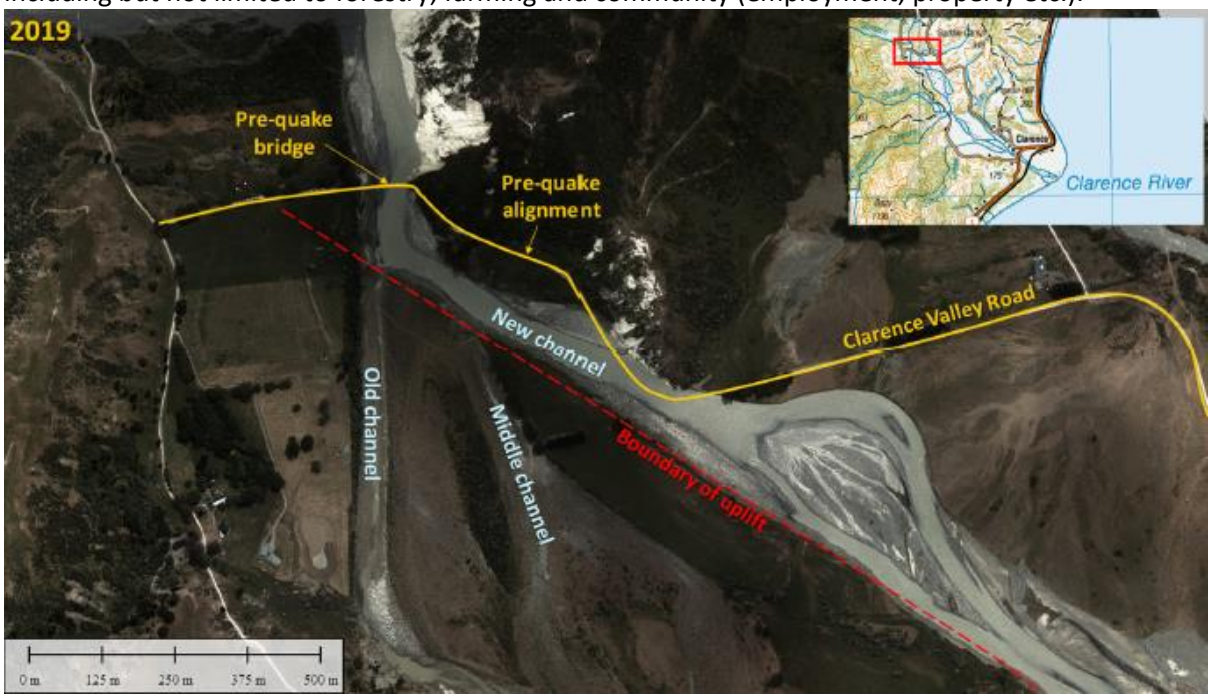
Clarence Valley Access – Summary for 2020/2021 Draft Annual Plan

The Problem:

Permanent all-weather road access to the Glen Alton area from State Highway (SH) 1 via Clarence Valley Road and the 130m long Glen Alton Bridge over the Waiau Toa/Clarence River was lost during the 16 November 2016 M7.8 earthquake. The total loss of the bridge and some 600m of the Clarence Valley Road approaching the bridge on the northern side, cut-off the Glen Alton community of about 15 residents and leaseholders (11 different registered landowners) on the south side of the river. The earthquake also created significant changes to the Waiau Toa/Clarence River that have also impacted on access along the Clarence Valley Road, with flooding resulting in closure of a section of the road and a risk of the road being eroded at Priams Flat.

The loss of all-weather access has impacted multiple economic activities in the Glen Alton community, including but not limited to forestry, farming and community (employment, property etc.).



What has been done following the 2016 Earthquake?

Due to the rapid erosion of the Waiau Toa/Clarence river flats below the Glen Alton bridge site and risk to Clarence Valley Road, emergency river works were constructed in September 2018 to protect the road. A risk of flooding and closure of the Clarence Valley Road remains albeit with a reduced level of risk following the emergency works.

Access to the Glen Alton area since the 2016 earthquake has been made available via Waipapa Road and along an existing farm track that includes a paper road crossing of the Wharekiri Stream, which must be forded. This track is known as the Southern Access Route (SAR) and is being maintained by Council using emergency works funding. Emergency works since the earthquake are heavily subsidised by the New Zealand Transport Agency (NZTA) at a bespoke Financial Assistance Rate (FAR) of 95%. The crossing of the Whareriki Stream ford requires individuals to be confident drivers who can read the behaviour of the stream and have an appropriate vehicle, i.e. a high clearance four-wheel drive (4WD). There have been multiple full closures of the Wharekiri Ford in the last 3 years due to heavy rainfall. Reinstatement work is required to reinstate access, with heavy machinery needed to re-form the ford.

As part of the emergency works, a Strategic Business Case investigating access to the Clarence Valley was completed in March 2018. The Business Case set out relevant information and provided evidence of the scale and impact of the identified problems, being:

- Problem 1**:** Loss of all-weather access is hampering economic, community, customary, and recreational use of the Glen Alton area
- Problem 2: Imminent risk of further river course changes is threatening access to areas serviced by the Clarence Valley Road

Following Council and NZTA endorsement of the Strategic Case, an Indicative Business Case was developed to investigate options to resolve the identified problems and presented to Council in August 2019.
Council identified a current preferred option 2A for further work and investigation. Council also requested NZTA agreement to progress Option 2A and extend the bespoke FAR of 95% to project completion, including interim maintenance of the Southern Access Route.
The NZTA Board considered the Council's request and the Indicative Business Case in November 2019 and approved funding for the Clarence Valley Access project Option 2/2A based on the estimated cost of up to $12.6M for Option 2. The approval included an extension of the bespoke 95% emergency works FAR from its current expiry date of 31 August 2020 through to 31 December 2022 to allow for completion of the Clarence Valley Access project.
All emergency roading works funding for Clarence Valley Access and earthquake response has been funded by NZTA at a bespoke enhanced FAR of 95%. Normal NZTA FAR for Council's annual roading network operations and renewals work programme is 51%.
<u>Options Considered in the Indicative Business Case</u>
The Indicative Business Case details the initial Long List of nine options that were developed and assessed using a Multi Criteria Analysis (MCA) tool consistent with NZTA's guidelines for business case development.
In evaluating the long list, it was determined that maintaining the Clarence Valley Road on the north side of the river is a necessary component for all options. Access via Clarence Valley Road is required to any crossing point of the Waiau Toa/Clarence River, or if there is no crossing of the river, the Clarence Valley Road is also required for access to properties on the north side of the river. Therefore "maintain the Clarence Valley Road" was consolidated as a component of all options for the short listing, except for Option 9 which is a non-infrastructure solution.

As a result of the MCA assessment of the long list of options, the following eight options (including the Do Minimum) were shortlisted for further development and consideration in the Indicative Business Case:

Do Minimum: Maintain the existing SAR road and ford to a minimum appropriate, safe and reliable standard. Additional works to maintain the Clarence Valley Road (including protection works).

Option 1: Access via Clarence Valley Road, and a permanent replacement bridge in the same location as the former Glen Alton Bridge. Additional works to maintain the Clarence Valley Road (including protection works).

Option 2: Access via Clarence Valley Road and a permanent bridge across the new channel (approximately 500m downstream of the former bridge) and then a ford across the normally dry bed of the former river channel. Additional works to maintain the Clarence Valley Road (including protection works).

Option 3: Access via Silver Springs Road and permanent bridge upstream of the former Glen Alton Bridge (including a ford over the George Stream). Additional works to maintain the Clarence Valley Road (including protection works).

Option 5: Upgrade of the SAR, being Waipapa Road, the upgraded track north of the Wharekiri Stream, and Waiautoa Road, with a permanent bridge in an appropriate location across the Wharekiri Stream. Additional works to maintain the Clarence Valley Road (including protection works).

Option 6: Upgrade of the SAR with an engineered ford in an appropriate location across the Wharekiri Stream. Additional works to maintain the Clarence Valley Road (including protection works).

Option 7: Upgrade of the SAR, with a permanent bridge across part of the Wharekiri Stream (with sections either side being wash-out areas in a large event) in an appropriate location across the Wharekiri Stream. Additional works to maintain the Clarence Valley Road (including protection works).

Option 9: Financial assistance for residents who currently require all-weather access (assumed to be limited to residents on the southern side of the Waiau Toa/ Clarence River). Non-infrastructure solution.

To inform the evaluation of the MCA, the views of stakeholders were sought at a meeting of residents, landowners and leaseholders from the Clarence Valley on the 25th July 2018 at the former Woodbank School in Clarence. The short list of options was presented at the meeting and feedback invited. During this meeting, an additional option was proposed by members of the Clarence Valley community. This new option was a proposed variation to Option 1 and comprised:

- Replacement of the Glen Alton bridge at its previous location, and
- Diversion of the Waiau Toa/Clarence Valley River back to its pre-earthquake course.

There was significant support for this idea among the Clarence Valley residents at the workshop. This proposal was taken forward for consideration as part of the options short list as Options 1A/1B.

<u>Short List Assessment Process</u>

Similar to the evaluation of the long list of options, an MCA tool was used to assess the short-list of options. The short list options were tested against both qualitative and quantitative criteria, including costs, which were based on concept drawings prepared for each option and an estimate of quantities required.

Based on the MCA analysis, it was determined that Options 1A and 1B, 3, 5, 6, 7, and 9 be disregarded from further consideration for the reasons summarised below.

Option 1A and 1B (Diversion of the Waiau Toa/Clarence River):
Both options 1A and 1B scored well against several criteria reflecting the same level of safety and reliability as Option 1. They also scored well, having regard to the support from the community, and in supporting social and economic well-being, consistent with Option 1. However, there are significant risks associated with these options from a river engineering standpoint with potential for breaching of the diversion structures and/or the outcome not being achieved of diverting the river back to its former course. The scale of the works is significant and would have the greatest effect on the natural environment. Regarding the costs, the capital cost of Options 1A is the second most or most expensive (subject to where rock is sourced from), with Option 1B also being expensive under the two scenarios (of where rock is sourced from).

Option 3 (Silver Springs Road):
This option is the second most or most expensive in terms of capital costs (subject to where rock is sourced from) and second or third most expensive in terms of operational costs. There is also significant opposition from the landowner whose property the proposed road extension would go through, which would affect the productive area of the farm.

Options 5 – 7 (Use of the SAR and crossing of the Wharekiri Stream):
These 3 options do not provide for safe or reliable access relative to other options and while options 6 and 7 are less expensive than most other options, they have high maintenance costs (on the assumption that rock is sourced locally from the Wharekiri Stream). This is partly attributable to the maintenance of the SAR and rock protection works in the Wharekiri Stream. Reflecting the safety and reliability of access, options 5-7 do not provide for social and economic well-being to the extent of other options and do not provide for the potential economic opportunities that may otherwise exist in the valley, including ongoing forestry. It is noted from the geotechnical and river engineering assessments that the Wharekiri Stream is a highly dynamic environment, with the bed downcutting and further change in the course of the stream. This uncertainty also presents a risk.

Option 9 (Financial assistance, non-infrastructure solution):
This option does not provide certainty of whether access will be reinstated or sustained over the long term. Anticipated to face a greater level of opposition on the assumption that not all landowners whose properties may be directly affected will be supportive. May involve compensation for significant reduction in level of service but does not assure affected Clarence Valley residents/ratepayers of access. Provides the least certainty of any access of all options.
This ***Non-Infrastructure Option*** is based on an individual voluntary compensation arrangement with each of the 11 registered landowners. It would still include capital protection works and maintenance of the Clarence Valley Road (Do Minimum). Landowner compensation estimates are variable depending on the purchase or payment methods chosen and range from $4.1m to $9.6m, as either a total direct cost or net cost to Council. Purchase options may require Council to commit sums ranging between $9.3m to $14.9m for up front land acquisition. Another key feature or risk of this option is that there is no NZTA or Crown funding towards any compensation payments. Council would be required to meet the full cost of all and any payments. This option has:

- public safety risks with any ongoing use of the SAR and the Wharekiri Ford;
- potential Council liability for these risks;
- financial risk regarding the quantum of compensation payments and the ability to negotiate voluntary agreements with all landowners; and
- uncertainty as to whether this would be a lawful option for the Council to adopt given that it would be a voluntary payment

With the discounting of options 1A, 1B, 3, 5-7, and 9 the reduced short-list comprises Options 1 and 2 as described below:

Option 1: Access via Clarence Valley Road, and a permanent replacement bridge in the same location as the former Glen Alton Bridge. Additional works to maintain the Clarence Valley Road (including protection works).

Option 2: Access via Clarence Valley Road and a permanent bridge across the new channel (approximately 500m downstream of the former bridge) and then a ford across the normally dry bed of the former river channel. Additional works to maintain the Clarence Valley Road (including protection works).

A risk identified early in the IBC stage and relevant to Options 1 and 2 as well as other options considered as part of the short-list is the uncertainty over the position of the Waiau Toa/Clarence River, having regard to its dynamic nature (including changing depth and alignment). This has implications for the design of any option including the position of a crossing.

Reflecting this uncertainty, a temporary crossing was suggested as a variation to Option 2 until there is a greater understanding of the river's future movement and alignment. **Option 2A** would involve a bailey bridge across the new channel (approximately 600m downstream of the former bridge) and then a ford across the normally dry bed of the former river channel.

<u>Option 1: Glen Alton Bridge Replacement</u>

Option 1 Indicative Sketch.

Key details:

- Replacement of single lane bridge constructed at location of previous Glen Alton bridge.
- On true left bank: substantial works required to rebuild section of the Clarence Valley Road that was lost as result of the earthquake.
- Approximately 750m of new road cut into Jacob Hill.
- On true right bank: bridge connects to Clarence Valley Road (existing).
- Heavy duty rock protection at the toe of Jacob Hill.
- 38,800 m^3 of rock protection required.
- Property purchase required.

Estimates:	Capital Cost	$19,300,000
	Operational Cost (per annum)	$ 202,000

Pros:

- Provides reinstatement of an all-weather permanent access across the Waiau Toa/Clarence River to Glen Alton, for standard Class 1 traffic loads (includes heavy commercial vehicles such as logging trucks)
- Provides most reliable and safe access to the community, without crossing a ford
- Full-span bridge option which gives greater resilience during significant rainfall and river flood events
- Restores the same level of service pre-earthquake to Glen Alton community and road users

Cons:

- This option does not have NZTA funding approval for Capital cost, or ongoing maintenance costs of the Southern Access Route beyond 31 August 2020.
- This option has significantly higher Capital cost (53%) and higher annual Operating cost (42%) than Option 2 cost estimates
- More technical risks and challenges with river/road engineering
- Managing the slope instability of Jacob Hill (during and post construction) is geotechnically challenging

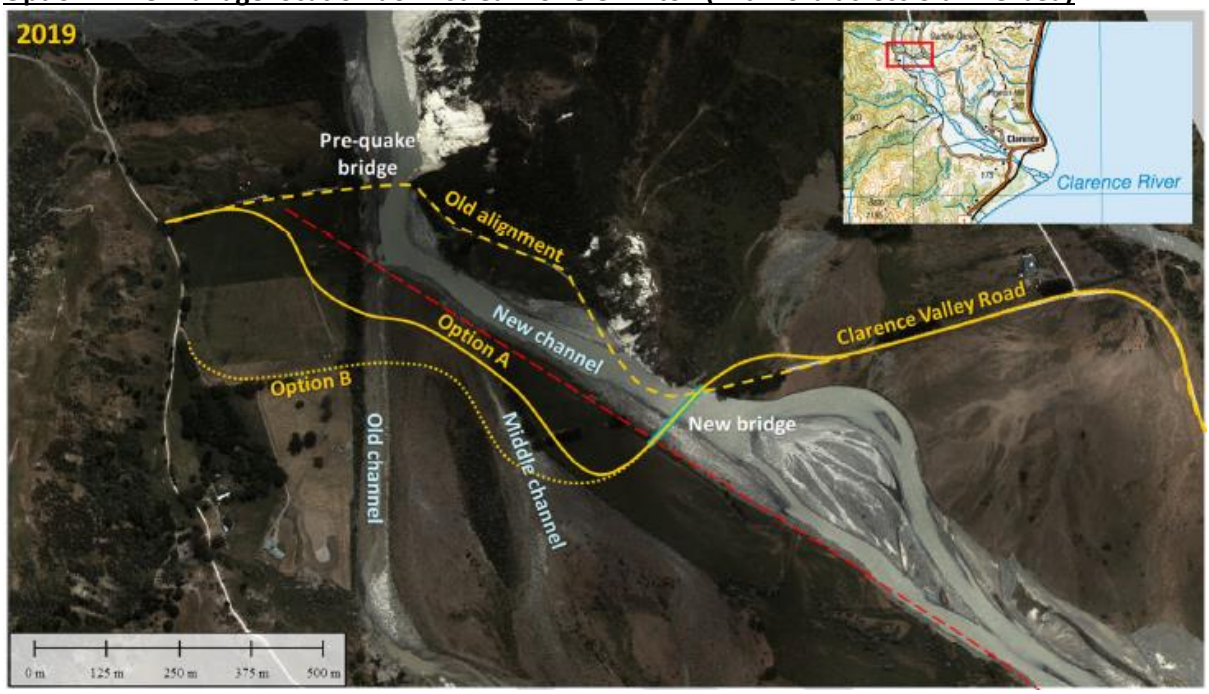
Timeline:

- This option could be delivered over a similar timeframe as Option 2 (2020/21 to 2022/23), although additional new investigations and preliminary design work would need to be undertaken taking up to an additional 6 months.

Implications:

- Council would need to fund 100% of all project costs (total project estimated up to $19.3 million)
- Council would need to fund 100% of all Southern Access Route maintenance costs after 1 July 2020 (estimated at $150,000 per annum)

Option 2: New bridge location downstream of Glen Alton (with ford across old riverbed)



Option 2 Indicative Sketch

Key details:

- New single lane bridge across the new (post-earthquake) channel on the northern side of the valley, with rock protection required.
- New unsealed section of the Clarence Valley Road across island and flood plain of the Waiau Toa/Clarence River, and on the southern side of the valley to meet the existing road network.
- New 60m long engineered ford across over the former main channel (currently an overflow channel).
- Extensive new rock protection required.
- Property purchase required.

Estimates:	Capital Cost	$12,200,000
	Operational Cost (per annum)	$ 142,000

Pros:

- This option has NZTA funding approval which includes an extension of the bespoke 95% emergency works FAR from its current expiry date of 31 August 2020 through to 31 December 2022 to allow completion of the Clarence Valley Access project
- The temporary four-wheel drive Southern Access Route will be maintained by Council as part of the project cost until the project is completed
- This option has the lowest Capital and annual Operating cost estimates
- Provides reinstatement of a permanent access across the Waiau Toa/Clarence River to Glen Alton, for standard Class 1 traffic loads (includes heavy commercial vehicles such as logging trucks)
- Provides the most financially sustainable solution
- More straightforward to implement from a river engineering perspective
- Route not affected by geotechnical instability of Jacob Hill

Cons:

- Requires new ford access across the old main channel
- Less resilient in a significant rainfall and river flood events
- Offers a level of service slightly lower than pre-earthquake, involving a ford crossing which is less safe and reliable than a full span bridge
- New ford crossing that may experience intermittent outages with no alternative route available

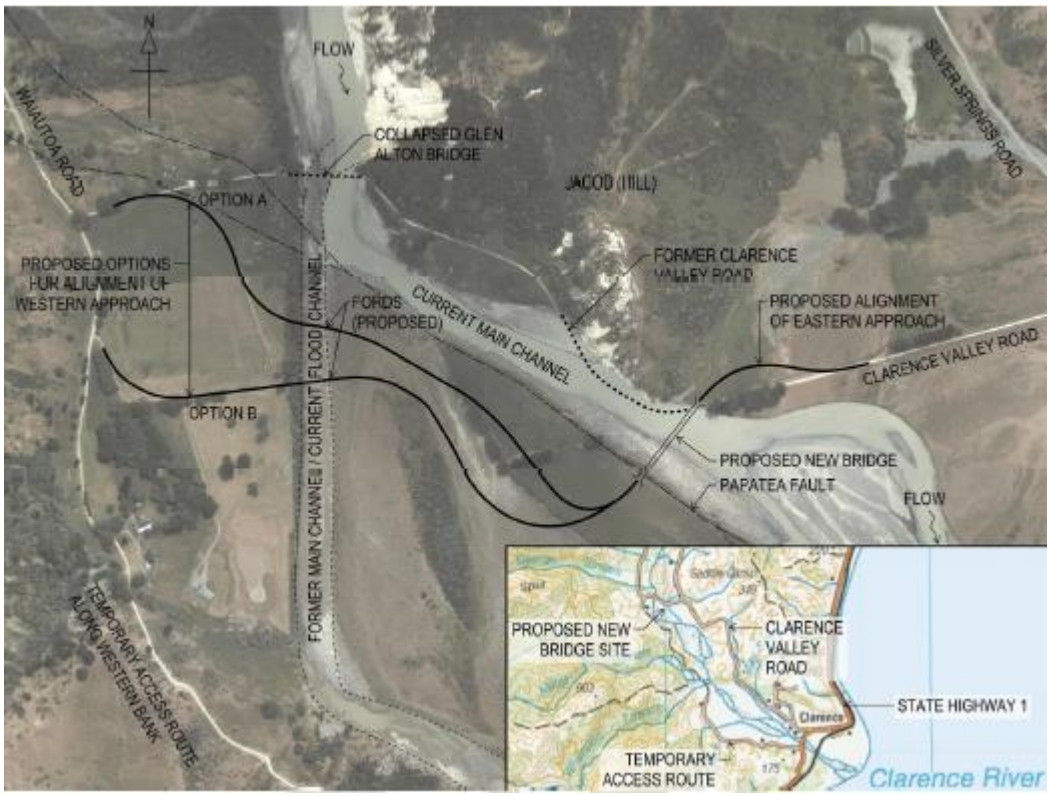
Timeline:

- Investigations and preliminary design are currently proceeding with NZTA funding approval
- Detailed design, consenting, property acquisition, and procurement to follow in 2020/2021 financial year
- Project construction and commissioning will be undertaken in 2021/2022 and completed in 2022/2023 financial year

Implications:

- Council will need to fund 5% of all project costs (estimated at $610,000), which includes all Southern Access Route temporary maintenance costs after 1 September 2020 through to project completion in 2022/23

- Council will need to fund 49% of road/bridge maintenance costs following project completion in 2022/23, when the new roading assets become part of the Council's local road network subsidised by NZTA with a FAR of 51%
- This project is not required to meet the same level of resilience that existed pre-earthquake, rather options are assessed against the NZTA's One Network Road Classification thresholds for access/access low volume roads where a limited number of route outages per year can be tolerated.



Plan of Proposed new bridge site and location of Papatea Fault

Community Engagement

The views of stakeholders have been sought at four meetings of residents, landowners and leaseholders from the Clarence Valley and the wider community held on 25 July and 4 December 2018 at the former Woodbank School in Clarence, on 2 October 2019 at Woodbank woolshed. Project options were presented at the meetings and feedback invited. Update emails have been sent out to residents of the Clarence Valley on a regular basis. On site meetings have also been held with landowners whose property may be potentially affected by project options. Meetings have been held with Te Rūnanga o Kaikōura, to initiate a consideration of the values and interests of Ngāi Tahu whānau, hapū and rūnanga, as mana whenua regarding this project.