

ŌTAKI TO NORTH OF LEVIN DETAILED BUSINESS CASE

INTERCHANGE OPTION REVIEW

PREPARED FOR WAKA KŌTAKI NZ TRANSPORT AGENCY

May 2020

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Waka Kōtahi NZ Transport Agency

Ō2NL Interchange Option Review

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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.

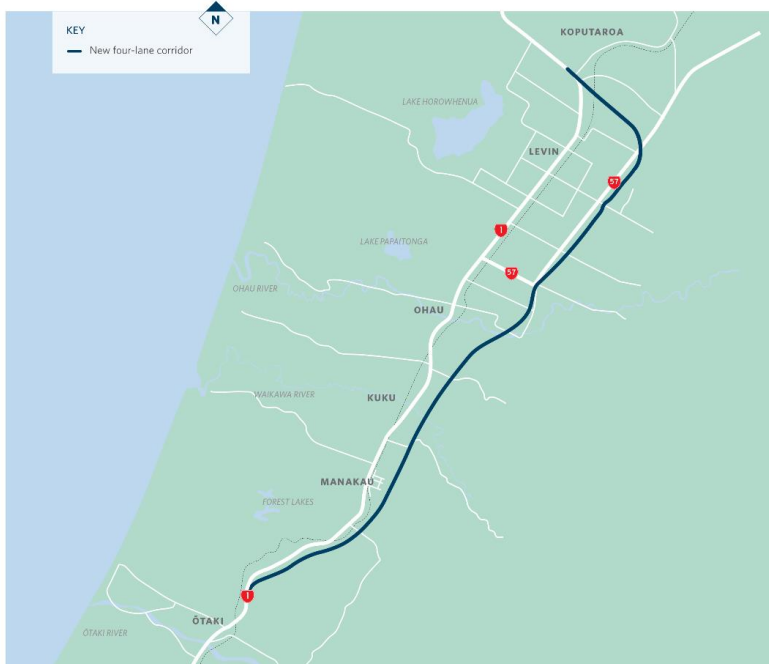


Figure 1 – Preferred 300m corridor for the Ō2NL Highway

At the completion of the IBC, it was identified that further development and assessment of potential interchanges (and their forms / types) for the preferred 300m corridor would be one of the first key activities needing to be undertaken when developing the DBC.

The IBC also identified that further option development and assessment would be required for the Ō2NL Highway alignment and for any major changes to the local road network. The initial development and assessment processes for these key project features are documented in separate reports.

2. Purpose

The purpose of this report is to set out the short-listed interchange location options that have been recommended by the Design Team for further evaluation as part of the Ō2NL DBC's multi criteria assessment (MCA) process. This report also identifies the footprint sizes of the preferred interchange options' forms / types that are to be evaluated as part of the MCA process.

3. Interchange forms / types

There are three types of interchange forms / types being considered for the Ō2NL Highway as follows:

- System interchange
- Service interchange, and
- At-grade roundabouts.

An overview of each interchange form / type is provided below. It is noted that the Design Team's recommendations for the interchanges are premised on both the initial NZ Transport Agency design advice as well as Austroads' *Guide to Road Design (AGRD) Part 4C: Interchanges*.

More detailed information on the interchange types can be found in the Ō2NL Design Philosophy Report.

3.1.1 System interchanges

Typically, a system interchange would be provided at locations where a high standard connection is required between high volume roads. Usually this would be in a "motorway-to-motorway" type situation as set out in Figure 1. Layouts are typically based on the need to provide for continuous high-speed traffic movements between motorways. Consequently, large interchange footprints are required in order to meet the necessary design requirements.

For Ō2NL, any system interchange is likely to be a T arrangement (rather than cross-roads). In this type of situation, a bifurcation layout is often used, such as the SH1 / SH2 interchange at Ngauranga, Wellington.

Generally, local access connections to and from system interchanges are avoided. This is because mixing local traffic with free flow (through) traffic leads to inconsistency in form and a lower level of road safety. If local access needs to be provided at a specific location it is usually provided via service interchanges.¹

¹ Austroads Guide to Road Design Part 4C, Item 2.4.2



Figure 2 – System interchange (Source: AGRD Part 4C)

3.1.2 Service interchanges

Service interchanges are typically provided at locations where a state highway connects with the local road network.

As set out in Figure 2, often service interchanges would likely take the form of elevated roundabout or diamond shapes in order to provide access between state highways and local roads. In non-urban situations, diamond shaped service interchanges tend to be preferred of which there are several layout considerations including:

- Full or half diamond shape: with ramps providing for all movements onto and off the local road, or only in one direction
- Spread or compact diamond shape: a spread diamond is wider which allows the ramp connections to join the local road at ground level. For a compact diamond shape, the ramp intersection with the local road is elevated / lowered reducing the lateral spread of the interchange, and
- Part-cloverleaf ('Par-Clo') options provide some connections in a cloverleaf type arrangement. Such arrangements often have less land requirements (when compared to the above interchange shapes).



Figure 3 – Service Interchange (Source: AGRD Part 4C)

Service interchanges often have significant footprints in order to operate safely, due to the need to provide sufficient deceleration and acceleration distances for entering or exiting the high-speed highway environment, at suitable horizontal and vertical geometric conditions.

3.1.2.1 Highway over local road, or vice-versa

A key consideration for service interchanges is whether the major road (e.g. highway) is to pass over or under the minor road (e.g. local road) as this consideration impacts on the general form of the interchange. Key considerations include:

- Overall strategy – the grade of the major road may be determined by an overall requirement to have it completely depressed or completely elevated
- Cost – the alternative arrangements (including the need for earthworks balance) needs to be considered when determining whether the major road is to go over or under. In general, it is more economical to have the major road constructed at existing ground level and to place the minor road over
- Visual amenity – the main (through) road may be given preference by making it an overpass in order to take advantage of any vistas or to create a feeling of minimum restriction (although impacts on local viewshafts also need to be considered)
- Operations – at interchanges, the operations of the ramps are assisted by having the major road at a lower level. This provides for the exiting traffic to slow down on the upgrade and the entering traffic to accelerate on the downgrade, which is a particular advantage for heavy commercial vehicles using the interchange ramps
- Sight distance – in rolling topography, if there is no pronounced advantage in using either an overpass or an underpass, the interchange type that produces the best sight distance for the major road should be selected
- Drainage – in some situations the choice of an underpass may create difficult drainage problems that would not arise if the major road was carried over the minor road with no changes to the grade line of the minor road
- Constructability – if the new road is to be carried across a heavily trafficked road, an overpass will create the least disruption during construction

- Over-dimension loads – on high load routes, an overpass has no limits on vertical clearance and may be the best solution. If the minor road passes over the major road, high loads may be accommodated on the ramps of the interchange if appropriately designed
- Noise reduction – a road depressed below the surrounding area generally has a lower noise impact. Therefore, the road with the highest traffic will be better placed on the lower level
- Constraint avoidance – different layouts may have different impacts on nearby constraints or sensitive receiving environments, and
- Impact on walking and cycling routes – it may be preferable to avoid grade changes for these active modes which may be travelling alongside and/or across the main highway at interchange locations.

3.1.3 At-grade roundabout

As this is being designed as a highway, the only at-grade form that complies with the NZ Transport Agency's Safe System principles and AGRD Part 4B is a high standard roundabout. Typically, such roundabouts comprise of a (minimum) 48m central island diameter², dual lane approaches, and circulatory and departure lanes for an highway speed environment.

It is noted that the footprint for an at-grade roundabout is substantially less than that of an interchange, but traffic performance is also lessened due to the conflicting movements between side road and highway traffic, as well as the need for all highway traffic to be interrupted from free flow through the roundabout.

Other than toward the northern extent and end of the highway, it is expected that at-grade roundabouts may not be safe or appropriate 'mid-point' on the highway, given all other access through to Wellington CBD is grade separated. This will require further testing through the MCA and DBC progression.

4. Summary of the interchange assessment process

In brief, in order to identify the preferred highway alignment, the following DBC processes are being undertaken:

- Step 1 – Identification of interchange principles and design requirements. This process was undertaken by the Design Team³ with input from the NZ Transport Agency, Horowhenua District Council (HDC) and Iwi
- Step 2 – Identification of a long list of interchange option locations
- Step 3 – Assessment of the interchange long list options against the interchange principles. This process also enabled the likely form / type of the interchanges for each short-listed location to be narrowed down, which in turn enable the likely interchange footprint sizes at each location to be identified for further MCA assessment
- Step 4 - Undertake an initial MCA process to identify the recommended interchange options and their preferred footprint sizes, with the outcomes to be documented in a Draft MCA Report
- Step 5 - Undertake Iwi and public engagement on the outcomes of the initial MCA process

² Austroads Guide to Road Design Part 4B: Roundabouts

³ The Design Team comprised of Jamie Povall (Design Manager), Phil Peet (Team Leader), and Selwyn Blackmore (Transport Planning Lead)

- Step 6 - Following completion of Iwi and public engagement processes, review and update the MCA process and Draft MCA Report to identify the recommended interchange options, and
- Step 7 - Recommend a preferred interchange option suite to the NZ Transport Agency for its consideration.

This report summarises the processes and recommendations of the Design Team for **Steps 1, 2** and **3** above.

Following Step 3, the Design Team has identified a number of access considerations for the southern and northern sections of the Ō2NL Highway. These considerations are documented below in Section 8 of this report.

It is noted that the processes outlined in Steps 1 to 3 above are the long list evaluation steps undertaken by the Design Team to help it identify a short list of interchange options to be taken forward for MCA evaluation. The Design Team acknowledges that there may be a need to revisit its short list recommendations as a result of further project investigations and / or stakeholder engagement.

5. Identification of interchange principles and design requirements (Step 1)

5.1 Interchange principles

The purpose of determining interchange principles for the Ō2NL Highway is to help guide the long to short list evaluation processes for the interchanges. Development of the principles has been informed by the IBC / DBC investment objectives, and through initial discussions with HDC and Tangata Whenua.

The Ō2NL interchange principles comprise of the following:

- Current urban form
- Potential future urban form
- Technical considerations, and
- Environmental and Cultural impacts.

A description of each principle is provided below.

5.1.1 Current urban form

The final interchange arrangement for the Ō2NL Highway needs to provide adequate access between the existing state highway network and urban / peri-urban areas.

For access to areas of economic activity, particularly commercial and retail areas, this principle is about interchanges improving access to these areas where it is feasible to do so.

For all other areas, current trips should not be severely impacted by the new highway. For example, increasing local trip lengths by more than 2 to 3km is considered undesirable, although this may be necessary for some local community road users.

Good levels of service to communities and properties is to be achieved, including providing improved access to strategic destinations. However, this could be provided by the existing highway corridor (i.e. SH1 or SH57).

5.1.2 Potential urban form

Future areas of economic activity or residential growth, as defined by HDC strategies, need to be considered when determining the final interchange arrangement (e.g. interchanges need to cater for future transport demands). The same principles applying to the current urban form (above) also apply when considering the likely urban form in 30+ years' time.

It is noted that the initial form of the highway construction doesn't necessarily need to cater for forecasted transport demands, however any final interchange arrangement should be appropriately "future proofed". For example, the scheme may allow for an interchange to be added later if predicted transport demands and the timing as to when this demand might be realised indicates it isn't warranted as part of the initial highway build.

5.1.3 Technical considerations

In general terms, the interchange designs need to be in keeping with the expectations of the road user. They should be readable, and their form should be relatively consistent with other interchanges along the corridor. Along the Wellington Northern Corridor, there are differing forms / types of service interchanges in operation. This in turn affords a certain level of flexibility when considering / designing the interchanges to be built for the Ō2NL Highway.

Interchanges should be appropriately spaced to facilitate convenient access to and from the state highway, but only where there is a demonstrable demand to do so. Not having an interchange does not preclude other forms of local road connectivity across (but not to / from) the highway such as over-bridges, underpasses or connections to other arterials or state highways.

In terms of spacing, the minimum spacing for interchanges should be between 5 and 8km in rural areas⁴, although in urban areas this spacing distance can be reduced. There is no maximum spacing. AGRD Part 4C also states that interchanges need to be located away from other highway structures (e.g. major river crossings).

The interchanges for the Ō2NL Highway need to accommodate 110km/h design speeds, and need to carefully manage the transition to lower local road speed environments (possibly 60km/h for urban / peri-urban roads or up to 80km/h for rural local roads).

Overall, the final interchange arrangement needs to ensure that the layout will not result in significant capacity or safety problems on the local road network (unless such issues are addressed as part of the wider Ō2NL programme or by the specific interchange option).

5.1.4 Environmental and cultural impacts

The key anticipated environmental and cultural effects from the construction of the interchanges to be considered for the Ō2NL Highway, include:

- Noise effects (especially increased noise from vehicles on raised structures)
- Visual impacts (e.g. due to the size and height of structures)
- Community severance (e.g. access to and from property parcels and communities)
- Other environmental (e.g. ecological effects), and
- Cultural effects on sites of significance and also wider Tangata Whenua considerations.

Generally, environmental effects should be minimised whenever possible. As such, the Ō2NL project has adopted a "tread lightly" design philosophy for the siting and design of the highway's interchanges (which is also expected to be a key principle that is embedded in the Ō2NL Urban

⁴ Austroads Guide to Road Design Part 4C. Spacing of interchanges on the Wellington Northern Corridor range from around 2.5km to 10km

Landscape Design Framework). This is to include minimising the footprints and / or visual effects of the interchanges.

5.2 Interchange design requirements

The key interchange design requirements for the Ō2NL Highway include:

- Suitable separation between interchanges and other significant structures
- Direct impacts on well established residential / commercial areas are to be avoided if possible
- Interchanges need to connect to an existing road (and the existing road ideally should be of a standard and function that it serves a reasonable community catchment), and
- Interchanges are generally not to be located where ramp entry and exits would be on tight horizontal curves, and
- Interchanges need to be safe for all modes.

5.2.1 Wellington Northern Corridor

The interchange arrangements for the Wellington Northern Corridor through to central Wellington (i.e. the Terrace Tunnel) consist of various types of grade separated interchanges. These interchanges take the form of either diamond or half diamond (service interchange) shapes.⁵ As such, the interchange forms / types to be pursued for the Ō2NL Highway should ideally be in keeping with the existing (and / or partially completed) Wellington Northern Corridor interchanges.

5.2.2 Indicative interchange footprints

On the basis of the Design Team's initial concept work, the relevant technical standards / guidance and examples of other interchanges along the Wellington Northern Corridor / SH1, the Design Team identified indicative / approximate dimensions for the footprints to help guide its long list evaluation processes. These dimensions are set out in Table 1 below.

Table 1 – Indicative interchange footprint dimensions

Interchange forms / types	Indicative footprint dimensions*
Diamond (service interchange)	<ul style="list-style-type: none"> • 1500m length • 500m width
Half Diamond (service interchange)	<ul style="list-style-type: none"> • 750m length • 500m width
Bifurcation (system interchange)	<ul style="list-style-type: none"> • 1.5km length • 500m width
At-grade roundabout	<ul style="list-style-type: none"> • 200m length • 200m width

*Excludes any associated local road realignment, shared use path or stormwater requirements

It is noted that final interchange footprint dimensions will vary from those identified above in Table 1 as a consequence of further investigation works, local constraints and desires and more advanced 3D design. However, these dimensions were used to assist with location identification.

⁵ The exception to this is the Central Wellington SH1/SH2 bifurcation split, as well as the bifurcation currently under construction for Transmission Gully at Linden

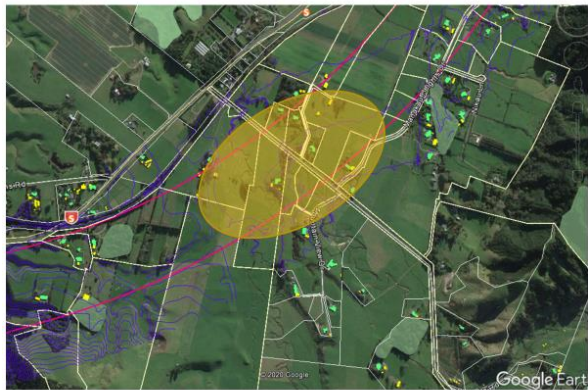

6. Identification of interchange locations (Step 2)

Based on the interchange principles and design requirements, the Design Team identified a long list of interchange location options (relative to the 300m wide corridor). It then undertook a high-level evaluation of each location option against the interchange principles.

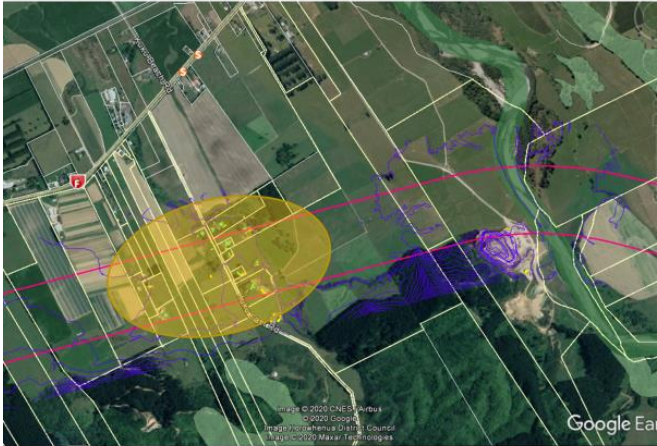
The long list of interchange options and the Design Team's interchange principle evaluations are summarised in Table 2 below.

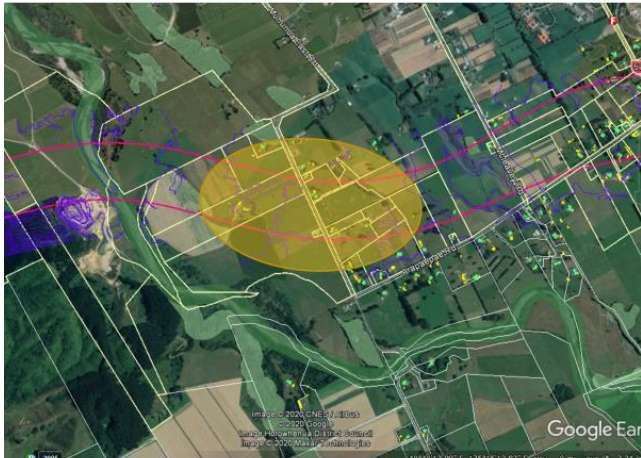
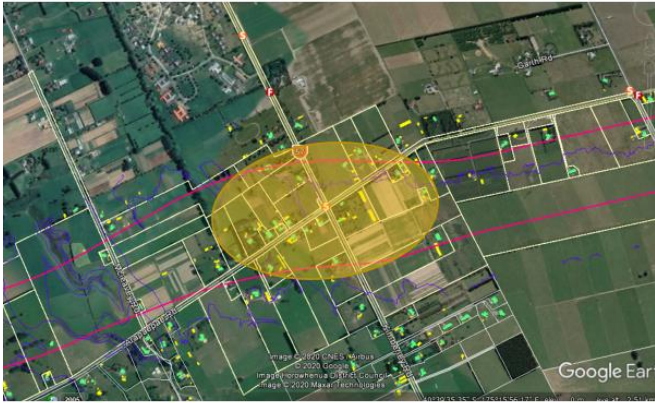
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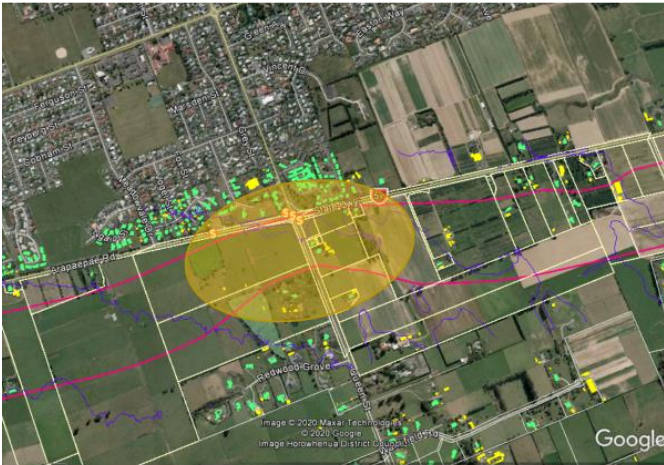
Table 2 - Interchange location long list and evaluation


Interchange location ⁶	Interchange principles evaluation				Overall assessment
	Current urban form	Future urban form	Technical	Environmental and cultural impacts	
<p>Manakau South</p> 	<p>Likely to be used by the Manakau community, including Manakau Heights</p>	<p>Likely to serve growth in the Manakau Heights area</p>	<p>Likely to be located on a sub-optimal curve alignment Interchange traffic would need to cross rail line to connect with SH1</p>	<p>Likely to have a large footprint and adversely impact on local communities</p>	<p>Consider further</p>
<p>Manakau North</p> 	<p>Would be located some distance from residential areas Unlikely to be well used by Manakau residents</p>	<p>Likely to serve future Manakau growth areas</p>	<p>Avoids interchange traffic crossing rail line to connect back to SH1 Complex design requirements to reconnect local roads Close to Waikawa stream crossing (adds</p>	<p>Limited impacts on local dwellings Impacts on high productivity land Impacts on Maori land</p>	<p>Consider further</p>


⁶ Aerial maps are sourced from Google Earth (with design information overlaid)

Interchange location ⁶		Interchange principles evaluation				Overall assessment
		Current urban form	Future urban form	Technical design complexity)	Environmental and cultural impacts	
Kuku		<p>Highly unlikely to meet state highway or local connectivity demands at this location</p> <p>Not well placed to service existing Manakau or Ohau communities</p>	<p>Not located near any residential or industrial growth areas</p>	<p>Poorly served by Kuku East Road. Close to new Ohau river crossing</p>	<p>Would be in close proximity to sensitive foothills</p> <p>Significant impacts on Maori land</p>	<p>Remove from consideration</p>

		Interchange principles evaluation				
Interchange location ⁶		Current urban form	Future urban form	Technical	Environmental and cultural impacts	Overall assessment
Muhunoa		Would not provide adequate access to Levin centre	Would provide limited access to southeast Levin and industrial growth areas	Inadequate local road connections Very close to the major Ohau River structure and is therefore likely to be problematic from a geometric perspective	Located within Ohau River's flood zone	Remove from consideration
Kimberley		Provides moderate level of access to the Levin urban area, but away from the town centre Kimberley Road (east of SH57) serves only a limited area	Would serve residential /industrial growth areas to southeast of Levin	Proximity of 4-arm intersection (Arapaepae / Kimberley) poses complex design challenges	Regionally significant ornate skink identified in area Some dwellings located in close proximity Adjacent to area of flooding risk	Consider further

		Interchange principles evaluation				
Interchange location ⁶		Current urban form	Future urban form	Technical	Environmental and cultural impacts	Overall assessment
Tararua		Likely to provide good level of access to the Levin urban area, and its key industrial growth area	Would serve residential /industrial growth areas to southeast of Levin	Proximity of SH57 could be problematic Intersection of SH1/Tararua is substandard and requires upgrade (changes to the North Island Main Trunk Rail Line crossing also required)	No extraordinary issues identified	Consider further
Queen Street		Would provide good level of service to urban and southeast Levin	Would serve residential /industrial growth areas to southeast of Levin	Added design complexity due to close proximity of SH57 (e.g. would create speed, sight distance and intersection control issues). Very narrow corridor at this location. Very close to likely "SH1/57	Possible significant impacts on native bush area and historic Prouse homestead. A number of dwellings in close proximity impacted	Remove from consideration

Interchange location ⁶		Interchange principles evaluation				Overall assessment
		Current urban form	Future urban form	Technical	Environmental and cultural impacts	
"SH1 / 57 Split"		<p>Would provide access to urban Levin and access north to Sanson / Palmerston North</p>	<p>Could provide access to Levin growth areas and access north to Palmerston North (growth)</p>	split" connection	<p>Potential adverse visual and noise impacts in the existing rural environment</p>	<p>Consider further</p>
				<p>Added design complexities if local roads directly connected</p> <p>Potential to retain SH57 in current form without deviation</p> <p>Localised flooding issues</p>		

Interchange location ⁶		Interchange principles evaluation				Overall assessment
		Current urban form	Future urban form	Technical	Environmental and cultural impacts	
North Levin		<p>Would provide good levels of access to urban Levin and to the north</p>	<p>Would provide access to Levin growth areas and access to the northern growth areas</p>	<p>Added design complexity due to close proximity to rail line</p> <p>Needs to integrate with local roads</p>	<p>No extraordinary issues identified</p>	<p>Consider further</p>

As set out in Table 2 above, the Design Team identified that interchange locations at Kuku, Muhunoa and Queens Street would not meet the interchange principles, and therefore should be removed from further consideration. The reasons for their removal are summarised in Table 3 below.

Table 3 – Interchange locations removed from further consideration

Interchange Location	Summary of key reasons for removal
Kuku	<ol style="list-style-type: none"> 1. There is little existing local connectivity demand or need for an interchange at this location and it is not close to future growth areas 2. Likely to involve environmental / cultural / terrain complexities (which could create increased cost, property acquisition relationship and consenting risks)
Muhunoa	<ol style="list-style-type: none"> 1. Due to location it would be the primary access point to Levin from the south, however it would provide a poor level of service for Levin and to Horowhenua's future residential / industrial growth areas 2. Very close proximity of major structure required for Ohau River
Queen Street	<ol style="list-style-type: none"> 1. Corridor constraints here are significant (Prouse historic homestead native bush and SH57) 2. Does not support the access requirements being pursued by HDC for central Levin or for the Gladstone Green development

7. Identification of interchange form / type (Step 3)

Following removal of the Kuku, Muhunoa and Queens Street interchange locations, the Design Team assessed the form / type of interchanges that were likely to be needed at the remaining six interchange locations. The prime purpose of undertaking this assessment was to identify the likely interchange footprint sizes that would need to be assessed through the MCA evaluation process.

The forms / types of interchanges for the short-listed interchange locations favoured by the Design Team are set out in Table 4 below. The footprint sizes for each form / type of interchange are provided in Table 1 above.

Table 4 – Favoured form / type for the short listed interchange locations

Location	Service Interchange	System Interchange	At-grade roundabout
Manakau South	Consider further	Not required as there is no need for a high-speed standard connection at this location	Consider further
Manakau North	Consider further	Not required as there is no need for a high-speed standard connection at this location	Consider further
Kimberley	Consider further	Not required as there is no need for a high-speed standard connection at this location	Consider further

Tararua	Consider further	Not required as there is no need for a high-speed standard connection at this location	Consider further
SH1 / 57 Split	Consider further	Consider further	Consider further
North Levin	Consider further	Not required as there is no need for a high-speed standard connection at this location	Consider further

8. Ō2NL Highway access considerations

Following on from the above analysis, there are still a number of decisions that need to be made, either via the MCA process or in subsequent analysis. This section of the report outlines these decisions.

8.1 Southern section

For the southern section of the Ō2NL Highway, the key access / local community connectivity requirements needing to be considered as part of the MCA process are as follows:

1. Provision of a service interchange or at-grade roundabout to the north of Manakau only, or
2. Provision of a service interchange or at-grade roundabout to the south of Manakau only, or
3. No direct highway access, rather the design of the highway could be "future proofed" for either a service or at-grade roundabout interchange north or south of Manakau (it is noted that north and south bound access to and from the proposed revoked SH1 would be provided at the Peka Peka to Ōtaki access arrangement to the north of the Ōtaki township).

Based on existing and future transport demands and community access requirements for the southern section, there only needs to be one interchange provided (i.e. either to the north or south of Manakau). It is noted that Austroads⁷ recommends that rural interchanges should be spaced a minimum of 5 to 8km apart. It is further noted that the potential locations⁸ for Manakau interchange options are all within an extent of 5km.

Transport modelling indicates there is unlikely to be sufficient existing transport / connectivity demand for a Manakau interchange in the short to medium term. As such, providing no direct access to the highway (but potentially future proofing its design) is an important access consideration for the southern section of the highway.

8.2 Northern section

For the northern half of the Ō2NL Highway, the key access decisions that need to be considered as part of the MCA process are as follows:

1. Whether an interchange should be provided at Tararua or Kimberley (not both)
2. The form of the interchange (service or at-grade roundabout) to be provided at Tararua or Kimberley (depending on the above decision)
3. The form of interchange (system, service or at-grade roundabout) at the SH1 / SH57 split

⁷ Austroads Guide to Road Design Part 4C Interchanges


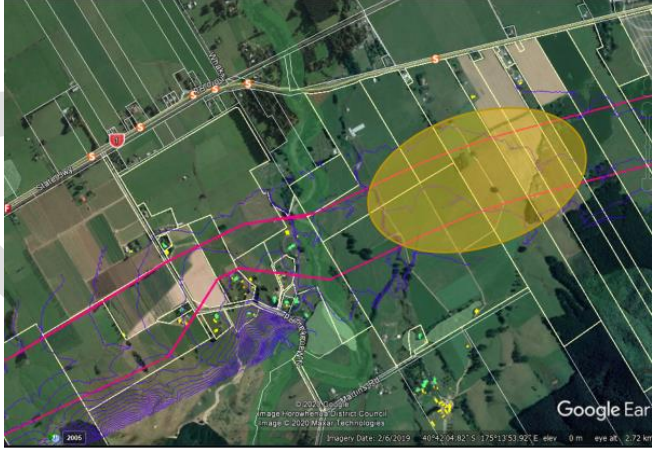
⁸ The area under consideration was South Manakau Road to the area to the immediate north of Waikawa Stream



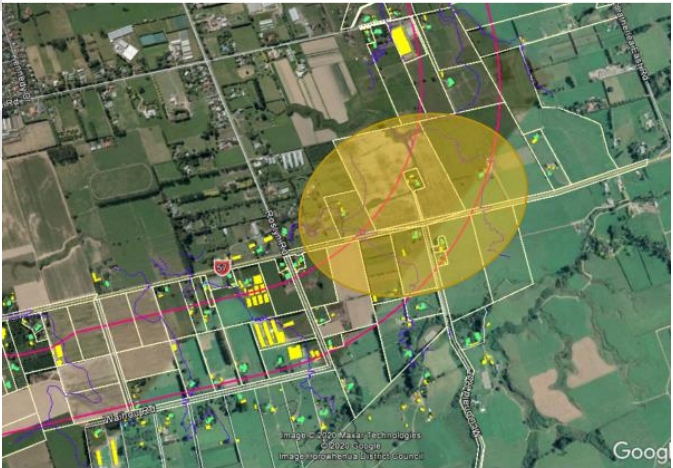
4. The form of interchange (service or at-grade roundabout) on SH1 to the north of Levin, and
5. Whether interchanges are required in all three locations.

9. Summary of interchange location and forms / types

Table 5 below summarises the interchange locations and forms / types favoured by the Design Team to be taken forward for further evaluation in the MCA process.

Table 5 – Summary of favoured interchange locations and forms / types

	Interchange locations	Interchange forms / types
<p>Manakau South</p>		<p>Service Interchange and At-grade roundabout</p>
<p>Manakau North</p>		<p>Service Interchange and At-grade roundabout</p>

	Interchange locations	Interchange forms / types
<p>Kimberley</p>		<p>Service Interchange and At-grade roundabout</p>
<p>Tararua</p>		<p>Service Interchange and At-grade roundabout</p>
<p>SH1 / 57 Split</p>		<p>Split System Interchange (bifurcation), Service interchange and At-grade roundabout</p>

Interchange locations

Interchange forms / types

North
Levin



Service interchange and At-grade roundabout

DRAFT

10. Recommendations and next steps

10.1 Recommendations

This report's recommendations are as follows:

- NZ Transport Agency to confirm whether at-grade intersections are appropriate for the Ō2NL Highway environment
- complete traffic modelling
- agree the short-listed interchange location options that are favoured by the Design Team, be taken forward for further consideration in the MCA evaluation process
- agree that the footprint sizes of the preferred interchange options' forms / types that are favoured by the Design Team, be taken forward for further consideration in the MCA evaluation process
- the interchange location options that have not been supported by the Design Team for further investigation / evaluation be removed from further consideration.

It is acknowledged that the recommendations from this report may need to be reviewed and / or amended as more information comes to hand during the MCA and consultation processes.

10.2 Next steps

If this report's recommendations are approved, the next step for the Design Team will be to take forward the short-listed interchange location options into the next phase of the MCA evaluation process. This evaluation would include assessing the footprint sizes of the preferred interchange options' forms / types that have been favoured by the Design Team.

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