# Part B – Option Development and Assessment

# 7. DEFINITION OF THE NETWORK ROUTES

Based on the investment objectives identified by the project partners, the desired outcome of this SSBC is to build on the existing network to implement a clearly identifiable, reliable, resilient and connected network across the Wakatipu Basin area where active transport is the top priority. It is key that the network connects communities and enhances neighbourhoods, as well as encourages both residents and visitors to use active travel as an attractive alternative to private vehicles.

Building on the existing trail network, key routes between populous centres within the Wakatipu Basin were identified by the W2G partnership and are shown in Table 16. The route classifications can be defined as:

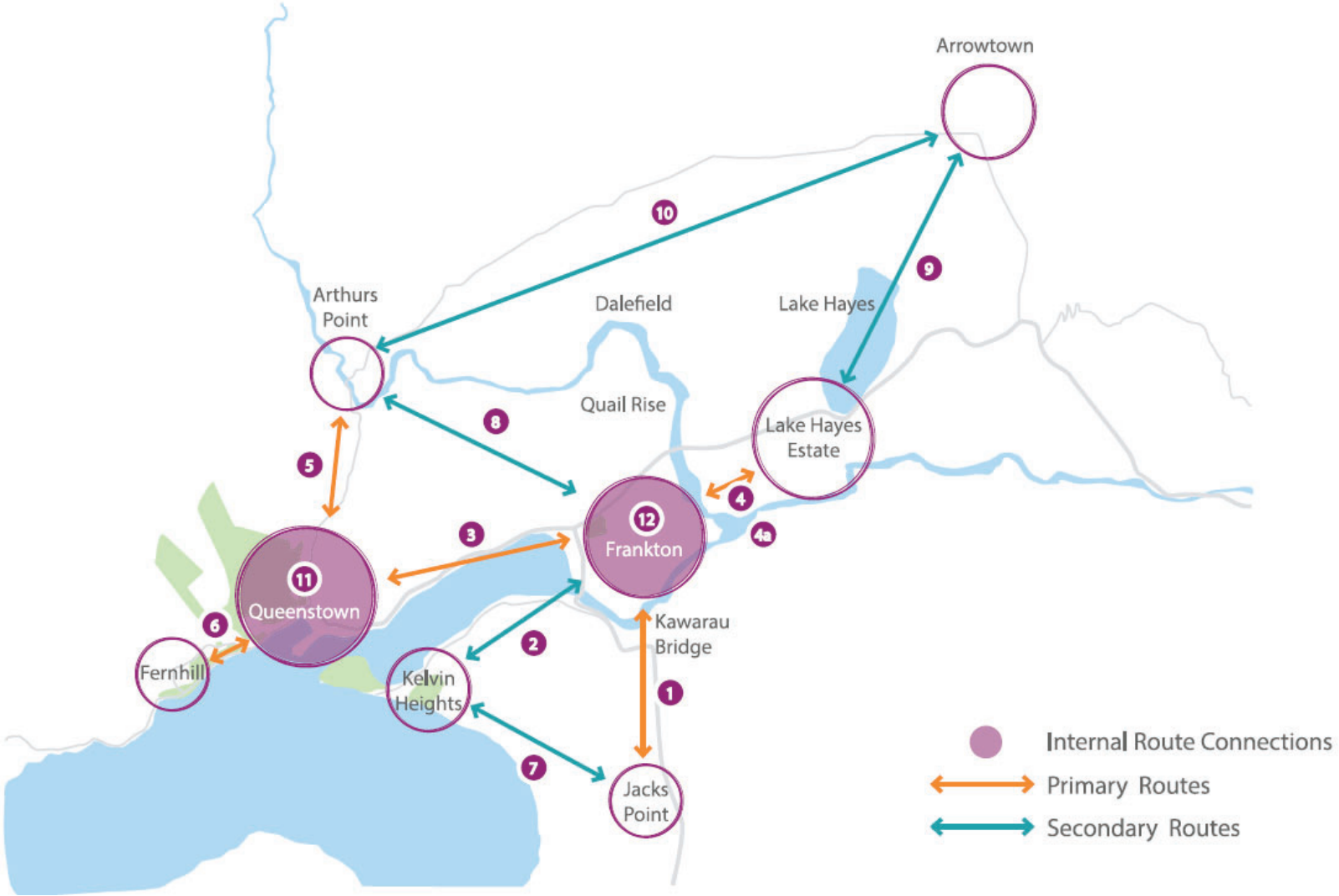
- **Primary:** Key connections into the two main populous areas of Queenstown and Frankton;
- **Secondary:** Routes with anticipated lower demand due to population; and,
- **Internal Connections:** Explores connections within a defined destination point.

**Table 16: Route Classification**

| # | Route | Route Classification |
|---|---|---|
| 1 | Jacks Point to Frankton | Primary |
| 2 | Kelvin Heights to Frankton | Secondary |
| 3 | Frankton to Queenstown | Primary |
| 4N | Lake Hayes Estate to Frankton NORTH | Primary |
| 4S | Lake Hayes Estate to Frankton SOUTH | Primary |
| 5 | Arthurs Point to Queenstown | Primary |
| 6 | Fernhill to Queenstown | Primary |
| 7 | Jacks Point to Kelvin Heights | Secondary |
| 8 | Arthurs Point to Lake Hayes Estate | Secondary |
| 9 | Arrowtown to Frankton | Secondary |
| 10 | Arrowtown to Arthurs Point | Secondary |
| 11 | Queenstown Town Centre | Internal Connections |
| 12 | Frankton Connections | Internal Connections |

It should be noted that the Queenstown Town Centre linkages have already been identified under the QTCMP PBC and are to be included. As well as this, the internal Frankton Connections were developed after the preferred routes between destinations have been defined, identified through the Frankton Masterplan. This was to ensure that the connections to and through Frankton are accessible from all routes and directions.

Figure 41: Proposed Routes for Assessment



## 7.1. Route Characteristics

The characteristics of each of the routes to be assessed have been described in Table 17.

**Table 17: Existing Route Characteristics**

| ROUTE | CHARACTERISTICS |
|---|---|
| Jacks Point to Frankton | • Recreational road riding - no trail currently in place<br>• Route along SH6 (high speed)<br>• Future connection through Hanley 's Farm |
| Kelvin Heights to Frankton | • Commuter and recreational<br>• Shared with pedestrians<br>• Steep grade and tight corners adjacent to Kawarau Falls Bridge |
| Frankton to Queenstown | • Commuter and recreational - popular<br>• Main commuter route - unsealed<br>• Shared with pedestrians<br>• Challenging connection with community |
| Lake Hayes Estate to Frankton | • Commuter - (home to work for Queenstown/ Frankton)<br>• Single link over Kawarau River<br>• Not direct<br>• Predominantly off-road trail |
| Arthurs Point to Queenstown | • Commuter and recreational - challenging<br>• topography - not sealed - ice due to shaded areas<br>• No dedicated bridge (Edith Cavell restriction) |
| Fernhill to Queenstown | • Commuter and recreational<br>• Shared with road - challenging topography |
| Jacks Point to Kelvin Heights | • Recreational - isolated - exposure to weather - challenging topography<br>• Scenic viewpoint - off road trail<br>• Future connection through Hanley's Farm |
| Arthurs Point to Frankton | • Recreational - challenging topography<br>• Half trail and half on road - ice due to shaded areas<br>• Narrow existing roads - not direct |
| Arrowtown to Lake Hayes Estate | • Recreational - part on road and part trail<br>• Not sealed<br>• Scenic viewpoints<br>• Challenging topography |
| Arrowtown to Arthurs Point | • Recreational road riding - no trail<br>• currently in place<br>• Prone to ice due to shaded areas<br>• Not direct |
| Queenstown Town Centre | • High pedestrian presence made up of predominately visitors<br>• Some shared spaces but mostly separated from traffic<br>• Safety issues with pedestrians stepping in front of traffic |
| Frankton Connections | • Discontinuous routes and lack of formal signage<br>• Mix of sealed narrow footpath and unsealed or unformed paths<br>• Safety issues crossing SH6<br>• High traffic volumes and challenging road crossings |

# 8. OPTION SELECTION

## 8.1. Identification of Options

### Workshop 1: Options Workshop

A site visit was undertaken on 21st September 2018, and a workshop held on the 10th October 2018. The workshop was undertaken to consolidate the thinking of the key stakeholders in defining problems and benefits, supported by an information pack completed by Beca that compiled available background information relating to the project. The outcome of this workshop was to ensure the process addresses the various stakeholder needs, while identifying risks and other considerations.

### Workshop 2: Options Workshop

This workshop, held on 11th October 2018, focussed on developing options to deliver the desired outcomes for the WATN. It promoted a shared understanding amongst attendees and outlines how W2G may choose to address the issues identified in Workshop 1.

Long list options were formed at this stage for the distinct routes, with the Queenstown Town Centre routes already defined, and the Frankton Connections being explored once the longlist options were assessed and preferred routes were proposed.

## 8.2. Long-list Options Assessment

### Workshop 3: Longlist to Shortlist

Attended by key stakeholders from W2G, this workshop held on 25th October 2018 looked at each route against the investment objectives. This process was undertaken on a route-by-route basis to determine whether the routes were viable to be taken forward into the shortlist assessment stage. This was also an opportunity to highlight additional opportunities, as well as the fatal flaws (i.e. unrealistic terrain or excessive cost) with some of the proposed routes.

## 8.3. Delivery Staging and Funding Splits

### Workshops 4 and 5: Delivery and Funding

Two workshops were held on 18th June 2019 and 6th August 2019 to confirm the delivery staging of the preferred network in line with existing funding streams. These workshops were attended by the key W2G project partners including W2G and QTT. It also provided the opportunity to confirm and agree funding splits between the key partners.

Section 12.2 outlines the agreed funding splits and rationale.

## 8.4. Options Overview

To respond to the Government Policy Statement and regional and district policy settings, options that might seek to manage demand for active mode uptake have not been considered. Option development has however included potential to continue with the status quo (do nothing) through to optimising existing routes through various interventions to make improvements (e.g. signage,

markings, surfacing, space allocation), on to options for new facilities or services. Option development for long listing purposes has taken into account the ability of an option to achieve at least some of the investment objectives identified.

The following section outlines the various options that were considered for each route and provides the rationale for why some routes were omitted. The relevant routes correspond to overview maps detailed in section 9 – Assessment of the Shortlist.

| Route Options | Assumptions | Notes |
|---|---|---|
| **Route 1 Jack's Point to Frankton** | | |
| East of Crossing | | *No Routes were disregarded in the longlist to shortlist stage.* |
| Ex-1.1<br>**Existing**<br>Cycle track alongside SH6 - Kingston Road | - Utilise existing narrow shoulder adjacent to SH6. | |
| 1a<br>Cycle track alongside SH6 - Kingston Road | - Existing unsealed shared cyclist/pedestrian path.<br>- New work to provide sealed, widened, continuous path.<br>- Separated from traffic. | |
| 1b<br>Woolshed Road | - Widened existing pedestrian path<br>- Mixed cyclists/vehicles on road<br>- Woolshed Road constrained environment with multiple closely spaces driveways, narrow carriageway width. | |
| 1c<br>Utilities / pipe easement corridor / stream corridor | - New shared cyclist/pedestrian path.<br>- New work to provide sealed, widened, continuous path.<br>- Separated from traffic. | |
| River crossing | | |
| Ex-1.2<br>**Existing**<br>New Kawarau Falls existing (SH) bridge | - Utilises new Kawarau Fall Bridge path (no changes)<br>- Existing on road shoulder | |
| 1d<br>New pipe bridge | - Grade separation of SH6<br>- New shared cyclists/pedestrian path<br>- Sealed, continuous | |
| 1e<br>New Kawarau Falls existing (SH) bridge | - New shared cyclist/pedestrian path connecting to new bridge.<br>- Utilises new Kawarau Fall Bridge path (no changes)<br>- New work to provide sealed, widened, continuous path.<br>- Separated from traffic and does not cross SH6. | |

| Route Options | Assumptions | Notes |
|---|---|---|
| 1f<br>Old (pedestrian/cycle) bridge | - New shared cyclist/pedestrian path.<br>- Utilises existing bridge with active modes only permitted<br>- New work to provide sealed, widened, continuous path.<br>- Separated from traffic and does not cross SH6. | |
| **Route 2 Kelvin Heights to Frankton** | | |
| Ex-2<br>**Existing**<br>via Existing QTT Trail on waterfront | - Existing shared unsealed cyclist/pedestrian path. | *Option 2c was disregarded during the workshop as a bridge across the narrows was not seen as a viable solution. This was due to the large associated cost with such a structure and the potential for future ferry and water taxi links to facilitate movement across this link in the future. This would also lead to degraded landscape and visual impacts which were noted.* |
| 2a<br>via Existing QTT Trail on waterfront | - Existing shared cyclist/pedestrian path.<br>- Work will be undertaken to even out some of the gradients.<br>- New work to provide sealed, widened, continuous path.<br>- Work to upgrade trail connection points | |
| 2b<br>via Peninsula Road | - Widened existing pedestrian path<br>- Mixed cyclists/vehicles on road. | |
| **Route 3 Frankton to Queenstown** | | |
| Ex-3<br>**Existing**<br>Existing lakeside trail | - Existing separated pedestrian and cyclist paths | *Option 3c was disregarded during the workshop due to the associated long steep gradients that would be used along the route. This was seen as undesirable and not considered as a viable option for the shortlist.* |
| 3a<br>Existing lakeside trail | - Existing separated pedestrian and cyclist paths<br>- New work to provide sealed, continuous path for both modes.<br>- Work to upgrade trail connection points | |
| 3b<br>SH6A | - Cyclists on-road with vehicles (separated bike lane or shared with bus lane)<br>- Utilise existing sealed pedestrian footpath and upgrade where required.<br>- Upgrades of existing intersection to better protect pedestrians/cyclists | |
| 3c<br>Local streets | - Widened existing pedestrian path<br>- Mixed cyclists/vehicles on road | |

| Route Options | Assumptions | Notes |
|---|---|---|
| **Route 4 Lake Hayes Estate to Frankton** | | |
| **Access to North Frankton** | | *Option 4d was disregarded due to comments of the viability of using the SH6a bridge. It was suggested that the route be redefined to utilise the Old Shotover Bridge as a viable crossing point.* |
| Ex-4.1<br>**Existing**<br>Existing trail (QTT) | - Existing unsealed shared path separated from traffic | |
| 4a<br>Existing trail (QTT) | - Existing shared path<br>- New work to provide sealed, widened, continuous path. | |
| 4b<br>SH6 | - New shared path, separated from traffic<br>- New work to provide sealed, widened, continuous path.<br>- Utilises old Shotover Bridge | |
| **Bridge Crossings** | | |
| Ex-4.2<br>**Existing**<br>Old Shotover River Crossing | -Bridge structure separate to carriageway. | |
| 4c<br>Old Shotover River Crossing | -Bridge structure separate to carriageway. | |
| 4d<br>New low crossing of the Shotover River, parallel to SH6 | -Bridge structure separate to carriageway. | |
| **Access to South Frankton** | | |
| Ex-4.3<br>**Existing**<br>Existing trail (QTT) | - Existing shared path | |

| Route Options | Assumptions | Notes |
|---|---|---|
| 4e<br>Existing trail (QTT) | - Existing shared path<br>- New work to provide sealed, widened, continuous path.<br>- Utilises one of the three assessed bridge structures. | |
| 4f<br>Possible paper road route | - New shared path.<br>- Primarily unsealed<br>- Multiple new pedestrian/cycle bridges assessed as it is only relevant to this option | |
| Route 5 Arthurs Point to Queenstown | | |
| Ex-5<br>Existing<br>Gorge Road | - Existing unsealed shared path | *Option 5b was disregarded due the feasibility of construction along the powerline corridor. This was due to the high gradients, steep banks and significant impacts on properties.* |
| 5a<br>Gorge Road | - Existing shared path<br>- New work to provide sealed, widened, continuous path.<br>- Route ends at the start of Watties Track | |
| Route 6 Fernhill to Queenstown | | |
| Ex-6<br>Existing<br>Cameron Place - walkway - Thompson Street | - Existing continuous footpath along Fernhill Road and Thompson Street<br>- Unsealed connection link | *No Routes were disregarded in the longlist to shortlist stage.* |
| 6a<br>Cameron Place - walkway - Thompson Street | - Existing continuous footpath along Fernhill Road and Thompson Street with widening.<br>- Cyclists on-road to utilise on road bike lanes.<br>- New work to provide sealed, widened, continuous path footpath connection link between Cameron Place and Thompson Street. | |
| 6b<br>Fernhill Road | - Cyclists on-road to utilise new on road bike lanes.<br>- Pedestrian to utilise existing footpath. | |
| 6c<br>Fernhill Road and Glenorchy - Queenstown Road | - New shared cyclist/pedestrian path.<br>- New work to provide sealed, widened, continuous path.<br>- Separated from traffic (generally no physical protection)<br>- Intersection crossing required at Glenorchy-Queenstown Rd/Fernhill Rd intersection | |

| Route Options | Assumptions | Notes |
|---|---|---|
| 6d<br>Lakeside walkway | - Existing shared cyclist/pedestrian path (50% sealed).<br>- New work to provide sealed, widened, continuous path.<br>- Separated from traffic.<br>- Intersection crossing required at Glenorchy-Queenstown Rd/Fernhill Rd intersection | |
| Route 7 Jack's Point to Kelvin Heights | | |
| Ex-7<br>Existing<br>Existing trail along lake front | - Existing shared cyclist/pedestrian path.<br>- New work includes widening, lessening grade and other minor improvements. | *No Routes were disregarded in the longlist to shortlist stage.* |
| 7a<br>4WD track / paper road corridor | - New cyclist/pedestrian path.<br>- Primarily unsealed, continuous. | |
| 7b<br>Existing trail along lake front | - Existing shared cyclist/pedestrian path.<br>- New work includes widening, lessening grade and other minor improvements. | |
| Route 8 Arthurs Point to Frankton | | |
| Upper Shotover | | *No Routes were disregarded in the longlist to shortlist stage.* |
| Ex-8.1<br>Existing<br>Arthurs Point Rd /Little Rd | - Majority of route on shoulder of road with minimal separated facilities. | |
| 8a<br>Trail on south bank to Tucker Beach | - New shared cyclist/pedestrian path.<br>- New work to provide primarily unsealed, widened, continuous path.<br>- Utilises existing Edith Cavell Bridge with proposed signalised changes. | |
| 8b<br>Arthurs Point Rd / Little Rd | - New shared cyclist/pedestrian path.<br>- New work to provide sealed, widened, continuous path.<br>- Separated from traffic. | |
| 8c<br>QTT route including to bridge crossings | - New shared cyclist/pedestrian path.<br>- New work to provide primarily unsealed, widened, continuous path.<br>- Upgrade of historic tunnel and construction of new bridge required. | |

| Route Options | Assumptions | Notes |
|---|---|---|
| Lower Shotover | | |
| Ex-8.2<br>Existing<br>Domain Rd | - New shared cyclist/pedestrian path.<br>- New work to provide sealed, widened, continuous path.<br>- Separated from traffic. | |
| 8d<br>via Johnson Lake | - New shared cyclist/pedestrian path.<br>- New work to provide sealed, widened, continuous path.<br>- Separated from traffic. | |
| 8e<br>Tucker Beach to Shotover via south bank | - Existing shared cyclist/pedestrian path.<br>- New work to provide sealed, widened, continuous path.<br>- Separated from traffic.<br>- Section along Tucker Beach Road will be separated on-road. | |
| 8f<br>Domain Rd | - New shared cyclist/pedestrian path.<br>- New work to provide sealed, widened, continuous path.<br>- Separated from traffic. | |
| Route 9 Arrowtown to Frankton | | |
| Ex-9<br>Existing<br>Existing QTT via Millbrook | - Existing unsealed recreational shared cyclist/pedestrian path.<br>- Section of route shares road with traffic | *No Routes were disregarded in the longlist to shortlist stage.* |
| 9a<br>Arrowtown - Lake Hayes Road | - Primarily new shared cyclist/pedestrian path.<br>- New work to provide sealed, widened, continuous path.<br>- Separated from traffic.<br>- Connects into existing Lake Hayes Lakeside circuit trail | |
| 9b<br>Existing QTT via Millbrook | - Existing shared cyclist/pedestrian path.<br>- New work to provide sealed, widened, continuous path.<br>- Separated from traffic. | |
| 9c<br>McDonnell Road and Speargrass Road | - New cyclist/pedestrian path.<br>- New work to provide sealed, widened, continuous path.<br>- Separated from traffic. | |

| Route Options | Assumptions | Notes |
|---|---|---|
| 9d<br>Malaghans Road | - New shared cyclist/pedestrian path.<br>- New work to provide sealed, widened, continuous path.<br>- Separated from traffic. | |
| Route 10 Arrowtown to Arthurs Point | | |
| Ex-10<br>Existing<br>Malaghans Road | - Existing shoulder with no separated facility. | *Option 10d was disregarded at this stage as the link via Hunter Road, into Lower Shotover, and onto the existing QTT trail linking to Arhturs Point was considered too much of a detour to be considered a route between Arrowtown and Arthurs Point.* |
| 10a<br>QTT Trail (proposed) | - Utilise existing QTT trail route and provide new shared cyclist/pedestrian path for a short section adjacent to Malaghans Rd.<br>- At grade crossing required on Malaghans Road.<br>- New work to provide sealed, widened, continuous path.<br>- Separated from traffic. | |
| 10b<br>Malaghans Road | - New shared cyclist/pedestrian path.<br>- New work to provide sealed, widened, continuous path.<br>- Separated from traffic. | |
| 10c<br>Speargrass Road | - New shared cyclist/pedestrian path.<br>- New work to provide sealed, widened, continuous path.<br>- Separated from traffic. | |
| Frankton Connections | | |
| North Frankton | | *No Routes were disregarded in the longlist to shortlist stage.* |
| Ex-12.1<br>Existing<br>SH6 via QTT track via Events Centre | - Mix of sealed and unsealed shared cyclist/pedestrian path.<br>- Sections of route go through residential streets without pathways. | |
| 12a<br>SH6 via QTT track via Events Centre | - Mix of new sealed shared cyclist/pedestrian path and "Greenway" through residential streets<br>- Signalised crossing of Kawarau Rd (SH6)<br>- Sealed pedestrian footpath on Beach Access road | |

| Route Options | Assumptions | Notes |
|---|---|---|
| | - Improved unsignalised crossings<br>- Signalised crossing of SH6 near Hawthorne Dr | |
| 12b<br>SH6 via QTT track (north of driving range and through camp ground) | - Mix of new sealed shared cyclist/pedestrian path and "Greenway" through residential streets<br>- Signalised crossing of Kawarau Rd (SH6)<br>- Signalised crossing of SH6 near Hawthorne Dr | |
| 12c<br>SH6A | - New shared cyclist/pedestrian path.<br>- Utilise existing shared path in some locations<br>- Diagonal pedestrian/cyclist crossing on McBride Street intersection<br>- Signalised crossing of Kawarau Rd (SH6)<br>- Underpass of SH6<br>- Existing 2.0m shared path SH6A | |
| South Frankton | | |
| Ex-12.2<br>Underpass via Robertson St | - Existing unsealed underpass with connection via Robertson Street mixed with traffic. | |
| 12d<br>Boyes Crescent | - New sealed pedestrian footpath on Boyes Crescent with on-road cycle facilities<br>- New signalised crossing facility across SH6 at Humphrey St as part of other project.<br>- New widened/ sealed path to Robertson St | |
| 12e<br>Underpass via Robertson St | - New widened/ sealed path on Robertson Street<br>- Minor legibility improvements to existing tracks | |
| 12f<br>Underpass via new track | - Minor improvements to unsealed new unsealed track.<br>- 1.0m to 1.5m path only due to ground conditions | |

## 8.5. Additional Stakeholder Feedback

The Longlist to Shortlist Workshops were undertaken between 10th October and 25th October 2018. Following the workshops, additional comments from stakeholders have provided a basis for further refinement and changes to the proposed route options. The changes for each route to support the iterative approach can be summarised as follows.

### Route 1 – Jacks Point to Frankton

- No additional changes have been made.

### Route 2 – Kelvin Heights to Frankton

- The extent of the existing trail (Option 2a) has been updated to ensure the start and end point matches with the on-road option (Option 2b).

### Route 3 – Queenstown to Frankton

- The start and end points of the options on this route have been updated to connect into the QTCMP extents.

### Route 4 – Lake Hayes Estate to Frankton

- The option of a walking/ cycling route along SH6A was disregarded in the longlist evaluation due to there being no option to use the existing vehicle bridge to cross the Shotover River. This option has been reinstated with a proposed structure parallel to the existing bridge for active travel;
- The option for a bridge across the Shotover River downstream of the existing bridge towards its confluence with the Kawarau River was considered as an alternative to the existing Shotover bridge. However, it has been discounted due to flood risk, landscape and visual effects, resilience and cost;
- Frankton as a destination has been split into two sections with the proposed options providing access to North Frankton and South Frankton. This was due to the size of the area and different destinations (i.e. Schools and Employment) within the Frankton Master Plan area that may impact on the routes taken. Therefore, it was deemed appropriate to consider options for a route serving the North Frankton area distinct from routes serving the South Frankton area. The bridge options have also been assessed separately as they are applicable to all routes accessing North Frankton; and,
- For all connections within Frankton (Route 2, 3, 4 and 8), a designated area has been highlighted on the map to show the extents of the area subject to the Frankton master plan. The route connections within the masterplan area are to be explored in conjunction with the QLDC and the SSBC team on the Frankton Masterplan project.

### Route 5 – Arthurs Point to Queenstown

- Route 5 maps have been updated to highlight the Edith Cavell Bridge as a key crossing point.

### Route 6 – Fernhill to Queenstown

- The waterfront track has been discarded due to the complexity of enhancing the existing walking trail. Widening and gradient reductions would create significant landscape and visual effects as well as taking away the recreational value of the trail. This trail does not directly connect with many of the Fernhill properties or the public transport route.

## Route 7 – Jacks Point to Kelvin Heights

- Option 7a is proposed to utilise the currently undeveloped paper road route and has been amended to reflect more accurately what is currently on site. The change is due to separate unrelated development over the existing paper road route blocking any potential implementation of a facility. This means that to pursue this option, a land swap may be required to obtain access to the remainder of the route. The changes are shown in Figure 42 and are represented by the blue lines, with the original proposal on the left, and the updated proposal on the right.


**Figure 42: Original route (Left) and altered route based on land development (right)**

## Route 8 – Arthurs Point to Frankton

- Route 8c through the Lower Shotover area, which followed Tuckers Beach Road was removed due to space constraints and its location directly adjacent to the existing Tuckers Beach Trail built by the QTT; and,
- The route along Watties Track (south side of the Shotover River) has been discarded due to known landowner issues which have been experienced through QTT interaction.

## Route 9 – Lake Hayes Estate to Arrowtown

- Route 9a now follows the Arrowtown-Lakes Hayes Road until it reaches Lake Hayes. At this point it joins onto the Lake Hayes trail and connects through to Ladies Mile, SH6 or trails through Lake Hayes Estate; and,
- The identified route along Speargrass Road is discarded due to having no overlap with any other route as well as providing fewer connections to current or future development.

## Route 10 – Arthurs Point to Arrowtown

- The Speargrass Road option has been discarded due to the indirectness and two additional hills that exist as part of this route; and,
- Dalefield Road has also been removed due to steep gradients.

# 9. ASSESSMENT OF THE SHORTLIST

## 9.1. Methodology

An MCA has been developed to assess the shortlisted options against defined criteria that have been agreed in collaboration with the partners to the project, being W2G.

The MCA criteria are based on:

- NZ Transport Agency draft guidance document – *Multi Criteria Analysis for Transport Business Cases;*
- Criteria used by Beca in planning and design of a network of major cycleway routes in Christchurch; and
- NZ Transport Agency guidance on matters to consider in planning a cycle network[24].

The criteria are split into three categories, being:

- Design Context;
- Stakeholder and Community; and
- Cost and Risk.

These are described in more detail in Appendix S.

## 9.2. Shortlist Options Assessment

This section outlines the MCA process that was undertaken on shortlisted options to define an emerging preferred network. These emerging preferred options then underwent additional key stakeholder feedback, as well as public engagement to highlight any further risks, opportunities and community requirements. Any applicable changes have also been discussed in this section under the 'key stakeholder and public engagement' heading, as well as being reflected in the final preferred option.

[24] https://www.nzta.govt.nz/walking-cycling-and-public-transport/cycling/cycling-standards-and-guidance/cycling-network-guidance/cycle-network-and-route-planning-guide/ as at 29 January 2019.

## 9.2.1. Route 1 – Jacks Point to Frankton

**Table 18: Option 1 MCA results**

| | | Safety | Usability | Directness and Coherence | Connectivity / Integration | Attractiveness | Social Safety | Stakeholders and Community | Effects on the natural and cultural environment | Resilience | Operational and Network Impacts | Ease of Construction and costs (Technical) | Property (Land Requirements, Easements and Agreements) | Consentability | Total Score - No Weighting |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Investment Objectives | IO1, | IO1, | IO1 | IO1 | IO1, | IO2 | IO3 | IO1 | IO2 | IO1, | IO3 | IO3 | IO3 | |
| | **Jack's Point to Frankton** | | | | | | | | | | | | | | |
| | **East of Crossing** | | | | | | | | | | | | | | |
| Ex-1.1 | **Existing** Cycle track alongside SH6 - Kingston Road | -2.0 | -2.0 | 0.0 | 1.0 | -2.0 | 1.5 | -2.0 | 0.0 | -1.0 | -1.0 | 0.0 | 0.0 | 0.0 | -7.500 |
| 1a | Cycle track alongside SH6 - Kingston Road | -1.0 | 1.0 | 0.0 | 1.0 | -0.5 | 1.5 | 0.0 | 0.0 | -1.0 | 1.0 | 1.0 | -0.5 | -0.5 | 2.000 |
| 1b | Woolshed Road | -1.0 | 1.0 | 1.5 | 1.5 | 0.0 | 1.5 | -0.5 | 0.0 | -1.0 | 1.5 | 0.5 | -2.0 | -0.5 | 2.500 |
| 1c | Utilities / pipe easement corridor / stream corridor | 2.0 | 1.0 | 1.5 | 0.5 | 1.5 | -1.0 | -0.5 | -0.5 | -0.5 | 1.5 | 0.5 | -2.0 | -1.0 | 3.000 |
| | **River Crossing** | | | | | | | | | | | | | | |
| Ex-1.2 | **Existing** New Kawarau Falls existing (SH) bridge | -2.0 | -1.5 | 1.0 | 1.0 | -1.0 | 1.5 | -1.0 | 0.0 | 0.0 | -1.0 | 0.0 | 0.0 | 0.0 | -3.000 |
| 1d | New pipe bridge | 2.0 | 0.5 | 2.0 | 1.0 | 2.0 | -0.5 | -1.5 | -2.0 | -1.0 | 1.5 | -2.0 | -1.5 | -2.0 | -1.500 |
| 1e | New Kawarau Falls existing (SH) bridge | 1.0 | 1.0 | 1.0 | 1.0 | 0.5 | 1.5 | 1.0 | -0.5 | 0.0 | 1.0 | -1.0 | -0.5 | -1.0 | 5.000 |
| 1f | Old (pedestrian/cycle) bridge | 1.5 | 1.0 | 0.5 | 1.0 | 1.5 | 1.0 | 1.0 | -0.5 | 0.0 | 1.0 | -1.0 | -0.5 | -1.0 | 5.500 |

| | |
|---|---|
| Ex 1.1 | Utilises the existing narrow shoulder adjacent to SH6. |
| Option 1a: | Provides a sealed, widened and continuous path alongside SH6 separate from general traffic. |
| Option 1b: | Widens the existing pedestrian path along Woolshed Road. Due to corridor constraints, cyclists and vehicles may not be separated with other users. Joins SH6 and shares the same route as Option 1a from this point. |
| Option 1c: | A sealed continuous shared path along the utility easement corridor to the north east of Jacks Point |
| Ex 1.2 | Utilises new Kawarau Fall Bridge path (no changes) with the existing on road shoulder. |
| Option 1d: | A new bridge structure with a sealed shared path. It is proposed that there will be grade separation from SH6 |
| Option 1e: | Utilises the New Kawarau Fall Bridge Path on the western side and provides a sealed shared path to connect to it. |
| Option 1f: | Utilises the existing heritage bridge with only active modes permitted. For this option, some of the steeper gradients will be reduced, the outcome being a sealed, continuous shared path. |

Figure 43 provides an overview of the shortlisted options for Route 1. Option 1c was determined as the preferred option for the following reasons:

- It would provide a fully separated pathway from traffic along the entirety of the route with very low risk of vehicle conflict.
- The topography of the route is fairly flat with minimal curvature potentially making it more appealing to unconfident cyclists.
- It's attractiveness as it delineates away from traffic through scenic rural pastureland. Because of this, it would likely attract recreational and tourism use.
- The route is the shortest and avoids detouring onto SH6 as per option Ex 1.1 and 1a.

Other options were discounted for the following reasons:
- Option Ex 1.1 would create disproportionate safety issues for users because of unprotected and narrow width shoulders combined with the high speeds experienced on the State Highway.
- Option 1a was not a viable option as its lack of directness makes it undesirable when compared to the other two options between Jacks Point and Frankton and exposure to adjacent SH6 traffic.
- Option 1b provides a more direct link which is easily accessible from the commercial centre of Jacks Point and provides good connectivity into the centre of Hanleys Farm and Jacks Point developments. However, due to width constraints along the corridor and issues with multiple driveways, people on bikes may be required to share the road with vehicles during this section. Pedestrians will be able to utilise the footpath.
- From a stakeholder and community perspective, improving the connectivity to the existing bridges (as per Option 1e and Option 1f) was assumed as likely to have support on the basis that it enables greater accessibility across the river. Option 1f would provide fully separated facilities for active travel users away from a high-speed and high-volume road unlike Option 1e where there is a separated path which runs adjacent the traffic lane, with no physical barrier between the two. However, this would provide a less direct option due to the access route onto the existing bridge.

It is useful to note that work is currently underway by the QTT to come to agreements with landowners for the use of Option 1c. The discussions are ongoing and have not yet been able to confirm the route as viable, or otherwise at this stage.

## Stakeholder Feedback and Public Engagement

Table 19 summarises the major themes around Route 1 Jack's Point to Frankton that were highlighted through additional stakeholder and public engagement including any proposed mitigatory measures.

**Table 19: Additional Stakeholder Feedback for Route 1**

| Route 1 Element | Feedback |
|---|---|
| Ex1.1/1a | The key themes that emerged through the public engagement suggests that a route which is adjacent to the State Highway (Options Ex1.1/1a) would not be favoured by the community. The community expressed that separation from the State Highway should be prioritised. With future land development proposed between Hanleys Farm and the Kawarau River it was determined that a route that traverses the utilities corridor would be taken forward as the preferred option to better integrate with the development. |
| Ex1.2/1e | Additional feedback from the NZTA has highlighted a risk of low demand for a connection between Jacks Point and Kelvin Heights, therefore making the western branch (option ex1.2/1e) redundant. However, the likelihood of an existing ferry connection and/or potential future commuter ferry connection at the Hilton in Kelvin Heights will provide demand for this western branch. In addition, once development extends from Hanley Farm towards Frankton in the future then this connection could be popular. It has therefore been agreed that this alignment warrants further investigation. |

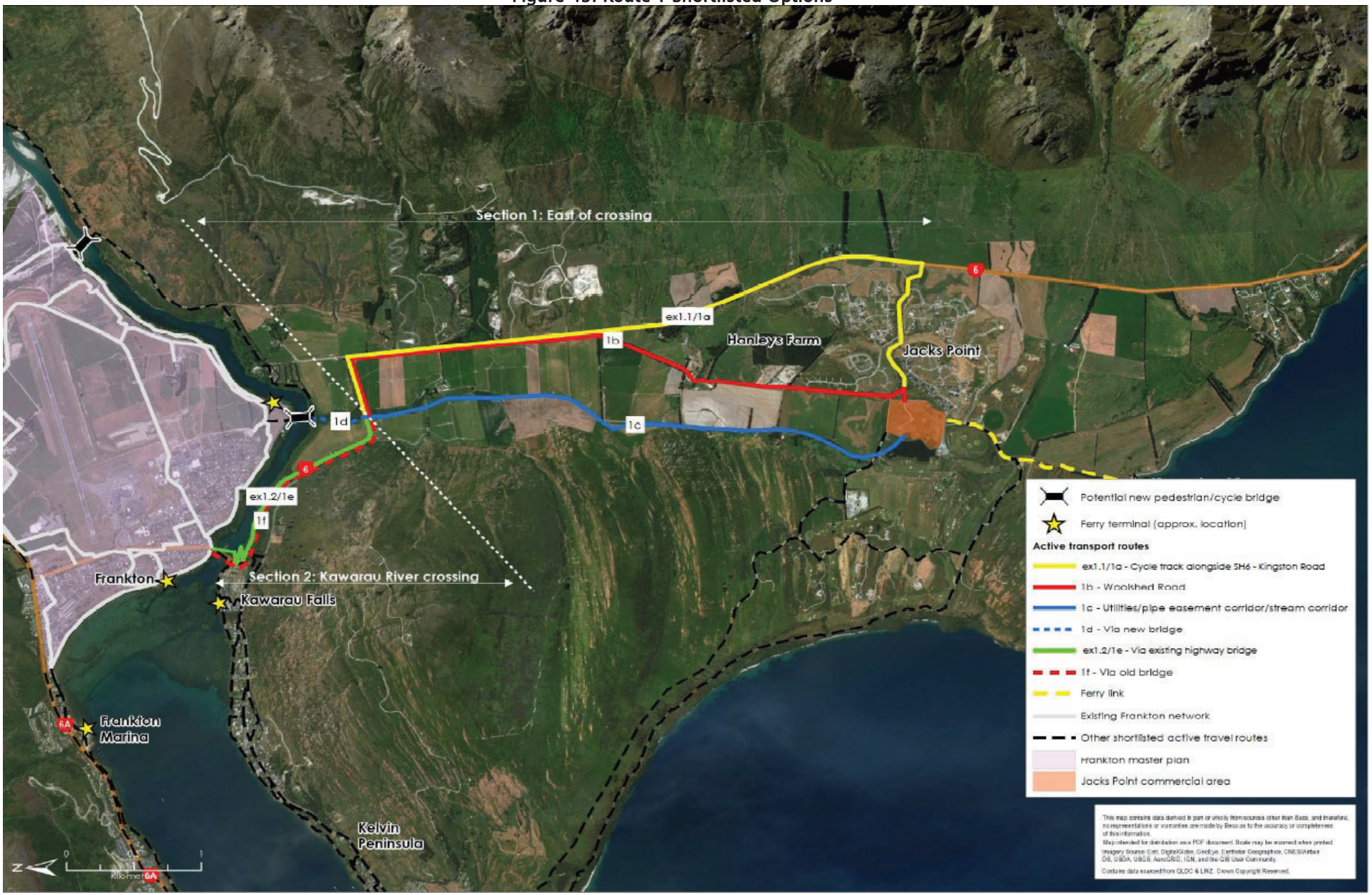
| | |
|---|---|
| 1e | Subsequent engagement with Iwi (facilitated by Aukaha) has highlighted that the proposed route alignment for the proposed new pedestrian/cyclist bridge across the Kawarau River (Option 1d) traverses a wāhi tūpuna (ancestral landscape) known as the traditional settlement of Tititea. It was raised that there is potential that material artefacts may be uncovered and or damaged whilst construction of the trail occurs, which is particularly relevant for the drilling for bridge abutments for the proposed landing of the bridge. Potential mitigation measures have been identified including undertaking of an archaeological assessment of this section of the route prior to construction, which should be mutually agreed between QLDC, Kāi Tahu and a Kāi Tahu mandated archaeologist. In addition, opportunities were highlighted for funding to be allocated to contribute to the cultural narratives of Kāi Tahu following route construction.<br><br>The Risk Register (Appendix M) and Consenting Strategy has subsequently been updated to reflect these sensitivities and it is proposed that additional funding be allocated to mitigate these risks using the activities described earlier. These additional costs have been reflected in the cost estimate report attached in Appendix J for the relevant routes. It is also recommended for the detailed design phase that Kāi Tahu work collaboratively with Way to Go and the design team regarding opportunities to create and reflect cultural narrative within the network of trails. |
| Ex1.2/1e/1d/1f | The QTT have raised concerns over the proposed alignment of this route where it diverts to the Western-side of the State Highway as it approaches the new Kawarau Falls bridge. Specific issues that have been highlighted concern:<br>• The trail crossing Peninsula Road at grade, which is currently a busy and fast intersection and is viewed as not providing a sufficiently safe environment for vulnerable users such as school children.<br>• Inadequate space between the White Cottage and SH6 to create a separated trail, with the road reserve needing to have shared space with heavy traffic at 100km/hr and a cycle lane, which was viewed as a barrier to encouraging behavioural change.<br><br>A new alignment has been proposed that would require crossing of the State Highway (river side) that would provide connections to the existing new Kawarau Falls bridge and proposed utilities bridge. QTT have completed a feasibility study and landowner discussions to an underpass beneath SH6 at the 'Boyd Road Dip', which would directly access the Kawarau River. NZTA have previously shown support for this option in that the 'dip' can be levelled in conjunction with installing the underpass. Some of the potential advantages of this alignment include:<br>• A trail on the river side of SH6 links directly to the proposed pedestrian bridge/ferry terminal/Remarkables Park (and the wider trail network).<br>• A trail on the river side of SH6 eliminates the crossing of Peninsula Road and gives the opportunity to complete the Kawarau Falls Scenic Reserve Loop with limited conflicts with vehicles.<br><br>Aukaha have raised potential issues with a river side alignment. The area on the south bank of the Kawarau River is within a historical settlement called 'Tititea', which is of significant importance to the local Iwi. There are concerns that material artefacts may be potentially damaged when construction occurs, including geotechnical investigations and drilling. However, it is acknowledged that this may create an opportunity for cultural and historical story-telling. |

| | |
|---|---|
| | W2G and QTT have agreed that the proposed alignment of this branch of the Jack's Point to Frankton route will be defined at pre-implementation phase following further site/archaeological investigations. It is noted that a river side alignment will require slight movement of SH6, altering the geometry, which would create enough width for the trail to link into the boardwalk underneath the south abutment of the new bridge. These implications will need to be considered at pre-implementation phase. |

## Preferred Option

| | Route | Preferred Option/s | Additional Comments |
|---|---|---|---|
| 1 | Jacks Point to Frankton<br><br>(Primary) | • 1c via utilities/ pipe easement corridor<br>• 1e via new Kawarau Falls bridge and connecting sealed path<br>• New SH6 river side alignment | The utilities corridor was confirmed as the preferred route as it is the most direct and attractive route located away from high volume roads including the state highway. It does not disrupt the current design and construction of Woolshed Road. The route will also connect through the future residential developments that are proposed in the area. A proposed alignment connecting to the new Kawarau Falls bridge will be confirmed at pre-implementation phase. |

Figure 43: Route 1 Shortlisted Options



## 9.2.2. Route 2 – Kelvin Heights to Frankton

Table 20: Option 2 MCA results

| | | Safety | Usability | Directness and Coherence | Connectivity / Integration | Attractiveness | Social Safety | Stakeholders and Community | Effects on the natural and cultural environment | Resilience | Operational and Network Impacts | Ease of Construction and costs (Technical) | Property (Land Requirements, Easements and Agreements) | Consentability | Total Score - No Weighting |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Investment Objectives | IO1, | IO1, | IO1 | IO1 | IO1, | IO2 | IO3 | IO1 | IO2 | IO1, | IO3 | IO3 | IO3 | |
| | **Kelvin Heights to Frankton** | | | | | | | | | | | | | | |
| Ex-2 | **Existing** via Existing QTT Trail on waterfront | -1.0 | -1.0 | 1.0 | 1.0 | 1.0 | 0.5 | -1.0 | 0.0 | -0.5 | -1.0 | 0.0 | 0.0 | 0.0 | -1.000 |
| 2a | via Existing QTT Trail on waterfront | 1.0 | 1.0 | 1.0 | 1.0 | 2.0 | 0.5 | 1.5 | -0.5 | -0.5 | 1.0 | -0.5 | 0.0 | -1.0 | 6.500 |
| 2b | via Peninsula Road | -1.0 | 0.5 | 1.0 | 1.5 | -1.0 | 1.5 | -2.0 | 0.0 | -1.0 | -1.0 | -2.0 | -2.0 | -0.5 | -6.000 |

| | |
|---|---|
| Ex 2.0 | Existing shared unsealed cyclist/pedestrian path. |
| Option 2a: | Utilises the existing trail with work to be undertaken to reduce gradients as well as provide more access points. It is envisaged that the trail will also be sealed and widened. |
| Option 2b: | Due to space constraints, this option will widen the existing pedestrian path on Peninsula Road with people on bikes mixing with vehicles on road. |

Figure 44 provides an overview of the shortlisted options for Route 2. When assessed against the MCA criteria, Option 2a (via the existing QTT Trail) along the waterfront scores much higher overall reflecting the attributes of this route compared with other options. Reasons for this are:

- The option provides full separation from vehicular traffic, rather than sharing with vehicular traffic under Options Ex 2.0 and 2b;
- There are high amenity values associated with Option 2A as the route is adjacent to the lakefront, which benefits from views and separation from a narrow road and vehicular traffic;
- Whilst Option Ex 2.0 shares many of the same amenity values, it ranks poorer for safety and usability due to constrained widths and steep gradients, which would be addressed via Option 2a;
- There are future stakeholders and community concerns with Option Ex 2.0 as future growth and use of the trail in the absence of upgrades may lead to community dissatisfaction.
- Enhancements to the existing trail are anticipated to gain support from stakeholders and the community in enabling greater use of the existing facility. In contrast, the on-road option is anticipated to receive potential opposition from the community, particularly landowners who may be affected by the proposed widening;
- There will be limited impact on the road network during construction and operation of this option reflecting its separation from the road network, whereas 2b will require work within a narrow road reserve; and,
- Option 2b will potentially necessitate additional land based on the current road width that may affect numerous properties to provide for active mode users. As Option 2a is an existing trail, it is assumed that no additional property will be required.

Option 2b provides alternative benefits in terms of connectivity and integration, social safety, effects on the environment and consentability criteria and is reflected in the MCA. Reasons for this are:

- Peninsula Road will be able to service and provide better connectivity to existing and future housing on the Kelvin Peninsula. At present there are limited access points to the existing trail from Peninsula Road, therefore reducing the potential connectivity of the trail to users;

- The existing ferry services at Bayview will enable a greater number of active travel journeys on this route to be integrated with alternative public transport options;
- There is potential for passive surveillance from some neighbouring properties over the existing QTT Trail. However, some remote reserve areas that the trail runs through may feel isolated with separation from other activity and creating a perception that they are less safe;
- The headland (Kelvin Peninsula) is part of an Outstanding Natural Landscape under the District Plan where there is a risk of effects on landscape values associated with works to the trail (Option 2a); and,
- During construction, there will be a need for sediment and erosion control to manage effects on water quality. There may be a need for resource consent for earthworks and stormwater works near the lake associated with Option 2a.

During the workshops, key stakeholders highlighted potential public transport integration issues due to limited access from Option 2a to Peninsula Road. The dis-benefit was noted and has been reflected in the scoring. Option 2a still provides the greatest benefit overall in the context of the MCA criteria.

To address the existing issue of access along Peninsula Road, part of the solution could include the provision of a footpath and pedestrian facilities in the road corridor (Option 2b) as there is not adequate provision currently.

## Stakeholder Feedback and Public Engagement

The local Kelvin Heights community appreciate the recreational value of the existing lake front trail, however concerns about the trail were raised at the engagement events. These issues include:

- Speeds of recreation cyclists;
- Narrow path widths;
- Safety concerns with limited sight lines;
- Concern of more numbers using this if it became the main commuter route;
- Lack of pedestrian pathways within residential area on Peninsula Road; and,
- Retaining gravel surface.

In response to these concerns, the route has been designed to provide some safety benefits on the trail particularly for pedestrians, without reducing the recreational value of the trail. The route comprises of a combination of lake front trail and greenway on Peninsula Road. This provides space for fast and competent cyclists to remain on road. A footpath has been added to Peninsula Road which provides connectivity for pedestrians between the existing footpath and a main access track to the trail. To reduce potential conflicts between cyclists and pedestrians around the Hilton Hotel, it is proposed that additional signage be introduced along this section of the lakeside. In addition, with the proposed improvements along Peninsular Road and Willow Place, it is likely that cyclists prioritising speed and travel time will prioritise the on-road alignment thereby reducing potential conflicts. Given the proposed unsealed treatment, it is unlikely that e-scooters will choose to travel via the lakeside.

## Preferred Option

| | Route | Preferred Option/s | Additional Comments |
|---|---|---|---|
| 2 | Kelvin Heights to Frankton<br>(Secondary) | • 2a/2b via Peninsula Road and the existing Lakeside Trail | When assessed against the MCA criteria, Option 2a (via the existing QTT Trail) along the waterfront scores much higher overall as it provides full separation from vehicular traffic, high amenity values and minimal impact on the road network. Due to the existing recreational value, very high cost associated with track widening and environmental/ visual challenges of the lakeside trail, there is a clear desire from the community to retain these values. There is also a lack of facilities along Peninsula Road, which has informed an option that combines a portion of Peninsula Road and the trail to complete the preferred option. |

Figure 44: Route 2 Shortlisted Options

## 9.2.3. Route 3 – Frankton to Queenstown

**Table 21: Option 3 MCA results**

| | | Safety | Usability | Directness and Coherence | Connectivity / Integration | Attractiveness | Social Safety | Stakeholders and Community | Effects on the natural and cultural environment | Resilience | Operational and Network Impacts | Ease of Construction and costs (Technical) | Property (Land Requirements, Easements and Agreements) | Consentability | Total Score - No Weighting |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Investment Objectives | IO1, | IO1, | IO1 | IO1 | IO1, | IO2 | IO3 | IO1 | IO2 | IO1, | IO3 | IO3 | IO3 | |
| | **Frankton To Queenstown** | | | | | | | | | | | | | | |
| Ex-3 | **Existing**<br>Existing lakeside trail | 1.0 | 1.0 | 2.0 | 1.0 | 2.0 | 0.5 | 0.5 | 0.0 | -0.5 | 1.0 | 0.0 | 0.0 | 0.0 | 8.500 |
| 3a | Existing lakeside trail | 1.5 | 2.0 | 2.0 | 1.0 | 2.0 | 0.5 | 1.5 | -0.5 | -0.5 | 2.0 | 0.5 | 0.0 | -1.0 | 11.000 |
| 3b | SH6A | -1.0 | 0.5 | 2.0 | 2.0 | 0.0 | 2.0 | 1.5 | 0.0 | -1.0 | 0.0 | -2.0 | -2.0 | -0.5 | 1.500 |
| 3c | Local streets | -1.0 | -2.0 | -1.0 | 0.0 | -1.0 | 1.0 | -2.0 | 0.0 | -0.5 | -1.0 | -1.0 | -2.0 | -0.5 | -11.000 |

| | |
|---|---|
| Ex 3.0 | Existing separated pedestrian and cyclist paths. |
| Option 3a: | Utilises the existing trail with upgrades to existing, and identification of additional access points to connect with SH6. It is envisaged that the trail will also be sealed and widened with the upgrade of existing access points. |
| Option 3b: | The existing footpath along SH6a will be upgraded where required and cyclists will be on road in a separated bike lane or shared with a bus lane. There will also be upgrades to existing intersections to provide safer facilities for pedestrians and cyclists. |
| Option 3c: | This route will utilise local streets where the footpath will be widened along Edinburgh Drive, Hensman Road, Highway Terrace, Street Georges Avenue and Goldfield Heights. It is envisaged that the cyclists will mix with vehicular traffic on this low volume road. |

Figure 45 provides an overview of the shortlisted options for Route 3. From the MCA assessment, Option 3a via the Existing QTT Trail was the highest scoring route against the criteria when compared to routes along SH6a (Option 3b) and Local Streets (Option 3c). Reasons for this are:

- Full separation from vehicular traffic compared with a shared on-road path (Option 3b) or a local road link (Option 3c);
- It provides additional access points and connections to SH6 when compared to the existing Option Ex 3.0, which improves the usability of the route.
- This option has a relatively flat gradient and opportunities for the widening of facilities. By comparison, Option 3c has challenging gradients that cannot be reduced without major works and does not provide a direct route;
- Enhancements to the existing well used and direct trail are anticipated to gain support from stakeholders and communities. Option 3c will require removal of parking and it is anticipated that there will be opposition from residents;
- The cost of construction will likely be lower than the other options as it is an improvement to existing infrastructure. However, there will be costs associated with providing appropriate access points to the facility from SH6a;

- There is anticipated to be limited impact on the road network during construction and operation of this option reflecting its separation from the road network;
- This option will provide connections to potential future ferry terminals located at Frankton Marina, The Rees and Queenstown Town Centre, with the proposed option running adjacent to the waterfront. Connections to SH6a would support integration with bus services subject to improvements to access between the trail and road; and,
- There is reduced additional property requirements. The other options may affect numerous properties and require land acquisition to widen the facilities to an appropriate standard.

Option 3a did not score highest against the criteria of connectivity and integration and scored lowest of the three options in respect of social safety, effects on the environment and consentability. Reasons for this are:

- Option 3a provides lower levels of connectivity to upper suburbs when compared to the other options. However, there is an opportunity for improved connections to SH6 that will facilitate access to residential areas up the hill. Notwithstanding this, the option provides good connectivity between Queenstown town centre and Frankton;
- The option scored lower on social safety than the other options due to several areas along the route being isolated from adjacent activities. However, the provision of a high-quality route is anticipated to attract a larger number of users, which can mitigate the perceived insecurity. Through design such as the introduction of lighting, any perceived risk can also be reduced;
- The headland (Queenstown Gardens) is part of an Outstanding Natural Landscape where there is a risk of effects on landscape values associated with works to the trail (Option 3a); and,
- During construction, there will be a need for sediment and erosion control to manage effects on water quality. There may be a need for resource consent for earthworks and stormwater works near the lake associated with Option 3a.

It was highlighted by stakeholders that the safety of the route could be improved if the proposed design included the separation of different active travel modes.

## Stakeholder Feedback and Public Engagement

This route sparked a lot of discussion at the engagement events due to its existing popularity as a route and scenic views:

- The width of the Frankton track is considered 'adequate' except during peak summer season (Jan/Feb) with some cyclists noting they avoid the trail during that period;
- There were expressions that the Frankton Walkway around the Frankton Arm was paved and lit; and,
- Safety with the increase of e-bikes is a significant concern for the community.

In response, an assessment of the appropriate width and surface for the track has been made. It is recommended to provide a grade separated pathway along the route in the future. However this will be dependent on the water/ wastewater pipes being relocated into the SH6A road corridor, which is currently unlikely given the requirement for the pipe to remain in place and an additional pipe required in either the Frankton Track or SH6a. In light of this, it is recommended that the design of the existing trail will provide maximised widths where practical. Where pinch points occur along the route measures will be introduced to calm cycle speeds. These interventions will include signage and surface treatment. Any potential upgrading of the route will need to consider the relevant pedestrian and cyclist volumes and to assess the level of risk and opportunities for conflict.

QLDC have agreed that any improvements between Frankton and Queenstown along the lake front will need to be reflected in updates to the Reserve Management Plan for the Sunshine Bay, Queenstown Bay, Frankton, and Kelvin Heights areas[25].

## Preferred Option

| Route | Preferred Option/s | Additional Comments |
|---|---|---|

[25] Sourced from https://www.qldc.govt.nz/assets/Uploads/Council-Documents/Reserve-Management-Plans/Sunshine-bay-to-kelvin-heights-reserve-management-plan.pdf

| | | | |
|---|---|---|---|
| 3 | Frankton to Queenstown<br><br>(Primary) | • 3a via Existing Lakeside Trail | From the MCA assessment, Option 3a via the Existing QTT Trail was the highest scoring route against the criteria due to full separation from vehicular traffic, flatter gradient, likely lower cost of construction, limited impact to the road network and access to potential future ferry terminals. It was highlighted by stakeholders that the safety of the route could be improved having regard to the different users, high use and narrow width in sections. Through the design process, methods are being considered including speed calming to minimise conflict between different users. |

Figure 45: Route 3 Shortlisted Options

## 9.2.4. Route 4 – Lake Hayes Estate to Frankton

Table 22: Option 4 MCA results

| | | Safety | Usability | Directness and Coherence | Connectivity / Integration | Attractiveness | Social Safety | Stakeholders and Community | Effects on the natural and cultural environment | Resilience | Operational and Network Impacts | Ease of Construction and costs (Technical) | Property (Land Requirements, Easements and Agreements) | Consentability | Total Score - No Weighting |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Investment Objectives | IO1, | IO1, | IO1 | IO1 | IO1, | IO2 | IO3 | IO1 | IO2 | IO1, | IO3 | IO3 | IO3 | |
| | **Lake Hayes Estate to Frankton** | | | | | | | | | | | | | | |
| | **Access to North Frankton** | | | | | | | | | | | | | | |
| Ex-4.1 | **Existing** Existing trail (QTT) | 1.0 | -1.0 | -1.0 | 0.0 | 1.0 | -1.0 | 0.0 | 0.0 | -1.0 | -0.5 | 0.0 | 0.0 | 0.0 | -2.500 |
| 4a | Existing trail (QTT) | 2.0 | -0.5 | -1.0 | 0.0 | 1.0 | -1.0 | 0.5 | -0.5 | -1.0 | 0.0 | 0.5 | 0.0 | -1.0 | -1.000 |
| 4b | SH6 | -1.0 | 0.0 | 0.0 | 1.5 | -0.5 | 1.5 | 0.0 | -0.5 | -0.5 | 0.5 | -1.0 | -1.5 | -1.0 | -2.500 |
| | **Bridge Crossings** | | | | | | | | | | | | | | |
| Ex-4.2 | **Existing** Old Shotover River Crossing | 1.0 | 0.5 | -1.5 | 0.0 | 1.5 | -1.0 | 0.0 | 0.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 1.000 |
| 4c | Old Shotover River Crossing | 2.0 | 0.5 | -1.5 | 0.0 | 1.5 | -1.0 | 1.0 | 0.0 | 0.5 | 0.0 | 0.0 | -0.5 | -1.0 | 1.500 |
| 4d | New low crossing of the Shotover River, parallel to SH6 | 2.0 | 0.0 | 1.0 | 1.0 | 0.5 | -1.0 | -0.5 | -1.5 | -1.5 | 0.5 | -2.0 | -1.5 | -2.0 | -5.000 |
| | **Access to South Frankton** | | | | | | | | | | | | | | |
| Ex-4.3 | **Existing** Existing trail (QTT) | 1.5 | -1.0 | -2.0 | 0.0 | 1.0 | -1.0 | -1.0 | 0.0 | -0.5 | -0.5 | 0.0 | 0.0 | 0.0 | -3.500 |
| 4e | Existing trail (QTT) | 2.0 | -0.5 | -2.0 | 0.0 | 1.0 | -1.0 | 0.5 | -0.5 | -0.5 | 0.0 | 0.5 | 0.0 | -1.0 | -1.500 |
| 4f | Possible paper road route | 2.0 | -0.5 | -0.5 | 1.0 | 1.5 | -1.0 | -0.5 | -2.0 | -1.0 | 0.0 | -1.0 | -1.0 | -2.0 | -5.000 |

| | |
|---|---|
| **North Frankton** | |
| Ex 4.1 | Existing unsealed shared path separated from traffic. |
| Option 4a: | Utilises the existing trail and it is envisaged that the trail will also be sealed and widened. |
| Option 4b: | A proposed separated shared path along SH6. This will be widened and sealed where required. An alternative route through Jim's Way was also highlighted as a potential route for part of this option. |
| **Crossing of the Shotover** | |
| Ex 4.2 | Old Shotover River Crossing - Bridge structure separate to carriageway. |
| Option 4c: | A bridge crossing which utilises the Old Shotover Bridge, separate from vehicular traffic. |
| Option 4d: | A new bridge structure adjacent, but separate, to the existing State Highway bridge. |
| **South Frankton** | |
| Ex 4.3 | Existing shared path. |

| | |
|---|---|
| Option 4e: | Utilises the existing trail and it is envisaged that the trail will also be sealed and widened. |
| Option 4f: | A new trail to be constructed on the south side of the Kawarau River with multiple bridge crossings, providing access into South Frankton. |

Figure 46 provides an overview of the shortlisted options for Route 4, with an additional designated area highlighted to show the extents of the Frankton Masterplan area. The routes within the masterplan area are to be explored parallel to this study by the QLDC and associated consultants responsible for preparation of the Frankton Masterplan.

The Frankton area has been split into North Frankton and South Frankton, with route options to each area considered separately. The two options for the bridge crossing across the Shotover River are applicable to all routes accessing North Frankton, as well as the Option 4e to access South Frankton. Therefore, these have been assessed separately.

*North Frankton*

The two options providing access to North Frankton are via the Existing QTT Trail with unsealed treatment and separated from traffic (Option Ex 4.1), via existing QTT trail with sealing and widening (Option 4a) and via SH6 (Option 4b). Based on the MCA, Option 4a is deemed to be the preferred option. Reasons are:

- It utilises the existing off-road path separated from vehicles, unlike option 4b which runs alongside a high-volume road;
- It facilitates greater safety and usability outcomes for the end user due to investments in new surface treatments and widening at pinch points/conflict points;
- Being adjacent to the river with views across the river, and separated from traffic, Option 4a is considered to have a higher level of amenity, making it more attractive;
- The cost of construction for Option 4a is likely be lower than Option 4b as it includes improvements to the existing trail as opposed to a new route; and,
- As Option 4a is to be built on an existing trail, it is assumed that there is not property required. Conversely, it is assumed for Option 4b that additional land will be needed to widen the facilities for active modes due to the existing space available, with multiple properties being affected.

Option 4b is considered to have a higher level of connectivity compared with Option 4a, on the basis that it links with the wider network (Route 8 and Route 9) as well as better connectivity to the future Ladies Mile development. To ensure that the best outcome is achieved for the network from a holistic perspective, it was decided by the stakeholders in the workshop that both options should be taken forward at this stage.

*Bridge options*

Out of the three bridge crossing options, Option 4c via the Old Shotover Bridge was deemed to be the most viable option. The reasons for this are:

- Option 4c provides a very attractive route over the historic bridge which will continue to serve recreational and touristic trail users;
- It provides greater safety and usability outcomes than Option Ex 4.2 due to investments in better treatment resurfacing and removal of pinch points; and
- Option 4c also utilises existing infrastructure, which has a significantly lower cost relative to a new bridge (Option 4e). A new bridge has potential for effects on the natural environment and would be subject to a consenting process that differentiates it from Option 4c.

Notwithstanding the above, Option 4c is not as direct as Option 4d. To address this, an alternative route via Jim's Way has been considered as a more direct route to the bridge away from the high-volume of traffic on SH6.

Reflecting its location, there are potential CPTED issues associated with Option 4c due to a lack of passive surveillance. Implementation of a high-quality route is anticipated to attract a larger number of users, which may reduce the level of perceived insecurity experienced. Through design such as the introduction of lighting, any perceived risk can also be reduced.

*South Frankton*

Despite scoring lowest out of the three South Frankton options, Option 4f (Paper Road Route) was determined to be the preferred alignment for a South Frankton route for the following reasons:

- It offers a direct, attractive link on the south side of the river. Alternatives such as Option 4e would have to utilise the SH6 or Old Shotover bridges, which only provide reasonable accessibility to North Frankton. Due to the scale of the diversion associated with Option 4e, access to South Frankton is made undesirable.
- In the stakeholder workshop, it was noted that a landowner is generally in favour of a facility being implemented through their property on the south side of the Kawarau River which reduces property/land risks associated with this option.
- A commercial opportunity has been identified with potential private contributions to be made to the funding of the proposed bridge across the Kawarau river, which reduces the capital costs of this route.
- This alignment provides a more coherent and direct route to large trip generators in Frankton such as the Remarkables Park and Frankton High school.

Notwithstanding the points above, there are noted cost and potential effects on the natural and cultural environment associated with a new bridge across the Kawarau River. However, additional stakeholder engagement has highlighted that there are opportunities for this bridge to be part-funded as part of a utilities crossing requirement. It is expected that some of these issues can be mitigated through early engagement with land owners and a more detailed assessment of route construction at pre-implementation phase.

For all options, there will need to be consideration during design and construction of the potential effects on natural and cultural values and resource consent requirements. These factors may present issues in respect of Option 4f.

## Stakeholder Feedback and Public Engagement

For the South Frankton routes, discussions with landowners identified that a minor realignment to avoid a particular property and instead pass through the adjacent Department of Conservation land was preferred.

Additional feedback provided by the NZTA has highlighted that preferred alignment of the alternative connection via Jim's Way would be located on the northern side of the house located at the end of Jim's Way (i.e. farmland side), which would provide a more pleasant walking/cycling environment (less noise, no steep drop-off) and better connect to existing properties in that location. It was proposed that the alignment should consider how the farmland may be subdivided in future to minimise issues relating to future road crossings. Regardless of the final alignment at detailed design stage, it was envisaged that an appropriate LoS connection to the public transport services here would likely be worthwhile.

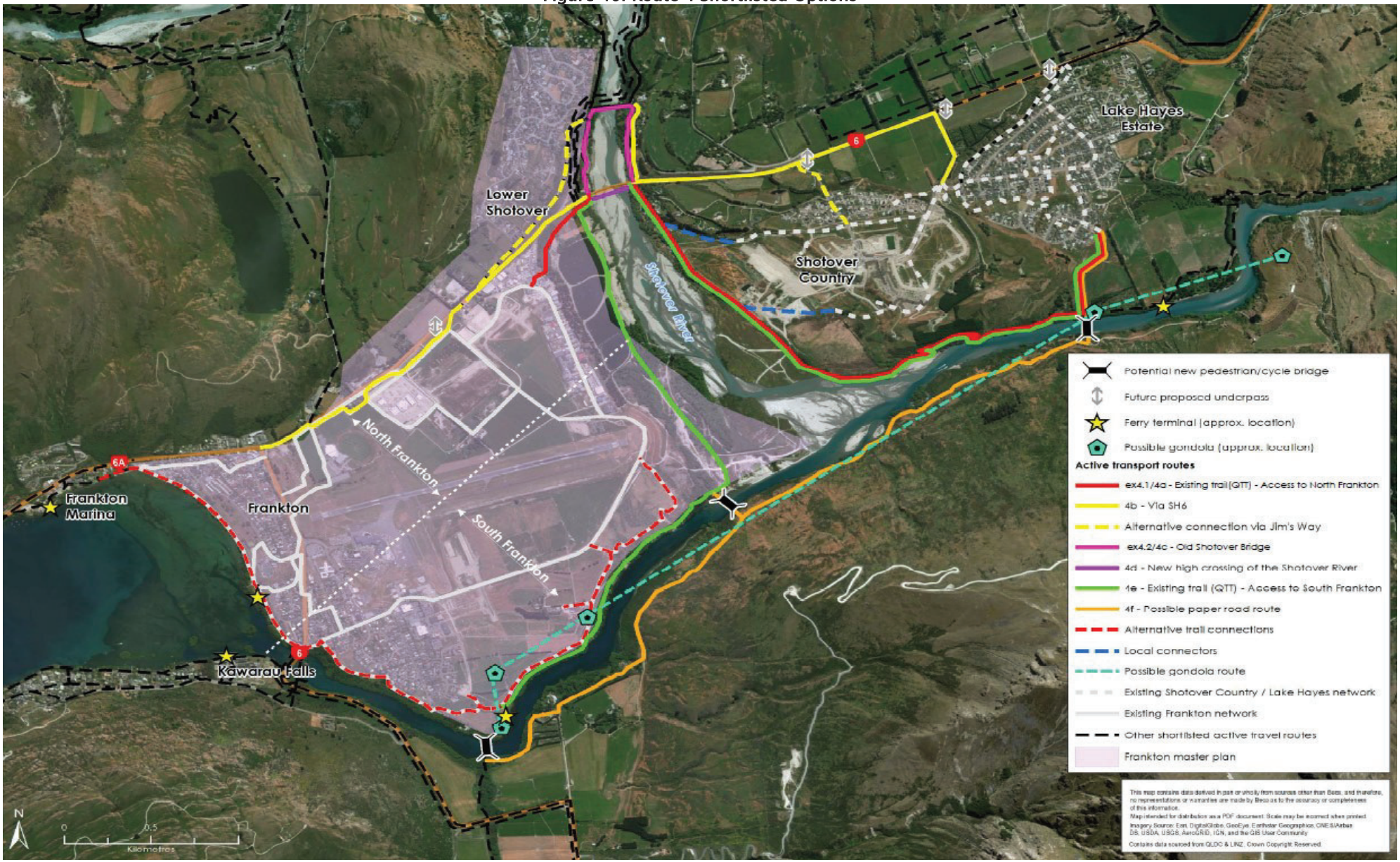
An additional route was identified through a stakeholder workshop on 18 June 2019 connecting Lakes Hayes Estate to Old Shotover Bridge/Shotover Country utilising an existing route linking LHE/Shotover Country back onto the Twin Rivers Trail. It was agreed that this route was relatively straightforward to upgrade for the northern link until such a time that development on Ladies Mile requires a better link to the Old Lower Shotover Bridge via Spence Road to the north of SH6. Because the route was identified following the assessment of shortlist options, it has not undergone a Multi Criteria Assessment. It has subsequently been reflected in the delivery staging plan outlined in section 10.4 (appearing as route C7).

At the time of engagement, the project partners highlighted the significance and relevance of the Ladies Mile and Quail Rise HIF developments that are occurring adjacent to the proposed route. QLDC have assessed three Special Housing Area (SHA) proposals that would result in approximately 579 residential units, including transport infrastructure. The three SHA's are within the area identified to be serviced through the Detailed Business Case (DBC) for the Ladies Mile Housing Infrastructure Fund (HIF) works. Subsequently QLDC has decided to progress a Plan Variation process for the Ladies Mile area which will consider the level of development and associated transportation infrastructure. The potential commercial opportunities associated with these activities has been further discussed in section 13.2 – Commercial opportunities.

## Preferred Option

| | Route | Preferred Option/s | Additional Comments |
|---|---|---|---|
| 4 | Lake Hayes Estate to Frankton<br><br>(Primary and Secondary) | • 4a, 4b, 4c to North Frankton<br>• 4f to South Frankton | The size of Frankton footprint necessitated the consideration of options for access split between North and South Frankton. The demarcation between North and South Frankton is a line parallel to the runway of Queenstown Airport.<br><br>In the context of Figure 1, access to North Frankton via Route 4 is classified as primary, and access to South Frankton via route 4 is classified as secondary. This is on the basis that it connects with the primary route from Lake Hayes to Queenstown. This has been reflected in the economic assessment.<br><br>Based on the MCA for North Frankton, Option 4a is deemed to be the preferred option due to separation from vehicles, the amenity and utilisation of the existing trail. However, during the stakeholder workshop on 20th November 2018, it was determined that 4b should also be considered on the basis that it links with the wider network (Route 8 and Route 9) and provides better connectivity to the future Ladies Mile development. Option 4c (existing Shotover heritage bridge) was chosen as the most appropriate crossing of the Shotover River.<br><br>For South Frankton, Option 4f along an existing paper road was chosen as the preferred option. This route follows the alignment of a proposed trail that is currently being investigated by the QTT. This route provides direct connections to the Wakatipu High School and Remarkables Park developments from the Lake Hayes Estate and Shotover areas. |

Figure 46: Route 4 Shortlisted Options



## 9.2.5. Route 5 – Arthurs Point to Queenstown

Table 23: Option 5 MCA results

| | | Safety | Usability | Directness and Coherence | Connectivity / Integration | Attractiveness | Social Safety | Stakeholders and Community | Effects on the natural and cultural environment | Resilience | Operational and Network Impacts | Ease of Construction and costs (Technical) | Property (Land Requirements, Easements and Agreements) | Consentability | Total Score - No Weighting |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Investment Objectives | IO1, | IO1, | IO1 | IO1 | IO1, | IO2 | IO3 | IO1 | IO2 | IO1, | IO3 | IO3 | IO3 | |
| | **Arthurs Point to Queenstown** | | | | | | | | | | | | | | |
| Ex-5 | **Existing** Gorge Road | -1.5 | -1.5 | 2.0 | 1.0 | 0.0 | 1.5 | -1.0 | 0.0 | -2.0 | -1.0 | 0.0 | 0.0 | 0.0 | -2.500 |
| 5a | Gorge Road | 1.0 | 0.5 | 2.0 | 1.0 | 1.0 | 1.5 | -2.0 | -0.5 | -2.0 | 0.0 | -1.0 | -2.0 | -0.5 | -1.000 |

| | |
|---|---|
| Ex 5.0 | Existing unsealed shared path. |
| Option 5a: | Utilises the existing trail and it is envisaged that the trail will also be sealed and widened. It is anticipated that the facilities will utilise the existing Edith Cavell Bridge with proposed signalisation to aid with crossing. |
| Option 5b: | Similar to Option 5a except it include the construction of a separate structure rather than the use of Edith Cavell Bridge. This will require the crossing of Gorge Road. |

Figure 47 provides an overview of the shortlisted options for Route 5 (note that 5b is not shown separately given its route duplication with Option Ex 5.0 and 5a). The MCA was completed for Route 5, while acknowledging that further investigations are proposed of alternatives to crossing of the Upper Shotover as part of a separate Business Case. Option 5a was chosen as the preferred option due to:

- Its directness connecting the major centre of Queenstown with the residential areas within Arthurs Point;
- Its high perceived level of attractiveness as a route for commuters and tourists given its increased connectivity to existing QTT trails;
- The potential to increase safety outcomes for users through shared path widening and opportunities to grade separate;
- Limited alternative routes between Queenstown and Arthurs Point requiring extensive civil works, construction costs, and reduced route continuity;
- Increased passive surveillance of the route provided by properties and other road users on Gorge Road.

It is envisaged that this project will facilitate the implementation of the route up to the point where the existing trail ends. This will open up access opportunities to future potential development areas surrounding Edith Cavell Bridge.

### Stakeholder Feedback and Public Engagement

The additional stakeholder feedback and public engagement process did not result in any further developments to the proposed shortlist.

### Preferred Option

| ROUTE | PREFERRED OPTION/S | ADDITIONAL COMMENTS |
|---|---|---|

| | | | |
|---|---|---|---|
| 5 | Arthurs Point to Queenstown | • 5a via Gorge Road and Robins Road | The MCA was completed for Route 5, while acknowledging that further investigations are proposed of alternatives to crossing of the Upper Shotover as part of a separate business case. It is envisaged that this project will facilitate the implementation of the route up to the point where the existing trail ends (Watties Track) and therefore, not limiting the possibilities for access to future potential development areas surrounding Edith Cavell Bridge. The route through Robins Road was chosen over Gorge Road within the Queenstown urban area as it provides less business disruption and less removal of parking close to businesses. |

Figure 47: Route 5 Shortlisted Options

## 9.2.6. Route 6 – Fernhill to Queenstown

Table 24: Option 6 MCA results

| | | Safety | Usability | Directness and Coherence | Connectivity / Integration | Attractiveness | Social Safety | Stakeholders and Community | Effects on the natural and cultural environment | Resilience | Operational and Network Impacts | Ease of Construction and costs (Technical) | Property (Land Requirements, Easements and Agreements) | Consentability | Total Score - No Weighting |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Investment Objectives** | IO1, | IO1, | IO1 | IO1 | IO1, | IO2 | IO3 | IO1 | IO2 | IO1, | IO3 | IO3 | IO3 | |
| | **Fernhill to Queenstown** | | | | | | | | | | | | | | |
| Ex-6 | **Existing** Cameron Place - walkway - Thompson Street | -1.0 | -1.0 | 0.0 | 1.5 | 0.0 | -0.5 | 0.0 | 0.0 | -1.0 | -2.0 | 0.0 | 0.0 | 0.0 | -4.000 |
| 6a | Cameron Place - walkway - Thompson Street | 0.5 | 0.0 | 1.0 | 1.5 | 1.0 | -0.5 | -2.0 | -0.5 | -1.0 | -1.5 | -1.5 | -0.5 | -0.5 | -4.000 |
| 6b | Fernhill Road | -1.0 | -2.0 | 1.0 | 1.0 | -0.5 | 1.5 | -2.0 | -0.5 | -1.0 | -1.5 | -1.0 | -2.0 | -0.5 | -8.500 |
| 6c | Fernhill Road and Glenorchy - Queenstown Road | -0.5 | -1.5 | -1.0 | -0.5 | -1.0 | 1.5 | -1.0 | -1.0 | -1.0 | -1.5 | -1.0 | -2.0 | -0.5 | -11.000 |
| 6d | Lakeside walkway | 0.5 | -1.5 | -1.5 | -1.5 | 1.5 | -1.0 | -1.0 | -1.0 | -1.0 | -1.5 | -1.0 | 0.0 | -1.0 | -10.000 |

| | |
|---|---|
| Ex 6.0 | Existing continuous footpath along Fernhill Road and Thompson Street. Unsealed connection link. |
| Option 6a: | Utilises the existing footpath along Fernhill Road, Cameron Place and Thompson Street with widening and it is envisaged that people on bikes will use on-road cycle lanes. There will be additional work to ensure the pedestrian link between Cameron Place and Thompson Street is usable for all active mode users. |
| Option 6b: | This option provides on- road cycle lanes along Fernhill Road, with pedestrians utilising the existing footpath. |
| Option 6c: | Provides a new sealed shared path separated from vehicular traffic along Glenorchy-Queenstown Road and Fernhill Road to access Fernhill from the west. This will require a crossing of Glenorchy-Queenstown Road. |
| Option 6d: | Upgrade of the existing Lakeside walkway by sealing and widening the facilities. The access to Fernhill will be a similar arrangement to Option 6c. |

Figure 48 provides an overview of the shortlisted options for Route 6. The existing options (Ex 6.0) and Option 6a via Cameron Place and Thompson Street were the highest scoring routes against the criteria when compared against the routes along Fernhill Road (Option 6b), Fernhill and Glenorchy – Queenstown Road (Option 6c) and the Lakeside Walkway (Option 6d). Reasons for this are:

- Options Ex 6.0 and 6a avoid the high gradients (>12%) along Fernhill Road when compared to Options 6b, 6c, and 6d. Option 6a will still have some gradient issues but not to this extent and not on a high-volume road which accommodates buses serving the area;
- The options provide good connectivity to recreation reserves along the route as well as providing a direct link to the town centre along lower volume vehicular routes when compared to the other options. It should also be noted that Option 6c and Option 6d are indirect and lack coherence compared with the other options on the basis that these options initially lead users away from the destination (eastbound to Queenstown town centre); and
- It is assumed that the extent of property required for Options Ex 6.0 and 6a is less when compared to the two options along Fernhill Road on the basis that widening to accommodate a separated facility on

Fernhill Road will require land from numerous property owners. With regard to Option 6d (Lakeside Walkway), it is assumed that land is not required.

When compared against each other, Option 6a was determined to be the more favourable route option over the exiting base-case (Option Ex 6.0) due to the improved safety and usability outcomes for the end-user. This is due to the benefits from increased investment in resurfacing treatments and the removal of pinch points or conflicts along the trail. It is noted however that this option is likely to generate opposition from stakeholders and the community because of anticipated objections with reduced road space and removal of car parking, particularly along Thompson Street.

Option 6a did not score highest in the context of Social safety and scored the lowest or joint lowest of the four options in terms of Stakeholder and community and Ease of construction. Reasons for this are:

- Option 6a is considered to be an attractive daytime route. CPTED issues are however identified with the use of this route at night. A section of the route is through a forested section of the trail at present, which may create a feeling of isolation when compared against the other options. The implementation of appropriate lighting and the attraction of more users will help mitigate this issue;
- For Options 6a and 6b, there is an anticipated likelihood of objections from users of the road network due to the reduced road space and removal of car parking. Additionally, there may be potential opposition if any land is required for widening the corridor. This will be minimised through the design process; and,
- Option 6a will have costs associated with the crossing of private accesses, intersections and constrained corridor widths, the latter being where widening is required including the existing link between Thompson Street and Cameron Place.

It was raised in the workshop that due to the uphill gradient travelling into Fernhill from Queenstown, there should be consideration of a multi-modal approach to travel, with the use of active modes travelling into Queenstown and use of public transport to return to Fernhill. Overall, even though there will be costs associated with implementing Option 6a, providing a direct route away from a high volume, high gradient road is seen as a benefit that will be attractive to new users.

## Stakeholder Feedback and Public Engagement

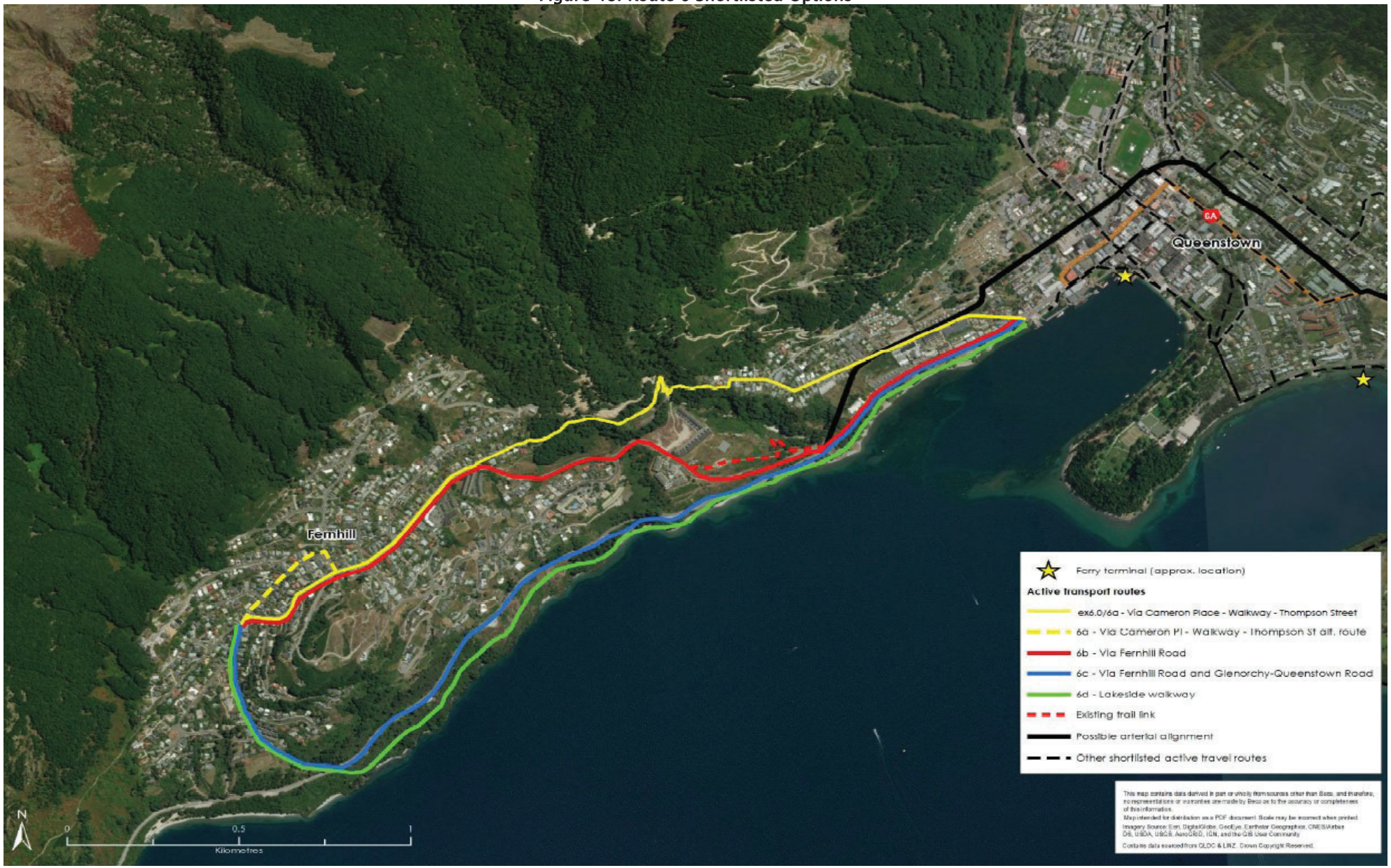
QLDC have highlighted that any improvements between Frankton and Queenstown along the lake front will need to be reflected in updates to the Reserve Management Plan for the Sunshine Bay, Queenstown Bay, Frankton, and Kelvin Heights areas[26].

## Preferred Option

| | Route | Preferred Option/s | Additional Comments |
|---|---|---|---|
| 6 | Fernhill to Queenstown | • 6a via Cameron Place and Thompson Street | Option 6a via Cameron Place and Thompson Street was the highest scoring route against the criteria when compared against other routes due to the avoidance of a high-volume road and connectivity with recreational reserves along the route. This route is currently a well-used connection and upgrades will enhance the usability of the trail. This route provides better connections end to end. |

[26] Sourced from https://www.qldc.govt.nz/assets/Uploads/Council-Documents/Reserve-Management-Plans/Sunshine-bay-to-kelvin-heights-reserve-management-plan.pdf

Figure 48: Route 6 Shortlisted Options



## 9.2.7. Route 7 – Jacks Point to Kelvin Heights

**Table 25: Option 7 MCA results**

| | | Safety | Usability | Directness and Coherence | Connectivity / Integration | Attractiveness | Social Safety | Stakeholders and Community | Effects on the natural and cultural environment | Resilience | Operational and Network Impacts | Ease of Construction and costs (Technical) | Property (Land Requirements, Easements and Agreements) | Consentability | Total Score - No Weighting |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Investment Objectives | IO1, | IO1, | IO1 | IO1 | IO1, | IO2 | IO3 | IO1 | IO2 | IO1, | IO3 | IO3 | IO3 | |
| | **Jack's Point to Kelvin Heights** | | | | | | | | | | | | | | |
| Ex-7 | **Existing**<br>Existing trail along lake front | 1.0 | -2.0 | 1.0 | 0.0 | 0.5 | -0.5 | 0.0 | 0.0 | -1.0 | 0.0 | 0.0 | 0.0 | 0.0 | -1.000 |
| 7a | 4WD track / paper road corridor | 1.0 | -1.0 | 0.5 | 0.0 | 1.0 | -0.5 | -1.0 | -1.5 | -1.0 | 1.0 | -2.0 | -2.0 | -1.0 | -6.500 |
| 7b | Existing trail along lake front | 1.0 | -2.0 | 1.0 | 0.0 | 1.5 | -0.5 | 1.5 | -1.0 | -0.5 | 1.0 | -1.5 | 0.0 | -1.0 | -0.500 |

| | |
|---|---|
| Ex 7.0 | Existing shared cyclist/pedestrian path. New work includes widening, lessening grade and other minor improvements. |
| Option 7a: | This option will provide a new primarily unsealed track along a paper road route |
| Option 7b: | This option utilises the existing unsealed track with widening and lessening of grades where applicable. |

Figure 49 provides an overview of the shortlisted options for Route 7. When assessed against the MCA criteria, Option 7b (via the existing QTT Trail) was the emerging preferred option. Reasons for this are:

- Enhancements to the existing trail when compared to the existing option (Ex 7.0) are anticipated to gain support from stakeholders and the community. It is also assumed that no additional land acquisition will be required for Option 7b;
- Improved gradients associated with Option 7b are likely to increase uptake of active mode use over existing facility;
- Both options are within an Outstanding Natural Landscape, with Option 7b having a lesser effect on the basis that it is an existing trail and the additional works will not have the same level of effect as a new trail;
- During construction, there will be a need for sediment and erosion control to manage effects on water quality;
- There is anticipated to be a need for resource consent for earthworks and stormwater works near the lake and for works in an Outstanding Natural Landscape but this needs to be confirmed; and,
- Due to the isolation of both routes, CPTED concerns were raised. These can be mitigated by providing quality infrastructure and appropriate lighting.

Through the workshop, consideration was given to the steep drop-offs on the existing route and how the route will connect with the transport network at either end. The possibility of an additional option further inland connecting to the Jacks Point to Frankton Route was suggested to minimise the gradient issues. However, this has yet to be evaluated and for which there is insufficient information at this time.

In the context of Option 7a, it was also noted that there is currently a process to remove its road classification, and it would be necessary to acquire land for this option to be implemented.

Option 7b is currently a popular route for experienced recreation users and mitigating some of the risks as stated will make it an attractive choice for more user groups. However, due to the challenging terrain, the route may be considered as a tertiary route pending confirmation from the key stakeholders.

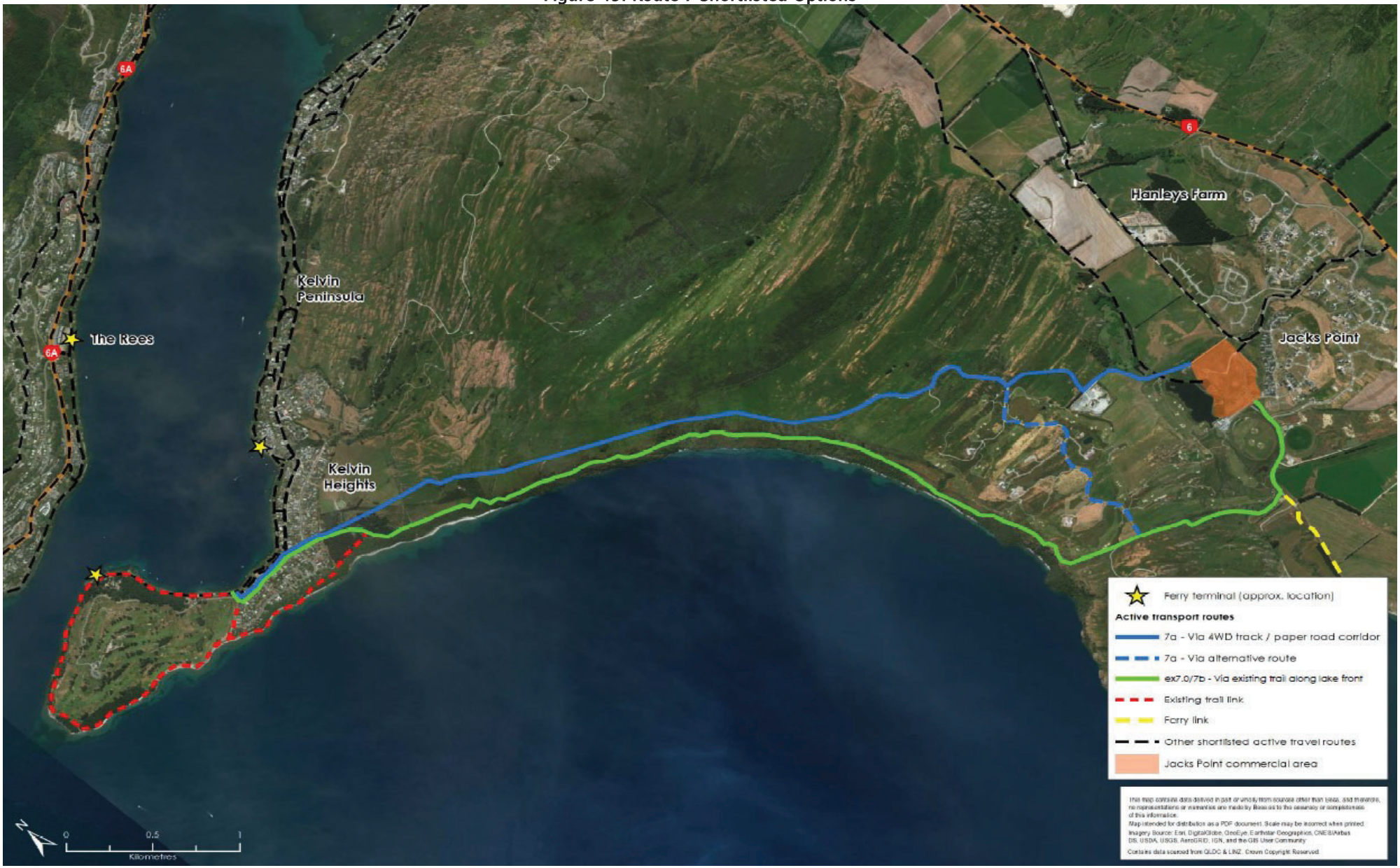
## Stakeholder Feedback and Public Engagement

The additional stakeholder feedback and public engagement process did not result in any further developments to the proposed shortlist.

## Emerging Preferred Option

| | Route | Preferred Option/s | Additional Comments |
|---|---|---|---|
| 7 | Jacks Point to Kelvin Heights | • 7b via Existing QTT | When assessed against the MCA criteria, Option 7b (via the existing QTT Trail) was identified as the preferred option due to stakeholder and community support and no assumed land acquisition. Option 7b is currently a route for experienced recreational users. However, due to the challenging terrain, low use and likelihood of additional roads being developed in the area in the future, the route could be been reduced to a tertiary route. |

Figure 49: Route 7 Shortlisted Options



## 9.2.8. Route 8 – Arthurs Point to Frankton

Table 26: Option 8 MCA results

| | | Safety | Usability | Directness and Coherence | Connectivity / Integration | Attractiveness | Social Safety | Stakeholders and Community | Effects on the natural and cultural environment | Resilience | Operational and Network Impacts | Ease of Construction and costs (Technical) | Property (Land Requirements, Easements and Agreements) | Consentability | Total Score - No Weighting |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Investment Objectives | IO1, | IO1, | IO1 | IO1 | IO1, | IO2 | IO3 | IO1 | IO2 | IO1, | IO3 | IO3 | IO3 | |
| | **Arthurs Point to Frankton** | | | | | | | | | | | | | | |
| | **Upper Shotover** | | | | | | | | | | | | | | |
| Ex-8.1 | **Existing** Arthurs Point Rd /Little Rd | -2.0 | -2.0 | -1.5 | 0.0 | -1.5 | 1.0 | -1.0 | 0.0 | -0.5 | 0.0 | -1.0 | -1.0 | -0.5 | -10.000 |
| 8a | Trail on south bank to Tucker Beach | 2.0 | 1.0 | -1.0 | -0.5 | 0.5 | -1.5 | 1.0 | -1.0 | -0.5 | 1.0 | -0.5 | -2.0 | -1.0 | -2.500 |
| 8b | Arthurs Point Rd / Little Rd | -1.0 | -1.0 | -1.5 | 0.0 | -1.5 | 1.0 | -1.0 | 0.0 | -0.5 | 0.0 | -1.0 | -1.0 | -0.5 | -8.000 |
| 8c | QTT route including to bridge crossings | 2.0 | 1.0 | 1.5 | 1.0 | 1.5 | -1.0 | 0.5 | -2.0 | -0.5 | 1.0 | -1.0 | -1.0 | -1.0 | 2.000 |
| | **Lower Shotover** | | | | | | | | | | | | | | |
| Ex-8.2 | **Existing** Domain Rd | -1.0 | -1.0 | -1.0 | 1.0 | -2.0 | 0.0 | 0.0 | 0.0 | -1.0 | -2.0 | 0.0 | 0.0 | 0.0 | -7.000 |
| 8d | via Johnson Lake | 2.0 | -1.0 | 2.0 | -1.0 | 1.5 | -1.0 | 1.0 | -1.0 | -0.5 | 1.0 | -0.5 | -0.5 | -1.0 | 1.000 |
| 8e | Tucker Beach to Shotover via south bank | 1.0 | 0.5 | 1.0 | 1.5 | 1.0 | 0.5 | 1.0 | -0.5 | -0.5 | 0.5 | 1.0 | 0.0 | -1.5 | 5.500 |
| 8f | Domain Rd | -1.0 | -1.0 | -1.0 | 1.0 | -1.0 | 1.0 | -1.0 | 0.0 | -1.0 | 0.0 | -1.0 | -1.0 | -0.5 | -6.500 |

| | |
|---|---|
| **Upper Shotover** | |
| Ex 8.1 | Majority of route on shoulder of road with minimal separated facilities. |
| Option 8a: | A new primarily unsealed trail on the south bank of the Shotover River to Tucker Beach. |
| Option 8b: | The implementation of a new sealed shared path separated from traffic along Arthurs Point Road and Little Road. |
| Option 8c: | A proposed QTT trail route with restoration and utilisation of the existing historic tunnel and a new river crossing to access the south bank of the river. It is anticipated that this could be a sealed surface. |
| **Lower Shotover** | |
| Ex 8.2 | New shared cyclist/pedestrian path. New work to provide sealed, widened, continuous path. Separated from traffic. |
| Option 8d: | A new sealed shared path is proposed separated from traffic. There is also an alternative route considered close to Lake Johnson. |

| | |
|---|---|
| Option 8e: | Utilises the existing trail and it is envisaged that the trail will also be sealed and widened. The section along Tucker Beach Road is proposed to be a separated on-road path. |
| Option 8f: | The implementation of a new sealed shared path separated from traffic along Domain Road. This will be an extension of Option 8b. |

Figure 50 provides an overview of the shortlisted options for Route 8. The route from Arthurs Point to Frankton is split into the two sections of Upper Shotover and Lower Shotover.

### Upper Shotover

Option 8c scores best against the MCA criteria for the following reasons:

- Option 8c provides an attractive route away from vehicular traffic on a riverside route which sets itself apart from other options. In utilising a historic tunnel, it also provides interest and an attraction on the route;
- The option provides a direct link to the existing Tucker Beach Trail Track and Quail Rise development area (Option 8e). In comparison, Option 8a is less direct and lacks coherence, with the trail at the Arthurs Point end taking users to the south initially, away from their destination. The travel distance required on Option 8b was also far higher than the other options and it was considered a non-viable option by key stakeholders;
- This trail route has already been investigated by QTT and is likely to be funded and implemented; and
- The existing route (Option Ex 8.1) provides poor levels of safety due to the route being shared with vehicle traffic with minimal separated facilities.

Options 8a and 8c scored lower against social safety due to the perceived isolation and potential CPTED issues. The insecurity experienced by users may be reduced with the anticipated increase in users on this route and other design elements.

Option 8c as explained above involves restoring a historic tunnel to enable its reuse and building a bridge structure across the Shotover River to access the south bank. There is anticipated to be a requirement for resource consent and effects will need to be appropriately managed, including (but not limited to) sediment and erosion control to manage effects on water quality in the area. Despite these challenges, the directness, coherence and attractive of the route makes it an emerging preferred option.

### Lower Shotover

For access through Lower Shotover, four options were assessed with Options 8d and 8e being considered as viable options. The reasons are:

- Option 8d provides an attractive route adjacent to Johnson Lake, while option 8e provides improved connectivity to the Lower Shotover and onto Lake Hayes Estate and the wider area via Route 9;
- Both Option 8d and 8e are anticipated to gain community and stakeholder support on the basis that they are attractive off-road trails that enhance the existing level of accessibility through this area. The options are seen as complementary to each other by serving different areas of Frankton. It should also be noted that Option 8e has been partly funded my MBIE; and,
- Like Option 8b, the travel distance for Option 8f is far higher than the other options.
- The existing option (Ex 8.2) scored poorly in regards to safety, usability, and directness because the route runs adjacent to a busy, high speed road with limited physical barriers to protect pedestrians/cyclists from errant vehicle. This option also has a considerable travel distance than other options and therefore does not represent a direct/coherent route.

Like Options 8a and 8c, Option 8d may have some CPTED issues due to the perceived isolation in some locations. This can be mitigated through high quality design and appropriate lighting.

The options either side of the Shotover River are through an Outstanding Natural Landscape with potential effects of the works. However, there is anticipated to be a lesser effect where an existing trail exists. Notwithstanding this, any effects will need to be appropriately managed, including (but not limited to) sediment and erosion control to manage effects on water quality in the area.

From the MCA and stakeholder feedback, Option 8c was preferred for the Upper Shotover, with both Option 8d and 8e being highlighted as viable options for the Lower Shotover. It should be noted that stakeholders highlighted the alternative route via Johnson Lake as the preferred route due to directness and attractiveness adjacent to the lake.

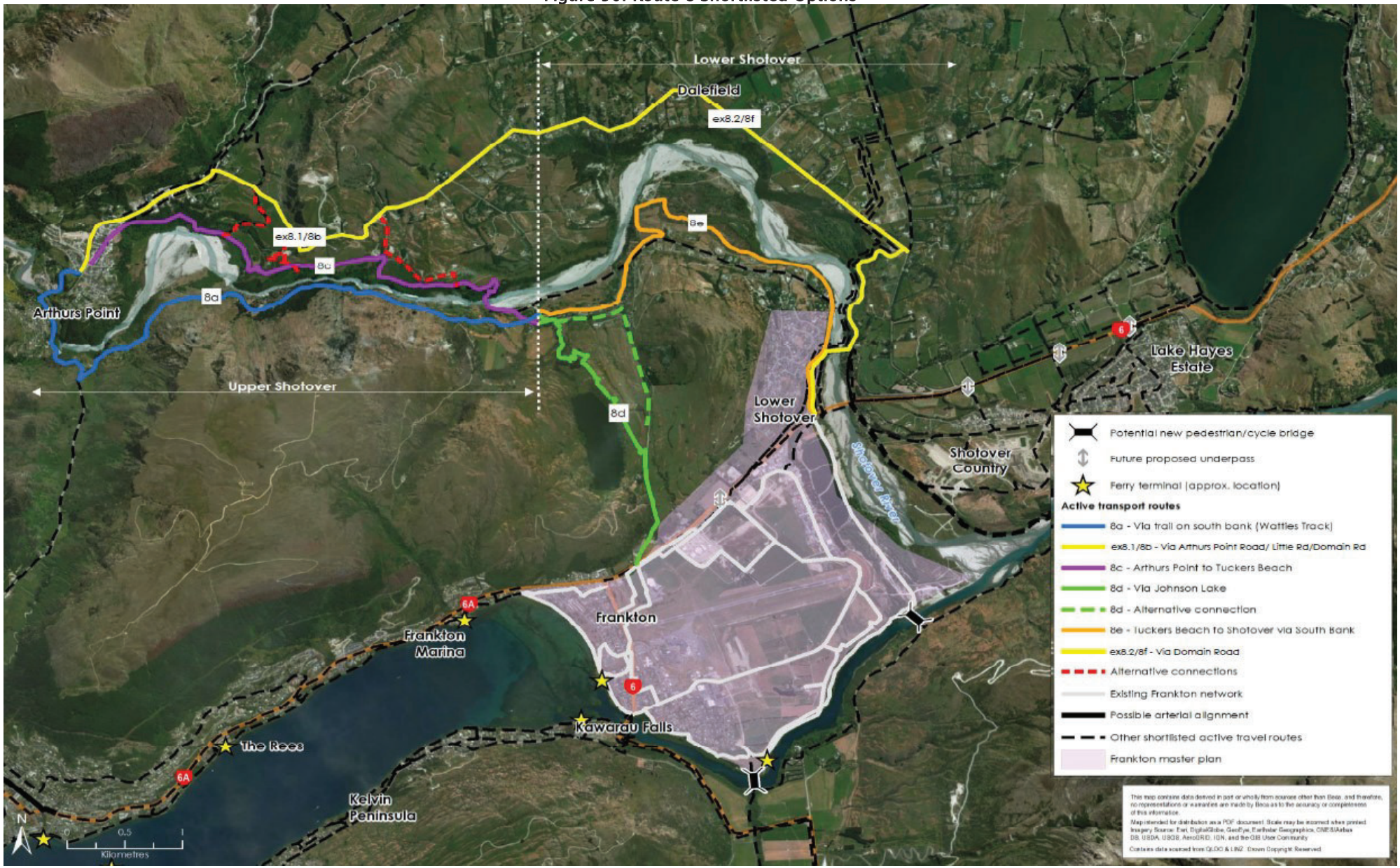
## Stakeholder Feedback and Public Engagement

The route proposed passed Johnsons Lake is a future link that would provide direct connection between Tuckers Beach and Frankton. Landowners along the route have expressed concern regarding the alignment and discussions are currently in process to understand if this will be a viable option in the future.

## Preferred Option

| | Route | Preferred Option/s | Additional Comments |
|---|---|---|---|
| 8 | Arthurs Point to Frankton | • 8c via Existing QTT<br>• 8d via Johnson Lake or 8e via Tucker Beach | The route from Arthurs Point to Frankton was split into the two sections of Upper Shotover and Lower Shotover, having regard to its length and the areas served by the different route options.<br><br>For Upper Shotover, option 8c scores best against the MCA criteria as it provides an attractive route away from vehicular traffic on a riverside trail, and a direct link to the existing Tucker Beach Trail Track and Quail Rise development area via a new bridge across the Shotover River. In addition, this trail route has already been investigated by QTT and is likely to be funded and implemented.<br><br>For access through the Lower Shotover area, 3 options were assessed with Options 8d and 8e being identified as the preferred options. Option 8d provides an attractive route adjacent to Johnson Lake with accessible grades, while Option 8e provides improved connectivity to the Lower Shotover and onto Lake Hayes Estate and the wider area via Route 9.<br><br>Stakeholders initially highlighted the alternative route via Johnson Lake (8d) as the preferred route due to directness and attractiveness adjacent to the lake. There are additional benefits experienced with the investment in an entire new route option. However, given the grades of this route (8d), the alternative 8e route provides an attractive flat route for less confident riders and does not remove the recreational value that this route already provides |

Figure 50: Route 8 Shortlisted Options



## 9.2.9. Route 9 – Arrowtown to Frankton

Table 27: Option 9 MCA results

| | | Safety | Usability | Directness and Coherence | Connectivity / Integration | Attractiveness | Social Safety | Stakeholders and Community | Effects on the natural and cultural environment | Resilience | Operational and Network Impacts | Ease of Construction and costs (Technical) | Property (Land Requirements, Easements and Agreements) | Consentability | Total Score - No Weighting |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Investment Objectives | IO1, | IO1, | IO1 | IO1 | IO1, | IO2 | IO3 | IO1 | IO2 | IO1, | IO3 | IO3 | IO3 | |
| | **Arrowtown to Frankton** | | | | | | | | | | | | | | |
| Ex-9 | **Existing**<br>Existing QTT via Millbrook | -2.0 | -1.0 | 0.0 | 1.5 | 1.0 | -1.0 | -1.0 | 0.0 | -0.5 | -0.5 | 0.0 | 0.0 | 0.0 | -3.500 |
| 9a | Arrowtown - Lake Hayes Road | -1.0 | 0.0 | 2.0 | 2.0 | 1.0 | 1.0 | -0.5 | -1.0 | -1.0 | 1.5 | -2.0 | -1.5 | -1.0 | -0.500 |
| 9b | Existing QTT via Millbrook | 0.0 | 0.0 | 0.0 | 1.5 | 2.0 | -1.0 | -1.0 | -0.5 | -0.5 | 0.0 | -1.0 | -2.0 | -1.0 | -3.500 |
| 9c | McDonnell Road and Speargrass Road | -1.5 | 0.0 | -0.5 | 0.0 | -0.5 | 0.5 | -0.5 | -0.5 | -0.5 | 0.0 | -1.5 | -1.0 | -1.0 | -7.000 |
| 9d | Malaghans Road | -2.0 | -1.0 | -1.0 | 0.0 | -1.0 | 1.0 | -0.5 | -0.5 | -0.5 | 0.0 | -1.5 | -1.0 | -1.0 | -9.000 |

| | |
|---|---|
| Ex 9.0 | Existing unsealed recreational shared cyclist/pedestrian path. Section of route shares road with traffic. |
| Option 9a: | Primarily a new sealed shared path separated from traffic which joins onto the existing Lake Hayes Lakeside circuit trail. |
| Option 9b: | Utilises the existing trail and it is envisaged that the trail will also be sealed and widened. |
| Option 9c: | A sealed continuous shared path along McDonnell Road and Speargrass Road. |
| Option 9d: | A sealed continuous shared path along Malaghans Road. |

Figure 51 provides an overview of the shortlisted options for Route 9. The preferred option is Option 9a based on the MCA. Reasons for this are:

- Option 9a is physically both separated from traffic along an attractive route. In contrast, Options 9c and Option 9d are primarily unprotected and run adjacent to high speed and high volume road environments, which detracts from the amenity;
- Option 9a is more direct and has enhanced connectivity and integration with Lake Hayes Estate and Shotover Country when compared against the other routes.
- Option 9b utilises the existing trail which is attractive and successful as a recreational and tourist route. By providing a complementary route for commuters and pedestrians through 9a, it would allow for Option 9b to remain as a purely recreational facility.
- Options Ex 9.0, 9c and 9d are less direct and coherent than the other routes, having regard to the distance travelled in an east-west direction to access Lake Hayes further to the south; and,

There are anticipated to be challenges associated with Option 9a in constructing on the SH6 corridor adjacent to Lake Hayes, having regard to the traffic volumes, amount of space available and potential effects in proximity to the lake (including but not limited to water quality), which is identified as an Outstanding Natural Feature. Option 9b also presents challenges including the need for land, having regard

to part of the route going through Millbrook. Notwithstanding this, the directness, coherence and attractiveness of the route distinguishes it from other options.

It is noted that public transport supplements this route as active travel users can travel into Frankton and use of public transport to return to Arrowtown due to gradients in a south-north direction.

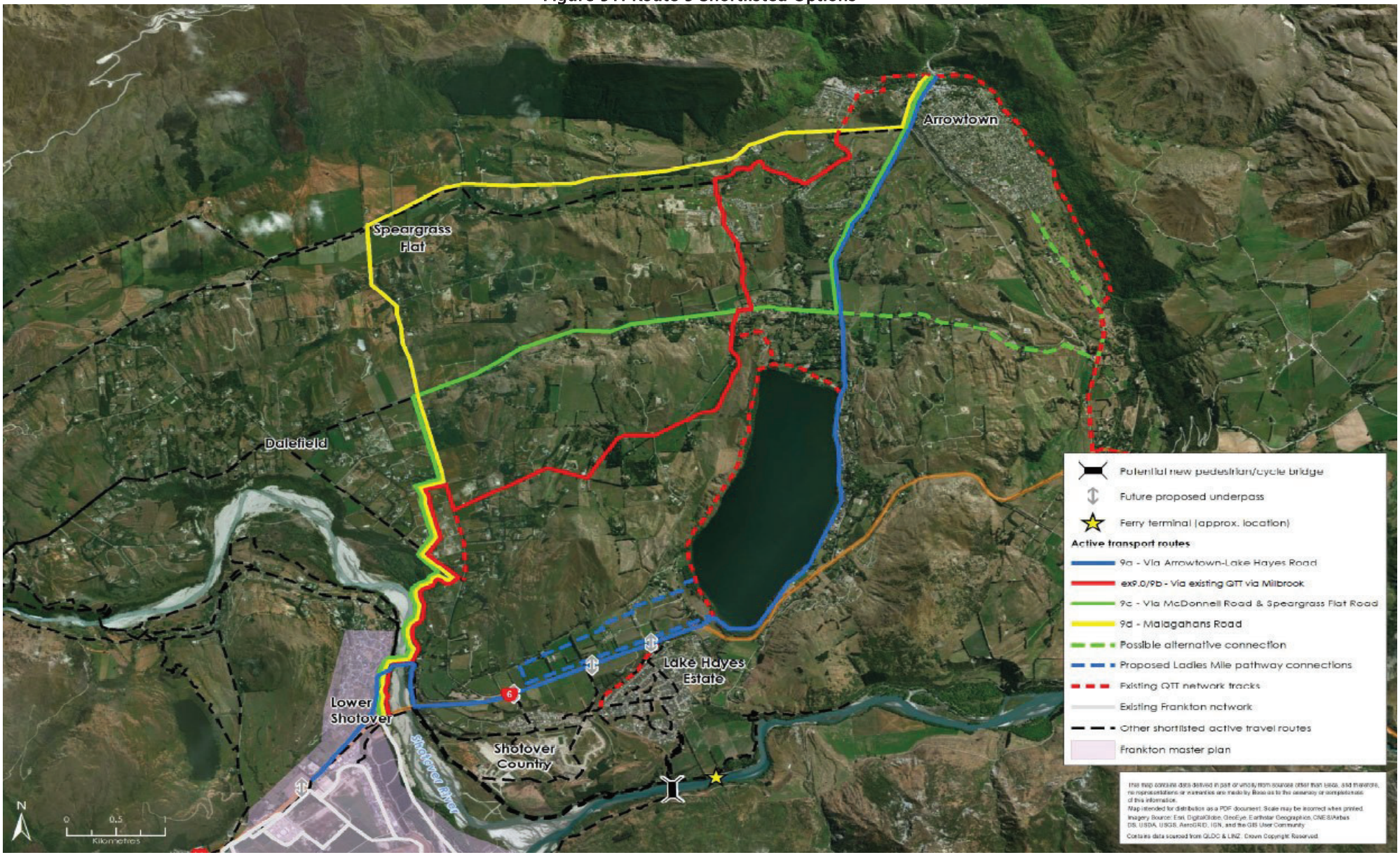
## Stakeholder Feedback and Public Engagement

At the time of engagement, the project partners highlighted the significance and relevance of the Ladies Mile and Quail Rise HIF developments that are occurring adjacent to the proposed route. QLDC have assessed three Special Housing Area (SHA) proposals that would result in approximately 579 residential units, including transport infrastructure. The three SHA's are within the area identified to be serviced through the Detailed Business Case (DBC) for the Ladies Mile Housing Infrastructure Fund (HIF) works. Subsequently QLDC has decided to progress a Plan Variation process for the Ladies Mile area which will consider the level of development and associated transportation infrastructure. The potential commercial opportunities associated with these activities has been further discussed in section 13.2 – Commercial opportunities.

## Preferred Option

| | Route | Preferred Option/s | Additional Comments |
|---|---|---|---|
| 9 | Arrowtown to Frankton | • 9a via Lake Hayes | Option 9a which runs along Arrowtown - Lake Hayes Road, Lake Hayes trail and connects onto the Route 4 trail adjacent to SH6 has been deemed the preferred route. This is because it enables the most direct connection between Arrowtown and Frankton. With Option 9b (QTT trail) being an existing recreational trail, investing in 9a will provide additional benefits and cater for new users while retaining the recreational value of the QTT trail. |

Figure 51: Route 9 Shortlisted Options



## 9.2.10. Route 10 – Arrowtown to Arthurs Point

Table 28: Option 10 MCA results

| | | Safety | Usability | Directness and Coherence | Connectivity / Integration | Attractiveness | Social Safety | Stakeholders and Community | Effects on the natural and cultural environment | Resilience | Operational and Network Impacts | Ease of Construction and costs (Technical) | Property (Land Requirements, Easements and Agreements) | Consentability | Total Score - No Weighting |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Investment Objectives | IO1, | IO1, | IO1 | IO1 | IO1, | IO2 | IO3 | IO1 | IO2 | IO1, | IO3 | IO3 | IO3 | |
| | Arrowtown to Arthurs Point | | | | | | | | | | | | | | |
| Ex-10 | Existing Malaghans Road | -2.0 | -2.0 | 2.0 | 0.0 | -1.5 | 1.5 | 0.0 | 0.0 | -0.5 | -1.0 | 0.0 | 0.0 | 0.0 | -3.500 |
| 10a | QTT Trail (proposed) | 0.0 | 0.0 | -1.0 | -1.0 | 1.5 | -1.0 | 1.0 | -0.5 | -0.5 | 1.0 | 0.5 | -0.5 | -1.0 | -1.500 |
| 10b | Malaghans Road | -1.0 | 0.5 | 2.0 | 0.0 | -0.5 | 1.5 | 0.0 | 0.0 | -0.5 | 0.5 | -1.0 | -0.5 | -0.5 | 0.500 |
| 10c | Speargrass Road | -1.5 | -1.0 | -1.0 | 1.0 | -1.5 | 1.0 | -1.0 | -0.5 | -0.5 | -0.5 | -1.5 | -1.0 | -0.5 | -8.500 |

| | |
|---|---|
| Ex 10.0 | Utilising the existing shoulder on Malaghan's Road with no separated facility. |
| Option 10a: | A proposed QTT trail route separate from vehicular traffic. |
| Option 10b: | A new separated sealed shared path along Malaghans Road. |
| Option 10c: | A new separated sealed shared path along Speargrass Road. |

Figure 52 provides an overview of the shortlisted options for Route 10. When assessed against the MCA criteria, Option 10b (via Malaghans Road) scores higher of the options overall. Reasons for this are:

- Options 10a and 10c have more challenging gradients than Option 10b;
- Option 10b is the most direct route at 14km, with Options 10a and Option 10c being15km and 16km respectively. This may not be perceived as a large distance but for walkers and cyclists, it may be noticeable;
- Proximity to the road associated with any of the options will reduce potential CPTED issues due to passive surveillance of the route by drivers and adjacent residents; and,
- Option 10b along with Option 10c are primarily outside an Outstanding Natural Landscape in a road environment. The effect of works is therefore anticipated to be less than may otherwise be the case. Option 10c at the western end closest to Arthurs Point has the potential to have adverse visual effects due to routing through an Outstanding Natural Landscape and an area that is less developed, including vegetated area.
- Option 10b provides improved safety, usability and attractiveness outcomes over the existing option (Ex 10.0) because it provides separated facilities for users and with the high traffic volumes and speeds is more unattractive without separated facilities.

Option 10b scores higher or equal to at least one of the other two options in all the MCA criteria. However, there are still a few issues with regards to safety and ease of construction. It should be noted that these are also challenges present on the other proposed options. These issues are:

- Option 10b runs adjacent to a high volume and high speed (100km/h) environment. Physical separation from traffic may reduce the risk of exposure although the amenity may still be reduced for this reason;

- Crossings of intersecting roads will be required along this route, increasing the exposure to vehicular traffic. This will need to be considered in the design process; and,
- There will be challenges associated with construction adjacent to the SH6 corridor, as well as associated traffic management costs.

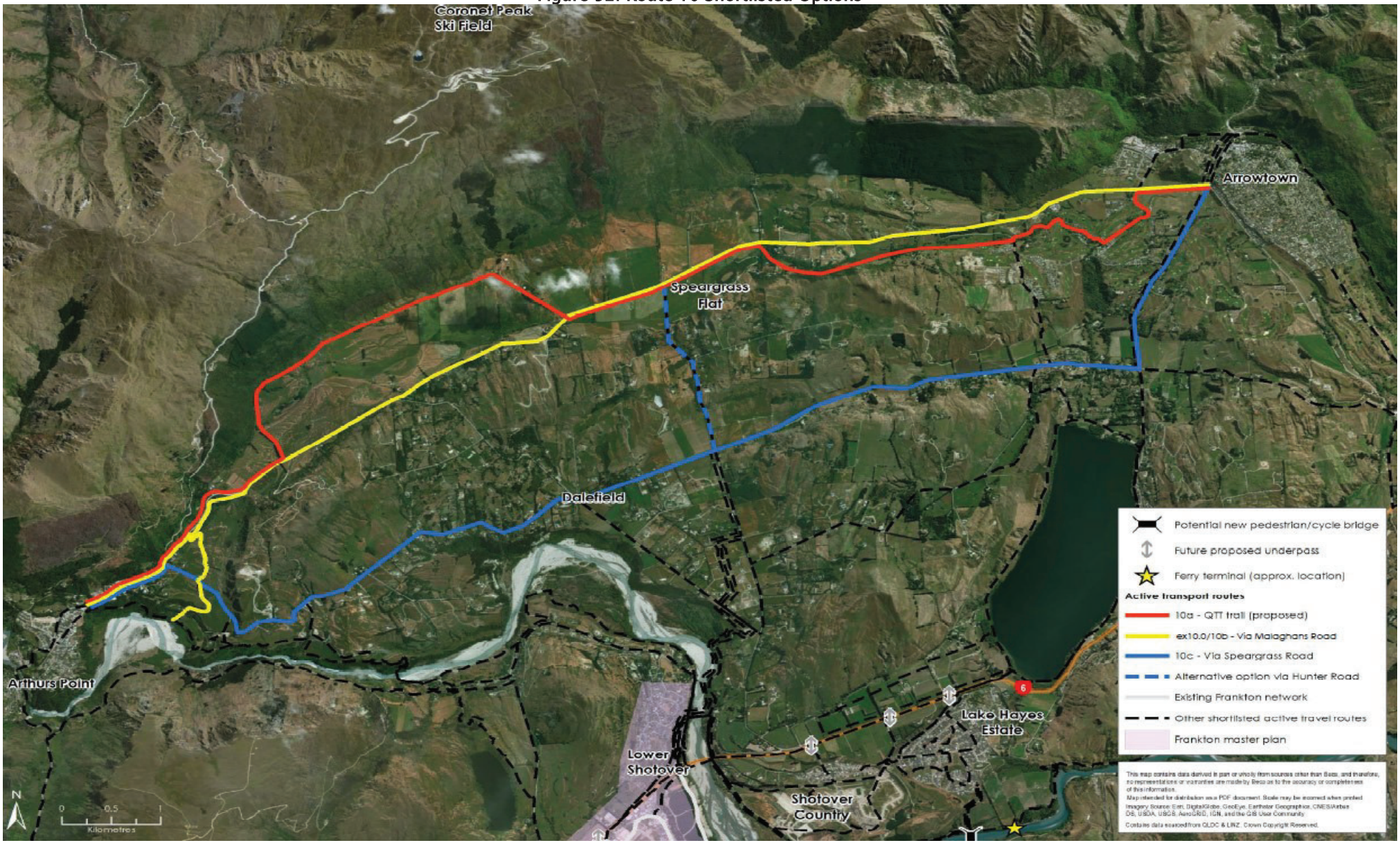
## Stakeholder Feedback and Public Engagement

The additional stakeholder feedback and public engagement process did not result in any further developments to the proposed shortlist.

## Preferred Option

| | Route | Preferred Option/s | Additional Comments |
|---|---|---|---|
| 10 | Arrowtown to Arthurs Point | • 10b via Malaghans Road | When assessed against the MCA criteria, Option 10b (via Malaghans Road) scores higher of the options overall due to a better gradient and the most direct route (14km). This route also aligns with the beginning and end sections of the proposed QTT trail along this section.<br>This route (10b) provides additional benefits by connecting to the QTT trail that is proposed to the north of Malaghans Road. This will allow the recreational function of the QTT to be retained in addition to this direct connecting trail |

Figure 52: Route 10 Shortlisted Options



# 9.3. Additional Assessment

In addition to the node to node route assessment and preferred network, the Queenstown Town Centre upgrades as defined in the Queenstown Town Centre Masterplan (QTCMP) are also included as part of this SSBC. As well as this, from stakeholder feedback throughout the process, it was noted that there is a requirement to provide internal connections in the main two populous areas of Queenstown and Frankton to allow seamless movement through and within these areas. Therefore, this section also defines and includes the internal Frankton Connections as part of the additional assessment.

## 9.3.1. Queenstown Town Centre

The routes within the Queenstown Town Centre were defined in the QTCMP. The improvements include:

- Rees Street;
- Brecon Street;
- Upper and Lower Beach Street; and
- Park Street.

An overview of the extent of town centre works is provided in Appendix H and technical drawings for these projects are presented in Appendices K and L.

These works have been costed and have been integrated into the Financial Case (Section 12) and delivery staging of the network outlined in section 10.4.

### Additional Stakeholder Feedback

Additional feedback was received for the Brecon Street project from the NZ Transport Agency, who observed that the environment attracts very high footfall. Pedestrians were observed to commonly be part of a group, necessitating greater space allocation than what might be normally required for an equivalent number of pedestrians. Due to the volume of pedestrians in the area, it was highlighted that consideration should be given to an improved LoS at the Man Street intersection, with priority afforded to pedestrians.

It was also highlighted that the Park Street connection forms a critical extension to the Frankton Track and that delivery timing should therefore ensure alignment with Frankton Track improvements.

### Preferred Option

| | Route | Preferred Option/s | Additional Comments |
|---|---|---|---|
| 11 | Queenstown Town Centre | • N/A | Routes through the town centre for walking and cycling have been defined in the QTCMP and IBC. These were defined through an iterative process of workshops and which are confirmed as a part of this business case. This business case seeks funding for the Brecon Street and Park Street projects, with subsequent town centre projects being reassessed at later stages. This is further detailed in the Financial Case. |

## 9.3.2. Frankton Connections

Table 29: Option 12 MCA results

| | | Safety | Usability | Directness and Coherence | Connectivity / Integration | Attractiveness | Social Safety | Stakeholders and Community | Effects on the natural and cultural environment | Resilience | Operational and Network Impacts | Ease of Construction and costs (Technical) | Property (Land Requirements, Easements and Agreements) | Consentability | Total Score - No Weighting |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Investment Objectives | IO1, | IO1, | IO1 | IO1 | IO1, | IO2 | IO3 | IO1 | IO2 | IO1, | IO3 | IO3 | IO3 | |
| | **Frankton Connections** | | | | | | | | | | | | | | |
| | **North Frankton** | | | | | | | | | | | | | | |
| Ex-12.1 | **Existing** SH6 via QTT track via Events Centre | 0.0 | 0.0 | -1.0 | 0.5 | 0.5 | -0.5 | 0.0 | 0.0 | -0.5 | 0.0 | 0.0 | 0.0 | 0.0 | -1.500 |
| 12a | SH6 via QTT track via Events Centre | 1.5 | 2.0 | -1.0 | 0.5 | 1.5 | -0.5 | -0.5 | 0.0 | -0.5 | 0.5 | 1.0 | -0.5 | -0.5 | 2.000 |
| 12b | SH6 via QTT track (north of driving range and through camp ground) | 0.5 | 0.5 | 1.0 | 1.5 | 1.0 | 1.0 | -1.0 | 0.0 | -0.5 | 1.5 | 1.0 | -0.5 | -0.5 | 4.500 |
| 12c | SH6A | -1.0 | 0.0 | 1.5 | 0.5 | -1.0 | 1.5 | 0.0 | 0.0 | -0.5 | 1.5 | 1.0 | -0.5 | -0.5 | 3.500 |
| | **South Frankton** | | | | | | | | | | | | | | |
| Ex-12.2 | Underpass via Robertson St | -1.0 | -1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 0.0 | -0.5 | 1.0 | 0.0 | 0.0 | 0.0 | 1.500 |
| 12d | Boyes Crescent | 1.0 | 1.5 | -0.5 | 1.0 | -0.5 | 1.5 | -1.0 | 0.0 | -0.5 | 1.0 | 1.0 | -0.5 | -0.5 | 4.000 |
| 12e | Underpass via Robertson St | 1.0 | 0.5 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 0.0 | -0.5 | 2.0 | 2.0 | 0.0 | -0.5 | 7.500 |
| 12f | Underpass via new track | 0.0 | -2.0 | 2.0 | 1.0 | 2.0 | 0.0 | 0.0 | 0.0 | -0.5 | 2.0 | 2.0 | 0.0 | -0.5 | 4.000 |

| | |
|---|---|
| **Frankton North Connection** | |
| Ex 12.1 | Mix of sealed and unsealed shared cyclist/pedestrian path. Sections of route go through residential streets without pathways. |
| Option 12a: | An existing route (for a majority of its length) that utilises the QTT trail via the Queenstown Events Centre and Lake Avenue. Mostly unsealed route where it runs to the south of the golf course with limited wayfinding signage down to the Frankton Track. |
| Option 12b: | A new sealed shared path running adjacent to SH6 (north of the golf course), crossing at the new signalised crossing at the Frankton hub and via Stewart Street and past the Queenstown motor camp. |
| Option 12c: | A new sealed shared path running adjacent to SH6 (north of the golf course), crossing at the new signalised crossing at the Frankton hub the running adjacent to SH6A Frankton Road via the existing shared path. |
| **Frankton South Connection** | |
| Ex 12.2 | Existing unsealed underpass with connection via Robertson Street mixed with traffic. |
| Option 12d: | A new route running via Bridge Street/Boyes Crescent, then crossing SH6 at Humphrey Street and connecting to the QTT Twin Rivers Trail via Robertson Street. |
| Option 12e: | Utilises the existing connection via the Kawarau Underpass, up SH6 and follow Robertson Street via Robertson Street. Upgrades to this track include legibility improvements and improved facilities on Robertson Street. |

| | |
|---|---|
| Option 12f: | Utilises the new recreational cut through via the Kawarau Underpass connecting directly to the QTT Twin Rivers Trail. Minor improvements only (wayfinding signage, compacted gravel surfacing, drainage improvements etc). |

The connections through Frankton have been considered in two parts:

- North – linking Jims Way route through Frankton to Frankton Track (Figure 53); and,
- South – linking Frankton Track to QTT Twin Rivers Trail.

For the Frankton North Connection, Option 12b scores the highest against the MCA criteria for the following reasons:

- Option 12b provides the most direct and attractive route, primarily separated from traffic for a majority of its length. While there is a section through Stewart Street where it requires cyclists to share the road with traffic, the directness and relative quiet nature of the street offsets this issue;
- The option is a safer route than 12c which is restricted by a 2.0-2.2m shared path (adjacent to Frankton Road) which is unsuitable for bidirectional shared path flows; and,
- While Option 12a is an attractive and safe route, it is the least direct of all options. Also given that it already exists and is useable, the existing benefits it provides has been assessed against the alternative of providing an additional, more direct route.
- The existing option (Ex 12.1) offers poor levels of safety, security, and usability due to the interaction with traffic and existing narrow footpaths increasing the potential for conflicts.

For connection between Frankton South routes, four options were assessed with Option 12e scoring highest. The main reasons are:

- Option 12e provides a cohesive and direct route that provides critical improvements for an existing facility. While it has some width constraints alongside SH6 between the cut batter and the guardrail, it provides an excellent supplementary route for 12f which currently exists and serves as a shorter recreational link;
- Option 12f while being the most direct route has no capacity for further upgrades beyond its current 1.0m to 1.5m form. For this reason, it has scored second highest;
- Option 12d has a greater impact to parking and accesses than 12e. It is also less attractive, where it crosses SH6 and involves a climb away from the intended direction of travel; and,
- Option 12e has lower costs than Option 12d and the existing option (Ex 12.2) as the route is already existing and doesn't require major new infrastructure or road reconfigurations.

## Stakeholder Feedback and Public Engagement

The additional stakeholder feedback and public engagement process did not result in any further developments to the proposed shortlist.

## Preferred Option

| | Route | Preferred Option/s | Additional Comments |
|---|---|---|---|
| 12 | Frankton Connections | • 12b via QTT Trail and Motorcamp<br>• 12e via Underpass and Roberston Street | The routes connecting Frankton was split into the two sections of Frankton North and Frankton South.<br><br>For Frankton North, option 12b scores the best against the MCA criteria as it provides the most direct and safest route in comparison with the other two options. It also facilities great connectivity via existing residential and commercial properties and integrates well with public transport including the Frankton Hub.<br>For Frankton South, option 12e has come out as the preferred as it enhances existing connections and supplements 12f that serves as a direct recreational link. Option 12e also provides a more direct and attractive route then 12d via Boyes Crescent. |

Figure 53: North Frankton Connections Shortlisted Options

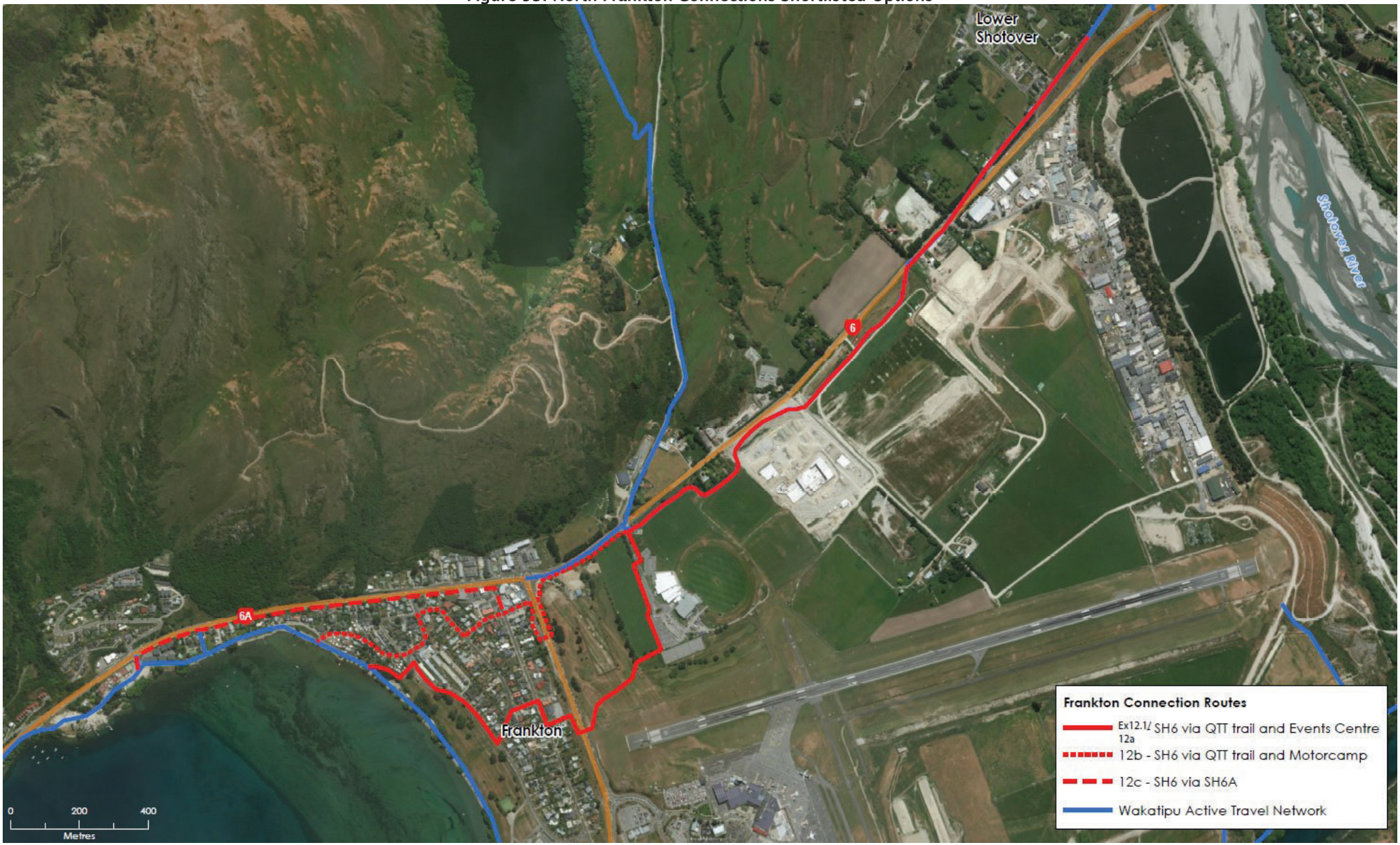
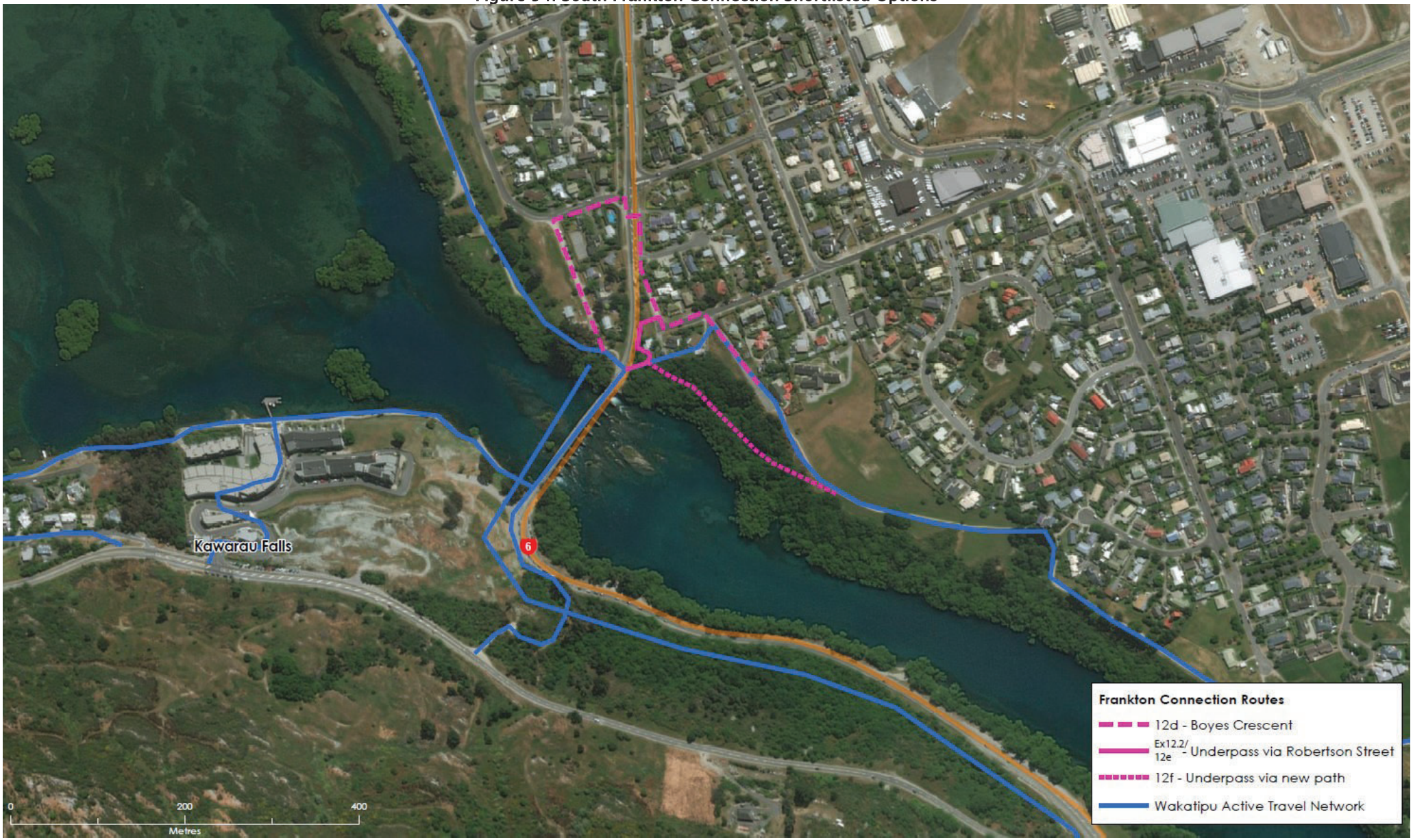


Figure 54: South Frankton Connection Shortlisted Options



## 9.4. Assessment Sensitivity Analysis

The forecasting of different risks and benefits associated with the various route options involve a degree of uncertainty and the subsequent analysis of the shortlist will be sensitive to the assumptions or subjectivities inherent in the analysis.

Uncertainties relating to the design criteria used are relevant since they represent a subjective interpretation. Uncertainty relating to the effects criteria, and uncertainties relating to the cost and risk criteria are also important to assess because additional consenting or property acquisition issues may arise that have not been accounted for.

### 9.4.1. Assessment Methods

To determine the robustness of the assessment against the investment objectives, weightings have been applied to review how different scenarios effect the preferred option for each route. For reference, the investment objectives are:

1. To provide a sustainable, integrated transport system that results in an enhanced user experience and increased use of active modes;
2. To support safe and secure journeys for walking and cycling; and
3. To facilitate positive community and economic outcomes associated with improvements to the active travel network.

### 9.4.2. Overall Weightings

Sensitivity tests were carried out of the different criteria groups as summarised in Table 30. The values for each scenario were implemented to assess how the options would be affected by prioritising different criteria, which will allocate benefits to different users depending on the scenario. The design criteria align with the focus of both investment objectives one and two, as well as three with regards to the LoS improvements providing positive economic outcomes to the area.

**Table 30: Assessment weighting for criteria groups**

| GROUP NAME | DESIGN CRITERIA | EFFECTS CRITERIA | COST AND RISK CRITERIA |
|---|---|---|---|
| Criteria | • Safety<br>• Usability<br>• Directness and coherence<br>• Connectivity/ integration<br>• Attractiveness<br>• Social safety | • Stakeholders and community<br>• Effects on the natural and cultural environment<br>• Resilience<br>• Operational and network impacts | • Ease of construction and costs<br>• Property (Land requirements, easements)<br>• Consentability |
| Scenario A | 33% | 33% | 33% |
| Scenario B | 50% | 25% | 25% |
| Scenario C | 70% | 15% | 15% |

### 9.4.3. Design Criteria

To build on the sensitivity analysis with regards to specifically the design criteria used in the assessment, the method for sensitivity analysis was to assess each of the routes by user types (commuter and non-

commuter), as their needs will differ. Table 31 shows the proposed weightings for each user type with a focus on specific design criteria that will appeal to each.

**Table 31: Design criteria sensitivity checks for commuters and non-commuters**

| Design Criteria | Base MCA | Commuter Specific Weightings | Non-Commuter Specific Weightings |
|---|---|---|---|
| Safety | 16.67% | 20% | 30% |
| Usability | 16.67% | 10% | 10% |
| Directness and Coherence | 16.67% | 30% | 10% |
| Connectivity and Integration | 16.67% | 30% | 10% |
| Attractiveness | 16.67% | 10% | 30% |
| Social Safety | 16.67% | 10% | 10% |

For the commuter users, the higher weighting for Directness and Coherence, and Connectivity and Integration reflects the desire of commuters to take the shortest route and to have connectivity to their place of residence and work, as well as other transportation hubs.

For non-commuter users, there is a higher weighting for attractiveness, which reflects the reason that many visitors visit Queenstown to enjoy the amenity and environment that the area provides. Safety is also given a higher weighting to reflect a lower level of cycling confidence which is more typical of non-commuter users.

All routes were assessed against the commuter needs and the non-commuter needs separately to understand the extremes of the MCA weightings and how sensitive the assessment is.

### 9.4.4. Effects Criteria

The effects criteria were also considered for sensitivity analysis. In this scenario, to assess against the outlined Investment Objectives, there is a higher weighting for Operational and Network Impacts and Stakeholder and Community, which reflects what has been proposed in Investment Objective one and three. It is also noted that positive effects on the natural and cultural environment will align with the objective for positive community benefits, and Resilience providing more choice (Connectivity/Integration) for users. The sensitivity weightings are outlined in Table 32.

**Table 32: Effects criteria sensitivity checks**

| Effects Criteria | Base MCA | Sensitivity Weightings |
|---|---|---|
| Stakeholder and Community | 25% | 30% |
| Effects on the natural and cultural environment | 25% | 25% |
| Resilience | 25% | 15% |
| Operational and Network Impacts | 25% | 30% |

### 9.4.5. Cost and Risk Criteria

With regards to the cost and risk criteria, the main factors influencing delivery of the network will be around the ease of construction, which aligns with Investment Objective three and the need to facilitate positive economic outcomes. Constructability will also have an effect on the user experience (Investment Objective one) through the development of the network. It is envisaged that property will also have a substantial effect on these desired objectives, with minor risks with the consentability. The sensitivity weightings are outlined in Table 33.

**Table 33: Costs criteria sensitivity checks**

| Effects Criteria | Base MCA | Sensitivity Weightings |
|---|---|---|
| Ease of Construction | 33.33% | 40% |
| Property | 33.33% | 40% |
| Consentability | 33.33% | 20% |

### 9.4.6. Scenarios

Based on the criteria weightings and their relation of the defined Investment Objectives described above, the following scenarios were tested:

| Scenario | Description | Weightings | | |
|---|---|---|---|---|
| | | Design | Effects | Cost and Risk |
| Scenario A | MCA totals with application of Scenario A weightings for criteria groups in Table 30. | 33% | 33% | 33% |
| Scenario B | MCA totals with application of Scenario B weightings for criteria groups. | 50% | 25% | 25% |
| Scenario C | MCA totals with application of Scenario C weightings for criteria groups. | 70% | 15% | 15% |
| Scenario D | Application of Scenario A for each grouping of criteria, with the split in weighting between individual criterion as described in Table 31. | 33% | 33% | 33% |
| Scenario E | Application of Scenario A in the table above for each grouping of criteria, with the split in weighting between individual criterion as described in Table 31. | 33% | 33% | 33% |
| Scenario F | Application of Scenario A in the table above for each grouping of criteria, with the split in weighting between individual criterion as described in Table 32Table 31. | 33% | 33% | 33% |
| Scenario G | Application of Scenario A in the table above for each grouping of criteria, with the split in weighting between individual criterion as described in Table 33. | 33% | 33% | 33% |

### 9.4.7. Results

There is a limited effect on the preferred outcome for a majority of routes by applying different weightings to the MCA scoring. This reinforces the results and robustness of the assessment process at this stage. With regards to providing for different types of users, the sensitivity checks show that the scores align with the requirements to cater for a high demand from both visitor and commuter users.

The following sensitivity test scenarios resulted in changes to the preferred route (highest scoring option):

- Route 1 (East of crossing) – **Scenario D** results in Option 1a scoring highest
  - Otherwise Option 1b is preferred
- Route 4 (Access to North Frankton) – **Scenario C** results in Option 4b scoring highest
  - Otherwise Option 4a is preferred
- Route 4 (Access to South Frankton) – **Scenario C** results in Option 4f scoring highest.
  - Otherwise Option 4e preferred

For Route 1, the results indicate that where costs and property risk criteria are given a higher weighting, the highest scoring option changes to Option 1a. Otherwise, Option 1b is the preferred route under all other sensitivity tests.

For Route 4, where a 70% weighting is given to the design criteria, the highest scoring option is different. Given the complexities of route alignment through Frankton it is expected that some variance may arise. It is noted that despite scenario C producing different results, all other scenarios have the same preferred option.

# 10. PREFERRED NETWORK

A summary of the preferred route choices based on the MCA and key stakeholder workshops is included in Table 34.

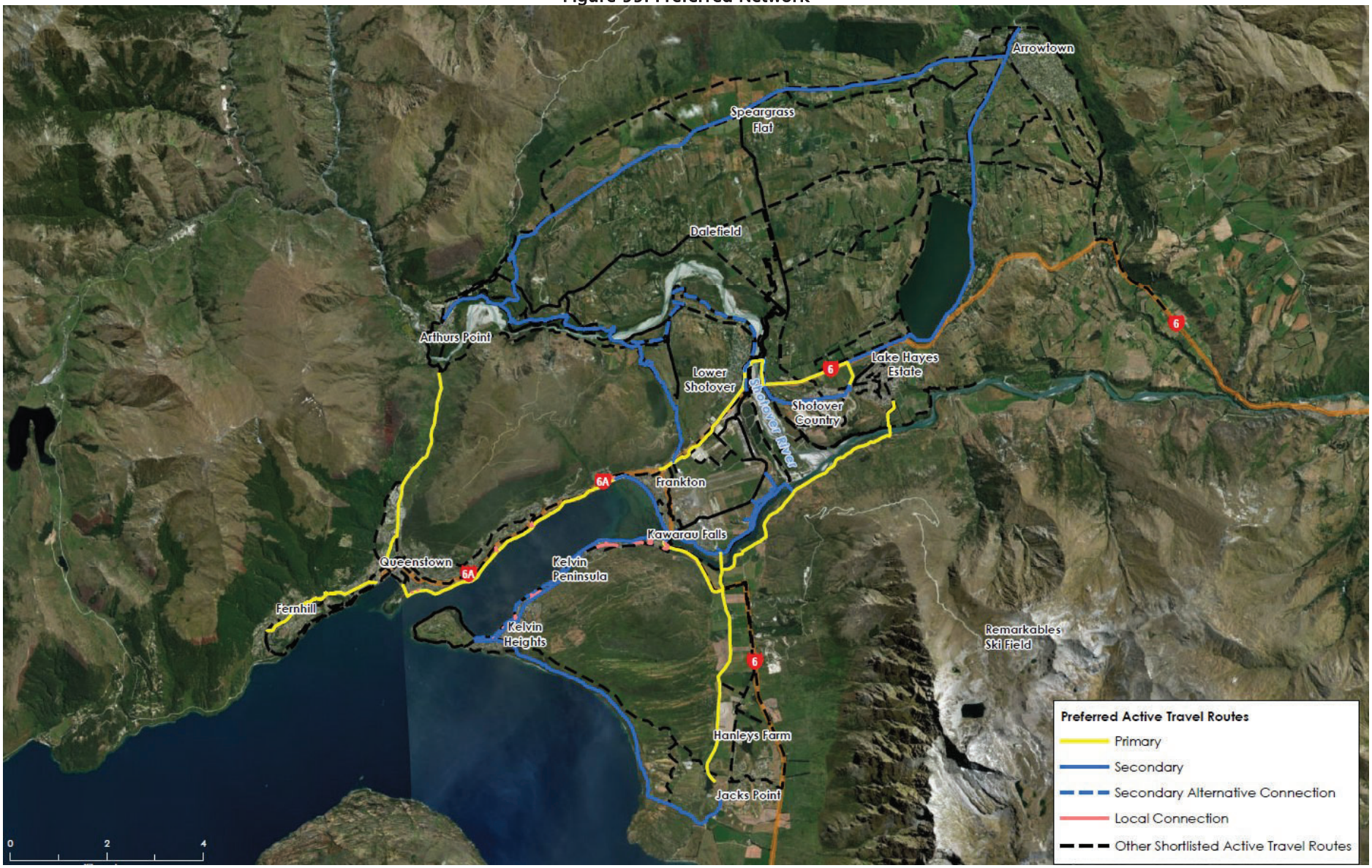
**Table 34: Preferred options for each route**

| | ROUTE | PREFERRED OPTION/S | ADDITIONAL COMMENTS |
|---|---|---|---|
| 1 | Jacks Point to Frankton (Primary) | • 1c via utilities/ pipe easement corridor<br>• 1e/new SH6 river side alignment | The utilities corridor was confirmed as the preferred route as it is the most direct and attractive route which is physically separated from high volume road including the State Highway. It does not disrupt the current design and construction of Woolshed Road. The route will also connect through the future residential developments that are proposed in the area. An alignment for the western branch of the route will be determined at pre-implementation phase after design options can be assessed and Iwi sensitivities are resolved. |
| 2 | Kelvin Heights to Frankton (Secondary) | • 2a via Peninsula Road and the existing Lakeside Trail | The utilisation of the lakeside trail in parallel with an upgrade of active travel provisions on Peninsula Road has been confirmed as the preferred route. Due to the existing recreational value, very high cost associated with track widening and environmental/visual challenges of the lakeside trail, a full active travel route upgrade was deemed unsuitable. Therefore a partial upgrade of Peninsula Road to support commuter cyclists and connectivity to future residential developments in conjunction with minor upgrades to the lakeside trail was deemed a better approach for the preferred route. |
| 3 | Frankton to Queenstown (Primary) | • 3a via Existing Lakeside Trail | From the MCA assessment, Option 3a via the existing lakeside trail was the highest scoring route against the criteria due to full separation from vehicular traffic, flatter gradient, likely lower cost of construction, limited impact to the road network and access to potential future ferry terminals. It was highlighted by stakeholders that the safety of the route could be improved having regard to the different users, high use and narrow width in sections. Through the design process, methods will be considered to minimise conflict between different users. |
| 4 | Lake Hayes Estate to Frankton (Primary and Secondary) | • 4a, 4b, 4c to North Frankton<br>• 4f to South Frankton | The size of the Frankton footprint necessitated the consideration of options for access split between north and south Frankton. The demarcation between north and south Frankton is a line parallel to the runway of Queenstown Airport.<br>For connection to North Frankton, Option 4a is deemed to be the preferred option due to separation from vehicles, the amenity and utilisation of the existing trail. However, during the stakeholder workshop on 20th November 2018, it was determined that 4b should also be included as an additional preferred option on the basis that it links with the wider network (Route 8 and Route 9) and provides better connectivity to the future Ladies Mile development. Option 4c (existing Shotover heritage bridge) was chosen as the most appropriate crossing of the Shotover River.<br>For South Frankton, Option 4f along an existing paper road was chosen as the preferred option. This route follows the alignment of a proposed trail that is currently being investigated by the QTT. This route provides direct connections to the Wakatipu High School and Remarkables Park developments. |
| 5 | Arthurs Point to Queenstown | • 5a via Gorge Road and Robins Road | With no alternative routes between Arthurs Point and Queenstown, Route 5a via Gorge Road and Robins Road was deemed the preferred route. The route through Robins Road was chosen over Gorge Road within the Queenstown urban area as it provides less business disruption and less removal of parking close to businesses. It is noted that this project will design the route up to the |

| | Route | Preferred Option/s | Additional Comments |
|---|---|---|---|
| | | | Edith Cavell Bridge and therefore not limiting the possibilities for access to future potential developments on the north side of Arthurs Point. |
| 6 | Fernhill to Queenstown | • 6a via Cameron Place and Thompson Street | Option 6a via Cameron Place and Thompson Street was deemed the preferred route due to the avoidance of Fernhill Road which has a very steep gradient into Fernhill which impacts cyclists who would need to ride uphill. Other benefits of 6a include its good connectivity with recreational reserves and properties along the route and that it complements existing walking and cycling routes into Fernhill. |
| 7 | Jacks Point to Kelvin Heights | • 7b via existing QTT | Option 7b (via the existing QTT Trail) was identified as the preferred option due to stakeholder and community support and no assumed land acquisition. Option 7b is currently a route for experienced recreational users. However, due to the challenging terrain, low use and likelihood of additional roads being developed in the area in the future, the route has been deemed as lower priority. |
| 8 | Arthurs Point to Frankton | • 8c via existing QTT<br>• 8d via Johnson Lake or 8e via Tucker Beach | The route from Arthurs Point to Frankton was split into the two sections of Upper Shotover and Lower Shotover, having regard to its length and the areas served by the different route options.<br><br>For Upper Shotover, Option 8c was deemed the preferred route as it provides an attractive route away from vehicular traffic on a riverside trail, and a direct link to the existing Tucker Beach Trail Track and Quail Rise development area via a new bridge across the Shotover River. In addition, this trail route has already been investigated by QTT and is likely to be funded and implemented.<br>For access through the Lower Shotover area, Options 8d and 8e were identified as the preferred. Option 8d provides an attractive route adjacent to Johnson Lake with accessible grades, while Option 8e provides improved connectivity to the Lower Shotover and onto Lake Hayes Estate and the wider area via Route 9.<br><br>Stakeholders initially highlighted the alternative route via Johnson Lake (8d) as the preferred route due to directness and attractiveness adjacent to the lake. There are additional benefits experienced with the investment in an entire new route option. However, given the grades of this route (8d), the alternative 8e route provides an attractive flat route for less confident riders and does not remove the recreational value that this route already provides. |
| 9 | Arrowtown to Frankton | • 9a via Lake Hayes | Option 9a which runs along Arrowtown - Lake Hayes Road, Lake Hayes trail and connects onto the Route 4 trail adjacent to SH6 has been deemed the preferred route. This is because it enables the most direct connection between Arrowtown and Frankton. With Option 9b (QTT trail) being an existing recreational trail, investing in 9a will provide additional benefits and cater for new users while retaining the recreational value of the QTT trail. |
| 10 | Arrowtown to Arthurs Point | • 10b via Malaghans Road | Option 10b (via Malaghans Road) has been selected as the preferred due to its good gradient and being the most direct option (14km). This route also aligns with the beginning and end sections of the proposed QTT trail which is proposed to the north of Malaghans Road connecting to the QTT trail that is proposed to the north of Malaghans Road. This will allow the recreational function of the QTT to be retained in addition to this direct connecting trail. |
| 11 | Queenstown Town Centre | • N/A | Routes through the town centre for walking and cycling have been defined in the QTCMP PBC. These were defined through an iterative process of workshops and which are confirmed as a part of this business case. This business case seeks funding for these routes. |

| | Route | Preferred Option/s | Additional Comments |
|---|---|---|---|
| 12 | Frankton Connections | • 12b via QTT Trail and Motor camp<br>• 12e via Underpass and Robertson Street | The routes connecting Frankton were split into the two sections of Frankton North and Frankton South.<br><br>For Frankton North, Option 12b has been deemed the preferred as it provides the most direct and safest route in comparison with the other two options. It also facilities great connectivity via existing residential and commercial properties and integrates well with public transport including the Frankton Hub.<br>For Frankton South, Option 12e has been selected as preferred as it enhances existing connections and supplements 12f that serves as a direct recreational link. Option 12e also provides a more direct and attractive route then 12d via Boyes Crescent. |

Figure 55: Preferred Network



## 10.1. Treatment Types

An assessment of recommended treatment types for the preferred network was determined in close collaboration between key project partners and Beca Ltd. The treatment types for each route can be found in Table 35. This includes:

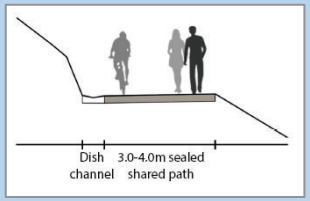
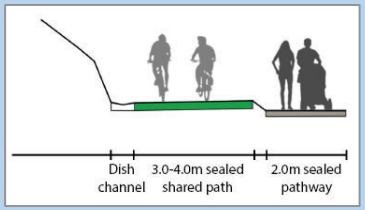
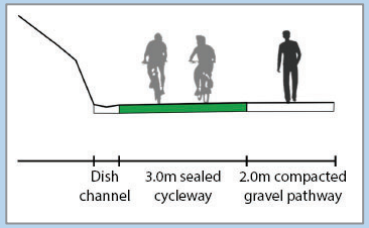
- The preferred treatment option;
- Two alternative treatment options;
- Justification for the preferred option;
- Risk and mitigation methods associated with each proposal; and,
- Additional implications.

Following this, the proposed LoS for each route is presented in Figure 56 and Figure 57 benchmarked against the LoS review in Section 5 – Problems, Opportunities and Constraints. The LoS of the existing routes (off-road ad on-road facilities) defined by QLDC have been reviewed for both pedestrians and cyclists and is shown in Figure 56 and Figure 57. This was completed using Austroads Level of Service Metrics (for Network Operations Planning) (2015), which provided a framework for both assessing the pedestrian and cyclist LoS.

The framework is based on a series of 'LoS needs' (mobility, safety, access, information and amenity), which are each subdivided into 'LoS measures' specific to each road user type. Ratings range from A to F and are assigned according to various defined 'service measure values', with A representing the top level as a condition of the desired network in which a high level of service for safety is accommodated through infrastructure design and F representing the worst level. There is currently no defined level of service in NZ for pedestrian and cyclist facilities although, traditionally, levels of service C or D are taken as the desirable levels of service. Therefore, the proposed amenity provided has been designed to meet this as a minimum standard and, in certain circumstances and for certain routes, to move beyond this level of service.

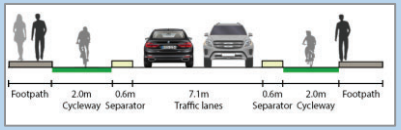
Table 35: Treatment types for each route

| Route | Preferred Option | Alternative Option One | Alternative Option Two | Justification for Preferred Option | Risks Mitigated or requiring mitigation | Carparking Implications/ Losses |
|---|---|---|---|---|---|---|
| 1. JP to Frankton | Shared path (3m) – chipseal surface<br><br>*(refer to design drawings for cross section)* | Shared path (4m)<br><br>*Some reasons against:*<br>• Low anticipated pedestrian volumes do not require additional width. | Shared path (2m)<br><br>*Some reasons against:*<br>• Too narrow to safely accommodate two way flows and multiple modes. | Greenfields site allows for desired width.<br>3m is sufficient width in terms of safety (conflicts between different users) and capacity until higher demand is realised in the future.<br>Peak cycle flows along the path will likely be in the same direction (ie. AM peak – majority of users travelling north to Frankton) | Width enables two-way flows and reduces risk of conflicts between different users.<br>Allow enough corridor width/easement to widen in the future if substantial path use occurs. | Nil |
| 2. Kelvin Heights to Frankton | Combination of on road greenway and an extended footpath at south end of Peninsula Road.<br>Upgrade to the existing shared path/trail throughout.<br>Trail widening from the substation access track to Kawarau Falls Bridge.<br><br>*(refer to design drawings for route and cross sections)* | Upgrade to the existing trail for entire route.<br><br>*Some reasons against:*<br>• Significant safety concerns that may not be completely mitigated through improvement works (i.e. sightlines, widths)<br>• Community wanted to retain the recreational character of the trail<br>• Remove higher speed cyclists from the trail to reduce safety concerns for pedestrians<br>• Very high construction costs and retaining walls with adverse visual effects | Entire route greenway on Peninsula Road with extended pedestrian facilities in residential areas<br><br>*Some reasons against:*<br>• Impact on the public transport efficiency with traffic calming throughout<br>• Higher speed areas would have to be reduced throughout the corridor<br>• Pinch points on road corridor could require significant property purchase to widen footpath throughout | Connects people from residential development above Peninsula Road to the lakeside trail.<br>Improves safety for commuters along Peninsula Road<br>Diverts higher speed cyclists from the narrow sections of the lakefront trail.<br>New pedestrian facilities on Peninsula Road to enhance safety, usability and provide better connection to bus stops | Reduces safety issues by encouraging the confident cyclists off the trail for majority of route where width improvements and sight line issues are difficult to mitigate.<br><br>Retains the recreational character of the trail.<br><br>Existing risk that additional | Nil |

| Route | Preferred Option | Alternative Option One | Alternative Option Two | Justification for Preferred Option | Risks Mitigated or requiring mitigation | Carparking Implications/ Losses |
|---|---|---|---|---|---|---|
| | | | | | cyclists use lakefront trail and don't use the greenway.<br><br>Implications on time efficiency with additional speed humps.<br><br>Consider implications of 30km/h greenway given AADT 2500 and 70km/h existing posted speed. | |
| 3. QT to Frankton | <u>Frankton track trail</u><br>Shared path (width maximised where feasible, typically 3-4m) on Frankton track<br>  <br> | Separated cyclist and pedestrian facility (5.3m total width - 3m cycle path, 0.3m separation, 2m pedestrian path)<br>  <br><br>*Some reasons against:*<br>• Width not available**<br>• Substantial cost increase and visual & environmental impact along lakeside<br>• Potential consent issues | Sealed cycle path and unsealed pedestrian path (4.5m total width)<br>  <br><br>*Some reasons against:*<br>• Width not available**<br>• Substantial cost increase and visual & environmental impact along lakeside<br>• Potential consent issues | Achieving required width for separation and/or surface differentiation is preferred. However existing widths with only minor retaining walls and/or batter slopes allow for average 3-4m path.<br>Path width will be widened where feasible.<br><br>**If water/waste water main upgrades occurs and more space can be allocated to the path, separation/surface differentiation may | Enhanced LoS with surface upgrade.<br>Low level bollard lighting to be considered along path.<br>Increased width from existing to provide more space for the different users.<br><br>"Cycle" calming interventions to be investigated including signage, paint markings and surface changes at narrow points, additional width | Nil |

| Route | Preferred Option | Alternative Option One | Alternative Option Two | Justification for Preferred Option | Risks Mitigated or requiring mitigation | Carparking Implications/ Losses |
|---|---|---|---|---|---|---|
| | | | | be achievable and would become the preferred option. | and seating to provide waiting spaces off the path. | |
| | <u>Park Street</u><br>Greenway<br><br>*(refer to design drawings for route and cross sections)* | Shared path (3.0m)<br><br>  <br><br>*Some reasons against:*<br>• Higher amounts of parking loss compared to preferred.<br>• Low volume road adjacent that can accommodate cyclists. | Widened footpath and greenway.<br><br>There is still an opportunity to widen footpath on lake front.<br><br>*Widened footpaths will result in:*<br>• Higher amounts of parking loss compared to preferred.<br>• Risks with amount of retaining walls that may be required to stabilise path along lakefront (resulting in potential consentability issues). | Low volume road can be traffic calmed and have slower speeds to provide a shared space for cyclists and vehicles.<br><br>Retains majority of carparking on the northern side of the road.<br><br>Retains the lakeside character without retaining walls. | Risk of public/local resident backlash at impact of parking loss mitigated through preferred option.<br><br>Consider 30km/h slow zone. | Little parking available on northern side of Park Street due to driveways so parking loss here is minimal.<br><br>Approx 75 potential parks removed on southern side. Parking bays to remain to remain for preferred option.<br><br>Alternative options remove a further 100 parks (175 in total). |

| Route | Preferred Option | Alternative Option One | Alternative Option Two | Justification for Preferred Option | Risks Mitigated or requiring mitigation | Carparking Implications/ Losses |
|---|---|---|---|---|---|---|
| 4N. Lake Hayes Estate to Frankton via SH6 | Shared path (4m) sealed<br><br>*(refer to design drawings for cross section)* | Separated cyclist and pedestrian facility (5.3m total width - 3m cycle path, 0.3m separation, 2m footpath)<br><br>*Some reasons against:*<br>• Low anticipated pedestrian volumes do not require additional width/separation. | | Shared space considered appropriate given low pedestrian volumes using this route for commuting purposes therefore minimal conflict issues.<br><br>Peak cycle flows along the path will likely be in the same direction (ie. AM peak – majority of users travelling south to Frankton) | Width enables two-way flows while minimising risk of conflicts between users. | Nil |
| 4S. Lake Hayes Estate to Frankton via Kawarau south bank | Shared path (2.5m) compacted gravel.<br><br>*As per QTT business case proposal and design drawings (secondary route detail only)* | Shared path (3m) chipseal<br><br>*Some reasons against:*<br>• Low anticipated pedestrian volumes do not require additional width/separation.<br>• 3m width does not align with QTT proposal of 2.5m which is appropriate until further demand realised. | 4m shared path<br><br>*Some reasons against:*<br>• As per alternative option one | 3m is sufficient width in terms of safety and capacity until higher demand is realised in the future.<br><br>Peak cycle flows along the path will likely be in the same direction (ie. AM peak – majority of users travelling south to Frankton) | Width enables two-way flows while minimising risk of conflicts between users. | Nil |
| 5. Arthurs Point to QT | Gorge Road (within urban extents)<br><br>Bidirectional cycle way and existing footpath. | Shared path (3m)<br><br>  <br> | One-way cycleways on either side of road. | Bidirectional cycleway removes approx 50% of parking from Gorge Road vs 100% which is required for one-way cycleways. | Two-way cycle movements unfamiliar to drivers at intersections. | Loss of 60 potential parks on western side of Gorge Rd with |

| Route | Preferred Option | Alternative Option One | Alternative Option Two | Justification for Preferred Option | Risks Mitigated or requiring mitigation | Carparking Implications/ Losses |
|---|---|---|---|---|---|---|
| |  <br>*Minimum 1.8m footpath to be maintained for route. | *Some reasons against:*<br>• Higher pedestrian numbers in urban areas<br>• |  <br>*Some reasons against:*<br>• 100% parking loss. | Shared path in residential areas not recommended due to higher pedestrian numbers.<br>Peak cycle flows along Gorge Road will likely be in the same direction (ie. PM peak – majority of users travelling north to Arthurs Point) | Backlash at loss of parking. | preferred option.<br><br>Similar amount of parking loss for alternative option one.<br><br>Loss of 120 potential parks removing parking on both sides of Gorge Rd |
| | <u>Robins Road</u><br>Shared path (4m)<br>  | Bidirectional cycleway and existing footpath.<br>  <br>*Minimum 1.8m footpath to be maintained for route.<br><br>*Some reasons against:*<br>• High pedestrian volumes require considerable extra capacity over existing which this treatment does not provide<br>• | One-way cycleways on either side of road.<br>  <br>*Some reasons against:*<br>• Consistency of treatment for both Gorge Road and Robins Road.<br>• No improvements to existing footpath widths/provision.<br>• | Extra width for pedestrians and cyclists provides required capacity through this corridor with various existing land uses including a school, coach hub and recreational grounds. | Some risk of conflict between cyclists and pedestrians however extra width will help mitigate this issue.<br><br>Risk of public/ local resident back lash at loss of parking. | Loss of 73 potential parks on Robins Road from Gorge Road to Queenstown Primary School with all options. |

| Route | Preferred Option | Alternative Option One | Alternative Option Two | Justification for Preferred Option | Risks Mitigated or requiring mitigation | Carparking Implications/ Losses |
|---|---|---|---|---|---|---|
| 6. Fernhill to QT | <u>Fernhill Road</u><br>Bidirectional cycleway with existing footpath<br>  <br> | Shared path (3.0m)<br>  <br><br>*Some reasons against:*<br>• Higher pedestrian numbers in urban areas.<br>• Cyclists speeds going downhill will be safety issue for pedestrians on shared path. | One-way cycleways on either side of road.<br>  <br><br>*Some reasons against:*<br>• 100% parking loss. | Bi-directional cycleway removes approx 50% of parking from Fernhill Road. 100% parking loss would be required for one-way cycleways. Shared path in residential areas not recommended due to higher pedestrian numbers.<br>Peak cycle flows along the path will likely be in the same direction (ie. AM peak – majority of users travelling north to QT) | Two-way cycle movements unfamiliar to drivers at intersections.<br>Public backlash at loss of parking.<br>Movement of bus stop will need to consider safe pedestrian crossing at Cameron Place | Loss of 190 potential parks.<br>Alternative option two would remove an additional 105 parks (295 total)<br>Bus stop near Cameron Place will need to be relocated to other side of Cameron Place |
| | <u>Cameron Place</u><br>Greenway<br>*(refer to design drawings for cross section)* | Shared path (3.0m)<br>*Some reasons against:*<br>• Space constraints<br>• Parking loss. | | Low traffic volumes do not warrant a separated facility for cyclists. | Explore possibility to remove 50% parking along one side of the road to provide more space and safety for cyclists on road.<br>Consider 30km/h slow zone | Removing parking on one side of Cameron Place would result in 24 lost potential parks |

| Route | Preferred Option | Alternative Option One | Alternative Option Two | Justification for Preferred Option | Risks Mitigated or requiring mitigation | Carparking Implications/ Losses |
|---|---|---|---|---|---|---|
| | <u>Thompson Street</u><br>Greenway and footpath surface improvements<br>  <br> | Shared path (3.0m)<br>  <br><br>*Some reasons against:*<br>• 100% parking loss<br>• Cycle speeds going downhill will be a safety issue for pedestrians on shared path | Widened footpath and greenway<br>There is still an opportunity to widen footpath however 100% parking loss may be required due to space constraints on Thompson Street. | Low traffic volumes do not warrant a separated facility for cyclists.<br>Approx 50% parking loss required to allow more space for cyclists on road. | Road width is a constraint in delivering full separation for cyclists.<br>Additional footpath width could be provided however, 100% parking removal would be required<br>Consider 30km/h slow zone | Currently parking only on one side of this section of Thompson Street. Removing this for alternative options results in 90 lost parks. |
| 7. Jacks Point to Kelvin Heights | Compacted gravel pathway – widened wherever possible<br>*(refer to design drawings for typical cross section – secondary route level of detail only)* | | | Low volumes of users.<br>Likely relocation in future as road network and developments occur in the area. | Compaction and additional width (where possible) provide improved amenity and safety benefits.<br>Sightlines and safety risk from fall to be improved as a minimum | Nil |
| 8. Arthurs Point to Frankton | Shared path (3m)<br>*(refer to design drawings for typical cross section – note secondary route level of detail only)* | Shared path (4m)<br>*Some reasons against:*<br>• Low anticipated pedestrian volumes do not require additional width.<br>• QTT standard appropriate until further demand realised. | | Green fields site.<br>3m width is sufficient until higher demand is realised in the future.<br>Low pedestrian volumes. | Width enables two-way flows.<br>Allow enough corridor width/ easement to widen in the future if substantial path use occurs | Nil |

| Route | Preferred Option | Alternative Option One | Alternative Option Two | Justification for Preferred Option | Risks Mitigated or requiring mitigation | Carparking Implications/ Losses |
|---|---|---|---|---|---|---|
| 9. Arrow town to Lake Hayes Estate | Arrowtown - Lake Hayes Shared path (3m)<br><br>*(refer to design drawings – note secondary route level of detail)* | Grade separated cyclist and pedestrian spaces along trail.<br><br>*Some reasons against:*<br>• Low anticipated pedestrian volumes do not require additional separation.<br>• Constrained corridor | Surface differentiated spaces along trail.<br><br>*Some reasons against:*<br>• Comments as per alternative option 1 | Green fields site.<br>3m is sufficient until higher demand is realised in the future.<br>Low volumes in recognition of existing recreational QTT route | Width enables two-way flows. | Nil |
| | <u>Lake Hayes Track</u><br>Existing trail with minor improvements<br><br>*Improvements include vegetation removal, track widening where possible, track level raised, and boardwalk widened.*<br><br>*(refer to design drawings – note secondary route level of detail)* | Sealed Shared path (3m)<br><br>*Some reasons against:*<br>• Community desire to retain the context and character of the Lake Hayes track<br>• Much loved recreational trail | Route along Arrowtown-Lake Hayes Road<br><br>*Some reasons against:*<br>• Constrained corridor<br>• High speed road corridor less attractive<br>• Property purchases required<br>• Back lash from Lake Hayes community if another route is built in parallel to an existing trail | Retaining the recreational value of the Lake Hayes track.<br>Removes the need for property purchase<br>Provides attractive section of route for commuters | Enhance resilience of path through raising levels in flood prone areas<br><br>Improve sight distance and passing width for pedestrians and cyclists.<br><br>Backlash to commuter trail along Lake Hayes Track | Nil |
| | <u>South of Lake Hayes to Howard's Drive</u><br>Shared path (3m)<br><br>*(refer to design drawings for cross section)* | Grade separated cyclist and pedestrian spaces along trail<br><br>*Some reasons against:*<br>• Low anticipated pedestrian volumes do not require additional separation.<br>• Section of constrained corridor | Surface differentiated spaces along trail<br><br>*Some reasons against:*<br>• Comments as per alternative option 1 | Green fields site<br>3m is sufficient until higher demand is realised in the future.<br>Ladies Mile development may provide opportunities for path widening in future | Width enables two-way flows.<br><br>Allow enough corridor width/ easement to widen in the future if substantial path use occurs | Nil |

| Route | Preferred Option | Alternative Option One | Alternative Option Two | Justification for Preferred Option | Risks Mitigated or requiring mitigation | Carparking Implications/ Losses |
|---|---|---|---|---|---|---|
| 10. Arrow town to Arthurs Point | Shared path (3m)<br><br>*(refer to design drawings for cross section)* | Shared path (4m)<br><br>*Some reasons against:*<br>• Low anticipated pedestrian volumes do not require additional width. | | Green fields site.<br>3m is sufficient until higher demand is realised in the future.<br>Low pedestrian volumes | Width enables two-way flows. | Nil |
| Brecon Street | The carriageway width will be narrowed. The<br>road centreline remains largely in the same location as existing. The cross fall of the new alignment will<br>follow the existing road where possible, however in some areas this is modified to reduce the steepness and<br>to improve the grades of the footpath.<br>This package includes the alignment of Brecon Street/ Man Street intersection, utilising the existing road<br>width. | n/a | n/a | Reduced carriageway width will reduce vehicle speed and widened footpaths will increase LoS for pedestrians. | Width enables two-way flows.<br><br>Allow enough corridor width/ easement to widen in the future if substantial path use occurs | Parking will be removed from the eastern side of the street. Through design the mobility park on lower Brecon Street will be<br>relocated to Duke Street beside the Sofitel<br>Hotel. |
| Park Street | The carriageway width will be narrowed. The crossfall of the new alignment will follow the existing road where possible, however in some<br>areas the cross fall will be modified to reduce the steepness and to improve the grades of the footpath. The<br>existing kerb line and footpath on the south and | n/a | n/a | Reduced carriageway width will reduce vehicle speed and reduce likelihood of cyclist and vehicle interactions/crashes. Widened footpaths will increase LoS for pedestrians. | Width enables two-way flows.<br><br>Allow enough corridor width/ easement to widen in the future if substantial path use occurs | Parking will be removed from the southern and eastern side of<br>the street. |

| Route | Preferred Option | Alternative Option One | Alternative Option Two | Justification for Preferred Option | Risks Mitigated or requiring mitigation | Carparking Implications/ Losses |
|---|---|---|---|---|---|---|
| | eastern side of the street will remain. | | | | | |
| Upper and Lower Beach Street | The existing carriageway will be transformed to a shared space, removing kerb and channel. The grading will follow the existing, with some areas being smoothed out locally to improve grades for pedestrian movements. | n/a | n/a | Improved amenity and LoS for pedestrians and cyclists. | Ensure shared space does not lead to increased cyclist/pedestrian conflicts | All existing parking spaces will be removed |
| Rees Street | The existing carriageway will be transformed to a shared space, removing kerb and channel. The grading will follow the existing, with some areas being smoothed out locally to improve grades for pedestrian movements. | n/a | n/a | Improved amenity and LoS for pedestrians and cyclists. | Ensure shared space does not lead to increased cyclist/pedestrian conflicts | All existing parking spaces will be removed |

Figure 56: LoS assessment proposed routes (Pedestrian)

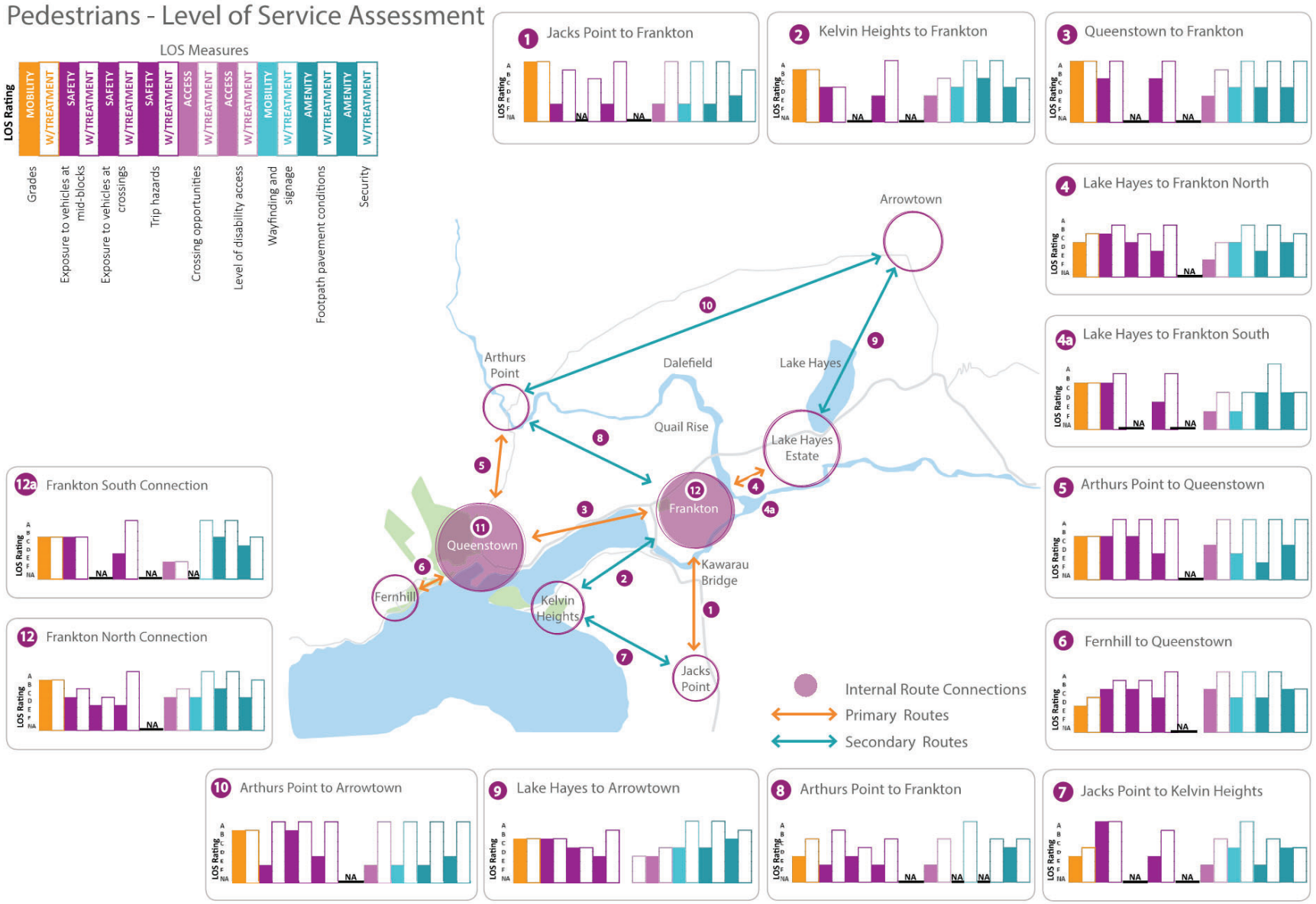
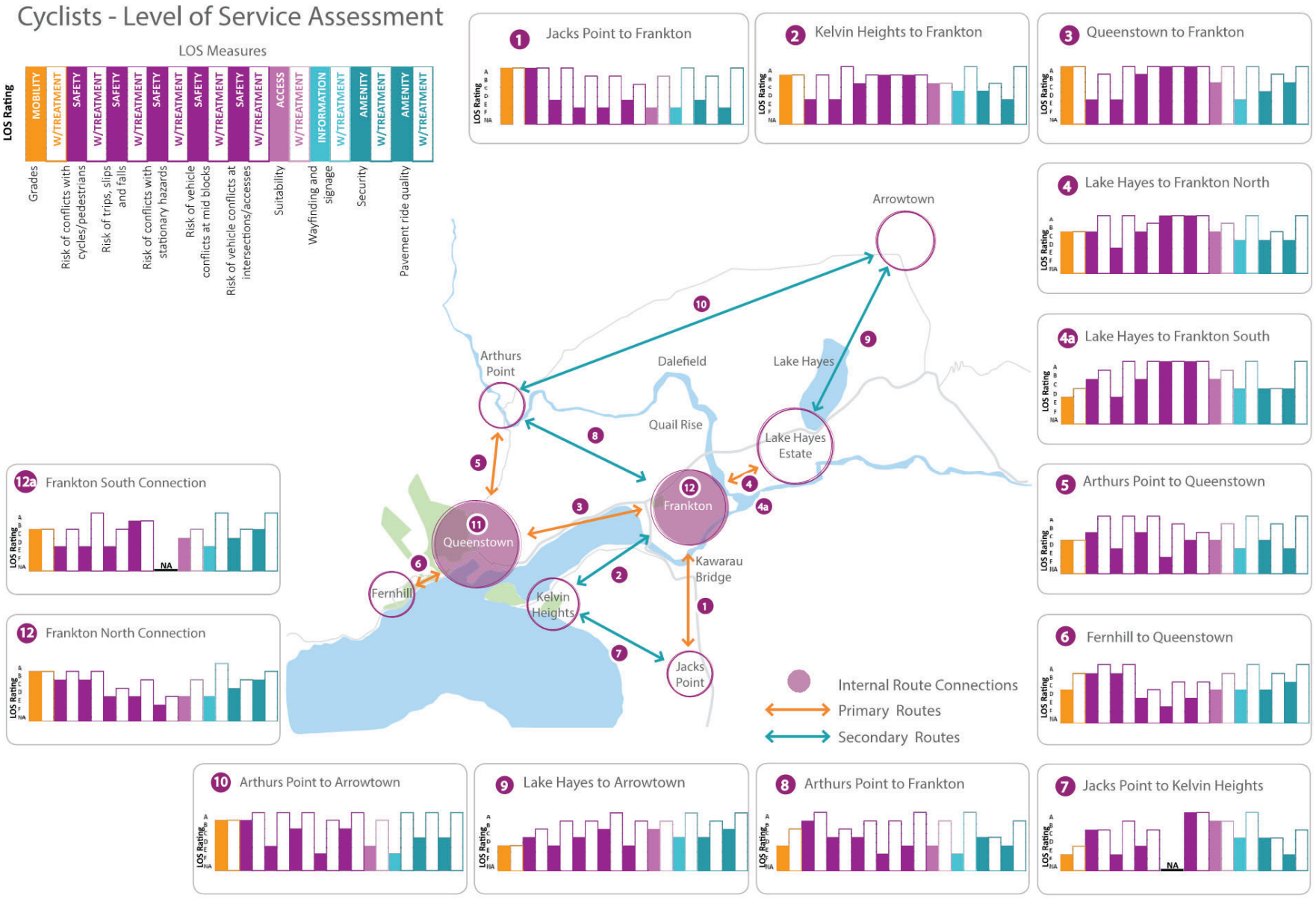


Figure 57: LoS assessment proposed routes (Cyclists)



## 10.2. Alignment with Investment Objectives and KPIs

The preferred network has been developed to address the identified problems with success measured on resolving these problems as well as achieving the benefits which were agreed during the Investment Logic Mapping process outlined in Section 5. Table 36 outlines how the preferred network delivers on the proposed programme benefits and investment objectives by the identified timeframe of 2029.

**Table 36: Preferred Network Alignment with Investment Objectives**

| BENEFIT | KPI MEASURES | PREFERRED NETWORK CONTRIBUTION |
|---|---|---|
| Better safety and security | A reduction of users referencing insufficient safety/security issues on the WATN by 75% from baseline. | The existing network of commuter and recreational trails provides limited levels of service for pedestrians and cyclists due to missing links and identified safety issues. A number of work packages have been identified as 'quick wins' which address identified safety issues on the network. Implementation of additional trails and investments to improve the existing level of service will reduce the risk associated with vehicle and cyclist interactions, as highlighted in Problem Statement 1.<br>In addition, by addressing key conflict points between modes, a number of intersection crashes involving cyclists is likely to decrease. Increased numbers of cyclists and visibility of cycling infrastructure is also intended to increase driver awareness of cyclists and facilitate a reduction in vehicle/cyclist crashes. |
| | An increase in users reporting satisfaction with WATN facilities and infrastructure by 50% from baseline. | Implementation of the preferred network will lead to improve levels of service for pedestrians and cyclists by addressing missing links, addressing critical safety issues, and providing a safe and attractive route off major arterial and urban roads. |
| Positive community and environmental effects | Increase the daily average cyclist flows on WATN primary routes by 15% from baseline. | Construction of additional trails, along with addressing critical safety issues, aims to attract new users to the network. Increases in active travel mode share, particularly adjacent to key arterial and urban roads, are likely to lead to a reduction in private vehicle use, congestion, and associated carbon emissions. |
| | | Construction and implementation of WATN, along with effective marketing and promotion of the trail network, will provide a bigger and better-quality network of trails in the region and is likely to lead to an increased awareness of cycling-related activities in the Wakatipu Basin amongst domestic and international visitors. Programme elements that continue to target school age children can ensure that investment benefits continue to accrue in the future. |
| | Increase the daily average pedestrian flows on WATN primary routes by 15% from baseline. | Design improvements relating to safety and route surfacing will lead to a better level of service for pedestrians, which are likely to attract users. |
| | | Improved safety outcomes are likely to lead to greater active travel use and participation on the trail network. This will create health benefits due to increased physical activity and will lead to with less carbon emissions, as opposed to driving a motor vehicle. |
| | | Investment in WATN is likely to lead to greater active travel mode share amongst residents in the Wakatipu Basin. Greater uptake of active modes will lead to improved health benefits for residents through increased exercise. It may also lead to longer-term travel behaviour changes which facilitate improved health benefits. |
| | | Routes that provide improved links between residential and commercial/employment areas will remove cyclists from busy arterial and urban roads. Addressing critical safety deficiencies |

| | | |
|---|---|---|
| | | and missing links through implementation of the preferred network will provide improved safety outcomes. The recommended treatment types for routes will also reduce the risk of crashes associated with surface unevenness and slippage. |
| An integrated active travel network | Remove all poor and critical LoS ratings (D-F) across the WATN | Maximising the use of the trail network through implementation of WATN is expected to more quickly result in improved journey time reliability and efficiency arising from modal shift. By completing the preferred network and addressing areas of highest level of service deficiency, cycling can quickly become a more attractive transport option for commuters, school children, and visitors to the region. |

## 10.3. Interdependencies

Fully realising the benefits and objectives of the WATN will be dependent on a number of interrelated projects and activities occurring in the Wakatipu Basin. As highlighted earlier in Section 1.5 – Parallel Projects, the Queenstown Town Centre Masterplan DBC, Frankton Masterplan, and Frankton to Queenstown SSBC are three critical projects that are progressing in parallel to WATN. An overview the activities arising out of the QIT PBC is shown in Figure 58. Their development highlights the need to ensure continued collaboration and knowledge-sharing to ensure the success of the WATN. Other developments such as the impact of Mobility as a Service (MaaS) and emerging micromobiltiy modes will also affect the development of the WATN, how it is used, and its subsequent success. A discussion of the various parallel projects and their relationship to the development of WATN is outlined in Table 37.

Figure 58: Recommended Activities of the QIT PBC

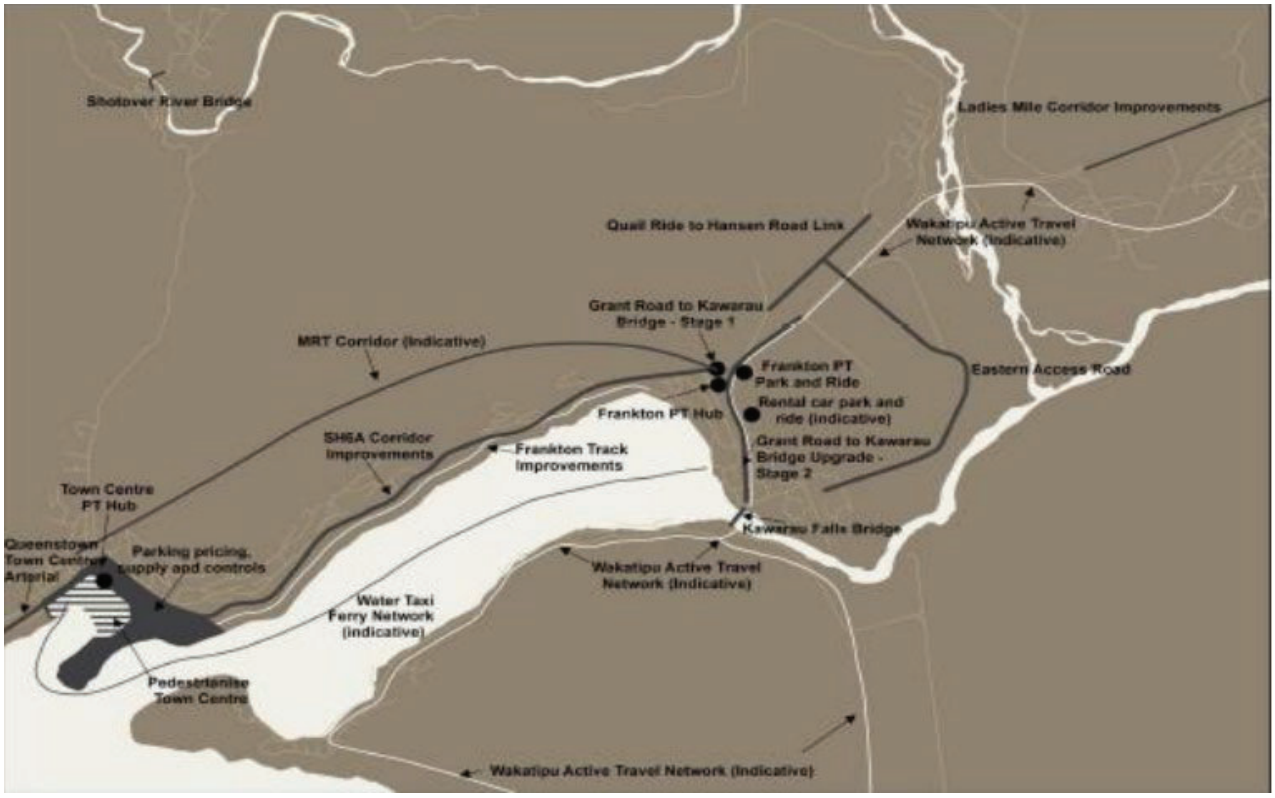


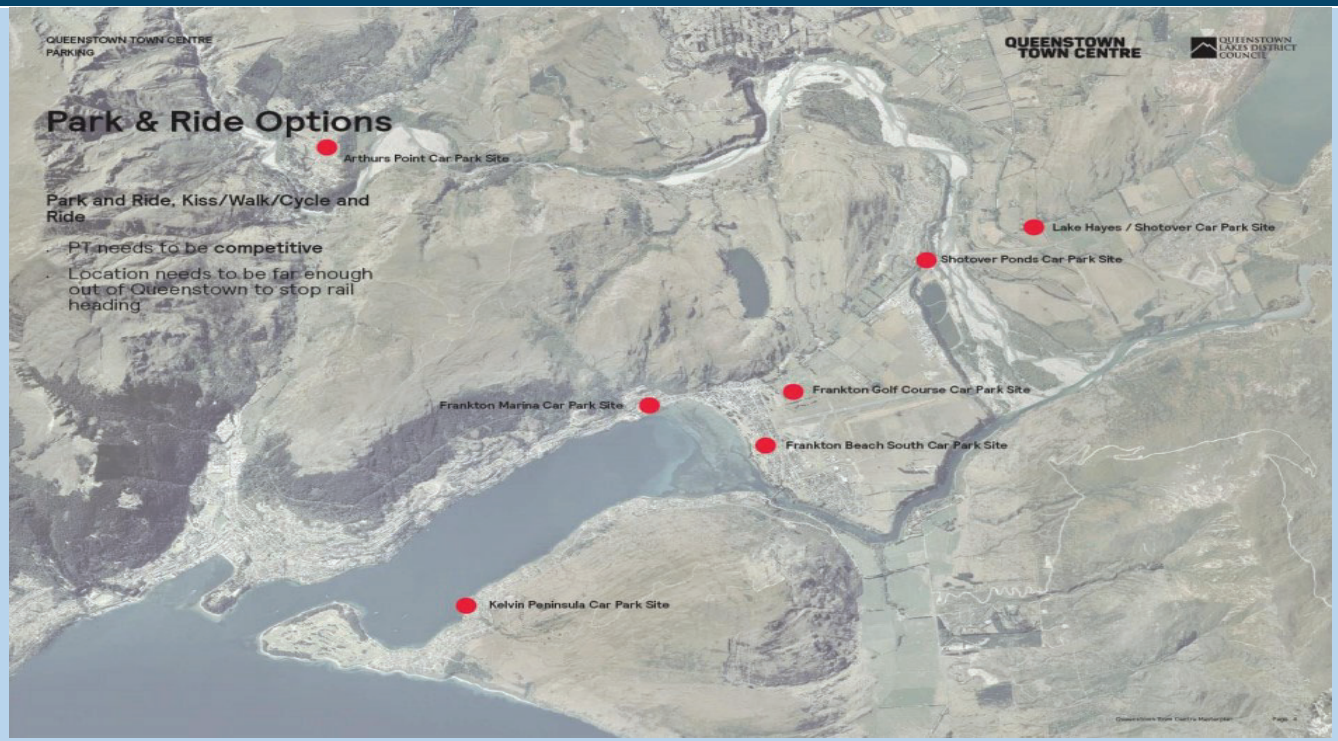
Table 37: Interdependencies of the Preferred Network

| FACTOR | RELATIONSHIP TO WATN |
|---|---|
| Regional trail network | There is parallel investment being made by a variety of partners in walking and cycling trails in the wider Otago region. The most relevant for WATN are:<br>• Recreational track between Arthurs Point and Arrowtown (QTT);<br>• Arthurs Point and Tucker Beach (QTT); and<br>• $26 Million NZCT project to link up Alexandra, Cromwell, Wanaka and Queenstown.<br><br>The successful completion of these projects will increase the accessibility of WATN and enable a greater proportion of users to use the WATN. This is particularly relevant for connections between Wanaka and Queenstown which will now be able to be safely travelled by bicycle. It will be important to ensure collaboration and integration of these different trails to ensure the overall success of the network. Such issues are more broadly discussed in the Management Case. |
| Travel Demand Management (TDM) | The location of schools in Queenstown and Frankton town centres are a large trip generator and contribute to morning and peak afternoon travel demand and congestion. The Queenstown Integrated Transport PBC reports that approximately 60% of this travel is completed by car with the reminder undertaken by active modes and public transport. Increasing the uptake of active travel modes amongst school pupils is a strategic priority for QLDC and there are opportunities through implementation of WATN to facilitate greater uptake in active modes amongst school pupils. It is advisable that QLDC incorporates the marketing of WATN post-construction into their existing school travel planning activities. This is particularly relevant for:<br>• Wakatipu High School, which will benefit from increased access south of the Kawarau river provided by Jack's Point to Frankton and Lake Hayes Estate to Frankton routes.<br>• Remarkables Primary School, which will benefit increased connectivity south and north to Lake Hayes estate.<br>• Kingsview School, which would benefits from local road improvements through Lakes Hayes Estate to Frankton routes.<br>• School trips that are currently being undertaken from Frankton Queenstown, which will benefit from an improved level of service via investments to the Frankton track.<br><br>A key consideration is also the planned investment in cycle parking within Queenstown and Frankton town centres, which will provide additional to security and incentives to existing and potential users of the WATN. The Queenstown Town Centre Masterplan identifies a town centre cycle network as a key strategic project, which includes provision for cycle parking, storage, and supporting facilities within the public realm. It will be important to ensure that the location of these facilities are appropriately integrated with the WATN. Of relevance to implementation of WATN, consideration should be given to the types of facilities provided from the lakeside (via Park Street) and from Fernhill. |

| FACTOR | RELATIONSHIP TO WATN |
|---|---|
| Ferry service improvements | The Queenstown Public Transport and Facilities Business Case highlights the need for greater and increased ferry service and options in Queenstown and Frankton as necessary to cater to future growth. By 2027, all piers within Frankton Arm that are envisaged for scheduled ferry services are recommended to be upgraded to pontoons. A scheduled ferry network/system is expected to be established by 2030. It is also envisaged that the wharf at Frankton could be improved to incorporate link with the airport.<br><br>Greater connections and integration between ferry services and the WATN will enable a greater proportion of trips to be made by alternative modes than the single occupant car. The potential to provide ferry links from Kelvin Height to Queenstown Town Centre will increase the viability and demand for Routes 7 (Jack's Point to Kelvin Heights) and 2 (Kelvin Heights to Frankton) as it will bring a greater proportion of residents in commuting distance of the CBD. These developments are likely to affect the proposed delivery staging outlined in section 10.4 as there may be a greater case to be made to deliver these routes more urgently. |
| Public transport improvements | The Public Transport and Facilities Business Case proposed in 2017 a new bus hub on Stanley Street between Camp Street and Shotover Street. Longer-term interventions were also identified. The business case proposed:<br>• Completion of the Stanley St bus interchange<br>• Increased bus frequencies on selected routes<br>• Increased water taxi fleet to cater for ongoing growth and demand;<br>• On-street PT hub on Stanley St;<br>• Queenstown town centre arterials constructed to support PT infrastructure and town centre growth.<br><br>The overall objective of these interventions is to increase public transport use and reduce congestion on key arterial and urban roads. These interventions are being further tested and will be confirmed through the QTC DBC It will be important ensure integration of any public transport improvements whist implementing the active travel network to ensure that the benefits of both projects are fully realised. |
| Parking management/regulation | The use and implementation of greater parking management mechanisms in Queenstown and Frankton town centres may influence the uptake of active travel modes and subsequent use of the active travel network. An indicative business case has been developed to identify a preferred option for parking management in Queenstown Town Centre[27], in the context of the Queenstown Masterplan[28]. The recommended programme includes a mixture of interventions, including:<br>• Intelligent transport system activities such as real time information, parking sensors etc; |

[27] Sourced from https://www.qldc.govt.nz/assets/Uploads/Council-Documents/Full-Council-Agendas/2017/26-October-2017/5a.-QT-Town-Centre-Parking-Business-Case.pdf
[28] Sourced from https://www.qldc.govt.nz/your-council/major-projects/queenstown-town-centre/masterplan-document-hub/

| FACTOR | RELATIONSHIP TO WATN |
|---|---|
| | • Parking enforcement measures including increased personnel, parking information systems to assist enforcement and potentially increased parking penalties<br>• Marketing and communications to enable better understanding of the parking and wider transport options,<br>• Demand management initiatives including increased parking charges to increase mode shift and optimise occupancy rates, less free parking, subsidising public transport<br>• Integrated park and ride facilities and services for commuters, visitors and campervan drivers.<br>• Additional cycle parking at strategic locations around Queenstown town centre.<br><br>Proposals for park and ride and increased investment in cycling infrastructure are particularly relevant for implementation of WATN. Park and ride facilities enable greater integration between public transport services and alternative transport choices. There is the potential to garner increased use of the active travel network if park and ride facilities can be properly integrated with WATN. Figure 59 shows the potential strategic park and ride locations identified through the Queenstown Town Centre Masterplan. Integration with the active travel network is particularly attractive for all of the identified sites. Proposals for additional bicycle parking around the town centre additionally provide incentives for existing and new cyclist for the WATN. It will be important to ensure that these facilities are properly integrated into the existing trails and network proposed in this SSBC.<br>**Figure 59: Proposed Park and Ride Facilities** |

| FACTOR | RELATIONSHIP TO WATN |
|---|---|
| |  <br><br>A Queenstown Town Centre Parking DBC is currently being prepared to expand on this recommended programme. It will be particularly important that the implementation of WATN is facilitated in close collaboration with the outcomes of this business case. |
| Mobility as a Service (MaaS) | Mobility as a Service (MaaS) is the integration of different forms of transport services from public and private providers into a single mobility service application that creates and manages the trip. It provides an entire mobility platform to the end user that offers increased convenience, through opportunities to pay for a variety of transport services through on application, and transport choice. A MaaS pilot programme (Choice) has operated in Queenstown since 2018 to explore the potential of this platform for bringing greater travel information and transportation choice to end users.<br><br>Development of the WATN within this mobility context provides potential opportunities to promote the network of trails to existing and new users within the application. It also provides potential to create integrated, and |

| FACTOR | RELATIONSHIP TO WATN |
|---|---|
| | multi-modal journeys through integration of cycling and public transport routes, which is identified as a key investment objective of this SSBC. In addition, the MaaS platform may provide additional customer insight and trail use information that is useful to the future management and operation of the WATN. |
| Uptake in microbility | Shared transport services such as bikes and, more recently, e-scooters have been introduced in some cities (Auckland, Christchurch, Wellington, Dunedin). QLDC is currently negotiating permit and licensing arrangements with a large e-scooter company[29]. The potential introduction of e-scooters into Queenstown has a variety of implications for WATN, principally around trail use, safety, and the use of infrastructure. Whilst there is more potential for e-scooter use in urban areas where paths are sealed and path widths are more generous, primary connector routes that are likely be used by commuters such as Frankton to Queenstown, Jack's Point to Frankton, and Lake Hayes Estate to Frankton, may attract e-scooter users. This may be more prevalent on routes where treatments are being sealed or investment results in improved levels of service. Due to their potential increased use it is recommended that design considerations are factored into pre-implementation phases.<br><br>It would also be prudent for Way to Go to consider, if implemented, the future use of the WATN and whether additional restrictions may need to be introduced. It is recommended that growth in e-scooters and other micromobility modes is monitored during implementation and post-implementation to ensure that the infrastructure requirements are fit for the demand profile and types of users that the routes are experiencing. |

[29] Sourced from https://www.stuff.co.nz/otago/113220025/queenstown-negotiating-tough-rules-for-lime-scooters

## 10.4. Implementation Approach

An initial high-level delivery staging strategy has been developed with project partners based on a review of identified network gaps, the proposed funding splits agreed by the project partners, and desired strategic outcomes of the network. There is strong motivation, need and support to deliver specific work packages earlier to take advantage of available funding and to address existing safety or LoS issues on the network. The implementation strategy will consider how this can be achieved in the most effective and efficient manner.

The implementation strategy has been shaped by consideration of the following criteria:

- Identifying specific work packages that remove gaps and increase the potential of the existing network. These have been classified as 'quick wins' and are likely to be of lower value and able to be delivered within a short timeframe;
- Staging of works programmes in a way that delivers value for money, manages risks, and accelerates the opportunities for delivery;
- Grouping of work packages based on geographic location and alignment to existing funding constraints;
- Aligning construction work in line with existing LTP/NLTP funding periods;
- Prioritising staging, based on demand modelling, for those routes with the highest modelled future demand. The BCR of each route was used as the method for prioritisation having regard to demand (benefits) and costs; and
- In addition to the assessment, development of adjacent or accompanying routes by QTT have also been considered in this prioritisation exercise.

### 10.4.1. Delivery Programme

The resulting criteria have been applied to the preferred network routes from section 10 – Preferred Network and have identified distinct work packages presented in Table 38. The proposed implementation strategy of the preferred network is illustrated in Figure 60 and are aligned to indicative design drawings outlined in Appendices O and P. Two distinct work packages have been identified, with the first targeting the existing and subsequent NLTP periods (2018-2021 and 2021-2024). The costs for pre-implementation and implementation have been separated for some work packages to align with the NLTP funding constraints and to take advantage of cost efficiencies. These concern routes:

- A8 – Jack's Point to Frankton
- C2 – Brecon Street
- C3 – Park Street

Table 38: Proposed Delivery Programme

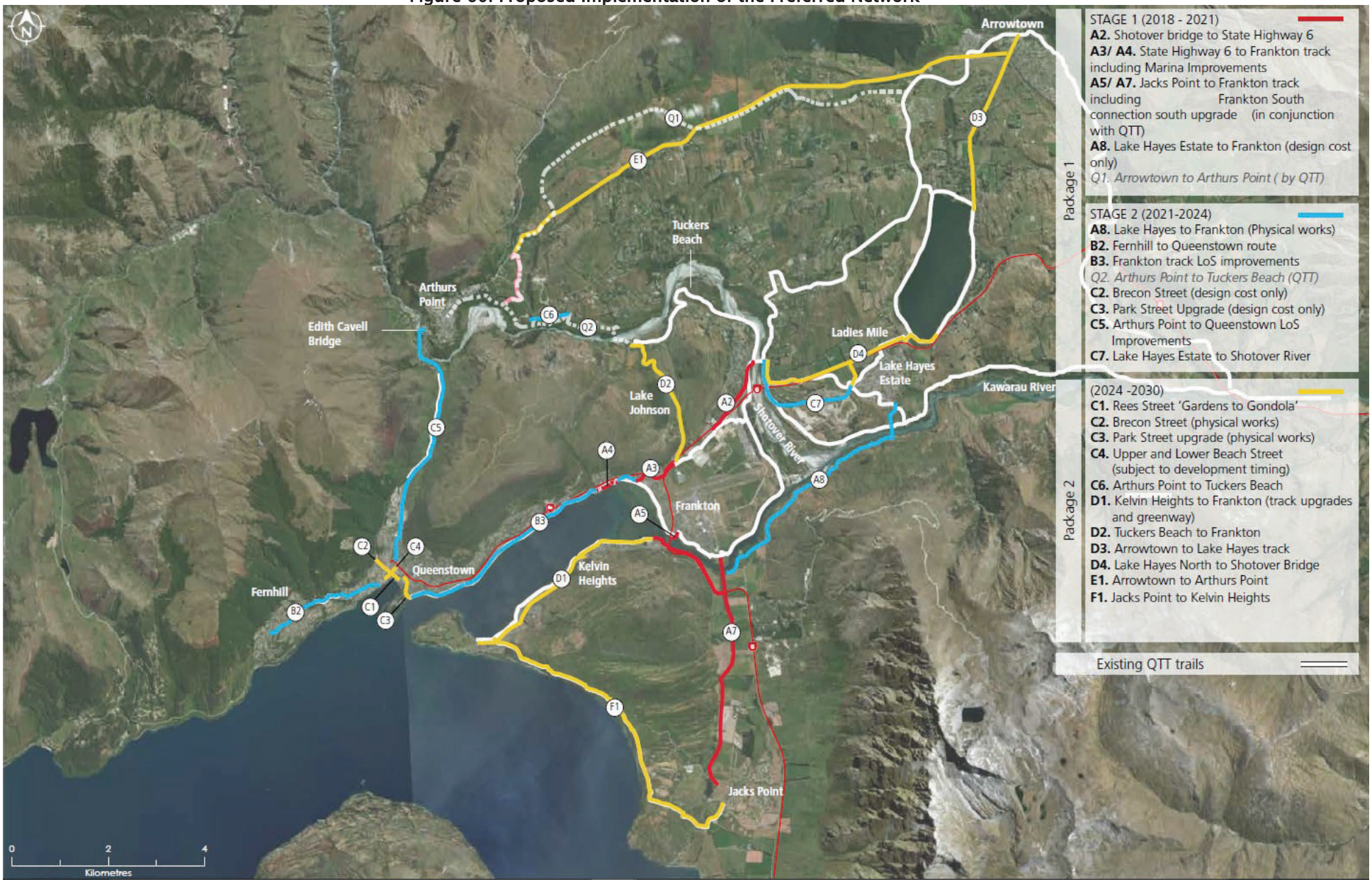
| NLTP Period | | Route | Component | Name | Partner Lead |
|---|---|---|---|---|---|
| Package 1 | 2018-2021 | 4N | A2 | Shotover Bridge to State Highway 6 | NZTA |
| | | 3/4N | A3/A4 | SH6 to Frankton Track including Marina Safety Improvements | NZTA |
| | | 1 | A5/A7 | Jack' Point to Frankton including Frankton connection south upgrade | NZTA |
| | | 4S | A8 | Lake Hayes Estate to Frankton - DESIGN COST ONLY | QLDC |
| | 2021-2024 | 6 | B2 | Fernhill to Queenstown | QLDC |
| | | 3 | B3 | Frankton Track LoS improvements | NZTA |
| | | N/A | C2 | Brecon St - DESIGN COST ONLY | QLDC |
| | | N/A | C3 | Park Street upgrade - DESIGN COST ONLY | QLDC |
| | | 5 | C5 | Arthurs Point to Queenstown LoS improvements | QLDC |
| | | 4N | C7 | Lake Hayes Estate to Shotover Bridge | QLDC |
| Package 2 | 2024-2030 | 4S | A8 | Lake Hayes Estate to Frankton - PHYSICAL WORKS | QLDC |
| | | N/A | C1 | Rees Street 'Gardens to Gondola' | QLDC |
| | | N/A | C2 | Brecon St - PHYSICAL WORKS | QLDC |
| | | N/A | C3 | Park Street upgrade - PHYSICAL WORKS | QLDC |
| | | N/A | C4 | Upper and Lower Beach Street | QLDC |
| | | 8 | C6 | Arthur's Point to Tucker's Beach | QLDC/QTT |
| | | 2 | D1 | Kelvin Heights to Frankton | QLDC |
| | | 8 | D2 | Tuckers Beach to Frankton | QLDC |
| | | 9 | D3 | Arrowtown to Lake Hayes track | QLDC |
| | | 4N | D4 | Lake Hayes North to Shotover Bridge | NZTA |
| | | 10 | E1 | Arrowtown to Arthurs Point | QLDC |
| | | 7 | F1 | Jack's Point to Kelvin Heights | QLDC |

### 10.4.2. Benefits

The major benefits of adopting a staged approach to construction of the preferred network is that it:

- Aligns delivery of the preferred network with available funding streams and associated constraints;
- Provides opportunities to further review some routes/work packages in the future to assess financial and economic need in light of local or regional developments;
- Provides opportunities to increase the commercial attractiveness to the market, as individual work packages can be portioned based on their value or geographic basis; and
- Provides an opportunity to decouple the risks associated with each construction stage, as delays or issues in one stage would are less likely to impact other construction stages.

Figure 60: Proposed Implementation of the Preferred Network



# 11. ECONOMIC CASE

The economic appraisal of the preferred network is based on an assessment of modelled demand and benefit evaluation and is in accordance with the NZ Transport Agency's Economic Evaluation Manual (EEM) procedures. The approach to the economic assessment, including further explanation to the main assumptions adopted, of the preferred network is more fully detailed in Appendix R.

## 11.1. Economic Analysis Methodology

The economic assessment has been developed utilising demand data from the Wakatipu Basin Future Public Transport Demand/ Capacity Analysis model developed by WSP-Opus (Appendix I). This model (with a 2016 base year and 2028 and 2048 forecasting years) was used to predict the likely future total number of vehicle trip demand in the area. From this, the total number of cycle trips was estimated based on adopted assumptions through the EEM and collated with existing live counts data collected via Eco-Counters on selected routes. Pedestrian growth figures including accrued benefits have not been factored across routes 1-10 but have been used to determine the likely benefits of the town centre projects identified within the QTCMP PBC.

The summary of input assumptions for this assessment are shown in Table 39, with the assumptions surrounding the public transport trip model attached in Appendix I.

The trip model is inclusive of the Wakatipu Basin area (Figure 61) and was used to estimate the overall cycle demand for the preferred network and its individual routes. The following methodology was undertaken to estimate the number of cycle trips along each route in the preferred network:

- The zones from the model (shown in Figure 61) were grouped into the defined destination areas for the WATN, and all trips to each destination were then calculated.
- Node to node analysis was undertaken to help understand the distribution of trips into each destination along each route.
- The distribution values were applied to the total estimate trip into each destination to calculate the estimate demand along each route.
- P50 estimates have been used to reduce the contingency associated with the economic evaluation. This assumes that 50% of the costs exceed the P50 estimate and that 50% of estimates are less than the P50 estimate (as outlined later in this chapter).

Once these factors were applied with the defined assumptions, there was an understanding of the estimate number of existing and future trips and benefits along each route assuming the implementation of the preferred network. These were then sense checked against existing live counts and demand estimates used by QTT in an assessment of routes within the project area, which is summarised in Table 40.

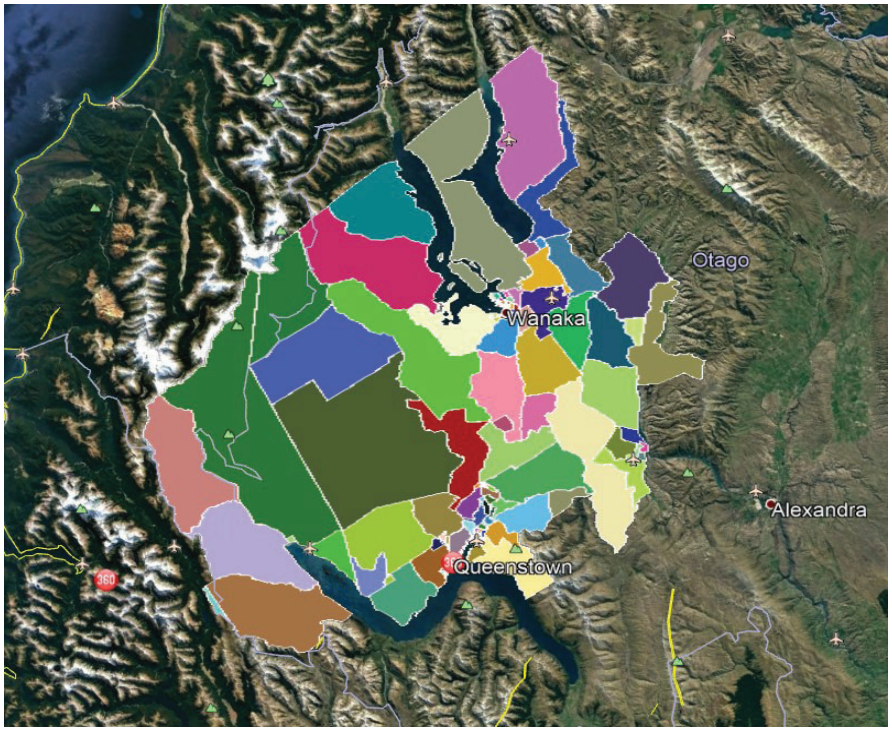



Figure 61: Model Area

Table 39: Summary of economic model assumptions

| FACTOR | ASSUMPTION | COMMENTS |
|---|---|---|
| Existing Modal Split | • 5% on all Primary Routes (except for Route 6)<br>• 3.6% on Secondary Routes 2 and 8 and Primary Route 6.<br>• 1% on Secondary Routes 7,9 and 10 | The value outlined in Table 20.1 of the EEM Manual states an average modal split of 3.6% for the whole Queenstown-Lakes District area.<br>Similar to above, the network routes serve different purposes, the outlined assumptions were applied based on review of the existing counts (Table 40), as well as alignment with existing QTT estimations.<br>Despite being a Primary route, a more conservative cycling mode share assumption has been applied to Route 6 Fernhill to Queenstown. This is due to the steep vertical gradients between Fernhill and Queenstown and the potential cycling deterrent this creates. |
| Future Modal Split (2046) | Double by 2045 | The QIT PBC set a target of increasing alternative mode share from 15% currently to 30% in 2045. Therefore, all initial modal split estimates have been assumed to double by 2045. |
| Average Trip Distance | 3km | This was assumed for the majority of the routes with exceptions of Fernhill-Queenstown (1.7Km) and the routes longer than 9Km (Routes 9 and 10) in which case the average trip was assumed as half of the total length. |
| Health and Environmental benefits from Non-Commuter Cyclists | 20% | In the case of the non-commuters, only a portion of them will cycle enough for improving their active/inactive status. It was assumed as well that a portion of the non-commuters are overseas visitors/tourists and therefore no national benefit can be considered. |

Table 40: Trip Comparison (existing vs. model)

| ROUTE | 1 | 2 | 3 | 4 | 9 |
|---|---|---|---|---|---|
| Origin/Destination | Jacks Point - Frankton | Kelvin Heights to Frankton | Queenstown to Frankton | Lake Hayes to Frankton | Lake Hayes to Arrowtown |
| Daily Count | 126 | 274 | 827 | 397 | 117 |
| Daily Model (existing and new) | 143 | 307 | 1029 | 472 | 153 |
| % New | 12% | 11% | 20% | 16% | 24% |

The comparison suggests that the estimated numbers closely match with the counts and as such is deemed to be an appropriate approach to be used for further projection and economic evaluation. It was also estimated the commute share for the sum of the routes for comparing against the EEM value. The estimated commute share for the DM was 3.4%, slightly below the 3.6% from the EEM that is based on the current 2013 Census.

### 11.1.1. Approach to Town Centre Economic Assessment

An economic evaluation regarding value for money and benefits has been undertaken on two Queenstown town centre projects within Package 1. These projects are:

- Brecon Street
- Park Street

The approach taken regarding economic assessment for these projects differs to the methodology taken for the other routes. This is due to pre-implementation and implementation costs being separated for these projects to align with the funding constraints of the National Land Transport Programme and to generate cost efficiencies by combining the design elements of Package 1 and 2 together. Since the pre-implementation costs are occurred in the 2021-2024 period, with construction likely beginning post 2024, the BCR reflects an initial incurrence of costs with deferred benefits that accumulate several years after the initial cost has been factored.

The pedestrian benefits were calculated following EEM's guidance and the methodology can be found in Appendix R.

## 11.2. Cost Estimation

The cost estimates are based on the following assumptions:

- Estimates are based on the original pricing estimates conducted by Beca through on-site visits and observations.
- A 30% contingency is included to reflect uncertainty about aspects of the preferred network. The current estimates have neither been informed by detailed LiDAR survey data, landowner usage nor detailed ground investigations.
- Trail maintenance and management cost assumptions for each of the short-listed options were determined by route length and required structures inspections. These are based on experience from managing the open sections of the trail to date. The maintenance of the on-road sections is assumed to be included under existing roading contracts.
- For bridges it was assumed an annual maintenance after year 10+ years equal to the 0.2% of the construction costs.

- Resurfacing of sealed sections was assumed to be necessary with a 20 years recurrence with a unit cost of $40/m$^2$.
- Cost estimates for Queenstown town centre projects (C1-C4) have been provided by QLDC.

A detailed breakdown of cost estimates is provided in the cost estimate report in Appendix J.

## 11.3. Economic Summary of Package 1

The economic assessment of the WATN was undertaken on route components that are to be delivered as part of Package 1, targeting construction by 2024. Additional assessment was undertaken on individual components that make up Package 1, aligning with the proposed incremental delivery staging of the network outlined earlier in section 10.4. From this, an overall aggregated BCR value has been calculated for Package 1 (Table 41).

The overall BCR for Package 1 is positive and reflects good value for money. When assessing work packages delivered under Stage 2 (2021-2024), the BCR increases significantly. This can be attributed to the value of benefits derived from delivery of routes between Frankton to Queenstown and Fernhill to Queenstown and because the larger proportion of construction costs for the preferred network are generated from delivering routes in the later construction stages.

**Table 41: Economic summary table – Full network**

| TIMING | | | | |
|---|---|---|---|---|
| Earliest implementation start date | 2019/2020 | | | |
| Expected duration of implementation | 10 years | | | |
| ECONOMIC EFFICIENCY | | | | |
| Time zero | July 2019 | | | |
| Base date for costs and benefits | July 2018 | | | |
| Present value of total project cost of do minimum | - | | | |
| Present value net total project cost of recommended option | $36.9M | | | |
| Present value net benefit of recommended option | $97.6M | | | |
| **Package 1 Overall BCR** | **2.6** | | | |
| First year rate of return (FYRR) | 13% | | | |
| Present value net total project cost of Stage 1 | $13.8M | | | |
| Present value net benefit of Stage 1 | $25.5M | | | |
| **Package 1 Stage 1 BCR** | **1.8** | | | |
| Present value net total project cost of Stage 2 | $23.1M | | | |
| Present value net benefit of Stage 2 | $73.6M | | | |
| **Package 1 Stage 2 BCR** | **3.2** | | | |
| FULL NETWORK P50 COSTS | | | | |
| | | | Present value | |
| | Do minimum | Recommended option | Do minimum | Recommended option |
| Design | | $2.78m | | $2.4m |
| Property | | $1.56m | | $1.3m |

| | | | | |
|---|---|---|---|---|
| Construction/ implementation | | $26.3m | | $22.4m |
| **TOTAL IMPLEMENTATION COST** | | $30.64m | | $26.1m |
| Maintenance | | $2.7M (40 years) | | $0.8M |
| Renewal | | $5.3M (40 years) | | $2.4M |
| **ONGOING COST** | | $8.0M (40 years) | | $3.2M |
| Project contingency | | $9.1M | | $7.8M |
| **TOTAL P50 PROJECT COSTS** | - | $47.74 (40 years) | - | $36.9 |
| FULL NETWORK BENEFITS | | | | |
| | | | Present value | |
| | | | Do min | Recommended option |
| Travel time savings | | | | $14.6M |
| Vehicle operating cost savings | | | | - |
| Accident cost savings | | | | - |
| Vehicle emissions reductions | | | | - |
| Reduced driver frustration | | | | - |
| Walking and cycling (EEM v2) | | | | $83.0M |
| Travel behaviour change (EEM v2) | | | | - |
| | | PV total net benefits | - | $97.6M |

## 11.4. Economic Summary of Package 1 Components

An assessment of the shortlisted routes identified in Section 10 – Preferred Network that have been identified for delivery between 2018-2024 (Package 1) has been undertaken to determine the individual components that generate the best value for money.

Table 42 provides an economic assessment of individual route components within Package 1.

Table 42: Package 1 – Economic Summary of Individual Routes

| Route | Route Components | PV Benefits | PV Costs | BCR |
|---|---|---|---|---|
| 1 – Jack's Point to Frankton | A5, A7 | $12.1m | $9.7m | **1.3** |
| 3- Queenstown to Frankton | B3 | $36.1m | $6.1m | **5.9** |
| 4N - Lake Hayes Estate to Frankton North | A2/A3 | $13.4m | $3.9m | **3.4** |
| 4N - Lake Hayes Estate to Frankton North | C7 only | $5.9m | $1.5m | **3.9** |
| 4S - Lakes Hayes Estate to Frankton South | A8 | $14.7m | $3.6m | **4.0** |
| 5 – Arthurs Point to Queenstown | C5 | $10.6m | $7.4m | **1.4** |
| 6 – Fernhill to Queenstown | B2 | $6.4m | $3.6m | **1.8** |
| C2 - Brecon Street | C2 | $15.5m | $6.7m | **2.3** |
| C3 – Park Street | C3 | $3.4m | $6.0m | **0.6** |

## 11.5. Cycle Growth Projections

The assumptions outlined in Table 39, combined with the Node to Node analysis approach, have been used to assess the likely growth in cyclists generated by implementation of the preferred network. Table 43 details the anticipated cycling growth for commuter and non-commuters across the WATN.

| Route | Total Cycling trips (Commuter and Non-Commuter) | | |
|---|---|---|---|
| | 2016 | 2029 | 2046 |
| 1 - Jack's Point to Frankton | 118 | 639 | 1357 |
| **% Change** | | **442%** | **1050%** |
| 2 – Kelvin Heights to Frankton | 193 | 897 | 1735 |
| **% Change** | | **365%** | **799%** |
| 3 – Frankton to Queenstown | 1057 | 2868 | 4974 |
| **% Change** | | **171%** | **371%** |

| Route | Total Cycling trips (Commuter and Non-Commuter) | | |
|---|---|---|---|
| | 2016 | 2029 | 2046 |
| 4 – Lake Hayes Estate to Frankton | 471 | 1401 | 2020 |
| **% Change** | | **197%** | **329%** |
| 5 – Arthurs Point to Queenstown | 353 | 926 | 1543 |
| **% Change** | | **162%** | **337%** |
| 6 – Fernhill to Queenstown | 493 | 1035 | 1633 |
| **% Change** | | **110%** | **231%** |
| 7 – Jack's Point to Kelvin Heights | 28 | 75 | 172 |
| **% Change** | | **168%** | **514%** |
| 8 – Arthurs Point to Frankton | 38 | 137 | 232 |
| **% Change** | | **261%** | **511%** |
| 9 – Arrowtown | 113 | 299 | 341 |
| **% Change** | | **165%** | **202%** |
| 10 | 66 | 172 | 414 |
| **% Change** | | **161%** | **527%** |
| Total | 3122 | 8828 | 15055 |

**Table 43: Cycling Growth Generated by the Preferred Network**

## 11.6. Sensitivity Analysis

The outlined economic assumptions and forecasted demand will involve some degree of uncertainty due to either costs or benefits. This may be due to variations in construction, maintenance or operating costs or predicted traffic flows not eventuating and the other relating to the timing and scale of unpredictable events. For this reason, sensitivity analysis has been undertaken to assess the robustness of the variables used.

The impact of assumption changes on the economic evaluation are summarised in Table 44.

**Table 44: Sensitivity Analysis**

| Sensitivity testing | | | | | |
|---|---|---|---|---|---|
| **Cost variability** | **Base case** | **Lower bound** | | **Upper bound** | |
| | | **Value** | **BCR** | **Value** | **BCR** |
| Construction / implementation (+25%/-25%)* | $39.6M | $31.7M | 3.4 | $49.5M | 2.1 |
| **Benefit variability** | | | | | |
| Increase in commute share | Double by 2045 | No growth | 1.0 | Double by 2028 | 3.3 |
| Non-commuter benefits | 20% | 0% | 2.4 | 40% | 3.0 |
| Modal split | Individualized | 3.6% all routes | 1.6 | 5% all routes | 2.8 |

| | | | | | |
|---|---|---|---|---|---|
| Average trip length primary routes | 3Km | 2Km | 1.9 | 4Km | 3.6 |
| **Economics variability** | | | | | |
| Discount rate | 6% | 4% | 3.6 | 8% | 2.0 |
| Assessment timeframe | 40 years | 20 years | 1.8 | 50 years | 2.8 |

*Sensitivity value chosen to reflect the existing detail of the design and the potential risks as they develop further.

The importance of this test is to measure the potential risks of the adopted assumptions and their implications to the result of the economic assessment. The commuting mode hsare as a manin assumption used within the methodology, and is detailed in Table 44. Changes in this assumption generate a considerable change in the project's BCR. This is despite the minimum value of the BCR, corresponding to the worst scenario of no-growth in the commute sharing, is still above 1.0.

The rest of the variables show less effect on the BCR, being in a range of 1.6 – 3.6.

## 11.7. Assessment Profile

When evaluating the investment case for this project, the GPS requires local government and NZ Transport Agency to demonstrate how investment shows alignment with the outcomes and priorities sought through GPS. Evaluation of a proposal must consider a number of factors including, but not limited to, achieving safety, access, environmental, and value for money outcomes. This evaluation entails utilising the IAF for the 2018-21 National Land Transport Programme (NLTP) to assess the project proposal across three factors:

- An assessment of the investment proposal against the outcomes sought through GPS (results alignment);
- Evaluation of the economic efficiency of the investment proposal (BCR); and
- Assessment of the priority of the investment proposal (prioritisation).

The assessment identifies the WATN as qualifying for a 'high' rating under the walking and cycling activity class.

### 11.7.1. Results Alignment - High

The results alignment assessment considers how investment in the WATN aligns with the broader outcomes and priorities sought through the GPS. This assessment has been made under the walking and cycling activity class, which is intended to cover funding for walking and cycling investments that are not otherwise part of a road improvement or public transport improvement activity. This includes new improvements and improvements to existing assets and services.

Walking and cycling improvements are assumed to enable transport choice and safe use, contribute to reductions of adverse effects on climate, and positively contribute towards public health.

An indicative 'High' rating for Results Alignment has been identified on the basis that the investment proposal addresses the components of the criteria as detailed in Table 45.

### 11.7.2. Prioritisation - 5

A prioritisation evaluation provides an assessment on the level of priority given to the proposal to enable funding through the National Land Transport Plan (NLTP). The WATN project falls under the walking and cycling class, which is categorised as an improvement activity class under the IAF.

Based on results of the Results Alignment and overall BCR for the preferred network of 2.6, the priority order given to this project is 5.

Table 45: Results alignment

| Strategic Priority | Criteria for High Rating | Criteria for a Very High Rating | Preferred Network Option |
|---|---|---|---|
| Safety | Addresses a high predicted walking and cycling safety risk. | Addresses a very high predicted walking or cycling safety risk. | The proposed network aims to reduce the number of fatal and serious injuries involving cyclists and pedestrians. The CAS data showed that collisions on the road network involving bicycles will most likely result in an injury for the cyclist despite a large number of non-injury crashes going unreported, as highlighted earlier. As the proposed network includes numerous new routes away from arterial and urban roads, it supports the strategic priority of reducing real and perceived safety risks for vulnerable road users.<br><br>LoS improvements and critical inks have been identified for some routes such as routes 3 (Frankton to Queenstown) and 5 (Arthur's Point to Queenstown). In addition, the construction of new additional trails (Jack's Point to Frankton, Lake Hayes Estate to Frankton) will provide a safe route off urban and arterial roads that doesn't currently exist, reducing the opportunities of conflict with vehicle traffic. |
| | Addresses a high perceived safety risk to use of active modes. | | |
| Access – liveable cities | Targets the completion and promotion of networks in major metros to enable access to social and economic opportunities | | Implementation of the preferred network will improve connectivity and access for communities and visitors between residential areas (Lake Hayes Estate, Fernhill, Arthur's Point) and commercial/employment areas (Queenstown, Frankton, Arrowtown). Routes 1, 3, 4, and 6 are likely to generate higher cycling growth figures, as is detailed in the Economic Case, as they provider a higher level of service between residential areas and trip generators. |
| | Addresses a significant problem with the ability to use existing facilities including use by people who identify as disabled | | The preferred network will provide new off-road facilities along Routes 1, 4, 5, 6, 9 and 10, providing improved accessibility for vulnerable users. There has also been consideration of improved connections to provide more permeability and access for all users. |
| | Supports increasing the uptake of children using walking and cycling especially to and from school | | The preferred network supports increased uptake of walking and cycling by connecting with existing schools in the Wakatipu. Routes that integrate well within the location of existing Wakatipu schools are 2, 3, 4, 8 and 9. A range of LoS improvements, including proposed lighting on some routes, will provide additional safety and security. |
| | Addresses a high or very high resilience risk in a corridor in a main urban area | | Routes 1-6, 9 and 10 provide a reduction in resilience risk as they run adjacent to major roads, providing an alternative option in the event of a road closure. Additional river crossings provided by Routes 1 and 4 enable greater transport choice crossing the Kawarau River. |
| | Supports agreed integrated land use and multi-modal plans in major metros | | The preferred network supports land-use ambitions expressed through the Draft Queenstown Future Development Strategy and Frankton Masterplan by improving links between nodes, enabling recreational, tourist and commuter trips and a mode shift i.e. increase in proportion of trips taken by active modes. The land use pattern promoted through the FDS will be integrated with planning for the transport network, such that land use patterns contribute to greater uptake of active modes. Routes 1 and 4 in particular enables greater connectivity and transport choice between the high growth areas of Jack's Point and Lake Hayes Estate with commercial and employment areas (Frankton, Queenstown).<br><br>The preferred network supports a multi-modal transport system within the Wakatipu Basin through an ambition of increased mode share of active travel modes. This is facilitated through the creation of new facilities and improved LoS. |

| Strategic Priority | Criteria for High Rating | Criteria for a Very High Rating | Preferred Network Option |
|---|---|---|---|
| | Address significant gap in access to new housing in high growth urban areas | Addresses a critical missing link in a strategic network or multi-modal interchange in major metros | A LoS assessment was undertaken to highlight any significant deficiencies. The proposed network addresses these deficiencies as part of the design and process, and significant gaps prioritised for delivery. |
| Environments | Enables a significant modal shift from private motor vehicles to active modes. | | As detailed in the Economic Case, all routes are likely to generate a growth in cycling numbers from the current situation. The highest growth shares are likely to being generated on routes connecting key commercial and residential areas (Routes 1, 3, 4, 6) and where there are significant LoS improvements proposed.<br><br>As part of the MCA, potential operational and network impacts are assessed. This includes the effect on existing road users, as well as the extent to which an option promotes a shift in mode share. Integration with other transport modes was also considered and whether multi-modal journeys could be facilitated e.g. ferry and then bicycle. These issues were also considered as part of the design and costing process to provide a platform for significant modal shift from private motor vehicles.<br><br>From the economic analysis, it is estimated that the modal shift and usage of the network will result in $102 million (NZD) worth of health, safety and road traffic reduction NPV benefits in the Wakatipu Basin. |