

# ŌTAKI TO NORTH OF LEVIN DETAILED BUSINESS CASE

## DRAFT MULTI CRITERIA ANALYSIS (MCA): POST MCA DESIGN UPDATE REPORT

PREPARED FOR WAKA KŌTAHI NZ TRANSPORT AGENCY

AUGUST 2020

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# Waka Kōtahi NZ Transport Agency

## Ō2NL DRAFT Multi Criteria Analysis (MCA): POST MCA DESIGN UPDATE REPORT

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DRAFT



# 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 upgrade 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 endorsed the preferred corridor on 14 December 2018.

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 Expressway (which is located approximately 2km north of the Ōtaki township) and will re-connect into SH1 and SH57 to the north of Levin (the New Highway).

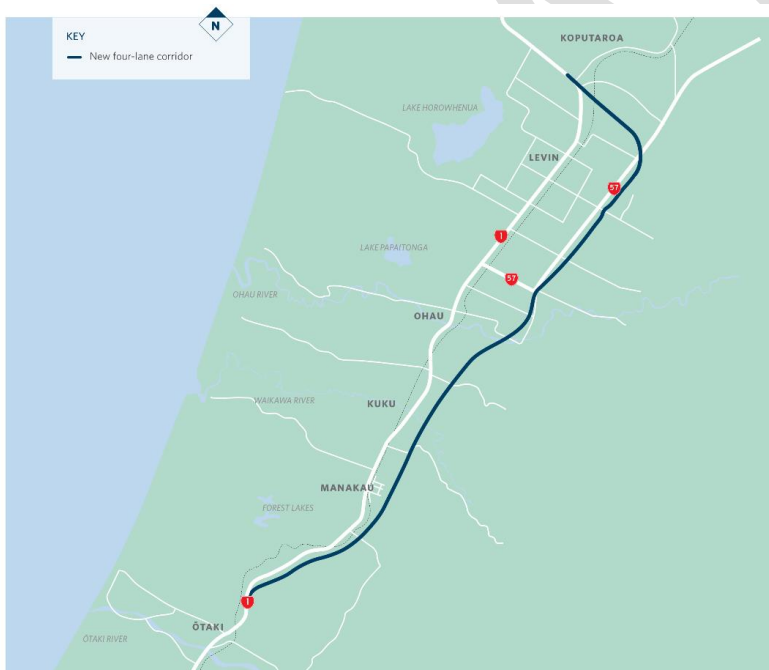


Figure 1 – Preferred 300m corridor for the Ōtaki to North Levin New Highway

At the completion of the IBC it was identified that one of the first key activities to be undertaken to inform the DBC was to undertake multi criteria analysis (MCA) processes to help identify a preferred alignment within the 300m corridor, the preferred location for the New Highway's interchanges and to identify the local road re-configuration and connections.

## 2. Purpose

The purpose of this report is to set out the design refinements undertaken by the Project Design Team<sup>1</sup> for the highway alignment, interchange (form / type) and local road long list options that were identified for further assessment in the *Assessment of new highway alignment, interchange and local road options* Report in July 2020. This report is referred to as the Draft Multi Criteria Analysis (MCA) Report in this document. It is draft as it remains subject to input from Iwi and public consultation.

## 3. Post MCA design update processes

### 3.2 Highway alignment design update processes

The Ō2NL Highway alignment options in Table 1 were identified in the Draft MCA Report as the preferred alignment for each "highway zone", and together comprise the draft preferred alignment.

Table 1: Draft preferred alignment in each New Highway zone

Zone	Draft preferred alignment in each New Highway zone
A	Green Alignment (only)
B	White Alignment (only)
C	White Alignments (only)
D	Dark Blue Alignment (only)
E	Green Alignment (only)
F	Both Orange and White Alignments
G	Purple Alignment (only)
H	Cyan Alignment (only)
K	Both Yellow and Dark Blue Alignments
L	Both Orange and Black Alignments

Following completion of the Draft MCA Report, the Project Design Team identified that there was a need to "stitch" together the emerging preferred alignment options to ensure that each could technically connect to the emerging preferred alignment in the next highway zone.

In addition, this process also enabled the Project Design Team to respond to the key issues raised by the MCA assessors (such as avoiding ecological effects or complex property acquisitions) as well as ensuring the highway alignments appropriately integrated with the draft preferred interchange options.

Section 4 below identifies the key outcomes of the design updates to the draft preferred alignment in each zone as identified in the Draft MCA Report. It is noted that there were no material design updates to the draft preferred alignment for Zones D and H.

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<sup>1</sup> The key members of the Project Design Team included: Jamie Povall (Design Manager), Keith Weale (Geometrics Lead), Phil Peet (Team Leader) and Selwyn Blackmore (Transport Planning Lead)

### 3.3 Interchange design update processes

The interchange location / form options in Table 2 were identified in the Draft MCA Report as the draft preferred options to be considered further.

Table 2: Draft preferred interchange location / form options

Location	Draft preferred interchange options
Manakau / Kuku	No connection, but if a connection was to be provided, then there is a preference for an interchange at Kuku (form undecided)
Kimberley or Tararua	Tararua only, noting a preference for grade separation
"SH1 / SH57 Split"	Roundabout (only)
North Levin	Roundabout (only)

Following completion of the Draft MCA Report, the Project Design Team further considered the location and forms of the draft preferred interchange options. Further design refinements were identified for the Tararua and "SH1 /SH 57 Split" interchange options, however no changes were identified for the Manakau / Kuku or North of Levin interchange options.

Section 5 below identifies the outcomes of the investigations undertaken by the Project Design Team for the Tararua and SH1 /SH57 interchange locations.

### 3.4 Local road design update processes

The Draft MCA Report identified a number of local road options for further consideration. Following completion of the Draft MCA Report, the Project Design Team undertook further engagement with Horowhenua District Council (HDC), Kāpiti Coast District Council (KCDC) and Waka Kotahi's technical specialists. Consequently, the Project Design Team was able to further reduce the local road long list (it is noted that a number of the original Local Road zones were also able to be combined).

Section 6 below sets out the key design updates undertaken for the local road option long list since completion of the Draft MCA Report.

### 3.5 Ō2NL project steering committee meeting

The recommendations of the Draft MCA Report, and the design updates documented in this report were endorsed by the Ō2NL Project Steering Group on 8 July 2020.

## 4. Highway alignment design updates

This section of the report sets out the design updates to the New Highway alignments that were identified in the Draft MCA Report for further consideration.

### 4.1 Zone A

The Draft MCA Report identified the Green alignment option for further progression for Zone A. Figure 2 sets out its approximate location (as identified in the Draft MCA Report).



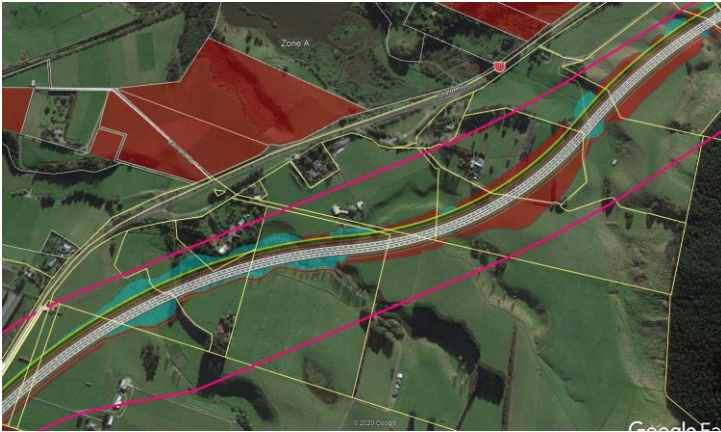


Figure 2 – Draft preferred Green alignment option for Zone A (as identified in the Draft MCA Report)

Following completion of the Draft MCA Report, the Project Design Team undertook further design refinements for the Green highway alignment. In particular, it sought to locate the alignment further away from Pukehou (to reduce cultural impacts), and to ensure an efficient connection to the preferred White Alignment in Zone B could be achieved.

Figure 3 sets out the refined Green highway alignment. While reducing cultural effects, the design amendments are not expected to create any new adverse effects nor add additional landowners who were not previously affected. It is proposed that this alignment be taken to public consultation.



Figure 3 – Draft preferred Green alignment options to proceed to public consultation (post Draft MCA Report)

## 4.2 Zone B

The Draft MCA Report identified the White highway alignment option for further progression for Zone B. Figure 4 sets out its approximate location (as identified in the Draft MCA Report).



Figure 4 – Draft preferred White alignment option for Zone B (as identified in the Draft MCA Report)

Following completion of the Draft MCA Report, the Project Design Team refined the White highway alignment in order to further minimise the impacts on the Pukehou Native Bush Area(s).

As set out in Figure 5, the design refinement process resulted in the alignment being shifted further east at the northern end of Zone B. While reducing effects on ecology the design amendments are not expected to create any new adverse effects nor add additional landowners who were not previously affected (even though the preferred alignment extends slightly beyond the edge of the preferred corridor). It is proposed that this alignment be taken to public consultation.



Figure 5 – Draft preferred White alignment option to proceed to public consultation (post Draft MCA Report)

### 4.3 Zone C

The Draft MCA Report identified the White highway alignment option for further progression for Zone C. Figure 6 sets out its approximate location (as identified in the Draft MCA Report).



Figure 6 – Draft preferred White alignment option for Zone C (as identified in the Draft MCA Report)

Following completion of the Draft MCA Report, the Project Design Team undertook additional design investigation works. During the Draft MCA process, it was identified that the house formerly owned by Robert Whiley, which is located at 76 North Manakau Road, would probably be relocated under all options.

On this basis the preferred White alignment was shifted slightly further east as set out in Figure 7 below. The design refinements reduce the impacts on nearby market gardens and are not expected to create any new adverse effects nor add additional landowners who were not previously affected. It is proposed that this alignment be taken to public consultation.



Figure 7 – Draft preferred White alignment option to proceed to public consultation (post Draft MCA Report)

#### 4.4 Zone E

For Zone E, and as set out in Figure 8, the Green highway alignment was identified for further progression in the Draft MCA Report.



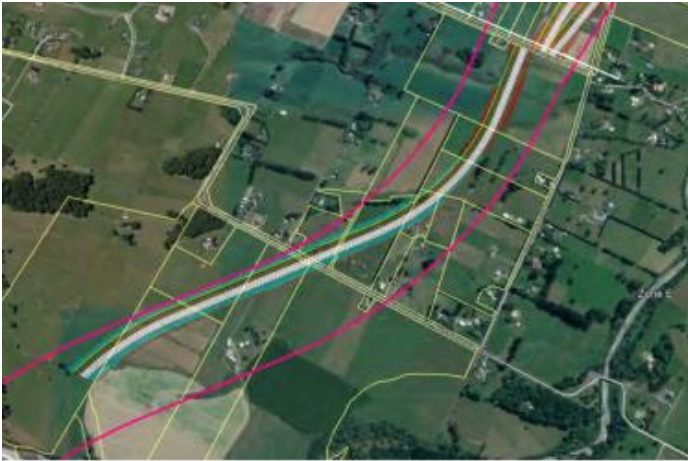


Figure 8 – Draft preferred Green alignment option for Zone E (as identified in the Draft MCA Report)

Following completion of the Draft MCA Report, the Project Design Team further refined the northern section of the Green highway alignment to ensure an efficient connection to the preferred alignment option(s) for Zone E was achieved.

Figure 9 identifies the refined Green highway alignment. The design amendments are not expected to create any new adverse effects nor add additional landowners who were not previously affected. It is proposed that this alignment be taken to public consultation.



Figure 9 – Draft preferred Green alignment option to proceed to public consultation (post Draft MCA Report)

## 4.5 Zone F

For Zone F, both the Orange and White highway alignments were identified for progression in the Draft MCA Report (noting that the Orange alignment was preferred under both the weighted and unweighted rankings). Figure 10 sets out both the highway alignment options.



Figure 10 – Short listed Orange and White alignment options for Zone F (as identified in the Draft MCA Report)

During the MCA workshop processes for the Draft MCA Report, Waka Kotahi noted its concern that the section of the Orange highway alignment to the south of Kimberley Road was located outside of the preferred corridor, and therefore three properties that had not previously been impacted were now likely to be affected. Waka Kotahi was also concerned that this section of the Orange alignment would result in a complex property acquisition of a nearby chicken farm. Accordingly, following completion of the MCA Report, the Project Design Team further refined the White highway alignment to the south of Kimberley Road in order to ascertain whether all of the alignment could be located within the preferred corridor. This in turn would also make better use of a number of properties that had already been acquired by Waka Kotahi.

These investigations resulted in a new refined White highway alignment to the south of Kimberley Road as set out in Figure 11. The design amendments to the White alignment are not expected to create any new adverse effects nor add additional landowners who were not previously affected by the White alignment. It is proposed that this alignment be taken to public consultation.



Figure 11 – Draft preferred White alignment option to proceed to public consultation (post Draft MCA Report)

## 4.6 Zone G

For Zone G, and as set out in Figure 12, the Purple alignment option was identified as the preferred alignment option to be progressed in the MCA Report. However, during the MCA workshop process it was reinforced that the native bush stands located to the immediate south of Queen Street should be avoided if possible.





Figure 12 – Draft preferred Purple alignment option for Zone G (as identified in the Draft MCA Report)

Following completion of the Draft MCA Report, the Project Team undertook further design refinement of the preferred Purple highway alignment to ascertain whether the native bush stands could be avoided. Figure 13 sets out the refined Purple highway alignment with design amendments that avoid the native bush stands and are not expected to create any new adverse effects nor add additional landowners who were not previously affected. It is proposed that this alignment be taken to public consultation.



Figure 13 – Draft preferred Purple alignment option to proceed to public consultation (post Draft MCA Report)

## 4.7 Zone K

For Zone K, and as set out in Figure 14, the Yellow and Dark Blue highway alignment options were identified for further progression in the Draft MCA Report. However, during the Draft MCA workshop process it was identified that there were geometric and local road connectivity issues as well as high risk property acquisition constraints (e.g. a nearby chicken farm) that required further consideration.

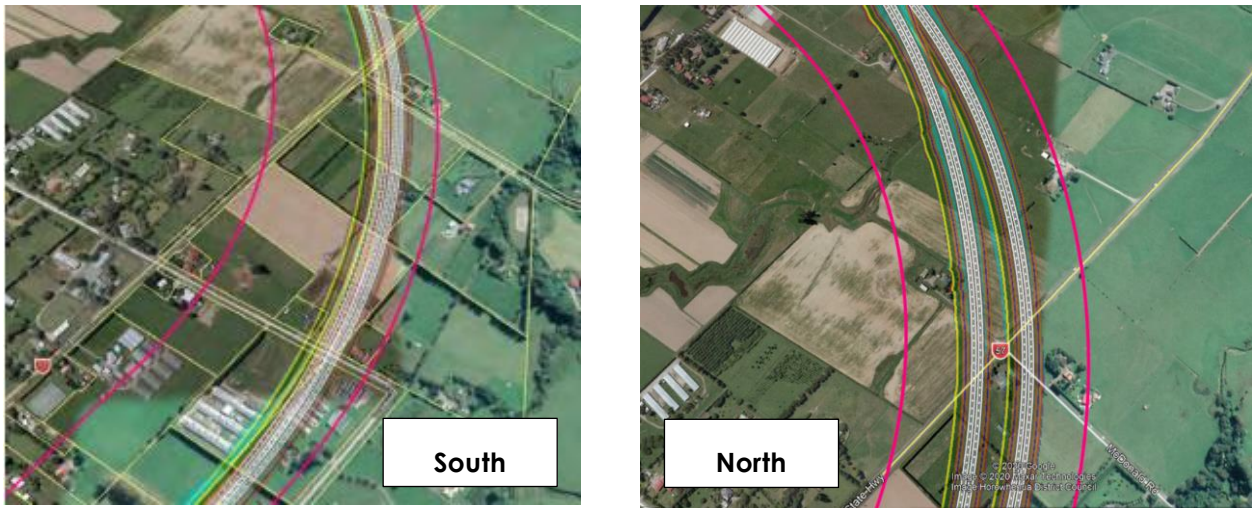


Figure 14 – Short listed Yellow and Dark Blue high alignment options for Zone K (as identified in the Draft MCA Report)

Following the Draft MCA Report, the Project Design Team developed a blended “Yellow / Dark Blue” alignment option that avoided complex property acquisitions associated with some parcels at the northern end of Waihou Road. In addition, the refined alignment is considered more likely to safely and efficiently integrate with the preferred at-grade roundabout at the “SH1 / SH57 Split” location (see the interchange section below).

Figure 15 sets out the refined Yellow / Dark Blue highway alignment. The design amendments are not expected to create any new adverse effects nor add additional landowners who were not previously affected. It is proposed that this alignment be taken to public consultation.

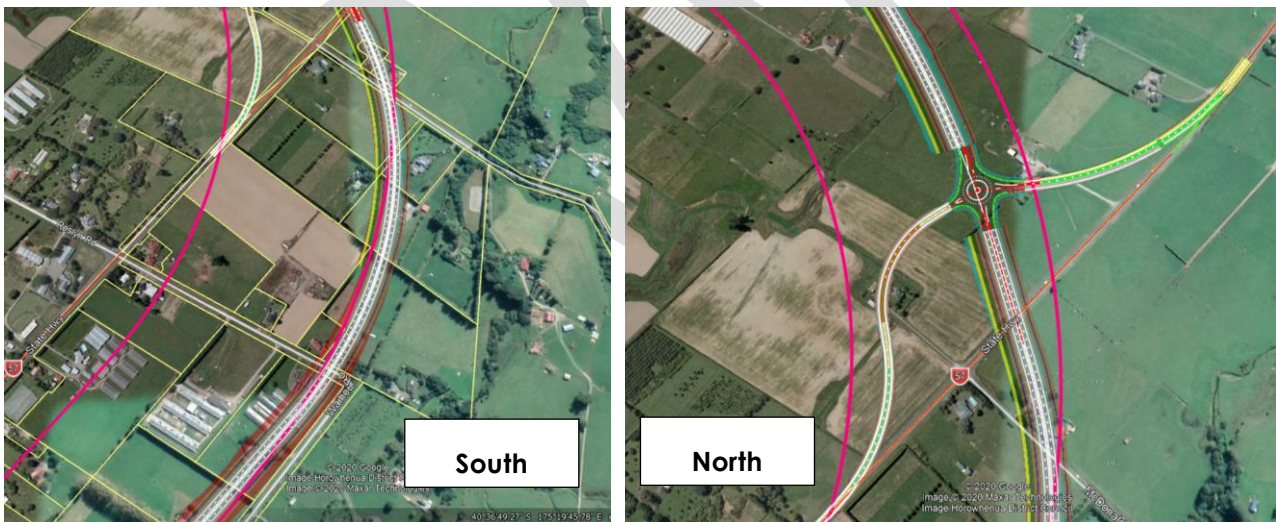


Figure 15 – Draft preferred alignment option for Zone K to proceed to public consultation (post MCA Report)

## 4.8 Zone L

For Zone L, and as set out in Figure 16, the Black and Orange highway alignment options were identified for progression in the Draft MCA Report. However, during the MCA workshop process it was highlighted by Waka Kotahi that sections of both options were located outside of the preferred corridor and would therefore impact on up to three properties not previously identified as being affected. In addition, there were localised geometric design challenges with the emerging preferred alignments including needing to allow for the North Island Main Trunk (NIMT) Rail Line, and local terrain complexities (e.g. steep sided gullies) that would need to be



overcome. The alignment through this section also needed to connect safely and efficiently into the emerging preferred intersection forms at the SH57 / SH1 Split and North of Levin locations.



Figure 16 – Short listed Black and Orange alignment options for Zone L (as identified in the Draft MCA Report)

Following completion of the Draft MCA Report, and to respond to the challenges identified, the Project Design Team drew on information gathered from previous site visits, updated property information and also undertook an additional site visit to consider the potentially newly affected area to the south of the corridor.

As a result of this more detailed investigation, the Project Design Team developed a new alignment option. The amended option:

- makes better use of a number of properties (5 at this stage) that have been acquired (or are part way through acquisition) by Waka Kotahi in the Sorensens Road area
- Enables a more optimal and appropriate geometric alignment between the Draft MCA preferred roundabout options at the SH1/57 Split and at North of Levin locations, including the combination of horizontal and vertical curvature and interface with the elevated crossing of the NIMT Rail Line and the need to grade back down close to the existing ground level at the proposed North Levin Roundabout, which will be important for northbound traffic (towards SH1) to operate safely
- Avoids more of the deep incised gully landform features, being 15m depth (or greater) in places, traversed by the original Black and Orange options, which was noted by the Project Design Team as being a significant concern following a post-MCA site visit. Instead it utilises much of the ridgeline terrain, and thereby crosses the deep incised gullies at closer to a perpendicular angle (as opposed to the alignment running longitudinally with the gullies which is not favoured), and
- Avoids impacting properties located outside of the preferred corridor, that have since been contacted by the Project Team and who are strongly opposed to an option that extends significantly out of the corridor.

It is recognised that the proposed draft preferred alignment as described would have other effects similar to the Green and Purple options assessed as part of the MCA, including landscape and visual effects and worse social / community outcomes. Whilst the within corridor options scored worse on Engineering Degree of Difficulty during the Draft MCA process, this was primarily due to the effect on local roads. This effect would be lessened by pulling the new road alignment south of Sorensens Road (as per the draft preferred alignment).

On the basis of these various considerations (landowner feedback, property purchase, geometrics, intersection tie-ins and terrain issues), a refined “within corridor” option is preferred to be advanced to public consultation through Zone L.

Figure 17 sets out the preferred highway alignment to be advanced to public consultation (i.e. post Draft MCA).



Figure 17 – Draft preferred new alignment option to advance to public consultation (post Draft MCA Report)

## 5. Interchange design updates

Section 5 sets out the key design updates to the interchange form / type options since completion of the Draft MCA Report.

### 5.1 Tararua interchange form

The Draft MCA Report identified a preference for a grade separated interchange at Tararua Road (rather than at Kimberley), but did not express a preference for its form. The preference for grade separation was primarily due to the status of the New Highway in the One Network Road Classification and the volume of traffic that is expected to be using it.

The interchange could either take the form of a half or full diamond shaped interchange at Tararua Road. A half diamond interchange would facilitate movements to and from the south only (i.e. movements from the north would be catered for by the roundabout at the SH1 / SH57 Split location). A full diamond interchange would facilitate full movements from both the south and the north. Figure 18 provides an example of a full diamond interchange at Tararua Road.

It is recommended that both the half and full diamond shaped interchanges be advanced to public engagement.



Figure 18 – An example of a full diamond shaped interchange at Tararua Road

## 5.2 “SH1 / 57 Split” interchange form

As set out in Figure 19, the Draft MCA Report identified a preference for an at-grade roundabout at the SH1 / SH57 Split location (rather than a grade separated option).



Figure 19 – SH1 / SH 57 Split interchange (roundabout) location (as identified through the Draft MCA Report process)

Through the MCA workshop discussions, a preference was identified for the roundabout to be located further southeast of the preferred corridor to reduce property acquisition requirements, other adjacent property effects (e.g. access) and to safely and efficiently integrate with the preferred highway alignment option in Zone K. Accordingly, further design work was undertaken to develop this option. The draft preferred interchange form to be advanced to public consultation at the SH1 / SH57 Split location is a roundabout only option as set out in Figure 20.



Figure 20 – Draft preferred roundabout at the SH1 / SH 57 Split location for public consultation

## 6. Local road design updates

Section 6 sets out the key design updates to the local road options long list since completion of the Draft MCA Report. The design updates reflect the discussions the Project Design Team has had with HDC, Kāpiti Coast District Council (KCDC) and Waka Kotahi’s technical specialists.

It should be noted that the alignments below have not been subject to design modelling and therefore should be considered as conceptual only. Once concept design has been undertaken there will be a better understanding of the potential footprint and effects of these options and additional refinements will be made.



## 6.1 Local Road Zone A: Existing SH1 / Taylors Road

The Draft MCA Report identified two emerging preferred local road options for consideration for Local Road Zone A.

Following discussions with KCDC and Waka Kotahi, one local road option for Local Road Zone A was identified for progression – that being the option retaining the link under Waitohu Stream bridge which is currently being constructed as part of the Peka Peka to Ōtaki Expressway. This option was selected as it requires no additional property take. As set out in Figure 21, this option would utilise the new Taylors Road connection / overbridge that is currently being built as part of the Peka Peka to Ōtaki Expressway. It is noted however existing SH1 (which is proposed for revocation) would need to be realigned and would either pass over or under the new highway alignment.

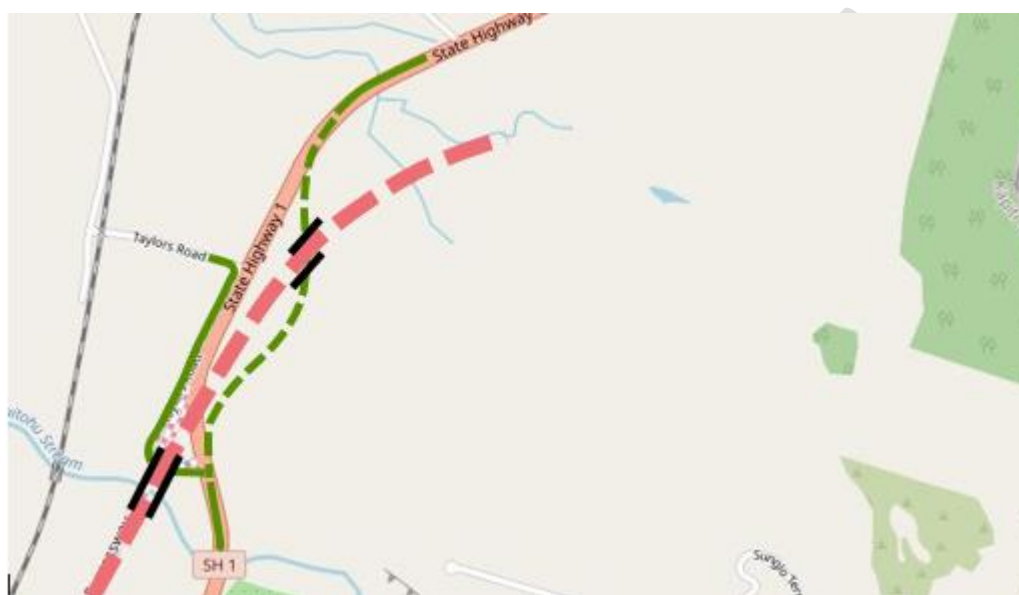


Figure 21 – Draft preferred local road connections for Local Road Zone A

## 6.2 Local Road Zones B and C: South Manakau Road and Honi Taipua Street

The Draft MCA Report included two emerging preferred local road options for Local Road Zone B (South Manakau Road) being either an underpass or an overbridge. The report also identified three emerging preferred options for Local Road Zone C (Honi Taipua). Following discussions between HDC and Waka Kotahi, one local road option was identified for a combined Local Road Zone B and C.

As set out in Figure 22, the proposed local road option would provide a connection at South Manakau Road (either an overbridge or an underpass), and a pedestrian and cycling connection at Honi Taipua Street to connect Manakau Heights to Manakau Village. Both connections could be either over or under the proposed highway alignment. Due to the proximity of these two locations it was considered that two vehicle connections were not required as the additional driving time would be negligible.



Figure 22 – Draft preferred connections for the combined Local Road Zone B and C

### 6.3 Local Road Zone D: North Manakau Road

The Draft MCA Report identified options for reconnecting North Manakau Road in Local Road Zone D via either an overbridge or an underpass.

As indicated in Figure 23, the draft preferred option provides a connection at North Manakau Road. This connection reflects both Draft MCA Report options as it could be either over or under the proposed highway alignment.

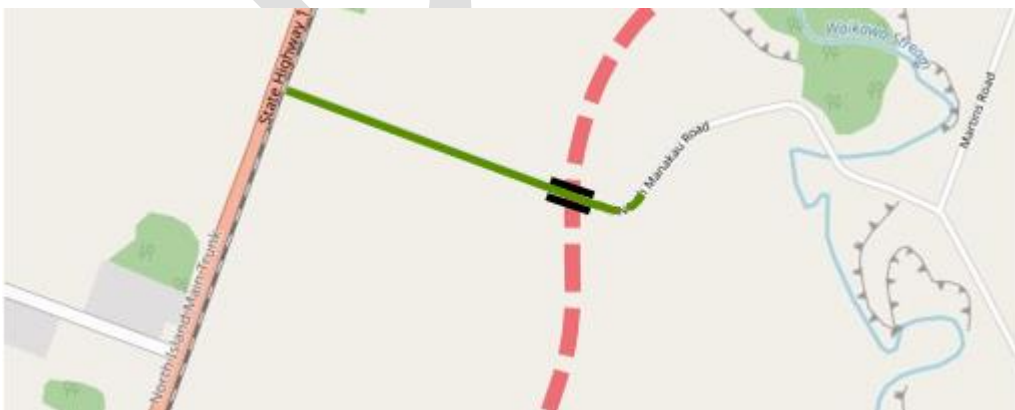


Figure 23 – Draft preferred connection for Local Road Zone D

## 6.4 Local Road Zone E: Kuku East Road

The Draft MCA Report identified options for reconnecting Kuku East Road in Local Road Zone E via either an overbridge or an underpass.

As set out in Figure 24, the draft preferred option provides a connection at Kuku East Road. This connection reflects both Draft MCA Report options as it could be either over or under the highway alignment.



Figure 24 – Draft preferred location for the connection for Local Road Zone E

## 6.5 Local Road Zones F, G, H, I and J: Muhunua East, McLeavey Road and Arapaepae and Kimberley Roads

The Draft MCA Report identified a number of local road options for Local Road Zones F (Muhunua East Road), Zone G (McLeavey Road), Zone H (Arapaepae Road) and Zone J (with regard to Kimberley Road). It is noted that no option was recommended to be progressed for Zone I.

Following discussions between HDC and Waka Kotahi, two local road options were identified for a combined Local Road Zone. The two options are set out below.

In developing these options, the following principles were taken into account:

- Muhunua Road is a key east west link and connectivity needs to be retained
- An interchange is being provided at Tararua Road which would also provide east-west connectivity, and
- McLeavey Road is not a key east-west link and has a very poor connection back onto the current SH1.

Accordingly, the two options are similar in their provision, but provide for two different alternatives for connecting Kimberley Road East.

### Option 1

As set out in Figure 25, Option 1 provides local connections over the new highway at Muhunua East, Kimberley and Tararua Roads. The connections at Muhunua East and Kimberley Roads could either pass over or below the highway alignment. The local road connection at Tararua would form part of the preferred grade separated interchange option. There would be a new north / south connection between Arapaepae Road (North) and McLeavey Road. Arapaepae Road (south of the new highway) would be converted to a cul-de-sac.



Figure 25 – Option 1: Connections at Muhunua East, Kimberley and Tararua Roads

### Option 2

As set out in Figure 26, Option 2 provides connections at Muhunua East Road and Tararua Road. There would be a new north-south link road connecting Arapaepae Road (south of the new highway), Kimberley Road and Tararua Road on the eastern side of the new highway, and a north / south connection from Arapaepae Road (North) and McLeavey Road on the western side. There would be no connection over the highway at either Kimberley Road or McLeavey Road.



Figure 26 – Option 2: Connections at Tararua and Muhunua East Roads (no connection at Kimberley Road)

## 6.6 Local Road Zone J: Liverpool Street

During the MCA process HDC requested that a Liverpool Street local road connection be considered by the MCA assessors. Three options were identified and considered in the Draft MCA Report – an underpass, overpass or no connection. Figure 27 sets out the location for such a connection.



Figure 27 – Possible location for a Liverpool Street connection

Following discussions with HDC, it is not currently proposed to progress a Liverpool Street option as it does not form part of the Ō2NL Project, however the project will be designed to enable such a connection to be added in the future if required.

## 6.7 Local Road Zone K: Queen Street

Following discussions between HDC and Waka Kotahi, one local road option was identified for this zone for progression. As indicated in Figure 28, the option provides a connection at Queen Street. This connection could be over or under the highway alignment.



Figure 28 – Draft preferred location for the connection for Local Road Zone K



## 6.8 Local Road Zone L and M: Waihou Road and McDonald Road

The Draft MCA Report identified two options for Local Road Zone L and one option for Zone M. Following discussions between HDC and Waka Kotahi, these two zones were combined. The refined options are set out below.

### Option 1

As set out in Figure 29, Option 1 provides a new connection between Waihou Road and McDonald Road. McDonald Road would also be partially diverted and reconnected to SH57 further north. Both Waihou Road (North) and Waihou Road (South) would be converted to cul-de-sacs.



Figure 29 – Option 1: Waihou Road to McDonald Road connection

### Option 2

As set out in Figure 30, Option 2 provides a connection from Waihou Road (East) to Wakefield Street. Both Waihou Road (North) and Waihou Road (South) would be converted to cul-de-sacs.

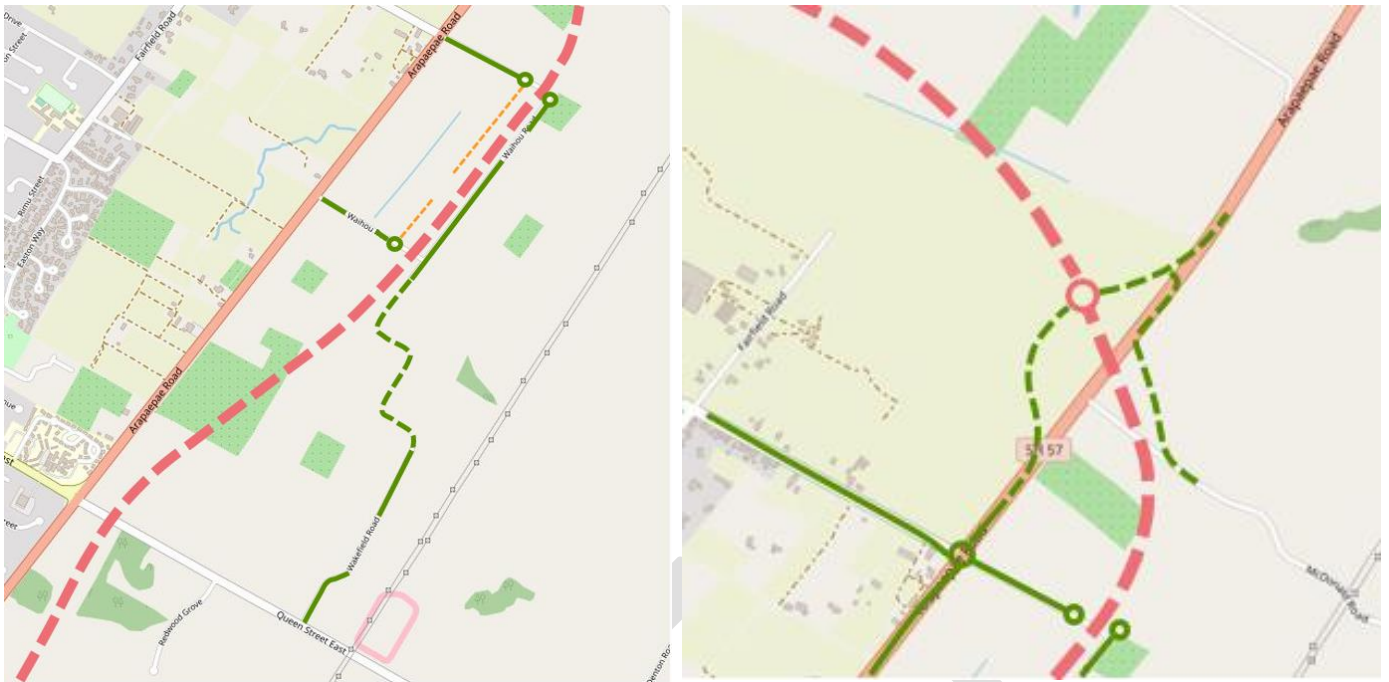


Figure 30 – Option 2: Waihou Road to Wakefield Street connection and McDonald Road reconnection

## 6.9 Local Road Zones N, P and Q: Sorensens Road, Heatherlea East Road and Avenue North Road

The Draft MCA Report included a number of emerging preferred local road options for Local Road Zones N (Sorensens Road), Zone P (Heatherlea East Road) and Zone Q (Avenue North Road).

However, with the draft preferred alignment and roundabout solution being identified, only one option remains.

Following discussions between HDC and Waka Kotahi, and as set out in Figure 31 below, the option proposes some new local road connections to integrate with the proposed North Levin roundabout (which involved combining all three Local Road Zones). Key new local connections include a new local road between Heatherlea East and Koputaroa Roads, and realignment of existing SH1 (which is proposed for revocation).

The draft preferred alignment is located such that there would be no properties south of the alignment that would need to be connected into Sorensens Road, so no connection would be needed at this location.

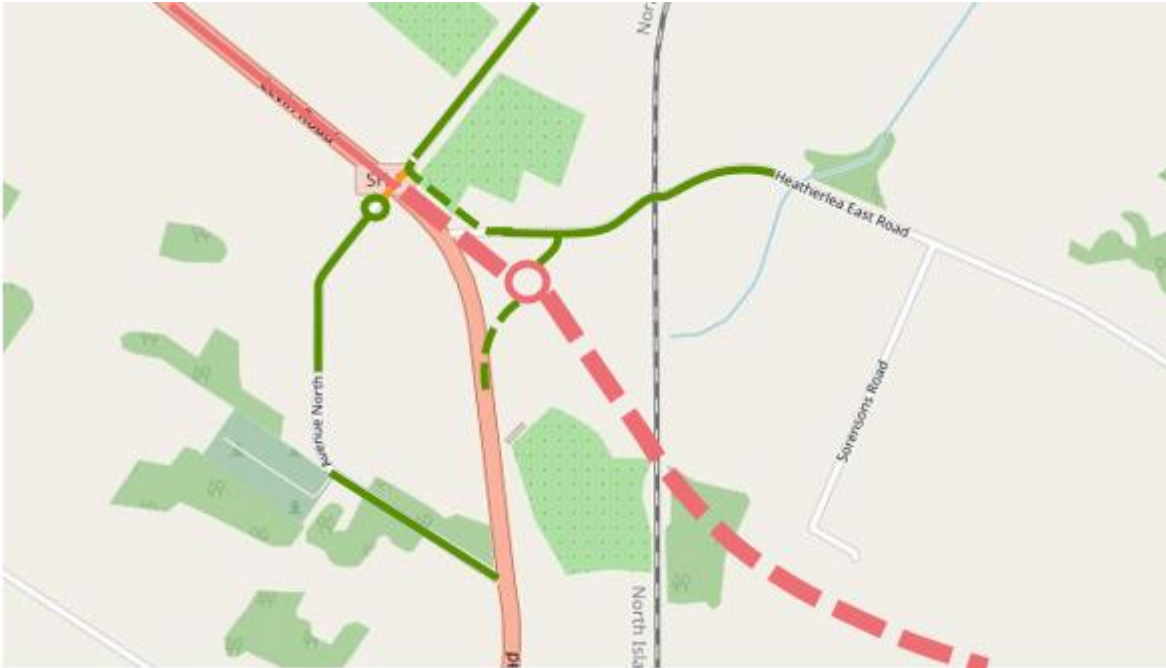


Figure 31 – Draft preferred local road connections for Local Road Zones N, P and Q

## 7. Summary

The following tables summarise the highway alignment, interchange, and local road option amendments preferred by the Project Design Team in this report. It is proposed that these options be progressed to public engagement.

### 7.1 Refined highway alignment options to be progressed

The Ō2NL Highway alignment options identified to be progressed for each “highway zone” are set out in Table 3 below.

Table 3: Draft preferred alignment

Zone	Draft preferred alignment in each New Highway zone
A	Refined Green Alignment
B	White Alignment
C	White Alignments
D	Dark Blue Alignment
E	Green Alignment
F	Refined White Alignment
G	Purple Alignment
H	Cyan Alignment
K	Refined Alignment
L	Refined Alignment

### 7.2 Refined interchange options to be progressed

The interchange alignment options identified for progression are set out below in Table 4.

Table 4: Draft preferred interchange location / form options

Location	Draft preferred interchange option for public engagement
Manakau / Kuku	No connection
Tararua	A grade separated compact diamond interchange
“SH1 / SH57 Split”	Roundabout (only)
North Levin	Roundabout (only)

### 7.3 Local road options to be progressed to public engagement

The local road options identified for public engagement are set out below in Table 5.

Table 5: Draft preferred local road options

Local Road Zone	Draft preferred local road options
<b>A</b>	Utilise new Taylors Road connection currently being built as part of the Peka Peka to Otaki Expressway (and reconfigure existing SH1)
<b>Combined B and C</b>	South Manakau Road, and a pedestrian and cycling facility at Honi Taipua Street
<b>D</b>	Connection at Manakau North Road
<b>E</b>	Connection at Kuku East Road
<b>Combined F, G, H, I and J (Kimberley Road only)</b>	Option 1: Provide connections at Muhunoa East, Kimberley and Tararua Roads, or Option 2: Provide connections at Muhunoa East Road and Tararua Road (no Kimberley Road connection)
<b>J (Liverpool Street only)</b>	No option
<b>K</b>	Connection at Queen Street
<b>L</b>	Option 1: Provide a new connection between Waihou Road and McDonald Road, or Option 2: Provide a new connection between McDonald Waihou Road (East) and Wakefield Street
<b>Combined N, P and Q</b>	Provide supporting local connections for the proposed North Levin roundabout



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