Item 3: Arthurs Point Crossing Project Update

SESSION TYPE: Briefing

PURPOSE/DESIRED OUTCOME:

The purpose of this briefing is to provide the Assets & Infrastructure Committee (the Committee) with an update on the Arthurs Point Crossing replacement bridge project. This will include the findings of the 2026 Business Case Addendum, the preferred crossing option, current cost estimates, key risks and constraints, and the proposed programme and next steps for pre-implementation activities.

This briefing is for information and discussion purposes only with no decisions are being sought. The desired outcome is that the Committee understand the current status of the project, the rationale for progressing further planning work, and the proposed pathway towards future delivery.

DATE/START TIME:

Tuesday 1 September 2026 at 4.10pm

TIME BREAKDOWN:

Presentation: 15 minutes
Questions and discussion: 15 minutes

PRESENTERS:

Jeremy Martin - Senior Network Engineer (Transport)
Tony Pickard - Strategy Planning Manager (Transport)

Prepared by:

Name: Jeremy Martin
Title: Senior Network Engineer (Transport)
20 August 2026

Reviewed and Authorised by:

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Title: General Manager, Property & Infrastructure
26 August 2026

ATTACHMENTS:

A	Arthurs Point Crossing Project Update Presentation
B	Arthurs Point 2026 Business Case Addendum **(page 8)**

Arthurs Point Crossing Update

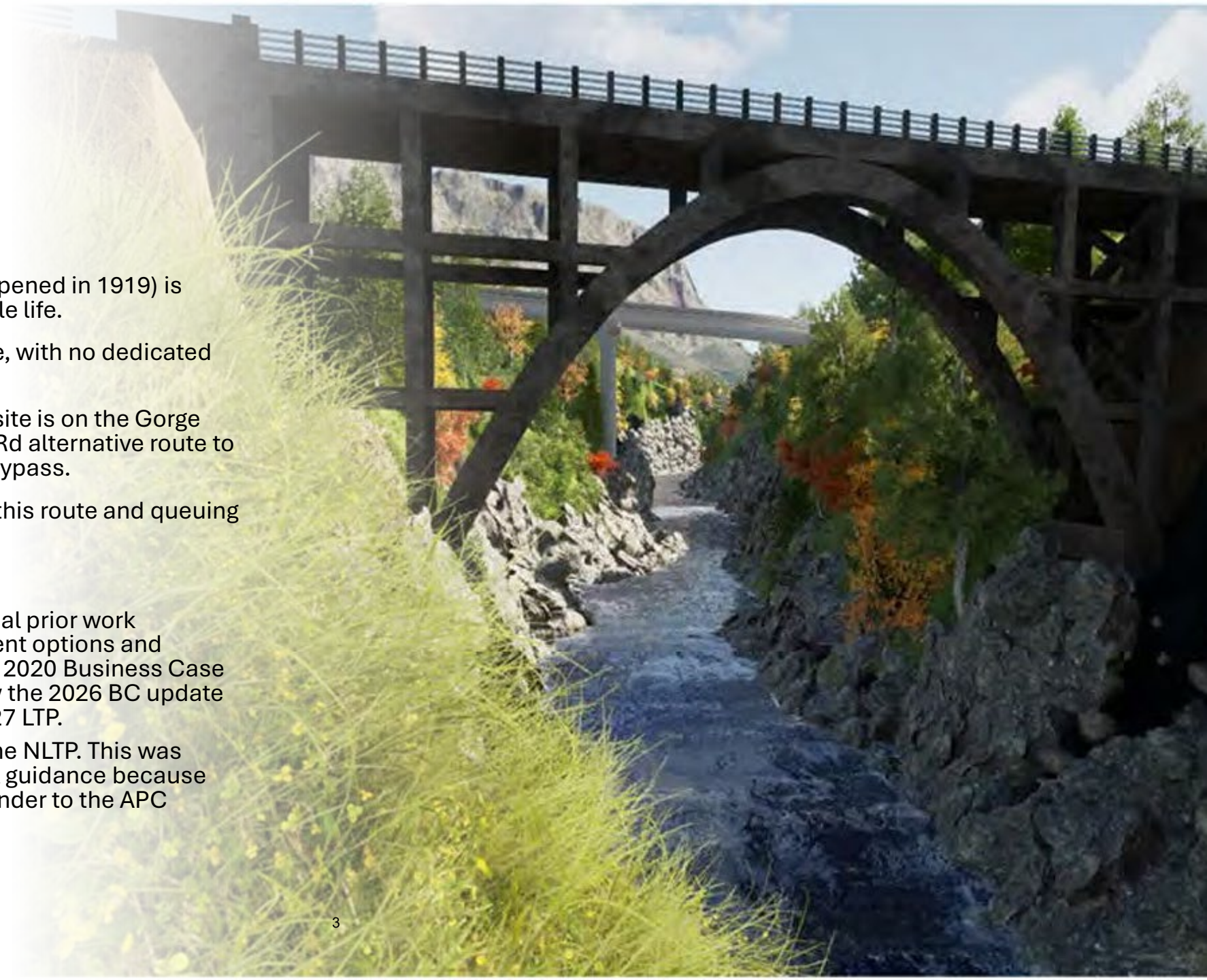
Assets & Infrastructure Committee workshop

1 September 2026

Purpose and Background

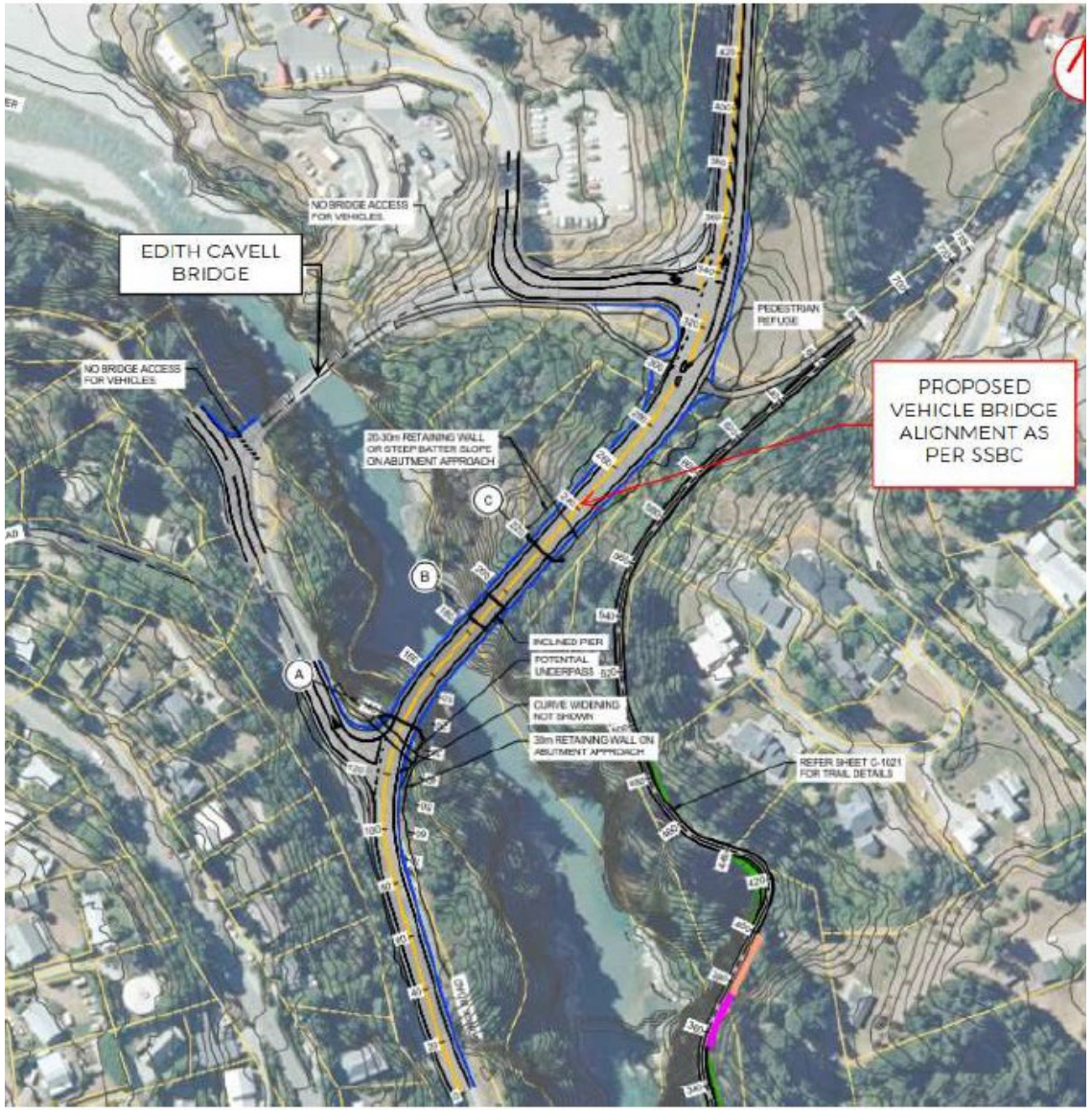
- The existing Edith Cavell Bridge (opened in 1919) is coming to the end of its serviceable life.
- Existing bridge is a one lane bridge, with no dedicated active travel facility.
- The Arthurs Point Crossing (APC) site is on the Gorge Road / Arthurs Point / Malaghans Rd alternative route to Queenstown. Frankton Rd SH6A bypass.
- Traffic volumes are increasing on this route and queuing times at the bridge are increasing.

- Council has undertaken substantial prior work previously, working through different options and alignments for the proposed APC. 2020 Business Case and subsequent updates and now the 2026 BC update was completed to input to the 2027 LTP.
    - This informs the RLTP and the NLTP. This was completed in line with NZTA guidance because they will be a contributor/funder to the APC project.



Update

- From the 2026 BC update
  - Current estimate has been updated $81m (This is the P95 cost, this is the higher contingency)
  - Benefits have been updated and the BCR is now 4.4
- The preferred option is still a combined road and active travel on the bridge.
- NZTA are accepting that this route is a required resilience route for Frankton Rd SH6A.
- ORC have asked if they can increase the bus size on this popular PT route.



Edith Cavell Bridge

- Bridge condition and resilience has become more prominent with several new structural issues have been found on the existing aging Edith Cavell Bridge.
  - Crack in the true left abutment
  - Rusty arch anchor pins
  - The bridge could topple sideways in a big seismic event
  - The Peer review on the engineering assessment for the bridge vehicle weight limit is being confirmed.

- A timely reminder that after a big earthquake this bridge needs to be closed until it is inspected and given the all clear. 16th July was a magnitude 6.3 earthquake.

Next Steps

Funding agreement from NZTA is progressing. The investment team at NZTA we are working with are taking the APC project to their board on the 10th Sept.

- In this year in QLDC's current LTP we have funding to continue with some pre-implementation work.

Pre-implementation

- Further GeoTech investigations
- Details design works
- Property/land acquisition.
  - Several properties are required for the proposed bridge alignment
  - There is now a QEII covenant on some of the property that had been identified that we will require, opposite Shotover Jet access. (April 2026). Council's Property & Legal team will start the progress this.
- Approvals and consenting


Questions?

Arthurs Point Bridge Single Stage Business Case Addendum (2026)

Addendum to the Arthurs Point Bridge Single Stage Business Case (2020). Provides an update to items where there has been significant change. To be read in conjunction with the 2020 business case.

Prepared for:
Queenstown Lakes District Council

Date:
10 August 2026

Prepared by:
Stantec New Zealand

Project/File:
310206713

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Revision Schedule

Revision No.	Date	Description	Prepared by	Quality Reviewer	Independent Reviewer	Project Manager Final Approval
1.0	20/3/26	Draft report	S Connolly	M Peat	M Peat	S Lloyd
2.0	10/8/26	Final	S Connolly	M Peat	M Peat	S Lloyd

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Executive Summary

Introduction

This Addendum should be read in conjunction with the Arthurs Point Bridge Single Stage Business Case 2020 (SSBC 2020). It updates elements that have changed.

Residential growth in the district continues to outpace the rest of the country, and visitor numbers have returned to pre-COVID levels. The single lane bridge at Arthurs Point is a high criticality asset on the route between Arrowtown and Queenstown, which is also the official (and only) detour route for SH6 and 6A in an unplanned event leading to closure (crash, fire, slip, stock). The National Resilience PBC notes the detour route is not ‘straightforward’ given the single lane bridge, with significant delays and traffic management at the bridge required during an event.

The 2025 condition assessment uncovered a significant horizontal crack adjacent to the 1875 abutment shelf and concluded the concrete structure may only remain in acceptable condition for another 10-20 years. This is being investigated to understand weight and loading tolerances, and the need for restrictions, which would have a significant impact on tourism, public transport and freight movements. Heavy vehicles making up 10% of the traffic stream.

The existing bridge is not configured for alternative modes and is unlikely to withstand a major disaster event such as an earthquake. If such an event occurred it would affect utilities (water and wastewater) on the bridge, with water supply disrupted and wastewater discharge to the Shotover River causing environmental damage and health risk.

Many options were considered during the SSBC 2020, with the preferred option being:

- Stage 1: New active modes bridge approximately 400 m downstream from the existing Edith Cavell bridge.
- Stage 2: New two-lane road bridge approximately 100 m downstream from the existing Edith Cavell bridge, and conversion of Edith Cavell bridge to a walking and cycling bridge.

In 2025 a new active mode bridge approximately 400 m downstream was designed and funded by the Queenstown Trails Trust, as part of the Queenstown to Arthurs Point Trail. It is designed primarily as a recreational trail. This negates the need for Stage 1. The now-preferred option is Stage 2 only (the Option).

The Option is a high priority for investment and has been included in the NZ Infrastructure Commission’s Infrastructure Investment Programme. Funding of $69m is allocated in the QLDC LTP and the RLTP, with construction expected during 2027-2031 period, and project completion by 2031/32.

The Option is not in the NLTP. Given the strong alignment with Resilience in the GPS and IPM, it is recommended the Option be added to the NLTP so planning and pre-implementation can start.

Economic Case

The 2025 Structure Management Assessment highlights that the original Do Minimum is no longer realistic. The concrete structure may only remain in acceptable condition for another 10-20 years. In addition, the seismic strengthening assumed is not likely to be practical due to structural defects, bridge heritage status and access constraints/challenges.

The updated Do Minimum assumes continued inspections and annual general maintenance, with a replacement 'like for like' single lane bridge required in year 20 (2045) adjacent to the existing structure which will be retained due to heritage limitations. The Do Minimum expected estimate (P50) is $41.3m. The estimate including risk (P95) is $50.5m.

The updated Option expected estimate (P50) is $66.1m. The estimate including risk (P95) is $80.9m.

The updated benefits assessment showed the Option would provide $151.8m benefits over the 60 year analysis period. The largest benefit stream is faster travel time, followed by resilience, active modes and public transport. The travel time saving is expected to be in the order of 8% for a typical journey using the bridge, or 1 minute saved on a 13 minute journey.

BCR: 4.2, or 4.4 (including Wider Economic Benefits to tourism and heritage).

An assessment was completed against the SSBC 2020 triggers for investment:

Trigger	Met?	Conclusion
End of Useful Life	NO	2025 inspection showed the bridge is not end of life yet but replacement requires planning now.
Traffic Delays:	NO	Data and model outputs show this trigger will be met in 2040 when delays reach LOS F in the evening peak. The Option is in the QLDC LTP indicating delays already unacceptable to the community.
Resilience: Improve resilience of infrastructure and provide resilient network.	YES	The National Resilience Assessment Tool (NRAT) identified a resilience risk score of 1197 (extreme/critical risk) for SH6/6A, in part due to deficiencies with the Arthurs Point detour. The National Resilience PBC notes SH6A is 'built on landslips', with 'several known active and monitored slips'. SH6A is the 'only route that links Queenstown and airport' and the 'alternate route would take an extra hour, however, is complicated by single lane Edith Cavell bridge'. TREIS indicates 12 full closures of SH6/6A over five years.
Public Transport: Provide for electric buses and higher capacity buses.	UNCLEAR	In 2025 the ORC introduced a new Arrowtown - Queenstown service which uses the Arthurs Point crossing. Buses are at capacity and the ORC is considering double-deckers or articulated buses to meet demand. The Otago LTP and RPTP include funding for a fully electric bus fleet for Queenstown by 2029 (date subject to change). The investigation into weight limits and tolerances will determine whether heavier vehicles can use the bridge. This may be a trigger and drive additional project benefits.

Investment Prioritisation Method (IPM): HHM | Project priority: 3.

There is strong GPS alignment for resilience, due to the resilience risk for SH6/6A, which is an extreme/critical risk. The detour route is not straightforward given the volume of diverted traffic, the frequency of full closures on SH6/6A and the single lane bridge at Arthurs Point which adds significant delay to what could be a simple detour. The scheduling rating is high due to criticality because there will be significant adverse network resilience risk if the Option is not started during 2024-27.

Investment will bring significant travel time savings for people using the bridge for a typical trip, with an estimated 8% reduction in average travel time. Further, the route will be able to perform a strategic network function as recognised by the Queenstown Strategic Network Plan (underway), providing a relief route to SH6/6A during busy periods, helping alleviate congestion.

Commercial Case

An implementation strategy has been developed which would see the bridge open in 2031. The recommended procurement method is Design with Early Contractor Involvement followed by tendering the construction contract supported by a Constructability Report.

A review of the property strategy found fewer parcels of land are now required for the Option and the total estimated compensation for the Option is $2.52M as of January 2026. The updated consenting strategy identifies consents and permissions required, and a series of recommended next steps.

Financial Case

Funding is included in the LTP but funding for pre-implementation and implementation is not in the NLTP. This should be progressed. An assessment of funding options indicates the most likely funding sources to be a combination of local share, NLTP and user charges from parking fees/levies and tools enabled by the Central Lakes Regional Deal (tolls and time of use charging).

Management Case

Delivery will be managed by QLDC.

1 Introduction

This Addendum provides an update to aspects of the 2020 Arthurs Point Bridge Single Stage Business Case (SSBC 2020) where there has been significant change since that time, as follows:

Table Heading	Table Heading	Table Heading
Economic Case	Do Minimum	Update to include latest Bridge Condition Report, maintenance costs, likely lifespan.
	Preferred Option	Clarify preferred option.
	Transport Benefits	Update data sources, apply latest MBCM.
	Wider Economic Benefits	Source data and derive benefits.
	Cost Estimates	Update to 2026 rates and apply most recent cost estimation methodology.
	Investment Appraisal	Update BCR and Investment Prioritisation Method (IPM), complete Appraisal Summary Table (AST).
Commercial Case	Consenting Strategy	Update to reflect changes to preferred option and to planning legislation.
	Property Strategy	Reconfirm and update cost estimates.
	Procurement Approach	Confirm procurement approach.
Financial Case	Costs and Cashflow	Update to reflect changes to costs and cashflow.
	Funding Options	Confirm alternative funding streams.
Management Case	Governance Structure	Confirm project management and delivery.
	Triggers	Update triggers for investment.

2 Preferred Option

The Investment Objectives from SSBC 2020 were:

1. Provides a safer, more accessible path for all confidence levels of pedestrians and cyclists between existing routes (and planned upgrades) in the short term (40%).
2. Ensures travel time reliability is maintained for growing vehicle traffic volumes (35%).
3. Improves overall network and route resilience to seismic events and closures of SH6A in the long term (15%).
4. Enables future land use development and growth by providing additional traffic and utilities capacity (10%).

These were agreed with partners and have not been reviewed or updated as part of this Addendum.

Many options were considered during the SSBC 2020, including upgrades to the existing bridge and new road bridges on different alignments. The preferred option identified in the SSBC 2020 was:

- Stage 1: a separate active modes bridge approximately 400 m downstream from the existing Edith Cavell bridge (with connecting trail tying in around the old Arthurs Point pub car park to the south and Atley Road to the north)
- Stage 2: a new two-lane road bridge approximately 100 m downstream from the existing Edith Cavell bridge. The Edith Cavell bridge will be converted to a walking and cycling bridge once the road bridge is built.

Since then, a separate active modes bridge approximately 400 m downstream has been designed and funded by the Queenstown Trails Trust, as part of the Queenstown to Arthurs Point Trail linking with the

Queenstown Trails network. As such, it is designed primarily as a recreational trail. It is noted that this mostly resolves Investment Objective 1, but an on road active mode option is still required for safety.

Based on this development, the now-preferred option is a modified version of Stage 2 – a combined road and active mode bridge (the Option). In addition, the Edith Cavell bridge will be repurposed to an active mode only walking and cycling bridge, with vehicle access prevented by kerbing, fencing and/or bollards.

The alignment of the now-preferred combined road and active mode bridge is shown in Figure 2-1. Conceptual designs for two options for the bridge design were developed in the Arthurs Point Bridge Feasibility Report (2023) and are shown in Figure 2-2 and Figure 2-3. Option 1 is a single span bridge. Option 2 is a two-span bridge, assuming worse Geotech conditions than Option 1, with an angled pier anchored to the cliff on the Arthurs Point side (true left) of the Shotover River.

Figure 2-1: Preferred alignment for the new bridge. The active modes route shown to the south-east of the new bridge is no longer proposed under this Project.

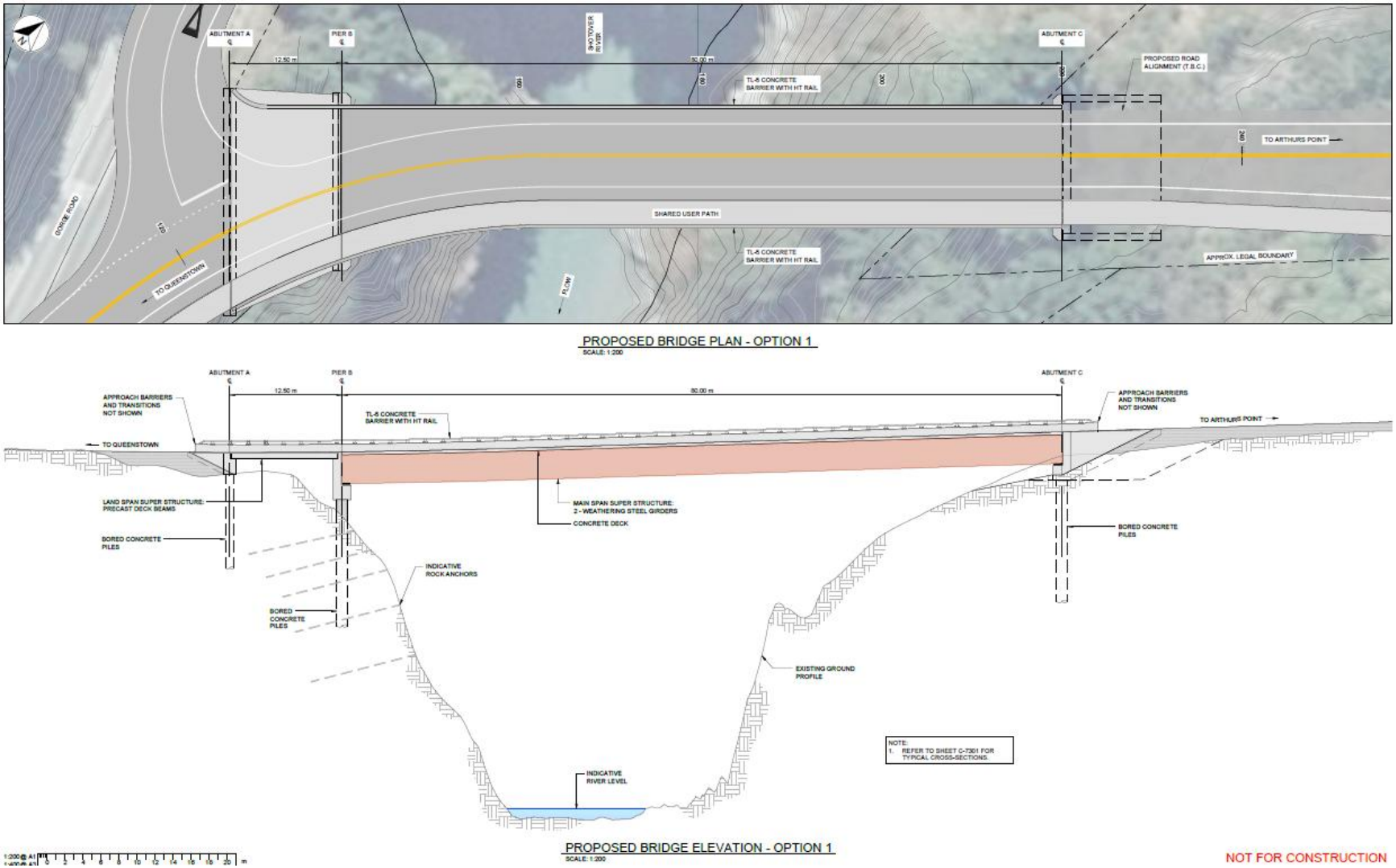


Figure 2-2: Preferred Option - Concept Design Option 1

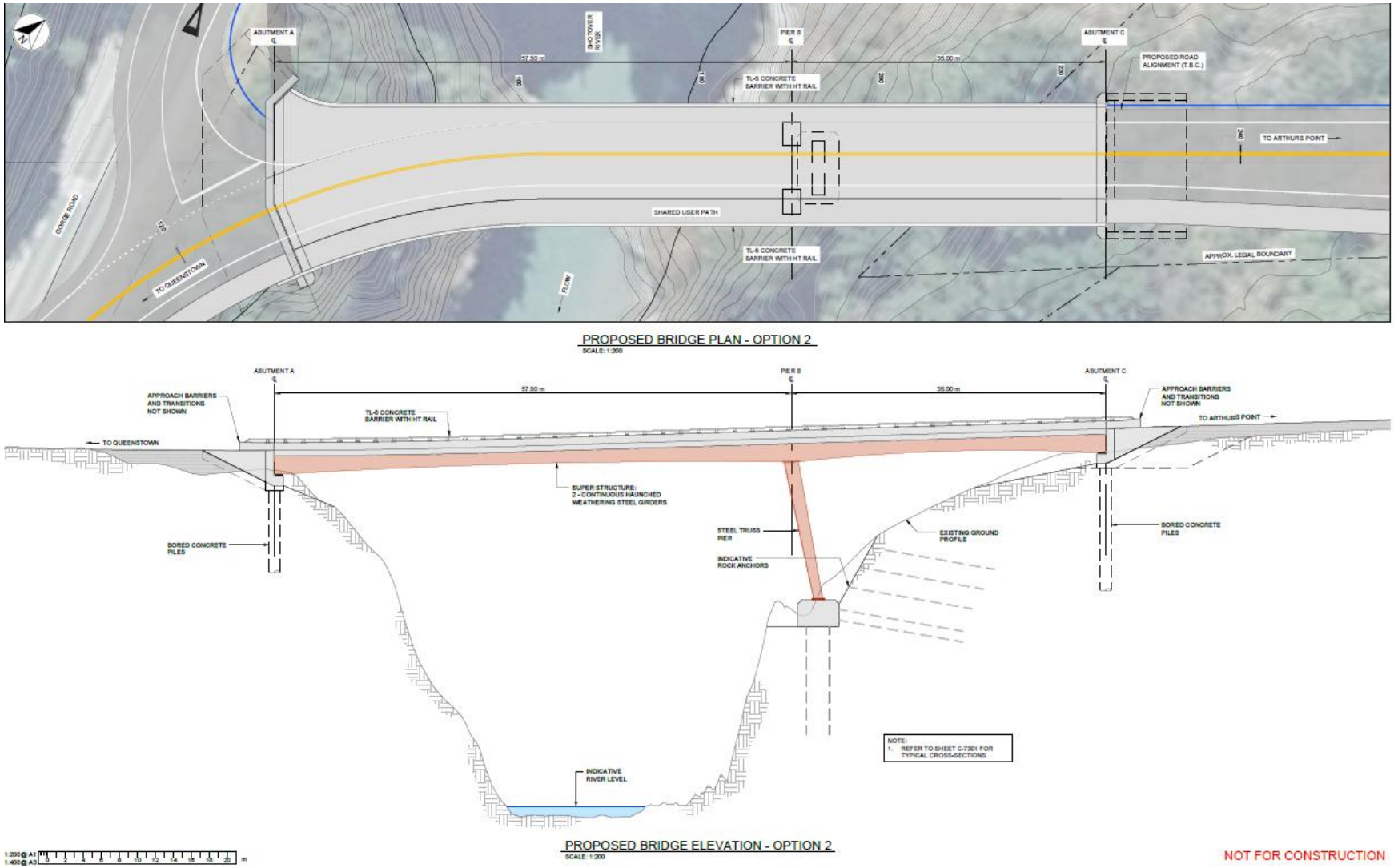


Figure 2-3: Preferred Option - Concept Design Option 2

The Arthurs Point Bridge Feasibility Report (2023) documents that the bridge design depends on geotechnical testing to determine whether the central pier is required. This testing has not been completed but will be the first step of the next phase.

The Arthurs Point Bridge Feasibility Estimates Report (2024) provides cost estimates for both design options identified in the Feasibility Report (2023).

For the purposes of this Addendum, a conservative approach has been taken, with the slightly more expensive Option 2 being taken forward and updated to calculate the benefit cost ratio. The estimated difference between Option 1 and Option 2 represents a potential saving opportunity.

3 Economic Case

3.1 Do Minimum

The Do Minimum represents the minimum level of expenditure required to maintain a minimum level of service. The Do Minimum in SSBC 2020 assumed short term seismic strengthening of $500,000 and minimal other capital works apart from on-going concrete repairs. This has now been updated as a result of recent findings, as explained below.

3.1.1 2025 Structure Management Assessment

A review of the 2025 Structure Management Assessment1 highlights that these earlier assumptions are no longer realistic. Key findings include:

- Although repairs were undertaken in 2012 to repair corroded deck reinforcing, the concrete structure may only remain in acceptable condition2 for another 10 to 20 years (2035-2045).
- The 2025 inspections uncovered a significant horizontal crack adjacent to the 1875 abutment shelf.
- As a result, neither the reinforced concrete bridge structure or the approach embankments are expected to perform well in a large seismic event (i.e. partial bridge collapse or sufficiently damaged to be unusable).

Given the recent findings, the seismic strengthening assumed in the Do Minimum (2020) is likely impractical due to:

1. **Structure Age and Defects**:
    - The approach embankment on the true left side of the bridge is part of the original 1875 bridge and has significant horizontal cracking discovered in 2025.
    - The 1918 reinforced concrete structure appears to have been detailed in such a way that ductile performance is unlikely, and the structure is expected to respond to earthquake loads in a brittle manner.
2. **Earthquake Risk:**
    - Given the structure age and defects, it is considered earthquake-prone and likely to suffer significant damage or collapse in a large earthquake.
    - Failure of the bridge or the approaches would also damage the water and wastewater services carried on the bridge causing the discharge of raw wastewater into the Shotover River and loss of water supply to Arthurs Point.
3. **Heritage**:

    Significant heritage constraints limit modifications to the existing structure. The bridge is a Category 1 Historic Place. The true left approach embankment is pre 1900 and is thus an ‘Archaeological Site’ and any disturbance to the embankment requires an Archaeological Authority. The bridge is

[1] Edith Cavell Bridge – Structure Management Assessment Memo, Stantec, July 2025
[2] Failure of the concrete structure would result in spalling, or chunks of concrete, falling into the Shotover River - at which point structure is not in an ‘acceptable’ condition.

listed as a Category 1 'Historic Place' in the District Plan and any alteration to the structure will require an Archaeological Authority and resource consent as a discretionary activity.

4. **Construction Environment:**

   The site has challenging access constraints, meaning any strengthening work would be difficult and costly.

Overall, due to feasibility, cost and heritage constraints, strengthening to maintain full vehicle operations beyond the 10-20 year life is not considered practical or economic. A whole-of-life cost comparison of options was undertaken, which confirmed that feasible strengthening interventions are limited (e.g. carbon-fibre wrapping) and would not address the underlying abutment failure risks during a significant earthquake. The whole-of-life Net Present Value (NPV) assessment shows that even if immediate strengthening were implemented and achieved an additional 10 years of structural life, the investment may not be economically justified.

A conservative bridge replacement in Year 20 would correspond to a bridge age of 127-170 years.

3.1.2 Revised Do Minimum

In discussions with the QLDC bridge management team and consistent with the latest bridge assessments, the revised Do Minimum is as follows:

- Continued inspections and annual general maintenance ($5,000 p.a)
- Principal inspections every 4 years ($30,000 / 4 years – note higher costs than typical due to scaffolding requirements). The next principal inspections in 2026 and in 2030 will be key trigger points for end-of-life discussions.
- A replacement 'like for like[3]' single lane bridge in year 20 (2045) adjacent to the existing structure (note: sensitivity testing will be undertaken at years 15 and 40).
- The Do Minimum will not involve the demolition of the existing bridge, in line with heritage limitations.
- The Do Minimum does not include relocating the water and wastewater services on the existing bridge. These costs are typically covered by QLDC and would require additional funding.
- Following replacement, it is assumed that the existing bridge will be repurposed for active modes only and continue to be maintained with repairs of $1M every 10 years from 2045 onward until collapse.
- The Do Minimum will include the associated resilience risk costs of failure during an earthquake until replacement.
- Traffic signals as an operational response in peak periods from 20404.

The costs and options for strengthening will be investigated through the next principal inspection ("Arthurs Point Crossing/Edith Cavell Bridge - weight limits and tolerances").

3.2 Updated Costs

3.2.1 Cost Estimates

Cost estimates from the Arthurs Point Bridge Feasibility Estimate Report (2024) have been updated for the modified 2026 Do Minimum and the Preferred Option – Concept Design Option 2.

[3] Like-for-like replacement is on the basis that the structure is replaced with a single lane structure in the same approximate location and includes the immediate approaches to the structure. https://www.nzta.govt.nz/planning-and-investment/planning-and-investment-knowledge-base/202427-nltp-investment-requirements/202427-nltp-activity-classes-and-work-categories/local-road-and-state-highway-improvements-2/wc-216-bridge-and-structures-renewals-2

[4] Based on 950 vph single lane capacity which is expected to be reached in 2040 in the PM Peak based on 2025 counts and 1.5% TRACKS growth rate between 2028 and 2048. 85th Percentile capacity (approx. 800vph) will be reached sooner in the PM peak (2030).

The previous cost estimates were transferred into NZTA's Cost Estimation Proforma (SM014) with rates updated by applying the latest published NZTA cost fluctuation values. Refer to section 3.2.1.1 and 3.2.1.2 for Do Minimum and Preferred Option estimate assumptions respectively.

The total estimated cost for the Do Minimum option is in the range from $41.3m (P50) to $50.5m (P95). A breakdown of the cost is provided in Table 3-1.

The total estimated cost for the Preferred Option is in the range from $66.1m (P50) to $80.9m (P95). A breakdown of the cost is provided in Table 3-2.

Refer to Appendix A for the completed DBE forms

3.2.1.1 Do Minimum Estimate

The Do Minimum estimate is based on the following:

- Like for like replacement of existing Edith Cavell bridge approximately 10m south of the current structure. Single lane structure approximately 6.5m wide, 75m long, using a similar construction type to the preferred option.
- Relocation of the water and wastewater services are not included across bridge and to be completed by others. New water and wastewater services are allowed for in the roading portion.
- Reduced roading component (compared to the Preferred Option), focussed on the tie-ins to the local road network only.
- Traffic signals to control bridge traffic flows5.
- Percentage reductions for most components compared to Preferred Option due to single lane bridge rather than dual lane.
- The rates used have been updated from the Arthurs Point Bridge Feasibility Estimate Report by applying cost fluctuation values of +0.9% over the March 2024 to October 2025 period.
- New rates were a mix of first principle build up and comparable rates from applicable local projects.
- "Standard" contingency additions for P50 of 35%, and P95 of 30%, with a multiplier for earthworks items increasing these to P50 of 70%, and P95 of 39% have been applied.

Refer to Appendix B for the sketch of the Do Minimum that was used for costing purposes.

Table 3-1: Do Minimum - 'Like for like' bridge plus traffic signals

2026 Update	Base	Standard Contingency P50	Funding Risk P95
Bridge Portion			
Property	690,000	241,500	207,000
Professional Fees	3,541,743	1,239,600	1,062,600
Client Managed Costs	1,649,137	577,200	494,700
Physical Works	19,332,660	6,867,700	5,825,800
SUBTOTAL	**25,213,540**	**8,926,000**	**7,590,100**
Roading Portion			
Property	690,000	241,500	207,000
Professional Fees	602,162	210,700	180,700
Client Managed Costs	474,612	166,100	142,400

[5] Note within the estimate the traffic signal cost is included but the assumption is that they would not be installed until 2040, when the Do Minimum would need to be implemented.

Physical Works	3,500,944	1,289,400	1,066,800
SUBTOTAL	**5,267,719**	**1,907,700**	**1,596,900**
Property	1,380,000	483,000	414,000
Professional Fees	4,143,906	1,450,300	1,243,300
Client Managed Costs	2,123,749	743,300	637,100
Physical Works	22,833,604	8,157,100	6,892,600
TOTAL	**30,481,258**	**10,833,700**	**9,187,000**

For the Do Minimum, the P50 cost estimate (base plus contingency), is $41.3m. The P95 cost estimate (P50 plus funding risk), is $50.5m.

NZTA have recently increased its project contingency rates for State Highway projects. Applying a typical NZTA Project Contingency range would rebalance and modify the above estimate contingency values as follows:

- Total Base - $30,481,258
- P50 Contingency (45%) - $13,881,900
- P95 Contingency (25%) - $7,710,100

With the NZTA Contingency ranges applied to the Do Minimum, the P50 cost estimate (base plus contingency), is $44.4m. The P95 cost estimate (P50 plus funding risk), is $52.1m.

3.2.1.2 Preferred Option Estimate

The preferred option estimate is based on the following:

- Concept Design Option 2 from the Arthurs Point Bridge Feasibility Estimate Report was the basis for the preferred option.
- The bridge and roading components are combined for the updated preferred option estimate.
- Relocation of the water and wastewater services are not included across the bridge and to be completed by others. New water and wastewater services are allowed for as part of the roading portion.
- The rates used have been updated form the Arthurs Point Bridge Feasibility Estimate Report by applying cost fluctuation values of +0.9% over the March 2024 to October 2025 period.
- Fees and contingencies have been revised from the Arthurs Point Bridge Feasibility Estimate (2024) to better align with the NZTA's Cost Estimation Manual (SM014).
- "Standard" contingency additions for P50 of 35%, and P95 of 30%, with a multiplier for earthworks items increasing these to P50 of 70%, and P95 of 39%, have been applied.

Table 3-2: Preferred Option – Concept Design Option 2

2026 Update	Base	Standard Contingency P50	Funding Risk P95
Bridge Portion			
Property	1,261,253	441,400	378,400
Professional Fees	4,928,813	1,725,100	1,478,600
Client Managed Costs	1,921,789	672,600	576,400
Physical Works	26,991,383	9,621,400	8,142,300
SUBTOTAL	**35,103,238**	**12,460,500**	**10,575,700**
Roading Portion			
Property	1,261,253	441,400	378,400
Professional Fees	1,684,926	589,700	505,500
Client Managed Costs	699,956	245,000	210,000

2026 Update	Base	Standard Contingency P50	Funding Risk P95
Physical Works	9,829,559	3,833,700	3,049,900
SUBTOTAL	**13,475,694**	**5,109,800**	**4,143,800**
Property	2,522,506	882,800	756,800
Professional Fees	6,613,739	2,314,800	1,984,100
Client Managed Costs	2,621,745	917,600	786,400
Physical Works	36,820,942	13,455,100	11,192,200
TOTAL	**48,578,931**	**17,570,300**	**14,719,500**

For the Preferred Option, the P50 cost estimate (base plus contingency), is $66.1m. The P95 cost estimate (P50 plus funding risk), is $80.9m.

Applying a typical NZTA Project Contingency range would rebalance and modify the above estimate contingency values as follows:

- Total Base - $48,578,931
- P50 Contingency (45%) - $22,428,300
- P95 Contingency (25%) - $12,453,200

With the NZTA Contingency ranges applied to the Preferred Option, the P50 cost estimate (base plus contingency) is $71.0m. The P95 cost estimate (P50 plus funding risk) is $83.5m.

3.2.1.3 Cost Estimates Change Over Time

The cost estimate development from SSBC 2020 to current SSBC 2026 Addendum is summarised in Table 3-3 and Table 3-4 for the P50 and P95 cost estimate respectively. The 2026 Addendum P50 with the standard contingency has been used in the economic assessment, as this is considered to be more realistic for a local road project in Queenstown.

Table 3-3: Expected Estimate (P50) change over time

P50 Expected Estimate	SSBC 2020	WTP (2024)	LTP 24-34	2026 Addendum (Standard contingency)	2026 Addendum (NZTA contingency)
Preferred Option Option 2 (Road and Bridge)	$18.6m	$61.8m	$66.984m (escalated value) https://www.qldc.govt.nz/your-council/council-documents/long-term-plan-ltp/	$66.1m	$71.0m
Do Minimum	$0.82m (strengthen and no replacement)			$41.3m	$44.4m

Table 3-4: Funding Risk Estimate (P95) change over time

P95	SSBC 2020	WTP (2024)	LTP 24-34	2026 Addendum (Standard contingency)	2026 Addendum (NZTA contingency)
Option 2 (Road and Bridge)	Not calculated	$76.0m		$80.9m	$83.5m
Do-Minimum	Not calculated			$50.5m	$52.1m

3.2.2 LTP Staging

Based on the current Long-Term Plan, the Option is expected to be staged over a period of six years commencing in the 2026/27 financial year.

A two-year pre-implementation phase is required to allow for the following works:

- Design and ECI Contractor procurement.
- Investigative works:
    - Geotech investigations
    - Survey
    - Utility services
    - Ecological assessments
    - Heritage assessments
- Resource consents:
    - Earthworks
    - Discharges
    - Department of Conservation Wildlife permits
    - Archaeological Authorities
- Detailed design:
    - Bridge structure
    - Roading geometry
    - Retaining walls
    - Pavement
    - Water and Wastewater modifications (by Others)
    - Utility services relocations
    - Tendering documentation
- Property Purchase.
- Physical Works tendering.

This would be followed by a three-year physical works phase, which assumes the Option would be constructed in stages, approximately in the order below, however, there will be overlapping and concurrent works required:

- Site clearance.
- Resource consent environmental compliance measures in place, noise, vibration, sediment protection.
- Wildlife protection measures (if any) in place and operational.
- Temporary works construction for material laydown/staging areas, crane platforms, safe access and egress between site and existing roads (may include works to be incorporated as part of final roading alignment).
- Abutment and bridge construction enabling earthworks.
- Bridge construction works:
    - Piling
    - Abutments
    - Sub structure
    - Super Structure
- Earthworks for retaining structures.
- Retaining structure construction.
- Roading earthworks and subgrade platform construction (typically here or as part of temporary works).
- Utility services relocations and street lighting installation (if any).
- Drainage construction – subsurface pipes/sumps etc.
- Pavements.

- Safety Barriers.
- Surfacing.
- Lines and signs.

The alignment of costs to the required project phasing is provided in Table 3-5.

Table 3-5: Long Term Plan Project phasing

https://www.qldc.govt.nz/your-council/council-documents/long-term-plan-ltp/

Financial Year	LTP 24-34		SSBC Addendum 2026		
	$	%	$ (unescalated)	%	
2024/2025	$309,000	0%			
2025/2026	$954,000	1%			
2026/2027	$1,945,000	3%	$4,495,797	6.8%	2 Year Pre-imp + property phase
2027/2028	$4,639,000	7%	$4,495,797	6.8%	
2028/2029	$16,956,000	25%	$14,479,935	22%	Assumed 3-year construction phase
2029/2030	$20,794,000	30%	$19,909,910	30%	
2030/2031	$21,222,000	31%	$19,909,910	30%	
2031/2032	$2,165,000	3%	$2,857,882	4%	12 Month Defects Period
2032/2033	$0	0%			

3.3 Benefits Assessment

The economic evaluation of the Option has been carried out in accordance with the latest NZTA Monetised Benefits and Cost Manual (MBCM, 1.7.4) full procedures.

This chapter demonstrates how the Option delivers value for money under a range of scenarios. The key assumptions, benefits considered and results are presented below.

3.3.1 Inputs and Assumptions

The key economic evaluation parameters and benefit streams considered are as outlined in Table 3-6.

Table 3-6: Economic inputs

Element	Assumptions
General	• The MBCM v1.7.4 released on 1 August 2025 has been used for undertaking benefit realisation. • The Crash Estimation Compendium (CEC) 2nd Edition v3 released on 26 May 2025 has been used for crash prediction modelling and DSI equivalent calculations • Impact on Urban Amenity in Pedestrian Environments released on 11 March 2020 has been adopted for pedestrian benefits from having a footpath. • General traffic growth is assumed at 1.5% per annum based on modelling and historic growth.

Costs	• The economic analysis has been based on the 50th Percentile Expected Estimate costs (standard contingency), with sensitivity testing using the 95th Percentile Costs.
	• Do-Minimum
	  ○ Annual maintenance of $5,000 per year until replacement
	  ○ Principal inspections every 4 years at $30,000 until replacement
	  ○ Replacement in Year 20 with construction beginning in Year 16
	  ○ On-going repairs to historic structure of $1M every 10 years from 2045

Element	Assumptions

	• Option Maintenance
	  ○ Annual maintenance of $1,000 per year
	  ○ Principal inspections every 6 years at $10,000 (access assumed to be easier to new bridge)
	  ○ On-going repairs to historic structure of $1M every 10 years from 2045

Analysis Period and Discount Rates	• 60-year analysis period with a variable 2% discount rate for the first 30 years and 1.5% discount rate from Year 31 onwards. • A 60-year analysis period as the base case has been adopted in line with the MBCM guidance for a 'new bridge' (MBCM, 1.7.4, page 19) • Sensitivity testing has also been undertaken separately for a 40-year analysis period and an 8% discount rate
Timing	• Time Zero is 2026 • Pre-implementation and property purchase are assumed to occur from 2026/27 to 2027/28 • Implementation is assumed to be spread over 3 years from 2028/29 to 2030/2031 • Opening Year in 2031
Travel Time and Vehicle Operating Costs6	• Travel time benefits arise from an improved shorter alignment and two-way traffic reducing bottleneck delays. • Travel time benefits have been assessed based on the changes in network travel time between the Do-Minimum and Option. These are based on a mix of TRACKS network statistics outputs and the VISSIM delays for the AM, IP and PM for the 2028 and 2048 future years. • TTC and VOC costs beyond 2048 have been capped due to uncertainty. • Travel time values were based on the Urban Arterial values of time. • Vehicle operating costs have been based on the TRACKS network statistics relating to total distance travelled and average speeds. Base vehicle running costs were based on the Urban Arterial values of time. • Travel Time Reliability benefits assumed as 5% of the total Travel Time Benefits. • Key sensitivity tests include the model output type (TRACKS or VISSIM) and the model scaling factors (2019 actual counts, 2025 actual counts or TRACKS model values).
Safety benefits	• Safety benefits arise from the improved approach alignment, two lane cross-section and minor intersection improvements. • Safety benefits were assessed based on a site-by-site assessment of crash cost savings between the Do-Minimum and Option scenarios using the procedures outlined in the CEC, MBCM and historic crashes reported in the NZTA Crash Analysis System (CAS) database. • The CAS 5-year period assessed was 2020-2024 • The Option results in relatively small safety benefits and so no sensitivity testing has been undertaken.
Active Modes (Cycling) Benefits	• Cycling benefits relate to the provision of a dedicated shared path for active modes. • Cycling benefits between the Do-Minimum and Option scenarios have been calculated based on the procedures outlined in the MBCM, and more specifically the Simplified Procedures (SP) SP11 form for monetising walking and cycling benefits. • To estimate the uptake in cyclists as a result of the improvement works, inputs into the SP11-7 form included census data on employment and the Auckland Transport (AT) Quality of Service (QoS) tool.

[6] This Addendum uses existing TRACKS and VISSIM outputs undertaken for the SSBC 2020. Further modelling (i.e., VISSIM 2048 scenarios and traffic signal outputs in future years, could be undertaken in future phases

Element	Assumptions
	• The AT QoS tool is used to quantify the change in quality of service between the Do-Minimum and Option. • A cycling growth rate of 6% per annum has been adopted based on census data of population growth within the Arthurs Point area. • Sensitivity testing includes upper and lower cyclist growth rates and proportions of SP11 cycling demand estimates. • The active mode benefits are temporary and are tied to the Do-Minimum replacement timing. Once the Do-Minimum bridge is built in Year 20, the existing Edith Cavell Bridge can be repurposed for active modes (similar to the Option). As a result, active mode benefits are not considered beyond Year 20.
Active Modes (Pedestrian) Benefits	• Amenity benefits relating to the provision of a footpath along the Arthurs Point Crossing (APC) was based on the NZTA Impact on Urban Amenity in Pedestrian Environments. • Pedestrian health benefits, based on removal of a hazardous section, were also included based on the SP11 procedures. • Pedestrian growth rates of 6.0% per annum were adopted based on historic population growth in the Arthurs Point area from census data. • Key sensitivity testing included upper and lower pedestrian demand forecasts. • As for cycling benefits, pedestrian benefits are not considered beyond the Do-Min replacement timing.
Emissions	• Emissions benefits were based on emission rates from the Vehicle Emissions Prediction Model (VEPM) coupled with changes in average speed and VKT from the model outputs. • Emissions benefits include changes in CO2e and a range of other harmful emissions (e.g. particulate matter) were considered based on MBCM guidance.
Public Transport Benefits	• Public transport benefits arise from shorter alignment and reduced delays of the two-lane bridge. • TRACKS/VISSIM model change in delays supplemented with Otago Regional Council (ORC) public transport data on total patronage (1,255 boardings/day in 2025). • An average growth rate of 2.6% has been adopted, with sensitivity testing at 1.5% (low) and 3.8%. This is based on actual PT growth (2022-2025) for Route 2, noting that it changed to Route 4 from 2025.
Resilience (EQ Risk)	• Under the Do-Minimum, there is a risk of the existing bridge collapsing due to earthquake risk (Refer Stantec Structure Management Assessment Memo, 2025) • This would trigger the replacement cost of the Do-Minimum to occur sooner, with an addition 5-10% cost incurred due to impact to utilities / temporary bridge structures. • Following the Do-Minimum Bridge replacement in Year 20, earthquake failure of the historic/existing bridge would not result in replacement costs.
Resilience (Events)	• Resilience benefits were estimated based on inputs from the Traffic Road Event Information System (TREIS) and CAS data (impact of crashes) for the corridor. • The TREIS data on average frequency and event durations was coupled with traffic volume outputs and detour routes (NZTA Detour Routes Tool) for Frankton to Queenstown and Frankton to Lower Shotover to estimate the impact of the two-lane APC on crashes and other events (fire, wandering stock, obstruction, etc.). • Overall, it was assumed that the removal of the APC crossing could reduce the congestion-related delays when the route is being used as a detour by 50%. • The adopted road closure event delay average is 6 hours with 4 and 8 hours tested in the sensitivity analysis.
Other Benefits	• Wider Economic Benefits (WEBs) are considered below.

3.3.2 Wider Economic Benefits

The ‘Modelling the Economics of Resilient Infrastructure Tool’ (MERIT) was intended to be used to estimate the economic impacts in terms of GDP in the event of a closure on APC. However, at the time

of preparation of this SSBC, the MERIT model was unavailable. Should the MERIT model come back online, then inclusion of these benefits can be reconsidered.

Anthony Byett (ECPC Limited) has provided an assessment of the WEBs for the Option, and these are summarised in this section. The WEBs have been assessed across three areas: international tourism, property, and heritage value. These benefits are additional to the conventional transport benefit streams and should be viewed as 'order-of-magnitude' only due to uncertainties in long-term risk modelling.

3.3.2.1 International Tourism

Queenstown is one of New Zealand's highest-value tourism destinations, with international visitor spending estimated at $1.7b in the Queenstown Lakes District. Nearly all visitors must travel via SH6A or the existing Arthurs Point bridge (Edith Cavell Bridge) route to reach the town centre.

Failure of the existing Edith Cavell Bridge, whether due to wear-and-tear or a seismic event, would divert all traffic to SH6A, generating a shock to SH6A daily traffic of '+23% during a six-month closure period'. This exceeds corridor capacity, creating unmet international tourism demand and leading to genuine national GDP losses rather than simple regional displacement.

A representative mid-life closure (Year 15) is estimated to result in foregone GDP $107.3m in Queenstown and $17.5m in New Zealand over a six-month period. When probability-weighted across the 60-year analysis period, accounting for sharply increasing wear-and-tear failure risk of the existing bridge over the next 10–30 years, the expected avoided loss with a new bridge gives a tourism WEB of $6.5m in present value terms (2026 year) for New Zealand.

International tourism WEBs form the most substantial wider benefit, reflecting national-level GDP protection from maintaining reliable access to Queenstown.

3.3.2.2 Property

Potential property value uplift effects are assessed as negligible. While accessibility changes can influence property prices, it is noted that these benefits are typically assumed to be measured within the standard transport analysis and should not be double counted.

No additional property WEBs arise beyond those already captured in the standard cost benefit analysis.

3.3.2.3 Heritage

Early replacement significantly increases the likelihood the Edith Cavell Bridge is preserved and available for recreational and heritage use. The assessment applies a maintenance-cost-based valuation. National heritage payments total $485.6m per annum, corresponding to $115,066 per Category 1 site in non-use value, with an equivalent amount applied for recreational use.

The Option reduces the impact and probability of destruction from earthquake or wear-and-tear. By Year 15, this generates a heritage benefit of $34,000, which, when discounted over 60 years, totals to $2.1m in present value terms (2026 year).

Preservation of the heritage bridge provides a modest but meaningful wider benefit aligned with its assessed "exceptional" heritage significance.

3.3.2.4 Summary

The benefit assessment is determined by the probable state of the Edith Cavell bridge in each future year and whether the Edith Cavell Bridge is sufficiently damaged in each year to require the construction of a temporary single lane bridge of similar capacity (which would require 6 months to construct). The key underlying risk assumptions are:

a. A 250-year return period earthquake would likely either collapse the bridge or damage it sufficiently to be unusable in any capacity.
b. Traffic will create major wear and tear events with increasingly probability within the next 10-30 years.

The expected benefits of the international tourism and heritage benefit streams are estimated to total $8.6m in present value terms (2026 year) using standard NZTA discount rates and appraisal duration.

This total would change to $2.9m (2026 year) should an 8% discount rate be applied (Sensitivity Test 1) or $8.9m (2026 year) if the damaging earthquake event was a 1-in-500 year risk (Sensitivity Test 2) or $12.4m (2026 year) if the bridge life were expected to be 5 years less than expected (Sensitivity Test 3). All benefit estimates should be considered as order-of-magnitude only as several judgements were required to reach these conclusions.

The workings behind these estimates are provided in Appendix C of this report. A summary is provided in Table 3-7.

Table 3-7: Summary of expected WEBs (PV, $2026)

WEBs	PV $m	Sensitivity 1 (8% discount)	Sensitivity 2 (1-in-500 EQ)	Sensitivity 3 (bridge life)
Unmet international tourism NZ GDP effect	$6.5	$2.6	$6.7	$8.3
Local property WEBs	$0.0	$0.0	$0.0	$0.0
Heritage benefit	$2.1	$0.4	$2.1	$4.2
TOTAL	**$8.6**	**$2.9**	**$8.9**	**$12.4**

3.3.3 Cost Benefit Analysis

The economic evaluation confirms that the Arthurs Point Bridge Option delivers value for money and aligns strongly with the strategic objectives of the SSBC 2020.

A summary of the economic assessment of the Option, based on a 60-year analysis period and P50 costs, is provided below in Table 3-8.

Table 3-8: Option Economic Evaluation

Benefit Type	Benefits ($m)
Travel Time	$67.3
Travel Time Reliability	$3.0
Vehicle Operating Costs	$0.4
Emissions	$0.5
Safety	$2.0
Active Modes	$16.0
Resilience	$50.3
Public Transport	$12.3
Total PV Benefits	**$151.8**
Wider Economic Benefits	$8.6
Total PV (P50) Costs	**$36.3**
BCR (Excluding WEBs)	**4.2**
BCR (Including WEBs)	**4.4**

The Option achieves a BCR (excluding WEBS) of 4.2 over a 60-year analysis period based on the expected estimate for the Option (P50), with approximately 40% of the benefits being travel time related, 30% of benefits are resilience related and smaller percentages for the other benefit streams, as illustrated in Figure 3-1.

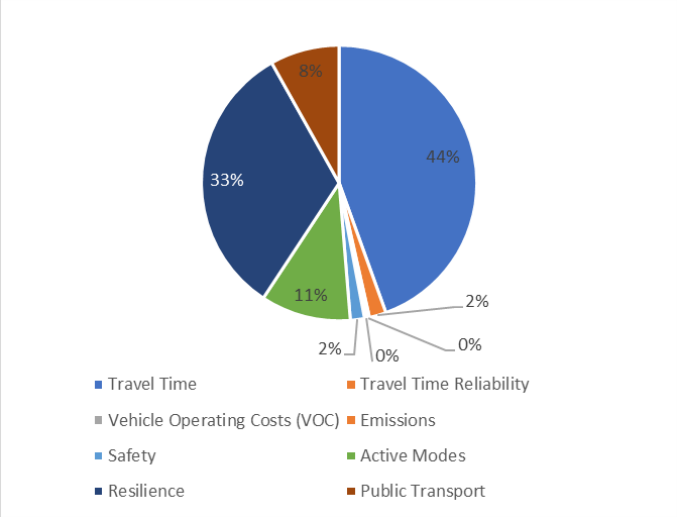


Figure 3-1: Benefit distribution for the Option

The overall benefit distribution reflects the strong alignment of the Option with the SSBC investment objective of travel time (35%). The Option demonstrates weaker alignment with the expected objective of active modes benefits (40%) (noting the importance of this investment objective has reduced due to the new active modes bridge already underway) but higher against resilience related benefits (15%). This is expected to be the case, for the following reasons:

- **Active modes**: benefits are expected to be net neutral as the Do-Minimum replacement bridge is assumed to be built in Year 20. This means that the active modes users have the choice to use either the Option bridge shoulders **OR** the existing heritage Edith Cavell bridge **OR** the new bridge being constructed downstream. As such, the active modes benefits do not continue beyond Year 20, which unlike other benefit streams, continue for the whole 60-year analysis period.
- **Resilience**: the crash records (NZTA CAS) demonstrate that there are a higher number of reported crashes than expected on the SH6 and SH6A road corridors. Analysis of the TREIS data has also shown that road closure events (crashes and other events) have reasonable durations. A combination of these two factors has led to higher-than-expected resilience benefits.

3.3.4 Sensitivity Testing

Sensitivity testing has been undertaken on a range of variables to understand the robustness of the BCR. The tests have focussed on the higher risk factors and areas of uncertainty. The resultant BCRs from the various sensitivity testing scenarios are summarised in Table 3-9.

Table 3-9: Sensitivity testing

Sensitivity Test (Low, Base, High)	Low BCR	Base BCR	High BCR
Project Costs (P95, P50, Base)	3.5	4.2	5.5
Analysis Period (40 years, 60 years, N/A)	3.2		-
Discount Rate (8%, 2%/1.5%, 1.5%)	1.0		4.8
Earthquake Probability (1/500, 1/250, 1/100 return period)	4.2		4.3
Model Adoption (N/A, TRACKS, VISSIM)	-		4.9

Sensitivity Test (Low, Base, High)	Low BCR	Base BCR	High BCR
Model Scaling Factor (TRACKS, 2025 Gorge Road, 2019 AP Bridge)	4.1		4.3
Public Transport Growth Rate (TRACKS, Average, QLDC Actual)	4.1		4.2
Traffic Growth Rate (TRACKS, 2028 to 2048 Only, N/A)	4.2		-
Active Modes Growth Rate (2%, Census 6%, QLDC 2024-2025)	4.0		10+
Active Modes SP11 Uptake (30%, 50%, 70%)	3.8		4.5
Preferred Option Cost Opportunity (N/A, No, Yes)	-		4.5
Do-Minimum Bridge Replacement Timing (40-years, 20-years, 15-years)	4.0		4.3
Benefits Capping (N/A, 2048 Cap, Uncapped)	-		4.7
Road Closure Event Delays (TREIS) (4 hours, 6 hours, 8 hours)	4.0		4.2
Wider Economic Benefits (WEBs) (8% Discounting, Standard, Event Probability)	4.2	4.4	4.4

Overall, the results show that the Option is robust and delivers value for money under a range of sensitivity scenarios. The BCRs generally range from 3.2 (40-year analysis period) to 5.5 (Base cost estimate), with the Discount Rate sensitivity testing dropping the BCR to 1.0. The sensitivity test applying the QLDC 2024-2025 growth at the Gorge Road count site demonstrates more than 200% of growth in one year. The resultant BCR can be disregarded as a growth rate of >200% p.a. is unrealistic.

The overall BCR remains above 3.0 under all scenarios except the high discount rate, reinforcing its overall economic viability.

3.4 Assessment against Triggers

Investment triggers were identified in the SSBC 2020 for the Arthurs Point Crossing Stage 2 (roading). This was because the economic case for investment was strong, but the strategic case was weak and funding constraints meant it was unlikely to be prioritised.

These triggers have been reviewed and the measures strengthened and validated using current data and evidence from the most recent structural assessment, economics, traffic modelling and resilience findings. Table 3-10 provides an updated triggers and assessment against each. The assessment shows that the strategic case is strong due to strong alignment with the investment objective of travel time, with the expected travel time savings making up the largest benefit stream and estimated to contribute $67.3m. There is also strong alignment with the resilience investment objective, because the Arthurs Point crossing route is the official detour route for SH6/6A.

Table 3-10: Investment triggers and assessment

Trigger (meeting any of these would trigger need for investment)	Assessment
End of Useful Life **Evidence**:	The Do Minimum has been updated from the SSBC 2020. The 2025 Structure Management Assessment highlights that the original Do

Trigger (meeting any of these would trigger need for investment)	Assessment
• Bridge inspection reports • Agreed Do Minimum • Economic evaluation • Arthurs Point Crossing/Edith Cavell Bridge – weight limits and tolerances report (underway 2026) **Conclusion: NOT MET** • Based on 2025 inspection the bridge is not end of life yet but requires planning now • The weight limits and tolerances report will confirm if this trigger is met. • Principal inspections will be the trigger moving forward.	Minimum (short term seismic strengthening of $500,000 and minimal other capital works apart from on-going concrete repairs) is no longer realistic. The 2025 assessment uncovered a significant horizontal crack adjacent to the 1875 abutment shelf and concluded the concrete structure may only remain in acceptable condition for another 10-20 years (2035-45). In addition, the seismic strengthening originally assumed is not likely to be practical due to structural defects, bridge heritage status and access constraints/challenges. The updated Do Minimum assumes continued inspections and annual general maintenance ($5,000 pa), with principal inspections every 4 years ($30,000 / 4 years – note higher costs than typical due to scaffolding requirements). The next principal inspections in 2026 and in 2030 will be key trigger points for end-of-life discussions. It is expected that a replacement 'like for like' single lane bridge is required in year 20 (2045) adjacent to the existing structure which will be retained due to heritage limitations.
Traffic Delays: Delays on either Arthurs Point Crossing and/or SH6A. **Evidence**: • Traffic count and travel time data • Strategic and microsimulation modelling outputs (TRACKS and VISSIM) • Fast Track consent developments • Queenstown Strategic Network Plan (under development) **Conclusion: NOT MET** • Based on the review of data and model outputs, this trigger will not be met until delays on Arthurs Point Crossing reach LOS F in 2040 (evening peak). • Project is included in QLDC LTP indicating delays already unacceptable, with LOS E indicated in 2028. • Should Coronet Village proceed, growth and delays will increase.	Traffic data and Tracks model outputs have been reviewed. The updated Do Minimum assumes that traffic signals are installed as an operational response in peak periods. This conclusion is based on a 950 vph single lane capacity (LOS F), which is expected to be reached in 2040 in the evening peak, based on 2025 Gorge Road counts and Tracks model outputs with a 1.5% growth rate applied between 2028 and 2048. The 85th percentile capacity (approx. 800vph, LOS E) will be reached by 2028 in the evening peak and by 2048 in the morning peak. Travel time benefits arising from an improved shorter alignment and two-way traffic reducing bottleneck delays are estimated at $67.3m (60 year analysis period) with bridge opening assumed for 2031. This is the largest benefit stream, making up 44% of the total monetised benefits (excluding WEBS). Arguably this is already unacceptable to QLDC and the community, as the replacement crossing is already included in the adopted LTP. Replacing the one lane bridge with a two lane bridge is expected to provide an 8% average travel time saving for a typical origin and destination between SH6A in Queenstown CBD, and Littles Road/Malaghans Road to the north of the Arthurs Point residential area. This 7.3km trip takes on average 13 minutes. With the bridge-related travel time saving around 1 minute per vehicle, which equates to an 8% reduction. Even for a longer, conservative 20 minute trip, the savings would equate to a 5% reduction. These figures are estimated from network travel time savings for 2048 from the Tracks model, which provide a figure of 3,968,457 minutes saved per year as a result of the two lane bridge. By 2048, the traffic volumes across the bridge are forecast to be approximately 10,846 vpd. When compared to the total minutes saved, this equates to approximately 1 minute saved per vehicle. The fast track consent for residential development of 780 units at Coronet Village is on hold, but should this come back online, the bridge will reach capacity more quickly as this will be the most direct route to Queenstown. The Queenstown Strategic Network plan has identified the Malaghans Road and Hawthorne Drive route as part of the local strategic network, to recognise the role these roads play in the wider strategic transport network, both to provide access to destinations, and alternative routes to the State highway network. This supports

<table>
<tr><th>Trigger (meeting any of these would trigger need for investment)</th><th>Assessment</th></tr>
<tr><td></td><td>further investment in this route so its important network role can be maintained.</td></tr>
<tr><td>Resilience: Improve resilience of infrastructure and provide resilient network.
Evidence:
• QLDC Long Term Plan
• QLDC Infrastructure Strategy
• NZTA Resilience PBC and frameworks
• NZTA Network Resilience Assessment Tool
• TREIS and incident records
• Queenstown Strategic Network Plan (under development)
Conclusion: MET
• Based on the NRAT score for SH6/6A, for which the Arthurs Point crossing provides the official detour route, this trigger has been met.
• TREIS and incident records indicate 12 full closures of SH6/6A over five years.
• The single lane bridge is a pinch point on the detour route and increases delays.</td><td>The resilience risk on SH6/6A has been assessed through the NZTA's National Resilience PBC. This identifies that SH6A is 'built on landslips', with 'several known active and monitored slips'. It is noted that this is the 'only route that links Queenstown and airport' and notes that the 'alternate route would take an extra hour, however, is complicated by single lane Edith Cavell bridge'. The risk is estimated at 3L (moderate, likely) and 3VL by 2050 (moderate, very likely).
The National Resilience Assessment Tool (NRAT) has been used to identify resilience risk for SH6/6A with and without the Option. The results are below:
<table><tr><td>Route: SH6/6A</td><td>Rating</td><td>Risk Score</td></tr><tr><td>Current Risk</td><td>Extreme/Critical</td><td>1197</td></tr><tr><td>Risk with Option</td><td>Extreme/Critical</td><td>735</td></tr></table>The option reduces the risk considerably although it does not reach the moderate category (<400). The current risk is 1197 because of route criticality (nominated evacuation route, main route to two or more upper band services without appropriate detour – the lack of appropriate detour was noted in the National Resilience PBC with the one lane bridge leading to large network delays as the route does not operate as a reliable alternate route), traffic volume, and frequency of full closure (at least one per year). With the Option, the risk reduces – the detour is appropriate and expected delays are less than 30 mins additional journey time.
The majority of events on SH6/6A recorded in TREIS are from crashes on SH6/6A where the official detour route via the Arthurs Point crossing does not operate as a reliable or appropriate alternative route. The adopted road closure event delay average was 6 hours.
Funding for a new Arthurs Point crossing is included in the QLDC LTP and Infrastructure Strategy, to improve network resilience and travel times. It is also needed for resilience of water and wastewater networks, as these services are on the existing bridge, and are dependent on bridge condition. In an earthquake the bridge is likely to collapse which will leave Arthurs Point community without water supply, and wastewater will discharge to the Shotover River creating environmental damage as well as leaving the community without wastewater services adding to health risk.
The Arthurs Point crossing is part of the official detour route for SH6/6A. The crash records (NZTA CAS) demonstrate that there are a higher number of reported crashes than expected on the SH6 and SH6A road corridors. Analysis of the TREIS data has also shown that road closure events (crashes and other events) have reasonable durations. A combination of these two factors has led to higher-than-expected resilience benefits, estimated at $50.3m (60-year analysis period), with the resilience benefit stream estimated at 33% of the overall benefits (excluding WEBS).
The Queenstown Strategic Network plan has identified the Malaghans Road and Hawthorne Drive route as part of the local strategic network, to recognise the role these roads play in the wider strategic transport network, both to provide access to destinations, and alternative routes to the State highway network. This supports further investment in this route so its important network role can be maintained.</td></tr>
</table>

Trigger (meeting any of these would trigger need for investment)	Assessment
Public Transport: Provide for electric buses and higher capacity buses. **Evidence:** • ORC LTP and RPTP • Queenstown PT Business Case • Arthurs Point Crossing/Edith Cavell Bridge – weight limits and tolerances report (underway) **Conclusion: UNCONFIRMED** • The Arthurs Point Crossing/Edith Cavell Bridge – weight limits and tolerances report (underway) will confirm whether the buses being considered will be able to use the route.	In 2025 the ORC introduced a new service between Arrowtown and Queenstown which uses the Arthurs Point crossing (Route 4). This has been hugely successful with buses at capacity at peak times. The ORC is exploring double deckers/articulated buses for this route to meet demand and have approached QLDC regarding the loading impact on Arthurs Point bridge, as these buses are heavier. The Otago LTP and RPTP include funding for a fully electric bus fleet for Queenstown by 2029. An indication of gross vehicle weight for buses is provided by NZTA, summarised as follows7: One rear axle / Diesel / Electric Single decker / 13 tonnes / 15-17 tonnes Double decker / 17 tonnes / 19-20 tonnes The enquiry from the ORC, the findings from the 2025 Edith Cavell Bridge inspection, combined with QLDC experience at Skippers Bridge where the 124 year old bridge has been closed indefinitely since late 2025 due to safety risks from extensive brittle failure of wires in the bridge's cables, have led to an investigation into weight limits and tolerances of the bridge (underway). Depending on the outcome of this investigation, additional loading on the bridge, such as a double decker, articulated or electric bus to meet public transport demand, could be a trigger for investment and drive additional project benefits.

3.5 Investment Appraisal

The Investment Prioritisation Method (IPM) for the NLTP 2024-27 has been used to assess the investment profile and priority for this project.

The profile for this project is H/H/M. This means the programme is Priority 3 out of 13. The rationale for these ratings is explained further below.

3.5.1 GPS Alignment

Some costs fall within the GPS 2024-27, and therefore an assessment has been completed against both Stage 1 and Stage 2 Investment Appraisal Prioritisation tables.

GPS Alignment: High

Priority: Increased maintenance and resilience | Benefit: Resilience

Stage 1 Assessment: High

The activity will address an extreme resilience risk for SH6/6A, which is a Regional Highway. The NRAT resilience risk score is 1197 because of the high traffic volume, route criticality, and the detour via Arthurs Point which is 'not appropriate' due to single lane bridge (identified in National Resilience PBC). This bridge is a pinch point for the detour route leading to significant delays when SH6/6A is closed. TREIS event data shows unplanned closures on SH6/6A are almost certain to occur at least once a year (12 in five year period). With the Option the NRAT resilience risk score is reduced to 735.

Refer to Appendix D for NRAT spreadsheets and rationale.

[7] Vehicle capacity and weight | NZ Transport Agency Waka Kotahi

Stage 2 Assessment: High

The Option will reduce the resilience on SH6/6A from Extreme (1197) to 735. That risk score is still within the Extreme category but there is no other way to reduce the risk further due to the traffic volumes, frequency of full closure, and route criticality.

3.5.2 Scheduling

Scheduling: High (criticality)

The scheduling factor has two criteria: interdependency and criticality. The highest rating is used to determine the priority. Criticality is concerned with the urgency for delivery of the programme, and the importance of the programme to ensuring the transport network is resilient. Interdependency indicates that unlocking the benefits of another activity depends on this project, for example where activities are part of a wider programme or a major housing development or international event.

For this project, the criticality rating is the highest. The Option meets the 'high' requirements for Criticality, because there will be significant adverse network resilience risk if the Option is not started during 2024-27. The network resilience risk to SH6/6A is Extreme, and the detour route is not 'appropriate' given the volume of diverted traffic, the frequency of full closures on SH6/6A and the single lane bridge at Arthurs Point which adds significant delay to what could be a straightforward detour.

Investment will bring significant travel time savings for people using the bridge for a typical trip, with an estimated 8% reduction in average travel time. Further, the route will be able to perform a strategic network function as recognised by the Queenstown Strategic Network Plan (underway), providing a relief route to SH6/6A during busy periods, helping alleviate congestion.

3.5.3 Efficiency

Efficiency: Medium

The efficiency rating reflects the benefit-cost-ratio. The BCR for this project is 4.2 (excluding WEBs) and 4.4 (including WEBs), both of which fall within the 3 to <6 range, which is 'Medium'. Confidence is high with all but one sensitivity test giving BCRs in this range.

3.6 Appraisal Summary Table

The Appraisal Summary Table for the Preferred Option is provided in Appendix E.

4 Commercial Case

4.1 Implementation Strategy

The following high level implementation strategy is proposed.

1. QLDC and NZTA endorse SSBC and Addendum and approve funding by mid-2026, for pre-implementation of the Option.
2. Two year pre-implementation phase:
    a. Procure and engage professional services designer and procure and engage ECI contractor in parallel.
    b. Designer, in coordination with ECI contractor, procures a site survey and geotechnical investigation required to support the development of a design for both permanent and temporary works.
    c. Designer and ECI contractor develop a constructable design considering temporary support, access and cranage and develop this into a formalised constructability report to accompany design drawings.
    d. Professional Services Designer prepares tender documents for implementation, incorporating constructability report and associated supporting documentation.
    e. Obtain statutory approvals/ designation (in parallel) – including building and resource consents.
    f. Funding approval for implementation (assume TIO process and NZTA approvals).

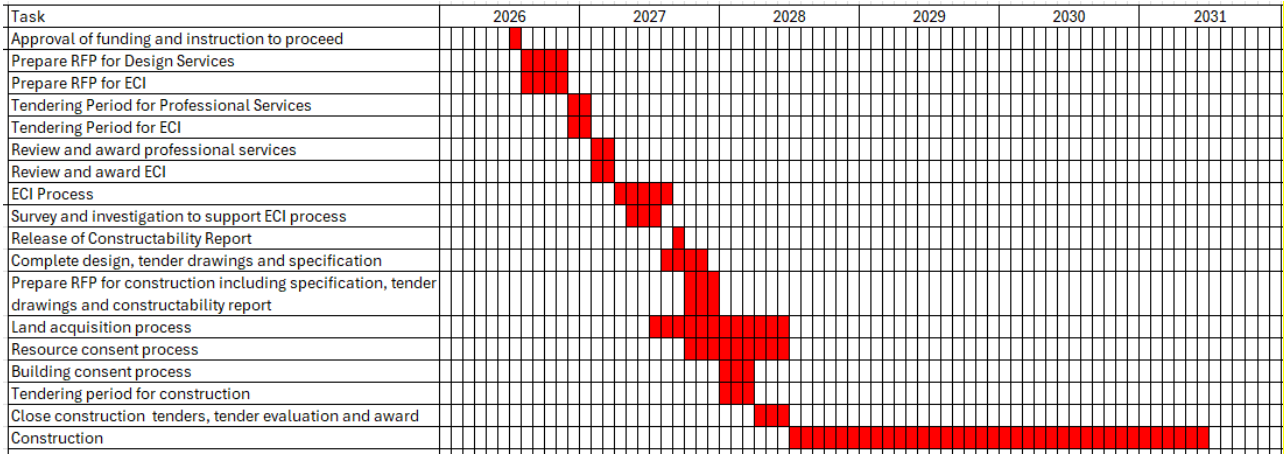
g. Procure Independent Design Peer Review through competitive tender.
h. Undertake Design Peer Review
i. Procure implementation services for physical works.

3. Three year implementation phase:

   a. Commence construction – anticipated bridge opening in 2031.

An indicative programme is provided in Table 4-1, however this will need to be developed in more detail once funding is approved.

Table 4-1: Indicative Programme for Delivery



4.2 Procurement Strategy

There are a variety of methodologies available for procurement the advantages and disadvantages of the individual approaches are summarised in Table 4-2.

Table 4-2: Procurement Options - Evaluation

Procurement Methodology	Advantages	Disadvantages
Design/build	• Promotes innovation • Potentially shorter timeframe for procurement than traditional	• Requires a preliminary design to be prepared at time tender and thus there are risks regarding price and scope • Requires tight specification • Risk associated with extent of geotechnical investigation and potential 'unforeseen conditions'
Traditional Design tender and construct	• Greater price certainty prior to construction • Would allow for hold points following design without proceeding to immediate construction if there are consent or funding constraints	• Potentially a longer timeframe for procurement due to sequential tendering • Design may not consider all construction methodologies • May get alternative tenders which are complex to assess fairly and consequently may incorporate some risk
Design with Early Contractor Involvement & then competitive tendering for construction	• Will identify a buildable design • Allows designer to incorporate construction methodology in design • Allows for geotechnical and survey data collection which may be required by contractor	• ECI methodology may favour one contractor's methodology or plant

Procurement Methodology	Advantages	Disadvantages
Prequalification with any of the above options	• Reduction in risk associated with capability or experience	• Additional step in the process which may add time
Alliance	• Allows a project team to be assembled with the relevant skills	• There is an existing alliance undertaking civil works in Queenstown, but this alliance does not have the specific skills for a complex bridge • An alliance is appropriate where there are options for competitive tendering. This contract has opportunity for competitive commercial mechanisms

This is a significant and technically challenging project. It will require large and experienced tier one designer and construction contractor to be realistically achievable. Thus, it is anticipated that any Request for Proposals will be a national effort in order to attract the appropriate level of expertise and experience.

4.2.1 Recommended ECI approach

The recommended procurement method is Design with Early Contractor Involvement followed by tendering the construction contract supported by a Constructability Report. This approach will not necessarily cover all potential construction methodologies, but it will provide a level of assurance that the design can be constructed, and that construction challenges have been investigated and are identified. Such issues include:

- Transport of modules or units to site
- Corrosion protection options such as galvanising, epoxy paint, corten steel and fluoropolymer paint
- Falsework and propping
- Launching of beams
- Protection to Shotover Jet on the river below
- Cranage methodology
- Rock drilling methodologies and access for drilling plant
- Safety coordination with Shotover Jet and protection measures
- Traffic control and maintenance of a trafficable lane

The ECI involvement will also allow the team to investigate alternative materials such as prestressed concrete beams and potentially beam launching. Investigation of construction materials such as Corten and concrete may allow reduction of long-term maintenance and painting requirements as painting a bridge in this environment will be challenging.

4.2.2 Prequalification

Prequalification of Construction contractors is not anticipated to add value to the process and may add an additional step and thus increased time. This project is believed to be sufficiently large that only experienced tier one contractors will have the ability to undertake the works and incorporating adequate pass/fail criteria in the Request for Proposal document would exclude insufficiently experienced contractors. The RFP document may require experience with construction of bridges of greater than a minimum value, and experience with bridge launching or complex falsework.

Similarly, the design of this structure is sufficiently complex that there are a limited number of design companies who are considered appropriate for such a task in New Zealand. Appropriate pass/fail criteria incorporated in the RFP proposal for professional services (such as previous projects above a certain value, bridge design, staff and experience of working alongside an ECI contractor), are anticipated to be sufficient to select only suitable designers.

4.2.3 Multiple Packages

The works do not lend themselves to multiple packages such as a separate contract for pavement or approaches. Due to the constrained site and lack of physical separation between elements of work multiple separate packages of work do not offer an advantage. Multiple separate construction packages will introduce the risk of time delays between contractors and blurring of responsibility and consequent time and cost risk.

No discrete elements of enabling works have been identified that would be suitable for delivery under a separate contract.

4.2.4 Local Subcontractors

It is anticipated that the Request for Proposal document will attract large, experienced contractors with a national presence. Irrespective of the involvement of large national contractors, a significant proportion of the work is anticipated to be undertaken by local contractors. This is likely to involve excavation, and pavement works, drilling, traffic control, scaffolding, services, elements of the cranage and the like. There is an opportunity to Include Broader Outcomes in procurement.

4.2.5 Shotover Jet

Shotover Jet operate on the river between 9am and approximately 6pm. Boats operate at approximately 15-minute intervals and the high traffic times are during school holidays. Protection will need to be provided so that boats are protected from falling objects. It will not be possible to provide practical protection to the boats below from large objects such as concrete skips or beams, and coordination with Shotover Jet will be required so that there are not boats below the structure during these times. This will require programming of such lifts so that they do not occur at busy times such as holiday periods.

4.2.6 Risk Allocation and Transfer

The recommended approach is intended to minimise and appropriately allocate risk by the following mechanisms:

- With ECI, the risk of a structure that is difficult or complex to construct is minimised and a potential optimum construction methodology will be developed
- With ECI, information that may be required for construction will be captured from the start of the design process
- Design/build requires a tight specification and identification of all issues that the contractor will need to allow for. This project is complex with complex and challenging foundation conditions. Thus, a design/build contract may involve scope risks which are more appropriately addressed by the ECI and design approach.
- Clear pass/fail criteria will allow a mechanism for only suitably experienced and resourced consultants and contractors to be considered and the inclusion of such provisions in the RFP documents are anticipated to be sufficient to obtain proposals only from appropriate suppliers.

4.3 Property Strategy

A memorandum to reconfirm the property strategy has been prepared and is contained in Appendix F. The memo:

a) Confirms the properties that now need to be acquired for the Option (a combined road and active modes bridge approximately 100 m downstream of the Edith Cavell bridge).
b) Confirms their legal descriptions and current ownership.
c) Includes an updated valuation for the land required.

Fewer parcels of land are required for the Option and the total estimated compensation for the Option is $2.52M as of January 2026.

4.4 Consenting Strategy

An updated consenting strategy has been prepared and is contained in Appendix G. The Option is expected to require the following statutory approvals under the Resource Management Act 1991 (RMA) (or its anticipated replacement with the Planning Act and the Natural Environment Act) and related legislation:

- Resource consents from Queenstown Lakes District Council (QLDC) for:
  - Earthworks
  - Vegetation removal within 20 m of the Shotover Riverbed (if required)
  - Structures within the Rural Zone and Outstanding Natural Landscape
  - Structures within a wāhi tupuna area

  Or alternatively, a notice of requirement (NOR) is prepared and submitted to QLDC for a designation over the required land.
- Resource consent from Otago Regional Council (ORC) for the erection or placement of a single span bridge that cannot comply with permitted activity conditions.
- Archaeological authority under the Heritage New Zealand Pouhere Taonga Act 2014 if the archaeological features associated with the earlier 1860s bridge downstream of the Edith Cavell Bridge will be disturbed.
- Approval under the Wildlife Act 1953 if there are protected wildlife that may be disturbed, for example lizards that would need to be relocated.
- Concessions or other authorisations under the Conservation Act 1987 and Reserves Act 1977 in relation to the use of DOC-managed land either side of the Shotover River.

Potential implications of the resource management system reform are briefly discussed in the consenting strategy. Of particular relevance; an opportunity for the Option is that in deciding on a resource consent or NOR, there will be less of an emphasis on the protection of landscape values under the reform, and greater weight given to the provision of infrastructure. However, risks include complications and uncertainties during the transition period (anticipated to be mid-2026 until 2028-2029).

Next steps recommended through the consenting strategy, include preparing technical assessments to inform and support applications, and undertaking specific consultation.

5 Financial Case

5.1 Cost Summary

A summary of updated costs for both Option 1 and 2 is provided in Table 5-1.

To be conservative through the economics the 2024 Bridge Option 2 has been brought forward and updated. This option was largely similar to the previous Bridge Option 1, with an added assumption included to account for finding worse Geotech conditions on site. The difference between these two option estimates presents an opportunity to realise $3.9m saving depending on the outcome of detailed geotechnical investigations during the pre-implementation phase.

Table 5-1: Cost Summary and Opportunity for Cost Savings (geotech ground condition opportunity)

	Bridge 1	Bridge 2 (Preferred)	Road
WT	$42,072,760	$44,762,249	$16,987,164
% Change Option 2 vs Option 1		106%	
2026	**$44,705,925**	**$47,563,738**	$18,585,494
2026 Total	$62,174,730	$66,149,232	
Opportunity Savings $ (P50)	$3,974,502 (6%)		

5.2 Funding Options

The expected estimate (P50) is $66.1m, and the funding risk estimate (P95) is $80.9m with standard contingencies. Funding of $66.984m has been allocated for the Option in the QLDC LTP 2024-34, with funding spread over an eight-year period (2024/25 to 2031/32).

Funding for pre-implementation and implementation is included in the RLTP (2021-31 updated 2024).

Funding for the SSBC is included in the NLTP 2024-27, but no funding has been allocated in the NLTP for pre-implementation or construction.

The Option is included in the package of improvements identified for Queenstown as part of the Central Lakes Regional Deal. This is still under negotiation, but the intent is to providing financing for infrastructure projects which can be paid back through revenue generated by tolls and time of use charging on the local network.

Potential funding streams for the Option are summarised in Table 5-2. NLTF, local share and user revenues (parking and Central Lakes Regional Deal tools) are the most likely funding sources. Development contributions are also an option.

It is recommended that QLDC investigate other potential funding streams further.

Table 5-2 Potential Funding Sources

Potential Source	Comments
Local share – QLDC rates funding	The Option is included in the LTP at 100% rates funding, which is a significant cost for a small rating base. A targeted rate is possible (e.g. for those living in Arthurs Point), but this would be unaffordable as the number of residents is small. Also, the government has introduced rates capping, makes it challenging to manage the rates impact of infrastructure.
National Land Transport Fund (NLTF)	Hypothecated fund from fuel taxes and road user charges, for activities in the NLTP. Co-investment in works on QLDC roads for approved activities are at the agreed Financial Assistance Rate (FAR), depending on the activity. For this project, funding would be from the Local Road Improvements Activity Class and the normal FAR rate would be 51%. Funding would be from a number of work categories e.g. • WC 322: new or improved bridges or structures. • WC 323: new roads – this includes a bridge that forms part of a new road or road link, construction of a new road, including earthworks and pavement construction. • WC 332: property purchase. • WC 451: walking improvement for the shared path. QLDC could open a discussion with NZTA regarding a higher FAR for this project given the network resilience benefits that accrue to SH6/6A.
Direct Budget Bid	QLDC could pursue buy in from Government, since the Option is improving resilience of SH6/6A and included in the Infrastructure Priorities Programme created by the Infrastructure Commission. However, this may be complicated by the Central Lakes Regional Deal currently under discussion.
Crown Resilience Programme	A seven-year programme with $279m for state highway and $74m for local road resilience improvements. This fund is primarily targeting projects that address flooding, land instability and coastal issues. It is unlikely the Option could receive funding from this source as the local road allocation is for quick wins. However, given the instability on SH6/6A and the added resilience an improved detour via Arthurs Point would add to the network, it is recommended this be explored with NZTA (programme manager).
National Infrastructure Funding and Financing (NIFF)	NIFF supports infrastructure to enable housing and urban development, financed through alternative models so that the costs fall primarily on the property owners who benefit. A standalone entity is created for each project or package, which can raise the finance and collect a multi-year levy to repay the finance. This is primarily aimed at enabling largescale housing and urban developments and it is only likely to be suitable for Arthurs Point crossing if that were part of a wider package of

Potential Source	Comments
	network improvements. The Central Lakes Regional Deal is an example of NIFF (see below).
Regional Infrastructure Fund (RIF)	The RIF is open for applications. It is a three year $1.2b fund which provides loans for improving regional infrastructure, especially projects that boost regional growth, resilience and productivity. Loan funding must be repaid over 5-20 years. For QLDC the Regional Deal will provide the same opportunity.
Development Contributions	One off charge on developers to fund growth infrastructure, set via Council policy. It is recommended this be considered if the Coronet Village fast track application progresses, or if other developments are proposed in the area north of the Arthurs Point crossing.
User Charges Implemented through QLDC (parking) and Central Lakes Regional Deal (tolls and time of use charging)	These are revenues direct from road users, for example from parking fees, bridge toll and time of use charging. Parking fees are planned to increase in Queenstown in 2027 and this could provide a source of funding. Parking levies have been used to generate significant revenue in Nottingham UK, where the city council introduced a per on-site parking space annual levy for workplaces with more than ten parking spaces. It is recommended this be explored by QLDC. Tolls and time of use charging are being enabled for QLDC through the Central Lakes Regional Deal because the area is so important to the NZ economy. However, this is still in negotiation and it is uncertain when these tools will be in place. Funding is needed now to progress the Option, but once these tools are available, they can be used to offset costs going forward. A toll on the new Arthurs Point crossing may have undesirable diversion effects on to the already congested SH6/6A, and the fee would have to be appropriate to minimise this effect. Differential fees could be charged, with local residents paying less than visitors/tourists. It is recommended this be explored further with the Council and community to understand willingness to pay and public appetite. Time of use charging could have unintended network effects depending on how it is implemented, but revenue does have the potential to offset some of the local share costs for the Option.
Tourism Infrastructure Fund (MBIE)	Since 2019, most international visitors are charged the International Visitor Conservation and Tourism Levy (IVL) of $100 per person. The IVL is managed by MBIE and invested in projects that will help to create productive, sustainable and inclusive tourism growth. This fund tends to be used for supporting infrastructure such as public toilets at destinations, and the Arthurs Point crossing is unlikely to be something that is funded, despite the Edith Cavell bridge being a Category 1 Historic Place attracting many visitors each year, who also use the route to access Coronet Peak and other key destinations. The historic Edith Cavell bridge is likely to be preserved for longer if road traffic were diverted to a new, alternative crossing.

6 Management Case

6.1 Governance Structure

The governance structure proposed in the SSBC 2020 has been reviewed. Given the Option is moving to pre-implementation, QLDC will lead delivery. Way to Go, the partnership between QLDC, NZTA and ORC, will be kept informed by QLDC Transport Strategy Manager. QLDC Governance decisions will be made by General Manager Infrastructure and Planning or escalated to the appropriate decision making authority within QLDC.

The Transport Strategy Manager at QLDC is the project sponsor and will lead the project up to pre-implementation at which point QLDC's Project Management Office will be responsible for delivering pre-implementation and implementation. QLDC Operations and Maintenance will be responsible for ongoing management of the completed assets.

Appendices

Appendix A Cost Estimates – DBE Forms

Project Estimate - Form C

Project Name: Arthurs Point Bridge SSBC
Do Minimum Option Bridge Portion

DBE

Detailed Business Case Estimate

Item	Description	Base Estimate	Contingency	Funding Risk	Contingency	Funding Risk Contingency	Total Contingency
	Property Costs						
	Property Purchase and Compensation Costs	690,000					
	Property Owner Accommodation Works	0					
	Property Consultancy Fees	0					
A	**Total Project Property Cost**	**690,000**	**241,500**	**207,000**	**35.00%**	**30.00%**	**65.00%**
	Project Development Phase						
	- Consultancy Fees	Nil	Nil	Nil	Nil	Nil	Nil
	- Client-Managed Costs	Nil	Nil	Nil	Nil	Nil	Nil
B	**Total Project Development**	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**
	Pre-Implementation Phase						
	- Consultancy Fees	1,550,479	542,700	465,200	35.00%	30.00%	65.01%
	- Client-Managed Costs	688,243	240,900	206,500	35.00%	30.00%	65.01%
C	**Total Pre-Implementation**	**2,238,722**	**783,600**	**671,700**	**35.00%**	**30.00%**	**65.01%**
	Implementation Phase						
	Implementation Fees						
	- Consultancy Fees	1,991,264	696,900	597,400	35.00%	30.00%	65.00%
	- Client-Managed Costs	960,894	336,300	288,200	35.00%	29.99%	64.99%
	Sub Total Base Implementation Fees	**2,952,158**	**1,033,200**	**885,600**	**35.00%**	**30.00%**	**65.00%**
	Physical Works						
D1	Construction Preliminary and General	6,172,238	2,160,300	1,851,700	35.00%	30.00%	65.00%
D2	Environmental Compliance	160,000	56,000	48,000	35.00%	30.00%	65.00%
D3	Site Clearance	161,440	56,500	48,400	35.00%	29.98%	64.98%
D4	Traffic Management and Temporary Works	1,750,000	612,500	525,000	35.00%	30.00%	65.00%
D5	Site-Wide Temporary Works and Plant	2,597,374	909,100	779,200	35.00%	30.00%	65.00%
D6	Earthworks	289,251	202,500	112,800	70.01%	39.00%	109.01%
D7	Ground Improvements	0	0	0	0.00%	0.00%	0.00%
D8	Drainage	0	0	0	0.00%	0.00%	0.00%
D9	Pavement and Surfacing	0	0	0	0.00%	0.00%	0.00%
D10	Bridges and Viaduct Structures	7,783,442	2,724,200	2,335,000	35.00%	30.00%	65.00%
D11	Structural Walls and Protection Works	0	0	0	0.00%	0.00%	0.00%
D12	Utility Services	0	0	0	0.00%	0.00%	0.00%
D13	Traffic Services	0	0	0	0.00%	0.00%	0.00%
D14	Intelligent Transport Systems (ITS)	0	0	0	0.00%	0.00%	0.00%
D15	Hard and Soft Landscaping	0	0	0	0.00%	0.00%	0.00%
D16	Tunnels, Subway Structures and Rockfall Shelters	0	0	0	0.00%	0.00%	0.00%
D17	Buildings	0	0	0	0.00%	0.00%	0.00%
D18	Sundry Items	418,915	146,600	125,700	35.00%	30.01%	65.00%
	Sub Total Base Physical Works	**19,332,660**	**6,867,700**	**5,825,800**	**35.52%**	**30.13%**	**65.66%**
D	**Total for Implementation Phase**	**22,284,818**	**7,900,900**	**6,711,400**	**35.45%**	**30.12%**	**65.57%**
E	**Project Base Estimate** (A+B+C+D)	**25,213,540**					
F	**Contingency** (Assessed / Analysed)	**(A+B+C+D)**	**8,926,000**		**35.40%**		
G	**Project Expected Estimate**	**(E+F)**	**34,140,000**				
	Nett Project Property Cost Expected Estimate		**931,500**				
	Project Development Phase Expected Estimate		**Nil**				
	Pre-Implementation Phase Expected Estimate		**3,022,322**				
	Implementation Phase Expected Estimate		**30,185,718**				
H	**Funding Risk** (Assessed / Analysed)		**(A+B+C+D)**	**7,590,100**		**30.10%**	**65.50%**
I	**95th Percentile Project Estimate**		**(G+H)**	**41,731,000**			
	Project Property Cost 95th Percentile Estimate			**1,138,500**			
	Project Development Phase 95th Percentile Estimate			**Nil**			
	Pre-Implementation Phase 95th Percentile Estimate			**3,694,022**			
	Implementation Phase 95th Percentile Estimate			**36,897,118**			

Base Date of Estimate	**1 Oct 2025**	**Cost Index**	**1345**
Estimate prepared by:	**Stantec**	**Signed**	
Estimate internal peer review by:	**Stantec**	**Signed**	
Estimate external peer review by:		**Signed**	
Estimate accepted by Client Project Manager:	**QLDC**	**Signed**	

Note: (1) These estimates are exclusive of escalation and GST.
(2) Project Development Phase Estimates are set to Nil as these are now sunk costs.
(3) Include Project Phase Funding Assessment Forms 2 and 4 with the DBE.
(4) Margin for Implementation Phase IPAA & PAA costs is included within the Physical Works item.

Project Estimate - Form C

Project Name: Arthurs Point Bridge SSBC
Do Minimum Option Roading Portion

DBE

Detailed Business Case Estimate

Item	Description	Base Estimate	Contingency	Funding Risk	Contingency	Funding Risk Contingency	Total Contingency
	Property Costs						
	Property Purchase and Compensation Costs	690,000					
	Property Owner Accommodation Works	0					
	Property Consultancy Fees	0					
A	**Total Project Property Cost**	**690,000**	**241,500**	**207,000**	**35.00%**	**30.00%**	**65.00%**
	Project Development Phase						
	- Consultancy Fees	Nil	Nil	Nil	Nil	Nil	Nil
	- Client-Managed Costs	Nil	Nil	Nil	Nil	Nil	Nil
B	**Total Project Development**	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**
	Pre-Implementation Phase						
	- Consultancy Fees	241,565	84,500	72,500	34.98%	30.01%	64.99%
	- Client-Managed Costs	124,634	43,600	37,400	34.98%	30.01%	64.99%
C	**Total Pre-Implementation**	**366,199**	**128,100**	**109,900**	**34.98%**	**30.01%**	**64.99%**
	Implementation Phase						
	Implementation Fees						
	- Consultancy Fees	360,597	126,200	108,200	35.00%	30.01%	65.00%
	- Client-Managed Costs	349,978	122,500	105,000	35.00%	30.00%	65.00%
	Sub Total Base Implementation Fees	**710,575**	**248,700**	**213,200**	**35.00%**	**30.00%**	**65.00%**
	Physical Works						
D1	Construction Preliminary and General	1,117,728	391,200	335,300	35.00%	30.00%	65.00%
D2	Environmental Compliance	101,895	35,700	30,600	35.04%	30.03%	65.07%
D3	Site Clearance	48,836	17,100	14,700	35.02%	30.10%	65.12%
D4	Traffic Management and Temporary Works	300,000	105,000	90,000	35.00%	30.00%	65.00%
D5	Site-Wide Temporary Works and Plant	0	0	0	0.00%	0.00%	0.00%
D6	Earthworks	183,033	128,100	71,400	69.99%	39.01%	109.00%
D7	Ground Improvements	0	0	0	0.00%	0.00%	0.00%
D8	Drainage	39,351	13,800	11,800	35.07%	29.99%	65.06%
D9	Pavement and Surfacing	311,277	108,900	93,400	34.98%	30.01%	64.99%
D10	Bridges and Viaduct Structures	0	0	0	0.00%	0.00%	0.00%
D11	Structural Walls and Protection Works	416,377	145,700	124,900	34.99%	30.00%	64.99%
D12	Utility Services	550,895	192,800	165,300	35.00%	30.01%	65.00%
D13	Traffic Services	118,490	41,500	35,500	35.02%	29.96%	64.98%
D14	Intelligent Transport Systems (ITS)	250,000	87,500	75,000	35.00%	30.00%	65.00%
D15	Hard and Soft Landscaping	0	0	0	0.00%	0.00%	0.00%
D16	Tunnels, Subway Structures and Rockfall Shelters	0	0	0	0.00%	0.00%	0.00%
D17	Buildings	0	0	0	0.00%	0.00%	0.00%
D18	Sundry Items	63,063	22,100	18,900	35.04%	29.97%	65.01%
	Sub Total Base Physical Works	**3,500,944**	**1,289,400**	**1,066,800**	**36.83%**	**30.47%**	**67.30%**
D	**Total for Implementation Phase**	**4,211,520**	**1,538,100**	**1,280,000**	**36.52%**	**30.39%**	**66.91%**
E	**Project Base Estimate** (A+B+C+D)	**5,267,719**					
F	**Contingency** (Assessed / Analysed)	**(A+B+C+D)**	**1,907,700**		**36.21%**		
G	**Project Expected Estimate**	**(E+F)**	**7,176,000**				
	Nett Project Property Cost Expected Estimate		**931,500**				
	Project Development Phase Expected Estimate		**Nil**				
	Pre-Implementation Phase Expected Estimate		**494,299**				
	Implementation Phase Expected Estimate		**5,749,620**				
H	**Funding Risk** (Assessed / Analysed)		**(A+B+C+D)**	**1,596,900**		**30.31%**	**66.53%**
I	**95th Percentile Project Estimate**		**(G+H)**	**8,773,000**			
	Project Property Cost 95th Percentile Estimate			**1,138,500**			
	Project Development Phase 95th Percentile Estimate			**Nil**			
	Pre-Implementation Phase 95th Percentile Estimate			**604,199**			
	Implementation Phase 95th Percentile Estimate			**7,029,620**			

Base Date of Estimate	**1 Oct 2025**	**Cost Index**	**1345**
Estimate prepared by:	**Stantec**	**Signed**	
Estimate internal peer review by:	**Stantec**	**Signed**	
Estimate external peer review by:		**Signed**	
Estimate accepted by Client Project Manager:	**QLDC**	**Signed**	

Note: (1) These estimates are exclusive of escalation and GST.
(2) Project Development Phase Estimates are set to Nil as these are now sunk costs.
(3) Include Project Phase Funding Assessment Forms 2 and 4 with the DBE.
(4) Margin for Implementation Phase IPAA & PAA costs is included within the Physical Works item.

Project Estimate - Form C

Project Name: Arthurs Point Bridge SSBC
Preferred Option Bridge Portion

DBE

Detailed Business Case Estimate

Item	Description	Base Estimate	Contingency	Funding Risk	Contingency	Funding Risk Contingency	Total Contingency
	Property Costs						
	Property Purchase and Compensation Costs	1,261,253					
	Property Owner Accommodation Works	0					
	Property Consultancy Fees	0					
A	**Total Project Property Cost**	**1,261,253**	**441,400**	**378,400**	**35.00%**	**30.00%**	**65.00%**
	Project Development Phase						
	- Consultancy Fees	Nil	Nil	Nil	Nil	Nil	Nil
	- Client-Managed Costs	Nil	Nil	Nil	Nil	Nil	Nil
B	**Total Project Development**	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**
	Pre-Implementation Phase						
	- Consultancy Fees	2,153,146	753,600	645,900	35.00%	30.00%	65.00%
	- Client-Managed Costs	960,894	336,300	288,200	35.00%	29.99%	64.99%
C	**Total Pre-Implementation**	**3,114,040**	**1,089,900**	**934,100**	**35.00%**	**30.00%**	**65.00%**
	Implementation Phase						
	Implementation Fees						
	- Consultancy Fees	2,775,667	971,500	832,700	35.00%	30.00%	65.00%
	- Client-Managed Costs	960,894	336,300	288,200	35.00%	29.99%	64.99%
	Sub Total Base Implementation Fees	**3,736,562**	**1,307,800**	**1,120,900**	**35.00%**	**30.00%**	**65.00%**
	Physical Works						
D1	Construction Preliminary and General	8,617,399	3,016,100	2,585,200	35.00%	30.00%	65.00%
D2	Environmental Compliance	201,800	70,600	60,500	34.99%	29.98%	64.97%
D3	Site Clearance	211,890	74,200	63,600	35.02%	30.02%	65.03%
D4	Traffic Management and Temporary Works	2,392,647	837,400	717,800	35.00%	30.00%	65.00%
D5	Site-Wide Temporary Works and Plant	2,597,374	909,100	779,200	35.00%	30.00%	65.00%
D6	Earthworks	498,346	348,800	194,400	69.99%	39.01%	109.00%
D7	Ground Improvements	0	0	0	0.00%	0.00%	0.00%
D8	Drainage	0	0	0	0.00%	0.00%	0.00%
D9	Pavement and Surfacing	0	0	0	0.00%	0.00%	0.00%
D10	Bridges and Viaduct Structures	11,778,238	4,122,400	3,533,500	35.00%	30.00%	65.00%
D11	Structural Walls and Protection Works	0	0	0	0.00%	0.00%	0.00%
D12	Utility Services	0	0	0	0.00%	0.00%	0.00%
D13	Traffic Services	0	0	0	0.00%	0.00%	0.00%
D14	Intelligent Transport Systems (ITS)	0	0	0	0.00%	0.00%	0.00%
D15	Hard and Soft Landscaping	0	0	0	0.00%	0.00%	0.00%
D16	Tunnels, Subway Structures and Rockfall Shelters	0	0	0	0.00%	0.00%	0.00%
D17	Buildings	0	0	0	0.00%	0.00%	0.00%
D18	Sundry Items	693,689	242,800	208,100	35.00%	30.00%	65.00%
	Sub Total Base Physical Works	**26,991,383**	**9,621,400**	**8,142,300**	**35.65%**	**30.17%**	**65.81%**
D	**Total for Implementation Phase**	**30,727,945**	**10,929,200**	**9,263,200**	**35.57%**	**30.15%**	**65.71%**
E	**Project Base Estimate** (A+B+C+D)	**35,103,238**					
F	**Contingency** (Assessed / Analysed)	**(A+B+C+D)**	**12,460,500**		**35.50%**		
G	**Project Expected Estimate**	**(E+F)**	**47,564,000**				
	Nett Project Property Cost Expected Estimate		**1,702,653**				
	Project Development Phase Expected Estimate		**Nil**				
	Pre-Implementation Phase Expected Estimate		**4,203,940**				
	Implementation Phase Expected Estimate		**41,657,145**				
H	**Funding Risk** (Assessed / Analysed)		**(A+B+C+D)**	**10,575,700**		**30.13%**	**65.62%**
I	**95th Percentile Project Estimate**		**(G+H)**	**58,140,000**			
	Project Property Cost 95th Percentile Estimate			**2,081,053**			
	Project Development Phase 95th Percentile Estimate			**Nil**			
	Pre-Implementation Phase 95th Percentile Estimate			**5,138,040**			
	Implementation Phase 95th Percentile Estimate			**50,920,345**			

Base Date of Estimate	**1 Oct 2025**	**Cost Index**	**1345**
Estimate prepared by:	**Stantec**	**Signed**	
Estimate internal peer review by:	**Stantec**	**Signed**	
Estimate external peer review by:		**Signed**	
Estimate accepted by Client Project Manager:	**QLDC**	**Signed**	

Note: (1) These estimates are exclusive of escalation and GST.
(2) Project Development Phase Estimates are set to Nil as these are now sunk costs.
(3) Include Project Phase Funding Assessment Forms 2 and 4 with the DBE.
(4) Margin for Implementation Phase IPAA & PAA costs is included within the Physical Works item.

Project Estimate - Form C

Project Name: Arthurs Point Bridge SSBC
Preferred Option Roading Portion

DBE

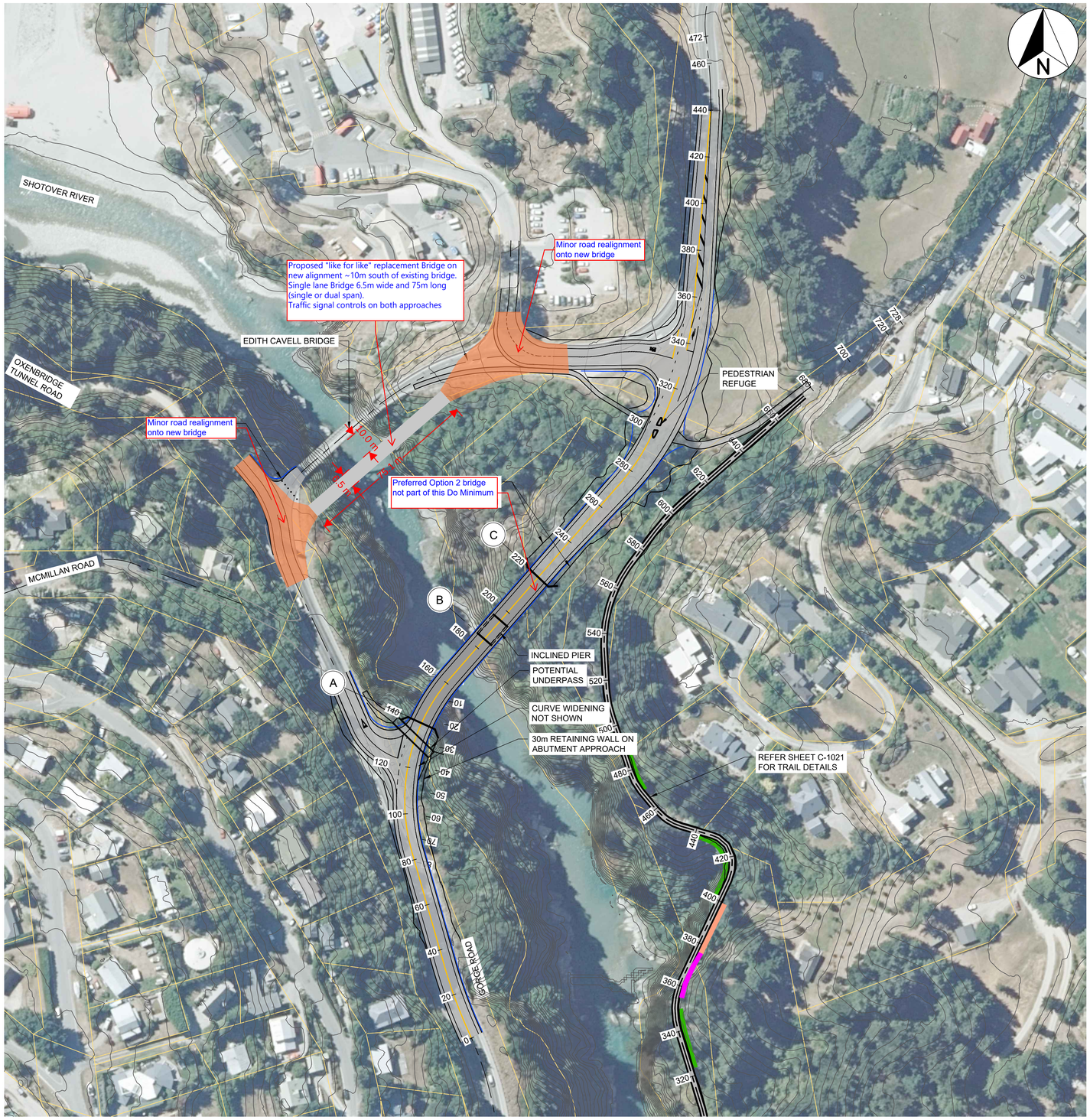
Detailed Business Case Estimate

Item	Description	Base Estimate	Contingency	Funding Risk	Contingency	Funding Risk Contingency	Total Contingency
	Property Costs						
	Property Purchase and Compensation Costs	1,261,253					
	Property Owner Accommodation Works	0					
	Property Consultancy Fees	0					
A	**Total Project Property Cost**	**1,261,253**	**441,400**	**378,400**	**35.00%**	**30.00%**	**65.00%**
	Project Development Phase						
	- Consultancy Fees	Nil	Nil	Nil	Nil	Nil	Nil
	- Client-Managed Costs	Nil	Nil	Nil	Nil	Nil	Nil
B	**Total Project Development**	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**
	Pre-Implementation Phase						
	- Consultancy Fees	673,970	235,900	202,200	35.00%	30.00%	65.00%
	- Client-Managed Costs	349,978	122,500	105,000	35.00%	30.00%	65.00%
C	**Total Pre-Implementation**	**1,023,948**	**358,400**	**307,200**	**35.00%**	**30.00%**	**65.00%**
	Implementation Phase						
	Implementation Fees						
	- Consultancy Fees	1,010,956	353,800	303,300	35.00%	30.00%	65.00%
	- Client-Managed Costs	349,978	122,500	105,000	35.00%	30.00%	65.00%
	Sub Total Base Implementation Fees	**1,360,934**	**476,300**	**408,300**	**35.00%**	**30.00%**	**65.00%**
	Physical Works						
D1	Construction Preliminary and General	3,138,232	1,098,400	941,500	35.00%	30.00%	65.00%
D2	Environmental Compliance	297,484	104,100	89,200	34.99%	29.98%	64.98%
D3	Site Clearance	144,020	50,400	43,200	35.00%	30.00%	64.99%
D4	Traffic Management and Temporary Works	920,261	322,100	276,100	35.00%	30.00%	65.00%
D5	Site-Wide Temporary Works and Plant	0	0	0	0.00%	0.00%	0.00%
D6	Earthworks	1,123,665	786,600	438,200	70.00%	39.00%	109.00%
D7	Ground Improvements	0	0	0	0.00%	0.00%	0.00%
D8	Drainage	135,105	47,300	40,500	35.01%	29.98%	64.99%
D9	Pavement and Surfacing	1,022,426	357,800	306,700	35.00%	30.00%	64.99%
D10	Bridges and Viaduct Structures	0	0	0	0.00%	0.00%	0.00%
D11	Structural Walls and Protection Works	708,320	247,900	212,500	35.00%	30.00%	65.00%
D12	Utility Services	2,021,342	707,500	606,400	35.00%	30.00%	65.00%
D13	Traffic Services	255,641	89,500	76,700	35.01%	30.00%	65.01%
D14	Intelligent Transport Systems (ITS)	0	0	0	0.00%	0.00%	0.00%
D15	Hard and Soft Landscaping	0	0	0	0.00%	0.00%	0.00%
D16	Tunnels, Subway Structures and Rockfall Shelters	0	0	0	0.00%	0.00%	0.00%
D17	Buildings	0	0	0	0.00%	0.00%	0.00%
D18	Sundry Items	63,063	22,100	18,900	35.04%	29.97%	65.01%
	Sub Total Base Physical Works	**9,829,559**	**3,833,700**	**3,049,900**	**39.00%**	**31.03%**	**70.03%**
D	**Total for Implementation Phase**	**11,190,492**	**4,310,000**	**3,458,200**	**38.51%**	**30.90%**	**69.42%**
E	**Project Base Estimate** (A+B+C+D)	**13,475,694**					
F	**Contingency** (Assessed / Analysed)	**(A+B+C+D)**	**5,109,800**		**37.92%**		
G	**Project Expected Estimate**	**(E+F)**	**18,586,000**				
	Nett Project Property Cost Expected Estimate		**1,702,653**				
	Project Development Phase Expected Estimate		**Nil**				
	Pre-Implementation Phase Expected Estimate		**1,382,348**				
	Implementation Phase Expected Estimate		**15,500,492**				
H	**Funding Risk** (Assessed / Analysed)		**(A+B+C+D)**	**4,143,800**		**30.75%**	**68.67%**
I	**95th Percentile Project Estimate**		**(G+H)**	**22,730,000**			
	Project Property Cost 95th Percentile Estimate			**2,081,053**			
	Project Development Phase 95th Percentile Estimate			**Nil**			
	Pre-Implementation Phase 95th Percentile Estimate			**1,689,548**			
	Implementation Phase 95th Percentile Estimate			**18,958,692**			

Base Date of Estimate	**1 Oct 2025**	**Cost Index**	**1345**
Estimate prepared by:	**Stantec**	**Signed**	
Estimate internal peer review by:	**Stantec**	**Signed**	
Estimate external peer review by:		**Signed**	
Estimate accepted by Client Project Manager:	**QLDC**	**Signed**	

Note: (1) These estimates are exclusive of escalation and GST.
(2) Project Development Phase Estimates are set to Nil as these are now sunk costs.
(3) Include Project Phase Funding Assessment Forms 2 and 4 with the DBE.
(4) Margin for Implementation Phase IPAA & PAA costs is included within the Physical Works item.

Appendix B Do Minimum Design Sketch



1:1000 @ A1
1:2000 @ A3
0 10 20 30 40 50 60 70 80 90 100 m

NOTES:

1. EXISTING CENTRELINE, PROPOSED TIE IN LOCATIONS AND PAINT MARKINGS ARE APPROXIMATE BASED ON AERIAL PHOTOGRAPHY.
2. AERIAL PHOTOGRAPHY FROM BETWEEN 2017-2019 SOURCED FROM LINZ.

LEGEND:

- PROPERTY BOUNDARY
- PROPOSED BARRIER
- MINOR RETAINING (0.5-1.5m)
- RETAINING (1.5-5m)
- CANTILEVERED BOARDWALK BOLTED TO SCHIST BLUFF
- TIMBER BOARDWALK

REVISION	AMENDMENT	APPROVED	DATE
A	DRAFT	ND	2020-09-03
b	DRAFT	ND	2020-09-15

QUEENSTOWN LAKES DISTRICT COUNCIL

wsp
Christchurch Office
+64 3 363 5400
PO Box 1482
Christchurch 8140
New Zealand

CIVIL

SCALES: 1:1,000 (A1) | 1:2,000 (A3)
ORIGINAL SIZE: A1

DRAWN	DESIGNED	APPROVED
B MCNEILL	B MCNEILL	N DIVERS

DRAWING VERIFIED	DESIGN VERIFIED	APPROVED DATE
N DIVERS	N DIVERS	2020-09-03

DRAFT

PROJECT
QUEENSTOWN LAKES DISTRICT COUNCIL
ARTHURS POINT ROAD
ARTHURS POINT CROSSING SSBC

TITLE
ROADING ALIGNMENT OVERVIEW

WSP PROJECT NO.	PROJ-ORIG-VOL-LOC-TYPE	SHEET NO.	REVISION
6XQ127.00	6XQ127-WSP-00-ZZ-DR	C-1011	B

Appendix C Wider Economic Benefits

To: Stantec

From: Anthony Byett, Economist and Director, ECPC Limited

Date: 10 February 2026

Title: Economic assessment to Edith Cavell Bridge business case

INTRODUCTION AND SCOPE

1. I have been engaged to provide an economic assessment of the following benefits associated with replacement of the Edith Cavell bridge, on behalf of Stantec:
   A. International tourism benefits attained by avoiding road closures during unplanned repairs to the bridge;
   B. Property development benefits to properties southwest of bridge arising from sooner replacement of the bridge, and likewise for northeast of bridge;
   C. Heritage benefits from the continued existence and new recreational use of the bridge
2. Each benefit is assessed as that component that would be additional to any benefits (ie a WEB) that might arise from traditional appraisal of travel cost savings.

THE CAVELL BRIDGE PROJECT

3. The proposed project is to replace the current 1-way bridge with an adjacent 2-way bridge now, instead of in 20 years.
4. Key features of the project include:
   a. The new bridge will cater for traffic only, including heavier vehicles and with a minute risk of failure, either due to earthquake or wear and tear in the next 100 or so years;
   b. The existing Edith Cavell bridge will be retained for heritage appeal and will still face the current earthquake risk (but with no traffic effects), but will otherwise experience slower wear and tear due to the removal of vehicles.
5. Subject to approval, construction is planned for the years ending June 2026-2031, with the new bridge operational in YE June 2032. Alternatively, the bridge would be replaced later and be operational in YE 2046.

SUMMARY OF ECONOMIC EFFECTS

6. The benefit assessment is determined by the probable state of the Edith Cavell bridge in each future year and in particular whether the Edith Cavell Bridge is sufficiently damaged in each year to require the construction of a temporary 1-lane bridge of similar capacity and which would require 6 months to construct. The key underlying risk assumptions are:
   a. A 250-year earthquake would likely either collapse the bridge or damage it sufficiently to be unusable in any capacity.
   b. Traffic will create major wear and tear events with increasingly probability within the next 10-30 years.
7. The expected benefits of the international tourism, property and heritage benefit streams are estimated to total $8.6m in present value terms using standard NZTA discount rates and appraisal

duration. This total would change to $2.9m should an 8% discount rate be applied (Sensitivity Test 1) or $8.9m if the damaging earthquake event was a 1-in-500 year risk (Sensitivity Test 2) or $12.4m if the bridge life were expected to be 5 years less than expected (Sensitivity Test 3). All benefit estimates should be considered as order-of-magnitude only as several judgements were required to reach these conclusions. The workings behind these estimates follow in the rest of this report.

Table 1. Summary of expected WEBs (PV, $2026)

WEBs	PV $m	Sensitivity 1	Sensitivity 2	Sensitivity 3
Unmet international tourism NZ GDP effect	$6.5	$2.6	$6.7	$8.3
Local property WEBs	$0.0	$0.0	$0.0	$0.0
Heritage benefit	$2.1	$0.4	$2.1	$4.2
TOTAL	$8.6	$2.9	$8.9	$12.4

PROBABLE EVENTS

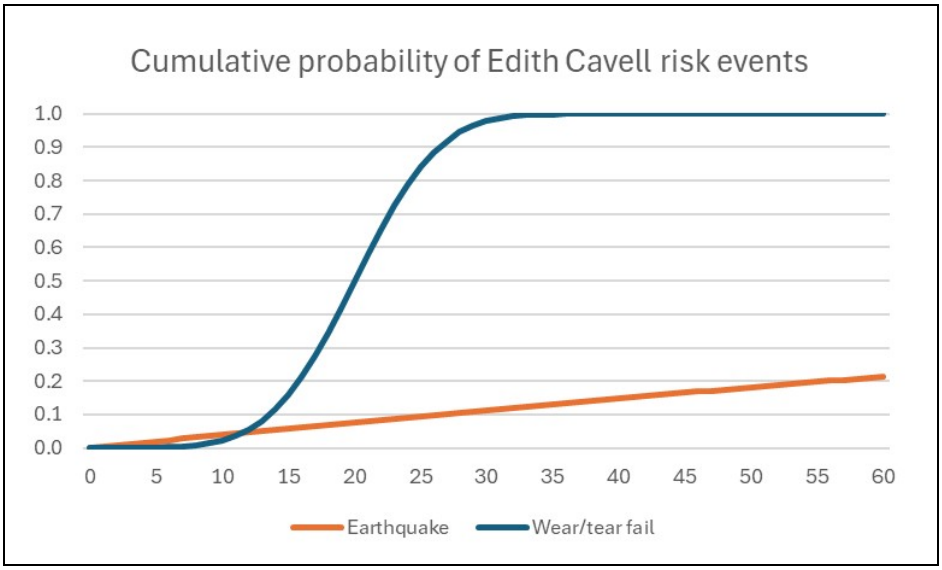
8. The effects summarised above arise from probable bridge closure events ie, they are not certain to occur but will become increasingly likely. The two key risk events that would force bridge closure and replacement are:

   a) the risk of a 1-in 250 year earthquake, which has the same risk of occurring each year (a sensitivity test of a 1-in-500 year earthquake being required to cause bridge closure is applied as a sensitivity test);

   b) the risk of the bridge failing simply due to wear and tear (treated as independent of the earthquake event), a risk that is expected to increase sharply over the next 10-30 years although decrease following any initial failure event (sensitivity tested with a 5-25 year window).

9. The estimated cumulative probabilities of each event by the year are shown in the figure below. Both are shown as cumulative risks of each event by the year. These convert to the probability of an earthquake event of 0.04% in any one year and an annual risk of a wear and tear failure increasing from around 0.01 in year 10 to 0.37 in year 30 (and near certain to have occurred by then).

Figure 1. Cumulative probabilities of (independent) risk events by future year



10. These probabilities give rise to 4 states (A-D) of the bridge that can exist in each future year, and 4 states (Aa-Ae) of any Bailey bridge used as replacement due to a previous risk event. So, for example, the situation of year 15 is likely to be as shown in the table below.
    A. State A. The bridge has previously failed and been replaced by a Bailey bridge (State A given a probability of 0.163 in year 15, largely due to the previous risks of a wear and tear failure), which can have different costs in that year depending on whether an earthquake (EQ) occurs in year 15 (shown in the second part of the table as Aa to Ae). Given the low probabilities of an earthquake occurring while a Bailey bridge exists (States Ab and Ac), this risk can largely be treated as immaterial – however it is not zero.
        a. State Aa. A second (or third) earthquake does not occur in the year, hence the standard Bailey bridge opex costs apply
        b. State Ab. Another earthquake could occur, in which case the costs associated with another replacement are incurred
        c. State Ac. An earthquake could occur following a previous wear and tear failure event – costs as per (b)
        d. State Ad. Included for completeness. A second wear and tear event is not possible, given our assumption that the first event prompted a temporary bridge replacement
        e. State Ae. A first earthquake does not follow a previous wear and tear failure event, hence costs as per (a)
    B. OR State B. The first earthquake occurs this year (B has low probability of 0.003 in year 15), thus leading to costs associated with damages (during event), cleanup (including any wastewater spill), replacement bridge construction (assumed to be a Bailey bridge) and travel disruption (higher travel costs and foregone international tourism GDP) are incurred.
    C. OR State C. The wear and tear failure event occurs this year (C has 0.041 in year 15, relatively low because the risk of failure has only gradually risen by now), thus leading to similar costs as in (B), although damages and cleanup costs may differ.
    D. OR State D. Nothing happens during the year (0.792 in year 15, also low because failure has probably already occurred) and the Edith Cavell bridge operates as usual and is subject to the standard opex.

Table 2. Probable states of the Edith Cavell Bridge in year 15

State	Description	Probabilities in year=	15	Response	Costs
A	Edith Cavell has already failed		0.163	See below if then struck by EQ in current year	
B	EQ on existing current state this year		0.003	First bailey bridge to be put in place	New bridge (traffic/waters) + damage + cleanup + disruption
C	Exists in current state and is damaged this year		0.041	First bailey bridge to be put in place	New bridge (traffic/waters) + damage + disruption
D	Exists in current state and is not damaged this year		0.792	Standard maintenance	As per standard
	TOTAL		1.000	Check=1	
	Subset of states where bridge has already failed:		Probability of State if another EQ strike		

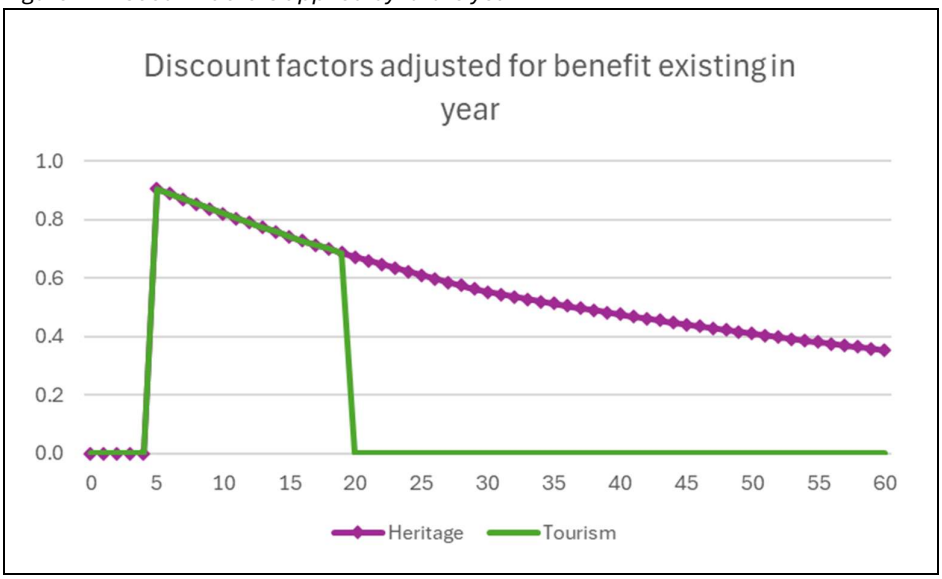
Aa	*Prior EQ only*	0.052	0.052	No action; Bailey bridge in place	Bailey bridge opex
Ab	*Prior EQ AND EQ*	0.001	0.000	Build another Bailey bridge	New bridge (traffic/waters) + damage + cleanup + disruption
Ac	*Prior traffic wear/tear fail AND EQ*	0.001	0.003	Build another Bailey bridge	New bridge (traffic/waters) + damage + cleanup + disruption
Ad	*NB cannot have wear/tear event more than once*	0.000	0.000	No action	None
Ae	*Prior traffic wear/tear fail only*	0.109	0.103	No action; Bailey bridge in place	Bailey bridge opex
	ALREADY FAILED SUB-TOTAL	0.163		Check equals Prob(State A) above	

DISCOUNTING

11. The standard NZTA MBCM discount rates of 2.0% (years 1-30) and 1.5% (years 31-60) have been applied here, along with a sensitivity test using an 8% discount rate.

12. The annual discount factor applied to benefits was also used to put zero weight on events that were unlikely due to the definition of the Do-Min scenario. For the tourism benefit, the Do-Min provision of a new bridge in 2046 (year 20) implies there cannot be an international tourism benefit associated with an Edith Cavell Bridge closure beyond this year. For the heritage benefit, the non-use and use value of the Edith Cavell bridge extends beyond the 60 years analysis horizon (subject to earthquake risk). For both benefits, there was no marginal benefit in the first five years during construction of the Do-Something scenario. There are no Property WEBs so no adjusted discount rate was calculated.

Figure 2. Discount factors applied by future year



A. TOURISM BENEFITS

Context

13. International tourism is very important to Queenstown and the only two traffic routes into the town centre are heavily used SH6A and via the route that includes the Edith Cavell Bridge.

14. Queenstown was recently again named by TripAdvisor as the number one destination in New Zealand[1]. Current statistics show international visitor spending in the Queenstown Lakes was estimated as $1.7b in the year ending March 2024, which was 15.9% of international visitor spending in New Zealand. International spending growth in Queenstown Lakes generally exceeds growth elsewhere in New Zealand.

15. Various research around 2018, based on 2016/17 data, showed the strong links that New Zealand international tourism has with Queenstown Lakes.

    a. 36% of international visitors to New Zealand visited Queenstown and over 80% of international visitors to the South Island visited Queenstown.[2]

    b. Spending by those international visitors including Queenstown in their New Zealand visit was $1.5b in Queenstown Lakes and $3.3b in other regions of New Zealand. Even when spending was predominantly in Queenstown Lakes (>50% of trip spend), tourists spent an extra $157-254m in the rest of the South Island.[3]

    c. Nearly all international visitors to Queenstown Lakes visited the town centre and hence nearly all international visitors needed to travel either across the Edith Cavell Bridge or along SH6A[4].

16. Research shows the importance of international visitors to New Zealand goes beyond their initial spending, with subsequent return visits, migration and/or foreign investment adding at least 20% more value than the initial visitor spending.[5]

17. At present it is believed that travel congestion on SH6A is reducing visitor spending, relative to that otherwise achievable[6]. This suppression of visitor spending is likely to increase with further congestion and soon that congestion on the busiest days is likely to also suppress visitors to the district (and hence all their spending). Effectively, visitor demand will go unmet due to SH6A traffic issues, and the unmet demand becomes tourism GDP foregone, locally and potentially even nationally. Note, importantly, this is not less tourism GDP than at present but rather less tourism GDP than can be reasonably expected.

18. Congestion on SH6A and the extent of unmet international tourism demand will increase should traffic across Edith Cavell Bridge instead have to use SH6A, as would be the case during the building of a temporary bridge to replace a damaged Edith Cavell Bridge occur.

19. A closure of Edith Cavell Bridge would cause higher travel demand on SH6A and hence changes in the generalised cost of travel (GTC) in Whakatipu (Queenstown and the immediately surrounding area). These higher GTCs are estimated within the standard travel cost approach of this business case. However, the traffic models fail (given the limited network) to address what happens when daily traffic exceeds capacity. This report provides an estimate of the international tourism GDP foregone that would occur during the above-capacity days. The GDP foregone would arise from international visitors choosing to not travel along SH6A, either due to not visiting the area or reducing the duration of their

[1] https://www.stuff.co.New Zealand/travel/360544186/number-one-destination-new-zealand-according-tripadvisor
[2] Derived from survey responses where Queenstown was not defined. See Byett, A., Welvaert, M., Stroombergen, A., & Patterson, B. (2018). Understanding current and forecast visitor flows to the South Island (650; Research Report). Waka Kotahi New Zealand Transport Agency.
[3] MartinJenkins (2018) Sustaining tourism growth in Queenstown. Report to Queenstown Lakes District Council.
[4] Stantec (2018) Economic Network Plan for Queenstown. Modelling update to Queenstown Lakes District Council
[5] One Picture. (2024). Rethinking the value of tourism. https://www.tourismticker.com/wp-content/uploads/2023/08/Lifetime-value-of-the-visitor-research-summary.pdf
[6] Anecdotal evidence gathered for NZTA 2018 Dual Queenstown Business Case

visit or curtailing activities during their visit. In many CBAs, this reduced travel demand would be assumed to show as demand elsewhere in NZ and hence represent a displacement of benefits rather than a national loss of benefit. The 2018 Dual Business Case argued that loss of international visitor demand in Queenstown will result in a loss of NZ GDP, rather than a one-to-one displacement to another region. The same logic has been applied here.

20. As an indicator of the unmet demand issue with the Edith Cavell route intact, modelling for the 2018 NZTA dual business cases estimated that the corridor would not be able to meet the unconstrained travel demand on 338 days of the year by 2048. Methods to enhance capacity in the town centre-Frankton corridor include more public transport services planned and a proposed offline cable car network but these interventions are not certain and Edith Cavell closures could occur before extra SH6A capacity is provided and cause short-term demand spikes that exceed even enhanced corridor capacity.

Estimation applied here

21. The effect of closures of the Edith Cavell Bridge, which becomes the benefit of projects that prevent this road closure risk, are estimated here in several steps.
    a. The 2018 Dual Business case projections for SH6A were updated to 2025 daily traffic counts, 2025 annual tourism GDP and 2025 QLDC population projections (residents and average visitors per day). The resulting AADT projections retain assumptions of a mode shift to 40% by 2048 (as planned) and a SH6A capacity peak of 40,400 vehicles per day (considered to be conservative to avoid the risk of double counting with the standard transport CBA).
    b. A shock to SH6A daily traffic of +23% was applied to all days of the year, with the 23% being the lower of the average daily traffic count north and south of Edith Cavell Bridge over two weeks in March 2025 relative to traffic volumes in the same weeks along SH6A (at telemetry site #90) – this extra traffic on SH6A was moderated by the standard 'mode shift' assumption as and the shock effect was taken as the average daily effect times 182.5 days (assuming 6 months bridge closure and that the 6-month window could occur at any time during the year).
    c. The traffic shock was applied in all future years, with the effect on unmet demand (due to demand exceeding capacity) increasing over time because the shock would come atop higher traffic volumes (due to rising travel demand from local residents, NZ visitors and international visitors). The probability of the shock occurring in any one year was used to provide the expected bridge closure effect in each future year.

22. The results of the estimation process showed that a 6-month bridge closure in, say, year 15 would be foregone GDP $107.3m in Queenstown and $17.5m in New Zealand (assuming significant displacement were to occur but with a lower productivity than in Queenstown). The NZ effect was used in this CBA, as per the standard approach. The probability associated with this event is estimated to be 0.041 (due to a bridge wear and tear failure), and hence the expected international visitor disbenefit to NZ of bridge closure is expected to be $0.9m. The equivalent benefit in year 20 and beyond would be zero (when Edith Cavell Bridge is certainty replaced). Summing these expectations over 60 years after applying discount rates gives a present value of this disbenefit (and benefit to a project to remove this risk) of $6.5m for New Zealand.

B. PROPERTY BENEFITS

Context

23. Changes in travel time are known to affect local property prices, with lower travel costs to major attractions (such as a town centre) showing as higher property prices. Or vice versa, property prices tend to be lower as the travel cost increases to reach major attractions. Changes in generalised travel costs due to Edith Cavell Bridge effects are likely to cause changes to the prices of properties

northeast of the bridge that rely on the route to access the Queenstown town centre and to properties southwest of bridge wanting regular access to Frankton or beyond. These property price effects are typically assumed to be measured within the standard transport analysis and hence are not typically also measured explicitly. This reliance on the transport analysis is made in this business case.

24. However, there may be other property changes occur that exceed the changes in GTC. These might be as follows.

    a. Travel changes cause changes in land use (changes in the purpose or intensity of usage), either earlier than otherwise or where land use change was not otherwise likely. A potential channel of effect here is generally termed a coordination failure ie, the respective parties to a property development may be more inclined to proceed if an uncertainty about travel costs were removed. In that case, the additional economic benefit is the increase in property price after the development, net of development costs.

    b. It is possible that a property development occurring due to (a) might be sufficiently large to affect regional property prices, and hence potentially cause even wider GDP effects via affordability channels.

25. The expected property development above and below the Edith Cavell Bridge are shown in the table below of QLDC projections[7]. The local developments projected are generally low numbers, relative to the total projected residential development in Whakatipu.

Table 3. Projected number of residential properties to be developed around Queenstown

Projection new houses 2025-2045		
	Number	*% of new*
Arthurs Point	*702*	*8.3%*
Whakatipu Basin Other	*5*	*0.1%*
Other Whakatipu	*7,789*	*91.7%*
Total Whakatipu	*8,496*	*100.0%*

Estimated property development effects

26. The net property development effect northeast of the bridge is expected to be small, and hence any additional property benefit has been treated as nil. This judgement was made after discussion with QLDC planners.

    a. There are projected to be 702 residences built in Arthurs Point over the next couple of decades. These properties may be delayed due to local traffic issues, or hastened if travel costs reduce, but this is a relatively small number of properties (8.3%), relative to the development projections for Whakatipu. Any timing change to development around Arthurs Point is likely to be met by a building and resource change elsewhere in the district, and hence the net building effect on the wider area will be minimal.

    b. Likewise, the expected property development between Arthurs Point and Arrowtown is low, given (a) it lies outside of the Urban Growth Area, (b) there is a specific Wakatipu Basin Specific Policy that includes "avoid sprawling and sporadic urban development across the rural areas of the Wakatipu Basin"[8] and (c) there has been intense opposition amongst locals to property

[7] The methodology and area maps is available at https://www.qldc.govt.nz/media/4x3b0dnq/qldc-demand-projections-methodology-may-2025.pdf

[8] https://www.qldc.govt.nz/media/vedg5nzw/4b-ihp-recommendation-report-uiv-appendix-1-recommended-provisions-mapping.pdf

intensification in this area. Here again any (relatively small) localised development changes are likely to offset by development changes elsewhere in Whakatipu.

c. However, this expectation could change over the next 5-10 years should a developer wish to test current Council plans and local community tolerances.

C. HERITAGE BENEFITS

Context

27. Heritage benefits are recognised as "11.1 Impact on heritage and cultural values" within the NZTA Land Transport Benefits Framework measures manual. No valuation guidance is provided in the NZTA Monetised benefits and costs manual and the Framework manual only refers to qualitative assessments.

28. Research into heritage values conducted for NZTA[9] reports that the monetisation of heritage benefits of built heritage is robust but warns against monetising cultural values and traditional knowledge. Values commonly associated with built heritage include aesthetics, bequest, existence and tourism values. These are typically separated into use and non-use values. A follow-up study[10] by the authors point to use of the heritage site adding significantly to the heritage value placed on sites.

29. From the NZTA heritage research report, methods of valuation generally aim to measure the public's Willingness To Pay (WTP) for the heritage value and are commonly stated preference methods, such as a contingency valuation and/or choice surveys.

30. An earlier US Getty Conservation Institute study[11] had also referred to revealed preference methods of monetization, including hedonic pricing, travel-cost and maintenance-cost methods.

31. Monetisation of built heritage using either stated preference or revealed preference methods can either be applied directly by undertaking the primary research or by benefit transfer from similar research elsewhere. The NZTA heritage report warns that there are insufficient (primary) benefit studies at present to inform a benefit transfer study for heritage.

32. As further context, a 2020 WSP Heritage Significance Assessment of the bridge commissioned by QLDC concluded that "The Edith Cavell Bridge has exceptional overall heritage significance due mainly to its historical, aesthetic, social, and technological value". By inference, this conclusion puts less emphasis on the bridge for other heritage values such as spiritual, (unpaid) recreation and (paid) tourism, to use categories of benefits applied in the NZTA Heritage research report and among those listed by Heritage New Zealand Pouhere Taonga (HNZPT)[12].

33. Unfortunately, no WTP studies exist for the Edith Cavell Bridge, if using a direct valuation method, and none were found for any bridges or Category 1 sites in New Zealand, if using a benefit transfer method.

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[9] Eppink, F., Awatere, S., & Frame, B. (2016). Understanding the value of transport investment in historic and cultural heritage December 2016 (No. 601; Research Report). Waka Kotahi NZ Transport Agency. https://www.nzta.govt.nz/assets/resources/research/reports/601/601-understanding-the-value-of-transport-investment-in-historic-and-cultural-heritage.pdf

[10] Wright, W. C., & Eppink, F. V. (2016). Drivers of heritage value: A meta-analysis of monetary valuation studies of cultural heritage. Ecological Economics, 130, 277–284.

[11] de la Torre, M. (Ed.). (2002). Assessing the Values of Cultural Heritage: Research Report. The Getty Conservation Institute. https://www.getty.edu/conservation/publications_resources/pdf_publications/pdf/assessing.pdf

[12] As listed in the WSP report

Estimation applied here

34. The approach used here to estimate the WTP of Edith Cavell is a variation of the maintenance-cost method, in that it builds from what New Zealanders are currently paying to maintain our current heritage assets and then apportions this total over all NZHPT sites.

35. The exercise undertaken for this project was to apply (a) and (b) below to estimate a non-use value and then add on (c) as an estimate of use value:

    (a) estimate the total "payments" that New Zealanders are currently making on heritage sites, where payments include all public and private spending and volunteer hours (valued at the minimum wages) on public heritage sites;

    (b) divide the total payments by the number of HNZPT sites, with Category 1 sites (judgementally) given twice the weight of all other sites;

    (c) and add a WTP for recreational use of the bridge.

36. Unfortunately, even this variation of the maintenance-method can only be crudely applied as it is derived from imprecisely measured numbers and is applied as an (weighted) average per Category 1 site.

37. **The estimates applied in this report are as tabled below. The resulting current heritage payments per annum – in time and money – is estimated to be $230,000 per C1 site.**

    (a) NZ spending on public heritage is estimated to be $116m pa currently and volunteer time applied to be valued at $368m, derived from: the NZ Government spending within the Vote Arts, Culture and Heritage, with the Heritage split only imprecisely measured; local Councils grants and spending, estimated here by the QLDC reported[13] $70,000 pa being spent at the same per capita rate by all Councils; the Lottery grants on Environment and Heritage, assumed to be split 50/50; the total annual volunteer time of 231 million hours at the $27.80/hour minimum wage[14], split (judgementally) to be very approximately 6/94 between heritage/other causes.

    (b) The number of C1 and non-C1 HNZPT sites are reported and a judgemental 50% weighting was applied to non-C1 sites to derive an average current annual payments per C1 site of $115,066.

    (c) The estimated WTP by users ($115,066 also) for this site was derived in two ways: (1) a crude estimate was made by assuming that the use benefit equalled to non-use benefit, an assumption that is broadly consistent with international research although individual outcomes vary widely; and (2) a second estimate was built up by estimating how many visitors might visit the bridge and what value would they would place on the visit for heritage benefit, setting this WTP/visit to equate to the use total value of Method 1. Both estimates are crude and imprecise and the logic is circular but the two methods did provide results that appear sensible. More importantly, Method 2 provides the means to test the use WTP estimate to different use assumptions.

Payment	Recent annual total	Weight	Estimated Heritage payments	Comment
ESTIMATE OF NON-USE WTP				
Central Govt Vote Arts, Culture and Heritage	$518,649,000	0.2	$103,729,800	Vote biased to Arts rather than spread evenly over the 3 areas
Local Council grants/spending			$6,928,048	Assuming same national per capita spend as QLDC

[13] https://www.qldc.govt.nz/media/fd1lrg3c/council-staffing-funding-and-incentives-for-historic-heritage-redacted-sent-7-november.pdf
[14] https://www.volunteeringnz.org.nz/data-advocacy/statistics

Lottery Environment and Heritage	$11,940,000	0.5	$5,970,000	Naïve 50/50 grant split over Environment/Heritage
Volunteer time	$6,400,000,000	0.06	$368,950,000	As per Stats NZ with judgemental split
TOTAL pa			$485,577,848	
No. of HNZPT C1 sites	1079	1.0	1079	As reported
No. of other HNZPT sites	6282	0.5	3141	Judgementally lower weighting given to non-C1 sites
TOTAL C1-equivalent sites			4220	
Annual payment/C1 site			$115,066	
ESTIMATE OF USE WTP				
Method 1. Assume similar to non-use value			$115,066	International research shows wide ratio but non-use to use of 50/50 is within reported range
Method 2. Equivalent to #users and WTP/visit				Provided to test implicit use and WTP within Method 1 above
Number of international visitors to Queenstown pa			3,900,000	Total visitors per annum estimate to Queenstown by Byett et at (2018)[15]
Percentage visiting Arthurs Point (A)			20%	Angus & Associate[16] proportion of international visitors
Percentage visiting heritage/cultural sites (H)			13%	Angus & Associate proportion of international visitors
Implied visit share for heritage at Arthurs Point			2.6%	AxH from above
Implied no. of visits pa			101,400	Total visitors x proportion visiting area for heritage reasons
WTP per visit (to equate Method 1 and 2 totals)			$1.13	Compares with $5.2 to walk within Wharerewarewa forest[17]
Total use WTP			$115,066	Assumed as per method 1

38. The logic applied here is that we (imprecisely) know New Zealanders are currently WTP at least $115,000 per annum on Category 1 sites on average and visitors to the site are likely to be WTP another $115,000. Reasons to believe the WTP could be higher for this bridge are listed below although it is not obvious that this would be the case. Note, more fundamental primary research into WTP for the Edith Cavell Bridge was not possible given the limited time and budget for this report.

    a) the Edith Cavell bridge is relatively more important than other Category 1 sites – this seems unlikely given its limited cultural significance but appears to be unresearched.

[15] https://www.nzta.govt.nz/resources/research/reports/650

[16] https://assets.simpleviewinc.com/simpleview/image/upload/v1/clients/queenstownnz/Queenstown_Visitor_Experience_Survey_Summary_YE_June_2025_86b9d1ef-a4a6-43aa-a995-4255619ed20b.pdf

[17] https://www.researchgate.net/profile/James-Turner-48/publication/259220224_Non-timber_values_from_planted_forests_Recreation_in_whakarewarewa_forest/links/54f1385d0cf2b36214ab7103/Non-timber-values-from-planted-forests-Recreation-in-whakarewarewa-forest.pdf

b) New Zealanders are WTP a one-off additional payment than currently being applied on average if the existence of the bridge was seriously under threat – this seems more plausible, especially considering the Getty report warning that the maintenance-cost method "may seriously miscalculate the true economic value of cultural conservation", but the true WTP is yet to be tested.

c) Local residents and visitors are WTP more for (unpaid) recreational use of the bridge, whether that be viewing the bridge or walking on the bridge – this option may be of higher value but would require more than the approximate 100,000 pa visits at $1/visit WTP that is implicit in the valuation used here.

39. The proposed project reduces the risk of the Edith Cavell Bridge being destroyed and makes the bridge available for heritage recreation. The reduced probability of destruction is the same as the increased probability of recreation and varies by year. By year 15, the proposed project changes each probability by 0.15 and hence the expected heritage benefit of the project in year 15 is $34,000 ($230,000 times 0.15)

40. **The discounted present value of the 60-year series of expected heritage benefit estimates is 2026$2.1 million. This PV would reduce to $0.4 million at an 8% real discount rate.**

Appendix D Network Resilience Assessment Tool Results

National Resilience Assessment Tool

Aim	to standardise the way we capture both network damage and resilience risk. All data captured will provide a 'live' geospatial database which can be used to assess, monitor and report on state highway damage and network resilience. It is intended that the ownership of the data sits with the Maintenance & Operations teams, supported by Programme & Standards, and used by M&O, P&S, System Design and System Leadership teams

Network Assessment Tools

Damage Assessment	This survey identifies the data required from the field teams as a result of a environmental hazard and provides a visual guide to classify the severity of the damage from the various types of natural hazards impacting the network
Resilience Risk Assessment	This survey collects information on hazards and the levels of risk they pose to the state highway network. The purpose of this survey is to estimate the resilience of the network.
Geohazard Risk Assessment	This survey collects information on hazards and the levels of risk they pose to the state highway network. The purpose of this survey is to estimate the resilience of the network.
Climate Change Risk Assessment	This survey is used to identify current and future risks to the state highway network. Future risk is estimated based on various climate change projections.

Resilience Assessment Criteria

Resilience Risk Score	The risk score is calculated as follows: Score = (AADT + Scale of Outage + Duration + ONRC + Lifeline Criticality + Detour Length) x Likelihood

Parameters Used

Consequence

Indicator	Description and Rationale	Potential Data Source(s)
Detour Length	Detour length is used as an indicator of redundancy in the system. Segments with longer/less viable detours are assumed to have less adaptive capacity than segments with shorter/viable detours.	Detour Route Tool
Outage/Disruption Duration	Disruption duration is used to indicate the timeframes necessary to restore service to assets following impacts of each of the variables. Length of time for the disruption to clear is an indicator of how well the system can deal with the climate impact.	Response times, NOC EPPP, Event type
Functional Classification	Functional classification characterizes the type of services roadways are intended to provide	ONRC
Criticality- Lifeline Routes, Access to Critical Areas	Roads designated as evacuation routes could have a greater consequence if damaged (and, thus, lower adaptive capacity). Roads that provide the only access to critical areas are more significant to the adaptive capacity of the larger response system	Lifelines Group, Journey Managers
Annual Average Daily Traffic (AADT)	AADT is the volume of vehicle traffic of a road for a year divided by 365 days. Roadways with higher traffic volumes would affect more drivers/traffic and cause a greater disruption if damaged	AADT Network Data

Likelihood:	The word 'likelihood' is used to refer to the chance of something happening, whether defined, measured or determined objectively or subjectively, qualitatively or quantitatively, and described using general terms or mathematically (such as a probability or a frequency over a given period) (ISO, 2018)

Resilience and Network Assessment Overview

TREIS Data	Historic disruption caused by geological and hydrological natural hazards
Geohazard Management System	GIS database of all known/managed rockfall and landslip sites mapped with risk assessment data. Links also provided to reports and assessments held within InfoHub.
Volcanic Disruption State	Corridor assessment of the likely disruption caused by a 1 in 250 year Lahar, 1 in 500 year Ash Fall, Eruption/Lava Flow, 1 in 1000yr to a 1 in 5000yr Eruption Volume
Storm Disruption State	Corridor assessment of the likely disruption and outage state caused by a 1 in 100yr storm event
Earthquake Disruption State	Corridor assessment of the likely disruption and outage state caused by a 1 in 1000yr Earthquake
Tsunami Disruption State	Corridor assessment of the likely disruption and outage state caused by a 1 in 2500yr Tsunami
Coastal Risk	Corridor assessment of the risk due to sea level rise and 1 in 100yr storm surges
Resilience PBC 2020	National Programme Business Case used to inform the 2021-24 NLTP and Arataki. Identifies key risks within the regions prioritised in 2020.
Arataki – Our 30 Year Plan	Provides direction that will guide how we'll work together during the next 30 years to deliver the future land transport system needed to keep Aotearoa New Zealand moving

WAKA KOTAHI NZ TRANSPORT AGENCY

National Resilience Assessment Tool

	Risk	ONRC		AADT		Criticality		Detour Length		Scale of Outage		Outage Duration		Likelihood		Consequence	Risk	
		ONRC	ONRC SCORE	AADT	Score	Criticality	Score	Detour Length	Score	Scale of Outage	Score	Outage Duration	Score	Likelihood	Score	Consequence Score	Risk Score	rank
Current	SH6 (Lower Shotover Road RAB) - SH6A (Gorge Rd)	Regional/ Arterial	8	30,000	13	High	13	Long(>90mins extra time)	13	Full Closure	8	Under 12 hours	2	Almost Certain	21	57	1197	
	Lower Shotover Road (at SH6) - Littles Road - Arthurs Point R	Primary/Secondary Collector	2	7,500	3	Medium	3	Moderate(30-90 mins extra time)	3	Full Closure	8	6 Months above	34	Rare	1	53	53	
Option	SH6 (Lower Shotover Road RAB) - SH6A (Gorge Rd)	Regional/ Arterial	8	30,000	13	Medium	3	Short(<30mins extra time)	1	Full Closure	8	Under 12 hours	2	Almost Certain	21	35	735	
	Lower Shotover Road (at SH6) - Littles Road - Arthurs Point R	Primary/Secondary Collector	2	7,500	3	Medium	3	Moderate(30-90 mins extra time)	3	Full Closure	8	Under 12 hours	2	Rare	1	21	21	

Likelihood
Likelihood
Rare (1 in 100 year ARI (1% AEP))
unlikely (1 in 20 year ARI (5% AEP))
Possible(1 in 10 year ARI (10% AEP))
Likely (1 in 5 year ARI (20% AEP
Almost Certain (1 in 1 year ARI (100% AEP)

Route	Section	Criticality	Detour Length	Scale of Outage	Outage Duration	Likelihood
Current	SH6 (Lower Shotover Road RAB) - SH6A (Gorge Rd)	High: Nominated evacuation route, main route to 2 or more upper band services without appropriate detour (police/fire services, Lakes District hospital)	Long (>90m extra) - Steven to confirm - based on 19m for route, 23m for detour, but due to one lane bridge there will be considerable delays on the detour compared to normal conditions, with TMP/police needed to manage flows. The structure is not HPMV approved so those vehicles will need to wait the full time for the route to reopen (average 6 hours).	Full closure: events have caused full closure 12 times in last 5 years (TREIS)	Assumed duration is 6 hours based on TREIS data.	Almost certain (1 in 1 year return period based on TREIS)
	Lower Shotover Road (at SH6) - Littles Road - Arthurs	Medium: Designated NZTA detour route for regional SH6, access to 3-5 lower band essential services (supermarket, school, fuel, health)	Moderate (30-90m extra) - 34 mins for detour route if bridge not available.	Full closure: earthquake likely to cause full closure due to condition of structure.	Assumed duration is over 6 months as bridge will need to be replaced.	Rare (1 in 250 year assumed probability for earthquake).
Option	SH6 (Lower Shotover Road RAB) - SH6A (Gorge Rd)	Medium: Providing a two lane bridge on the detour means there is an appropriate detour people can take.	Short (<30m) - 19m compared to 23m for detour, with two lanes this will be much closer to the truth.	No change to scale of outage.	No change to outage duration.	No change in likelihood.
	Lower Shotover Road (at SH6) - Littles Road - Arthurs	No change to criticality	No change to detour length.	No change to scale of outage.	Outage duration is assumed to be less than 12 hours, with an emergency principal inspection completed immediately and the structure assumed withstand the earthquake.	No change in likelihood.

		Consequence					Likelihood	
Fibonacci Weighting	AADT	Scale of Outage	Duration of Outage	ONRC	Criticality	Detour Length(nearest detour suitable for HPMV	Likelihood	
0								
1	<1000				Low	Short(<30mins extra time)		
2	1001- 5000	Partial Closure	Under 12 hours	Primary/Secondary Collector			Rare (1 in 100 year ARI (1% AEP))	<20% length H/VH
3	5001-10000		12-48 hours		Medium	Moderate(30-90 mins extra ti	unlikely (1 in 20 year ARI (5% AEP))	20-40% length H/VH
5			48 hrs- 7 days					
8	10001-20000	Full Closure	7 days to 1 Month	Regional/ Arterial			Possible(1 in 10 year ARI (10% AEP))	40-60% H/VH
13	20000- 40000		1 Month to 3 Months		High	Long(>90mins extra time)	Likely (1 in 5 year ARI (20% AEP	60-80% H/VH
21	>40000		3 Months to 6 Months	National (Including High Voulme)		None	Almost Certain (1 in 1 year ARI (100% AEP)	>80% H/VH
34			>6 Months					

flooding

Criticality Definition	
Low	LIFELINE UTILITY 1 - Failure would cause loss of supply to more than 2,000 customers or reduction in services to part of the region□ And/or□ Is the main route to 1-2 lower band essential services□ And/or □ Has an appropriate NZTA designated detour route□ (less than 60min detour equal to or greater ONRC) □
Medium	LIFELINE UTILITY 2 - Failure would cause loss of supply to more than 20,000 customers or reduction in services across the region□ And/or□ Is the main route for 3-5 lower band essential services□ And/or is the NZTA designated detour route for a regional or State Highway□ And/or□ Is the main route to 1 upper band essential service (without appropriate detour) □
High	LIFELINE UTILITY 3 or 4 - Failure would have national significance or cause loss of supply to another nationally significant site that depends on this service OR is a nominated evacuation route□ AND Is the main route to 2 or more upper band essential services (without appropriate detour)□ And/or□ Is the only NZTA designated detour route for a national or high-volume highway □

Duration of Outage
Select the Duration
Under 12 hours
12-48 hours
48 hrs- 7 days
7 days to 1 month
1 month to 3 months
3 Months to 6 Months
6 Months above

Scale of Outage
Select Scale of Outage
Partial Closure
Full Closure

ONRC
Select ONRC
Primary/Secondary Collector
Access
Regional/ Arterial
National (Including High Voulme)

Detour Length(nearest detour suitable for HPMV	Consequence		Risk Score		
Select Detour length	Insignificant	<10		NRAT RISK SCORE	PBC RISK SCORE
Short(<30mins extra time)	Minor	10-18	<100	Low	Minor
Moderate(30-90 mins extra time)	Moderate	19-30	101-180	Medium	Moderate
Long(>90mins extra time)	Severe	31-39	181-400	High	Severe
None	Extreme	>40	>401	Critical	Extreme

Criticality
Select Criticality
Low
Medium
High

Likelihood of Occurance
Rare
Unlikely
Possible
Likely
Almost Certain

Appendix E Appraisal Summary Table

Appraisal Summary Table Template

Date:	3/03/2026	Evaluation Period: (baseline and forecast year) e.g 2020 - 2060	2026 - 2065 (40-year)	Option Name:	Arthurs Point Crossing	This is the preferred option	☑

Problem/opportunity statement:	Investment objectives:	How project gives effect to GPS:	How project gives effect to local community outcomes:
PS1: Bridge and bridge approach layouts limit the capacity to safely accommodate people using active travel modes (50%) **PS2:** Bridge and bridge approach layouts limit the capacity to service future land development and growth (20%) **PS3:** Structural design limits the route and network resilience to seismic events (30%)	**Objective 1:** Provides a safer, more accessible path for all confidence levels of pedestrian and cyclist between existing routes (and planned upgrades) in the short term (40%) **Objective 2:** Ensure travel time reliability is maintained for growing traffic volumes (35%) **Objective 3:** Improves overall network and route resilience to seismic events and closures of SH6A in the long term (15%) **Objective 4:** Enables future land use development and growth by providing additional traffic and utilities capacity (10%)	The activity will address an extreme resilience risk for SH6/6A, which is a Regional Highway. The NRAT resilience risk score is 1197 because of the high traffic volume, route criticality, and the detour via Arthurs Point which is 'not straightforward' due to single lane bridge (identified in National Resilience PBC). This bridge is a pinch point for the detour route leading to significant delays when SH6/6A is closed, and requires traffic management to manage flows. TREIS event data shows unplanned closures on SH6/6A are almost certain to occur at least once a year (12 in five year period). With the Option the NRAT resilience risk score is reduced to 735. The activity provides average travel time savings of 8% for those travelling from Queenstown CBD to the developments north of the bridge, travel time benefits for public transport users, and improved provision for pedestrians and cyclists.	The outcome expected by the community is to have a separate two-way bridge offset sufficiently far from the existing Edith Cavell bridge as to not detract from the vistas of the Historic Category 1 heritage bridge and landscape.

1. Summary of Non-Monetised Impacts (Description)	2. Summary of Financial Impacts (nominal, non-discounted)		3. Summary of Monetised Option Impacts (present value, discounted)	
The activity will allow the Arthurs Point route to provide a real strategic alternative to SH6/6A. The activity is likely to enable land development opportunities in the vicinity of the bridge.	Capital Costs	$41,314,958	Total Monetised Benefits, excluding Wider Economic Benefits (WEBs)	$151,800,000
			Total Monetised Benefits, including Wider Economic Benefits (WEBs)	$160,400,000
	Operating Costs	**Do-Minimum** - Annual $5,000 maintenance - Principal inspections every 4 years at $30,000 until replacement - Replacement in Year 20 w/ $1M on-going repairs to historic structure from 2045 **Preferred Option** - Annual $1,000 maintenance - Principal inspections every 6 years at $10,000 - On-going repairs to historic structure of $1M every 10 years from 2045	Total Economic Costs	$36,300,000
			BCR (excluding WEBs)	4.2
	Total Financial Costs		BCR (including WEBs)	4.4

Transport Outcomes	Non-Monetised Impact: (description in numerical or narrative terms)				Monetised Impact: (description in dollar terms in real terms, non-discounted)	
Name of Benefit	**Name of Measure:**	**Baseline:**	**Do Minimum Impact:**	**Option Impact:**	**Do Minimum Impact:**	**Option Impact:**
Healthy and safe people						
1.1 Impact on social cost and incidents of crashes	1.1.3 Deaths and serious injuries	2021 - 2025 1x Minor 2x Non-Injury	No DSI analysis undertaken as change was safety benefits comprise <1% of total benefits)	As Do-Minimum	Annual Safety Cost (Year 2048) $162,967	Annual Safety Cost (Year 2048) $117,862
Resilience and security						
4.1 Impact on system vunerabilities and redundancies	4.1.1 Availablity of a viable alternative to high-risk and high-impact route	HR, HI Route: SH6 and SH6A (>30,000vpd) **Alternate Route:** Lower Shotover Road	New bridge in Year 20 means the likelihood of an extreme weather event causing bridge closures is decreased	New bridge in Year 2031 means the likelihood of an extreme weather event causing bridge closures is decreased	Annual Resilience (Crash) Cost (Year 2048) $4,228,336	Annual Resilience (Crash) Cost (Year 2048) $3,224,593
4.1 Impact on system vunerabilities and redundancies	4.1.2 Level of service and risk (EQ)	Edith Cavell bridge failure following 1 in 500 earthquake event	Edith Cavell bridge failure following 1 in 250 earthquake event with new bridge built in Year 20	Edith Cavell bridge failure following 1 in 250 earthquake event with new bridge built in Year 5	Annual Resilience (EQ) Cost (Year 2045) $0	Annual Resilience (EQ) Cost (Year 2045) $165,289
4.1 Impact on system vunerabilities and redundancies	4.1.2 Level of service and risk (Crash)	32 crashes per annum (Year 2048) impacting a total of 2599vph	Edith Cavell bridge failure following 1 in 250 earthquake event with new bridge built in Year 20	Edith Cavell bridge failure following 1 in 250 earthquake event with new bridge built in Year 5	Annual Resilience (Crash) Cost (Year 2045) $3,185,830	Annual Resilience (Crash) Cost (Year 2045) $2,385,942
4.1 Impact on system vunerabilities and redundancies	4.1.2 Level of service and risk (Other Events)	4 total closure events on SH6 2 total closure events on SH6A	Edith Cavell bridge failure following 1 in 250 earthquake event with new bridge built in Year 20	Edith Cavell bridge failure following 1 in 250 earthquake event with new bridge built in Year 5	Annual Resilience (Other) Cost (Year 2048) $1,173,087	Annual Resilience (Other) Cost (Year 2048) $586,543
Economic prosperity						
5.1 Impact on system reliability	5.1.3 Travel time delay	Peak Period (Year 2048) delays for current bridge 8-9am = 37.5s 12-1pm = 31.0s 5-6pm = 22.8s Estimated 8% reduction in average travel time between Queenstown CBD and areas to north of Arthurs Point bridge.	Annual Total Vehicle Minutes (Year 2048) 1790465919 minutes	Annual Total Vehicle Minutes (Year 2048) 1786497462 minutes	Annual TT Cost (Year 2048) $432,677,855	Annual TT Cost (Year 2048) $432,667,273
5.1 Impact on system reliability	5.1.1 Punctuality - public transport	Peak Period (Year 2048) delays for current bridge 8-9am = 37.5s 12-1pm = 31.0s 5-6pm = 22.8s Buses experience the same delays as general traffic and will experience the same benefit.	Only TT savings data provided	Average Peak Hour (Year 2048) savings 0.016hrs	Only TT savings data provided	Annual TT Benefit (Year 2048) $389,075
5.1 Impact on system reliability	5.1.2 Travel time reliability - PT	N/A	Only Reliability benefits data assessed	Average peak period boardings (2048) 1227 passengers per day	Only Reliability benefits data assessed	Annual PT Reliability Benefit (Year 2048) $244,886
Environmental sustainability						
8.1 Impact on greenhouse gas emissions	8.1.1 CO2 emissions	Operational carbon	Vehicle Kilometres Travelled (Year 2048) 969,458,977 kms	Vehicle Kilometres Travelled (Year 2048) 1,342,394,719 kms	Annual VKT Cost (Year 2048) $111,578,284	Annual VKT Cost (Year 2048) $111,574,917
8.1 Impact on greenhouse gas emissions	8.1.1 CO2 emissions	Operational carbon	Carbon from construction (Year 20) and vehicle operation	Carbon from construction (Year 5) and vehicle operation	N/A	N/A
Inclusive access						
12.1 Impact on Te Ao Māori	12.1.1 Te Ao Māori	Iwi unable to access or fully utilise some land	May have prolonged disconnect from land, businesses, or other important sites	New structure with improved resilience to extreme weather events. Improves existing access, and opportunity to improver wider communities	N/A	N/A
10.2 Impact on mode choice	10.2.10 Traffic - mode share (number)	136 total cyclists and pedestrians per day	No uptake in cyclists before new bridge gets builts. Following new bridge construction in Year 20 there is 206 predicted total cyclists and pedestrians per day	Following new bridge construction in Year 5 there is 206 predicted total cyclists and pedestrians per day	Annual Active Modes Benefit (Year 2048) $0 before and after Year 20	Annual Active Modes Benefit (Year 2045) $1,678,215 No benefits beyond Year 2046 as DoMin has new bridge built
11.2 Impact on landscape						

Rationale for option selection decision

Residential growth in the district continues to outpace the rest of the country, and visitor numbers have returned to pre-COVID levels. The single lane bridge at Arthurs Point is a high criticality asset on the route between Arrowtown and Queenstown, which is also the official (and only) detour route for SH6 and 6A in an unplanned event leading to closure (crash, fire, slip, stock). The National Resilience PBC notes the detour route is not 'straightforward' given the single lane bridge, with significant delays and traffic management at the bridge required during an event.
The 2025 condition assessment uncovered a significant horizontal crack adjacent to the 1875 abutment shelf and concluded the concrete structure may only remain in acceptable condition for another 10-20 years. This is being investigated to understand weight and loading tolerances, and the need for restrictions, which would have a significant impact on tourism, public transport and freight movements. Heavy vehicles making up 10% of the traffic stream.
The existing bridge is not configured for alternative modes and is unlikely to withstand a major disaster event such as an earthquake. If such an event occurred it would affect utilities (water and wastewater) on the bridge, with water supply disrupted and wastewater discharge to the Shotover River causing environmental damage and health risk. The preferred option was identified from a long list of options through the SSBC 2020. It offers a moderate return on investment with a BCR of 4.2 (ex WEBS) and 4.4 (inc WEBS).

Appendix F Property Strategy Update Memo

Stantec

Memo

To:	Sarah Connolly Dunedin	From:	Ethan Archer Christchurch
Project/File:	310206713	Date:	19 March 2026

Reference: Arthurs Point Crossing – Reconfirmation of Property Strategy

1 Introduction

The Queenstown Lakes District Council (QLDC) are updating the Single Stage Business Case (SSBC) that was completed in 2020 for a new bridge crossing and associated road realignment at Arthurs Point. The purpose of this memorandum is to reconfirm the property strategy that was proposed as part of the SSBC in 2020 by:

a) Confirming the properties that now need to be acquired for the Project based on the now-preferred option (a combined road and active modes bridge approximately 100 m downstream of the Edith Cavell bridge).

b) Confirming their legal descriptions and current ownership.

c) Including an updated valuation for the land based on escalating the values used in the Feasibility Estimate prepared by WTP NZ Infrastructure Limited and dated 5 March 2024.

2 Required Land

Many options were considered during the SSBC, including upgrades to the existing bridge and new road bridges on different alignments. The preferred option identified in the 2020 SSBC was:

- Stage 1: a separate active-modes bridge approximately 400 m downstream from the existing Edith Cavell bridge (with connecting trail tying in around the old Arthurs Point pub car park to the south and Atley Road to the north)
- Stage 2: a new two-lane road bridge approximately 100 m downstream from the existing Edith Cavell bridge. The Edith Cavell bridge would be converted to an active mode only once the road bridge is built.

Since then, a separate active-modes bridge approximately 400 m downstream has been designed and funded by the Queenstown Trails Trust, as part of the Queenstown to Arthurs Point Trail linking with the Queenstown Trails network. As such, it is designed primarily as a recreational trail. Based on this development, the now-preferred option as part of the SSBC is a modified version of Stage 2 – a combined road and active mode bridge.

The land required for the now-preferred option remains the same as what was identified as being required for the ‘Stage 2’ two-lane road bridge. This land is shown on the Land Requirement Plans

prepared by WSP in 2020 as Parcels 1, 2, 3, 4 and 11. The other land identified as being required for the pedestrian and cycle trail route ('Stage 1') is no longer required for the Project.

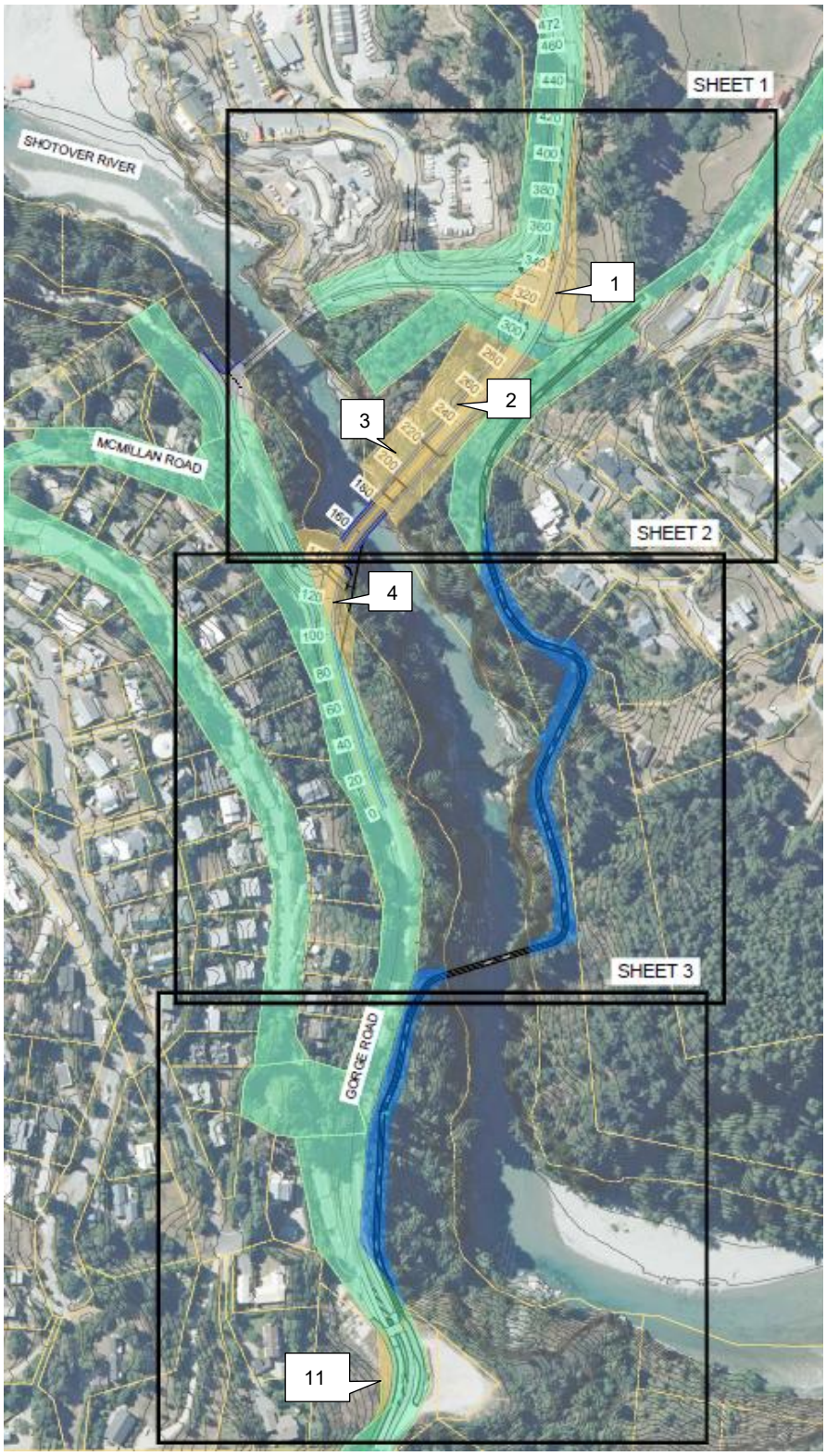

Figure 2-1: Land requirements overview plan. Green denotes existing road and yellow denotes property required for the Project (the preferred combined road and active modes bridge). Blue

shows the pedestrian and cycle route ('Stage 1') that is no longer proposed under this Project (Source: Land Requirement Plans prepared by WSP, dated 2020-09-15).

Table 2-1 sets out the current legal descriptions, ownership and zoning under the Proposed Queenstown Lakes District Plan for these sites.

Updated valuations are also provided based on escalating the values used in the Feasibility Estimate prepared by WTP NZ Infrastructure Limited and dated 5 March 2024. Escalations have been completed in line with changes to the published Ratable Valuation and Stats NZ cost adjustment factors over the intervening two-year period.

These have resulted in an increase in expected property costs of +1% compared to the 2024 valuations and an increase of +71% compared to the 2020 valuations completed by WSP (although note that the 2020 valuations did not include property accommodation works e.g. private fences, retaining walls, landscaping etc whereas the 2024 and current valuations do).

Table 2-1: Required land schedule

Reference (as per 2020 land requirement plans)	**Description**	**Owner**	**Required Area (m^2)**	**District Plan Zoning**	**Estimated Valuation**
1	Part Section 123 Block XIX Shotover SD - OT14C/1126	Colin James White Emma Zandra White	1,560	Rural	$666,368
2	Section 65 Block XIX Shotover SD - OT13C/511	Shotover Jet (Queenstown) Limited	2,700	Rural	$1,058,792
3	Crown Land Block XIX Shotover Survey District	Crown Land Reserved from Sale (Marginal Strip) Sec 58 Land Act 1948	1,300	Rural	$48,000
4	Section 1 Survey Office Plan 24109 – Scenic Reserve. RT 56652 part cancelled. Subject to the Reserves Act 1977	Her Majesty the Queen	1,050	Rural	$43,600
11	Section 1 SO 446319	The Junction Hotel Limited	260	Lower Density Suburban Residential - Visitor Accommodation Subzone	$705,747

The legal descriptions and owners are the same as what was identified in the property strategy prepared by WSP in 2020. Land Information New Zealand has confirmed that under Section 5(2) of the

Constitution Act 1986, references to Her Majesty the Queen are deemed to include a reference to His Majesty the King, so no changes have been undertaken to existing titles and instruments owned by Her Majesty the Queen.

The zoning under the Proposed Queenstown Lakes District Plan also remains the same as the property strategy prepared by WSP in 2020.

3 Conclusion

This memo reconfirms the property strategy that was undertaken in 2020 as part of the SSBC for a new crossing at Arthurs Point. Fewer parcels of land are required for the Project now and the total estimated compensation associated with the project is $2.52M as at January 2026.

The strategy, risks and timing of acquisitions identified in the 'Strategy-Vehicle crossing' section (pages 13-14) of the 2020 property strategy are still considered valid for the Project.

Ngā mihi,

Stantec New Zealand

Ethan Archer
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Reviewed by: Sally Clarkson, Senior Planner and Nigel Lister, Senior Principal Project Engineer

Appendix G Consenting Strategy

Consenting Strategy

Arthurs Point Crossing

Prepared for:
Queenstown Lakes District Council

Date:
10 August 2026

Prepared by:
Stantec New Zealand

Project/File:
310206713

Stantec New Zealand

Revision Record

Revision	Description	Author	Date	Quality Check	Date	Independent Review	Date
0	Draft for client	Ethan Archer	15/01/2026	Sally Clarkson	16/01/2026	Sally Clarkson	16/01/2026
1	Updated draft	Ethan Archer	22/01/2026				
2	Final	Ethan Archer	10/08/2026				

Disclaimer

The conclusions in the Report titled Consenting Strategy are Stantec's professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

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Prepared by:

Signature

Ethan Archer

Printed Name

Reviewed by:

Signature

Sally Clarkson

Printed Name

Approved by:

Signature

Sarah Connolly

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Consenting Strategy Summary

The Arthurs Point Crossing Project ('the Project') is expected to require the following statutory approvals under the Resource Management Act 1991 (RMA) (or its anticipated replacement with the Planning Act and the Natural Environment Act) and related legislation:

- Resource consents from Queenstown Lakes District Council (QLDC) for
    - Earthworks
    - Vegetation removal within 20 m of the Shotover River bed (if required)
    - Structures within the Rural Zone and Outstanding Natural Landscape
    - Structures within a wāhi tupuna area

  Or alternatively, a notice of requirement (NOR) is prepared and submitted to QLDC for a designation over the required land.
- Resource consent from Otago Regional Council (ORC) for the erection or placement of a single span bridge that cannot comply with permitted activity conditions.
- Archaeological authority under the Heritage New Zealand Pouhere Taonga Act 2014 if the archaeological features associated with the earlier 1860s bridge downstream of the Edith Cavell Bridge will be disturbed.
- Approval under the Wildlife Act 1953 if there are protected wildlife that may be disturbed, for example lizards that would need to be relocated.
- Concessions or other authorisations under the Conservation Act 1987 and Reserves Act 1977 in relation to the use of DOC-managed land either side of the Shotover River.

Recommended next steps for consenting of the Project are:

- Prepare the following technical assessments:
    - Ecological assessment (terrestrial flora and fauna, and addressing any Wildlife Act 1953 requirements),
    - Landscape impact assessment. A suitably qualified landscape architect should be engaged for the design and consenting phases of the Project to address Outstanding Natural Landscape values,
    - Geotechnical assessment,
    - Erosion and sediment control plan,
    - Archaeological impact assessment.
- Wāhi tūpuna - Consultation with the relevant iwi/hapu with mana whenua over the land and river should be undertaken as early as possible in the design and consenting process.
- Undertake community and affected landowner consultation in relation to the consenting/NOR process.
- Consult DOC in relation to concessions or other authorisations that are required from for the use of land either side of the river for the new bridge.

1 Introduction

The Queenstown Lakes District Council (QLDC) are updating the Single Stage Business Case (SSBC) that was undertaken in 2020 for a new road crossing at Arthurs Point. QLDC (through their consultant, WSP) undertook a consenting strategy in October 2020 for the SSBC. A planning memo was also undertaken as part of the 2023 Feasibility Report, which focused on consenting risks and opportunities and changes to the planning framework since the SSBC.

The purpose of this report is to provide an updated consenting strategy to identify approvals under the Resource Management Act 1991 (RMA) (or its anticipated replacement with the Planning Act and the Natural Environment Act) to authorise what is now being proposed for the Arthurs Point Crossing Project ('the Project'). Statutory approvals under other related legislation are also identified. Implications of anticipated RM reform are discussed, and a series of next steps are recommended.

2 Project Location and Context

The single lane Edith Cavell Bridge at Arthurs Point is the sole crossing of the Shotover River on the route between Arrowtown and Queenstown. Its location is shown in Figure 2-1.

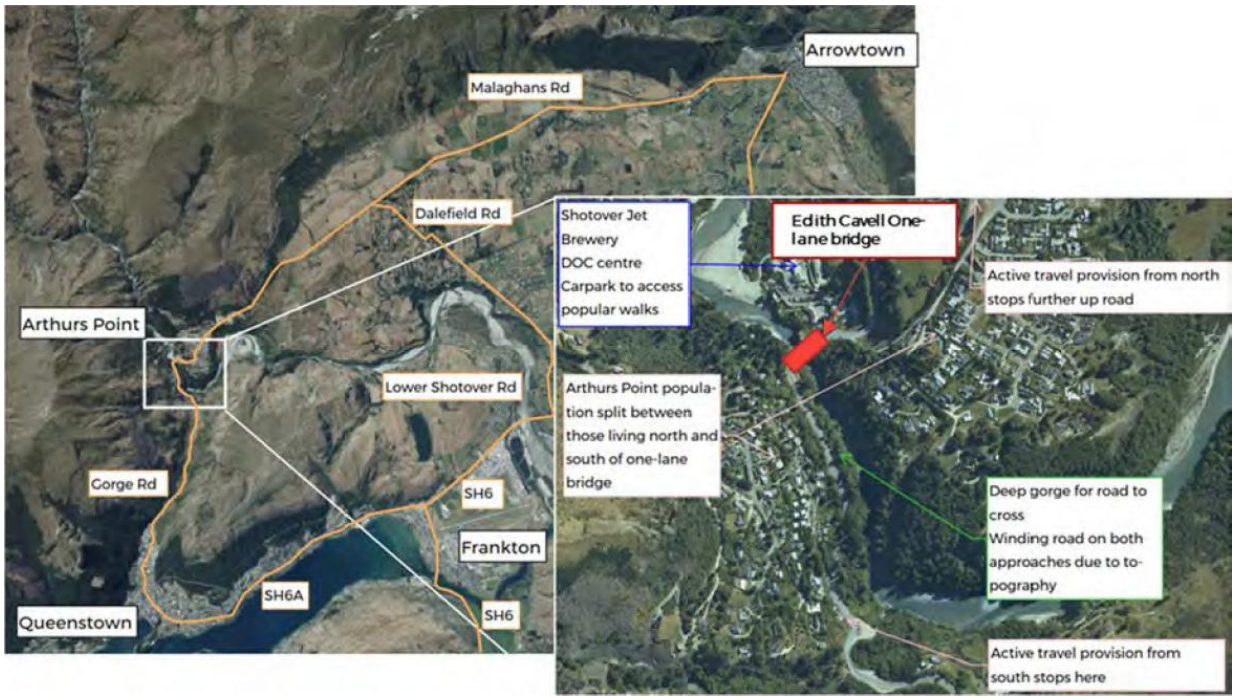

Figure 2-1: Project location and geographic context

Key functions of the bridge are:

- To connect the local community as the Arthurs Point population is split between those living north of the bridge and those living south.
- To provide a connection for people traveling between Arrowtown and Queenstown, including for tourist attractions at Arrowtown, Skippers Canyon, Coronet Peak (which includes winter skiing) and Shotover Jet,
- It is the sole alternative land-based transport route to Queenstown when State Highway 6A has been subject to closure, due to traffic accidents, adverse weather events, routine maintenance, etc.

The Edith Cavell Bridge is a single span reinforced concrete arch bridge approximately 50 m long and 30 m high. Built in 1919, it has significant heritage values (detailed further in section 4.6.1).

There are several constraints with the bridge that prompted QLDC to investigate a new road crossing, some of which include:

- The bridge is narrow with no dedicated facilities provided for pedestrians or cyclists, which deters those users. The lack of a suitable crossing for pedestrians and cyclists at Arthurs Point is one of the few remaining barriers to completing the Wakatipu Active Travel Network (WATN).
- The existing bridge has limited traffic capacity. Due to structural and heritage constraints, it is not possible to increase capacity of the existing bridge, which is leading to increasing delays and decreasing journey reliability. This also has an impact on resilience during emergency events when State Highway 6A is not available.
- In the 2020 SSBC, it was estimated that the bridge had a remaining useful life in the order of 20 years, although this would be extended with appropriate routine maintenance. There are also risks of structural damage from large seismic events.
- The road alignments on either side of the bridge are steep, have poor sight distances and are subject to hazardous winter conditions, posing crash risks.

3 Description of the Preferred Option

Many options were considered during the SSBC, including upgrades to the existing bridge and new road bridges on different alignments. The preferred option identified in the 2020 SSBC was:

- Stage 1: a separate active-modes bridge approximately 400 m downstream from the existing Edith Cavell bridge (with connecting trail tying in around the old Arthurs Point pub car park to the south and Atley Road to the north)
- Stage 2: a new two-lane road bridge approximately 100 m downstream from the existing Edith Cavell bridge. The Edith Cavell bridge will be converted to a walking and cycling bridge once the road bridge is built.

Since then, a separate active-modes bridge approximately 400 m downstream has been designed and funded by the Queenstown Trails Trust, as part of the Queenstown to Arthurs Point Trail linking with the Queenstown Trails network. As such, it is designed primarily as a recreational trail. Based on this development, the now-preferred option is a modified version of Stage 2 – a combined road and active mode bridge. In addition, the Edith Cavell bridge will be repurposed to a walking and cycling bridge, with vehicle access prevented by kerbing, fencing and/or bollards.

The alignment of the now-preferred combined road and active mode bridge is shown in Figure 3-1. Conceptual designs for two options for the bridge design are shown in Figure 3-2 and Figure 3-3. Option 1 is a single span bridge. Option 2 is a two-span bridge, with a pier anchored to the cliff on the Arthurs Point side (true left) of the Shotover River.

Figure 3-1: Preferred alignment for the new bridge. The active modes route shown to the south-east of the new bridge is no longer proposed under this Project.

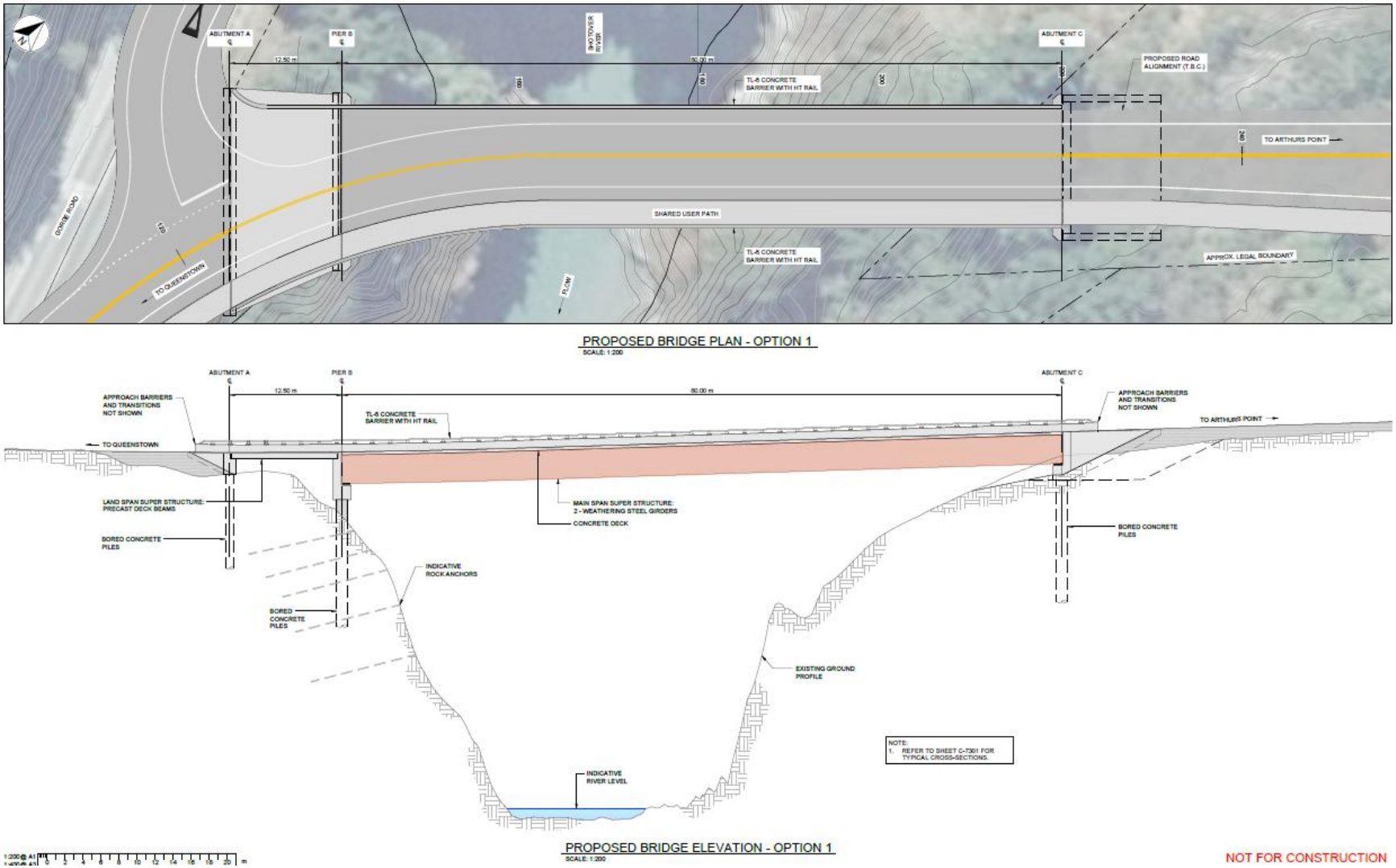

Figure 3-2: Conception design for bridge - Option 1

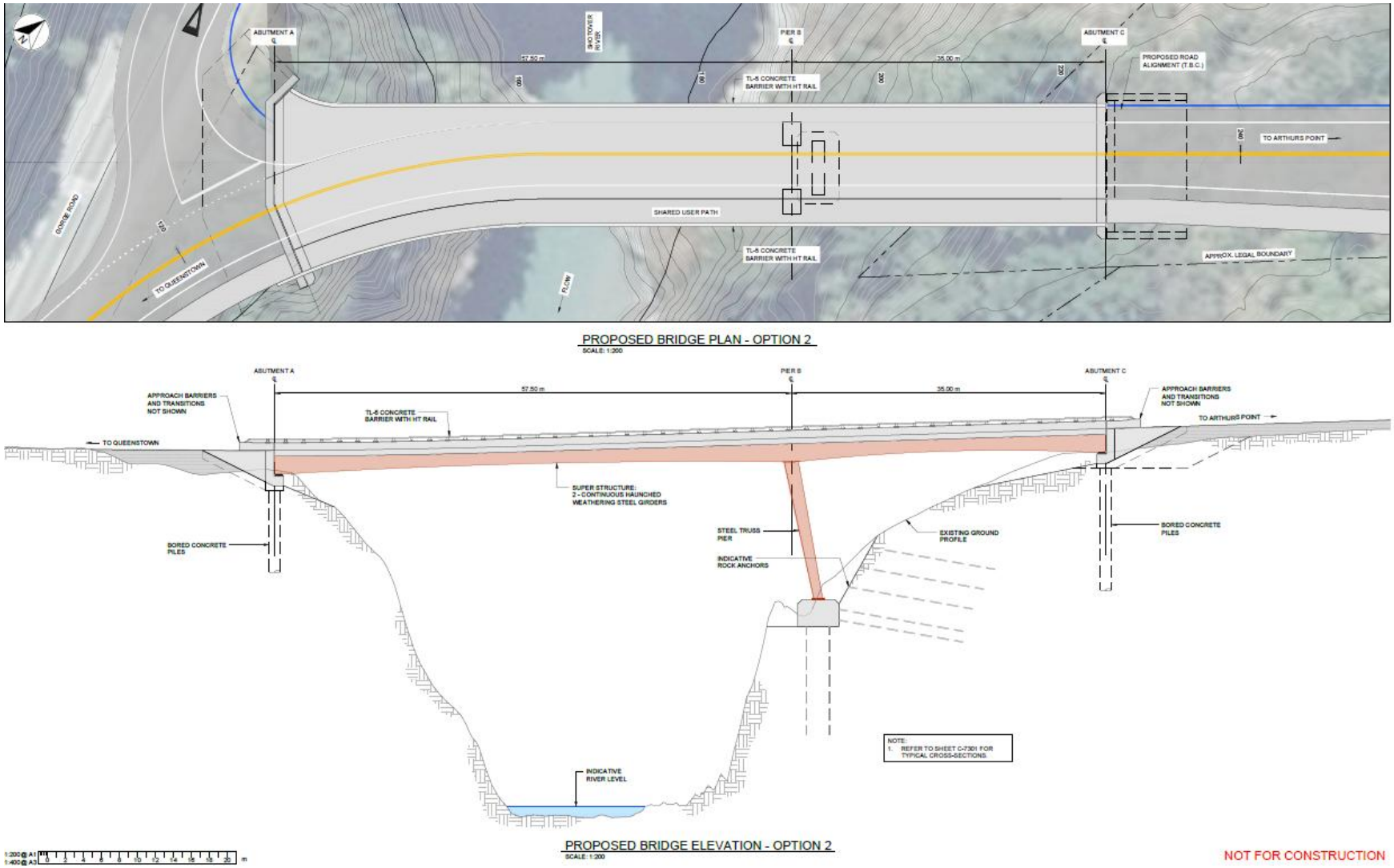

Figure 3-3: Conceptual design for bridge - Option 2

3.1 Associated Works

The following works are likely to be associated with the Project:

- Geotechnical investigations
- Stormwater, wastewater and water supply infrastructure realignments and upgrades
- Constructing temporary laydown areas and access tracks
- Constructing/installing road infrastructure on the road approaches and where they tie into the existing roads, such as lighting, road marking etc.

4 Planning Approval Requirements

QLDC (through their consultant, WSP) undertook a consenting strategy in October 2020. A planning memo was also undertaken as part of the 2023 Feasibility Report, which focused on consenting risks and opportunities and changes to the planning framework since the SSBC. Based on those documents, the following section provides an up-to-date assessment to identify the statutory approvals likely required for the Project.

4.1 Resource Consents Held

QLDC holds resource consents from QLDC and Otago Regional Council (ORC) authorising activities associated with the construction, maintenance and operation of stormwater, wastewater and water supply infrastructure (QLDC consent reference RM200341, ORC consent references RM20.017.01-RM20.017.04). These consents can likely be relied on to authorise stormwater, wastewater and water supply infrastructure works associated with the new bridge (e.g. realigning pipes either side of the new bridge so that pipes can cross the Shotover River attached to the new bridge. This should be confirmed once designs for those works are progressed.

4.2 Proposed Queenstown Lakes District Plan

The zones and overlays of the Proposed Queenstown Lakes District Plan are shown in Figure 4-1. The proposed bridge will pass through land zoned Rural on both sides of the river. Historic heritage feature No. 35 is the Edith Cavell Bridge and No. 29 is the Thomas Arthur Monument, beside Edith Cavell Bridge. Kimiākau (Shotover River) is identified as wāhi tūpuna (reference no. 29). The Project site is also in an area identified as an Outstanding Natural Landscape (ONL): the Kimiākau (Shotover River) Priority Area. The Schedule of Landscape Values (21.22.3) implies that part of this area (likely the river itself) is also an Outstanding Natural Feature (ONF), however, this is not currently mapped as such. Aspects of the ONL provisions are under appeal. However, given the nature of the appeals (relating to the Schedules of Priority Areas and of mapped sites that are not the subject site), it is unlikely that the rules relevant to the Project will change as appeals are resolved.

There are no designated sites affected by the Project.

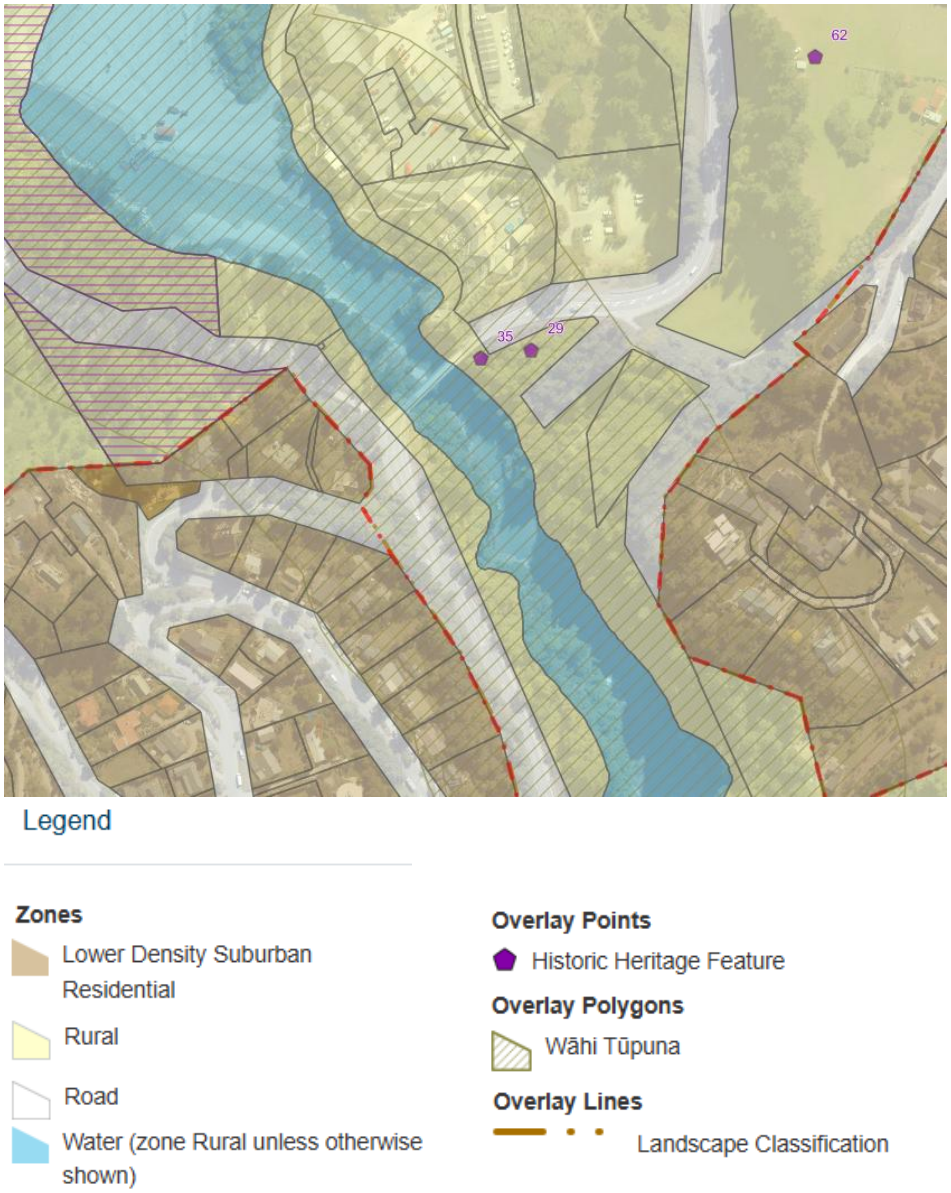

Figure 4-1: Proposed District Plan Zonings and Overlays

The relevant rules under the proposed district plan are as follows:

<u>New bridge</u>

- Rule 25.5.6 (earthworks within the Rural Zone) - the maximum total volume of earthworks permitted within the Rural Zone is 1,000 m^3. Under Rule 25.5.7.1, earthworks undertaken in roads (including unformed roads) do not have a volume limit. It is likely that more than 1,000 m^3 of earthworks will be required outside the road and therefore resource consent as a **restricted discretionary** activity will be required under Rule 25.4.2
- Rule 25.5.11 (earthworks – slopes) – earthworks over a contiguous area of land shall not exceed the following area: 2,500 m^2 where the slope is 10° or greater. This is likely to be exceeded and therefore resource consent as a **restricted discretionary** activity will be required under this rule.
- Rules 25.5.15 and 25.5.16 (earthworks cut and fill heights) - the maximum depth of any cut shall not exceed 2.4 m, and the maximum height of any fill shall not exceed 2 m. Both rules do not apply to earthworks within roads. It is possible that the Project will involve either cut to a depth in excess of 2.4 m or fill to a height exceeding 2 m outside the road and therefore resource consent as a **restricted discretionary** activity will be required under these rules.

- Rule 33.4.7 (vegetation removal) - any clearance of vegetation within 20 m of a riverbed is a **discretionary** activity. This rule will be triggered for vegetation removal for the bridge abutments where this is within 20 m horizontally of the Shotover River bed.
- Rule 21.7.2 (Rural Zone – standards for buildings) - any building, including any structure larger than 5 m^2 requires resource consent as a **restricted discretionary** activity. The land on either side of the bridge is zoned Rural. It is not clear whether the bridge would fall into the definition of a 'building' but if so, this rule, or alternatively Rule 21.4.11 mentioned below, would apply.
- Rule 21.4.11 (Rural Zone – activities) - the construction of any building including the physical activity associated with buildings including roading, access, lighting, landscaping and earthworks, not provided for by any other rule requires resource consent as a **discretionary** activity. As above, this rule may apply to the bridge being a 'building' or 'structure' within the Rural Zone.
- 21.21 Assessment Matters (Landscape) – where resource consent is required under the Rural Zone rules (e.g. under Rule 21.7.2 or 21.4.11), a comprehensive, detailed landscape assessment will be required that addresses these assessment matters.
- Rule 39.5.2 (Wāhi Tūpuna) - structures associated with utility activities within identified wāhi tūpuna areas require resource consent as a **restricted discretionary** activity. This rule will be triggered as the bridge is a utility activity structure and is within a wāhi tūpuna area.

Edith Cavell Bridge

- Rules 26.5.3 and 26.5.4 (Demolition of heritage features) – total demolition of a Category 1 heritage feature is a **prohibited** activity (i.e. resource consent cannot be obtained) and partial demolition would require consent as a **non-complying** activity. As part of the Project, the Edith Cavell Bridge will be retained so neither of these rules will be applicable.
- Rule 26.5.2 (Repairs and maintenance of a heritage feature) – minor repairs and maintenance on all listed heritage features is a **permitted** activity. This is defined as "*repair of building materials and includes replacement of minor components such as individual bricks, cut stone, timber sections, roofing and glazing. The replacement items shall be of the original or closely matching material, colour, texture, form and design, except that there shall be no replacement of any products containing asbestos, but a closely matching product may be used instead*". It is anticipated that there will be repairs to the Edith Cavell Bridge associated with the Project that will meet this definition and therefore be permitted.
- Rule 26.5.7 (Alterations to a heritage feature) – external alterations and additions to a Category 1 heritage feature requires consent as a **discretionary** activity. This is defined as "*undertaking works affecting the external heritage fabric of heritage features, but excludes repairs and maintenance, and partial demolition. External additions includes signs and lighting*". At this stage, it is not anticipated that alterations meeting this definition will be needed to the Edith Cavell Bridge.

4.3 Notice of Requirement/Designation Option

As discussed in the 2020 consenting strategy, there is the option for QLDC to use the designation process instead of seeking land use consents under the Proposed Queenstown Lakes District Plan. The notice of requirement (NOR) process to create a designation is outlined in Section 168A of the RMA. For the same reasons as outlined in the SSBC, NOR option is recommended. This process will still generally require consideration of the same matters and supporting technical assessments to what would be required under the land use consent process, particularly around the effects on landscape values.

4.4 Regional Plan

The relevant rules under the Regional Plan: Water for Otago (RPW) are as follows:

- Rule 13.2.1.7: The erection or placement of any single span bridge including for pipes over the bed of a river is a permitted activity, providing:

(a) The bridge or its erection or placement, does not cause any flooding, nor cause any erosion of the bed or banks of the lake or river, or Regionally Significant Wetland, or property damage; and
(b) No more than 20 metres of bridge occurs on any 250 metre stretch of any lake or river; and
(c) There is no reduction in the flood conveyance of the lake, river or Regionally Significant Wetland; and
(d) The bridge soffit is no lower than the top of the higher river bank; and
(e) The bridge and its abutments are secured against bed erosion, flood water and debris loading; and
(f) Where the bridge is intended for use by stock, measures are taken to avoid animal waste entering the lake, river or Regionally Significant Wetland; and
(g) If the bridge is situated over or on public land, then public access over the public land is maintained.

- Rule 13.2.2.1: The erection or placement of a single span bridge that cannot comply with the conditions of Rule 13.2.1.7 requires resource consent as a **restricted discretionary** activity.

Due to the topography, the proposed bridge will be constructed without bed disturbance. While it might be constructed of two spans, the pier would not be located within the bed. Subject to clarification that should be sought from ORC, the proposed bridge is considered to be a single span bridge for the purpose of assessing the RPW rules. It will not be able to comply with condition (b) of Rule 13.2.1.7 as the proposed bridge (which will have a width of approximately 10-15 m), combined with the existing Edith Cavell bridge (approximate 5 m wide) and the proposed active modes bridge (approximately 4 m wide, and likely to be consented ahead of the Project), will result in more than 20 m of bridge on a 250 m stretch of the Shotover River. Therefore, resource consent will be required under Rule 13.2.2.1 of the RPW.

- Rule 14.2.1.1: The drilling of land, other than for the purpose of creating a bore, and other than on the bed of any lake or river, is a permitted activity providing:
  (a) The drilling does not occur on land over an aquifer identified in the C-series maps; and
  (b) The hole is filled or sealed on completion of the work so that contaminants are prevented from entering the hole at any level.

Geotechnical testing will be able to be undertaken as a permitted activity under Rule 14.2.1.1 as the site is not over an identified aquifer (specifically, it is outside the Wakatipu Basin Aquifer).

4.5 National Environmental Standards

No National Environmental Standards are relevant. There is no known contaminated or potentially contaminated land that would be disturbed by the Project requiring consideration under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011. There are no proposed activities that are controlled under the Resource Management (National Environmental Standards for Freshwater) Regulations 2020.

4.6 Other Statutory Approvals

4.6.1 Heritage New Zealand Pouhere Taonga Act 2014

4.6.1.1 Heritage Listing

A heritage assessment was undertaken by WSP in 2020 for the SSBC. The Edith Cavell Bridge is listed as a *Category 1 Historic Place* (Listing No. 4371) with Heritage New Zealand Pouhere Taonga (HNZPT). There are no requirements under the Heritage New Zealand Pouhere Taonga Act 2014 for heritage-listed sites.

4.6.1.2 Archaeological Sites

A high-level archaeological assessment was undertaken by WSP in 2020 for the SSBC. As the Edith Cavell Bridge abutments were originally constructed in the 1870s the bridge is thus defined as an archaeological site under the Heritage New Zealand Pouhere Taonga Act 2014. Furthermore, the construction of a new bridge may affect features associated with the earlier 1860s bridge which was located downstream of the present Edith Cavell Bridge.

The Project does not involve disturbing or damaging the Edith Cavell Bridge abutments and therefore no archaeological authority will be required in relation to the existing bridge. As recommended in 2020, an Archaeological Assessment of Effects Report prepared by an appropriately qualified archaeologist should be undertaken to assess the physical effects of the proposed bridge and road alignments once the design is developed, and determine whether an archaeological authority needs to be applied for. It is noted that the proposed bridge is slightly further downstream (south) of the earlier 1860s bridge, however, associated ground disturbance for the road alignments may still affect archaeological features associated with the earlier bridge.

4.6.2 Wildlife Act 1953

Under the Wildlife Act 1953, approvals are required from the Department of Conservation (DOC) for catching, killing and releasing certain protected wildlife, such as lizards. There are multiple lizard species known to be present in various habitat types in Queenstown Lakes District. An ecological assessment is recommended to inform whether any approvals or other requirements are required under the Wildlife Act 1953.

4.6.3 Conservation Act 1987 and Reserves Act 1977

Concession(s) would need to be granted by the Department of Conservation (DOC), as the land on either side of the river is owned by the Crown and managed by DOC. It is likely that an easement would need to be created across the affected land, in this case a Scenic Reserve and Marginal Strip.

Regardless of whether resource consents are obtained or the NOR/designation process followed, concessions or other authorisations will need to be obtained from DOC.

5 Potential Consent Pathways

The standard pathway for obtaining resource consents is to apply to the relevant district or regional council, or in the case of designating land is to submit a notice of requirement to the relevant district council, following the processes under the RMA. The Fast-track Approvals Act 2024 (FFTA) became law recently and has offered an alternative pathway for obtaining resource consents and designations (among other statutory approvals). These two pathways are discussed in more detail below.

Other potential pathways include having a Board of Inquiry consider applications (for proposals of national significance, under s145 of the RMA) or for direct referral to the Environment Court (s87D of the RMA). Pursuing these consenting pathways for the Project is not recommended at this time.

5.1.1 Fast-Track Approvals Act 2024

Under the FTAA, resource consent applications (among other statutory applications) made for projects listed in Schedule 2 of the FFTA and for projects that are referred by the Minister for Infrastructure will be assessed and determined by an expert panel.

The Arthurs Point Crossing Project is not a project listed in Schedule 2. If the use of the Fast-track Approvals process is pursued, an application would first need to be made to the Minister for Infrastructure for referral. Criteria for accepting a referral application include that the project would have significant regional or national benefits.

If a project is referred, it is then eligible for resource consent applications, notices of requirement and / or applications for other statutory approvals required e.g. archaeological authorities to be sought under the Fast-track Approvals process. A substantive application under the current rule framework and with the supporting technical assessments would need to be prepared. This would be assessed and determined by an expert panel without need for public or limited notification. The decision can only be appealed on points of law.

The Project is being considered under the Infrastructure Priority Programme, administered by the New Zealand Infrastructure Commission, Te Waihanga. This suggests that it could be demonstrated to have 'significant regional or national benefits' and therefore be eligible for the FTAA consenting pathway. It is noted that to date, some expert panels have scrutinized whether applications made under the FTAA have met this threshold and some applications have been rejected for not. Further advice on the FTAA and advantages and disadvantages compared to the standard council pathway can be provided if requested.

5.1.2 Standard Council Pathway

If the Project is not eligible for the FTAA process, or if it is preferred for other reasons, the required applications/NOR for the Project would be subject to the default Council consenting pathway, with the exception that independent consultants and commissioners may process and decide the consent applications made to QLDC. This is common practice for projects where the Council is also the applicant to help ensure a transparent and impartial process and decision.

6 RM Reform

The New Zealand Government is currently underway with a phased approach to reforming the resource management system. To date, this has involved (among other things) introducing the Fast-track Approvals Act (discussed in section 5.1.1) and making targeted changes to national direction. Two bills, the Planning Bill and the Natural Environment Bill, have also been introduced to replace the RMA. The following outlines potential implications for the Project, based on what is currently known.

6.1 Changes to National Direction - National Policy Statement for Infrastructure 2025

The National Policy Statement for Infrastructure 2025 (NPS-I) is in force from 15 January 2026. The NPS-I requires decision-makers to recognise infrastructure as a matter of national significance and provides policy to support its development, maintenance and upgrades.

For the consent application/NOR for the proposed bridge (whether submitted under the current RMA framework or under the anticipated transition period for the Planning Act and Natural Environment Act discussed in section 6.2), the decision-makers will need to have greater recognition of the benefits of the bridge as infrastructure and its operational or functional need in a particular location (Policies 1 and 2) in particular. The NPS-I will likely assist in balancing the need for infrastructure with the protection of landscape values.

6.2 Planning Bill and Natural Environment Bill

The Planning Bill and Natural Environment Bill are currently in the public submissions process. The Government aims to pass them into law in mid-2026, when there will be a transition period expected to last until 2028-2029 when new plans will come into force. Based on this, it is anticipated that approvals for the Project will likely be sought during the transition period.

It is likely that the Project will require fundamentally the same kinds of consents as under the RMA, outlined in section 4, being land use consents for earthworks and structures in an Outstanding Natural Landscape and in a wāhi tūpuna from QLDC (although with less of an emphasis on their protection) and

a consent for a structure over a river from ORC. If the designation/NOR option is pursued, this process will for the most part be similar to that under the RMA, but is expected to be more streamlined.

At this stage, opportunities for the Project associated with the introduction of the Planning Act and Natural Environment Act are anticipated to include:

- In deciding on a resource consent or NOR, less of an emphasis on the protection of landscape values and greater weight given to the provision of infrastructure.
- Faster, more predictable timeframes for consenting.
- A longer default lapse period for giving effect to designations (10 years compared to the previous 5 years).

Risks for the Project are anticipated to include:

- Complications and uncertainties during the transition period, such as with overlapping rules.
- Strained resources during the transition period. As with the above, this could result in increased and unpredictable timeframes for consenting during the transition period, despite the intention for the opposite.
- Alienating local stakeholders if pre-application consultation with them is not adequate, given reduced rights for involvement during the consenting/NOR process.

7 Recommended Next Steps

The following next steps are recommended:

- Prepare the following technical assessments:
  - Ecological assessment (terrestrial flora and fauna, and addressing any Wildlife Act 1953 requirements)
  - Landscape impact assessment
  - Geotechnical assessment
  - Erosion and sediment control plan
  - Archaeological impact assessment
- The heritage values of the Edith Cavell Bridge were considered in the Preliminary Design Philosophy Statement, undertaken in 2020 for the SSBC. For example, the design of the new bridge was expected to use steel beams with curvature to complement curves on the Edith Cavell Bridge, and the 2-span option would have an angled pier, sympathetic to the Edith Cavell Bridge. As well as integrating well with the Edith Cavell Bridge from a heritage values perspective, the design of the new bridge will need to minimise adverse effects on Outstanding Natural Landscape values.

  The planning memo undertaken as part of the 2023 Feasibility Report highlighted the important considerations that will need to be had for the design of the new bridge in relation to the protection of Outstanding Natural Landscape values and recommended that a suitably qualified landscape architect is engaged for the design and consenting phases of the Project.

  Factoring in the anticipated RM Reform, it is still recommended that a suitably qualified landscape architect is engaged for the design and consenting phases of the Project, as a landscape impact assessment that addresses the Proposed Queenstown Lakes District Plan policy framework for Outstanding Natural Landscapes is still anticipated to be required for a resource consent application or NOR for the Project.
- Wāhi tūpuna - Consultation with the relevant iwi/hapu with mana whenua over the land and river should be undertaken as early as possible in the design and consenting process. The results of this consultation will need to be included with any application for resource consent submitted to Council.
- Undertake community and affected landowner consultation in relation to the consenting/NOR process.
  - Consult DOC in relation to concessions or other authorisations that are required from for the use of land either side of the river for the new bridge

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