

LOCAL ACCESS ROADS LONG LIST OPTIONS REPORT
ŌTAKI TO NORTH OF LEVIN DETAILED BUSINESS
CASE

PREPARED FOR WAKA KOTAHI NZ TRANSPORT AGENCY

June 2020

Manakau



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REVISION SCHEDULE

Rev No.	Date	Description	Signature or Typed Name (documentation on file)			
			Prepared by	Checked by	Reviewed by	Approved by
1	25/05/20	Revised following David Dunlop review and Option 1 for Kimberley Road added	KW, Jamie Povall	Selwyn Blackmore	Phil Peet	Phil Peet
2	22/06/20	Options J4, J5 and J6 for Liverpool Street added	KW, Jamie Povall	Selwyn Blackmore	Phil Peet	Phil Peet
4	24 August 2020	FINAL DRAFT	Selwyn Blackmore	Selwyn Blackmore	Phil Peet	Phil Peet

Waka Kotahi NZ Transport Agency

Ōtaki to North of Levin Detailed Business Case

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1 Introduction

State Highway 1 (SH1) is New Zealand's premier highway, but the section between Ōtaki and Levin is afflicted by a number of serious safety, efficiency and resilience problems. The importance of this section of SH1 is characterised by its function in connecting Wellington to the upper North Island, where no other resilient route exists. It also provides an essential economic connection to Palmerston North, the largest freight node in central New Zealand.

Therefore, Waka Kotahi NZ Transport Agency (Waka Kotahi) has been investigating potential upgrades and new alignment options to address the issues with the existing SH1 route. In 2018, an Indicative Business Case (IBC) was endorsed, which included endorsement for an offline highway, from Taylors Road in the south to north of Levin (and bypassing Levin (the Project or Ō2NL Highway), and a 300m corridor (the preferred corridor) for further investigation. This Project was subsequently included in the NZ Upgrade Programme to "improve safety and access, support economic growth, provide greater route resilience, and better access to walking and cycling facilities".

Waka Kotahi is now undertaking a Detailed Business Case (DBC) to refine the new highway alignment, interchange locations / options, and local road connections for the preferred corridor plus undertake scheme design and obtain funding approvals.

As set out in Figure 1 below, the preferred corridor is located to the east of State Highway 1 (SH1) and State Highway 57 (SH57). In summary, heading north, the proposed new highway will extend from the northern end of the Peka Peka to Ōtaki Highway (which is located approximately 2km north of the Ōtaki township) and will re-connect into SH1 and SH57 to the north of Levin.

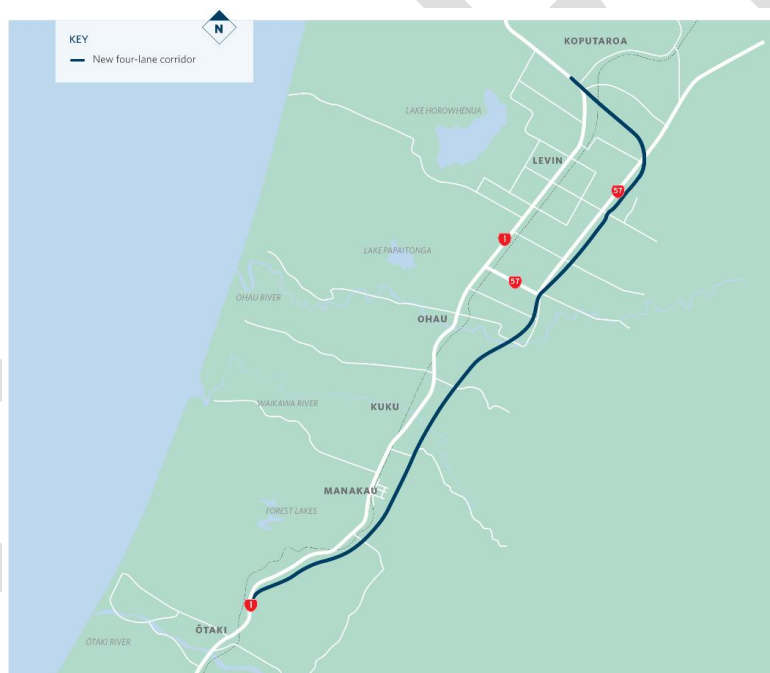


Figure 1 – Preferred 300 m corridor for the Ō2NL Highway

At the completion of the IBC, it was identified that further development and assessment of local road connections would be one of the first key activities needing to be undertaken when developing the DBC.

Accordingly, this report documents the long list of options for reconnecting local roads and accesses potentially severed by the Ōtaki to North of Levin Highway. Local road connections and crossings are based on the alignment options for the highway that the design team identified during a workshop held on 16 March 2020. The alignment options for each of the zones that will be taken forward for further consideration in the multi-criteria analysis are listed in the Ōtaki to North of Levin Detailed Business Case: Initial Alignment Review report dated 28 April 2020. (Stantec, 2020)

2 Long List Principles

The following principles have underpinned the development of the long list of local road options.

2.1 Community severance

It is accepted that some degree of community severance is inevitable. Local road and non-motorised mobility options have been included where such severance has been recognised.

2.2 Access severance

Current motorised vehicle access is to be maintained. Where a highway crossing option would sever a local road, a replacement route must be provided. Such a route should not unreasonably increase the current journey length by more than a few kilometres.

2.3 Private access to properties

It has been assumed that all properties that would remain viable as private properties will be provided with motorised vehicle access. Some accesses may need to be new extended driveways or rights of way. At this stage individual property accesses have not been shown, although access to properties has been considered as part of the development of feasible options.

2.4 Local road cross-section

At this long list stage, the number and width of lanes and off-road provision for walking and cycling to be adopted for each local road crossing or realignment is not considered to be, nor should it be, a differentiator for assessing the option. The cross-section to be adopted for each road will be a separate consideration. Therefore, for the purposes of this long list of options, each alternative option for a particular local road would have the same cross-section.

2.5 Bridges over or under highway

The long list of options generally considers crossings both over and under the highway wherever physically feasible or practicable.

2.6 Filtering and culling

The long list of options includes all viable options. No practical options have been filtered out or culled at this stage, although in many cases the detrimental effects of a particular option are highlighted for information.

2.7 Presentation of options

There are two to four highway alignment options at each of the local road crossings or severances. To avoid being overwhelmed by the number of combinations and permutations of local road access options that could therefore be generated if each possible alignment were considered separately (about 130), the following approach has been adopted.

All combinations are presented only where a highway alignment option would have a significant effect on the local road layout.

Where the various highway alignment options would have little or no effect on the layout of the local road connection option, a typical layout has been shown that would apply to any of the highway alignment options. However, it must be noted that, although the arrangement might not change, the property impacts may differ depending on the highway alignment option. This should be reasonably apparent.

Since there are a number of highway alignment options to be considered, only a single highway alignment is shown for each local road option to give a rough indication of where an highway alignment could be within the identified 300 m wide corridor. All new roads and the highway are shown as broken lines to indicate that the alignments are not yet fixed.

2.8 Interdependencies between options

Options for each local road are generally presented as standalone options. However, there will necessarily be interdependencies between options. For example, it may be unreasonable to adopt all options that provide a bridge over the highway, resulting in multiple bridges in a short length. Equally, it may be unreasonable to adopt many successive cul de sacs that would require long diversions to a crossing point.

It is intended that the reader would be able to imagine a reasonable combination of options (e.g. a cul de sac at road A and a diversion to the crossing at road B), versus a cul de sac at road B and a diversion to the crossing road A. Most such cases are spelt out in the report to demonstrate that severance of a road can be mitigated by a reasonable diversion route to another, but other less critical combinations are not for the sake of simplicity.

2.9 Recommended options

The local road layout options and possible individual property access arrangements and implications can be presented in more detail once the highway alignment options have been shortlisted after the multi-criteria analysis process has been undertaken.

This report presents only the long list of options and known implications of the local road connections but does not provide any recommendations for the adoption of any options at this stage of the process.

3 Previous Business Case Feedback

3.1 Southern gateway entrance to Levin

Horowhenua District Council officers have previously identified a full service interchange at Tararua Road could be favourable but acknowledges that Tararua Road and the connection to the existing SH1 across the railway line at the western end of Tararua Road would have to be upgraded to suit.

3.2 Queen Street

Horowhenua District Council has previously promoted safety improvements to the intersection of Queen Street and Arapaepae Road (SH57). The NZ Transport Agency has confirmed that a roundabout will be constructed to replace the existing priority controlled crossroad intersection.

Although Queen Street is a main access from SH57 into the town centre of Levin, Horowhenua District Council has previously indicated a preference that Queen Street is not connected directly to the highway. In any case this would be inappropriate for what is a largely residential street. Instead, access to the highway would be via Arapaepae Road connections at or near Tararua Road in the south and Roslyn Road in the north. Moreover, Queen Street would be the main town access to the Gladstone Green greenbelt residential cluster zone—Growth Area LS6 bounded by Arapaepae Road in the west, Queen Street in the north, Gladstone Road in the east, and Tararua Road in the south. (Horowhenua District Council, pp. 34-36)

3.3 SH1/SH57 split

Horowhenua District Council officers have indicated a preference for a full connection between the new highway and SH57, Arapaepae Road, and serving Roslyn Road. But they also acknowledge that a grade-separated system interchange between SH1 and SH57 superimposed on a service interchange connecting to Arapaepae Road and Roslyn Road may be incongruous for the situation.

3.4 Northern gateway entrance to Levin

Horowhenua District Council officers have indicated a roundabout connecting The Avenue to the northern end of the highway is likely to be favourable, to provide a northern gateway to Levin, as well as signalling the end of the highway route.

3.5 Sorensens Road Community

The community served by Sorensens Road off Heatherlea East Road has requested that alternative alignments that would have less local community impact by shifting the highway alignment southwards away from Sorensens Road beyond the boundary of the identified 300 m corridor width. It has been stated

that the local community have liaised with the main landowner who would be most affected by the alignments. This landowner is understood to be supportive.

It is also noted that the Transport Agency has advanced or concluded purchase of a number of properties in the vicinity of Sorensens Road.

3.6 Manakau Heights Community

It is understood from previous landowner discussions that the residents of Manakau Heights consider themselves to be very much part of the Manakau community and are concerned that the highway may sever that direct bond, which they wish to maintain. Therefore, even though a physical road connection may be provided via Manakau South Road, they would still feel cut off if the existing connection to Manakau via Honi Taipua Street were severed.

4 Interchanges and Connections

4.1 Ōtaki Interchange

There will be connections between the Peka Peka to Ōtaki Highway and the existing SH1 at an interchange with north facing ramps positioned just north of Mill Road in Ōtaki and at an interchange with south facing ramps just south of the Ōtaki River. The two interchanges will be 0.8 km and 3.6 km south of the start of the Ōtaki to North of Levin Highway. There is therefore no need to provide another connection where the existing SH1 and the Ōtaki to North of Levin Highway cross near Taylors Road.

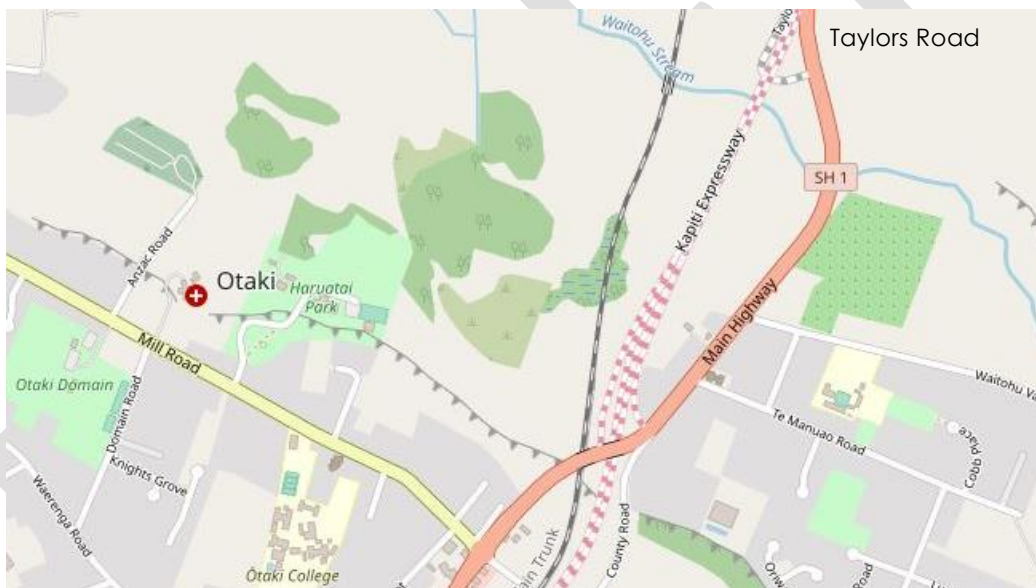


Figure 2: Ōtaki northern interchange (Peka Peka to Ōtaki Highway project) (Argonaut Ltd, 2019)



Figure 3: Ōtaki southern interchange (Peka Peka to Ōtaki Highway project) (Argonaut Ltd, 2019)

4.2 Manakau and Levin Interchanges

Refer to the Interchange Option Review report. (Stantec, 2020).

Any interchanges at Manakau and Levin would need to integrate with the local access roads. Since the interchange options are still in early phases of development, this report cannot address local access in the vicinity of the possible interchange positions in much detail. Therefore, this report may need to be revisited once firmer options for the interchanges are available, or once decisions have been made on the location and form of interchanges

5 Crossings and Severances

5.1 Existing SH1 / Taylors Road

The existing SH1 and the Ōtaki to North of Levin Highway cross one another obliquely 300 m to 500 m north of the Waitohu Stream. No connection between the existing SH1 and the highway would be required at this point as the Ōtaki interchange (referred to in Section 4.1) will provide a connection between the two (and is only a short distance further south).

Although most of the regional traffic between Ōtaki and Bulls or Palmerston North will use the new highway, the existing SH1 will potentially still carry a significant volume of Manakau and Ohau and other local traffic travelling between Ōtaki and Levin (depending on interchange locations).

Taylors Road intersects the existing SH1 at the point where the existing SH1 and the Ōtaki to North of Levin Highway cross one another. This is also the point where the Peka Peka to Ōtaki Highway project ties into the existing SH1 alignment temporarily. Therefore, both projects require the existing Taylors Road intersection to be shifted to another position on the existing SH1.

The Peka Peka to Ōtaki Highway project will close the existing intersection of Taylors Road with SH1 and realign Taylors Road southwards from its existing intersection position to run along the western edge of the highway, under the new Waitohu Stream bridge on the northern banks of the stream and 180° back northwards to join the severed portion of the existing SH1 east of the highway. The alignment requires two sharp 90° left-hand curves to pass under the Waitohu Stream bridge and a sharp 45° right-hand curve to re-join the existing alignment of SH1.

Options for reinstating the severance of the existing SH1 by the Ōtaki to North of Levin highway and for connecting Taylors Road to the existing SH1 have been considered in previous phases of both projects resulting in the same conclusions as discussed in the options below. (Stantec, 2017)

5.1.1 Option A1 via Waitohu Stream bridge

The highway would sever the existing SH1 just south of Taylors Road. Bearing in mind that the Peka Peka to Ōtaki project will have closed the Taylors Road intersection, this option would reinstate the Taylors Road T-intersection. The existing SH1 would join the realigned and rerouted Taylors Road passing under the Waitohu Creek bridge and follow the Taylors Road realignment exactly as described above.

The alignment under the Waitohu Stream bridge may be acceptable for the function and the amount of traffic using Taylors Road. However, the sharp 90° curve at the southern end of a long straight section of highway would be inappropriate to the point of being unsafe for the road classification, function and amount of traffic expected to continue using the existing SH1.

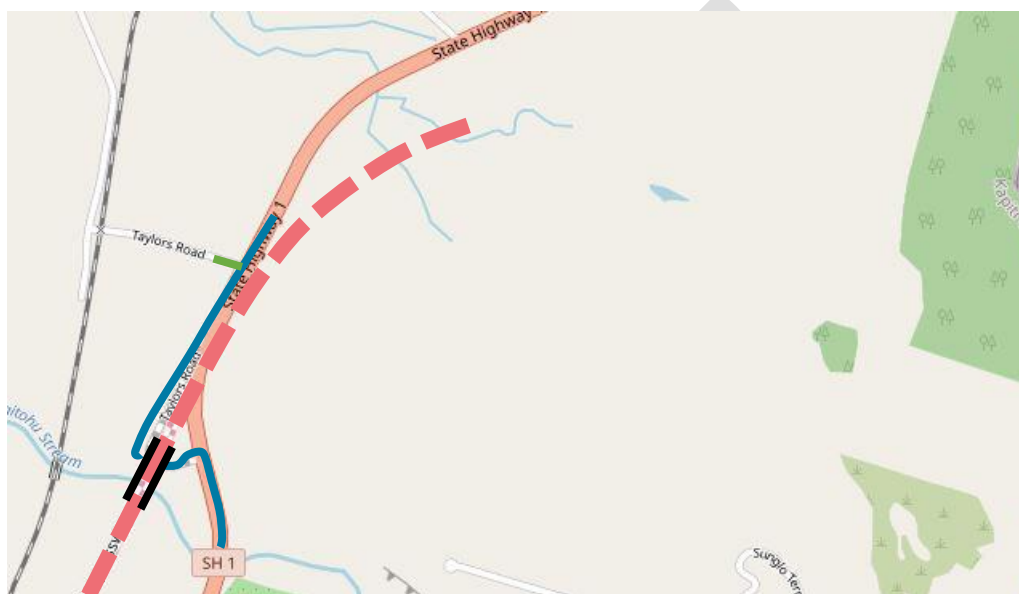


Figure 4: Option A1 (Argonaut Ltd, 2019)

5.1.2 Option A2 via a new underpass (Taylors Road realignment abandoned)

The existing SH1 would be realigned under the highway more or less along the existing alignment of SH1 but with a less oblique crossing angle to reduce the length of the underpass required.

Taylors Road would be realigned northwards to a new T-intersection with the existing SH1 about 200 m from its original intersection location. The Taylors Road realignment under the Waitohu Stream bridge would no longer be required and could be abandoned or used for farm access or walking and cycling access to the stream.

This option would be sensitive to the highway alignments on the western side of the identified 300 m wide corridor as Taylors Road would be realigned along the western side of the highway. This could require additional land beyond the 300 m wide corridor (for the highway and local road connection).

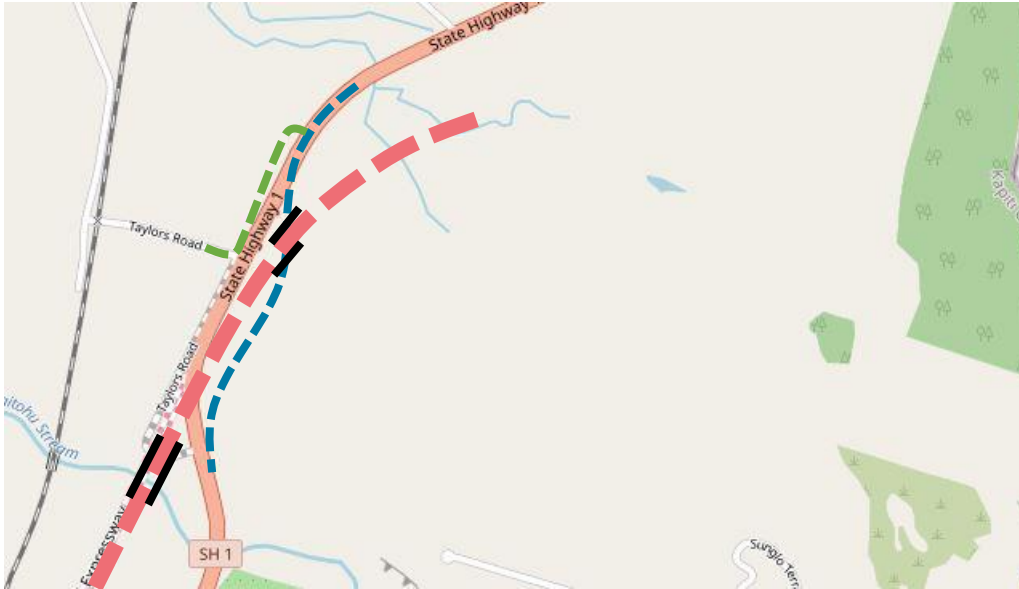


Figure 5: Option A2 (Argonaut Ltd, 2019)

5.1.3 Option A3 via a new underpass (Taylors Road via Waitohu Stream bridge)

The existing SH1 would be realigned under the highway more or less along the existing alignment of SH1 but with a less oblique crossing angle to reduce the length of the underpass required.

Taylors Road would remain on its realigned route passing under the Waitohu Stream bridge and intersect the existing SH1 at a T-intersection in place of the 45° right-hand curve described above.

This option would not be sensitive to the highway alignment and would not require any additional land for the realignment of Taylors Road, but would require additional land for the realignment of current SH1.



Figure 6: Option A3 (Argonaut Ltd, 2019)

5.2 South Manakau Road

South Manakau Road provides access from the existing SH1 to Manakau Heights Drive, Mountain View Drive and Corbetts Road. South Manakau Road also links southwards to Ōtaki via Waitahu Valley Road. Severance of Manakau South Road would require reinstating access to those roads.

Manakau Heights Drive provides access to a significant number of residential properties along the road.

The review of interchange options identified a possible South Manakau interchange at South Manakau Road. (Stantec, 2020, p. 14) The following options are based on the possibility that an interchange would

not be provided at South Manakau Road. If an interchange were to be provided, further local access road options may have to be considered to tie in with such an interchange.

The options presented are based on a vehicle crossing being provided at either South Manakau Road or Honi Taipua Street, since the two roads are only 1 km apart. However, this assumption does not preclude a combination of options from being adopted where vehicle crossings could be provided at both South Manakau Road and Honi Taipua Street.

5.2.1 Option B1 underpass

South Manakau Road would remain open via an underpass under the highway.

South Manakau Road and all the highway alignment options cross a small creek halfway between existing SH1 and Manakau Heights Drive. Since the highway would need to be aligned above a higher flood level than South Manakau Road, it would be practical for South Manakau Road to pass under the highway. This would keep the existing intersections of Manakau Heights Drive and Mountain Valley Road more or less on natural ground level and would not require the two intersections to be reconstructed to any great degree.

This option assumes that the highway would sever Honi Taipua Street and that Manakau Heights Drive would become a cul de sac with an extended service road turning bulb at the northern end. However, the footbridge Option C3 described in Section 5.3.3 could be combined with this option to preserve the Manakau Heights community connection with Manakau itself.

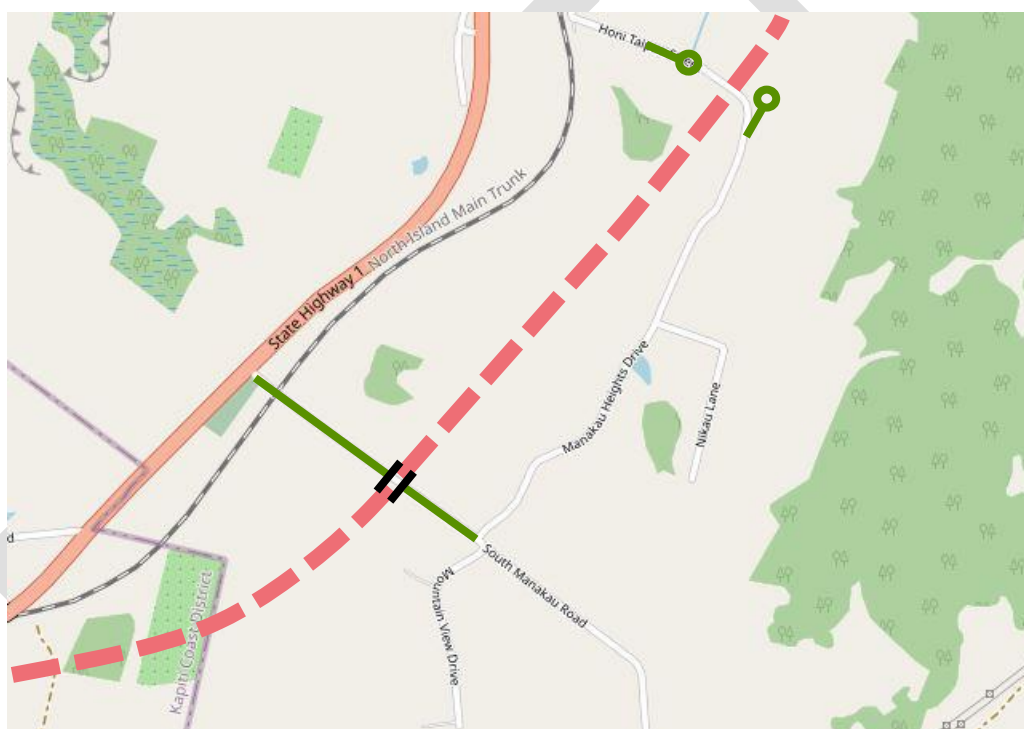


Figure 7: Option B1 (Argonaut Ltd, 2019)

5.2.2 Option B2 bridge

South Manakau Road would remain open via a bridge over the highway. Since the highway would have to be lifted above the flood level of the creek, the overbridge would be quite high above natural ground level—perhaps as high as 10 m.

There are two sub-options for reconstructing the existing intersections of Manakau Heights Drive and Mountain Valley Road to account for the raised levels of South Manakau Road. The two roads could be lifted to the elevated crest level of South Manakau Road to provide safe intersection sight distance; or they could be realigned to intersect further away from the highway at a point where South Manakau Road returned to ground level and where safe intersection sight distance could be assured. An intermediate option positioning the new intersections somewhere between the crest and ground level would be unlikely to provide safe intersection sight distance.

Since the bridge would be quite high, the associated earthworks to raise the local roads would be quite extensive or the realignment to intersections at ground level could be 300 m away from the existing

intersections. For both sub-options, there would be a significant impact on the properties along the southern end of Manakau Heights Drive and the northern end of Mountain Valley Road including severance and required reinstatement of their accesses.

Since the bridge would be quite high, some highway options, particularly the western alignment options, may not leave enough distance between the bridge and the railway level crossing to achieve the necessary grade separation. There may be the added consideration that a steep downhill approach to the railway level crossing could be unsafe for heavy vehicles.

This option assumes that the highway would sever Honi Taipua Street and that Manakau Heights Drive would become a cul de sac with an extended service road turning bulb at the northern end. However, the footbridge Option C3 described in Section 5.3.3 could be combined with this option to preserve the Manakau Heights community connection with Manakau itself.

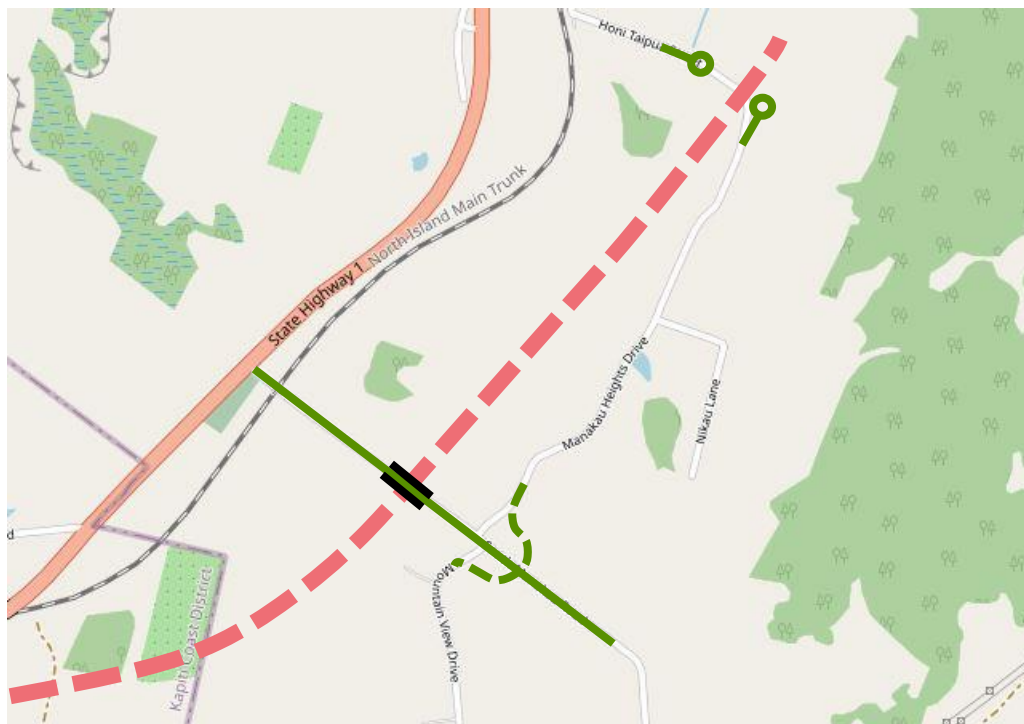


Figure 8: Option B2 (Argonaut Ltd, 2019)

5.2.3 Option B3 cul de sac and access via Honi Taipua Street

The highway would sever South Manakau Road leaving a cul de sac portion with turning bulb west of the highway between the existing SH1 and the highway.

The severed portion of South Manakau Road would be connected to existing SH1 via Manakau Heights Drive and along Honi Taipua Street through Manakau.

Honi Taipua Street is currently a very low standard narrow residential road varying between 4 m and 6 m wide serving only half a dozen properties east of the highway alignments (and connecting into Manakau village). Honi Taipua Street would therefore necessarily have to be upgraded to meet the same standards as South Manakau Road and to carry the same volume of traffic and size of vehicle that currently uses South Manakau Road.

There are two existing connections between the existing SH1 and Honi Taipua Street. Refer to Figure 11. At the southern end there is a single vehicle width subway under the railway line with a vertical clearance of 3.2 m. This would be unsuitable for heavy vehicles and would be impractical to lift or lower. At the northern end, Honi Taipua Street intersects with Mokena Kohere Street, which crosses the railway line at a level crossing (which is in the area used as a track crossover and can be blocked frequently). There are practical limitations for heavy vehicles as there is barely 15 m clearance between the tracks and SH1.

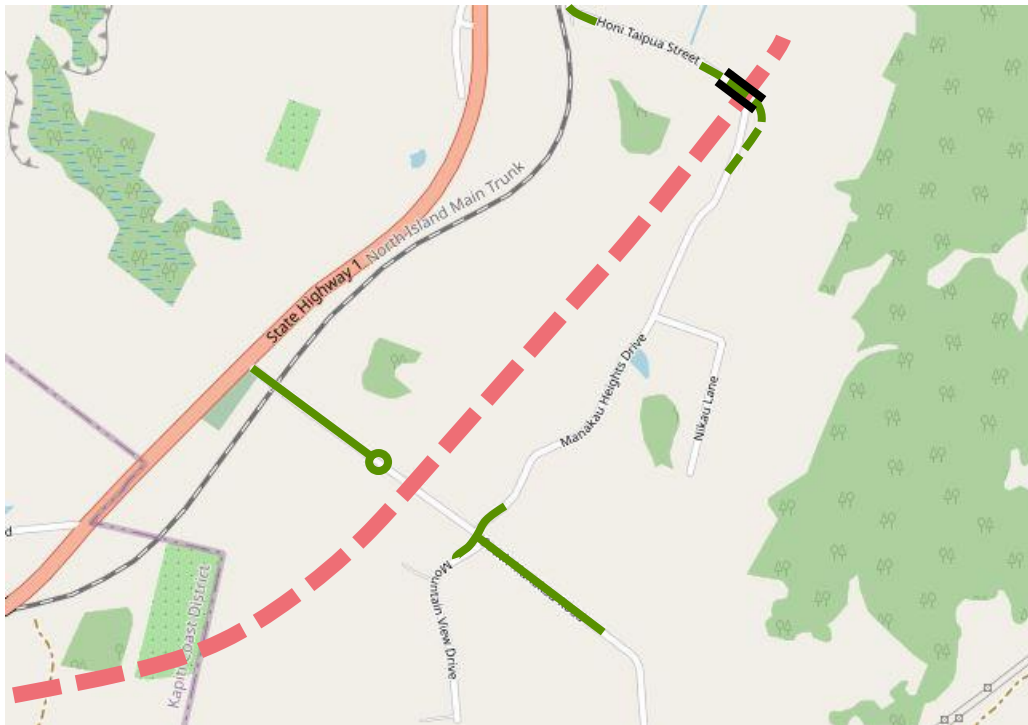


Figure 9: Option B3 (Argonaut Ltd, 2019)

5.3 Honi Taipua Street

Honi Taipua Street serves a few residential properties on the eastern side of the highway corridor and then connects into Manakau Heights Drive. Alternative access could be provided to the properties via Manakau Heights Drive. Therefore, options for closing and for keeping Honi Taipua Street open have been considered.

The options presented are based on a vehicle crossing being provided at either South Manakau Road or Honi Taipua Street, since the two roads are only 1 km apart. However, this assumption does not preclude a combination of options from being adopted where vehicle crossings could be provided at both South Manakau Road and Honi Taipua Street.

5.3.1 Option C1 cul de sac and access via Manakau Heights Drive

Honi Taipua Street would be severed by the highway. The remaining three properties east of the alignment would be served by an extended service road from Manakau Heights Drive northwards from Hanawera Ridge Road. This option would require South Manakau Road to remain directly connected to the existing SH1 as described in South Manakau Road Option B1 in Section 5.2.1 and Option B2 in Section 5.2.2.

Highway alignments along the western side of the identified 300 m wide corridor would allow most of the severed portion of Honi Taipua Street to remain as the service road, but eastern highway alignments would require a new service road to be built parallel to the highway from Hanawera Ridge Road northwards. It has been noted in the alignment report that the choice of highway alignment will affect property access around Honi Taipua Street. (Stantec, 2020, p. 6)

Honi Taipua Street Option C3, described in Section 5.3.3, comprising a footbridge to preserve a connection between the Manakau Heights community with Manakau via the service road and Honi Taipua Street could be combined with this option.



Figure 10: Option C1 (Argonaut Ltd, 2019)

5.3.2 Option C2 bridge

Honi Taipua Street would remain open. A bridge would be constructed over the highway on the alignment of Honi Taipua Street.

This option would preserve the direct vehicular and pedestrian connection between the Manakau Heights community and Manakau.

Since Honi Taipua Street would continue to be connected to Manakau Heights Drive, there would need to be safe sight distance over the bridge crest and down to the sharp curve on the eastern side of the highway. Highway alignments on the western side of the identified 300 m wide corridor would require some deviation of the existing Manakau Heights Drive to the east to achieve this, but those to the east of the corridor would require significant land outside the corridor to accommodate a realigned Manakau Heights Drive. This option is therefore sensitive to the highway alignment chosen.

This option would be essential if South Manakau Road cul de sac Option B3 described Section 5.2.3 were chosen.

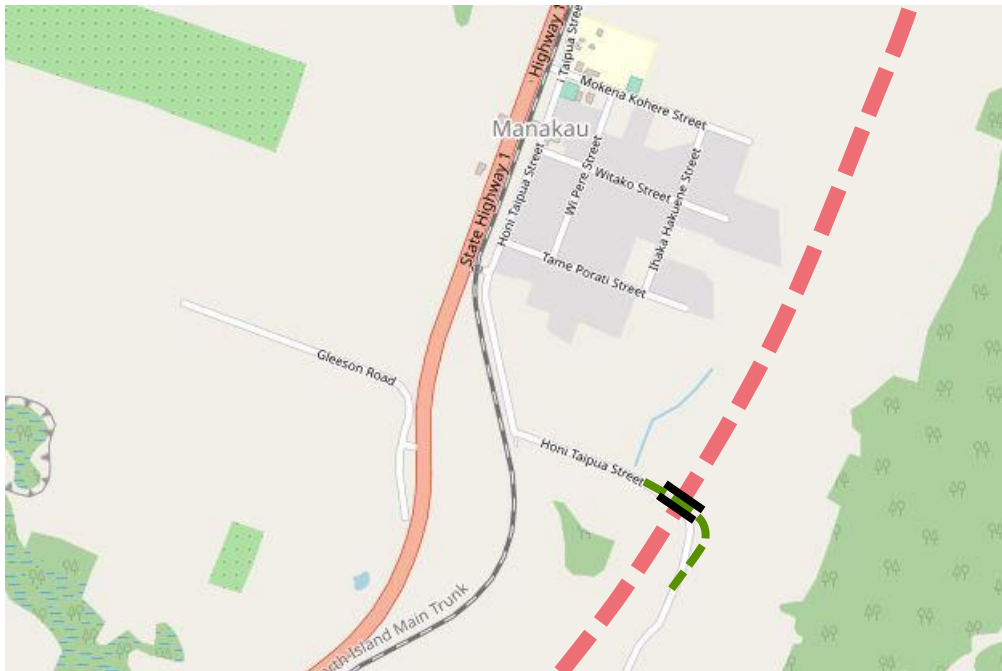


Figure 11: Option C2 (Argonaut Ltd, 2019)

5.3.3 Option C3 Honi Taipua Street footbridge

This option would consist of a pedestrian and cyclist bridge across the highway on the alignment of the severed Honi Taipua Street but would provide no vehicular access across the highway. This option recognises that directing all of South Manakau traffic along the narrow quiet residential Honi Taipua Street may have impacts, and recognises the community severance issues that closing Honi Taipua Street would create if South Manakau Road underpass Option 1 in Section 5.2.1 or bridge Option 2 in Section 5.2.2 were chosen. This option can therefore be combined with the options that keep South Manakau Road open but sever Honi Taipua Street for vehicular traffic.

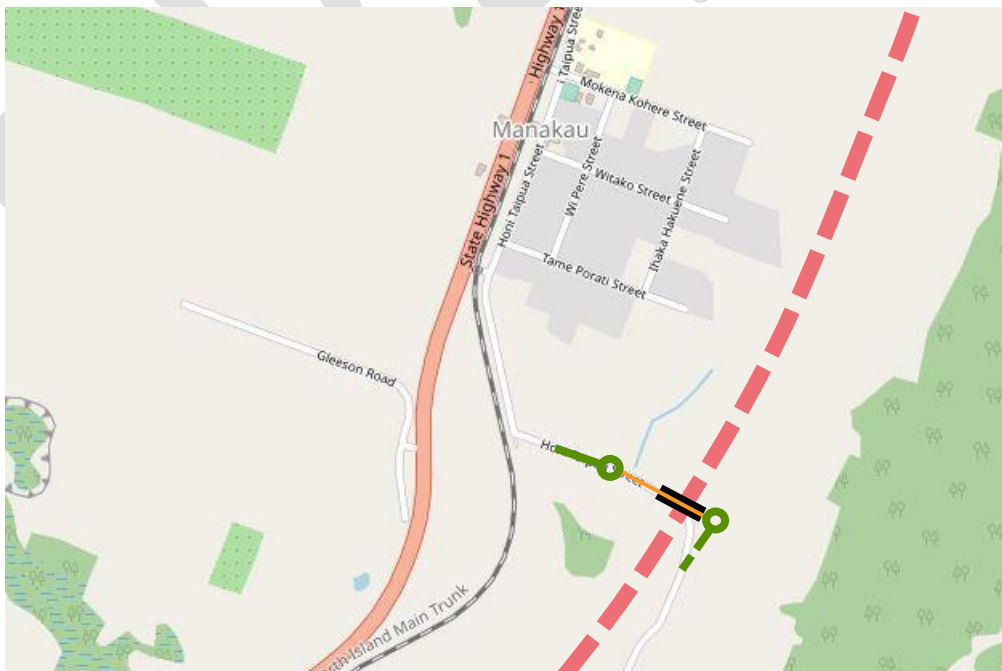


Figure 12: Option C3 (Argonaut Ltd, 2019)

5.3.4 Option C4 Mokena Kohere Street footbridge

This option would consist of a pedestrian and cyclist bridge across the highway on an extension of Mokena Kohere Street but would provide no vehicular access across the highway. This option recognises that directing all of South Manakau traffic along the narrow quiet residential Honi Taipua Street may have impacts, but recognises the community severance issues that closing Honi Taipua Street would create if South Manakau Road underpass Option 1 in Section 5.2.1 or bridge Option 2 in Section 5.2.2 were chosen. This option can therefore be combined with the options that keep South Manakau Road open but sever Honi Taipua Street for vehicular traffic.

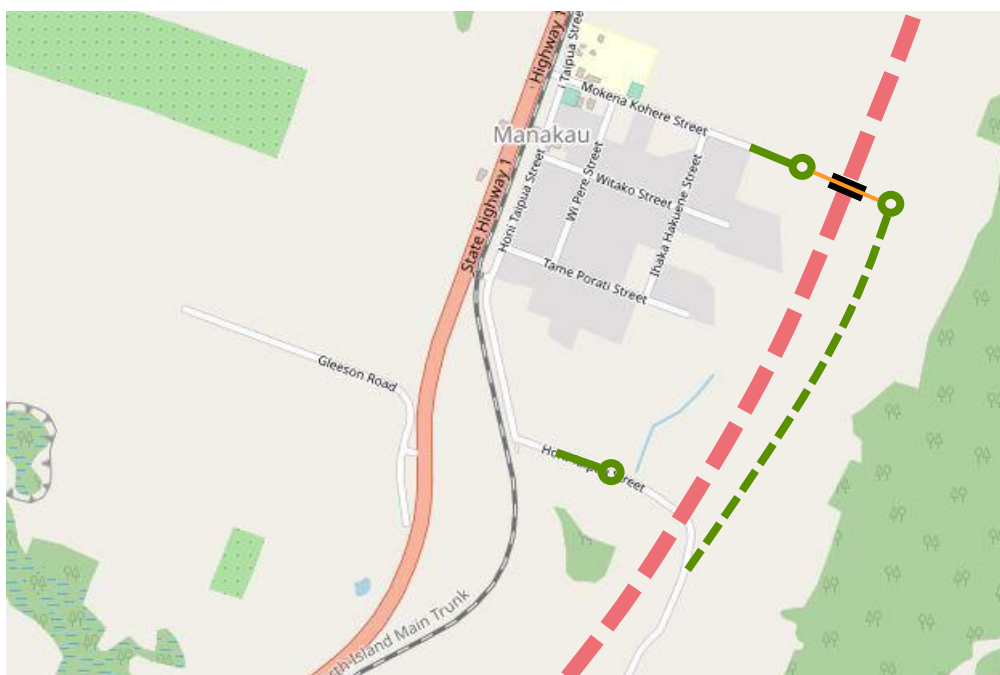


Figure 13: Option C4 (Argonaut Ltd, 2019)

5.4 North Manakau Road

North Manakau Road serves an area to the east of the highway corridor. There are no other alternative roads that could be used to serve the area. Therefore, practically, North Manakau Road should remain open.

The review of interchange options identified a possible North Manakau interchange at North Manakau Road or the area further north beyond the Waikawa Stream. (Stantec, 2020, p. 14). The following options are based on the possibility that an interchange would not be provided at North Manakau Road. If an interchange were to be provided there would be no major obstacles to combining local access with the interchange, though the Gilpin historic property may be problematic for an interchange on North Manakau Road itself.

5.4.1 Option D1 bridge

North Manakau Road would remain open via a bridge over the highway. The alignment of North Manakau Road would be eased to remove the existing sharp curve just east of the corridor, as eastbound sight distance to the existing sharp curve over the crest would be a safety consideration.

Raising the level of North Manakau Road locally to cross the highway may be less visually intrusive than raising the highway to cross North Manakau Road. However, property accesses close to the bridge may require relocation because North Manakau Road would be elevated above natural ground level. Whether or not property individual accesses would have to be reinstated or preserved would depend on the highway alignment chosen within the identified 300 m corridor.

This option is not sensitive to the highway alignment.

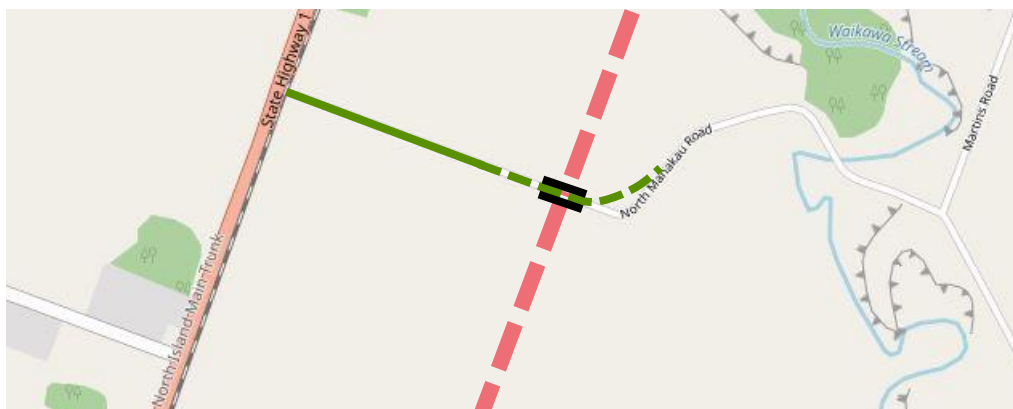


Figure 14: Option D1 (Argonaut Ltd, 2019)

5.4.2 Option D2 underpass

North Manakau Road would remain open via an underpass under the highway.

The existing alignment of North Manakau Road, including the sharp curve just east of the corridor, would probably be maintained to maximise sight distance through the underpass and minimise the effects on properties.

A large amount of fill would be required to lift the highway over North Manakau Road and there may be associated visual impact. However, lifting the highway could be combined with the requirement to lift it above the flood levels of the stream, which is only 600 m north of North Manakau Road.

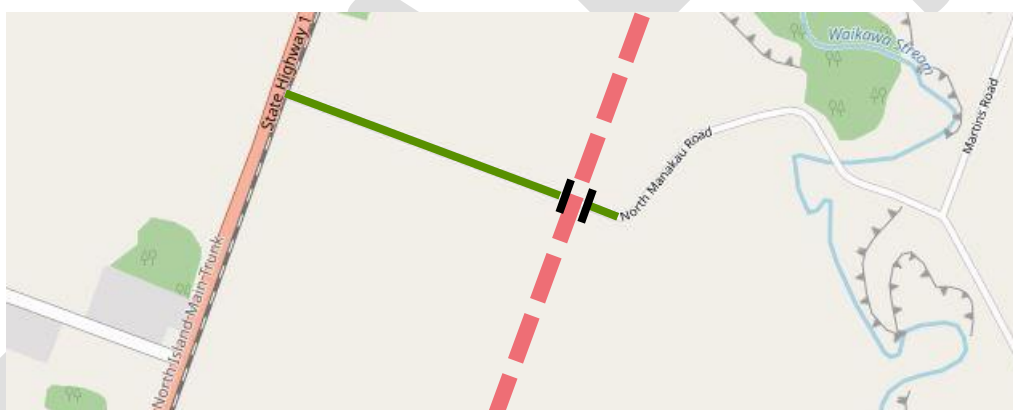


Figure 15: Option D2 (Argonaut Ltd, 2019)

5.5 Kuku East Road

Kuku East Road serves an area to the east of the highway corridor. There are no other alternative roads that could be used to serve the area. Therefore, practically, Kuku East Road should remain open.

5.5.1 Option E1 bridge

Kuku East would remain open via a bridge over the highway.

Raising the level of Kuku East Road locally to cross the highway may be less visually intrusive than raising the highway to cross Kuku East Road. However, property accesses close to the bridge may require relocation because Kuku East Road would be elevated above natural ground level. Whether or not individual property accesses would have to be reinstated or preserved would depend on the highway alignment chosen within the identified 300 m corridor.

This option is not sensitive to the highway alignment.

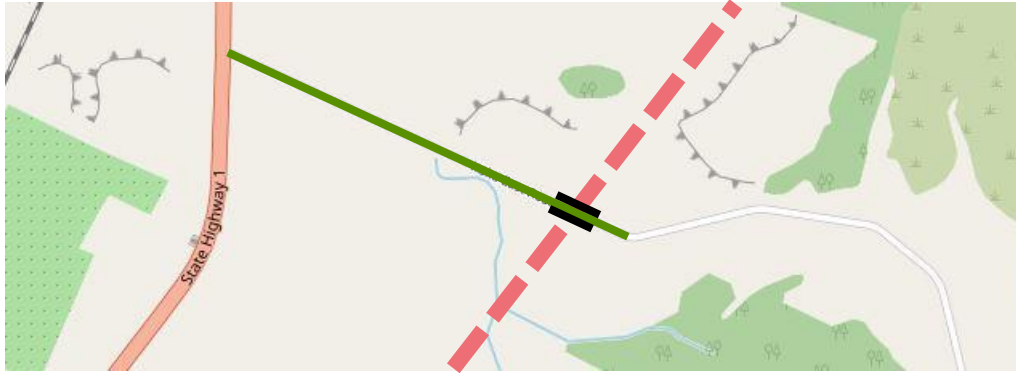


Figure 16: Option E1 (Argonaut Ltd, 2019)

5.5.2 Option E2 underpass

Kuku East Road would remain open via an underpass under the highway.

The existing alignment of Kuku East Road would be maintained.

A large amount of fill would be required to lift the highway over Kuku East Road and there may be associated visual impact.

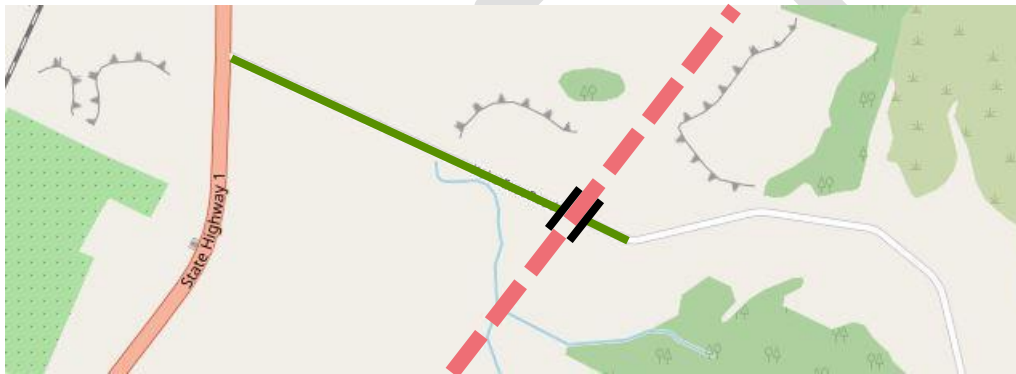


Figure 17: Option E2 (Argonaut Ltd, 2019)

5.6 Ohau River Quarry Access

Access to the quarry situated along the left bank of the Ohau River would be extended from the severed end of the existing private access road to pass through the southernmost span of the new highway bridge. There are no other viable options.

This option is not sensitive to the highway alignment.



Figure 18: Ohau River quarry access (Argonaut Ltd, 2019)

5.7 Muhunua East Road

Muhunua East Road serves an area to the east of the highway corridor. There is an alternative route to the existing SH1 via Arapaepae Road and McLeavey Road, but it does not lead directly to the centre of Ohau as Muhunua East Road does. Since there is an alternative route, an option for severing Muhunua East Road has been included.

5.7.1 Option F1 bridge

Muhunua East would remain open via a bridge over the highway.

Raising the level of Muhunua East Road locally to cross the highway may be less visually intrusive than raising the highway to cross Muhunua East Road. However, property accesses close to the bridge may require relocation because Muhunua East Road would be elevated above natural ground level. Whether or not individual property accesses would have to be reinstated or preserved would depend on the highway alignment chosen within the identified 300 m corridor.

This option is not sensitive to the highway alignment, although western alignment choices would reduce the westbound distance sight distance over the crest vertical curve to the sharp right angle bend. This may be a safety consideration. Similarly, the height restricted bridge in Ohau is also a potential concern for this option.

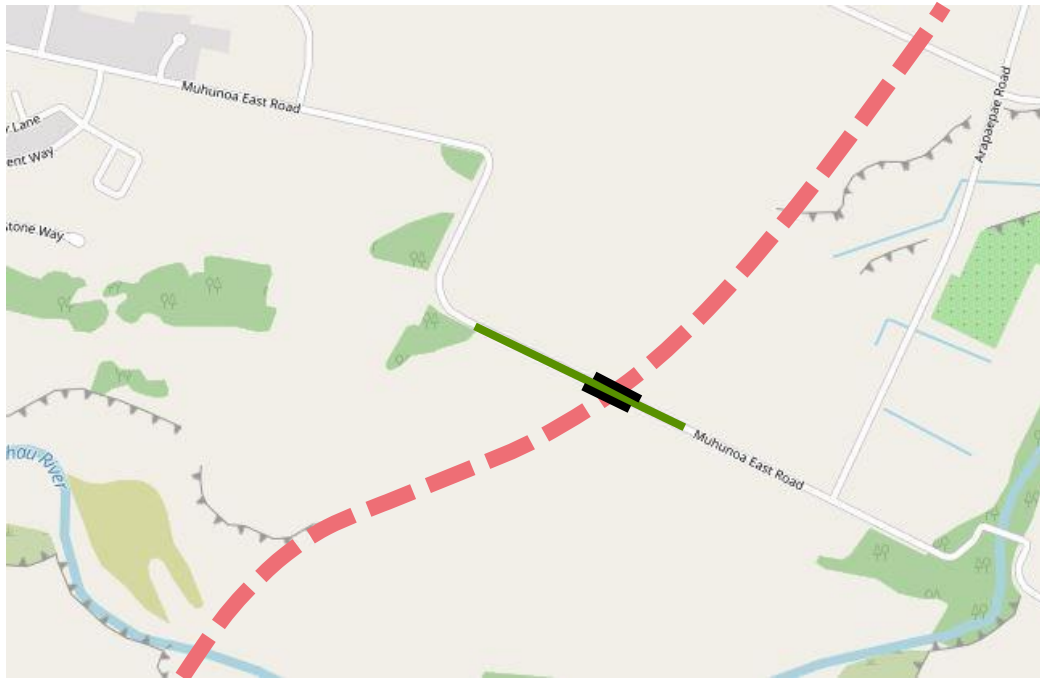


Figure 19: Option F1 (Argonaut Ltd, 2019)

5.7.2 Option F2 underpass

Muhunoa East Road would remain open via an underpass under the highway.

The existing alignment of Muhunoa East Road would be maintained.

A large amount of fill would be required to lift the highway over Muhunoa East Road and there may be associated visual impact.

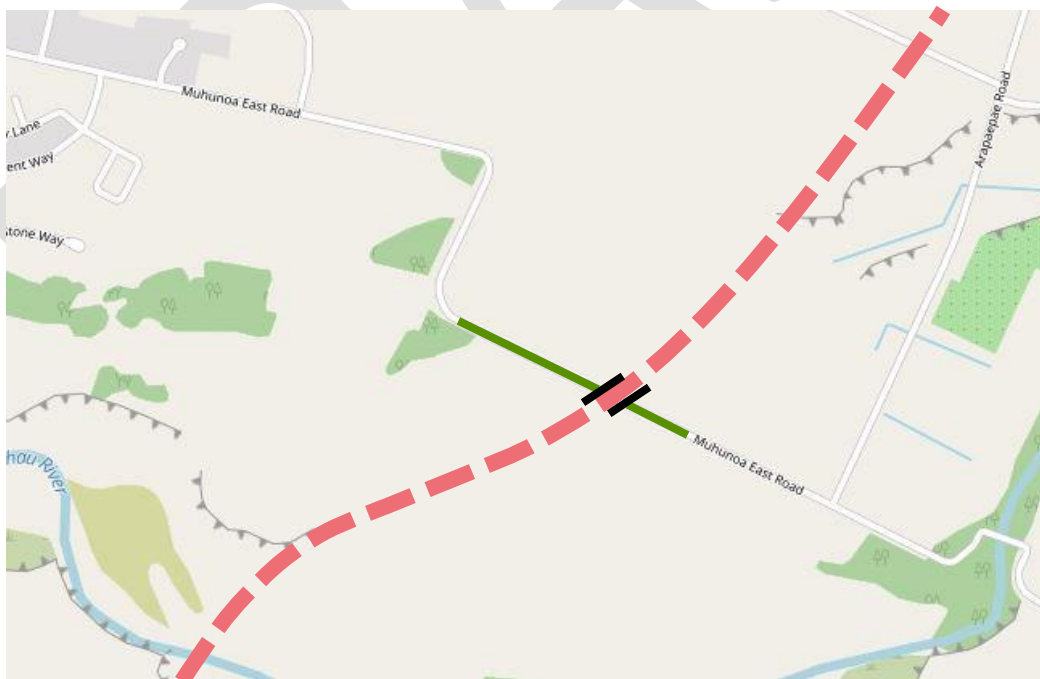


Figure 20: Option F2 (Argonaut Ltd, 2019)

5.7.3 Option F3 cul de sac and access via Arapaepae Road

The highway would sever Muhunooa East Road, which would end with a turning bulb on the western side of the highway.

The severed portion of Muhunooa East Road would be served by a connection to Ohau via Arapaepae Road and McLeavey Road or Kimberley Road. This would require the adoption of either McLeavey Road Option G1 in Section 5.8.1 or Option G2 in Section 5.8.2 or Arapaepae Road via Kimberley Road Option H3 in Section 5.9.3. Figure 21 shows an example using Option G2 via McLeavey Road.

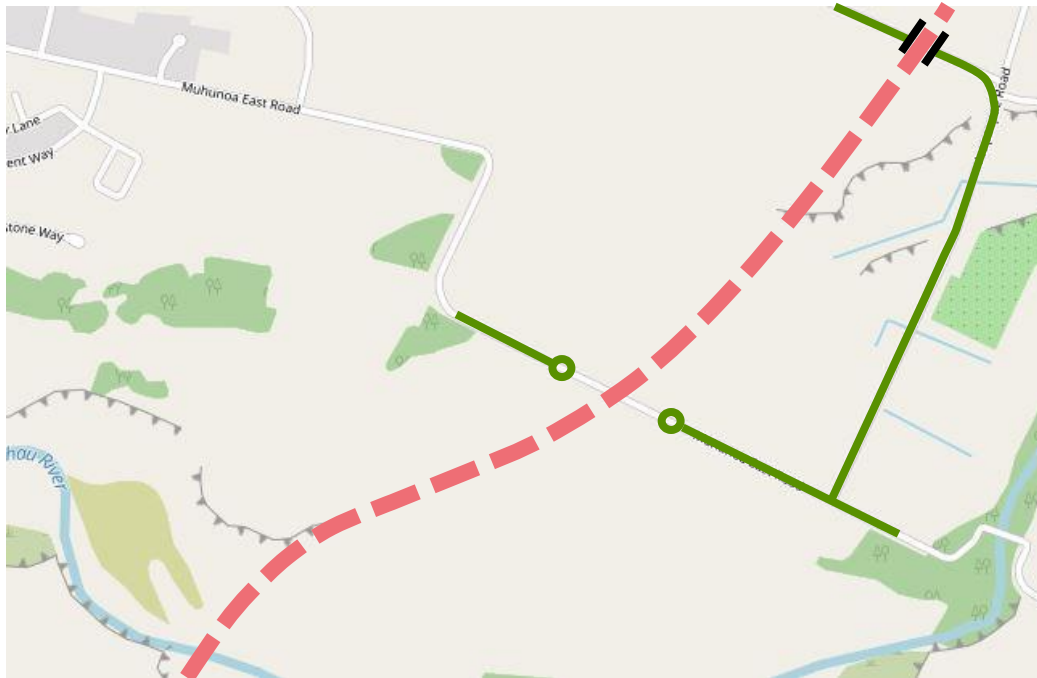


Figure 21: Option F3 (Argonaut Ltd, 2019)

5.8 McLeavey Road

5.8.1 Option G1 bridge

McLeavey Road would remain open via a bridge over the highway.

Raising the level of McLeavey Road locally to cross the highway may be less visually intrusive than raising the highway to cross McLeavey Road.

However, since McLeavey Road would continue to be connected to Arapaepae Road, there would need to be safe sight distance over the bridge crest and down to Arapaepae Road on the eastern side of the highway. This precludes highway alignments on the eastern side of the identified 300 m wide corridor as there would not be enough distance to achieve this. Any realignment of Arapaepae Road to the east would have a major impact on the properties served by Arapaepae Road. This option is therefore very sensitive to the highway alignment chosen. This option is probably feasible only with western alignments of the highway.

This option should be considered if Option F3 severing Muhunooa East Road is considered as it could provide access to the severed portion of Muhunooa East Road via Arapaepae Road.

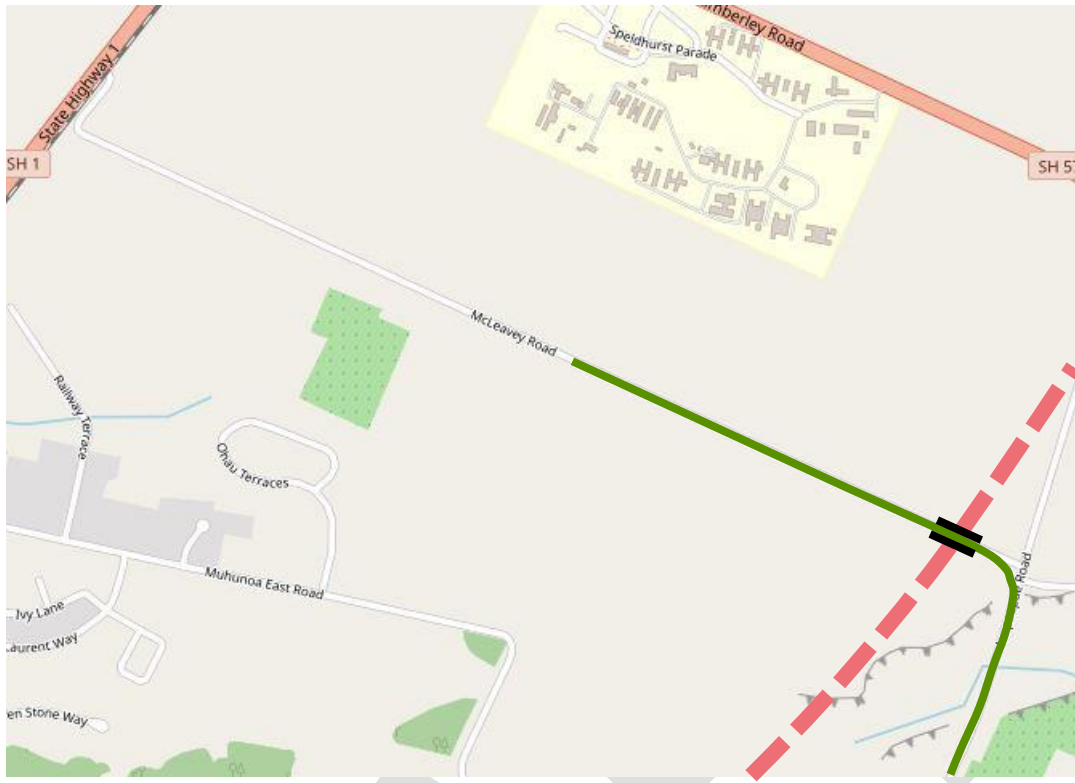


Figure 22: Option G1 (Argonaut Ltd, 2019)

5.8.2 Option G2 underpass

McLeavey Road would remain open via an underpass under the highway.

A large amount of fill would be required to lift the highway over McLeavey Road and there may be associated visual impact.

This option is not sensitive to the highway alignment chosen, as McLeavey Road would remain on existing ground level and safe sight distance to the intersection with Arapaepae Road could be achieved easily.

This option should be considered if Option F3 severing Muhunoa East Road is considered as it could provide access to the severed portion of Muhunoa East Road via Arapaepae Road.

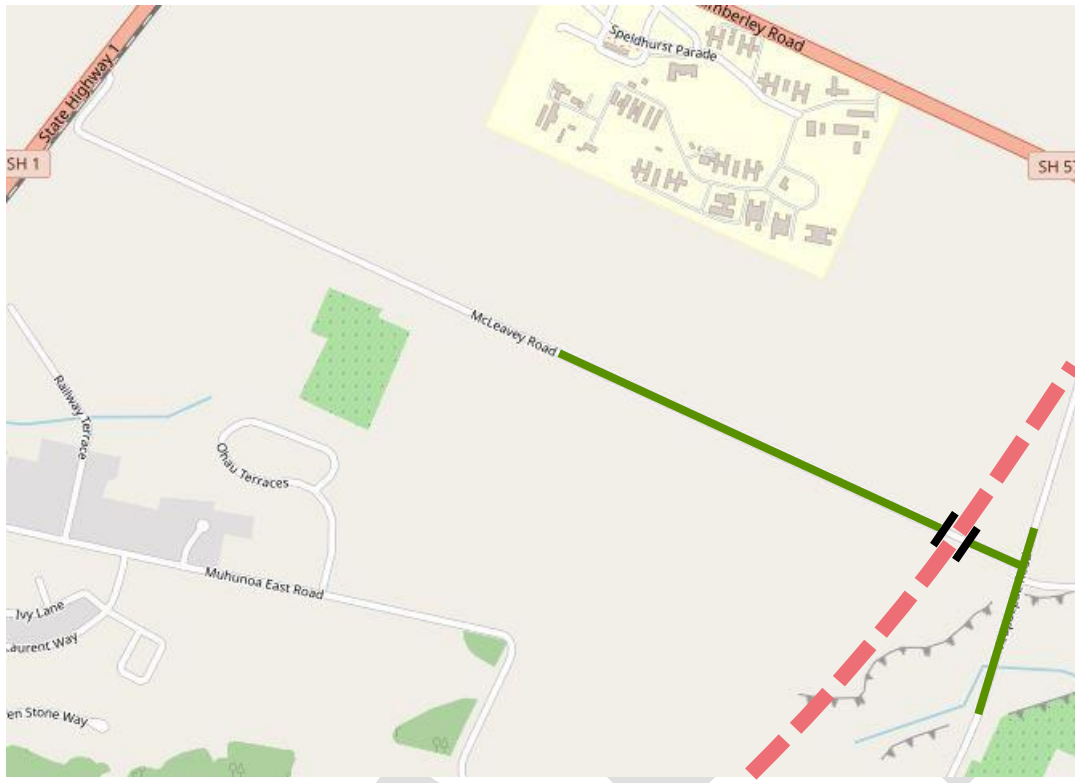


Figure 23: Option G2 (Argonaut Ltd, 2019)

5.8.3 Option G3 cul de sac

The highway would sever McLeavey Road, which would end with a turning bulb on the western side of the highway.

The severed portion of McLeavey Road would be so short that it would become redundant.

This option is not sensitive to the highway alignment.

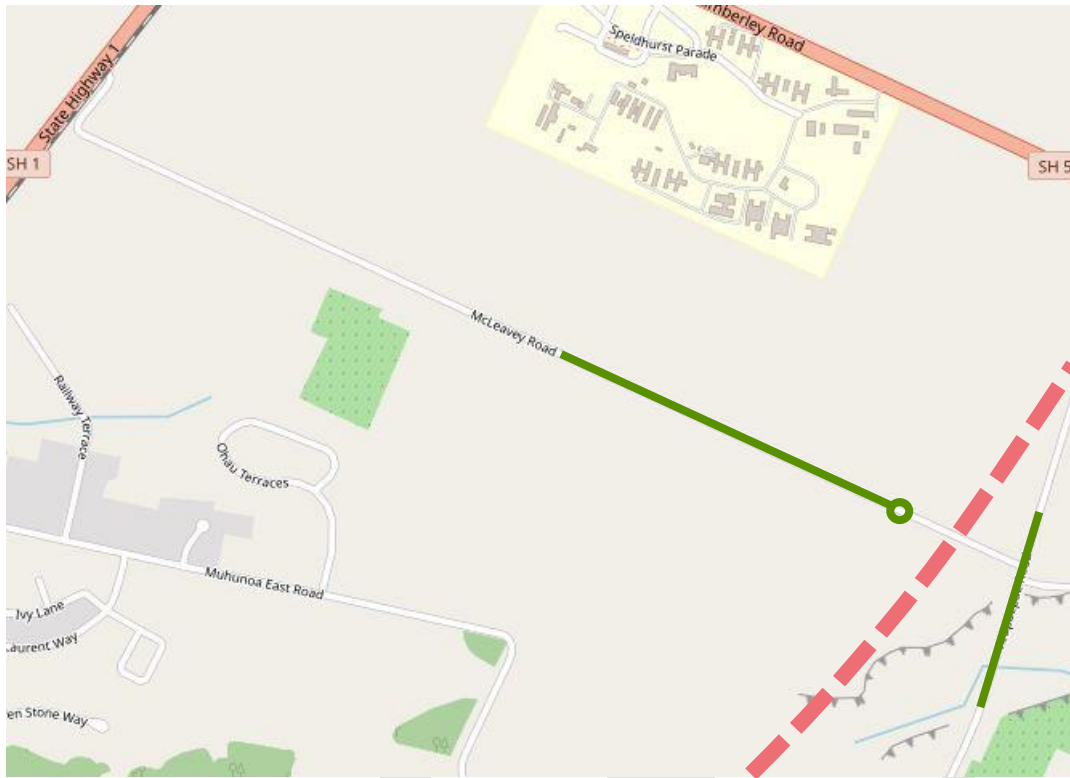


Figure 24: Option G3 (Argonaut Ltd, 2019)

5.9 Arapaepae Road south of Kimberley Road

Arapaepae Road and the highway alignments cross so obliquely between McLeavey Road and Kimberley Road that any form of crossing or underpass along the existing alignment of Arapaepae Road would be impractical. Therefore, it has been assumed that Arapaepae Road would be severed between McLeavey Road and Kimberley Road in all options considered.

Almost all the properties along Arapaepae Road between McLeavey Road and Kimberley Road would be affected by the highway, to the extent that maintaining access to most of these properties is not expected to be necessary.

Depending on the highway alignment chosen, there may be some properties that could remain near the McLeavey Road intersection or the Kimberley Road intersection. Such properties could be served by a remaining stub of Arapaepae Road at either or both ends.

5.9.1 Option H1 cul de sac and access via Muhunoa East Road

The highway would sever Arapaepae Road, which would end with a turning bulb at the northern end of the remaining portion of Arapaepae Road on the eastern side of the highway.

Access to existing SH1 would be via Muhunoa East Road bridge Option F1 in Section 5.7.1 or underpass Option F2 in Section 5.7.2, either of which option would necessarily be required as there would be no other way of accessing the severed portion of Arapaepae Road as this option assumes that McLeavey Road would also be severed as described in McLeavey Road cul de sac Option G3 in Section 5.8.3.



Figure 25: Option H1 (Argonaut Ltd, 2019)

5.9.2 Option H2 access via McLeavey Road

The highway would sever Arapaepae Road, but the connection to McLeavey Road at the northern end of the remaining portion of Arapaepae Road on the eastern side of the highway would remain open.

This option necessarily requires the adopting of either McLeavey Road bridge Option G1 in Section 5.8.1 or preferably the underpass Option G2 in Section 5.8.2 as shown in Figure 26.

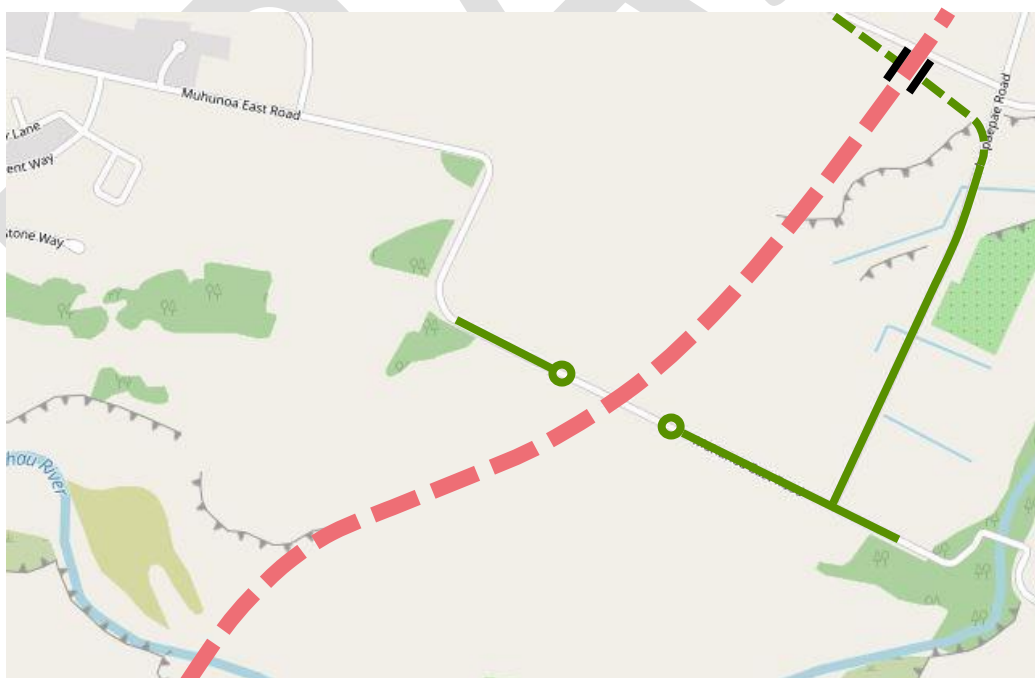


Figure 26: Option H2 (Argonaut Ltd, 2019)

5.9.3 Option H3 access via Kimberley Road

The highway would sever Arapaepae Road, but neither the connection to existing SH1 via Muhunoa East Road or McLeavey Road would be possible as both those roads would be severed by the highway too. Instead, access to existing SH1 would be via a new connection to Kimberley Road running parallel to the highway along its eastern side. This option necessarily assumes that the highway would not sever Kimberley Road.

This option assumes no interchange at Kimberley Road, as also noted in Section 5.11. If an interchange were provided here, the local road options presented here would need to be revised accordingly.



Figure 27: Option H3 (Argonaut Ltd, 2019)

5.10 Muhunoa East McLeavey Kimberley combination

5.10.1 Option I Muhunoa East, McLeavey and Kimberley severed

The highway would sever Muhunoa East Road, McLeavey Road and Kimberley Road.

A new road running parallel to the highway would connect the severed roads to the west of the highway to each other and to Tararua Road and Arapaepae Road as shown in Figure 28.

Similarly, a new road running parallel to the highway on the eastern side would connect all the remaining severed portions of the roads to one another and to Tararua Road. Figure 28 shows two of many options for the alignment of such a connecting road.



Figure 28: Option I (Argonaut Ltd, 2019)

5.11 Kimberley Road

Kimberley Road serves a small area to the east of the highway corridor. There is no existing alternative route to the existing SH1 if the highway severed Kimberley Road. However, a new link southwards to McLeavey Road or Muhunoa East Road or northwards to Tararua Road could be provided along the eastern side of the highway if Kimberley Road were severed.

The review of interchange options identified a possible interchange to serve southern Levin at Kimberley Road. (Stantec, 2020, p. 14) The following options are based on the possibility that an interchange would be provided at Tararua Road and not at Kimberley Road. If an interchange were to be provided at Kimberley Road instead, then further local access road options may have to be considered to tie in with such an interchange.

5.11.1 Option J1 bridge

Kimberley Road would remain open via a bridge over the highway.

Raising the level of Kimberley Road locally to cross the highway may be less visually intrusive than raising the highway to cross Kimberley Road.

However, since Kimberley Road would continue to be connected to Arapaepae Road, there would need to be safe sight distance over the bridge crest and down to Arapaepae Road on the western side of the highway. Highway alignment options on the western side of the identified 300 m wide corridor would probably require realignment of Arapaepae Road as illustrated in Figure 29. This option is therefore very sensitive to the highway alignment chosen. Serving the remaining stub of Arapaepae Road south of Kimberley Road may not be practical with western alignments of the highway due to the height of the fill at that point. However, a stub off the roundabout shown in Figure 29 could be provided instead.

This option should be considered if Option F3 severing Muhunoa East Road and/or Option G3 severing McLeavey Road is considered as it could provide access to the severed roads via Arapaepae Road as illustrated in Figure 29.

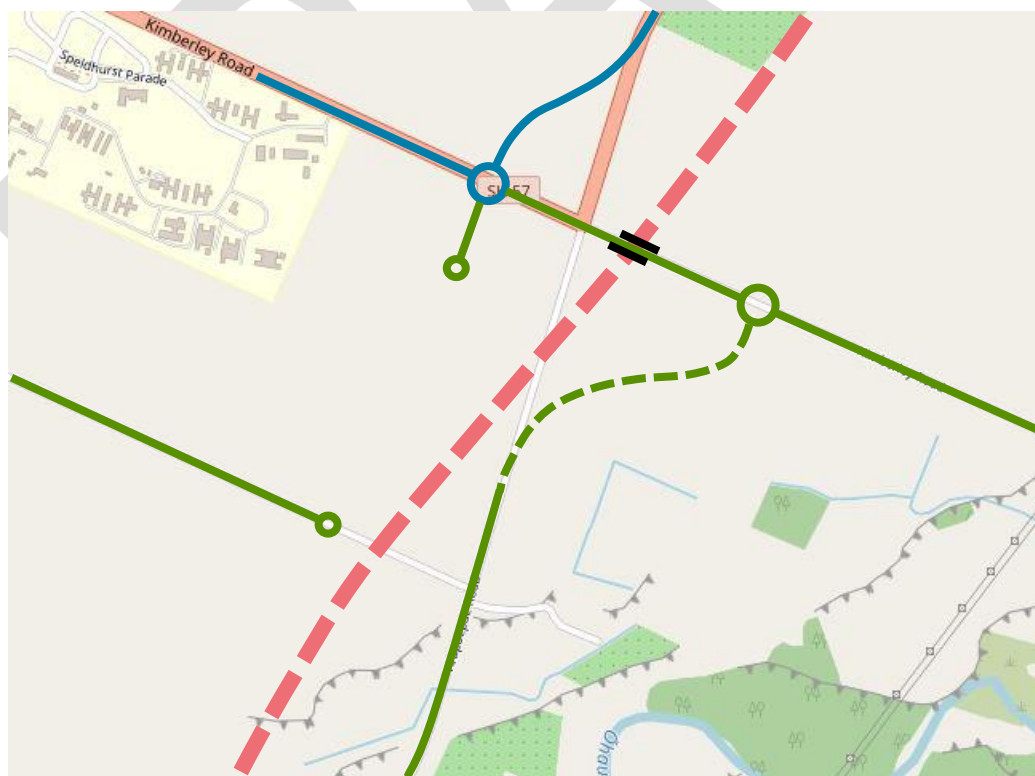


Figure 29: Option J1 (Argonaut Ltd, 2019)

5.11.2 Option J2 underpass

Kimberley Road would remain open via an underpass under the highway.

A large amount of fill would be required to lift the highway over Kimberley Road and there may be associated visual impact.

This option is not sensitive to the highway alignment chosen, as Kimberley Road would remain on existing ground level and safe sight distance to the intersection with Arapaepae Road could be achieved through the underpass.

This option should be considered if Option F3 severing Muhunoa East Road and/or Option G3 severing McLeavey Road is considered as it could provide access to the severed roads via Arapaepae Road as illustrated in Figure 30.

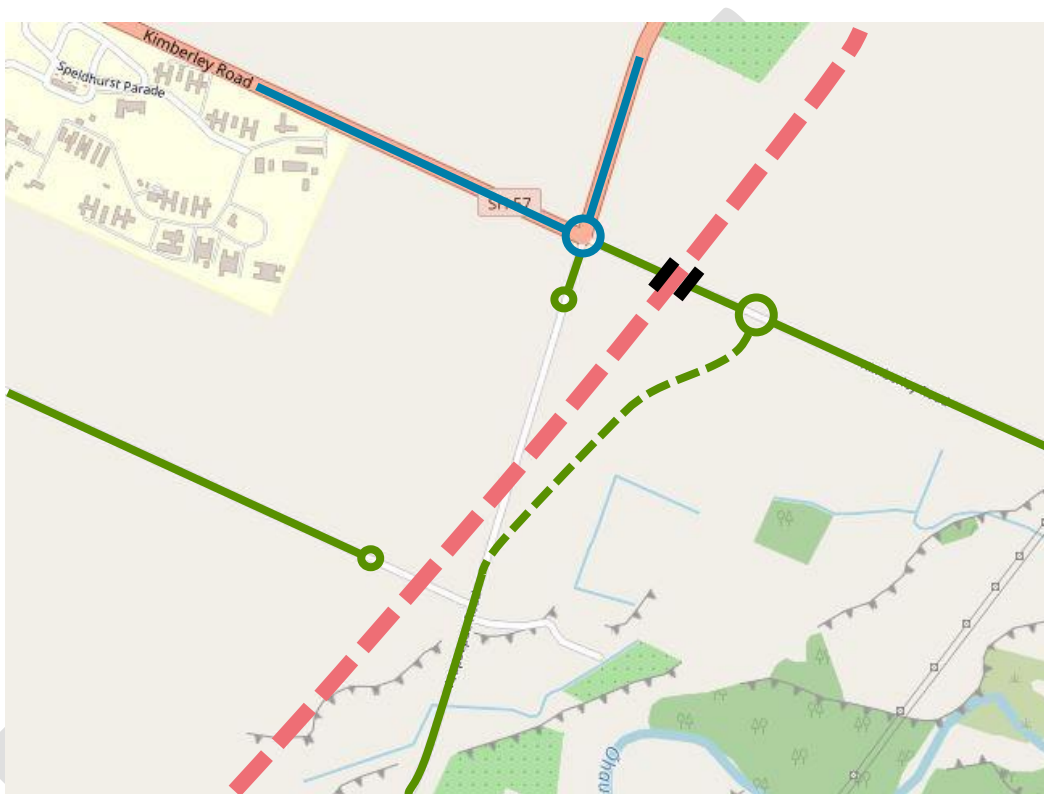


Figure 30: Option J2 (Argonaut Ltd, 2019)

5.11.3 Option J3 cul de sac connect to McLeavey Rd or Muhunoa East Rd

The highway would sever Kimberley Road at Arapaepae Road on the western side of the highway.

The severed portion of Kimberley Road on the eastern side of the highway would be connected to McLeavey Road and/or Muhunoa East Road.

This option is not sensitive to the highway alignment.



Figure 31: Option J3 (Argonaut Ltd, 2019)

5.11.4 Option J4 cul de sac connect to Tararua Road

The highway would sever Kimberley Road at Arapaepae Road on the western side of the highway.

The severed portion of Kimberley Road on the eastern side of the highway would be connected to Tararua Road.

This option is not sensitive to the highway alignment.

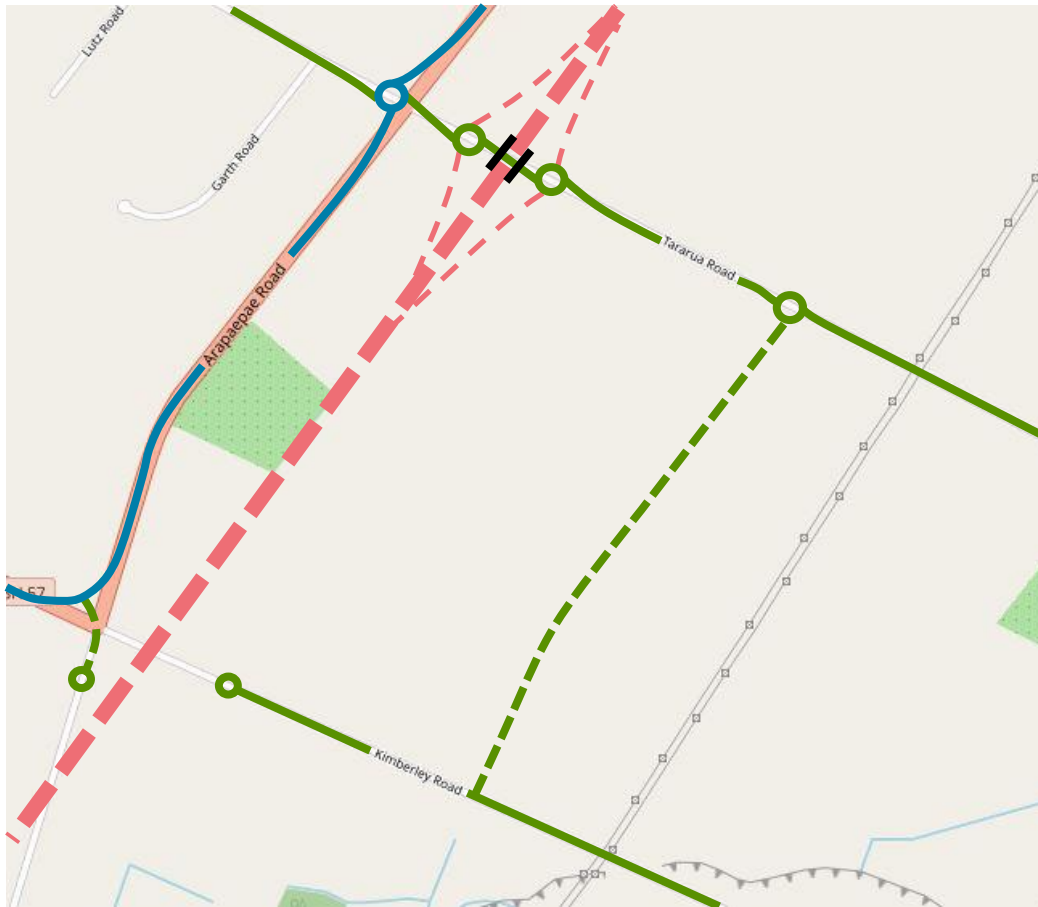


Figure 32: Option J4 (Argonaut Ltd, 2019)

5.12 Tararua Road

The Tararua options described below have assumed an interchange of some form will be provided at this location, in order to limit the number of local road permutations. This has not been confirmed and further local road option development work may be required if this is not the case.

Tararua Road serves a rural residential and farming area along Tararua Road east of the identified 300 m wide highway corridor and a farming and forestry area further east via a connection to Gladstone Road. To the west Tararua Road is serving a growing industrial area.

If Tararua Road were severed by the highway, there would be an alternative access route via Queen Street and Gladstone Road. However, Tararua Road forms the southern boundary of the future Gladstone Green residential and commercial development area east of the highway and will serve a future industrial area between the highway and the existing SH1. Tararua Road has been identified by Horowhenua District Council officers as a favourable location for an interchange serving the southern end of Levin. Therefore, it is considered unlikely that Tararua Road would be severed and (it is assumed) likely that it would connect to the highway.

Options for Tararua Road have been limited to those that tie into a diamond interchange. An example is shown in Figure 33. If, however, an interchange were not provided at Tararua Road (and were provided at Kimberley Road instead), then it is likely that Tararua Road would simply pass either over or under the highway.

In all diamond interchange options, it has been assumed that Arapaepae Road would remain connected to Tararua Road both to the north and south of Tararua Road, although some realignment of Arapaepae Road might be required to separate the roundabouts. This would depend on the highway alignment chosen and whether Tararua Road would pass over or under the highway.

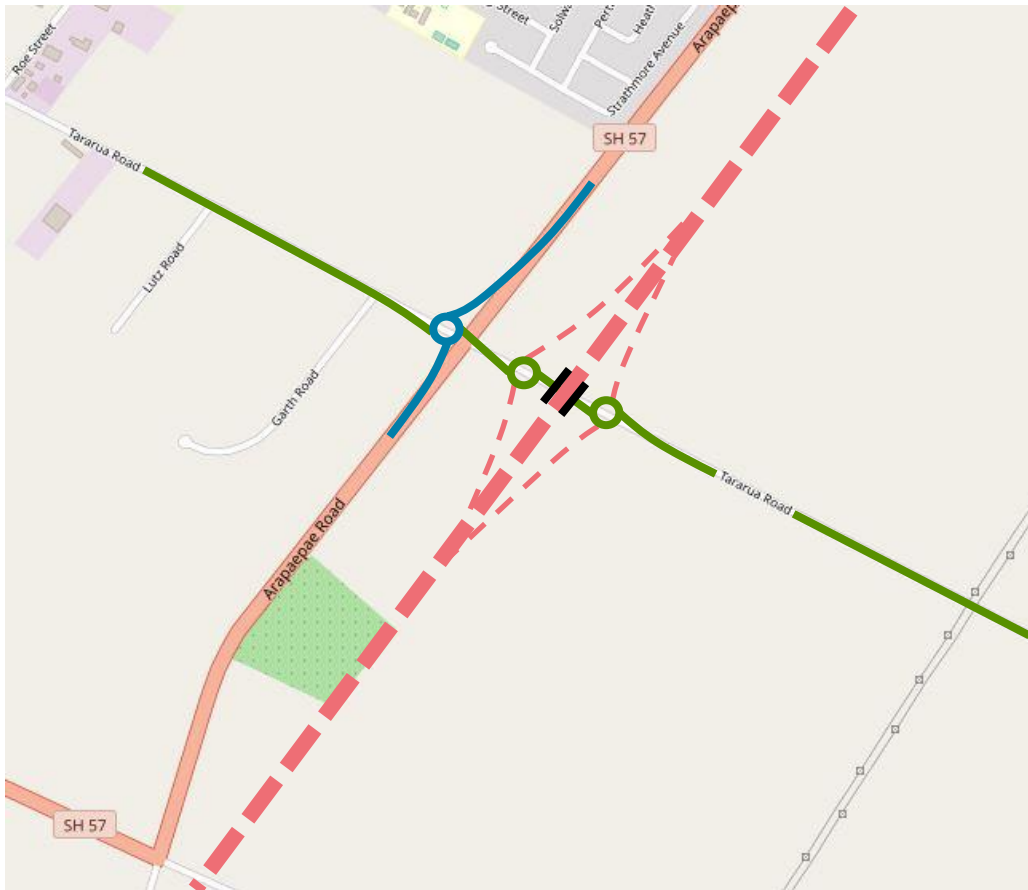


Figure 33: Example of Tararua Road diamond interchange (Argonaut Ltd, 2019)

5.13 Liverpool Street

Liverpool Street runs parallel to Queen Street and Tararua Road in Levin and is situated halfway between the two roads. Unlike Queen Street and Tararua Road, Liverpool Street does not currently connect to or cross Arapaepae Road but stops about 200 m short of Arapaepae Road. As such, access to the existing Liverpool Street would not be severed or affected by the highway.

However, the master plan for the future Gladstone Green housing development, situated east of Arapaepae Road and bounded by Queen Street in the north and Tararua Road in the south, includes an extension of Liverpool Road across Arapaepae Road and into Gladstone Green. The Horowhenua District Council considers the new link to be an important connection to and across Arapaepae Road and therefore also across the highway.

5.13.1 Option J5 bridge

Liverpool Street would extend into Gladstone Green via a bridge over the highway. The highway may have to be lowered partially below ground level so that the Liverpool Street bridge would not restrict safe stopping sight distance to an at-grade intersection between Liverpool Street and Arapaepae Road.

This option could have benefits if the highway alignment were lowered sufficiently to mitigate visual, noise and severance effects on the nearby existing Levin community and future Gladstone Green community, however there may be significant engineering challenges to this. Partially lowering the highway may also provide much needed fill material for use elsewhere. However, free-flow drainage of the highway cutting and interaction with groundwater may be a practical challenge.

The Queen Street crossing in Figure 34 illustrates a bridge option, but this is not the only option. Refer to Section 5.14 for an underpass option. However, it is possible that a bridge option chosen for Liverpool Street might have to apply to Queen Street as well to achieve a free drainage vertical alignment flowing to the north.

A further option (not shown) could be to provide a pedestrian and cyclist connection only at this location.



Figure 34: Option J5 bridge (Argonaut Ltd, 2019)

5.13.2 Option J6 underpass

Liverpool Street would extend into Gladstone Green via an underpass under the highway.

A large amount of fill would be required to lift the highway over Liverpool Street and there may be associated visual and noise impacts. It is unlikely that Liverpool Street could be lowered below natural ground level to reduce the height of the highway, as the depression created would not be free-draining.

The Queen Street crossing in Figure 35 illustrates an underpass option, but this is not the only option. Refer to Section 5.14 for a bridge option.

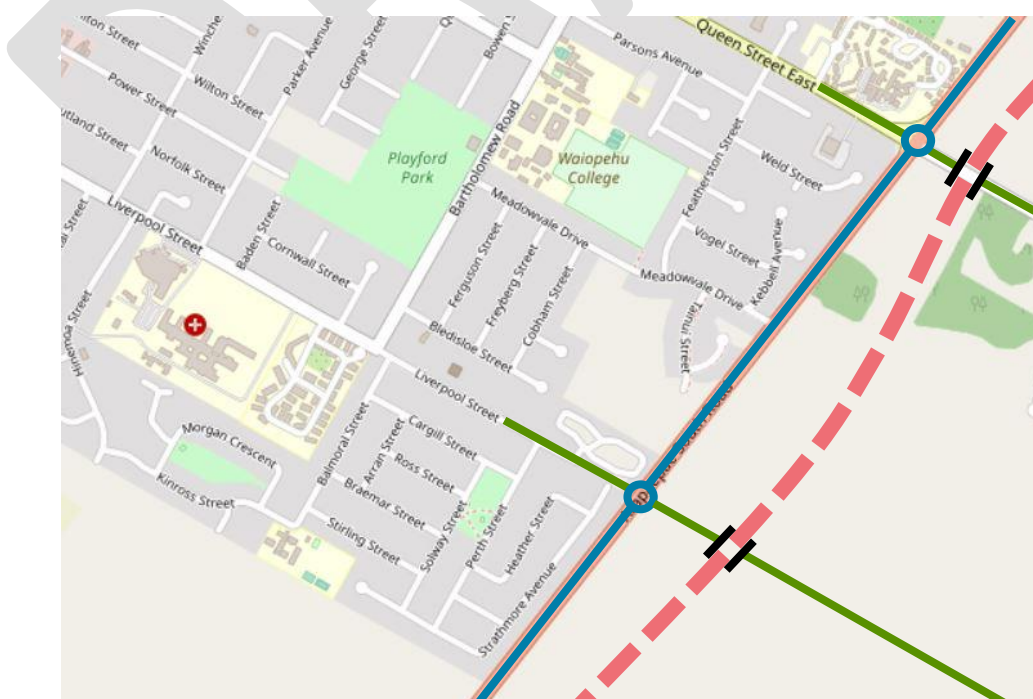


Figure 35: Option J6 underpass (Argonaut Ltd, 2019)

5.13.3 Option J6 no connection to Gladstone Green

Liverpool Street could be extended as far as an at-grade intersection with Arapaepae Road but would not extend into Gladstone Green on the eastern side of the highway.

The Queen Street crossing in Figure 36 illustrates a bridge option, but this is not the only option. Refer to Section 5.14 for an underpass option.

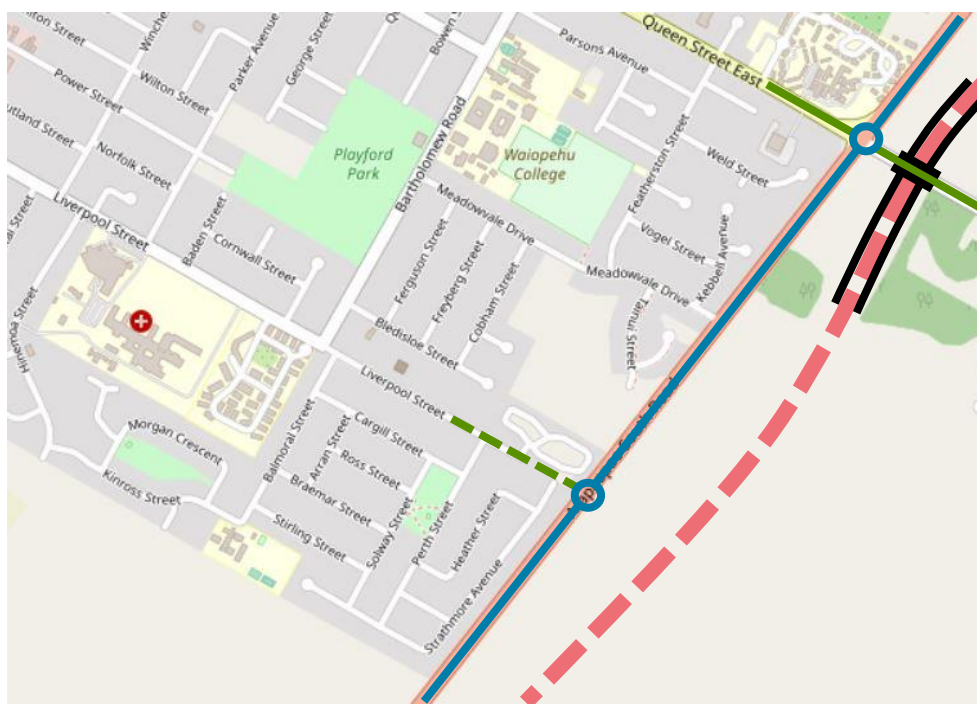


Figure 36: Option J6 no connection to Gladstone Green (Argonaut Ltd, 2019)

5.14 Queen Street

Queen Street serves an area to the east of the highway corridor and provides direct access to the town centre of Levin. The area to the east of Arapaepae Road is earmarked for the future expansion of Levin namely the Gladstone Green development. There is no existing alternative route that could be used if the highway severed Queen Street. Any new links parallel to the highway to Tararua Road or Roslyn Road would be at least 2 km long creating 4 km long circuitous routes. Therefore, options for severing Queen Street have not been considered.

The existing priority-controlled intersection of Queen Street and Arapaepae Road will be converted to a roundabout to improve the safety of the intersection as noted in Section 3.2. Due to the proximity of the Arapaepae Road roundabout to the highway, Queen Street would have to remain on natural ground level. Lifting or lowering the roundabout would not be practical given the close proximity of residential properties and a retirement complex to the intersection.

5.14.1 Option K1 underpass

Queen Street would remain open via an underpass under the highway.

A large amount of fill would be required to lift the highway over Queen Street and there may be associated visual and noise impact.

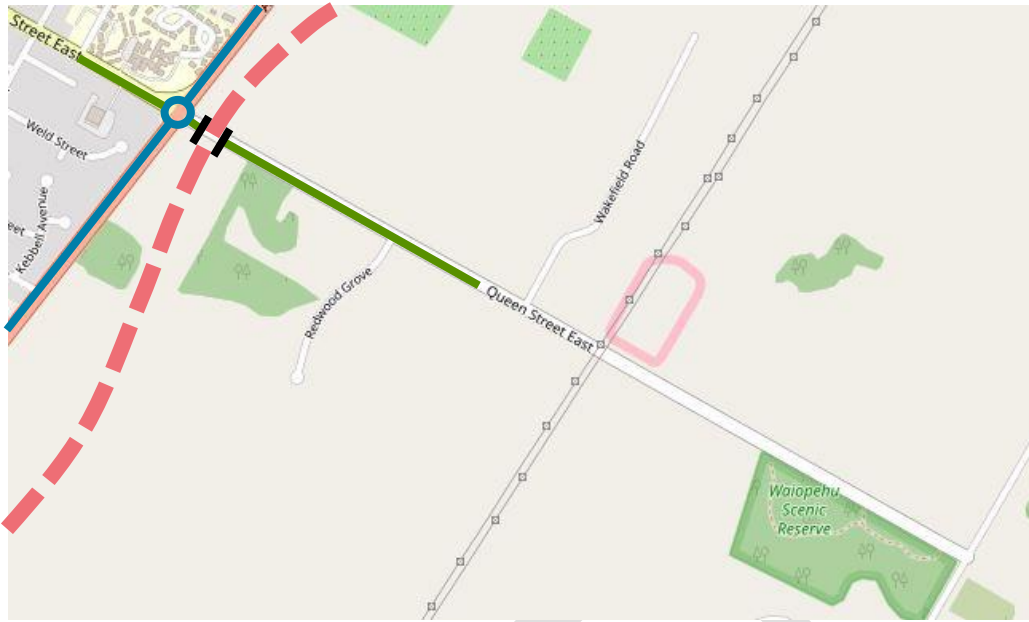


Figure 37: Option K1 (Argonaut Ltd, 2019)

5.14.2 Option K2 bridge

Queen Street would remain open via a bridge over the highway. The highway would be lowered below ground level so that the Queen Street bridge would remain at natural ground level.

This option could have benefits when considering visual, noise and severance effects on the nearby existing Levin community and future Gladstone Green community. Lowering the highway may also provide much needed fill material for use elsewhere. However, free-flow drainage of the highway trench and interaction with groundwater may be a practical challenge.

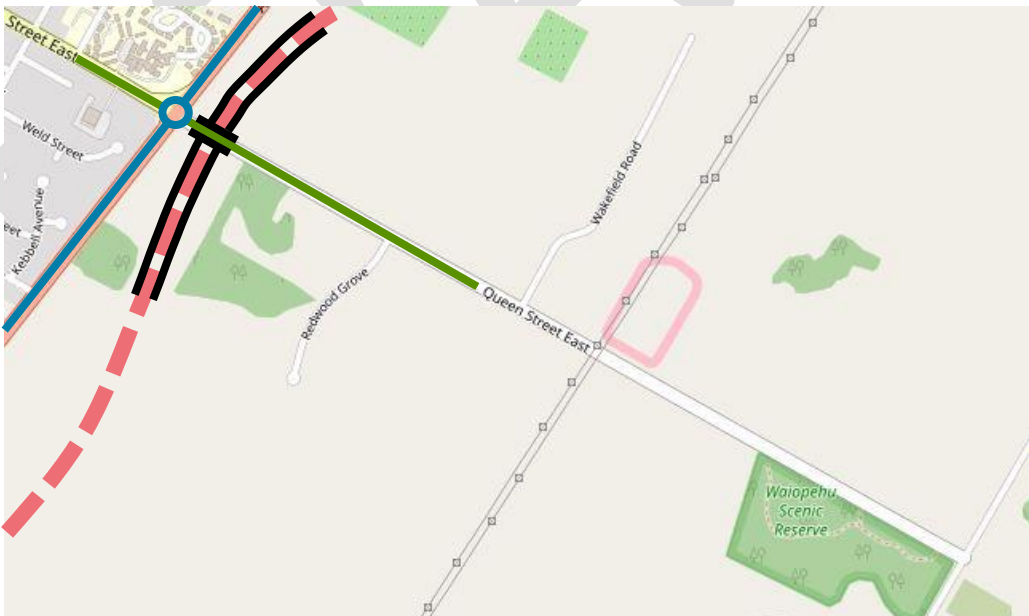


Figure 38: Option K2 (Argonaut Ltd, 2019)

5.15 Roslyn Road and Waihou Road

Waihou Road serves about ten properties to the east of the highway via Roslyn Road. If the highway severed Roslyn Road, there would be no alternative existing route that could serve Waihou Road.

Due to the proximity of Roslyn Road and Waihou Road to the intersection of the highway and SH57 to Palmerston North, it is unlikely that a separate dedicated bridge or underpass to such a small service area could be justified. Therefore, only options that integrate Roslyn Road and Waihou Road with the highway and Arapaepae Road (SH57) intersection have been considered.

5.15.1 Option L1 connect to McDonald Road

The highway would sever Roslyn Road and therefore the connection to Waihou Road. A new link would be provided connecting Waihou Road northwards to McDonald Road, which in turn would be connected across the highway via the connection to Roslyn Road and Arapaepae Road.

The example in Figure 39 illustrates that the connection could follow property boundaries to minimise adverse effects on properties depending on the highway alignment chosen. The stub off Arapaepae Road at the southern end of Waihou Road would be optional as there are no existing property accesses that need to be served at that point. A variation of this option is illustrated in Figure 42. Options would be dependent on the type of intersection layout or roundabout chosen at the intersection of Arapaepae Road (SH57) and the highway alignment.

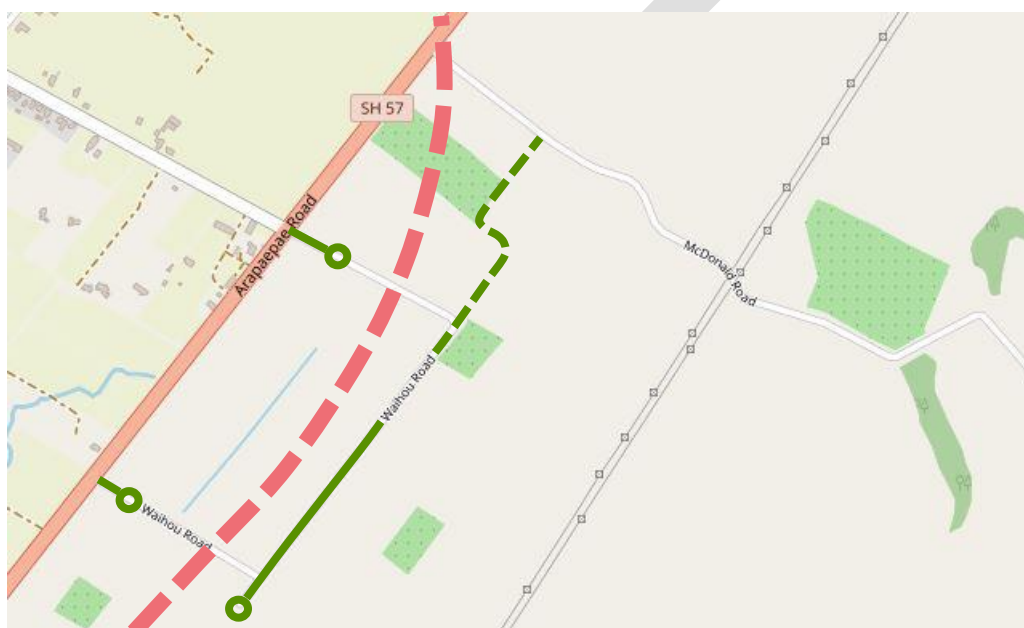


Figure 39: Option L1 (Argonaut Ltd, 2019)

5.15.2 Option L2 connect to Wakefield Road

The highway would sever Roslyn Road and therefore the connection to Waihou Road. A new link would be provided connecting Waihou Road southwards to Wakefield Road.

The example in Figure 40 illustrates that the connection could follow property boundaries to minimise adverse effects on properties. The stub off Arapaepae Road at the southern end of Waihou Road would be optional as there are no existing property accesses that need to be served at that point.

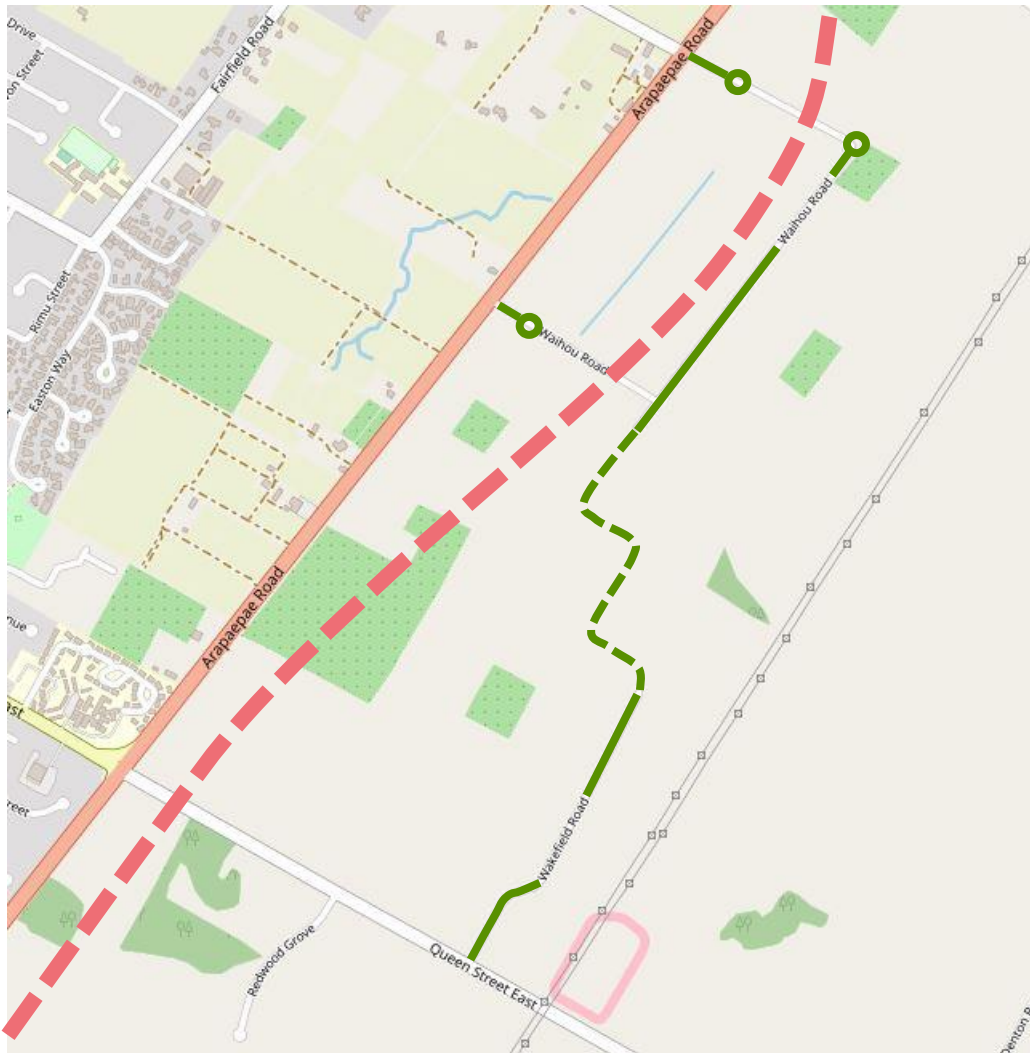


Figure 40: Option L2 (Argonaut Ltd, 2019)

5.16 McDonald Road

McDonald Road serves about a dozen properties east of SH57. The existing T-intersection with SH57 is likely to be affected by all of the highway alignment and interchange or roundabout options that could be considered.

5.16.1 Option M relocate intersection on SH57

The highway would close the existing intersection with SH57. The intersection would be relocated northwards along SH57 to a safe location dependant on the interchange or roundabout options considered. Figure 41 and Figure 42 illustrate two such options.



Figure 41: Option M (Argonaut Ltd, 2019)

5.17 Arapaepae Road (SH57)

Further information on this location is provided in the Interchange Option Review report. (Stantec, 2020)

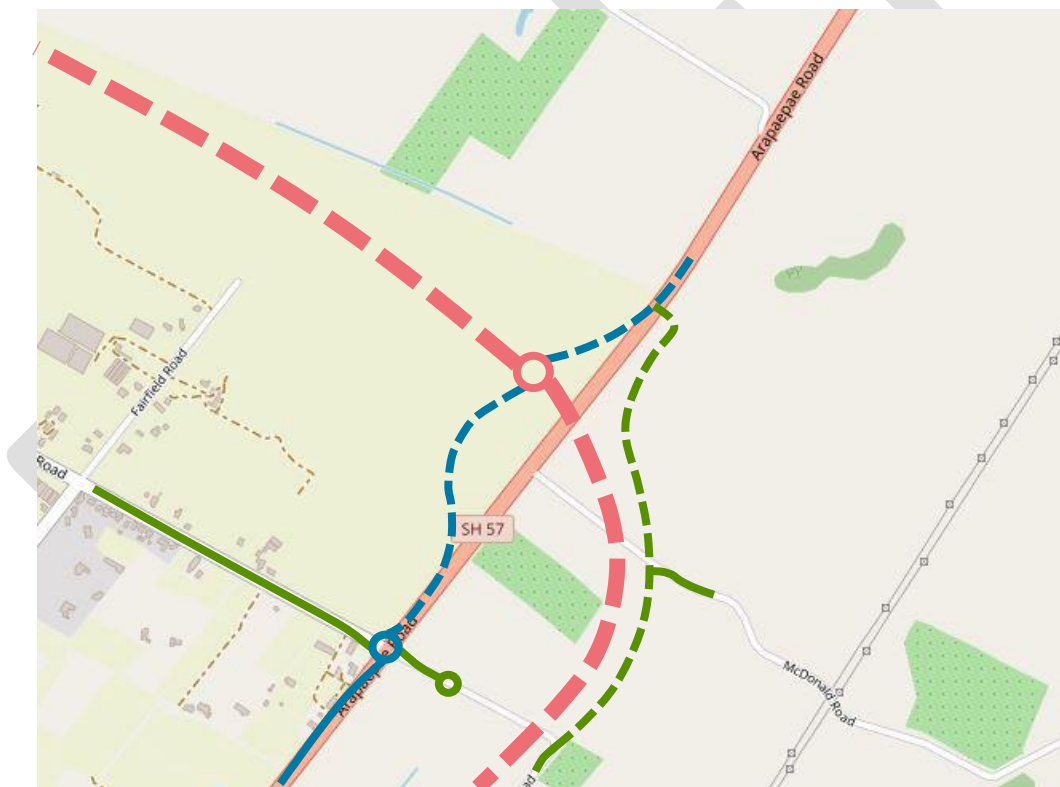


Figure 42: Example of Arapaepae Road SH57 intersection (Argonaut Ltd, 2019)

5.18 Sorensens Road

Sorensens Road is currently a cul de sac accessed from Heatherlea East Road. Sorensens Road serves about 20 residential properties.

The desires of the Sorensens Road community have been recognised in the options considered for Sorensens Road. All options seek to limit severance on Sorensens Road. It is also noted that a considerable amount of property around Sorensens Road has been purchased or is in the process of being purchased by the Transport Agency, which will influence the local road requirements in this area.

5.18.1 Option N1 underpass

Sorensens Road would remain open via an underpass under the highway.

The underpass option may facilitate the vertical alignment of the highway over the nearby railway line to tie in with the existing SH1 gradient levels at Koputaroa Road.

The option is not sensitive to the highway alignment chosen assuming that the furthest south that the highway could be aligned would be as shown in Figure 43.

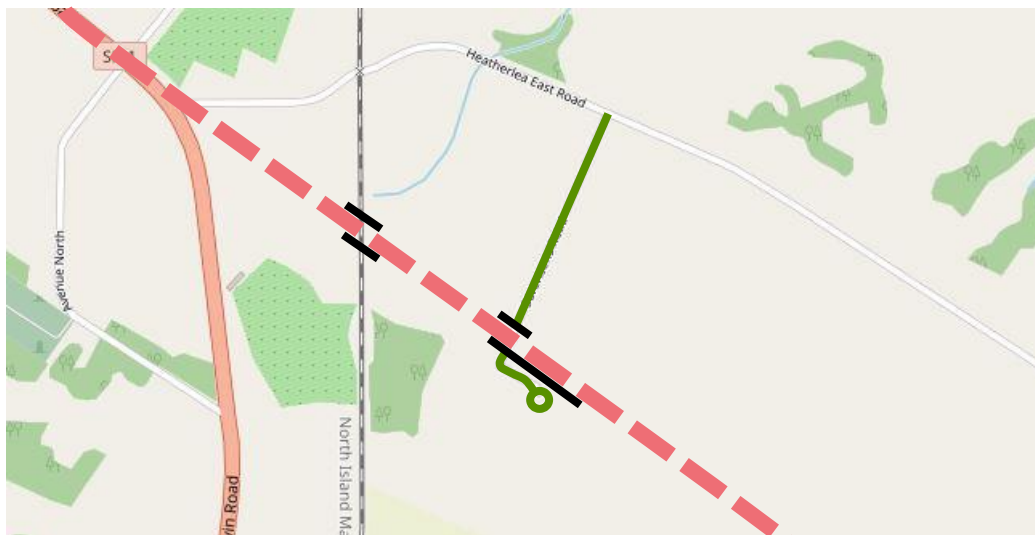


Figure 43: Option N1 (Argonaut Ltd, 2019)

5.18.2 Option N2 bridge

Sorensens Road would remain open via a bridge over the highway.

The vertical alignment of the highway, which would have to pass over the nearby railway line to tie in with the existing SH1 gradient levels at Koputaroa Road, may have to be in fill. This would require the bridge over the highway to be quite high, perhaps as high as 10 m above natural ground level. It is likely that this would be impractical to serve the accesses to the properties south of the highway with this option unless the alignment were shifted further north than indicated in the 300 m wide corridor. This option is therefore sensitive to the highway alignment chosen.

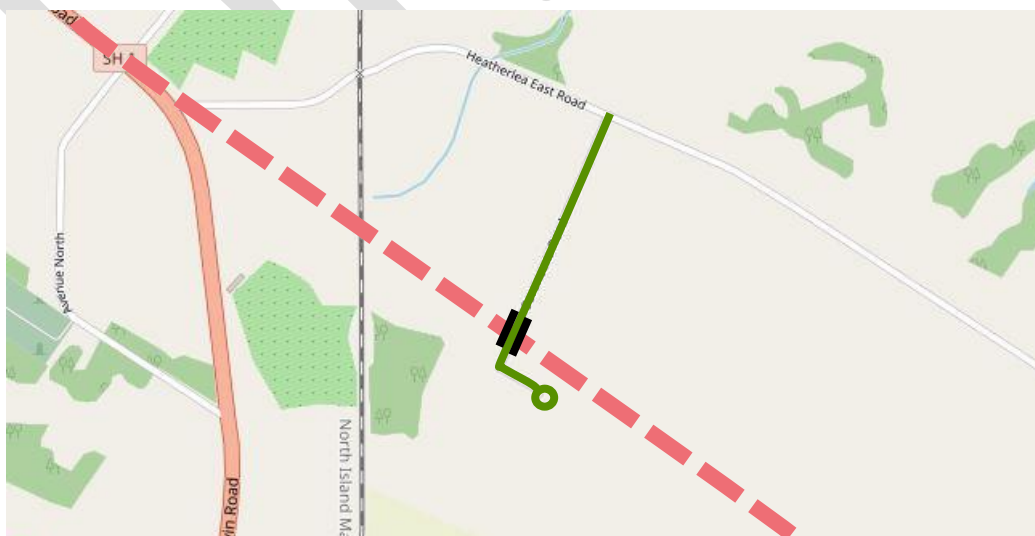


Figure 44: Option N2 (Argonaut Ltd, 2019)

5.18.3 Option N3 status quo

Sorensens Road would not be affected by the highway, which would pass by the southern end of Sorensens Road.

The option is sensitive to the highway alignment, as only those alignments that pass to the south of Sorensens Road could be considered.

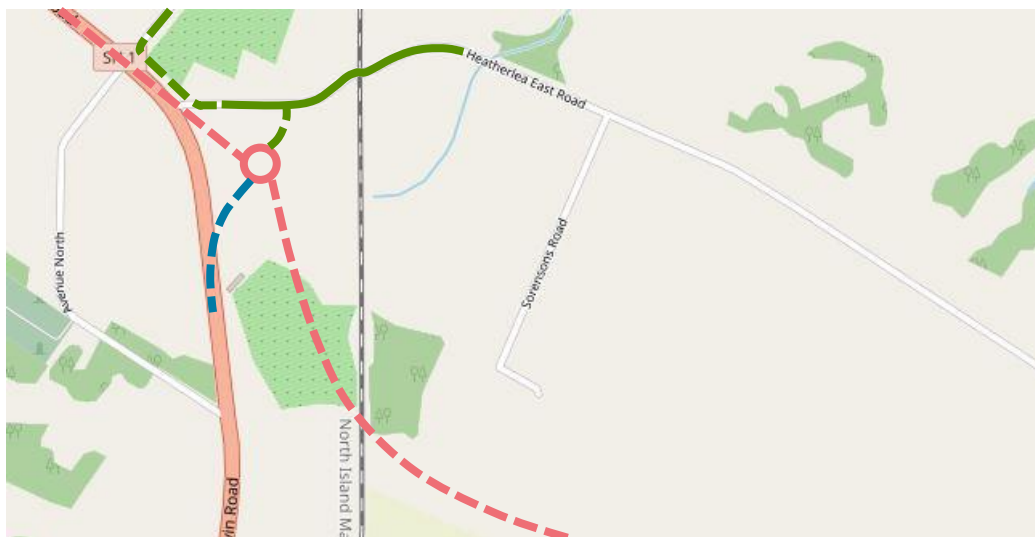


Figure 45: Option N3 (Argonaut Ltd, 2019)

5.19 Heatherlea East Road and Koputaroa Road

Heatherlea East Road provides a rural residential standard road connection between SH1 and SH57 north of Levin as an alternative to Roslyn Road. It also provides the only access to Sorensens Road.

Koputaroa Road ties into SH1 at two points about 6.5 km apart via an 11 km long loop serving farms in a triangular area north of Levin bounded by SH1 in the west, the Manawatu River in the north, and SH57 in the east.

The existing T-intersections with SH1 at the western end of Heatherlea East Road and the southern end of Koputaroa Road are likely to be affected by most if not all of the highway alignments and interchange or roundabout options that could be considered.

If affected, there would be no viable option other than to relocate both intersections between Heatherlea East Road and SH1 and between Koputaroa Road and SH1.

The only highway option that would not affect Heatherlea Road or Koputaroa Road is an alignment that would tie into existing SH1 near the southern end of Avenue North Road.

5.19.1 Option P1 roundabout

The highway would tie into existing SH1 at a roundabout positioned just south of the existing Heatherlea East Road intersection with SH1, which would be closed. Heatherlea East Road would instead share a short connection to the roundabout with a realigned portion of Koputaroa Road as illustrated in Figure 46.

There is the option of providing direct pedestrian and cyclist access between SH1 and Koputaroa Road at the existing intersection of Koputaroa Road, but it would be closed for motor vehicle access.

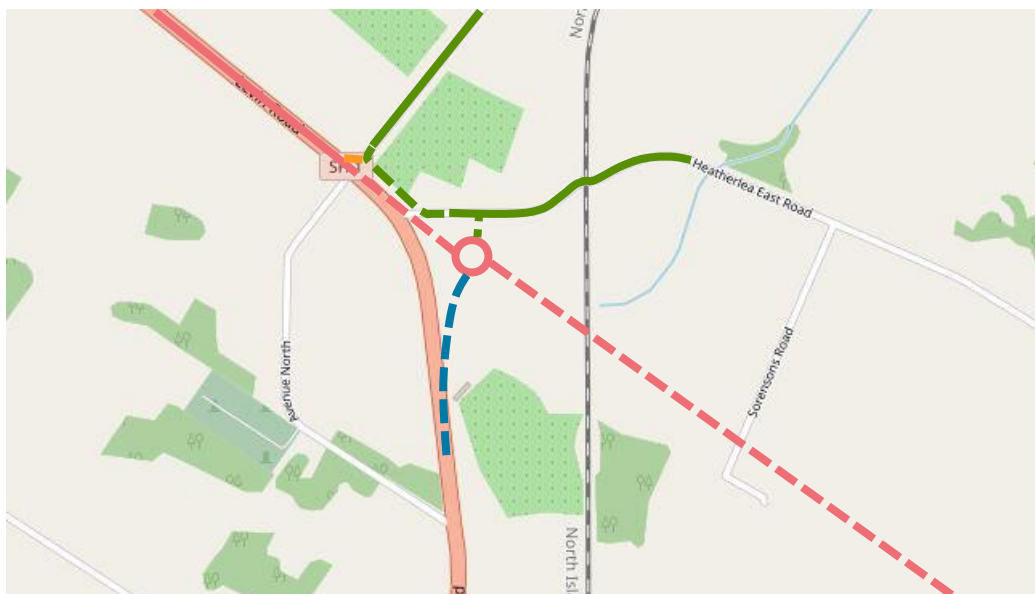


Figure 46: Option P1 (Argonaut Ltd, 2019)

5.19.2 Option P2 connection to interchange

The highway would tie into existing SH1 at a half diamond interchange with north facing ramps. Koputaroa Road would be realigned to cross the highway and join the existing SH1 south of the interchange. The severed portion of Koputaroa Road would be connected to the realigned portion.

Heatherlea East Road would connect to Koputaroa Road at the southbound exit ramp terminal intersection.

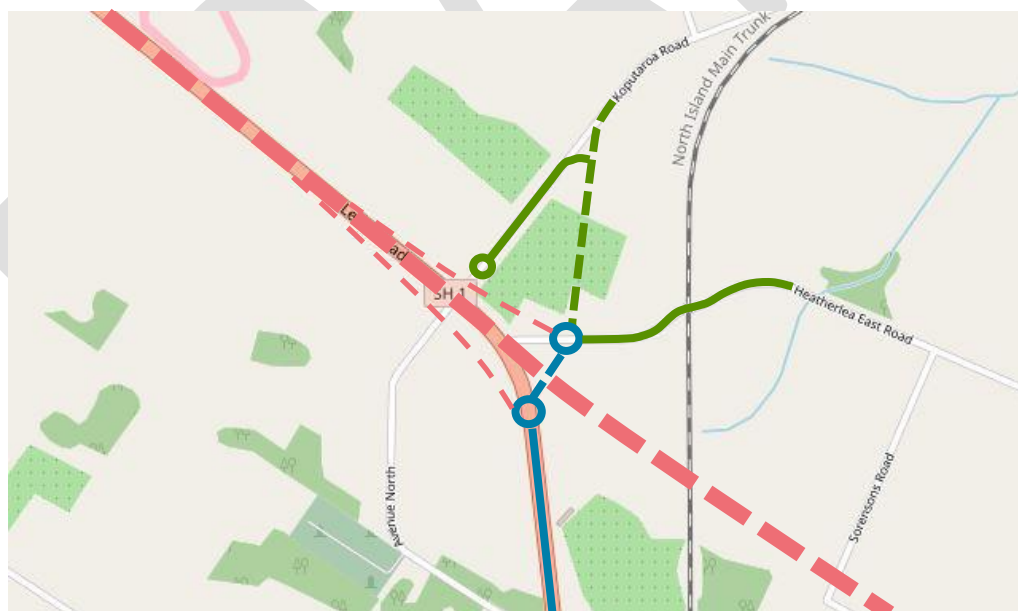


Figure 47: Option P2 (Argonaut Ltd, 2019)

5.20 Avenue North Road

Avenue North Road intersects the existing SH1 at two places about 850 m apart forming a 1.1 km crescent between the two intersections. Avenue North Road serves about 25 rural residential properties, but also provides access to the Avenue Crematorium and Cemetery.

The northern intersection with existing SH1 is likely to be affected by most if not all of the highway alignment and interchange or roundabout options that could be considered.

5.20.1 Option Q cul de sac

As with Koputaroa Road, the Avenue North Road intersection would be closed due to its proximity to the interchange or roundabout.

Avenue North Road would become a cul de sac with a turning bulb for motor vehicles, but pedestrian and cyclist access to SH1 could be maintained. All motor vehicle access to Avenue North would be via the southern intersection on SH1.

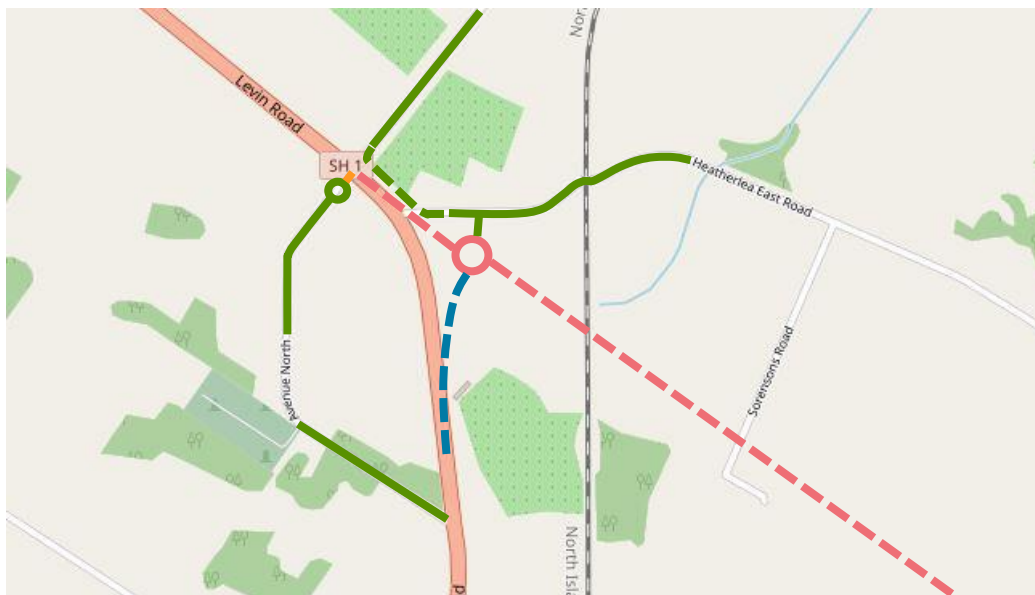


Figure 48: Option Q (Argonaut Ltd, 2019)

6 Summary of Key Questions

The following is a summary of the key questions for local road access provision and connectivity requiring consideration.

Table 1 – Summary of Local Road access option key questions

Location	Key Questions
Taylor's Road / PP20 Tie-in	<ul style="list-style-type: none"> Connect current SH1 via Waitohu stream bridge / Taylor's Road? Connect via a new local road underpass with the Taylor's Road realignment abandoned? Connect via a new local road underpass with Taylor's Road via the Waitohu Stream bridge?
South Manakau Road	<ul style="list-style-type: none"> Reconnect South Manakau Road via an underpass (highway over)? Reconnect South Manakau Road via an overbridge (highway under)? Sever South Manakau Road and provide access via Honi Taipua Street?
Honi Taipua Street	<ul style="list-style-type: none"> Sever Honi Taipua Street and access via Manakau Heights Drive? Reconnect Honi Taipua Street via an overbridge (highway under)? Reconnect Honi Taipua Street via a footbridge only (highway under)? (vehicle access via Manakau Heights Drive) Sever Honi Taipua Street and create a Mokena Kohere Street footbridge
North Manakau Road	<ul style="list-style-type: none"> Reconnect North Manakau Road via an underpass (highway over)?

	Reconnect North Manakau Road via an overbridge (highway under)?
Kuku East Road	Reconnect Kuku East Road via an underpass (highway over)? Reconnect Kuku East Road via an overbridge (highway under)?
Muhunoa East Road	Reconnect Muhunoa East Road via an underpass (highway over)? Reconnect Muhunoa East Road via an overbridge (highway under)? Sever Muhunoa East Road and provide access via Arapaepae Road or McLeavey Road?
McLeavey Road	Reconnect Muhunoa East Road via an underpass (highway over)? Reconnect Muhunoa East Road via an overbridge (highway under)? Sever Muhunoa East Road and provide access via Muhunoa East Road or Arapaepae Road?
Arapaepae Road south of Kimberley Road	Sever Arapaepae Road and provide access via Muhunoa East Road? Sever Arapaepae Road and provide access via McLeavey Road? Sever Arapaepae Road and provide access via Kimberley Road / new link?
Kimberley Road	Reconnect Kimberley Road via an underpass (highway over)? Reconnect Kimberley Road via an overbridge (highway under)? Sever Kimberley Road and provide access via Arapaepae South and a new link? Sever Kimberley Road and provide access via Tararua Road and a new link?
Queen Street	Reconnect Queen Street via an underpass (highway over)? Reconnect Queen Street via an overbridge (highway under)?
Waihou Road	Reconnect Waihou Road via a new link to McDonald Road? Reconnect Waihou Road via a new link to Wakefield Street?
Sorensens Road	Reconnect Sorensens Road via an underpass (highway over)? Reconnect Sorensens Road via an overbridge (highway under)? Retain Sorensens Road status quo based on alignment selection?
Heatherlea East Road and Koputaroa Road	Reconnect Heatherlea East Road and Koputaroa Road via an intersection to a new roundabout on SH1? Reconnect Heatherlea East Road and Koputaroa Road via an interchange on SH1?

7 Next Steps

7.1 Recommendations

This report's recommendations are as follows:

- the local road options identified by the Design Team be taken forward for further consideration in the options evaluation process, and
- at the MCA workshop, the assessors are to comment on the key issues they have identified for each local road option (i.e. relating to their specialist areas), and
- revisit the alternative evaluation processes for local roads following public engagement on the alignment, interchange and local road options.

7.2 Next steps

If this report's recommendations are approved, the next step for the Design Team will be to take forward the local road options into the option evaluation process.

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References

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Stantec. (2020, April 22). Ōtaki to North of Levin Detailed Business Case. *Interchange Option Review*.

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