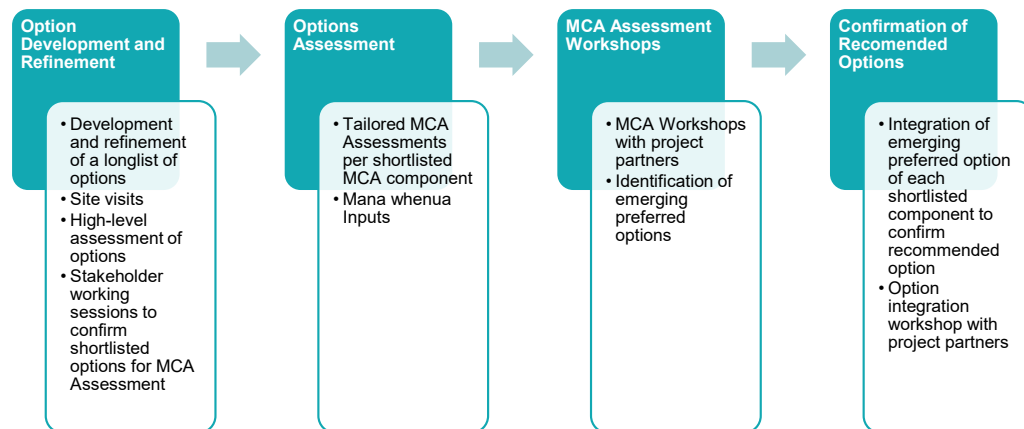


Figure 5-2: Shortlist Assessment Approach

5.1 Assessment framework

Shortlist options were evaluated against a range of criteria of the MCA Framework developed for each of the four components. The assessment framework included:

- Benefit and Investment objectives
- Technical / Feasibility criteria
- Focused / tailored technical criteria – to enable a focused assessment appropriate for each specific technical component. Options were assessed against specific tailored criteria only applicable to a specific component.

Table 5-1: MCA Criteria for each Shortlist Assessment Component

		Cycling Facility Type MCA	Neighbourhood Streets MCA	Primary Bus Routes MCA	Multi-modal Corridors MCA
Benefit and Investment objectives		Yes	Yes	Yes	Yes
Technical / Feasibility	Community and Stakeholder	Technical / feasibility criteria.			
	Urban Environment				
	Cost and risk				
Focused / Tailored Technical criteria		Design criteria Agreed during the Route Selection process	Specific Tailored Criteria for this MCA	Specific Tailored Criteria for this MCA	Specific Tailored Criteria for this MCA

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The standardised technical / feasibility criteria used across the different MCA's are included in Appendix D, E, F and G. These criteria (community and stakeholders, urban environment and cost and risk) were consistent across all four shortlist MCA frameworks. Additional tailored technical criteria for each component have been developed and are expanded upon in subsequent sections.

5.1.1 Sensitivity Analysis

To both ensure transparency and recognise the significance/materiality of different criteria, sensitivity analysis of the MCA outcomes was completed. The methodology of the sensitivity tests was aligned with Waka Kotahi's guidance on multi-criteria assessment.

The unweighted average scorings were calculated, assuming the same weighting over all assessed criteria. To estimate the trade-off between costs and risk and the option outcomes, a sensitivity test was applied to increase the weighting for the two cost and risk criteria to 10% each, with 80% split across all other criteria.

As the number of criteria assessed per category could lead to skewed summarised scores, with scores being led by categories with a higher number of assessed criteria, rather than the relative importance of the criteria category, the average per scoring per category was calculated instead, with further sensitivity test completed against these aggregated scores. The sensitivity tests undertaken for all shortlisted MCA components are indicated in Table 5-2 below.

Table 5-2: Sensitivity Tests

Average Score	Description
Unweighted (all criteria)	Unweighted average scoring – applying equal weighting to all individual criteria
Sensitivity 1: Cost and risk criteria at 10% each	20% weighting for the two cost and risk criteria (10% each), with 80% split across all other criteria
Sensitivity 2: Equal category weighting 20%	Equal weighting of the five criteria categories of the mca
Sensitivity 3 to 7: 50% weighting for individual categories	50% weighting applied across each of the 5 criteria categories, with 12.5% weightings on all other criteria categories

The results of the sensitivity test completed are summarised in each of the shortlisted MCA sections.

5.2 Cycle Facility Types

This section summarises the shortlist option development and MCA assessment undertaken for the various cycling facility type options developed for the primary cycle network shown in Figure 4-3. Full details of the options developed, and the assessment are included as Appendix D.

5.2.1 Option Development and refinement

The longlist screening assessment identified the following cycle facility types to progress for further development and assessment as part of the shortlist assessment:

- On-road one-way protected (separated) cycleways
- On-road bi-directional protected (separated) cycleways
- Off-road bi-directional protected (separated) cycleways
- Shared paths

As part of the optioneering process to identify and confirm the shortlist options for assessment against the agreed MCA framework these interventions were developed in more detail. The primary cycle route was

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partitioned into two areas (B1 and B2) and further into five sections as shown in Figure 5-3, based on the consistent road environment and adjacent land use, with a range of potential facility options identified for each section. The identified sections include:

- Section 1: Chapel Street from Harrington Street to Maxwells Road
- Section 2: Chapel Street and Ngatai Road from Maxwells Road to Ōtūmoetai Road
- Section 3: Southern end of Ngatai Road via Windsor Road to Bellevue Road
- Section 4: Bellevue Road from Windsor Road to Waihi Road
- Section 5: Waihi Road and Eleventh Avenue



Figure 5-3: Facility Type Shortlist Options – Sections

The potential midblock options included a range of variations of the facility type interventions, including different sides of the road for the cycle facility, different on-street parking and roadway arrangements, and retention or relocation of kerbs. Intersection options included cycle facility alignments and intersection control types. A wide range of possible cycle facility and intersection treatment options were then identified for each individual section of the route.

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The key considerations in the identification of options included determining the site factors that impact the ability to provide an option (as well as its impact to the community) and determining the types of facility options that may be appropriate for the section. The latter included consideration of design criteria and objectives that will contribute towards the project objectives shown in Table 5-3.

Table 5-3: Facility Type Option Considerations

Site factors	Design criteria
<ul style="list-style-type: none"> Roadway width (kerb to kerb) Road corridor width Traffic volumes and speeds Pedestrian volumes Adjacent land use, including accessways Existing on-street parking supply and demand Location and type of intersections Gradients Other site constraints Key services and utilities 	<ul style="list-style-type: none"> Safety of cycleway- and other road-users Cycle facility width Traffic lane widths Viability of road widening Directness/delay Route coherence Connectivity to destinations Ability to provide on-street parking Impact of gradients

A longlist of potential options was identified, and initial assessments were undertaken by Haerenga Tahī to confirm the shortlist options. This initial screening of options involved identifying the more feasible options of the different cycleway alignments in each individual section and combining them into three to four shortlist options for each MCA section. Options included alternatives such as bi-directional cycleways on either side of the road, one-way cycleways with and without on-street parking, and shared paths in some locations.

The screening exercise was undertaken by the design team and subject matter experts using an options table highlighting the pros and cons to confirm the shortlist options to progress through the MCA process. The findings of this assessment were presented and confirmed during a workshop with key stakeholders on 21 July 2022 and the shortlisted options for assessment against the MCA framework were agreed. The outcomes of this initial assessment are included in Appendix D. The identified shortlist options for each section (shown in Figure 5-3) are detailed in the following sections.

5.2.1.1 Area B2 Section 1: Harrington Street to Maxwells Road

The shortlist options identified for Section 1 are shown in Figure 5-4 and described in more detail below.



Figure 5-4: Section 1: Harrington Street to Maxwells Road Shortlist Options

Option A proposes a shared path on both sides of Cameron Road. To accommodate this, the footpath behind the trees on Cameron Road requires widening, and parking between Harrington and McLean Streets

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will be converted to parallel parking, likely reducing the number of parking spaces. Cycle lanes on Cameron Road will be retained while the cycle lanes between Brown Street and Maxwells Road will be converted to a shared path. Path widening is required into the estuary, from the petrol station to Chapel Street bridge and from the bridge to Maxwells Road.

Option B proposes a one-way cycleway on both sides of Cameron Road. To accommodate this, minor road widening is required and parking between Harington and McLean Streets will be converted to parallel parking, likely reducing the number of parking spaces. Traffic signals will be installed at the T-intersection on Maxwells Road, and this option requires removing one northbound traffic lane between Brown Street and Vale Street.

Option C proposes a two-way cycleway on the eastern side of Cameron Road. This option will not impact parking on the western side of the corridor, but parking on the eastern side between Harington and Brown Streets will become parallel parking, likely reducing the number of parking spaces available. The road between Harington and Marsh Streets needs widening and street trees on the eastern side of Cameron Road will be removed. This option requires removing one northbound traffic lane between Brown Street and Vale Street.

5.2.1.2 Area B2 Section 2: Maxwells Road to Ōtūmoetai Road

The shortlist options identified for Section 2 are shown in Figure 5-5 and described in more detail below.

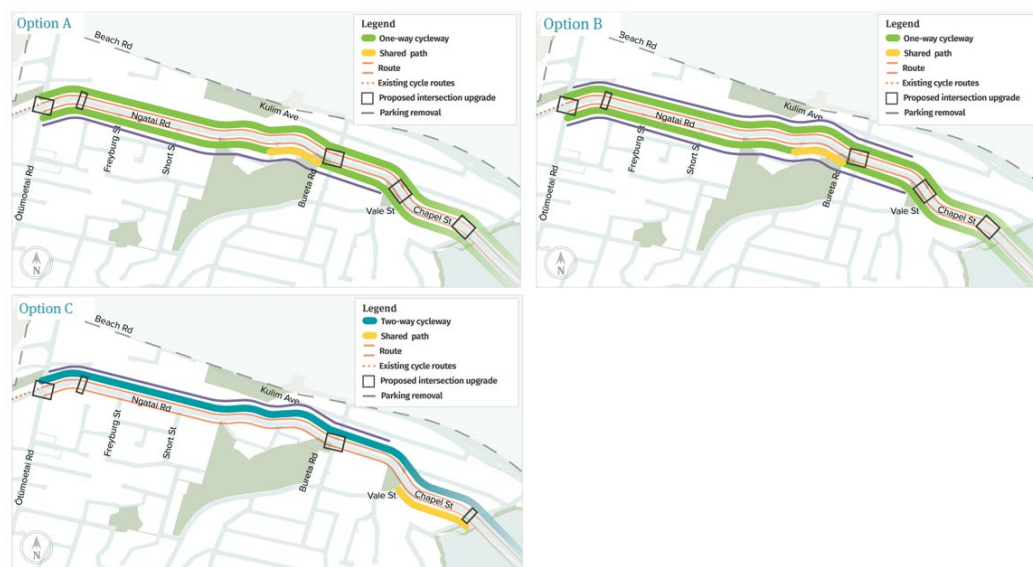


Figure 5-5: Section 2: Maxwells Road to Ōtūmoetai Road Shortlist Options

Option A proposes a one-way cycleway on both sides of Ngatai Road between Ōtūmoetai Road and the Chapel Street bridge. To accommodate this option, extensive road widening, the undergrounding of the existing power lines and the removal of the Vale Street and Ngatai Road slip lanes would be required. In addition, this option requires the removal of on-street parking on one side of the road.

Option B also proposes a one-way cycleway on both sides of Ngatai Road between Ōtūmoetai Road and the Chapel Street bridge with no widening require. To accommodate this option within the existing road

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corridor, reducing the need for widening and the undergrounding of power utilities, all on-street parking through this corridor will need to be removed.

Option C proposes a two-way cycleway on the north side of Ngatai Road. This option requires minimal road widening and will require the removal of on-street parking on the north side of the road. Parking on the south side will however be retained. While Option A and B require the closure of the Vale Street and Ngatai Road slip lanes, this option only requires the relocation of these lanes and does not require their full closure.

All options include new traffic signals at the intersection of Chapel Street and Vale Street.

5.2.1.3 Area B1 Section 3: Windsor Road

The shortlist options identified for Section 3 are shown in Figure 5-6 and described in more detail below.

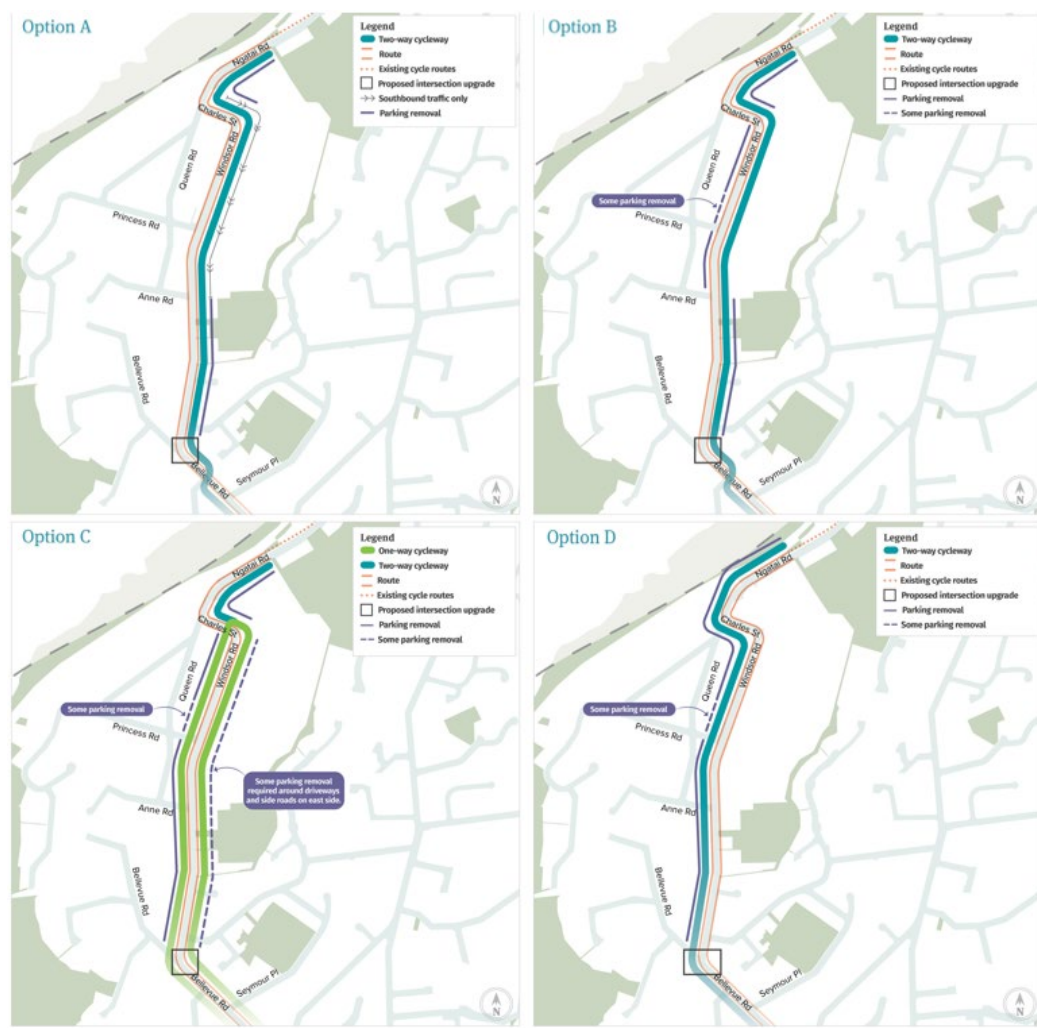


Figure 5-6: Section 3: Windsor Road Shortlist Options

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Option A proposes a two-way cycleway on the east side of Windsor Road. To accommodate the two-way cycleway and retain parking on both sides of the road this option removes a general traffic lane on Charles Street and Windsor Road between Ngatai Road and Anne Road to introduce a one-way circulation system.

Option B also proposed a two-way cycleway on the east side of Windsor Road however retains the two-way traffic flow and requires the removal of on-street parking and moderate road widening. Parking will be retained on the east side of Windsor Road north of Anne Road and on the west side to the south of Anne Road. All other existing on-road parking will be removed.

Option C proposes one-way cycleways on both sides of the road between Windsor Road and Bellevue Road and a two-way cycleway on the east side of Ngatai Road from the existing facility to Windsor Road (via Charles Street). Similar to Option B this option retains the two-way traffic flow. Option C will require significant widening and reduction in parking capacity including the reconfiguration of the existing parking provided outside the local Bellevue shops with some reduction in parking spaces likely. Parking is likely to only be retained on the east side of the road along Windsor Road.

Option D proposes a two-way cycleway on the west side and retains the two-way traffic flow. Similar to Option C this option will require the reconfiguration of the existing parking provided outside the local Bellevue shops with a reduction in parking capacity likely as a result. Along the route, parking on the west side will be removed and provision for parking would be retained on the east side only. This option however does not require as extensive road widening compared to Option C.

5.2.1.4 Area B1 Section 4: Bellevue Road

The shortlist options identified for Section 4 are shown in Figure 5-7 and described in more detail below.

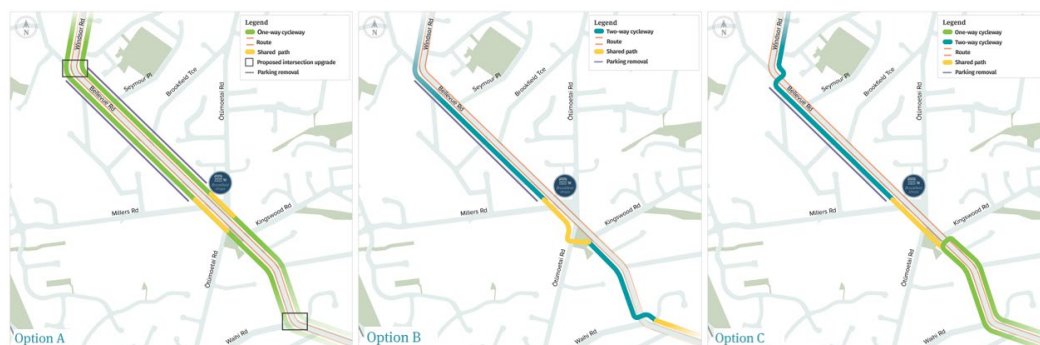


Figure 5-7: Section 4: Bellevue Road Shortlist Options

Option A proposes a one-way cycleway on both sides of Bellevue Road between Windsor Road and Waihi Road with shared paths provided at the Brookfield roundabout. The proposed shared paths will require the widening of the existing footpaths and include improved crossing facilities for users to move through the roundabout. The existing angled parking outside the shops opposite Millers Road will be converted to parallel parking reducing the number of parking spaces provided. To the north of the Brookfield roundabout the proposed one-way cycleways will require the removal of all parking and moderate road widening at intersections to accommodate the cycle facility. South of the roundabout significant road widening would be required.

Option B proposes a two-way cycleway on the west side of Bellevue Road. North of the Brookfield roundabout this will require the removal of parking on the west side with parking retained only on the east side. South of the roundabout significant road widening is required to accommodate the two-way cycleway.

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Through the Brookfield roundabout this option proposes a shared path via Lees Park with an improved crossing over Ōtūmoetai Road and Millers Road.

Option C proposes a two-way cycleway on the west side of Bellevue Road between Windsor Road and Millers Road with shared path facilities through the Brookfield roundabout area and one-way cycleways provided on both sides of the road south of the roundabout. North of the roundabout this option requires the removal of parking on the west side of the road however retains parking on the east.

5.2.1.5 Area B1 Section 5: Waihi Road and Eleventh Avenue

The shortlist options identified for Section 5 are shown in Figure 5-8 and described in more detail below.

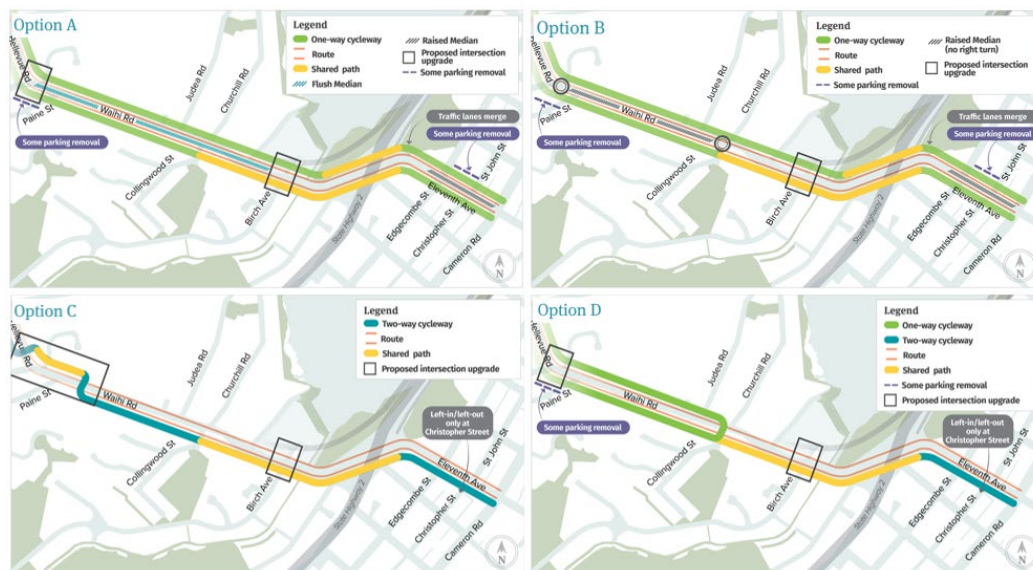


Figure 5-8: Section 5: Waihi Road and Eleventh Avenue Shortlist Options

Option A proposes a one-way cycleway and shared path on both sides of Waihi Road. This will require reconfigured parking outside the Waihi Road local shops (near Paine Street), likely reducing the number of parking spaces available. This option will reduce parking on Eleventh Avenue, require a painted flush median on Waihi Road and moderate road widening of this corridor.

Option B proposes a one-way cycleway and shared path on both sides of Waihi Road with some additional restrictions for vehicle movements from Option A. This option will reconfigure parking outside the Waihi Road local shops (near Paine Street), likely reducing the number of parking spaces available and requires a raised centre island on Waihi Road to restrict all right turns, replaced with roundabouts for access.

Option C proposes a two-way cycleway and a shared path on the southern side of Waihi Road. This option requires two crossing points with signals on Bellevue and Waihi Roads, reconfigured parking outside the Waihi Road local shops (near Paine Street), likely reducing the number of parking spaces available, and moderate road widening.

Option D proposes a combination of the other options. To the west of Churchill Road, a one-way cycleway is proposed on both sides of the road which will reconfigure parking outside the Waihi Road local shops (near Paine Street), likely reducing the number of parking spaces available. To the east of Churchill Road, a two-

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way cycleway is proposed on both sides of the road with a shared path section on the southern side of Waihi Road. This option requires moderate road widening to the west and east of Churchill Road.

5.2.2 Options Assessment and Outcomes

The Cycle Facility Types Options Assessment Workshops were held with TCC, BoPRC and Waka Kotahi on 17 August 2022 (Area B1, Section 3-5) and 18 August 2022 (Area B2, Section 1 and 2). The workshops included the shortlist MCA assessments for Area B1 and B2 undertaken by the project team, with additional stakeholder comments and updated scoring incorporated after the workshop. Full details of the assessment, workshop comments and outcomes are included in Appendix D.

A summary of the MCA assessment is shown in Figure 5 below.

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Accessible Streets SSBC Shortlist MCA Assessment Cycle Facility Types			SECTION 1 HARINGTON STREET TO MAXWELLS ROAD				SECTION 2 MAXWELLS ROAD TO OTUMOETA ROAD			SECTION 3 WINDSOR ROAD				SECTION 4 BELLEVUE			SECTION 5 WAIHI / ELEVENTH			
BENEFIT	INVESTMENT OBJECTIVE	MEASURE / KPI	Do Minimum SCORE	Option A	Option B	Option C	Option A	Option B	Option C	Option A	Option B	Option C	Option D	Option A	Option B	Option C	Option A	Option B	Option C	Option D
Improved access to employment, education and social opportunities by active travel modes and public transport	Achieve mode shift (active travel and public transport modes) to work/education trips to/from within the Otumoetai peninsula	Mode shift	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Improved environmental and health outcomes	Reduction of transport related CO2e	CO2 emissions	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Improved safety for people using active travel modes	Reduce annual walking and cycling DSIs within the Otumoetai peninsula	Deaths and serious injuries	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
TECHNICAL / FEASIBILITY CRITERIA	MEASURE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE
COMMUNITY & STAKEHOLDER	Local Business/Organisation Impact	0	-0.5	-2	-2	-1	-2	-1	-1	-1	-1	-1.5	-1	0	0	-1.5	-2	-1	-1.5	-1.5
	Local Resident Impact	0	-0.5	-2	-2	-1	-2	-1	-2	-1	-1.5	-1	-2	-1	-1	-0.5	-1.5	-0.5	-0.5	-0.5
	Cultural Impact	0	-2	1	-1.5	2	0	0	1	1	0	-1	0	1	1	0	-1	0	0	0
	Operational and Network Impacts	0	-0.5	-2	-2	-1.5	-1.5	-1	-1	-0.5	-1	-0.5	-1.5	-0.5	-1	-1	-2	-0.5	-0.5	-0.5
URBAN ENVIRONMENT	Improved Quality of Urban Environment	0	-2	1	-1.5	0.5	1	1	1.5	1	0	-0.5	0	1	0.5	0	0	0.5	0.5	0.5
	Integration with Future Land Use	0	0.5	1.5	1.5	2	2	1	2	2	2	1	2	1	1	2	2	2	2	2
COSTS & RISKS	Ease of Construction and Costs	0	-2	-1	-0.5	-2	-0.5	-0.5	-1	-1.5	-2	-1	-2	-1	-1.5	-1	-2	-1	-1	-1
	Land Requirements / Easements / Other Agreements	0	-2	-0.5	-1.5	-2	-0.5	-0.5	0	-0.5	-1	0	-1	-0.5	-0.5	-0.5	-2	-0.5	-0.5	-0.5
TAILORED TECHNICAL CRITERIA		SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE
Safety		0	-1	0.5	1	1.5	2	0.5	1.5	1	2	1	1.5	1.5	1.5	1.5	2	0.5	1	1
Directness		0	1	2	2	2	2	2	1	1	1	1	1.5	1	1	2	1.5	1	1.5	1.5
Coherence		0	1	2	1.5	2	2	1.5	2	2	1	1	1	0.5	1	2	2	1	1.5	1.5
Attractiveness (including UDIA12)		0	0.5	1	-1	1	1	1	2	2	1	1	1	1.5	1	1	0.5	1	1	1
Comfort		0	1	2	1.5	2	2	1.5	1.5	1.5	1	1.5	1	1.5	1.5	1.5	1.5	0.5	1	1
OVERALL SCORE		0	-3.5	3.5	1.5	11.5	11.5	10.5	13.5	13	6.5	7	6.5	12	10.5	11.5	5	9	10.5	10.5

RATING: 2 Significantly positive, 1 Moderate Positive, 0 Neutral, -1 Moderate adverse, -2 Significantly adverse

Figure 5-9: Cycle Facility Types MCA Summary Table



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Following the workshop, additional sensitivity analysis was undertaken to inform the decision-making process and provide additional robustness to the MCA assessment. The outcomes of the sensitivity tests are summarised in Table 5-4. As outlined in Section 5.1.1 this assessment considered a range of weightings applied to each criteria category aligned with Waka Kotahi's MCA user guidance.

Table 5-4: Cycle Facility Type MCA Assessment Sensitivity Tests

Sensitivity Test	Do Minimum	Section 1			Section 2			Section 3				Section 4			Section 5			
		A	B	C	A	B	C	A	B	C	D	A	B	C	A	B	C	D
Unweighted (all criteria)	0	-0.22	0.59	0.09	0.72	0.72	0.66	0.84	0.81	0.41	0.44	0.41	0.75	0.59	0.72	0.31	0.56	0.66
Sensitivity 1: Cost and risk criteria at 10% each	0	0.43	0.78	0.40	1.29	0.81	0.76	0.93	1.06	0.84	0.56	0.84	0.92	0.86	0.89	0.91	0.75	0.84
Sensitivity 2: Equal category weighting	0	-0.43	0.55	0.03	0.52	0.69	0.61	0.82	0.73	0.32	0.37	0.32	0.67	0.49	0.62	0.18	0.56	0.62
Sensitivity 3: 50% Investment Objectives Weighting	0	0.11	1.09	0.77	1.07	1.18	1.13	1.26	1.20	0.95	0.98	0.95	1.17	1.06	1.14	0.86	1.10	1.13
Sensitivity 4: 50% Community & Stakeholder Weighting	0	-0.59	-0.13	-0.69	0.18	-0.09	0.10	0.23	0.31	-0.23	-0.14	-0.23	0.37	0.12	0.11	-0.50	0.16	0.15
Sensitivity 5: 50% Urban Environment Weighting	0	-0.55	0.81	0.02	0.79	0.99	0.76	1.17	1.02	0.57	0.33	0.57	0.79	0.59	0.76	0.48	0.82	0.85
Sensitivity 6: 50% Cost and Risk Weighting	0	-1.02	0.06	-0.36	-0.43	0.24	0.19	0.33	0.08	-0.37	0.04	-0.37	0.13	-0.07	0.11	-0.64	0.07	0.10
Sensitivity 7: 50% Tailored Technical Criteria	0	-0.08	0.91	0.39	0.96	1.10	0.87	1.11	1.02	0.65	0.64	0.65	0.87	0.76	0.99	0.67	0.65	0.83

■ Highest scoring option ■ Second highest scoring option ■ Third highest scoring option

The sensitivity analysis supported the MCA findings and informed the identification of the recommended options for each section. The following sections provide a summary of the assessment undertaken and Section 5.2.2.5 outlines the emerging preferred options. These sections should be read in conjunction with Appendix D.

5.2.2.1 Area B2 Section 1: Harrington Street to Maxwells Road MCA Assessment Summary

Option B and C scored significantly positive when assessed against the Investment Objectives, while option A (shared path) scores moderately positive.

The technical feasibility assessment considered several trade-offs between the options. While Option A would have a minimal impact on local businesses due to a small impact on parking, it is likely to have the greatest cultural impact as it requires widening into the estuary. This option had the highest cost and most difficult construction impact due to the widening required.

Option C requires the removal of street trees on Cameron Road.

Option B scored the highest against these criteria as its likely to provide better urban environment and cultural outcomes as widening into the estuary is not required, and the option also does not impact street trees.

Option B (one-way cycleways on each side of Cameron Road and Chapel Street) demonstrated clear positive outcomes, provides good opportunities for urban enhancement, and has minimal impact to Mana whenua.

Based on the outcomes of the assessment, Option B was identified as the recommended option for this section.

5.2.2.2 Area B2 Section 2: Maxwells Road to Ōtūmoetai Road MCA Assessment Summary

While all three options scored similarly in the assessment, each option has unique benefits and constraints associated with its alignment and design impacts.

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Option A (one-way cycleway with power undergrounded) have the highest cost and risk associated with its implementation, and due to the undergrounding of utilities has construction cost approximately \$4.3m more than other options.

Option B (one-way cycleway with all on-street parking removed) has the greatest impact on business owners and residents. There is significant risk associated with the removal of all on-street parking, which is unlikely to gain public buy-in and support for the project.

Option C (two-way cycleway on north side with on-street parking retained on opposite side) does not have any major constraints, provides the best connection to the existing Ngatai Road facility, and demonstrates positive outcomes when measured against the majority of the assessment criteria.

Because of these reasons above, Option C was identified as the recommended option for this section.

5.2.2.3 Area B1 Section 3: Windsor Road MCA Assessment Summary

Option A (two-way cycleway along the east side of Windsor Road, one-way southbound traffic lane, and parking both sides) and Option B (two-way cycleway along the east side of Windsor Road, two-way traffic lanes, and parking along one side) demonstrate clear positive outcomes compared to Option C and D and it is anticipated that the emerging option be developed from with these options.

Option A provides the highest number of on-street parking spaces, which caters for the demand from nearby schools and recreation centres. Restricting Windsor Road traffic to one-way southbound from Ngatai Road to Anne Road has safety and operational benefits around the schools and permits more on-street parking. However, this option requires all northbound traffic to reroute onto Anne Road and Queen Street, which has a negative residential impact related to traffic volumes. Traffic routes to business on the Princess / Windsor Road corner will change and requires consideration to the location of business parking along Princess Road.

Overall, the support from nearby schools to minimise on-street parking loss and improve student safety resulted in Option A being identified as the preferred option for this section.

5.2.2.4 Area B1 Section 4: Bellevue Road MCA Assessment Summary

As safe segregated cycling facilities are included in the three options, all options scored positive in the assessment against the Investment Objectives.

When assessed against the technical and feasibility criteria, Option B, which includes a two-way cycleway throughout this section, and Option C, which provides a consists of a combination of a one-way and two-way cycleway, scored significantly higher than option A.

Option B has significant technical complexities associated with its design due to the severe space constraints at the Bellevue cutting. In this section, investigations illustrated that a one-way cycleway would it be more feasible.

The two-way cycleway alignment through the cutting creates a very narrow contraflow separated cycle lane up the hill, which requires the downhill riders to use the traffic lane or the residential service lane. Safety assessments identified the potential risk that a cyclist heading towards Brookfield may use the narrow cycleway through the cutting, which would create direct conflict with cyclists using the facility up the cutting.

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The proposed facility type in the Waihi Road section was also a factor in this assessment. In the Waihi Road section, the emerging preferred option is a one-way and with the forward visibility approaching the cutting being restricted, the risk that Brookfield cyclists using the laneway is critical.

Due to the short distance between the cutting and the Waihi Road section, there are significant benefits associated with the provision of a consistent facility type in this location, as it will improve the legibility of the cycleway through the Waihi / Bellevue intersection and improve connectivity, continuity, and directness.

Based on the outcomes of the assessment, option C was identified as the preferred option for this section.

5.2.2.5 Area B1 Section 5: Waihi Road and Eleventh Avenue MCA Assessment Summary

Option A (One-way cycleways both sides, flush median, no parking, moderate road widening) and Option D (One-way cycleways both sides, raised median, no parking, moderate road widening except for major widening at new roundabouts) demonstrate comparative positive outcomes and it is anticipated that the emerging option should be developed from these options.

Option D includes the raised median along Waihi Road from Bellevue Road to Churchill Road with roundabouts constructed at each end of the median to cater for U-turn movements. It would be challenging to provide a compliant roundabout design at Churchill Road due to road corridor width constraints and the Waihi Road longitudinal gradient.

The raised median creates a width constraint to the proposed cycle facility that could impede the movement of emergency vehicles along Waihi Road, with limited locations for other vehicles to pull clear of the traffic lane. Through traffic will be impeded by the rubbish truck during weekly collections.

Based on these considerations, Option A with the flush median was identified as the preferred option for this section.

5.2.3 Emerging Preferred Options

Based on the outcomes of the MCA assessment and the Options Assessment Workshop, the following options were identified as the preferred cycle facility type options for the primary cycle route. These options would best contribute to achieving the investment objectives and aligns with all technical and strategic requirements identified for the project.

The emerging preferred AAA cycleway facility type options for each section identified are:

- Section 1 – one-way cycle facilities
- Section 2 – two-way cycle facility on northern side of Ngatai Road
- Section 3 – two-way cycle facility on eastern side of Windsor Road, with one-way southbound road
- Section 4 – two-way cycle facility on southern side of Bellevue Road, changing to one-way facility south of Brookfield roundabout
- Section 5 – one-way cycle facilities

As well as seeking to provide AAA cycling facilities through the, the Accessible Streets programme requires investigation of the quality of and access to bus stops on the primary bus route as well as multimodal provision on Chapel Street and Waihi Road. Therefore, further work is required as part of the integration of the emerging preferred options of all four shortlisted MCA components to establish how the preferred cycling options will work with the preferred multimodal option, and

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whether any adjustments need to be made to deliver the required outcomes. This is detailed in Section 6.

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5.3 Multi-modal Areas

This section summarises the shortlist option development and MCA assessment undertaken for the two multi-modal areas shown in Figure 5-1. Full details of the options developed, and the assessment are included as Appendix E.

The overall approach entailed the development of a range of potential public transport priority options based on the outcomes of the initial screening assessment to improve public transport operations through the two multi-modal areas. Due to the number of potential options, an additional option screening process was undertaken with stakeholders to refine and confirm the short-listed options to be assessed against the agreed MCA framework.

5.3.1 Option Development

The longlist screening assessment identified the following bus priority interventions to progress for further development and assessment as part of the shortlist assessment:

- Road space reallocation
- In-lane bus stops
- Public transport priority interventions.

As part of the optioneering process to identify and confirm the shortlist options for assessment against the agreed MCA framework, these interventions were developed in more detail and refined to address the specific operational issues identified for public transport in the two multi-modal areas. The bus priority interventions considered are outlined in Table 5-5 below.

Table 5-5: Bus Priority Interventions Investigated

Intervention	Description
In lane bus stop	Realignment of existing indented bus stops to provide in-lane bus stops to reduce delays experienced by buses when attempting to re-enter general traffic vehicle lanes
Bus jump	This includes the provision of bus jumps at intersections, which allows for buses to separate from general traffic via a short bus lane to reach the front of a queue. A queue jump for buses (a bus jump) uses signals to allow buses to take the lead ahead of general traffic, giving priority at intersections
Signal optimisation / Intersection improvements	Introducing a new signalised intersection or improving an existing intersection can allow for buses to move more easily through known pinch points and reduce delays during peak times.
Intelligent Transport Systems (ITS) intervention	ITS interventions aimed at providing priority for buses by coordinating green time in a series of traffic lights to allow a continuous traffic flow to occur over several intersections.
Bus lane	Introduction of a bus priority lane which would allow clear passage for the buses and prevent the buses from delays due to not being blocked by traffic.
Transit lane	Introduction of a T2/T3 lane which would allow buses to operate within a high occupancy vehicle lane with a reduced number of general vehicles, thus providing lane with a better level of service.

These priority interventions were then combined to identify an initial set of options to be assessed for their suitability and feasibility to eliminate infeasible or poor performing options and confirm a shortlist of options to progress to the MCA assessment. The assessment of these initial options was undertaken by Haerenga Tahi and confirmed with TCC, Waka Kotahi and Bay of Plenty Regional Council at a workshop held in July 2022.

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Following this initial assessment, further work was carried out to refine each of the shortlisted options. This process included a workshop with project partners and subject matter experts (SMEs) on 2 August 2022. Each of the options were presented for discussion and acceptance by project partners to progress and a set of options for assessment were agreed. The confirmed shortlisted options for the two Multimodal Areas are described below in Section 5.3.1.1 and 5.3.1.2.

5.3.1.1 Multi-modal Area 1: Chapel Street Options

Four options were identified for the Chapel Street multi-modal area. These included:

- Option 1 – In-lane bus stops
- Option 2 – Bus jumps and signal optimisation
- Option 3 – Bus lanes
- Option 4 – Transit lanes

These options are illustrated in Figure 5-10 and expanded upon below.

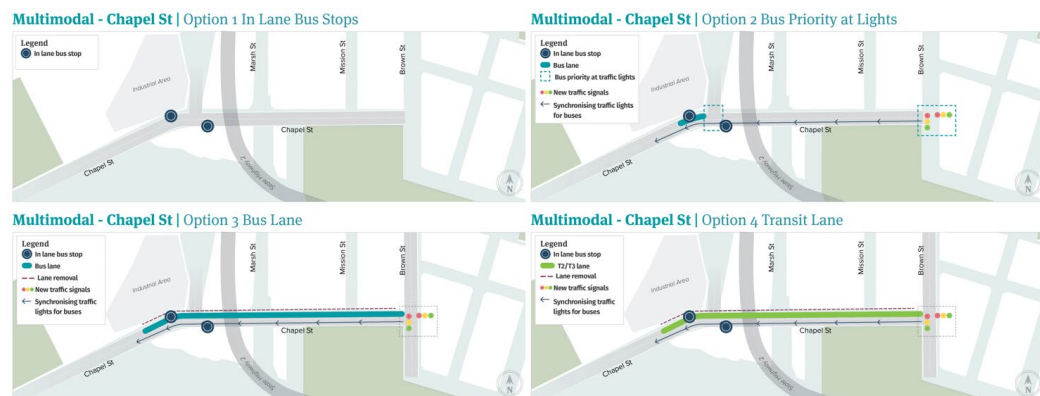


Figure 5-10: Multi-modal Area 1: Chapel Street Shortlist Options

Option 1 includes the adjustment of the existing indented bus stops within the area extent to provide in-lane bus stops to reduce the delays caused for buses manoeuvring in and out of the existing stops. There are two existing bus stops in this area:

- Chapel Street outside the Chapel Street Wastewater Treatment Plant (inbound)
- Chapel Street north of the Mobil petrol station (outbound)

This option will require build out of the existing kerb to align with the general traffic lane at both stop locations, to remove the indented bus stop and provide an in-lane stop.

Option 2 proposes additional bus priority for buses traveling through the Chapel Street corridor by providing in-lane bus stops, a bus jump at the intersection of Chapel Street and the Bay Central Shopping Centre, signal optimisation through the SH2 interchange and a new signalised intersection at the intersection of Chapel Street and Brown Street.

The proposed new signalised intersection at the intersection of Chapel Street, Brown Street and Cameron Road will include a bus only right turn on to Chapel Street to provide additional priority for outbound bus services. To implement the proposed bus jump at the intersection of Chapel Street and the Bay Central Shopping Centre entrance, an existing general traffic lane at the intersection will be reallocated.



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Option 3 proposes the reallocation of an existing general traffic lane to provide an inbound bus lane on Chapel Street between the Chapel Street Bridge and the intersection of Chapel Street, Brown Street and Cameron Road. This option also includes in-lane bus stops, signal optimisation and a new signalised intersection and bus jump at the intersection of Chapel Street, Brown Street and Cameron Road.

Option 4 proposes the reallocation of an existing general traffic lane to provide an inbound transit lane on Chapel Street between the Chapel Street Bridge and the intersection of Chapel Street, Brown Street and Cameron Road. The transit lane will allow high occupancy vehicles (2 or more occupants) to have priority over single occupancy vehicles through the Chapel Street corridor. This option also includes in-lane bus stops, signal optimisation and a new signalised intersection and bus jump at the intersection of Chapel Street, Brown Street and Cameron Road.

5.3.1.2 Multi-modal Area 2: Waihi Road / Eleventh Avenue Options

Four options were identified for the Waihi Road / Eleventh Avenue multi-modal area. These included:

- Option 1 – In-lane bus stops
- Option 2 – Bus jumps and signal optimisation
- Option 3 – Bus lanes
- Option 4 – Transit lanes

These options are illustrated in Figure 5-11 and expanded upon below.

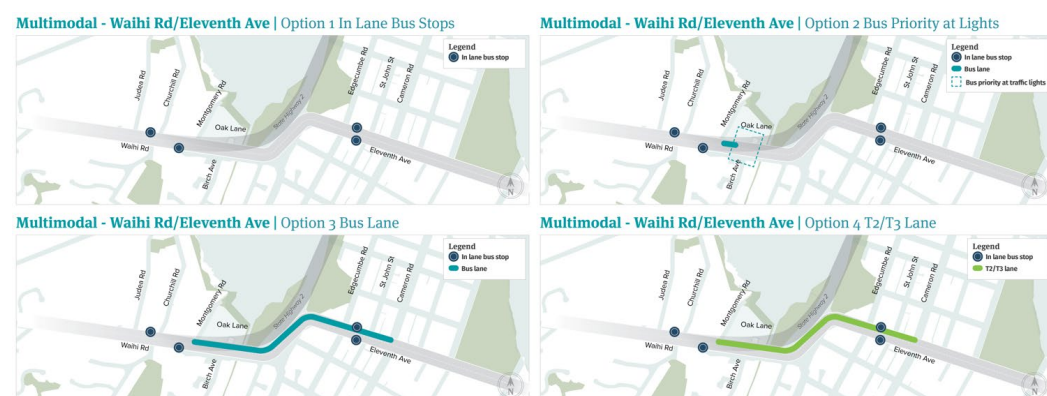


Figure 5-11: Multi-modal Area 2: Waihi Road / Eleventh Avenue Shortlist Options

Option 1 includes the adjustment of the existing indented bus stops within the area extent to provide in-lane bus stops to reduce the delays caused for buses manoeuvring in and out of the existing stops. There are four existing bus stops in this area:

- Waihi Road inbound at Churchill Road
- Waihi Road outbound at Montgomery Road
- Eleventh Avenue at Edgecumbe Road (inbound, currently not indented))
- Eleventh Avenue at John Street (outbound)

This option will require the build out of the existing kerb to align with the general traffic lane at all stop locations to remove the indented bus stop and provide an in-lane stop.



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Option 2 proposes additional bus priority for buses traveling through the Waihi Road / Eleventh Avenue corridor by providing in-lane bus stops and a bus jump at the intersection of Waihi Road, Birch Avenue and Oak Lane. To implement the proposed bus jump at the intersection of Waihi Road, Birch Avenue and Oak Lane, the existing station layout will need to be reallocated to provide a dedicated through lane for buses and a new left turn lane for vehicles accessing Oak Lane.

Option 3 proposes the reallocation of an existing general traffic lane to provide a city-bound bus lane on Waihi Road and Eleventh Avenue between Montgomery Road and Cameron Road. This option also includes in-lane bus stops and bus jump at the intersection of Waihi Road, Birch Avenue and Oak Lane.

Option 4 proposes the reallocation of an existing general traffic lane to provide an eastbound transit lane on Waihi Road and Eleventh Avenue between Montgomery Road and Cameron Road. The transit lane will allow high occupancy vehicles (2 or more occupants) to have priority over single occupancy vehicles through the Waihi Road / Eleventh Avenue corridor. This option also includes in-lane bus stops, and a bus jump at the intersection of Waihi Road, Birch Avenue and Oak Lane

5.3.2 Options Assessment and Outcomes

The Multi-modal Area Options Assessment Workshop was held with Mana Whenua representatives TCC, BoPRC and Waka Kotahi on 15 August 2022. The workshop included the shortlist MCA assessments undertaken by the project team, with additional stakeholder comments and updated scoring incorporated after the workshop. Full details of the assessment, workshop comments and outcomes are included in Appendix E.

Across both multi-modal areas all four bus priority options provide an improvement for public transport users when compared to the do-minimum and scored positive in the assessment against the Investment Objectives aimed at increasing mode share and improving environmental and health outcomes. This was based on the varying levels of travel time savings associated with the different options, and the resulting mode shift that can be expected across all options.

While all options can be accommodated within the existing road corridor, the main differentiators were largely related to the impact of the different priority interventions on network operations, local businesses, and due to the incremental nature of the options, the likely scale of the improvements to public transport operations.

A summary of the MCA assessment is shown in Figure 5-12 below.

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Accessible Streets SSBC				AREA 1 CHAPEL STREET				AREA 2 WAIHI ROAD							
Shortlist MCA Assessment			Do Minimum	Option 1	Option 2	Option 3	Option 4	Option 1	Option 2	Option 3	Option 4				
Multi-Modal Areas				SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE				
BENEFIT	INVESTMENT OBJECTIVE	MEASURE/ KPI	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE				
Improved access to employment, education and social opportunities by active travel modes and public transport	Achieve mode shift (active travel and public transport modes) to work/education trips to/from within the Ōtūmoetai peninsula	Mode shift	0	0.5	1	2	1	0.5	1	2	1				
Improved environmental and health outcomes	Reduction of transport related CO2e	CO2 emissions	0	0.5	1	2	1	0.5	1	2	1				
Improved safety for people using active travel modes	Reduce annual walking and cycling DSLs within the Ōtūmoetai peninsula	Deaths and serious injuries	0	0	0	0	0	0	0	0	0				
TECHNICAL / FEASIBILITY CRITERIA	MEASURE		SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE				
COMMUNITY & STAKEHOLDER	Local Business/Organisation Impact		0	0	0	-1	-0.5	0	0	-1	-0.5				
	Local Resident Impact		0	0	-0.5	-1	-0.5	0	-0.5	-1	-0.5				
	Cultural Impact		0	0	0	0	0	0	0	0	0				
	Operational and Network Impacts		0	-1	-1	-2	-1.5	-1	-1	-2	-1.5				
URBAN ENVIRONMENT	Improved Quality of Urban Environment		0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5				
	Integration with Future Land Use		0	0	1	2	1	0	1	2	1				
COSTS & RISKS	Ease of Construction and Costs		0	-0.5	-1.5	-2	-2	-0.5	-1	-2	-2				
	Land Requirements / Easements / Other Agreements		0	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5				
TAILORED TECHNICAL CRITERIA			SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE				
Public Transport Network Efficiency			0	0.5	1	2	1	0.5	1	2	1				
Operating Cost			0	0.5	0.5	1	1	0.5	0.5	1	1				
Bus Journey Time and Journey Time Reliability			0	0.5	1	2	1	0.5	1	2	1				
Perception of Safety and Ease of Use			0	0.5	0.5	1	0.5	0.5	0.5	1	0.5				
Impacts on Active Modes			0	0	0	-1	-1	0	-0.5	0	0				
Impacts on Network / Infrastructure Owner and Operator			0	0	0	-1	-1.5	0	0	-1	-1.5				
OVERALL SCORE			0	1.5	3	4	-0.5	1.5	3	5	0.5				
RATING	2 Significantly positive			1 Moderate Positive			0 Neutral			-1 Moderate adverse			-2 Significantly adverse		
						RECOMMENDED OPTION			RECOMMENDED OPTION						

Figure 5-12: Multi-modal Area 1 and Area 2 MCA Summary Table

Following the workshop, additional sensitivity analysis was undertaken to inform the decision-making process and provide additional robustness to the MCA assessment. The outcomes of the sensitivity tests are summarised in Table 5-6. As outlined in Section 5.1.1 this assessment considered a range of weightings applied to each criteria category aligned with Waka Kotahi's MCA user guidance.

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Table 5-6: Multi-modal Areas MCA Assessment Sensitivity Analysis

Sensitivity Test	Do Minimum	Multi-modal Area 1: Chapel Street				Multi-modal Area 2: Waihi Road / Eleventh Avenue			
		Option 1	Option 2	Option 3	Option 4	Option 1	Option 2	Option 3	Option 4
Unweighted (all criteria)	0	0.09	0.19	0.31	0.06	0.09	0.19	0.38	0.13
Sensitivity 1: Cost and risk criteria at 10% each	0	0.23	0.47	0.60	0.36	0.24	0.41	0.74	0.51
Sensitivity 2: Equal category weighting	0	0.05	0.13	0.27	0.01	0.05	0.16	0.31	0.05
Sensitivity 3: 50% Investment Objectives Weighting	0	0.15	0.33	0.67	0.26	0.15	0.35	0.69	0.28
Sensitivity 4: 50% Community & Stakeholder Weighting	0	-0.06	-0.06	-0.21	-0.23	-0.06	-0.04	-0.18	-0.20
Sensitivity 5: 50% Urban Environment Weighting	0	0.12	0.36	0.64	0.29	0.12	0.38	0.66	0.31
Sensitivity 6: 50% Cost and Risk Weighting	0	-0.16	-0.29	-0.30	-0.46	-0.16	-0.18	-0.28	-0.44
Sensitivity 7: 50% Tailored Technical Criteria	0	0.18	0.31	0.54	0.19	0.18	0.29	0.64	0.29

■ Highest scoring option ■ Second highest scoring option ■ Third highest scoring option

The sensitivity analysis supported the MCA findings and identified Option 3 as the highest performing option for majority of the sensitivity tests in both multi-modal areas. Due to the incremental nature of the options the greater the level of priority and intervention (e.g., bus lanes versus in-lane bus stops only) proposed the greater the cost and impact on stakeholders therefore Option 3 did not perform as well as the lower cost / impact options for Sensitivity 4 and 6. Option 3 however performed consistently high against the remaining categories due to the benefits for public transport provided by the proposed dedicated bus lanes, in-lane bus stops and supporting priority interventions.

The following sections provide a summary of the assessment for both multi-modal areas. These sections should be read in conjunction with Appendix E.

5.3.2.1 Multi-modal Area 1: Chapel Street Assessment Summary

Option 1 will result in a small improvement in reliability for buses by reducing the delays associated with exiting and re-merging into general traffic lanes at the existing stops. At present during peak periods Chapel Street experiences significant congestion in both the inbound and outbound direction. Buses pulling in and out of the stops located through this corridor are currently required to merge back with general traffic which can cause additional delay and difficulty for bus operators. The in-lane bus stops will remove the need to re-merge with general traffic and enable buses to move more efficiently through the Chapel Street corridor.

While this option will only provide a small improvement to bus operations through the corridor, it is the lowest cost option that would be low risk and easy to implement. In addition, the associated bus stop upgrades could improve the public's perception of bus services as they would contribute to a more enjoyable experience with better bus stops and amenities.

Option 2 (a bus jump or signal intervention to give priority) will result in a greater improvement to public transport reliability than Option 1 by providing additional priority through the Chapel Street corridor at the Bay Central Shopping Centre, signal optimisation through the SH2 interchange and a new signalised intersection at the Chapel Street and Brown Street intersection. Due to the additional priority measures, this option may lead to additional delays for general traffic at intersections with the risk of upstream congestion impacts. This option will be more expensive to implement than Option 1 due to the need for signal upgrades and the provision of the new signalised intersection at Brown Street.

While Option 1 and 2 would likely provide the smallest improvement to public transport travel times, the negative impact on the network would be significantly reduced when compared to Option 3 and 4.

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Due to the additional extent of dedicated public transport priority provided by Option 3, this option would provide the greatest improvements to public transport travel time and reliability along the corridor compared to the other options. However, there is likely to be a significant impact on the wider network due to the removal of a general traffic lane through the Chapel Street corridor that already experiences congestion during peak periods. As a result, the reduced capacity for general vehicles through the corridor could lead to upstream delays that would ultimately contribute to increased delays for public transport before reaching the dedicated bus lanes.

Option 4 would provide benefits to public transport travel time and reliability along the corridor due to the provision of a high-occupancy-vehicle lane. The benefits are unlikely to be as significant as Option 3 as this lane would be shared with high-occupancy-vehicles which may still cause delays for public transport. Similar to option 3, the impact on general traffic queues due to the short length of priority provided may impact public transport operations as buses could be delayed in queues with general traffic due to the reduction in lane capacity.

In addition, there are significant operational impacts and safety risks associated with the implementation of transit lanes for such localised short sections of a corridor due to the merging and re-merging of vehicles between general traffic lanes and the provided transit lanes that increase the potential risk of conflict. Transit lanes also require additional investment and monitoring to ensure adequate enforcement of their operation. As TCC do not operate any other transit lanes across the network, this would require extensive investment to establish.

5.3.2.2 Multi-modal Area 2: Waihi Road / Eleventh Avenue Assessment Summary

Option 1 (Adjusting bus stops to in-lane bus stops) will result in a small improvement in reliability for public transport services by reducing the delays associated with exiting and re-merging into general traffic lanes at stops. This option had the lowest cost, would be the easiest to implement, and could improve the public's perception of bus services as they would contribute to a more enjoyable experience with better bus stops and amenities. The in-lane bus stops will negatively impact general traffic, specifically during off-peak times, when general vehicles would be delayed when buses stop to pick up or drop off passengers.

Option 2 (A bus jump through sections of Waihi Road, Birch Avenue and Oak Lane) will result in a greater improvement to public transport reliability by providing additional priority and provide improved access to employment, education, and social opportunities. Due to the additional priority measures, this option would likely lead to additional delays for general traffic at intersections. This option had a higher cost compared to option 1 due to the need to provide a dedicated through lane for buses while providing a new left turn lane for vehicles accessing Oak Lane.

Option 3 involves the reallocation of an existing general traffic lane to provide an eastbound bus lane between the Waihi Road/Montgomery Road intersection and Eleventh Avenue/Cameron Road intersection. Due to the dedicated public transport priority provided in this option, the option could provide the greatest improvements to public transport travel time and reliability along the corridor. The option also contributes to the overall spatial plan integration to support long term growth and aspirations. The impact of this option on the wider network is likely to be significant due to the removal of a general traffic lane.

Due to the high general vehicle volumes, and the reduced capacity, this option could lead to increased delays for general traffic vehicles during peak periods. The general traffic queues could ultimately also impact public transport operations as buses could be delayed in queues within general traffic lanes leading up to the dedicated bus lanes.

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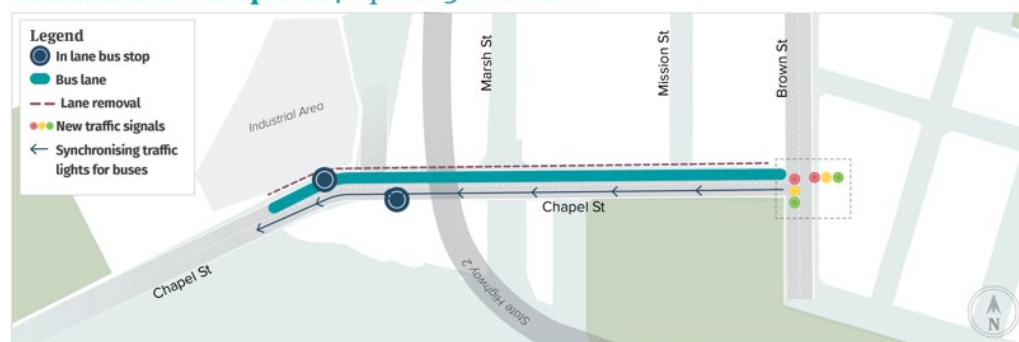
Option 4 involves the provision of a citybound transit lane (T2 or T3) between Waihi Road/Montgomery Road intersection and Eleventh Avenue/Cameron Road intersection. This option would provide significant benefit to public transport travel time and reliability along the corridor due to the provision of a high-occupancy-vehicle lane. The reduced capacity of this corridor for single-occupancy vehicles would result in increased delays for general traffic during peak periods. Similar to option 3, the general traffic queues could ultimately also impact public transport operations as buses could be delayed in queues within general traffic lanes leading up to the transit lanes.

As previously outlined in Section 5.3.2.1 above, there are additional operational risks and impacts of implementing transit lanes through the corridor including the investment required to establish, monitor and enforce their operation.

5.3.3 Emerging Preferred Options

Based on the outcomes of the MCA assessment and the Options Assessment Workshop, Option 3 was identified as the emerging preferred option for both multi-modal areas (shown in Figure 5-13 below). These options provide the greatest benefit to public transport travel time and reliability along the respective corridors and provide improved public transport options for people living in Ōtūmoetai. The dedicated bus lanes, in-lane bus stops and signal optimisation will provide significant travel time benefits for public transport users and is expected to encourage public transport uptake for trips to and from the Ōtūmoetai peninsula.

Multimodal - Chapel St | Option 3 Bus Lane



Multimodal - Waihi Rd/Eleventh Ave | Option 3 Bus Lane



Figure 5-13: Multi-modal Areas – Emerging Recommended Bus Priority Options

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Option 3 also contributes to the overall spatial plan integration to support long term growth and aspirations. Given the strategic significance of these two corridors, in terms of providing connectivity and travel choice to the residents of Tauranga as it grows, the combination of interventions across space reallocation, bus stop adjustments as well as signal and ITS interventions, means that opportunities associated with bus priority improvements are maximised.

Due to the nature of the shortlist assessment approach the cycling facility type and bus priority options were assessed separately. The requirement to integrate the options with the emerging preferred cycling facility type assessment may therefore necessitate potential refinement of these options.

Additional analysis including traffic modelling was undertaken following the MCA workshops to inform the integration of the emerging preferred options of all shortlisted MCA components to establish how the preferred cycling options will work with the preferred bus priority options, and whether any adjustments need to be made to deliver the required outcomes. This is detailed in Section 6 below.

Within the emerging preferred options, this might necessitate the need for a staged approach to deliver the benefits over a period of time. This includes potential progressive staging from a general traffic lane to smaller localised improvements (Option 1 or 2), followed by further staged improvements to Options 3. This potential outcome will be based on the findings of the modelling, and the feasibility and impact of the combined bus priority and cycling options, as this progression is primarily influenced by operational requirements and the ability of respective lane configurations to deliver increased operational efficiencies on the road network.

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5.4 Primary Bus Route

This section summarises the shortlist option development and MCA assessment undertaken for the primary Bus route shown in Figure 5-1. Full details of the options developed, and the assessment are included as Appendix F.

The overall approach entailed the development of a range of potential bus stop facility upgrade and optimisation options. Due to the number of potential options, an additional option screening process was undertaken with stakeholders to refine and confirm the short-listed options to be assessed against the agreed MCA framework.

5.4.1 Option Development

The longlist screening assessment identified the following primary bus route interventions to progress for further development and assessment as part of the shortlist assessment:

- Bus stop facility upgrades
- Bus stop location optimisation

As part of the optioneering process to identify and confirm the shortlist options for assessment against the agreed MCA framework these interventions were developed in more detail and refined to address the specific operational and customer experience issues identified for public transport users along the primary bus route. The interventions considered are outlined in Table 5-7 below.

Table 5-7: Primary Bus Route Interventions Investigated

Intervention	Description
Bus stop optimisation	Optimisation of network through the provision of new stops, or the relocation or removal of existing stops.
Minor bus stop upgrades	Upgrade bus stops to meet TCC's Simple Bus Stop guidelines.
Major bus stop upgrades - Minimum standards	Upgrade bus stops to meet TCC's Bus Stop with Shelter guidelines.
Major bus stop upgrades - Standard intervention	Upgrade bus stops to meet TCC's Bus Stop with Shelter guidelines, with improved crossing points included.
Major bus stop upgrades - Standard intervention plus urban realm improvements	Upgrade bus stops to meet TCC's Bus Stop with Shelter guidelines, with improved crossing points and public realm improvements such as landscape planting, street furniture, cultural narrative and wayfinding included.

A number of technical investigations were undertaken to inform the development of options:

- Data analysis of patronage

Patronage data for the 33 stops on the primary bus route was analysed to identify the busiest stops on the and inform the prioritisation of bus stops. Based on the number of passengers, bus stops were categorised into high, medium and low priority to categories.

- Bus stop facility audit

An audit of all stops on the primary route was undertaken to determine the quality of existing bus stop facilities and pedestrian facilities. The audit identified the stops that lack adequate facilities, or where poor facilities could potentially act as a barrier to public transport usage. A significant number of stops on the route 61% have no shelter at all. Of the shelters that do exist, 12% are in poor condition. Of the 33 stops surveyed, 26 stops were identified for potential improvement.

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■ Measurement of distances between bus stops

Distances between the 33 existing bus stops on the primary bus route were measured, to inform the development of options that include bus stop optimisation interventions. The purpose of optimising the distance between stops is to balance improving operational efficiency by improving bus journey times, with ensuring that stops serve as many people as possible and are in convenient and accessible locations.

The assessment was undertaken in accordance with TCC's Bus Stop Design Guidelines for high frequency, medium frequency and low frequency corridors. 4 bus stops were identified for potential relocation to improve the operating efficiency of the bus network as the distance between these stops did not adhere to the prescribed distances. 1 bus stop was identified for removal due to an oversupply of stops serving the same local catchment. The stops identified for improvement and / or relocation are illustrated in Figure 5-14 below.

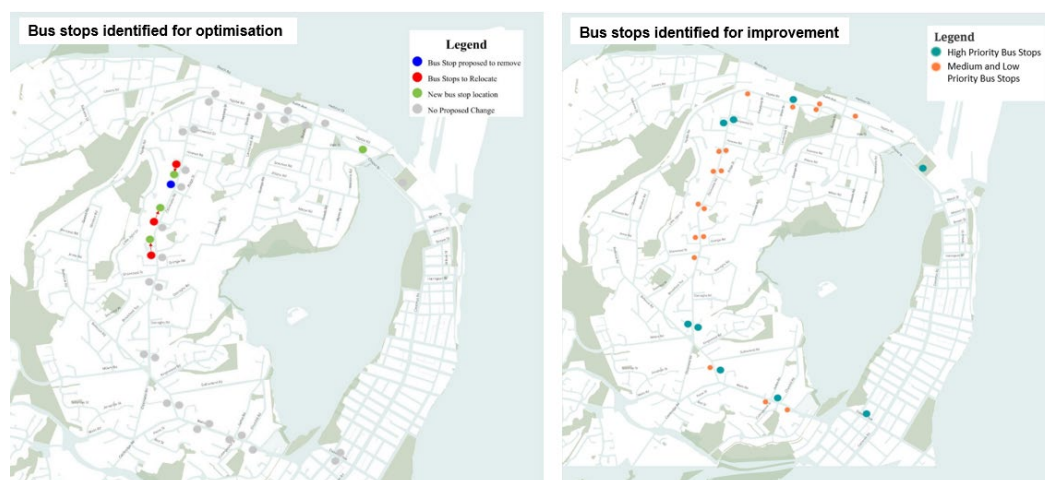


Figure 5-14: Bus stops identified for improvement and/or optimisation

The interventions were combined to identify an initial set of options to be assessed for their suitability and feasibility to eliminate infeasible or poor performing options and confirm a shortlist of options to progress to the MCA assessment. The assessment of these initial options was undertaken by Haerenga Tahī and confirmed with TCC, Waka Kotahi and Bay of Plenty Regional Council at a workshop held in July 2022.

Following this initial assessment, further work was carried out to refine each of the shortlisted options. This process included a workshop with project partners and subject matter experts (SMEs) on 3 August 2022. Each of the options were presented for discussion and acceptance by project partners to progress and a set of options for assessment were agreed. The confirmed shortlisted options for the primary bus route assessment are described below.

Option 1 includes minor upgrades to priority stops only in order to meet TCC's Simple Bus Stop Guidelines.

Option 2 includes major upgrades to high priority stops only to meet the minimum bus stop with shelter guidelines. This includes seating, rubbish bins and cycling parking in high demand locations. This option also includes the optimisation interventions, and includes the provision of one new stop, and the removal or relocation of four stops.

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Option 3 includes major upgrades to high priority stops to meet the minimum bus stop with shelter guidelines, and minor upgrades to medium and low priority bus stops to meet the simple bus stop guidelines. This option also proposes of one new stop, and the removal or relocation of four stops.

Option 4 includes major upgrades to high priority stops to meet the bus stop with shelter guidelines, with upgrades at destination stops incorporating additional public realm improvements such as landscape planting, street furniture, cultural narrative, and wayfinding improvements. Minor upgrades to medium and low priority bus stops to meet the simple bus stop guidelines, the provision of one new stop, and the removal or relocation of four stops are also included.

The type and extent of the proposed stop upgrades are illustrated in Figure 5-15 below.

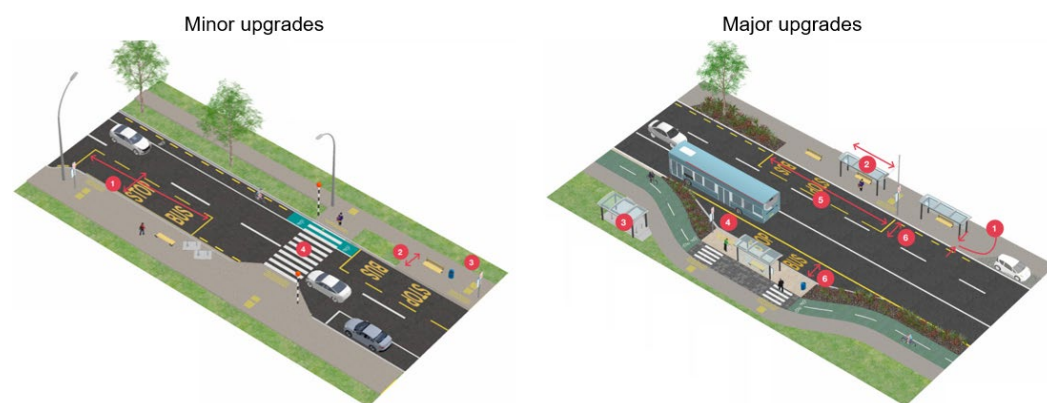


Figure 5-15: TCC's Street Design Guide Standards - Bus stop upgrades

5.4.2 Options Assessment and Outcomes

The Primary Bus Route Options Assessment Workshop was held with TCC, BoPRC and Waka Kotahi on 15 August 2022. The workshop included the shortlist MCA assessments undertaken by the project team, with additional stakeholder comments and updated scoring incorporated after the workshop. Full details of the assessment, workshop comments and outcomes are included in Appendix F. A summary of the MCA assessment is shown in Figure 5-16 below.

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Primary Bus Route

			Do Minimum	Option 1	Option 2	Option 3	Option 4
BENEFIT	INVESTMENT OBJECTIVE	MEASURE/ KPI	SCORE	SCORE	SCORE	SCORE	SCORE
Improved access to employment, education and social opportunities by active travel modes and public transport	Achieve mode shift (active travel and public transport modes) to work/education trips to/from/within the Ōtūmoetai peninsular	Mode shift	0	1	1	2	2
Improved environmental and health outcomes	Reduction of transport related CO2e	CO2 emissions	0	1	1	2	2
Improved safety for people using active travel modes	Reduce annual walking and cycling DSIs within the Ōtūmoetai peninsular	Deaths and serious injuries	0	0	1	2	2
TECHNICAL / FEASIBILITY CRITERIA	MEASURE		SCORE	SCORE	SCORE	SCORE	SCORE
COMMUNITY & STAKEHOLDER	Local Business/Organisation Impact		0	1	1	2	2
	Local Resident Impact		0	0	-0.5	-1	-1
	Cultural Impact		0	0	0	1	2
	Operational and Network Impacts		0	0.5	0.5	0.5	1
URBAN ENVIRONMENT	Improved Quality of Urban Environment		0	1	1	1.5	2
	Integration with Future Land Use		0	1	1	2	2
COSTS & RISKS	Ease of Construction and Costs		0	-0.5	-0.5	-1	-1.5
	Land Requirements / Easements / Other Agreements		0	-0.5	-0.5	-0.5	-1
TAILORED TECHNICAL CRITERIA			SCORE	SCORE	SCORE	SCORE	SCORE
Operating Cost / Efficiency			0	1	1	2	2
Perception of Safety and Ease of Use			0	1	1	2	2
Accessibility to Bus Stops			0	1	1	2	2
Placemaking and Urban Realm Impacts			0	0	1	1	2
Perception of Facility Attractiveness			0	1	1	2	2
OVERALL SCORE			0	8.5	10	19.5	21.5

RECOMMENDED OPTION

RATING 2 Significantly positive 1 Moderate Positive 0 Neutral -1 Moderate adverse -2 Significantly adverse

Figure 5-16: Primary Bus Route MCA Summary Table

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Following the workshop, additional sensitivity analysis was undertaken to inform the decision-making process and provide additional robustness to the MCA assessment. The outcomes of the sensitivity tests are summarised in Table 5-8. This assessment considered a range of weightings applied to each criteria category aligned with Waka Kotahi's MCA user guidance.

Table 5-8: Primary Bus Route MCA Assessment Sensitivity Analysis

Sensitivity Test	Do Minimum	Option 1	Option 2	Option 3	Option 4
Unweighted (all criteria)	0	0.53	0.63	1.22	1.34
Sensitivity 1: Cost and risk criteria at 10% each	0	0.64	0.73	1.35	1.62
Sensitivity 2: Equal category weighting	0	0.47	0.55	1.09	1.15
Sensitivity 3: 50% Investment Objectives Weighting	0	0.54	0.72	1.43	1.47
Sensitivity 4: 50% Community & Stakeholder Weighting	0	0.43	0.44	0.91	1.09
Sensitivity 5: 50% Urban Environment Weighting	0	0.67	0.72	1.33	1.47
Sensitivity 6: 50% Cost and Risk Weighting	0	0.11	0.16	0.40	0.25
Sensitivity 7: 50% Tailored Technical Criteria	0	0.59	0.72	1.35	1.47

■ Highest scoring option ■ Second highest scoring option ■ Third highest scoring option

The sensitivity analysis supported the MCA findings and identified Option 4 as the highest performing option for majority of the sensitivity tests. Due to the incremental nature of the options, option 4 had the highest cost of all options, which impacted the outcomes of the sensitivity test with increased weighting applied to cost and risk criteria. Option 4 however performed consistently high against the remaining categories due to the benefits for public transport provided by the proposed suite of bus stop and facility upgrades.

5.4.2.1 Assessment Summary

This section provides a summary of the outcomes of the multi-criteria assessment undertaken for all options.

All four primary bus route options assessed provide an improvement for public transport users when compared to the do-minimum and scored positive in the assessment against the Investment Objectives aimed at increasing mode share and improving environmental and health outcomes. This was based on the improved facilities included in all options, and the resulting mode shift that can be expected across those.

All options are feasible from a delivery perspective, the main differentiators were largely related to the impact of the different priority interventions on the quality of the urban environment, local residents as well as cost and constructability. Due to the incremental nature of the options, options that included a greater number of improvements scored highest in the assessment.

Option 1 (Minor upgrades to high priority bus stops only) will result in a small improvement in the quality of and attractiveness of the public transport network by providing good facilities at approximately a third of the stops. This option had the lowest cost, would be the easiest to implement, and could improve public perception of bus services through better bus stops and amenities. As with any installation of new shelters, there would be some risks associated with securing permissions and construction.

Option 2 (Major upgrades to high priority bus stops, plus optimisation) will result in a greater improvement to the quality of the public transport network. In addition to the upgrades to the shelters, optimisation provides an opportunity ensure that services run in an efficient manner and

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reduced journey times can be a significant factor in the attractiveness of a public transport facility. In addition, through the adjustments and the new stop proposed, a significant number of people would live, work or study closer to a bus stop, opening opportunities for growing patronage. Relocating bus stops can be disruptive to local residents and the community, and this is reflected in the scoring.

Option 3 (Major upgrades to high priority bus stops, minor upgrades to remaining stops, plus optimisation) involves a significant step change to the quality of the facilities across the full length of the primary bus route. It follows that notable benefits are seen in terms of potential for mode shift and an improved public transport experience. Conversely, impacts on local residents, and constructability could become more of an issue with the greater number of bus stop upgrades that are included.

Option 4 (Major upgrades to high priority bus stops, minor upgrades to remaining stops, destination stops, plus optimisation) involves upgrades to all the stops, plus a focus on providing destination stops at key attractors on the route, including shopping centres. This option would provide the most significant improvement to the public transport experience from a passenger perspective. This option will require more substantial works to install the new shelters, in particular at the destination stops, which are located in busy and often constrained locations.

5.4.3 Emerging Preferred Option

Based on the outcomes of the MCA assessment and the Options Assessment Workshop, Option 4 was identified as the preferred option for the primary bus route. This option would contribute to achieving the investment objectives and aligns with all technical and strategic requirements identified for the project.

Well-designed bus stops in the right location provides consistent, safe, and attractive bus infrastructure required to support mode shift and improve travel choice. Option 4 proposes to upgrade all bus stops on the primary bus route to the minimum prescribed standard, which will make the stops easy to identify, safe, comfortable, and attractive to use.

Option 4 also includes major upgrades to destination stops within local town centres, which positively contributes to the Ōtūmoetai spatial plan objectives to support long term growth and urban realm improvements. The design of the bus stops located on Chapel Street, Ngatai Road and Waihi Road will need to be integrated with the emerging preferred cycling facility type. Some adjustments to the nature of bus facility will be required, and it is likely that a number of the stops will be adjusted to be 'in lane' bus stops.

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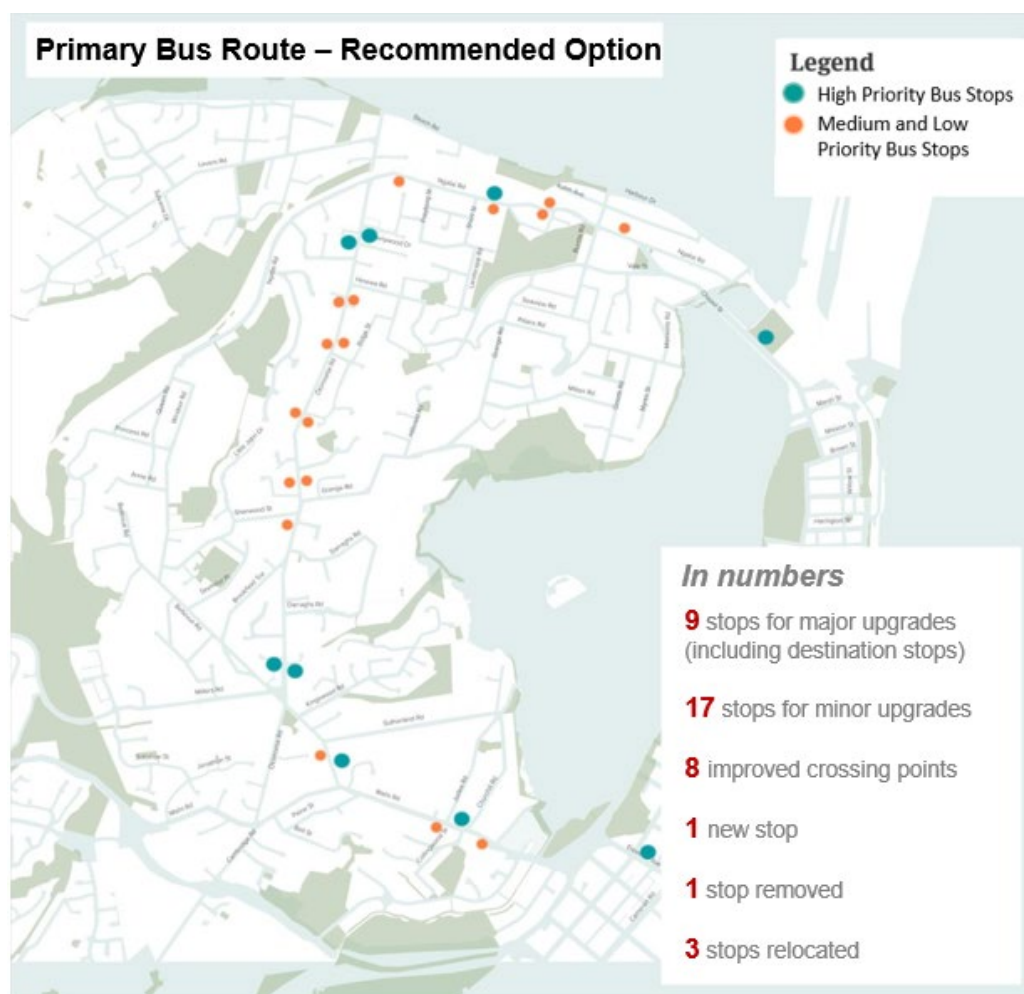


Figure 5-17: Primary Bus Route - Recommended Option

5.5 Neighbourhood Streets

This section summarises the shortlist options development and MCA assessment undertaken for the two neighbourhood streets areas shown in Figure 5-1. Full details of the options developed, and the assessment are included as Appendix G.

5.5.1 Option Development

A range of interventions were identified for each of the two Neighbourhood Streets areas and from this, a long list of options was developed. These options were screened during a workshop held with TCC, Waka Kotahi and BoPRC stakeholders and assessed against various elements including suitability and feasibility. This assessment identified potential interventions to be developed further to confirm the shortlisted options that would improve safety, urban amenity, encourage active travel mode uptake and improve connectivity to the primary cycle network in the two identified Neighbourhood Streets areas.

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The additional screening process was undertaken with project partners and subject matter experts (SMEs) in August 2022, to refine and confirm these interventions as shortlist options to be assessed against the agreed MCA framework.

The options selected to progress are listed below and apply to each of the Neighbourhood Streets areas:

- Option 1 - Extensive speed treatment, pedestrian upgrades, and urban design enhancements
- Option 2 - Moderate speed treatment, pedestrian upgrades, and partial urban design improvements
- Option 3 - Minor speed treatment
- Option 4 – Safer speed areas

The options include incremental additions, starting with option 4 that provides the lowest level of intervention with safer speed areas. Option 3 improves on this by introducing minor speed treatment such as speed ramps and option 2 builds on option 3 with moderate speed treatment that includes raised table crossings and some urban design enhancements such as trees or improved street lighting for pedestrian linkages. Option 1 provides the highest level of intervention, encompassing the interventions from option 2 but with more extensive treatment, and full urban redevelopment with amenities such as park benches, and green spaces for the community to enjoy.

5.5.1.1 Neighbourhood Streets Area 1: Windsor Road Area Options

Four options were developed for the Windsor Road Area. These options are illustrated in Figure 5-18 and expanded upon below.

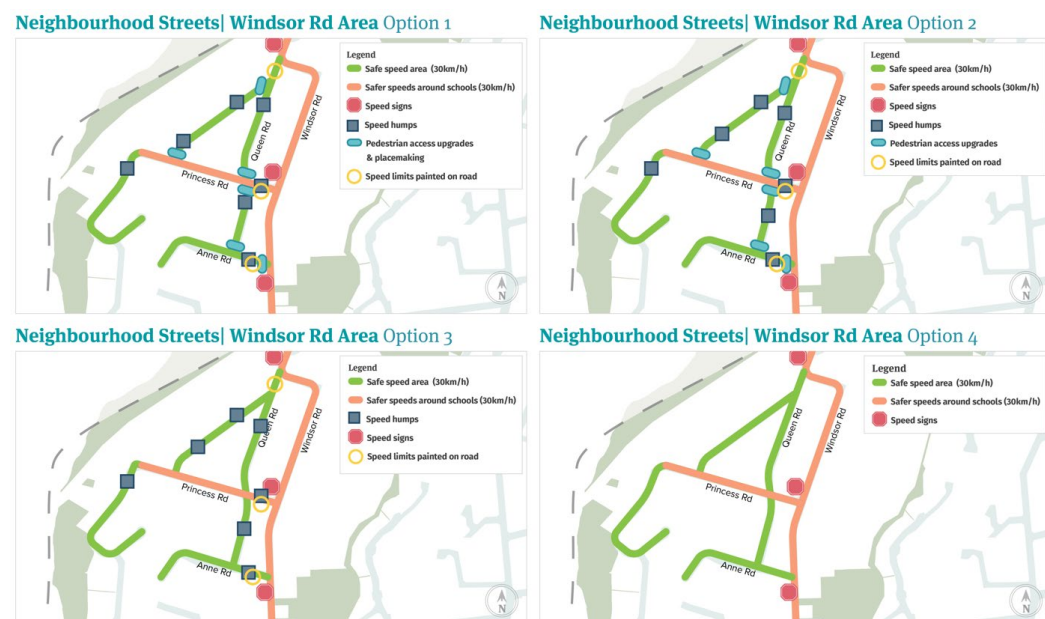


Figure 5-18: Neighbourhood Streets Area 1: Windsor Road Shortlist Options

Option 1 proposes an extensive change to the existing layout to provide speed reduction treatments, new signage and painted lines to enforce a 30km/hr speed limit for all roads within the area. Extensive speed treatment includes raised table crossings, speed bumps at locations

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identified in the figure above, road narrowing and pedestrian access upgrades at key intersections. Improving the network links for pedestrians will include full urban redevelopment of these areas with greenery and place making amenities such as park benches, improved street lighting and recreational spaces for leisure.

Option 2 proposes a moderate change to the existing layout to provide speed reduction treatments and a reduction in speed limits using signage (30km/h) and painted lines that indicate safer speeds for all roads within the area. Moderate speed treatment includes raised tables, speed bumps and upgrades to improve access for pedestrians, particularly at intersections connecting into Princess Road, Queen Road and Anne Road. Partial urban development is proposed for this option with enhancements such as trees to provide green spaces and improved street lighting.

Option 3 proposes a minor change to the existing layout with speed reduction infrastructure and signage indicating reduced speeds throughout and safer speed areas with a 30km/hr speed limit for all roads. Minor speed treatment includes speed bumps concentrated in the Queen/Princess/Margaret Road triangle and the eastern end of Princess Road where speed limits are reinforced by painted lines on the road.

Option 4 proposes the lowest level of intervention by implementing safer speeds of 30km/hr for all roads within the area. While speed signs are proposed at key intersections with Windsor Rd, there are no changes proposed to the existing road layout.

5.5.1.2 Neighbourhood Streets Area 2: Ngatai Road Area Options

Four options were developed for the Windsor Road Area. These options are illustrated in Figure 5-19 and expanded upon below.



Figure 5-19: Neighbourhood Streets Area 2: Ngatai Road Area Shortlist Options

Option 1 proposes an extensive change to the existing layout to provide speed reduction treatments, new signage and painted lines to enforce a 30km/hr speed limit for all roads within the

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area. Extensive speed treatment includes raised table crossings, speed bumps at locations identified in the figure above, road narrowing and pedestrian access upgrades at key intersections. Improving the network links for pedestrians will include full urban redevelopment of these areas with greenery and place making amenities such as park benches, improved street lighting and recreational spaces for leisure.

Option 2 proposes a moderate change to the existing layout to provide speed reduction treatments and a reduction in speed limits using signage (30km/h) and painted lines that indicate safer speeds for all roads within the area. Moderate speed treatment includes raised tables, speed bumps and upgrades to improve access for pedestrians, particularly at intersections with Pillans Road and Maxwells Road. Partial urban development is proposed for this option with enhancements such as trees to provide green spaces and improved street lighting.

Option 3 proposes a minor change to the existing layout with speed reduction infrastructure and signage indicating reduced speeds throughout and safer speed areas with a 30km/hr speed limit for all roads. Minor speed treatment includes a speed bump on Pillans Road and the northern end of Maxwells Road, towards Chapel Street, where speed limits are reinforced by painted lines on the road.

Option 4 proposes the lowest level of intervention by implementing safer speeds of 30km/hr for all roads within the area. While speed signs are proposed at key intersections with Maxwells Road, there are no changes proposed to the existing road layout.

5.5.2 Options Assessment and Outcomes

The Neighbourhood Streets Options Assessment Workshop was held with TCC, BoPRC and Waka Kotahi on 15th August 2022. The workshop included the shortlist assessments undertaken by the project team, with additional stakeholder comments and updated scoring incorporated after the workshop. Full details of the assessment, workshop comments and outcomes are included in Appendix G. A summary of the MCA assessment is shown in Figure 5-20.

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Accessible Streets SSBC				WINDSOR ROAD				NGATAI ROAD							
Shortlist MCA Assessment															
Neighbourhood Streets															
			Do Minimum	Option 1	Option 2	Option 3	Option 4	Option 1	Option 2	Option 3	Option 4				
BENEFIT	INVESTMENT OBJECTIVE	MEASURE/ KPI	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE				
Improved access to employment, education and social opportunities by active travel modes and public transport	Achieve mode shift (active travel and public transport modes) to work/education trips to/from within the Ōtūmoetai peninsula	Mode shift	0	1.5	1	1	0	1.5	1	1	0				
Improved environmental and health outcomes	Reduction of transport related CO2e	CO2 emissions	0	1	1	1	0	1	1	1	0				
Improved safety for people using active travel modes	Reduce annual walking and cycling DSLs within the Ōtūmoetai peninsula	Deaths and serious injuries	0	1.5	1	0.5	0	1.5	1	0.5	0				
TECHNICAL / FEASIBILITY CRITERIA			SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE				
COMMUNITY & STAKEHOLDER	Local Business/Organisation Impact		0	1	1	0	0	0	0	0	0				
	Local Resident Impact		0	0.5	1	-0.5	0	0.5	1	-0.5	0				
	Cultural Impact		0	2	1	0.5	0	2	1	0.5	0				
	Operational and Network Impacts		0	-1	-1	-0.5	0	0	0	0	0				
URBAN ENVIRONMENT	Improved Quality of Urban Environment		0	2	1	0	0	0.5	1	0	0				
	Integration with Future Land Use		0	1	1	0	0	1	1	0	0				
COSTS & RISKS	Ease of Construction and Costs		0	-1.5	-1	-0.5	-0.5	-1.5	-1	-0.5	-0.5				
	Land Requirements / Easements / Other Agreements		0	-1	-0.5	0	0	-1	-0.5	0	0				
TAILORED TECHNICAL CRITERIA			SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE	SCORE				
Movement and Overarching Accessibility for Active Modes			0	2	1	0	0	2	1	0	0				
Placemaking / Urban Realm Contribution			0	2	1	0	0	1.5	1	0	0				
Perception of Facility Attractiveness			0	2	1	0	0	2	1	0	0				
Speed Reduction			0	1.5	1	0.5	0	1.5	1	0.5	0				
Impacts on Schools			0	1	1	0	0	1	1	0	0				
OVERALL SCORE			0	15	10.5	2	-0.5	14.5	10.5	2.5	-0.5				
				RECOMMENDED OPTION				RECOMMENDED OPTION							
RATING	2	Significantly positive		1	Moderate Positive		0	Neutral		-1	Moderate adverse		-2	Significantly adverse	

RATING 2 Significantly positive 1 Moderate Positive 0 Neutral -1 Moderate adverse -2 Significantly adverse

Figure 5-20: Neighbourhood Streets MCA Assessment Summary

Following the workshop, additional sensitivity analysis was undertaken to inform the decision-making process and provide additional robustness to the MCA assessment. The outcomes of the sensitivity tests are summarised in Table 5-9. As outlined in Section 5.1.1 this assessment considered a range of weightings applied to each criteria category aligned with Waka Kotahi's MCA user guidance.

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Table 5-9: Neighbourhood Streets MCA Assessment Sensitivity Analysis

Sensitivity Test	Do Minimum	Windsor Road Area				Ngatai Road Area			
		Option 1	Option 2	Option 3	Option 4	Option 1	Option 2	Option 3	Option 4
Unweighted (all criteria)	0	0.94	0.66	0.13	-0.03	0.91	0.66	0.16	-0.03
Sensitivity 1: Cost and risk criteria at 10% each	0	1.25	0.84	0.19	0.05	1.22	0.84	0.22	0.05
Sensitivity 2: Equal category weighting	0	0.73	0.55	0.11	-0.05	0.71	0.55	0.14	-0.05
Sensitivity 3: 50% Investment Objectives Weighting	0	0.96	0.72	0.38	-0.03	0.94	0.72	0.40	-0.03
Sensitivity 4: 50% Community & Stakeholder Weighting	0	0.69	0.53	0.02	-0.03	0.68	0.53	0.09	-0.03
Sensitivity 5: 50% Urban Environment Weighting	0	0.93	0.72	0.07	-0.03	0.91	0.72	0.09	-0.03
Sensitivity 6: 50% Cost and Risk Weighting	0	-0.01	0.06	-0.02	-0.13	-0.02	0.06	-0.01	-0.13
Sensitivity 7: 50% Tailored Technical Criteria	0	1.09	0.72	0.11	-0.03	1.04	0.72	0.12	-0.03

■ Highest scoring option ■ Second highest scoring option ■ Third highest scoring option

The sensitivity analysis supported the MCA findings and identified Option 1 as the highest performing option for majority of the sensitivity tests in both neighbourhood areas. Due to the incremental nature of the options the greater the level of intervention (e.g., speed limit changes only versus extensive speed treatment interventions) proposed the greater the cost therefore Option 1 did not perform as well as the lower cost options for Sensitivity 6. Option 1 however performed consistently high against the remaining categories due to the benefits provided by the proposed interventions.

The following sections provide a summary of the assessment for both neighbourhood streets areas. These sections should be read in conjunction with Appendix F.

5.5.2.1 Neighbourhood Streets Area 1: Windsor Road Area

Options 1, 2 and 3 provide an improvement for active mode and public transport users when compared to the do-minimum and scored positive in the assessment against the Investment Objectives aimed at encouraging mode shift and improving environmental and safety outcomes for active travel. This was based on the varying levels of annual reduction in walking and cycling DSIs within the Ōtūmoetai peninsula across all three options and the resulting mode shift that can be expected. The level of mode shift may reduce carbon emissions, but in some cases shared trips may still comprise of vehicle usage. Option 4 has no improvements when assessed against the do-minimum option.

While all options can be accommodated within the existing road corridor, the main differentiator is that options 1 and 2 allow for urban design enhancement which provides various benefits while the benefits for options 3 and 4 are limited to speed treatment and reduction of all roads in the area. Due to the lack of urban development, the latter options do not increase amenity and therefore do not encourage urban intensification, dissimilar to the former options that integrate with future land use and positively contribute to the wider Ōtūmoetai spatial plan.

Option 1 (safer speed areas with extensive speed treatment, pedestrian linkage upgrade and full urban design enhancement) will likely encourage users to choose a different mode because the significant urban enhancements proposed at key junctions along Princess and Queen Road, provides improved local movement, accessibility, and amenities for people to enjoy. However, this option has the worst impact overall to the network by adding pinch points in terms of travel time and public transport operations. This option is the most difficult to construct due to the extent of improvements required which will incur significant costs.

Option 2 differs slightly from option 1 in providing moderate speed treatment and partial urban design enhancement. Partial enhancement will likely encourage only some users to change modes but still provide significant safety improvements due to the extent of treatment. This option positively

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impacts residents because parking removal will not be excessive compared to other options and there is improved quality urban development despite the perception that facilities are less attractive than those for option 1. This development may lead to improvement in pedestrian linkages, specifically at intersections with Princess, Queen and Anne Road with safer speed areas that provide better active travel conditions for school students. However, this option negatively impacts the network, and some costs are incurred to implement the extent of improvements.

Option 3 (safer speeds areas with minor speed treatment) has similar benefits to option 2 including mode shift as a result of lower speeds and some safety improvements, though not as significant as previous options. This option is expected to negatively impact residents due to the removal of parking for speed treatment, will negatively impact network operations and incur similar costs to option 2 due to the extent of improvements.

Option 4 (safer speeds areas) is likely to reduce speed in the area but will not provide significant improvements to safety compared to other options.

5.5.2.2 Neighbourhood Streets Area 2: Ngatai Road Area

While all options can be accommodated within the existing road corridor, the main differentiator is that options 1 and 2 allow for urban design enhancement which provides various benefits while the benefits for options 3 and 4 are limited to speed treatment and reduction. Due to the lack of urban development, the latter options do not increase amenity and therefore do not encourage urban intensification, dissimilar to the former options that integrate with future land use and positively contribute to the wider Ōtūmoetai Spatial Plan.

Option 1 (safer speed areas with extensive speed treatment, pedestrian linkage upgrade and full urban design enhancement) will likely encourage users to choose a different mode because the significant urban enhancements at the intersection of Maxwells Road and Pillans Road provides improved local movement and accessibility, active mode users to enjoy at reduced speeds. However, this option has the worst impact overall to the network and the extent of improvements required will incur significant costs.

Option 2 differs slightly from option 1 in providing moderate speed treatment and partial urban design enhancement. Partial enhancement will likely encourage only some users to change modes but still provide significant safety improvements due to the extent of treatment. This development may lead to improved pedestrian linkages with access upgrades proposed at the northern end of Maxwells Road approaching Chapel Street with reduced speeds and better active travel conditions for school students. However, this option negatively impacts the network, and some costs are incurred to implement the extent of improvements.

Option 3 (safer speeds areas with minor speed treatment) has similar benefits to option 2 including mode shift as a result of lower speeds and some safety improvements with a speed bump proposed on Pillans Road and Maxwells Road, though not as significant as previous options. This option is expected to negatively impact residents due to the removal of parking for speed treatment, will negatively impact network operations and incur similar costs to option 2 due to the extent of improvements.

Option 4 (safer speeds areas) is likely to reduce speed in the area but will not provide significant improvements to safety compared to other options.

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5.5.3 Emerging Preferred Options

Based on the outcomes of the MCA assessment and the Options Assessment Workshop, Option 1 was identified as the emerging preferred option for both neighbourhood streets areas (shown in Figure 5-21 below). These options align with all technical and strategic requirements identified for the project.

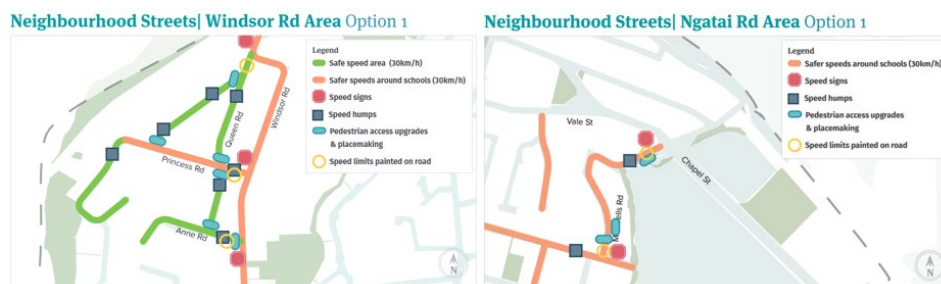


Figure 5-21: Neighbourhood Streets Emerging Recommended Options

Option 1 includes the largest scale or number of focused interventions and will have the greatest impact in terms of improving accessibility and safety for active mode users within these areas. Due to the scale of the interventions proposed, this option has the highest cost and potential impact on the network.

As a result, there might be a need to consider trade-offs if the cost of the full suite of improvements exceeds the available funding for the project. The incremental nature of these options enables it to be scaled back in specific locations, or to be packaged in a staged delivery programme. There is also an opportunity to investigate the delivery of specific components as part of the speed reduction programme which will be investigated during the subsequent phases of the SSBC.

Specific risks identified in the assessment, and the need for the integration of the emerging preferred Windsor Road and Ngatai Road option with the emerging preferred cycling facility type might necessitate potential refinement of these options. This is expanded upon in Section 6.

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6 Integration of Emerging Preferred Options

As outlined in Section 5, options were developed and assessed for the four components of the Accessible Streets SSBC during the shortlist stage. Options for cycling facility types, bus priority, bus stop upgrades, and neighbourhood streets were assessed separately using techniques and approaches appropriate for each. This approach enabled the confirmation of emerging preferred options for each component. In two specific areas of the Accessible Streets project, further work was required as part of the integration of the emerging preferred bus priority and cycle facility options to establish how the preferred options could be integrated, and whether any adjustments need to be made to deliver the required outcomes. This section outlines the process followed to integrate the emerging preferred options in the two multi-modal areas illustrated in Figure 6-1 below.

- Multi-Modal Area 1: Chapel Street from Chapel Street / Brown Street intersection to the signalised intersection in the vicinity of 65 Chapel Street.
- Multi-Modal Area 2: Waihi Road from Birch Avenue / Waihi Road intersection to the Eleventh Avenue / Cameron Road intersection.



Figure 6-1: Multi-Modal Areas

6.1 Integration Approach

Following the identification of the emerging preferred options, investigations were undertaken to confirm the feasibility of integrating the bus priority and cycling facility type options in the multi-modal areas and considered a range of risks and trade-offs required to integrate the proposed multi-modal improvements. The approach is illustrated in Figure 6-2 below.

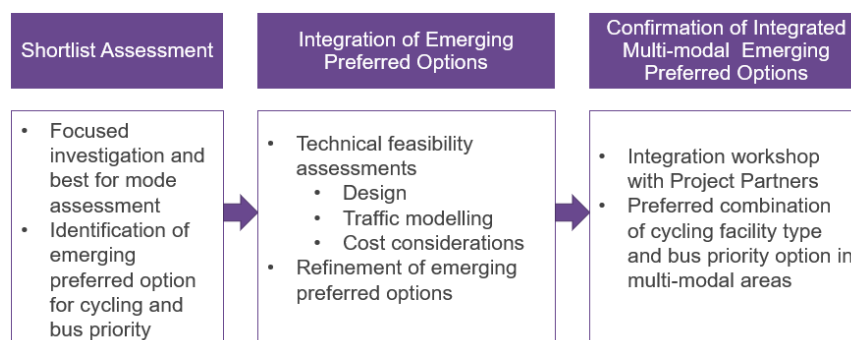


Figure 6-2: Integration of Emerging preferred options - Approach

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6.2 Multi-modal Area 1: Chapel Street

The emerging preferred bus priority and cycling facility type options identified in the shortlist assessment for multi-modal area 1 is illustrated in Figure 6-3 below.

The preferred bus priority option involves the reallocation of an existing general traffic lane to provide an inbound bus lane on Chapel Street between the Chapel Street Bridge and the intersection of Chapel Street, Brown Street and Cameron Road. This option also included in-lane bus stops, signal optimisation and a new signalised intersection and bus jump at the intersection of Chapel Street, Brown Street and Cameron Road.

The preferred cycling facility type in this area consists of one-way cycleways on both sides of Chapel Street, which requires the removal of one northbound traffic lane between Brown Street and Vale Street.

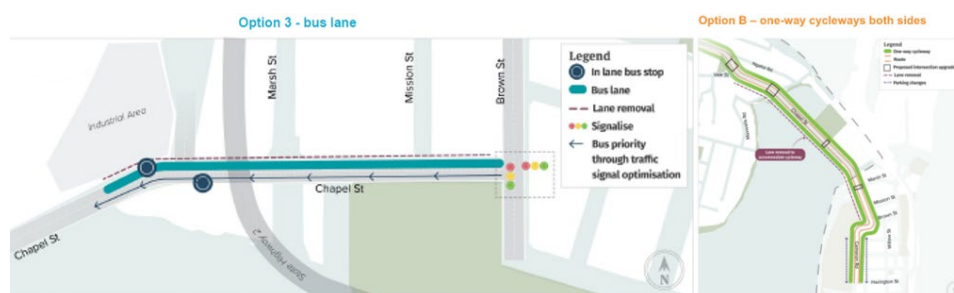


Figure 6-3: Multi-modal Area 1: Chapel Street - Recommended Bus Priority and Cycling Facility options

6.2.1 Transport Modelling Assessment

Transport modelling was undertaken to test the benefits and impacts of the emerging option. The Tauranga Transport Hybrid Model (TTHM) was utilised with a 2031 forecast year scenario that includes projected population growth. The TTHM allows us to examine travel times for; buses, cycles, cars and trucks with the proposed treatments in place. Where interventions require reallocation of road space, an important consideration has been the potential upstream impacts i.e., ability of buses to avoid being delayed by longer traffic queues, and potential safety risks, i.e., traffic queuing back onto State Highway 2 which has an 80km/h operating speed. The modelling at this stage was used to compare options and understand potential impacts, more detailed mode shift modelling will be undertaken as part of the next stage. Full transport modelling findings are included in the modelling report.

The findings of the modelling assessment illustrated the potential impact and benefits associated with the provision of bus lanes:

- The reduction of a southbound general traffic lane through the interchange causes significant additional queueing along Chapel Street. Buses would be delayed, and the benefit of bus lanes negated.
- A reduction in the number of through lanes (northbound or southbound) will have significant impacts on queueing / delays with potential for traffic to queue back along the SH2 off ramp to the expressway through lanes.
- Reducing the number of northbound lanes on Chapel Street north of the Mobil petrol station to Vale Street does not have a significant impact, however detailed modelling of this area including the bay central access intersection will be necessary as part of mode shift modelling to be undertaken in the next stage.

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| Integration of Emerging Preferred Options |



Figure 6-4: Chapel Street Modelling Outputs

6.2.2 Assessment of the combined emerging preferred options

This section of the corridor has significant space constraints that will impact the provision of the emerging preferred cycling facility type and bus priority options identified in the shortlist assessment.

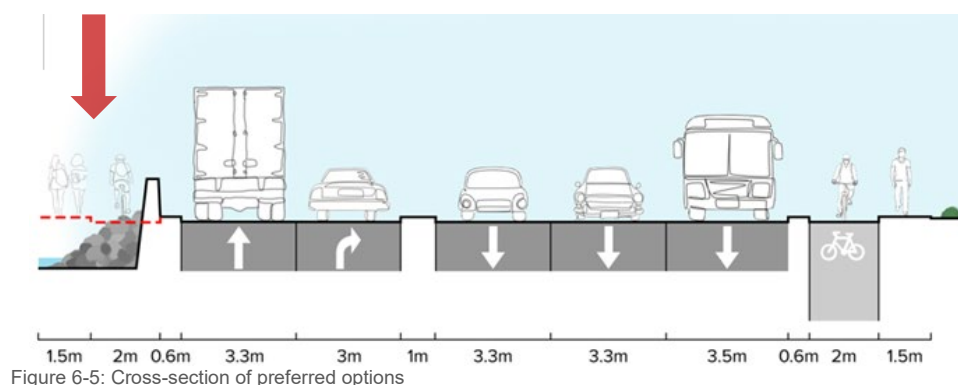
In its current form, both options would require the removal of general traffic lanes, and in order to accommodate both options, two lanes of general traffic would need to be reallocated. The traffic modelling assessments illustrated the significant impact of the removal of a northbound and southbound lane.

In order to mitigate the operational impact, one general traffic lane would need to be retained, and would require widening into the estuary to accommodate the integrated options. Due to the significant cost and consenting risks associated with this option, combining these emerging preferred options in its current form was not recommended.

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6.2.3 Assessment of Alternative Integrated Options

Two alternative options to integrate cycling and bus priority options in this multi-modal area were developed and assessed. The combinations are illustrated in Figure 6-6 below. These options included:

- Gold Bus / Silver cycleway - Emerging preferred bus priority option with the second highest scoring cycling facility type option
- Gold Cycleway / Silver Bus - Emerging preferred cycling facility type with the second highest scoring bus priority option

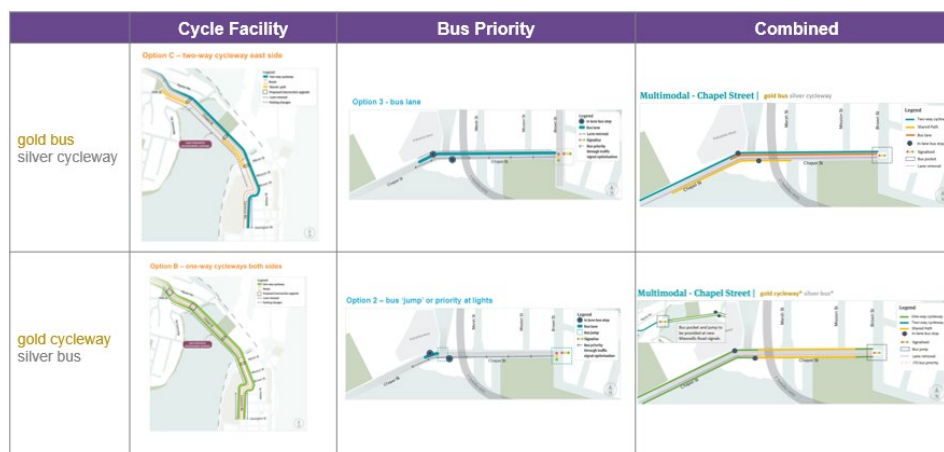


Figure 6-6: Multi-modal Area 1 - Alternative Combinations

Gold Bus – Silver Cycleway

This option, illustrated in Figure 6-7 combines the preferred bus priority option with the second highest scoring cycling facility type option. The findings of the assessment are summarised below:

- To accommodate this option within the existing corridor, one southbound lane of general traffic would need to be reallocated.
- Traffic modelling results indicate that the removal of a southbound lane would lead to widespread congestion, with significant queueing back to Bureta Road.

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- There is not enough available space between Bay Central Shopping Centre and Marsh Street to widen the road to provide a bus lane.
- The Silver cycleway option (which scored significantly lower in the MCA) includes a two-way cycleway on the northern side and a section of shared path on the southern side. Providing a cycleway and bus lane on the north side would require significant changes to road alignments.

Based on the findings of the assessment, this option was not recommended.

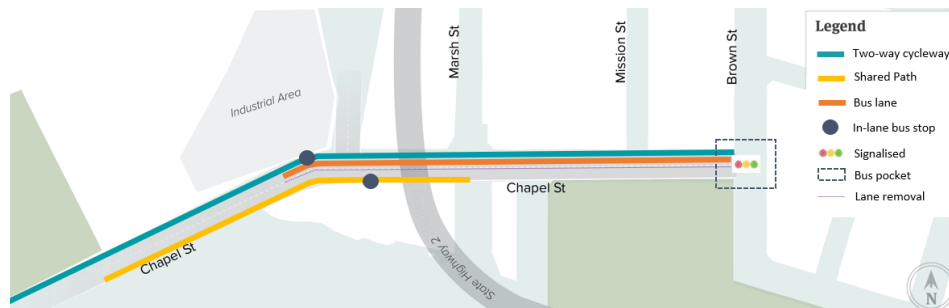


Figure 6-7: Multi-modal Area 1: Gold Bus / Silver Cycleway Combined Option

Gold Cycleway / Silver Bus

This option, illustrated in Figure 6-8 combines the preferred cycleway option with the second highest scoring bus priority option. This option includes a refined gold cycleway option in response to modelling, and to enable the combined option to be provided within the existing corridor. The findings of the assessment are summarised below:

- To accommodate this option, a section of the northbound general traffic lane would need to be reallocated.
- Traffic modelling results indicate that the removal of a northbound lane between the Mobil petrol station and Vale Street has limited traffic impacts. Traffic modelling also indicated that the provision of a bus jump at the new signalised intersection at Maxwells Road would provide more benefits for public transport.
- Between Brown Street and Mobil petrol station, space constraints necessitate the provision of sections of shared paths due to width constraints (particularly through the Chapel Street cutting). North of the Mobil Petrol station dedicated one-way cycleways would be provided.
- Low pedestrian numbers through the cutting on Chapel Street mean that potential conflicts that can be associated with shared paths are considered to be low in this location.
- The gold cycleway option scored significantly higher than any of the other options.



Figure 6-8: Multi-modal Area 1: Gold Cycleway / Silver Bus Combined Option

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Based on the findings of the assessment, this option was recommended as the preferred option for multi-modal area 2.

6.2.4 Multi-Modal Area 1: Confirmation of the Preferred Option

The risks identified in the design feasibility and modelling assessments necessitated refinement of the bus priority and cycleway options to provide a feasible integrated option in this multi-modal area.

The extent and proposed cross-section of the emerging preferred option is illustrated in Figure 6-9 and Figure 6-10. below. This option was confirmed as the preferred option during the integration workshop undertaken with project partners on the 2nd of September 2022.

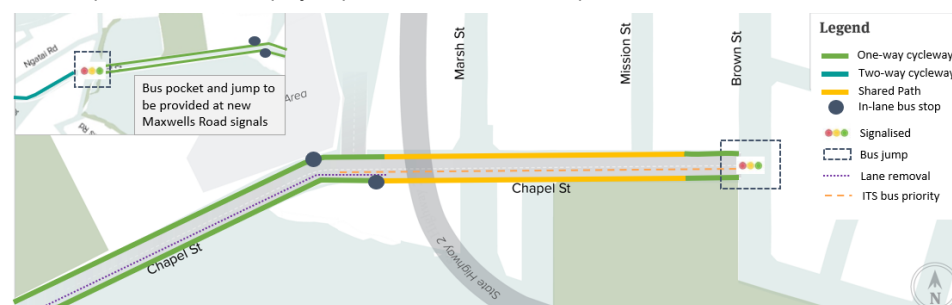


Figure 6-9: Multi-Modal Area 1: Preferred Option

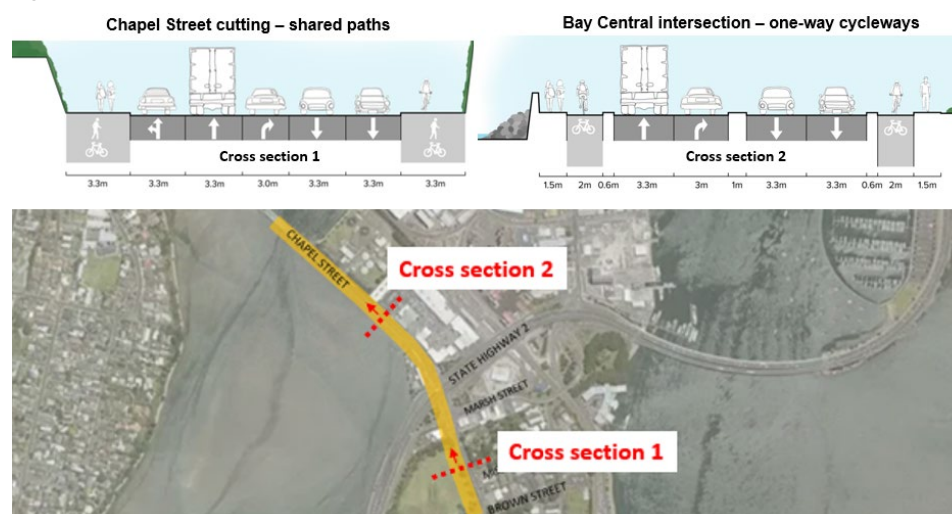


Figure 6-10: Cross-sections of the Preferred Option

6.3 Multi-modal Area 2: Waihi Road / Eleventh Avenue

The emerging preferred bus priority and cycling facility type options identified in the shortlist assessment for multi-modal area 1 is illustrated in Figure 6-11 below.

The preferred bus priority option involves the reallocation of an existing general traffic lane to provide a city-bound bus lane on Waihi Road and Eleventh Avenue between Birch Road and Cameron Road. This option also includes in-lane bus stops and bus jump at the intersection of Waihi Road, Birch Avenue and Oak Lane.



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The preferred cycling facility type in this area consists of one-way cycleways and shared paths on both sides of Waihi Road, which require the reconfiguration of parking outside the Waihi Road shops and on Eleventh Avenue, and the merging of the two eastbound traffic lanes at the Eleventh Avenue cutting.



Figure 6-11: Multi-modal Area 2: Emerging Preferred Bus Priority and Cycling Facility Options

6.3.1 Transport Modelling Assessment

Transport modelling was undertaken to test the benefits and impacts of the emerging preferred bus priority option. The findings of the modelling assessment illustrated the potential impact and benefits associated with the provision of bus lanes:

- The reduction of the eastbound traffic lane from Edgecumbe Road to Cameron Road results in additional queueing along Eleventh Avenue / Waihi Road (Figure 6-12). Buses would be delayed by this potentially negating the benefit of the bus lane.
- The removal of parking for an AM peak bus lane while retaining two general traffic lanes from Edgecumbe Road to Cameron Road but removing a traffic lane between Birch Avenue and Edgecumbe Road appears to perform similarly to the existing road configuration (Figure 6-13).



Figure 6-12: Removal of lane on approach to Cameron Road

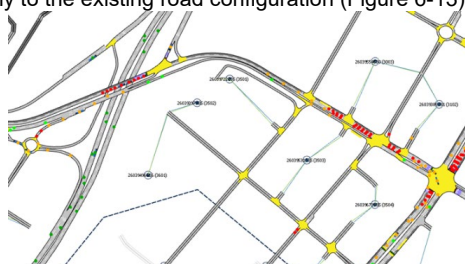


Figure 6-13: Removal of parking on approach to Cameron Road

The modelling also illustrated that the limited benefits of the proposed bus jump at the Birch Street intersection, as traffic queues on Waihi Road prevent the buses from accessing the bus lane.

Modelling for the cycle crossing of the SH2 onramp is necessary to confirm the layout in this area. This will be progressed as part of the developed design.

6.3.2 Design Considerations

The integration of the preferred options highlighted space constraints in the corridor. These are detailed below:

- The **Waihi Road approach to Birch Avenue** from the west is constrained by the adjacent property boundaries and cut/fill embankments, meaning that there is limited space to develop additional lanes prior to the intersection. This resulted in the short bus lane with limited benefits

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and was only viable with the silver cycling option of a two-way cycleway on the southern side due to its narrower footprint.

- The **Eleventh Avenue cutting** creates a restriction in the width of the roadway, with the cross-section at this location consisting of narrow painted cycle lanes, two eastbound traffic lanes, one westbound traffic lane, and a single footpath on the southern side. Access roads and property boundaries at the top of the cutting retaining walls limit the feasibility of widening the roadway. To provide the gold one-way separated cycleways or a bus lane at this location requires the removal of one eastbound traffic lane; the provision of the two together is not possible. The provision of a bus lane with the silver cycling option of a two-way separated cycleway/shared path on the southern side appeared possible, albeit by utilising narrower than desirable widths for some elements of the design.
- Maintaining the existing number of general traffic lanes on **Eleventh Avenue between Edgecumbe Road and Cameron Road**, as highlighted by the traffic modelling, requires an eastbound bus lane to operate in the parking shoulder on the northern side of Eleventh Avenue due to space constraints. This means that on-street parking will not be permitted whilst the bus lane is in operation. The width required to provide all movement elements of the cross-section results in insufficient space to provide right turn bays or a flush median for turning traffic at side roads and property accesses. Right turn bans are therefore required, in conjunction with a narrow-raised median, which also has safety benefits for cycleway users and general traffic. This is required for both the gold and silver cycleway options; despite the silver two-way cycleway requiring less road space, the lateral alignment of the road and safety of any on-road cyclists on the northern side of the road limits any substantial widening of the median.

With the modelling results indicating the feasibility of removing a traffic lane on the Eleventh Avenue Bridge and cutting and the limited benefit of a bus jump at Birch Avenue, it was identified that the key aspects of the gold bus option could be provided with the gold cycleway option.

6.3.3 Multi-Modal Area 2: Confirmation of the Preferred Option

The risks identified in the design feasibility and modelling assessments necessitated refinement of the bus priority option to provide a feasible option in this multi-modal area. The extent and proposed cross-section of the emerging preferred option is illustrated in Figure 6-14 and Figure 6-15 below. This option was confirmed as the preferred option during the integration workshop undertaken with project partners on the 2nd of September 2022.

The preferred option entails the reallocation of a general traffic lane between the exit to Takitimu Drive and Edgecumbe Road. The bus lane would commence at the exit to Takitimu Drive and end prior to the cutting, where the bus lane would merge with the general traffic lane and a cycleway would be provided utilising the reallocated lane space. The provision of a bus lane requires the removal of on-street parking during peak times between Edgecumbe Road and Cameron Road.

The bus jump is relocated from Birch Avenue to the signals on the overbridge to improve the reliability of bus travel times by enabling buses to get in front of general traffic prior to the merge at the cutting.

Initial modelling assessments indicate that this integrated option would be feasible, with further modelling required during the development of the recommended option to assess the impact of the new signals at the SH2 on-ramp.

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| Integration of Emerging Preferred Options |



Figure 6-14: Multi-Modal Area 2: Preferred Option

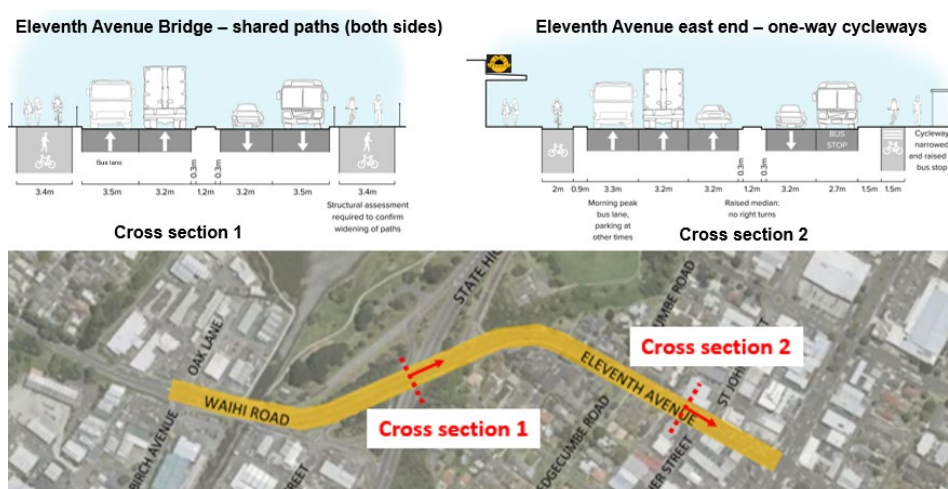


Figure 6-15: Cross-Sections of Preferred Option

6.4 Accessible Streets Emerging Preferred Options

The outcomes of the assessment process, which confirmed the emerging preferred options for all components of the Accessible Streets SSBC, are summarised in Table 6-1 and Figure 6-17 below.

Table 6-1: Accessible Streets - Emerging Preferred Options

MCA Component	Accessible Street Component	Option #	Option Description
Cycle Facility Type	Cycle Section 1 - Chapel Street	B	One-way cycleways, northbound lane removed from Mobil to Vale Street
	Cycle Section 2 - Ngatai Road	C	Two-way cycleway on northern side
	Cycle Section 3 - Windsor Road	A	Two-way eastern side (one-way traffic)
	Cycle Section 4 - Bellevue Road	C	North of Brookfield roundabout – two-way cycleway on western side. South of Brookfield roundabout – one-way cycleways on both sides
	Cycle Section 5 - Waihi/11th Avenue	A	One-way cycleways / shared paths
Multi-modal Areas	Chapel Street	3	Bus lane from WWTP to Brown Street
	Waihi Road / 11th Avenue	3	Bus lane from Birch Avenue to Cameron Road

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MCA Component	Accessible Street Component	Option #	Option Description
Primary Bus Route	Bus Stop Improvements	4	Major upgrades to high priority stops, minor upgrades to medium and low priority stops, optimisation of bus stop locations
Neighbourhood Streets	Ngatai Road Area	1	30km/h speed limit, speed treatments, pedestrian upgrades, urban realm upgrades
	Windsor Road Area	1	30km/h speed limit, speed treatments, pedestrian upgrades, urban realm upgrades



Figure 6-16: Accessible Streets - Emerging Preferred Options

6.5 Cost Estimates

Comparative cost estimates have been prepared for the emerging preferred options. It should be noted that these are not based on a preliminary design and as such is not detailed cost estimates. The comparative cost estimate **should not** be used for funding applications or any budgeting, as they are only for high level comparative purposes between options.

The comparative cost estimates have been compiled using composite rates from similar cycling projects in Christchurch. Rates were used to determine costs for typical intersection arrangements and a typical per meter rate for a one-way / two-way / shared path facility with road widening or constructing within the existing road.

The composite rates used for the cost estimates are from 2021. A Low, Middle, and High estimate has been provided for each cost estimate component. A 30% contingency has been applied to the 2021 rates to produce the Low-cost estimate. This accounts for the change in market cost for materials to date (approximately 10%) and a contingency of 20%.

A further 30% contingency has been applied to the Low-cost value to produce the High-cost value. This accounts for the associated project risk with pricing at this early design stage. The Low and High-cost estimates provide an expected range in which the project costs are expected to fall, with the Middle estimate being the mean of the Low and High estimates.

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Four of the five safety intersections have been included within the cycle facility costs as they are on the cycle route and will need upgrading to provide cycle facilities through the intersection. The Cherrywood Drive / Ōtūmoetai Road intersection has been shown as a separate item as it is not on the cycle route.

Some costs associated with the multi-modal areas are included in the cycleway costs, where the works are also necessary for the cycleway. The costs shown for the multi-modal areas are the additional works required to install the bus lanes and/or jumps identified.

The comparative cost estimates have been prepared separately for all MCA components to provide an indication of cost for each component so that it can align with the appropriate funding source.

The indicative cost estimates for the recommended options are included in Table 6-2 below.



| Integration of Emerging Preferred Options |

Table 6-2: Cost Estimates of Emerging Preferred Options

Accessible Street Component	Option #	Option Description	Length (m)	Physical Works Cost (Low)	Physical Works Cost (High)	Design & MSQA Cost
Cycle Section 1 - Chapel St	B	One-way cycleways, northbound lane removed from Mobil to Vale Street	1505	\$8,070,000	\$10,500,000	\$1,065,000
Cycle Section 2 - Ngatai Rd	C	Two-way cycleway north side	2080	\$8,120,000	\$10,560,000	\$1,072,000
Cycle Section 3 - Windsor Rd	A	Two-way east side (one-way traffic)	1470	\$4,270,000	\$5,560,000	\$564,000
Cycle Section 4 - Bellevue Rd	C	North of Brookfield roundabout – two-way cycleway west side. South of Brookfield roundabout – one-way cycleways both sides	1430	\$6,710,000	\$8,730,000	\$886,000
Cycle Section 5 - Waihi/11th Ave	A	One-way cycleways/shared paths	1900	\$10,750,000	\$13,980,000	\$1,419,000
Multi-Modal - Chapel St	3	Bus lane from WWTP to Brown St	660	\$1,600,000	\$2,080,000	\$211,000
Multi-Modal - 11th Ave	3	Bus lane from Birch Ave to Cameron Rd	940	\$300,000	\$390,000	\$40,000
Bus Stop Improvements	4	Major upgrades to high priority stops, minor upgrades to rest	8650	\$2,460,000	\$3,200,000	\$325,000
Neighbourhood Streets Ngatai	1	30km/h speed limit, speed treatments, pedestrian upgrades, full urban	590	\$890,000	\$1,160,000	\$117,000
Neighbourhood Streets Windsor	1	30km/h speed limit, speed treatments, pedestrian upgrades, full urban	1850	\$2,930,000	\$3,810,000	\$387,000
Cherrywood Drive Intersection		Intersection improvements, connection to Ngatai Road facility	240	\$716,000	\$940,000	\$95,000
Artwork Across Project		Allow for 1% of PW cost for art/feature installations along route		\$468,610	\$610,000	
TCC Internal Costs		TCC Internal Costs		\$1,871,040	\$1,844,000	
				\$49,156,800	\$63,364,000	\$6,181,000
Total Cost Low (PW + Design & MSQA)						\$55,337,000
Total Cost Mid (PW + Design & MSQA)						\$62,441,400
Total Cost High (PW + Design & MSQA)						\$69,545,000

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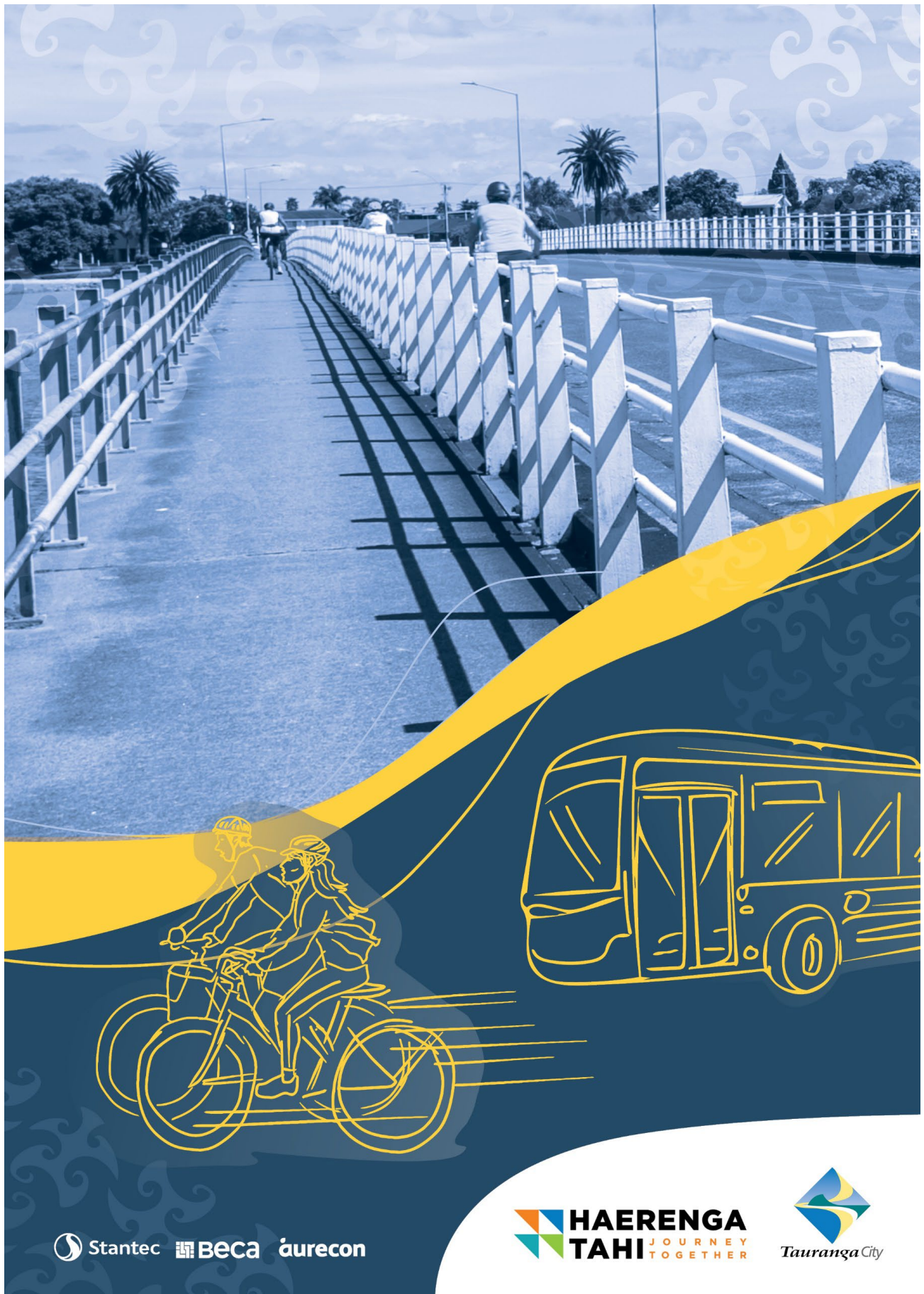
7 Conclusion and Way Forward

This assessment report outlines the process undertaken to confirm the emerging preferred options for all components of the Accessible Streets SSBC. Community feedback is also integral to option selection. While the consultation report is being prepared by TCC, it will be included as part of the appendices and key feedback will be considered further through concept design development

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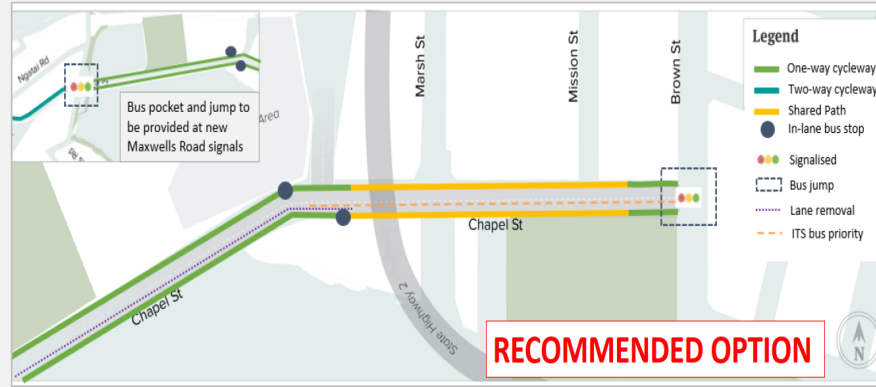


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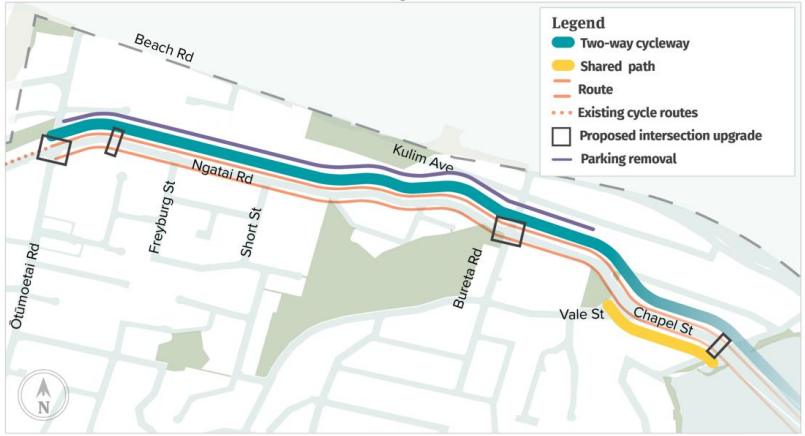
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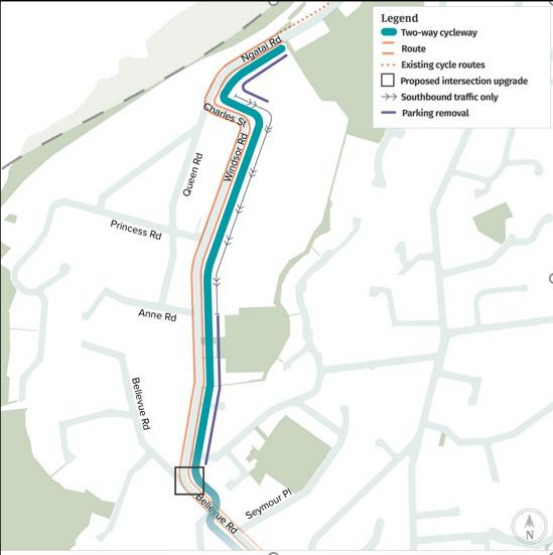
Accessible Streets for Ōtūmoetai - Emerging Options, Key Themes from community feedback and staff response

MCA Type	Sections	Map #	Emerging option key considerations	Key Themes Community and Stakeholder feedback	Considering feedback – Staff response
Multi- Modal	<p>Section 1 -Cycle and Bus Priority - Chapel Street between Harington Street and Maxwells Road</p> <p>One-way cycleways and shared path, northbound lane removed north of Mobil to Vale Street, Bus jumps and signal priority at Brown Street</p>	1	 <p>The emerging option is a hybrid of two options being a one-way cycleway and shared paths in some locations. Key elements include:</p> <ul style="list-style-type: none"> parking between Harington and Brown Streets is changed to parallel parks, some reduction in spaces likely Maintains trees outside the court (removed with two-way cycleways or shared paths) minor road widening traffic signals at Brown str and Maxwells Road that includes Bus jumps and signal priority for buses. Bus stops are in- lane removes one northbound traffic lane north of Mobil to Vale Street. <p><u>Note:</u> options to remove either a southbound or northbound lane from Brown Street to south of Mobil to accommodate either bus or transit lane was modelled. No lane removals in these locations are recommended due to significant impacts on the state highway and the local network. Removal of lanes also increase bus travel delays along Browne Street and Willow Street which negates any benefits potentially derived.</p>	<p>Cycleway feedback 44% of people supported a shared path with 27% supporting one-way cycleways and 29% supporting a two-way cycleway. The key themes include:</p> <ul style="list-style-type: none"> Support for the shared path given that it benefited pedestrians as well and negated the removal of the northbound lane. Removal of trees on Cameron Road was of significant concern with the two-way cycleway. There are people that suggest that one way cycleways should be the only treatment option. Businesses in the vicinity of Marsh Street are concerned with potential traffic delays and impacts on access as a result of cycleways or removal of lanes. Bay Central businesses and tenants have raised concerns with the impacts on access in and out of Bay Central as a result of lane reduction, including weekend peak demand. <p>Bus priority feedback 54% of people supported bus journey time improvements, with a stronger preference for transit lanes (38%) rather than bus lanes. Those not supporting bus improvements was due to lack of patronage, expense and removal of lanes will cause traffic congestion.</p>	<p>Feedback has been carefully considered as part of recommending the emerging option.</p> <ul style="list-style-type: none"> Modelling has confirmed that the complete removal of lanes between Brown Street to South of the Mobil site on Chapel Street will have adverse impacts on Marsh Street businesses and Bay Central. It will negatively impact overall bus journey times and have significant impacts on SH2. Further modelling is being undertaken to determine additional opportunities to provide a higher LoS for buses south of the Mobil site and Brown Street. The northbound lane removal north of Mobil site which is past the queues for vehicles turning right into Bay Central does not have a significant impact i.e. additional delay of roughly 1 minute over that section. Removal of the outbound lane north of Mobil to Vale Street is needed as there is insufficient space without widening into the estuary. Widening into the estuary would add significant cost and substantial environmental impacts. The trees will be retained with one-way cycleways. Shared paths are also provisioned that would also support pedestrians using this area. We appreciate the strong support for improved bus priority with the preference for transit lanes and bus stop improvements across all the options. Transit lanes will be further considered in the Waihi Road section of the project

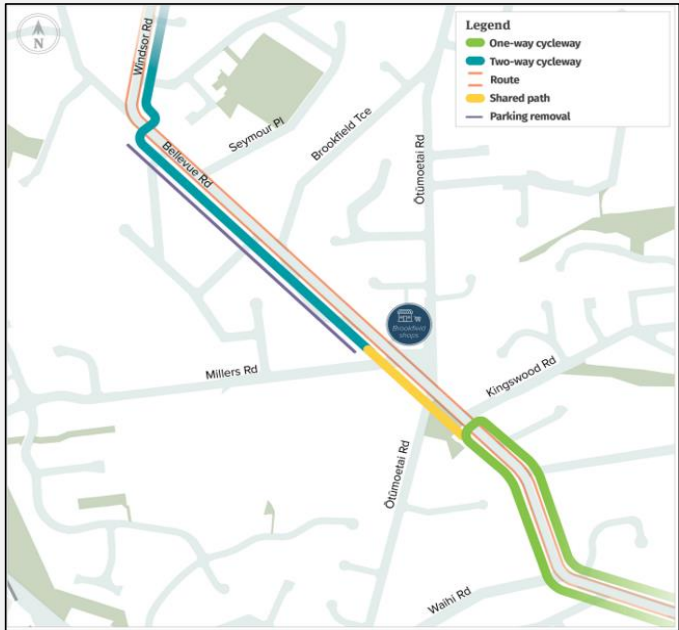
Accessible Streets for Ōtūmoetai - Emerging Options, Key Themes from community feedback and staff response

MCA Type	Sections	Map #	Emerging option key considerations	Key Themes Community and Stakeholder feedback	Considering feedback – Staff response
Cycleway and bus improvements	<p>Cycle Section 2 – Ngatai Road between Maxwell Road and Ōtūmoetai Roundabout. This option proposes a two-way cycleway on the north side of Ngatai Road. This option requires minimal road widening and will require the removal of on-street parking on the north side of the road. The majority of parking on the south side will be maintained. . While other options require the closure of the Vale Street and Ngatai Road slip lanes, this option only requires the relocation of these lanes and does not require their full closure. All options include new traffic signals at the intersection of Chapel Street and Vale, Bureta and Ōtūmoetai Roundabout.</p>	2	<div></div> <p>The emerging option has the least overall impact on residents and business due to least loss of parking. Key elements include:</p> <ul style="list-style-type: none">• two-way cycle way• shared path extended to Vale Street to improve access to the area• parking removed on north side; most parking retained on south side (minor parking removal)• minimal road widening• removal of Vale Street and Ngatai Road slip lanes• signalisation at Bureta/ Ngatai intersection (all turns available).• traffic signals and bus queue jumps at Maxwell Road• signalisation of Ōtūmoetai roundabout	<p>51% of people supported a two-way cycle way on the northside given parking can be retained on one side of the road. 31% supported one way cycleways while maintaining parking. This will be achieved by undergrounding of power poles, widening the road and narrowing footpaths. 18% supported cycleways with removal of all parking. The key themes are:</p> <ul style="list-style-type: none">• Concerns were raised as to why an alternative route along Harbour Drive was not progressed• Safety concerns with Ōtūmoetai/Ngatai Road roundabout for people cycling.• Access across Maxwell Road requires improvement.• Opposition to removal of all parking or widening, it will have a significant impact on footpath use• Consider widening the footpath towards Bureta Shops as it is very narrow. Concerns that when two people in a wheelchair try to pass, they cannot do so.• Extend cycleways down Levers Road, connecting to Ferguson Park via Tilby Drive and Ōtūmoetai Road to Ōtūmoetai Primary.• Concerns were raised regarding access to properties and associated safety concerns• Some businesses believed that parking and access implications would be detrimental to their business. Concern from a business/resident around potential implications of the proposal on property value.• The kindergarten and around 20 parents provided strong support for the project and supported two-way cycleways and maintaining parking on one side.• Some residents were happy with the slip lane removal at Ngatai	<p>Substantial feedback was provided for the team to consider. In response to the key themes:</p> <ul style="list-style-type: none">• Ngatai Road scored higher because it will provide the best opportunity for the greatest number of people to access the city centre, shops and schools Unfortunately, Harbour Drive can only be accessed via Ōtūmoetai Road and Maxwell Drive with a railway corridor in-between.• The safety of the intersections at Ōtūmoetai Road Roundabout and Bureta Road are acknowledged and proposed to be signalised.• Access improvements across Maxwell Drive are proposed to be improved with an intersection upgrade.• We acknowledge the concern for businesses around parking and access. This has been considered with the emerging option by maintaining parking on one side of the road. Staff will work with businesses during the concept design development.• The opportunity to incorporate some footpath widening within the scope of work will be considered as part of the concept design development.• We appreciate the feedback to extend the project to other roads within the peninsula. This project is a first step to connect to the city centre and the large cluster of schools in the Windsor Road area. As part of the spatial plan and development and the next Long Term Plan for consideration.• In response to the potential for property value decreasing. We have undertaken research in the area. A model developed in the US, as part of research that examined factors affecting property values in

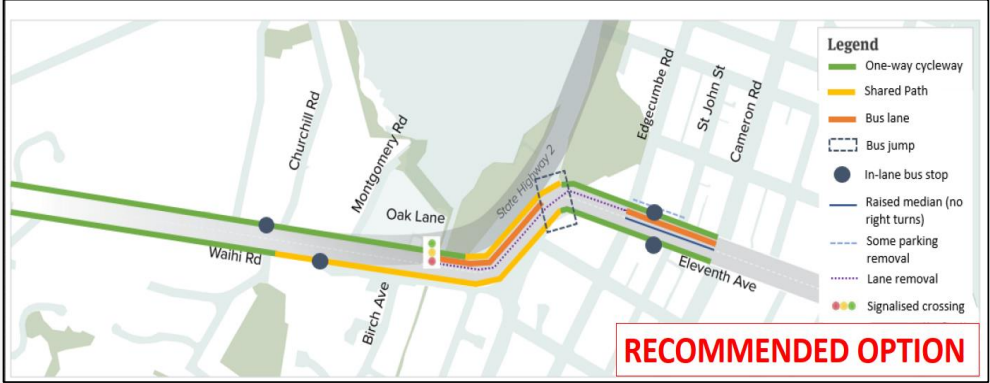
Accessible Streets for Ōtūmoetai - Emerging Options, Key Themes from community feedback and staff response

MCA Type	Sections	Map #	Emerging option key considerations		Key Themes Community and Stakeholder feedback	Considering feedback – Staff response
					<p>Road/Chapel Street intersection given the safety issues with people speeding through that section.</p> <ul style="list-style-type: none">• Safety concerns with Bureta intersection was a high priority for people as part of the Spatial Plan feedback	<p>Delaware, showed that a bicycle path would be expected to increase property values by about US\$8,800. The research indicated that the presence of a bike path either increased property values and ease of sale slightly or had no effect.</p> <ul style="list-style-type: none">• A study in Pittsburgh found that both property owners and real estate agents both agree that bike paths led to increases in business and property selling prices. Similarly results from the City of Vancouver indicated that 65% of realtors would use the bikeway as a selling feature of a home.
	<p>Cycle Section 3 - Charles Street to Bellevue Road along Windsor Road</p> <p>Proposes a two-way cycleway on the east side of Windsor Road. To accommodate the two-way cycleway and retain parking on both sides of the road this option removes a general traffic lane on Charles Street and Windsor Road between Ngatai Road and Anne Road to introduce a one-way circulation system.</p>	3		<ul style="list-style-type: none">• The emerging option provides the highest number of on-street parking spaces, which caters for the demand from nearby schools and recreation centres.• Restricting Windsor Road traffic to one-way southbound from Ngatai Road to Anne Road has safety and operational benefits around the schools and permits more on-street parking.• However, this option requires all northbound traffic to reroute onto Anne Road and Queen Street, which has a negative residential impact related to traffic volumes.	<p>71% of people supported a two-way cycleway on the school side of Windsor Road due to close access to school. 32% of those preferred the road to be widened and two-way traffic maintained. 39% supported a one-way (vehicle) system. Key themes from feedback:</p> <ul style="list-style-type: none">• Concern about loss of parking due to the large number of sporting events. The one-way system is supported given the option that maintains the most parking• Two-way on the school side is supported as it was coherent with what was on Ngatai Road and provides easy and safe access to and from school• Widening of the road is not supported by some residents with concern of encroachment towards properties.• For some schools, the preference would be a two-way traffic system	<p>In response to the concerns raised:</p> <ul style="list-style-type: none">• We appreciate the loss of parking is important. The one-way system is the only option that maintains parking on both sides of the road. Taking into account the needs of local residents not to encroach towards their property boundaries has been considered.• The option of having speed limits applying during school times is supported and can be accommodated

Accessible Streets for Ōtūmoetai - Emerging Options, Key Themes from community feedback and staff response

MCA Type	Sections	Map #	Emerging option key considerations	Key Themes Community and Stakeholder feedback	Considering feedback – Staff response
			<ul style="list-style-type: none">Traffic routes to business on the Princess / Windsor Road corner will change and requires consideration to the location of business parking along Princess Road.Overall, the support from nearby schools to minimise on-street parking loss and improve student safety resulted in this option being identified as the preferred option	<p>with angle parking. This would be achieved by widening of the road.</p> <ul style="list-style-type: none">For some the proposals are a waste of money and a clearway could be put in place during school times instead.A full-time speed limit should not be progressed and should be accommodate during school times only.	
	<p>Cycle Section 4 - Bellevue Road North of Brookfield roundabout – two-way cycleway on western side. Parking retained on the east side. South of Brookfield roundabout – one-way cycleways on both sides</p>	4	<div></div> <p>The emerging option proposes:</p> <ul style="list-style-type: none">a two-way cycleway on the west side of Bellevue Road between Windsor Road and Millers Road with shared path facilities through the Brookfield roundabout area, Lees Park.One-way cycleways are provided on both sides of the road south of the roundabout.North of the roundabout this option requires the removal of parking on the west side of the road however retains parking on the east.This option also has the least impact on business at Brookfield as well as the managing the potential operational challenges with the Brookfield Roundabout. Heading towards the city, one-way cycleways are proposed due to gradients.	<p>45% of people supported a two-way on one side of the road with 45% supporting a one-way cycle on each side of the road for its length. The key themes include:</p> <ul style="list-style-type: none">The support for one way were associated with ease of access from side road or properties.Loss of parking for residents determined the preference for two-way cycleways.Support for use of Lees Park given it is quiet and open, and underused, and the cycle path through it would be more beneficial to a greater number than not.Navigating the Brookfield Roundabout	<p>In response to feedback:</p> <ul style="list-style-type: none">It is important to balance the needs of many users together with the needs of residents. Provision of some of parking on one side of the road for residents and visitors has been considered in the emerging option.The emerging option has the least impact on the Brookfield roundabout and the surrounding businesses.The impacts of a one-way cycleways on the Brookfield shops have also been considered together with the potential challenges of navigating through the roundabout at the Brookfield intersection. This option therefore has not been recommended.The reason for the one ways and shared paths south of Bellevue Road is that significant technical complexities associated with its design due to the severe space constraints, gradients of the road which create safety concerns. In this section, investigations illustrated that a one-way cycleway would it be more feasible.The two-way cycleway alignment through the Bellevue cutting creates a very narrow contraflow separated cycle lane up the hill, which requires the downhill riders

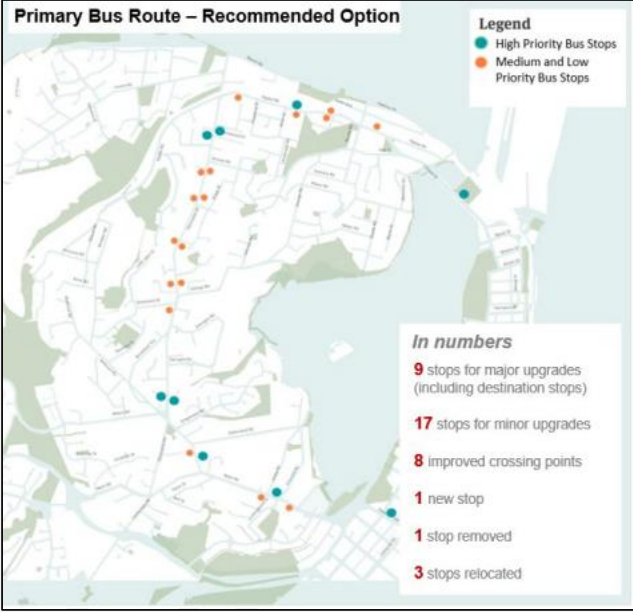
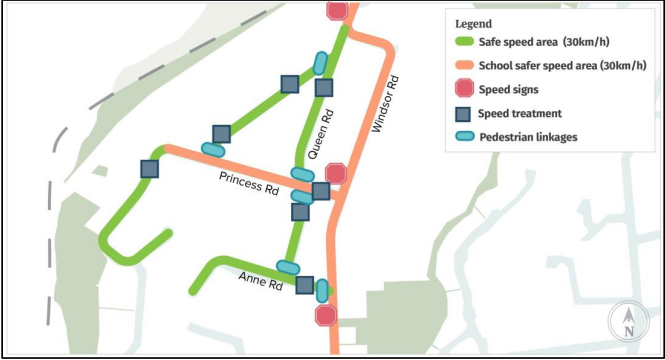
Accessible Streets for Ōtūmoetai - Emerging Options, Key Themes from community feedback and staff response

MCA Type	Sections	Map #	Emerging option key considerations	Key Themes Community and Stakeholder feedback	Considering feedback – Staff response
					to use the traffic lane or the residential service lane. Safety assessments identified the potential risk that a cyclist heading towards Brookfield may use the narrow cycleway through the cutting, which would create direct conflict with cyclists using the facility up the cutting.
Cycle and Bus Facilities (Multi modal)	Cycle Section 5 - Waihi/11th Avenue One-way cycleways / shared paths and bus priority measures	5	<div></div> <p>For cycling The preferred cycling facility type in this area consists of</p> <ul style="list-style-type: none">one-way cycleways and shared paths in some sections on both sides of Waihi Road. These changes require reconfiguration of parking outside the Waihi Road shops and on Eleventh Avenue, and the merging of the two eastbound traffic lanes at the Eleventh Avenue cutting.The use of one-way cycleways in this location is due to the grades through the cutting and the potential conflict and speed differential that a two-way cycleway at this location would introduce. <p>For buses The preferred option entails:</p> <ul style="list-style-type: none">the reallocation of a general traffic lane between the exit to Takitimu Drive and Edgecumbe Road.The bus lane would commence at the exit to Takitimu Drive and end prior to the cutting, where the bus lane would merge with the general traffic lane and a cycleway would be provided utilising the reallocated lane space.The provision of a bus lane requires the removal of on-street parking during peak times between Edgecumbe Road and Cameron Road.The bus jump is relocated from Birch Avenue to the signals on the overbridge to improve the reliability of bus travel times by enabling buses to get in front of general traffic prior to the merge at the cutting.	<p>For cycling 41% of people preferred one way cycle ways with 28% of those preferring that the flush median be maintained. 48% preferred a two-way cycleway and shared path on the south side of Waihi Road. The key themes include</p> <ul style="list-style-type: none">A group of businesses located near Koromiko / Waihi rd. roundabout are concerned with the potential impact to their business. Their concerns also relate to safety between significant volumes of traffic and two way cycle facilities with a preference for one way cycleways to be maintained at their current location. Concerns , removal of the roundabout, access, and egress arrangements as well as the safety of navigating through the area with a shared path.McDonalds at the corner of Eleventh Ave and Cameron Rd has expressed concerns over the potential restriction of vehicles turning right from Eleventh Ave into 1 of their 3 access points.Loss of parking at Edgecumbe Road and implications of bus lane <p>For buses Similar to Chapel Street multi modal, of the 67% of people that provided feedback into the options, 44% preferred transit lanes rather than bus lanes. A Further</p>	<p>In response to the concerns raised:</p> <ul style="list-style-type: none">The emerging option of a one-way cycle facility provides the best opportunity given that forward visibility approaching the cutting is restricted if a two way cycleway is provided.The one way cycleways is also preferred due to the high volume of turning movements from the retirement village and businesses along Waihi Road.The one way cycleways and shared path mitigates the concerns for business in Koromiko area. Staff have met with the businesses to better understand their operational constraints and what needs to be considered during the development of the concept plan. Staff have committed to work with them throughout the development of the concept designDue to the short distance between the cutting and the Waihi Road section, there are significant benefits associated with the provision of a consistent facility type in this location. It will improve the legibility of the cycleway through the Waihi / Bellevue intersection and improve connectivity, continuity, and directness.Staff will meet with and work through the concerns with

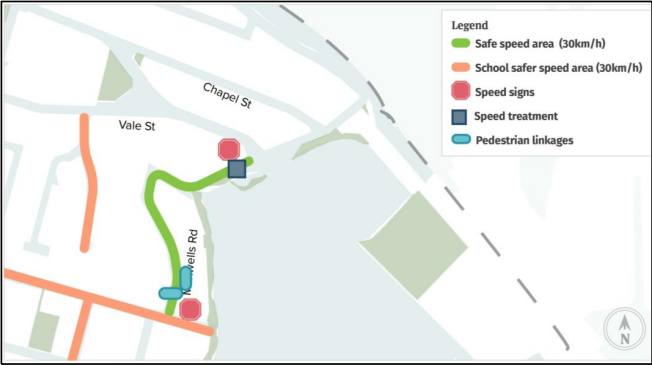
Accessible Streets for Ōtūmoetai - Emerging Options, Key Themes from community feedback and staff response

MCA Type	Sections	Map #	Emerging option key considerations	Key Themes Community and Stakeholder feedback	Considering feedback – Staff response
			<ul style="list-style-type: none">Initial modelling assessments indicate that this integrated option would be feasible, with further modelling required during the development of the recommended option to assess the impact of the new signals at the SH2 on-ramp.	33% of people supported bus jumps or priority at lights.	<p>McDonalds regarding concerns around access.</p> <ul style="list-style-type: none">In seeking a balance between business parking needs, any bus lanes or transit lanes will be a morning peak clearway to mitigate impacts on parking. This will also serve buses well when congestion impacts are at its worst.The opportunity for transit lanes will be further explored through the concept design development.

Accessible Streets for Ōtūmoetai - Emerging Options, Key Themes from community feedback and staff response

MCA Type	Sections	Map #	Emerging option key considerations	Key Themes Community and Stakeholder feedback	Considering feedback – Staff response
Primary bus routes	Bus Stop Improvements Major upgrades to high priority stops, minor upgrades to medium and low priority stops, optimisation of bus stop locations. In lane bus stops at high priority stops including multi modal areas to provision improved journey times for passenger transport		<div><p>Primary Bus Route – Recommended Option</p><p>Legend</p><ul style="list-style-type: none">High Priority Bus StopsMedium and Low Priority Bus Stops<p>In numbers</p><ul style="list-style-type: none">9 stops for major upgrades (including destination stops)17 stops for minor upgrades8 improved crossing points1 new stop1 stop removed3 stops relocated</div> <p>Well-designed bus stops in the right location provides consistent, safe, and attractive bus infrastructure required to support mode shift and improve travel choice. The preferred option proposes to upgrade all bus stops on the primary bus route to the minimum prescribed standard, which will make the stops easy to identify, safe, comfortable, and attractive to use. The design of the bus stops located on Chapel Street, Ngatai Road and Waihi Road will need to be integrated with the emerging preferred cycling facility type. Some adjustments to the nature of bus facility will be required, and it is likely that a number of the stops will be adjusted to be ‘in lane’ bus stops</p>	73% of people supported bus stop upgrades to include shelters and seating at a min. 49% of people supported in lane bus stops with 38% disagreeing. Key feedback surrounding in lane bus stops are associated with safety issues within lane bus stops and congestion. Those in support felt that it would improve journey times buses.	With regards to in lane bus stops, the Safety concerns raised are already a key consideration for the concept design where a further opportunity for feedback will be provided in early 2023.
Neighbourhood Streets	Windsor Road Area 30km/h speed limit, speed treatments, pedestrian upgrades, urban realm upgrades	7	 <p>Legend</p> <ul style="list-style-type: none">Safe speed area (30km/h)School safer speed area (30km/h)Speed signsSpeed treatmentPedestrian linkages	69% of people supported a higher level of neighbourhood street interventions. 19% of people disagreed and opted for the minimum which only included a speed reduction and signage	The option of having speed limits applying during school times is supported and can be accommodated. Further feedback will be sought on any proposals including speed limits early in the 2023.

Accessible Streets for Ōtūmoetai - Emerging Options, Key Themes from community feedback and staff response

MCA Type	Sections	Map #	Emerging option key considerations	Key Themes Community and Stakeholder feedback	Considering feedback – Staff response
			<p>The Emerging option provides the highest level of Neighbourhood Street type interventions, that include speed treatments such as speed ramps or raised tables, Safer pedestrian linkages and urban redevelopment with possible amenities such as park benches, and green spaces for the community to enjoy.</p>		
	Maxwells Road and Pillans Point Road 30km/h speed limit, speed treatments, pedestrian upgrades, urban realm upgrades	6	 <p>The map shows a section of Maxwells Road and Pillans Point Road. A legend indicates: Safe speed area (30km/h) in green, School safer speed area (30km/h) in orange, Speed signs in red, Speed treatment in blue, and Pedestrian linkages in teal. The map shows a green line along Maxwells Road, an orange line along Pillans Point Road, and a blue square on Maxwells Road. A red circle is on Pillans Point Road. A teal line connects the two roads. A north arrow is in the bottom right corner.</p>	<p>57% of people supported a higher level of neighbourhood street interventions. 43% of people disagreed and opted for the minimum which only included a speed reduction and signage.</p> <p>Feedback was also received around location of potential speed treatments or pedestrian crossing facilities. Pillans Point Primary school are supportive of changes but would like to see more detail.</p>	<p>Majority of the 43% that preferred the minimum option was mostly concerned about speed bumps. Speed humps is only one intervention type proposed to traffic calm the street. Concept design will seek a balance between intervention types.</p> <p>Current feedback around location of speed tables or pedestrian facilities will be considered during the concept design development.</p>

Accessible Streets for Ōtūmoetai Peninsula

Engagement report

October 2022

1. Report purpose

This report provides a summary of all community engagement activity undertaken with key stakeholders, the wider community and mana whenua to inform the *Accessible Streets for Ōtūmoetai Peninsula* project. Community feedback collected from August to September 2022 was then used to help inform a preferred option for multimodal and road safety improvements on the Ōtūmoetai Peninsula. If the preferred option is endorsed by Tauranga City Council in November 2022, a second round of engagement will be undertaken in early 2023 on the concept design of the preferred option.

This engagement report summarises:

- the engagement approach
- the key themes of what we heard about the options being considered
- next steps.

2. Role of engagement for Accessible Streets – Ōtūmoetai Peninsula project

The purpose of the Accessible Streets programme is to support a shift from private vehicles to more energy efficient, low cost and active modes of transport such as walking, cycling and public transport by delivering a connected network of cycleways, improving bus journey times and infrastructure, and making it safer for pedestrians and other road users. To change the layout of roads in a city that has been built in narrow peninsulas and waterways will be challenging. These changes include:

- Prioritising road space between modes – i.e., between bus and bike and which mode has priority where and how, as well as potential impacts to local businesses or overall traffic flow.
- Reallocating road space from motor vehicles for people to walk, cycle or bus will inevitably create challenges such as increased congestion when lanes are used for alternative purposes.
- Loss of parking or changes to access for residents and/or businesses.

To mitigate these challenges, a multi- criteria analysis (MCA) option analysis was undertaken that takes a holistic view of options, seeks early feedback from the local community and stakeholders to enable clear and transparent decision making. Strategic modelling is undertaken to understand the impacts to the network.



The MCA framework connects the problems the project is seeking to address, the benefits that the project would bring and how these will be measured. The MCA also assesses the technical feasibility of the options and a range of other criteria. KPIs include:

- Safety and cycling criteria or bus needs
- Cultural and environmental impacts
- Impact to businesses or residents
- Impacts on traffic flows
- Site factors that impact the ability to provide an option (as well as its impact to the community) and determining the types of facility options that may be appropriate for the section
- Project risk and cost
- Early community feedback is integral to the process.

This process provides decision makers and the community with a deeper level of transparency and confidence in the resulting outcome.

A stakeholder mapping exercise was undertaken at the start of the project to determine who we needed to engage with through the process. We deliberately cast a wide net for stakeholder identification as we wanted to ensure that the various community groups and schools within the Ōtūmoetai Peninsula were included and made aware of the project and how they could have their say. Those stakeholders were contacted early on to confirm interest and for those representing a wider community group, school or organisation.

We undertook a series of workshops with project partners and technical experts to determine a short list of about 35 possible options for improvements on the identified route. Our project partners included the Bay of Plenty Regional Council, mana whenua and Waka Kotahi

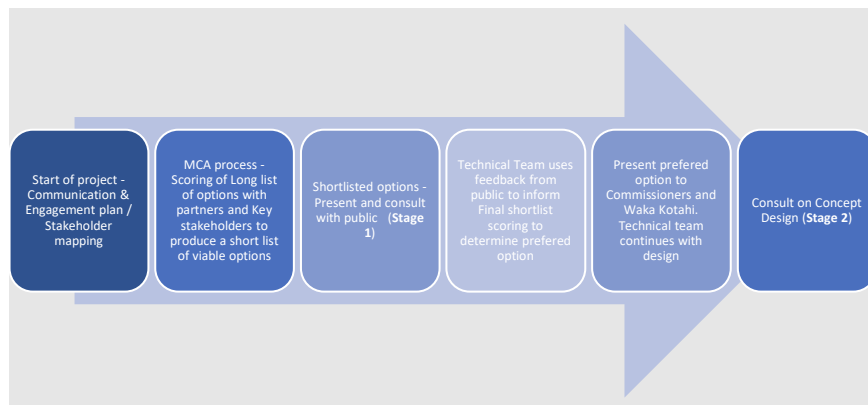
We consulted with the wider community and stakeholders on the various options to understand what concerns they may have and what their preferences were. Referred to as Stage 1 engagement, we were keen to hear their ideas on the various options and how best to support and enhance how they live, work, play and move around this area, now and into the future.

The feedback received during the first round of engagement (as summarised in sections below) helped informed the emerging option along with other technical assessments. If the project partners and the Council endorse the preferred option, the concept design with Stage 2 consultation planned for early 2023.

The purpose of Stage 2 engagement will be to seek feedback from the community and stakeholders on the concept design. All information gathered will feed into the final business case, which will then be presented to Commissioners and Waka Kotahi for approval.

Mana whenua representatives from the Ōtūmoetai Peninsula have held a pivotal role in working with Council from the inception of this project, and further details relating to that partnership role are included later in this report.





3. Option selection engagement approach

The objective of Stage 1 engagement was to seek feedback from the community and stakeholders on the various options. In particular which options were more or less preferred.

A key objective of our engagement approach was to ensure we made it easy for the wider community to provide their feedback on the short-listed options. For that reason, we developed a survey that we believe the community would best respond to. As an alternative, people could also complete the survey at the drop-in sessions, or send their feedback via email to the project team

To ensure people were aware of the project and the survey, we decided to deliver a multi-faceted communications approach which included:

- 292 letters sent to businesses in July 2022 with options to attend two webinars or an in-person presentation and discussion in August 2022
 - 6841 letters sent directly to affected residents or businesses in July with options to attend three drop-in sessions, webinars or meet the project team in person in August.
 - Key stakeholders invited to workshops including Cycle Action Tauranga, disability groups, NZ Police, emergency services and other stakeholders on 4 August 2022.
 - A workshop held with school principals from Ōtūmoetai Intermediate, Ōtūmoetai College, Bellevue Primary and Brookfield School on 10 August 2022
 - A further 11,085 letters sent in August inviting all residents and businesses in the area to provide feedback on various options along the corridor with a further three drop-in sessions held in September
 - , A series of print articles and advertisements about the project in The Weekend Sun and Bay of Plenty Times newspapers during August to September, as well as digital advertising on Stuff, SunLive and the Bay of Plenty Times online
 - Advertisements on Facebook, targeted at residents, which reached an audience of more than 78,000 people and directed them to the project webpage
 - Radio advertising
 - A flyer to all businesses along the corridor delivered in person to outline the project and encourage people or businesses to provide feedback
- Formal consultation with the wider community ran from 29 August to 25 September 2022.



4. Engagement methods

Webinars

Webinars were used as a way for people to learn more about the project directly from the project team and to ask questions. During the month of August, three webinars were held with a total of 41 attendees. While the numbers for these events were low, there were some good questions being asked by those attending. The first webinar was recorded and made available on the web page for anyone to view. 215 people later viewed the recorded webinar.

Drop-in sessions and meetings

During the month of August and September, five community drop-in sessions were held. These were all held at the Church of Christ on 258 Ngatai Road, except for one that was held at Tauranga City Council's offices. A total of 108 people attended these events.

Online survey

Stakeholders and the community were invited to provide feedback via an online survey. The survey was available from 29 August to 25 September. This was particularly useful for those who wished to provide feedback on a specific option presented. The survey took people through the proposed options before requesting their feedback. We received 202 survey responses. The feedback from the survey and key themes are summarised in section 5 of this report.

Email correspondence

Stakeholders and the community were encouraged to use the online survey but if they preferred could provide feedback via email. This was particularly useful for those who wished to provide more detailed feedback about any topic that was important to them. Feedback via email is also included in the key themes (refer to section 3.3 below).

5. Engagement feedback – what we heard

150 people or businesses attended a webinar or in person drop-in session and 202 individual survey responses were received. This generated 339 responses to multiple choice options and 472 pieces of feedback or commentary about the project, and 32 submissions were received via email or at a drop-in session.

In general, the feedback received has been much more positive/supportive than negative/against. Those who supported the project wanted to make sure the team delivered a high-quality outcome, considered inclusion of additional routes, and did not delay the delivery. The main concerns were about potential loss of parking, impacts to vehicle travel times, increased congestion, restricted access to property and impacts on businesses.

While a significant volume of feedback was provided across all engagement activity, there were a number of key themes raised by the community and stakeholders.



The following is a summary of those key themes but is by no means an exhaustive list of all the feedback received. There was more than 70% of people that supported the project or supported the project and provided suggestions. While the majority of people provided positive feedback into their preferred option, some people raised concerns around the following :

- Loss of parking
- Restricted access to property
- Lack of bus services
- Increase in congestion/traffic
- General safety concerns
- There was more than 70% of people that supported the project or supported the project and provided suggestions.
- Preference for some to have one way cycleways rather than two way cycleways, ensuring appropriate protection between moving vehicles and the cycleway.
- Alternative routes or additional routes to be included in project. These include Vale Street, Grange Road and Ōtūmoetai Road. An alternative route, rather than Ngatai Road, was to utilise the path along the estuary and Harbour Drive.
- Overall disagreement
- Fully support with no additional comments

6. Engagement with mana whenua

Throughout developing of the Accessible Streets business case, Council have worked in partnership with mana whenua including representatives o Ngāi Tamarāwaho and Ngāi Tukairangi. Wananga and hui were held since May 2022 to ensure that mana whenua provided feedback into the development of a preferred option and ensure cultural considerations are taken into account. Mana whenua will continue to partner with Council during the development of the concept design and ensure that cultural design elements are considered.

7. Next steps

Should the project partners and the Council endorse the preferred options, further consultation will take place on the concept design early next year. This will be another opportunity for people in the Ōtūmoetai peninsula to have their say.

For more information go to www.tauranga.govt.nz/accessiblestreets-otumoetai

