

High Level Transport Assessment of Proposed Rural Lifestyle Areas



Executive Summary

Abley has been engaged by Taupō District Council to undertake a high-level transport assessment of a potential future plan change proposal to increase the supply of Life lifestyle blocks in the vicinity of Taupō Township. The proposed method of achieving this is to introduce a new zone called 'Rural Lifestyle' (RL) which will allow creation of sites down to 2ha in area. We understand that currently the creation of a lot less than 4ha in Rural zones is a non-complying activity.

This assessment comprises a multi-criteria analysis which assesses eight areas against:

- Transport network capacity;
- Road Safety; and
- Their individual alignment with the seven priorities contained within the Taupō District Council Transport Strategy – Connecting Taupō 2020-2050 (Transport Strategy).

The assessment of transport network capacity and road safety has been directly fed into the alignment assessment with the Transport Strategy, noting that two of the Transport Strategy priorities specifically relate to Road Safety (safe) and Transport Network Capacity (maintaining predictable travel times in the face of growth).

Based on the alignment assessment, each site has been assigned a score. Scores range from 1 point for 'very poor' results to 5 points for 'very good' results. Although no site scored particularly well (the highest score being 26 out of a possible 35 points and the lowest score being 11 out of a possible 35 points), this is primarily due to the nature of what is being assessed. Rural residential development is low density and generally does not enhance access to alternative modes of transport, instead increasing reliance on private motor car. It is noted that this assessment has not applied any weightings to the seven priorities so essentially treats each priority as having equal importance. Should some priorities be considered to have more impact in terms of transportation impacts, it is recommended that a sensitivity test could be undertaken to improve the robustness of the assessment.

The unweighted results demonstrate that Site 2 is the most suitable for potential RL rezoning from a transportation perspective, followed by Sites 4, 1 and 3. These sites are closer in proximity to the existing urban area and are expected to have a lower impact on transportation network than other sites. This assessment has shown that comparatively, sites 5-8 are less suitable than sites 1-4. This is primarily due to the projected impact these sites would have on the already constrained areas in the transport network, most notably the Control Gates Bridge and due to their relatively remote location.

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Quality Assurance Information

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1. Introduction

This technical note is a high-level assessment of the proposed Rural Lifestyle (RL) land areas proposed to be rezoned in Taupō District Council's (TDC) Proposed District Plan. It is understood that the intent of the Plan Change is to increase the supply of RL zoned land in proximity to Taupō township. Figure 1 shows the 8 clusters of sites that are being considered by TDC for this purpose.

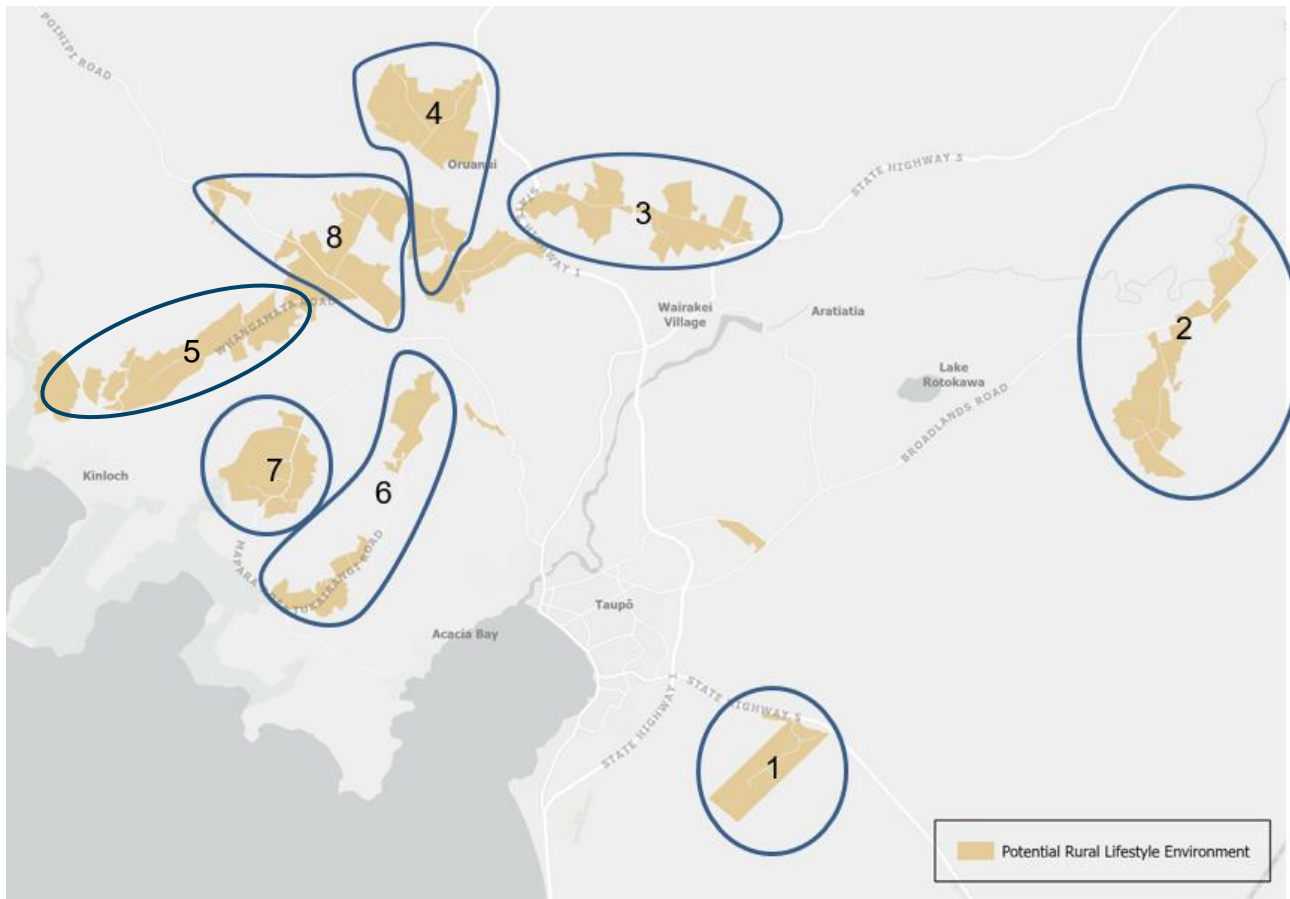


Figure 1.1 Map of potential future RL areas in light brown.

Abley have prepared an assessment to consider the wider transportation implications of the rezoning of each RL area. It is intended to inform TDC's future decision making in respect of RL land supply selection in proximity to Taupō Township.

For completeness, it should be noted that Waka Kotahi should be consulted on any site in proximity to a State Highway. This is particularly relevant for Sites 1, 3 and 4.

2. Methodology

The assessment methodology delivers a high-level multi-criteria transportation analysis of each site which compares the merits of the various sites.

Three criteria were used to score each site:

- Transport network capacity;
- Road safety performance; and
- Alignment with the Taupō District Council Transport Strategy – Connecting Taupō 2020-2050 (“Transport Strategy”).

It is noted that the seven priorities under the Transport Strategy includes consideration of network capacity and road safety, therefore the first two criteria do feed directly into the assessment of alignment with the Transport Strategy. Each of these three criteria are explained further in the following sections.

2.1 Transport network capacity

Abley have first reviewed comments provided by TDC’s Asset Managers with respect to network capacity to ensure that this local knowledge is captured in the assessment.

The likely increases in peak hourly traffic volumes resulting from development have been calculated for each site. The *Taupō Code of Practice – Development of Land* does not provide specific guidance on traffic generation for lifestyle blocks, however the Dunedin Code of Subdivision and Development 2010¹ states that eight vehicle movements per day per residential unit on rural and rural residential lots shall be used for design purposes. Typically, peak hour trip generation is 10% of daily generation therefore a peak hourly generation rate of 0.8 vehicles per hour per residential unit is assumed.

The RTA Guide to Traffic Generating Developments, Technical Direction 2013/04A (TDT 2013/04A)² recommends applying peak hour trip generation rates of 0.71 per dwelling during the weekday AM peak hour and 0.78 per dwelling during the weekday PM peak hour, with a daily traffic generation rate of 7.4 per dwelling. The underlying survey data was captured across five regional New South Wales (rural residential) developments, and we consider this aligns well with the Dunedin source document and validates adopting these values for the Taupō assessment.

Note that rural lifestyle properties generally have lower traffic generation rates than their urban counterparts because the primary employment trip is typically longer. This increases the likelihood and frequency of trip chaining, where residents will combine a supermarket trip with their employment trip, for example.

In addition to a minimum lot size of 2ha for RL sites, TDC have advised in an email that one minor residential unit is also permitted in addition to the primary residential unit. The following restrictions apply to minor residential units:

Minor residential units

1. No more than one minor residential unit per primary residential unit is permitted.
2. All minor residential units shall:
 - a) Be no larger than 100m² in size (inclusive of garaging).
 - b) Be located no greater than 20 metres from the primary residential unit.
 - c) Share an accessway/driveway with the primary residential unit.

Although the addition of a minor residential unit creates potential for an increase in traffic generation per site, it is considered unlikely that this would represent the same level of traffic generation as a standalone unit. This is primarily due to the characteristics and restrictions that apply to minor

¹ Dunedin Code of Subdivision and Development, 2010.

² Guide to Traffic Generating Developments, Technical Direction, 2013.

residential units, which mean that it is more likely that occupants of the minor residential unit will be associated with those of the primary unit. For example, this arrangement may suit families with young teenagers, those with elderly parents or potentially workers. In the absence of any published trip generation data for these situations, Abley have assumed that a second unit may generate in the order of 50% of the daily and hourly traffic of a primary residential unit. While there will undoubtedly be differences in how each site operates, this is considered a reasonable but conservative approach noting that not all sites will erect a minor residential unit.

Overall, when accounting for minor residential units, we have applied a peak hour traffic generation rate of 1.2vph per RL site and 12vpd per RL site (refer Table 1). This corresponds to 0.8 and 0.4 trips per peak hour and 4 and 8 daily trips for primary and minor residential units respectively.

High level impacts have been assessed based on the potential trip generation of each site taking into consideration existing network constraints. The yields provided by TDC are potentially conservative, based on the maximum yield of each land area. This is due to a variety of factors including topography, access, water and hazard constraints.

The scoring methodology is outlined in Table 2.1.

2.2 Road safety performance

The collective and personal risk rating of each road has been extracted from Waka Kotahi's Mega Maps³ and this has been used to score each site and/or cluster with respect to road safety (included in the priorities assessment above). Definitions for Collective and Personal Risk are as follows:

- **Collective safety risk:** risk density measured as the number of fatal and serious casualties over a distance, e.g. deaths and serious injuries (DSI) per kilometre or within a set distance of an intersection; and
- **Personal safety risk:** risk to the individual of fatal or serious casualties per million vehicle kilometres travelled.

High-level crash analysis has been undertaken using Waka Kotahi's Crash Analysis System (CAS)⁴. The crash query has been used to determine if there are any obvious safety issues on the local network in the vicinity of each site. This has been purely quantitative based on the number of crashes reported in any given location. No detailed crash analysis has been undertaken.

The safety risk rating assessment and high-level crash analysis collectively provides an indication of potential safety risks which need to be considered prior to rezoning land.






2.3 Alignment with Transport Strategy

Each site has been reviewed against the seven priorities in the Transport Strategy. As noted previously the network capacity and road safety assessments align with two of the priorities, wherein the network capacity criterion is used to represent the "maintaining predictable travel times in the face of growth" priority and the road safety criterion represents the "safe" priority. The scoring system used to assess alignment with the Transport Strategy is a largely qualitative assessment as outlined below, however for the purposes of comparing sites a quantitative 1-5 score has been attributed to each rating.

³ <https://maphub.nzta.govt.nz/megamaps/?iss=https%3A%2F%2Fnzta.okta.com>

⁴ <https://cas.nzta.govt.nz>.

Table 2.1 Qualitative evaluation symbology

Qualitative Rating	Symbol
Very Good	 5 points
Good	 4 points
Average	 3 points
Poor	 2 points
Very Poor	 1 point

The intent of this assessment is a multi-criteria analysis which can be used to simply compare the relative merits of each site.

It is noted that no sites scored particularly well against the ‘Inclusive’ and ‘Walking and cycling friendly to support sustainable choices’ priorities because of the nature of the type of development being considered. Lifestyle blocks are typically low density, reasonably distant from the town centre, and lack infrastructure required to support safe walking and cycling options.

Additionally, all sites scored ‘average’ against ‘Supporting the vibrancy of Taupō’s town centres and fostering social and economic interactions’ as this was not considered to be relevant to the rural residential activity considered in the assessment.

Given that some sites are located close to one another, a ‘cluster’ approach has been adopted whereby several sites that are located together score the same in the assessment. This clustering brings together the assessments for Sites 6 and 7, and Sites 5 and 8.

3. Site Identification & High-Level Review

3.1 Site 1

The location of this site and proximity to the wider Taupō transport network is shown below.



Figure 3.1 Aerial Image showing location of Site 1 (orange shading)

Information provided to Abley confirms there is potential for an additional 85 sites across Site 1. This site is located about 9km from the town centre and is about 12 minutes-drive via State Highway 5.

Network Capacity

For 85 new sites a peak hour traffic generation of 102vph has been assumed. This equates to 1.7 vehicles per minute if averaged across the hour. It is assumed that the majority of traffic generated by the development would travel west toward the town centre via State Highway 5. The transport network will be able to accommodate this level of traffic and no wider network capacity issues are expected. Waka Kotahi would likely need to be consulted due to the increase in traffic at the Caroline Drive intersection and state highway network generally.

Road Safety

The collective and personal risk of nearby roads as identified in MegaMaps is shown in the table below.

Table 3.1 Road Safety Performance Rating, Site 1

Road	Collective Risk	Personal Risk
Caroline Drive	Low	Low
State Highway 5	Low-medium	Low-medium
Napier Road	Low-medium, Low	Medium, Low, Low-medium
Napier Road	Personal Risk	Medium, Low, Low-medium

The below collision diagram from CAS shows reported crashes in the vicinity of the site in the most recent 5-year period. This shows a cluster of minor and serious reported crashes on the curve in State Highway 5. These are generally loss of control crashes. The crashes have not been analysed in detail but this cluster of crashes suggests a trend in this location which may require further investigation and could potentially be addressed through minor safety improvements and or speed management.

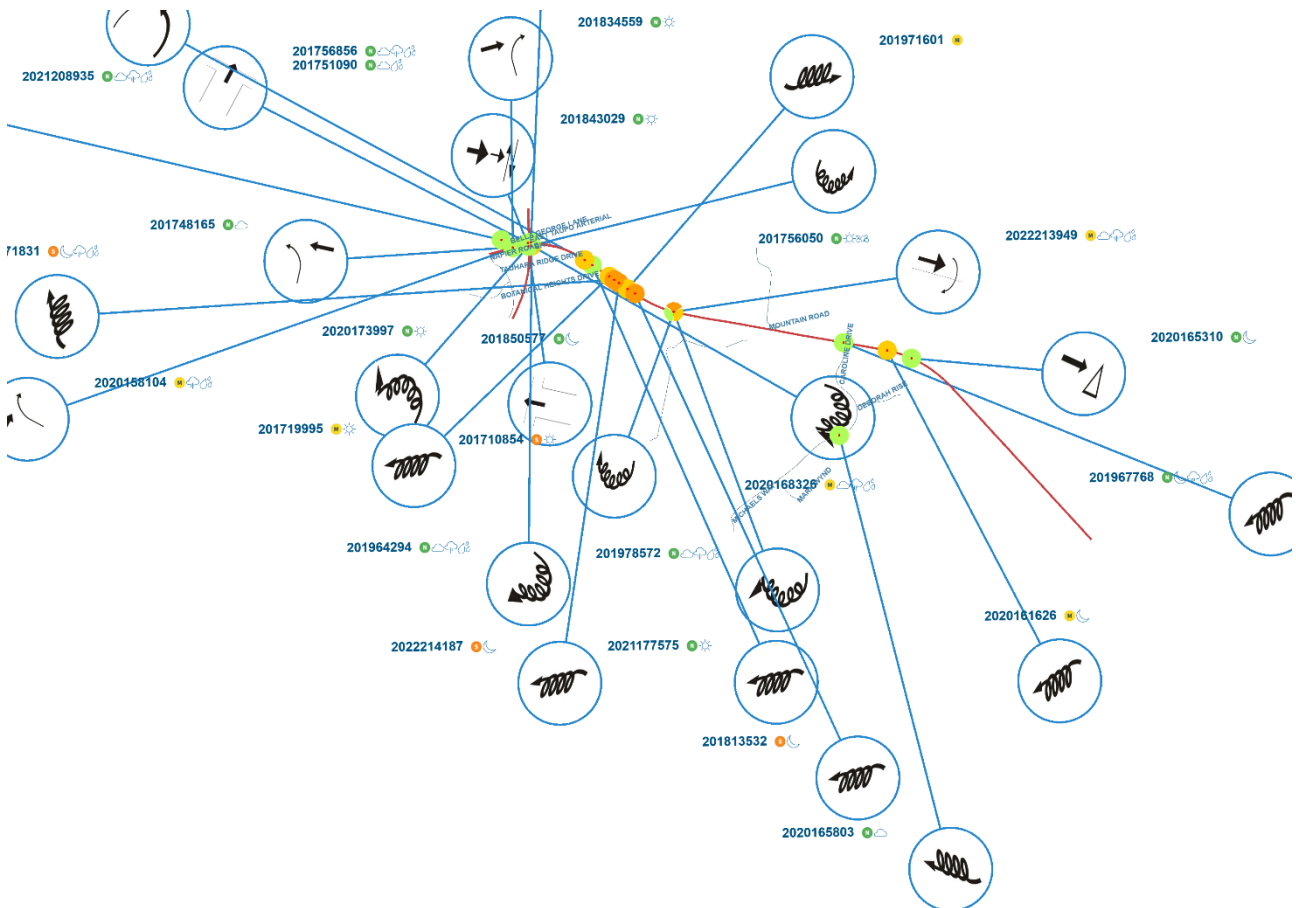









Figure 3.2 Collision diagram, Site 1

Alignment with Transport Strategy

The assessment against the seven Transport Strategy priorities is shown in the table below.

Table 3.2 Alignment with Transport Strategy priorities, Site 1

Transport Strategy Priority	Alignment Rating	Comments
Safe	 3 points	Nearby roads generally have low and low to medium personal and collective risk, however there may be underlying safety issues on the State Highway network which could be addressed through reducing speeds or safety improvements.
(Network Capacity) Maintaining Predictable travel times in the face of growth	 5 points	It is unlikely that development of this scale in this location would have any noticeable effect on travel times and travel times would therefore remain predictable.
Inclusive	 2 points	The site is not served by public transport and increased development in this location would increase reliance on private motor car. This site does score better than many others given it is the closest site to Taupō township.
Walking and cycling friendly to support sustainable choices	 2 points	There is no dedicated cycling or pedestrian infrastructure linking the site with Taupō Township. However, given the site is the closest to Taupō township out of all sites being considered it is rated poor as opposed to very poor. It is also noted that the Transport Strategy does not identify any plans to improve active modes infrastructure linking this site to the town centre.
Supporting the vibrancy of Taupō's town centres and fostering social and economic interactions	 3 points	It is not considered that rezoning this area would have any significant impact on the vibrancy of the Taupō Town Centre and would not directly foster social and economic interactions.
Well connected to the rest of New Zealand	 5 points	The proximity of the site to the SH network means that it is very well connected to the rest of New Zealand.
Resilient and reliable	 1 point	Increased household numbers on Caroline Drive would be at risk of having poor reliance and reliability if a crash or other emergency event occurred as there are no other roads in or out of the area.
Total Points	21	

3.2 Site 2

The location of this site and proximity to the wider Taupō transport network is shown below.

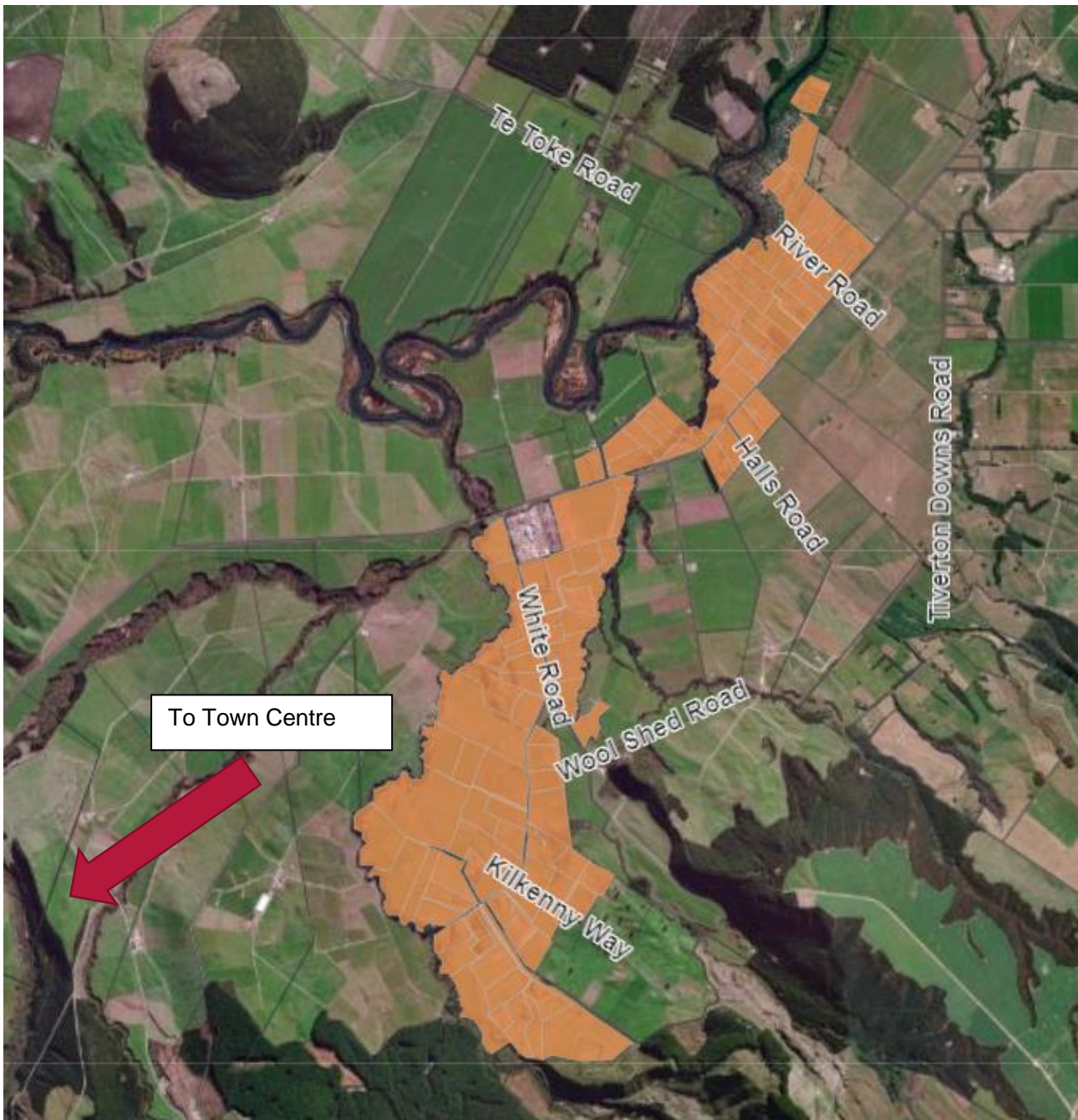


Figure 3.3 Aerial Image showing location of Site 2 (orange shading)

Information provided to Abley confirms there is potential for an additional 166 sites across Site 2.

Network Capacity

For 166 new sites a peak hour traffic generation of 199vph has been assumed. This equates to just over three additional vehicles per minute if averaged across the hour. It is assumed that the majority of traffic generated by the development would travel west toward the town centre via Broadlands Road and Tauhara Road. Access is also available to the state highway network from Broadlands Road. It is considered that the transport network will be able to accommodate this level of traffic and no wider

network capacity issues are expected. Some of the side roads off Broadlands Road such as Hill Road are narrow and unsealed and would not be suitable for development unless they were upgraded.

Road Safety Performance

The collective and personal risk of nearby roads as identified in MegaMaps is shown in the table below.

Table 3.3 Road Safety Performance Rating, Site 2

Road	Collective Risk	Personal Risk
Broadlands Road	Low, Medium	Medium, Low, Medium-High

The below collision diagram from CAS shows reported crashes in the vicinity of the site in the most recent 5-year period. The search area includes Broadlands Road and associated intersections from the site up to the on and off ramps to the state highway. This shows 63 reported crashes over that period. 7 of these crashes resulted in Death and Serious Injury (DSI) crashes and 19 resulted in minor injuries. The remaining 37 did not result in any injuries. While this has not been analysed in detail, the number of DSI and minor injury crashes suggest that there are existing safety issues on Broadlands Road and further development would increase the safety risk by virtue of increased traffic volumes. It is noted that Broadlands Road is referenced in the Transport Strategy as being a priority for safety improvements which is likely to include road widening and curve improvements. Hence, this road is understood to be part of an ongoing Rural Road Safety Programme of Works.

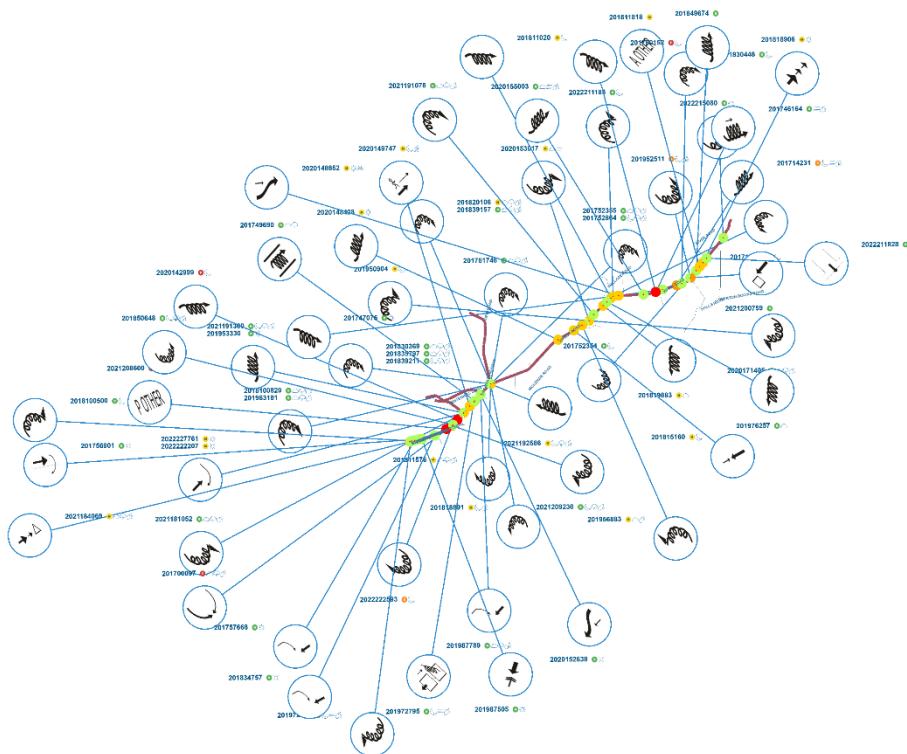









Figure 3.4 Collision diagram, Site 2

Alignment with Transport Strategy

The assessment against the seven Transport Strategy priorities is shown in the table below.

Table 3.4 Alignment with Transport Strategy priorities, Site 2

Transport Strategy Priority	Alignment Rating	Comments
Safe	 2 points	Nearby roads have low, low-medium, medium and medium high personal and collective risk. The number of DSI crashes indicates that there are existing safety issues on Broadlands Road. However, noting that Broadlands Road is already a priority rural road for safety improvements, the site receives a 'poor' rating as opposed to 'very poor'.
(Network Capacity) Maintaining Predictable travel times in the face of growth	 5 points	It is unlikely that development of this scale in this location would have any noticeable effect on travel times and travel times would therefore remain predictable.
Inclusive	 3 points	The site is isolated and increased development in this location would increase reliance on private motor vehicle travel.
Walking and cycling friendly to support sustainable choices	 4 points	There is currently no dedicated cycling or pedestrian infrastructure linking the site with Taupō Township. However, we note that the Transport Strategy earmarks Broadlands Road as a future long distance / Sport cycling route in the short term. This means that future network improvements will be undertaken to support cycle safety on this road.
Supporting the vibrancy of Taupō's town centres and fostering social and economic interactions	 3 points	It is not considered that rezoning this area would have any significant impact on the vibrancy of the Taupō Town Centre and would not directly foster social and economic interactions.
Well connected to the rest of New Zealand	 4 points	The proximity of the site to the SH network means that is connected to the rest of New Zealand.
Resilient and reliable	 5 points	Alternative routes are available in the event of a road closure.
Total Points	26	

3.3 Site 3

The location of this site and proximity to the wider Taupō transport network is shown below. Information provided to Abley confirms there is potential for an additional 180 sites across Site 3.



Figure 3.5 Aerial Image showing location of Site 3 (orange shading)

Network Capacity

For 180 new sites a peak hour traffic generation of 216vph has been assumed. This equates to 3.6 vehicles per minute if averaged across the hour. It is assumed that there would be a relatively even split between State Highway 1 and State Highway 5 to travel toward the town centre. Google maps shows the fastest route into the town centre being via Wairakei Drive (about 15 minutes) and requires crossing over the Control Gates bridge, which is already a known pressure point on the road network during the morning and evening peak periods. An alternative route is available however via State Highway 1. Hence, this site does have potential to add to existing network capacity problems via the Control Gates bridge at peak times but is well served by already available alternative routes such that this is not a critical consideration.

Road Safety Performance

The collective and personal risk of nearby roads as identified in MegaMaps is shown in the table below.

Table 3.5 Road Safety Performance Rating, Site 3

Road	Collective Risk	Personal Risk
Palmer Mill Road	Low-Medium	High
State Highway 1	Medium, Medium-High	Medium, Medium-High
State Highway 5	Medium	Medium

The below collision diagram from CAS shows reported crashes in the vicinity of the site in the most recent 5-year period. The search area includes Palmer Mill Road, State Highway 1 and State Highway 5 (and associated intersections). This shows 78 reported crashes over that period. 26 of these crashes resulted in either minor or serious injuries. There were no fatalities, and the remaining 52 reported

crashes did not result in any injuries. There are no specific locations of particular concern, however there are two minor injury and two serious crashes on Palmer Hill Road which is of concern given the estimated ADT is low at only 457vpd, noting that traffic volumes on this road would increase significantly with development. The Transport Strategy does not prioritise safety improvements for Palmer Mill Road and additional traffic on this road may increase the safety risk.



Figure 3.6 Collision Diagram, Site 3

Alignment with Transport Strategy Priorities

The assessment against the seven Transport Strategy priorities is shown in the table below.

Table 3.6 Alignment with Transport Strategy priorities, Site 3

Transport Strategy Priority	Alignment Rating	Comments
Safe	XX 1 point	The nearby roads are at the medium to high end in terms of personal and collective risk ratings. CAS shows several injury crashes on Palmer Mill Road which is of concern given the

Transport Strategy Priority	Alignment Rating	Comments
		relatively low traffic volumes at present.
Maintaining Predictable travel times in the face of growth	✓ 4 points	The site receives a rating of 'good' rather than 'very good' because of the potential for additional pressure on the control gates bridge.
Resilient and reliable	✓ ✓ 5 points	The site is very resilient from a transport perspective due to the number of available routes.
Inclusive	✗ ✗ 1 point	The site is isolated and increased development in this location would increase reliance on private motor car.
Walking and cycling friendly to support sustainable choices	✗ ✗ 1 point	There is no dedicated cycling or pedestrian infrastructure linking the site with Taupō Township and none is planned according to the Transport Strategy.
Supporting the vibrancy of Taupō's town centres and fostering social and economic interactions	3 points	It is not considered that rezoning this area would have any significant impact on the vibrancy of the Taupō Town Centre and would not directly foster social and economic interactions.
Well connected to the rest of New Zealand	✓ ✓ 5 points	This site has excellent road access to the state highway network being adjacent to State Highway 1 and State Highway 5.
Total Points	20	

3.4 Site 4

The location of this site and proximity to the wider Taupō transport network is shown below. Information provided to Abley confirms there is potential for an additional 234 sites across Site 3.

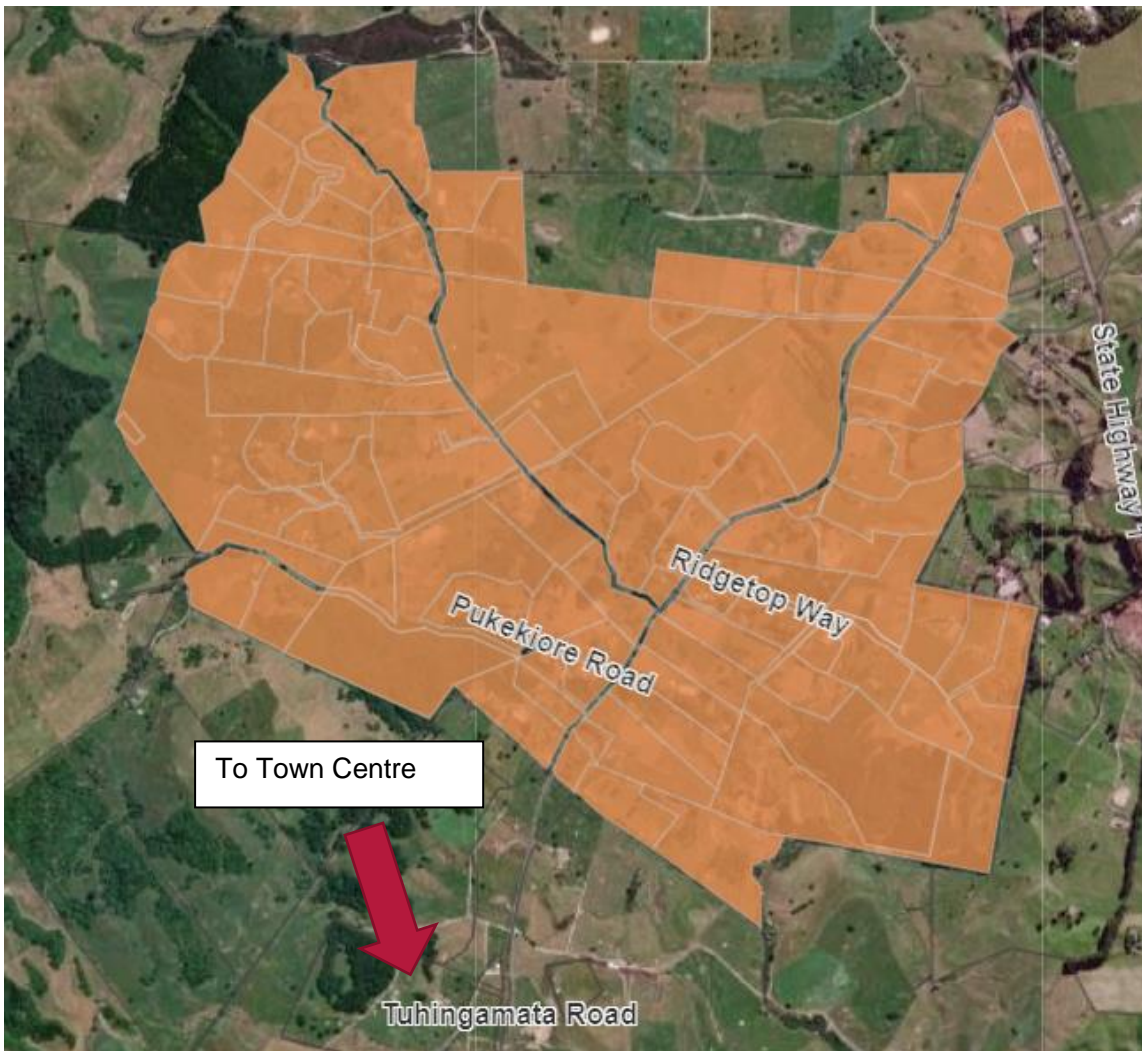


Figure 3.7 Aerial Image showing location of Site 4 (orange shading)

Network Capacity

For 234 new sites a peak hour traffic generation of 281vph has been assumed. This equates to 4.7 vehicles per minute if averaged across the hour. Access to the town centre is available via State Highway 1, Oruanui Road/ Poihipi Road and also State Highway 1 via Link Road. From the Forest Road intersection, Google Maps shows that the Poihipi Road route is the quickest/shortest route taking approximately 13 minutes. By way of comparison the State Highway 1 route takes approximately 17 minutes. While the Poihipi Road route is shorter it requires vehicles to cross the Control Gates bridge which is already under pressure during peak times. If pressure at the bridge worsens then motorists may gravitate to the State Highway network despite the longer distance. Hence, this site does have potential to add to existing network capacity problems via the Control Gates bridge at peak times but is well served by already available alternative routes such that this is not a critical consideration.

Road Safety Performance

The collective and personal risk of nearby roads as identified in MegaMaps is shown in the table below.

Table 3.7 Road Safety Performance Rating, Site 4

Road	Collective Risk	Personal Risk
Oruanui Road (between Link Road & State Highway 1)	Low-Medium	Medium-High
Forest Road	Low-Medium	Medium

The below collision diagram from CAS shows reported crashes in the vicinity of the site in the most recent 5-year period. The search area includes Oruanui Road from Tuhingamata Road to State Highway 1 and also includes Pukekiore Road and Forest Road and associated intersections.

This shows 21 reported crashes over that period. 26 of these crashes resulted in either minor or serious injuries. 9 of the crashes resulted in minor or serious injuries and the remaining 17 did not result in any injuries. There were no fatalities. The results suggest some safety issues are present on the two curves in Oruanui Road with multiple loss of control crashes occurring on each curve. Given the level of traffic that would be generated by the rezoning this would require further investigation.

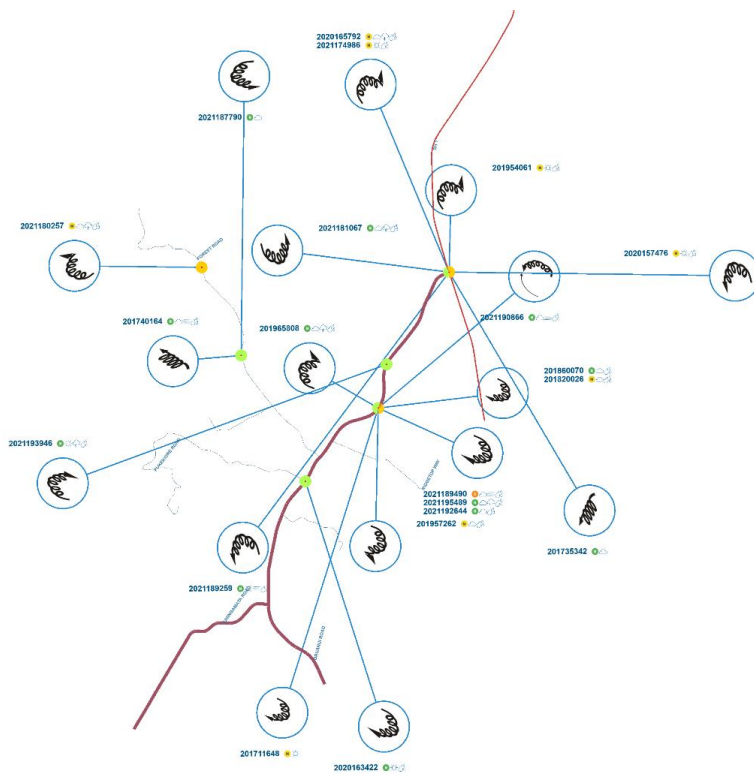









Figure 3.8 Collision diagram, Site 4

Alignment with Transport Strategy Priorities

The assessment against the seven Transport Strategy priorities is shown in the table below.

Table 3.8 Alignment with Transport Strategy priorities, Site 4

Transport Strategy Priority	Alignment Rating	Comments
Safe	 3 points	There is a mix in collective and personal risk ratings. The crash records indicate some issues worthy of further investigation on the local network.
Maintaining Predictable travel times in the face of growth	 4 points	This receives a rating of 'good' rather than 'very good' because of the potential for additional pressure on the control gates bridge, although there is an alternative route that can be taken during peak periods.
Inclusive	 1 point	The site is isolated and increased development in this location would increase reliance on private motor car.
Walking and cycling friendly to support sustainable choices	 1 point	There is no dedicated cycling or pedestrian infrastructure linking the site with Taupō Township.
Supporting the vibrancy of Taupō's town centres and fostering social and economic interactions	 3 points	It is not considered that rezoning this area would have any significant impact on the vibrancy of the Taupō Town Centre and would not directly foster social and economic interactions.
Well connected to the rest of New Zealand	 5 points	This site has excellent access to the state highway network being adjacent to State Highway 1 and State Highway 5.
Resilient and reliable	 5 points	The site is very resilient from a transport perspective due to the number of available routes.
Total Points	22	

3.5 Sites 6 & 7

The location of this site and proximity to the wider Taupō transport network is shown below. Information provided to Abley confirms there is potential for an additional 213 sites across Sites 6 & 7.



Figure 3.9 Aerial Image showing location of Sites 6 & 7 (orange shading)

Network Capacity

For 213 new sites a peak hour traffic generation of 256vph has been assumed. This equates to 4.3 vehicles per minute if averaged across the hour. Access to the town centre is available via Mapara Road / Arcacia Bay Road or Tukairangi Road / Poihipi Road. It is approximately 10-15kms from the town centre depending on departure location. Importantly, both routes will require crossing the Control Gates bridge which is an existing pressure point at peak times, with no convenient alternative routes to connect to the town centre and wider Taupō urban area. As a result, this site scores poorly in terms of network capacity.

Road Safety

The collective and personal risk of nearby roads as identified in MegaMaps is shown in the table below.

Table 3.9 Road Safety Performance Rating, Sites 6 & 7

Road	Collective Risk	Personal Risk
Mapara Road	Low	Medium
Tukairangi Road	Low	Medium

The below output from CAS shows reported crashes in the vicinity of the site in the most recent 5-year period. In this instance the collision diagram is not included due to the size of the corresponding area. The search area is as shown below, but for completeness includes Mapara Road, Tukairangi Road, Poihipi Road and the intersection with Wairakei Drive, and Arcacia Bay Road. This shows 115 reported crashes. 7 of these resulted in serious injuries and 1 was fatal. 29 of the reported crashes resulted in minor injuries and the remaining 78 did not result in any injuries. Based on the locations, the crashes appear generally random in nature, though there are various injury crashes along Poihipi Road and also along Mapara Road near Acacia Bay Road. Of particular note is that there are a cluster of 6 injury crashes at the Poihipi Road / Wairekei Dr intersection although there have been recent improvements (including reducing the speed environment) and potentially further improvements at this location linked to PC37. In general terms the additional traffic associated with this site would exacerbate any safety concerns and should be investigated further.

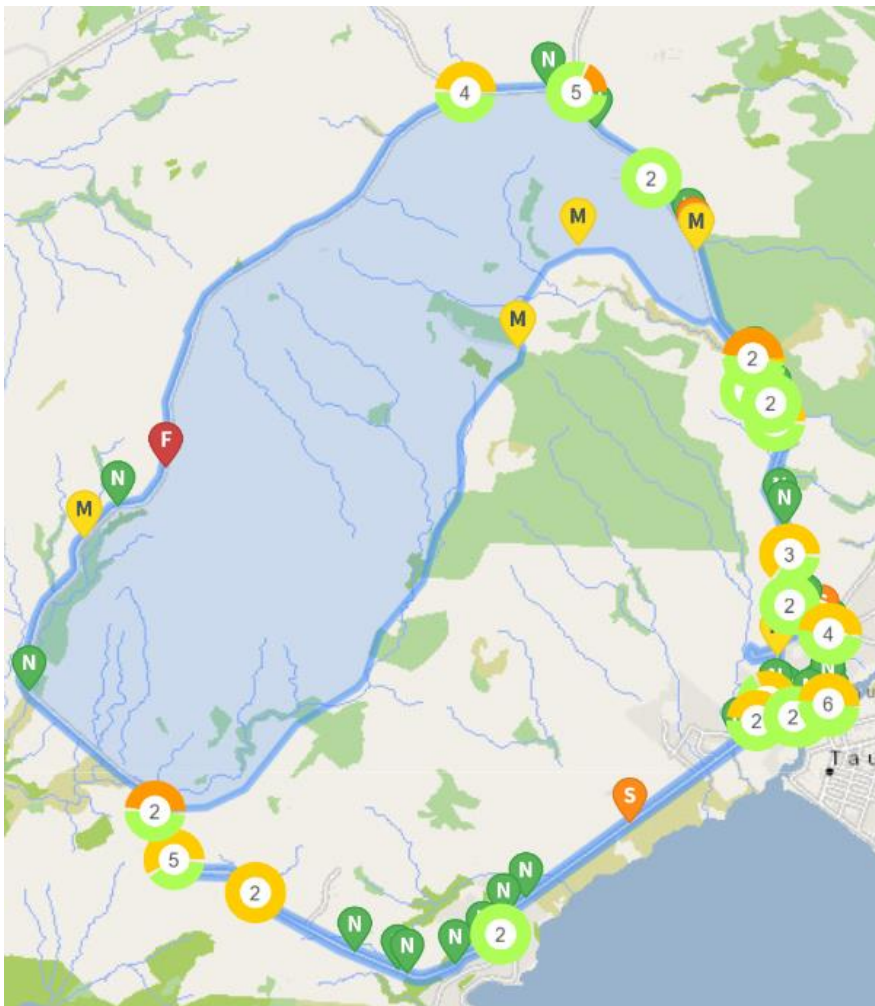


Figure 3.10 CAS output of reported crash locations, Sites 6 & 7

Alignment with Transport Strategy Priorities

The assessment against the seven Transport Strategy priorities is shown in the table below.

Table 3.10 Alignment with Transport Strategy priorities, Site 6 & 7

Transport Strategy Priority	Alignment Rating	Comments
Safe	↔ 3 points	Personal and collective risk ranges from low to medium and the CAS data indicates some existing safety issues, primarily on Mapara Road and Poihipi Road.
Maintaining Predictable travel times in the face of growth	✘ ✘ 1 point	While alternative routes are available, both of these require traffic to cross the Control Gates bridge which is an existing pressure point in the network.

Transport Strategy Priority	Alignment Rating	Comments
Inclusive	✘ ✘ 1 point	The site is isolated and increased development in this location would increase reliance on private motor car.
Walking and cycling friendly to support sustainable choices	✘ 2 points	There is no dedicated cycling or pedestrian infrastructure linking the site with Taupō Township. It is noted, however, that the Transport Strategy identifies Poihipi Road as a strategic long distance/sport riding route, which means that improvements for cyclists are a possible prospect.
Supporting the vibrancy of Taupō's town centres and fostering social and economic interactions	↔ 3 points	It is not considered that rezoning this area would have any significant impact on the vibrancy of the Taupō Town Centre and would not directly foster social and economic interactions.
Well connected to the rest of New Zealand	✘ ✘ 1 point	Compared with other sites being considered in this analysis, these sites are distant from the state highway network.
Resilient and reliable	✘ 2 points	The site has alternative access if the Control Gates bridge is congested or closed but the route is significantly longer and therefore receives a 'poor' rating rather than 'very poor'.
Total Points	13	

3.6 Sites 5 & 8

The location of this site and proximity to the wider Taupō transport network is shown below. Information provided to Abley confirms an additional 461 sites could be created across Sites 5 and 8. This is made up of 192 sites at the Whangamata Road area (Site 5) and 269 sites at Site 8.

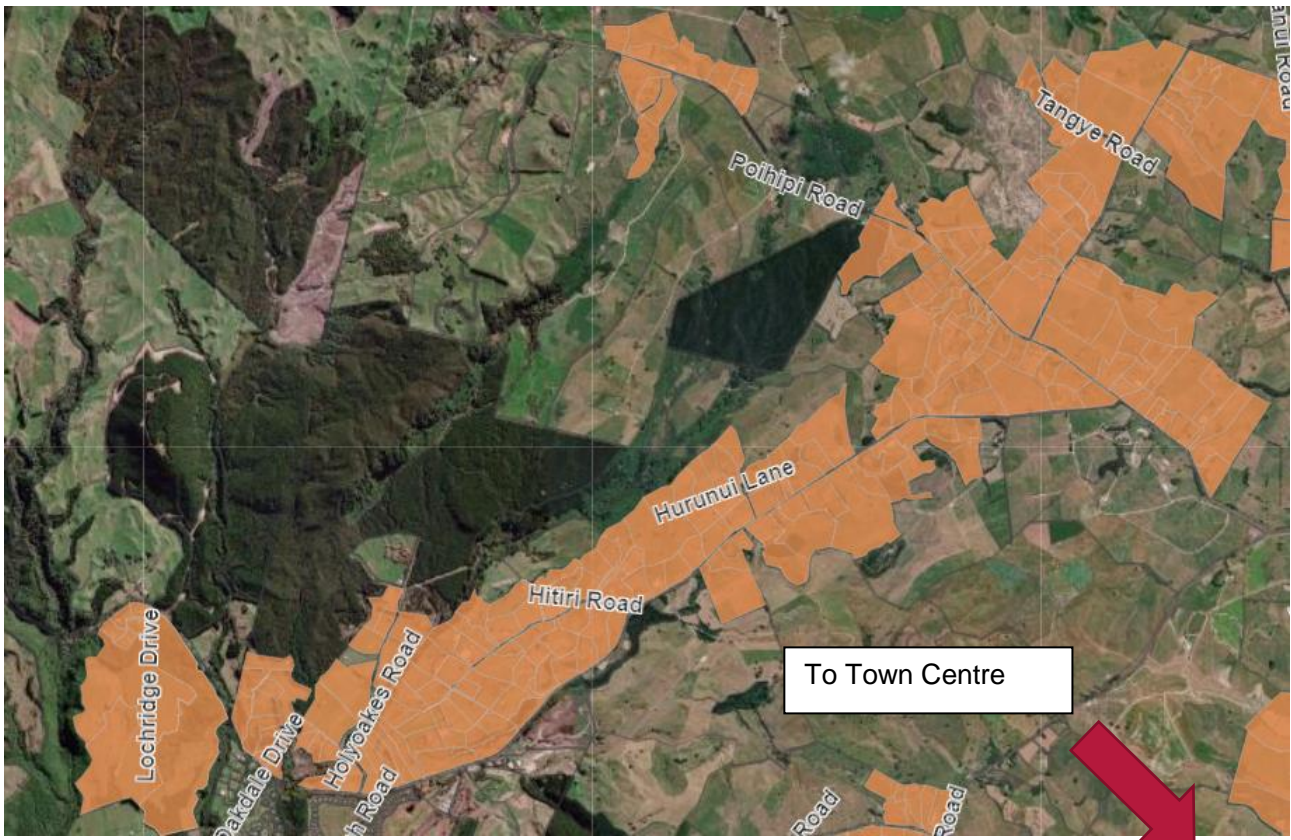


Figure 3.11 Location of Sites 5 & 8

Network Capacity

For 461 new sites a peak hour traffic generation of 533vph has been assumed. This equates to 9.2 vehicles per minute if averaged across the hour. It is assumed that the majority of this traffic would use Poihipi Road and Wairakei Drive in order to travel to the town centre. The site is approximately 15km from the Town Centre and is approximately a 15 minute drive via Poihipi Road. This will require crossing the control gates bridge over the Waikato River which is an existing pressure point in the network. Because of this, Sites 5 and 8 score very poorly in network capacity terms. We also note that the Council’s asset managers have already highlighted a potential need to upgrade Poihipi Road / Oruanui Road but this is dependent on funding. Development of this land will increase the pressures on Council to upgrade these roads for safety and efficiency reasons. Similarly, there would be increased pressure on Wairakei Drive / Poihipi Road intersection and it is likely that improvements would need to be investigated in this regard.

Road Safety Performance

The collective and personal risk of nearby roads as identified in MegaMaps is shown in the table below.

Table 3.11 Road Safety Performance Rating, Sites 5 & 8

Road	Collective Risk	Personal Risk
Poihipi Road	Low-medium	Medium
Whangamata Road	Low-medium	Low-Medium
Tuhingamata Road	Low	Low

The below output from CAS shows reported crashes in the vicinity of the site in the most recent 5-year period. In this instance we have not included the collision diagram due to the size of the study area. The search area included Whangamata Road, Poihipi Road between Tuhingamata Road and Oruanui Road, and Oruanui Road from Tuhingamata Road and Poihipi Road. We have not included the full length of Poihipi Road as this was already searched for Sites 6 & 7. A total of 52 crashes were reported. 23 of these resulted in minor or serious injuries and one was fatal. The remaining 28 did not result in any injuries. There are a number of injury crashes along Whangamata Road and Poihipi Road which suggests the need for further investigation of these roads in the event of intensification.

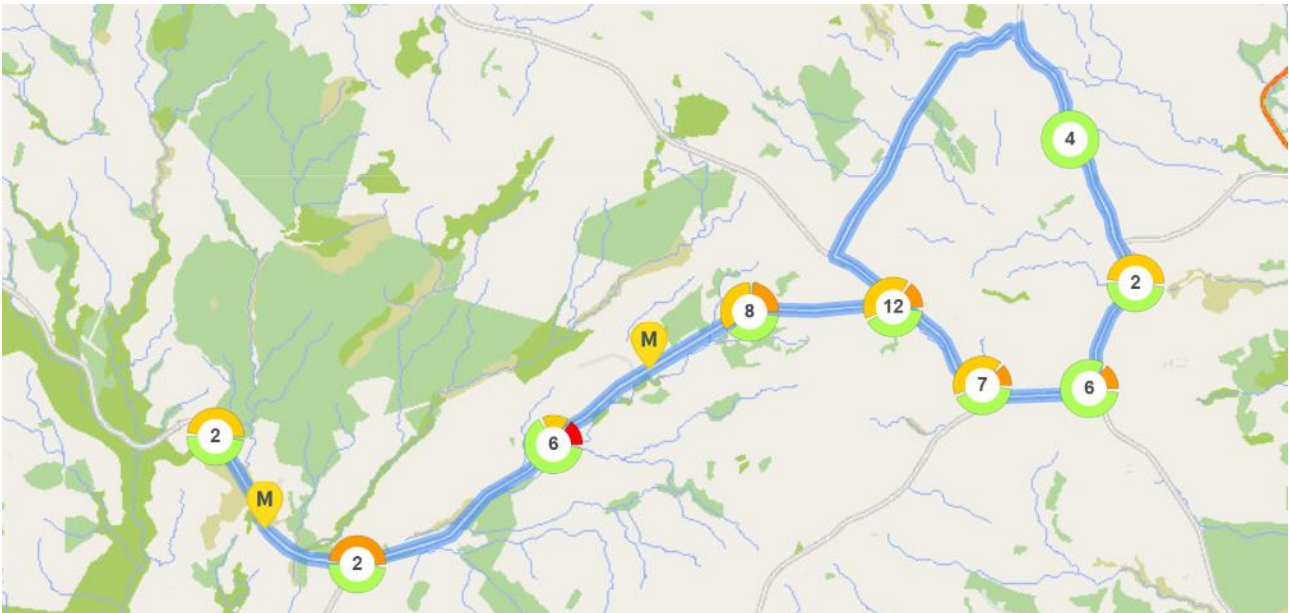







Figure 3.12 CAS output with reported crash locations, Sites 5 & 8

Alignment with Transport Strategy Priorities

The assessment against the seven Transport Strategy priorities is shown in the table below.

Table 3.12 Alignment with Transport Strategy priorities, Site 5 & 8

Transport Strategy Priority	Alignment Rating	Comments
Safe	✘ 2 points	The personal and collective risk of affected roads ranges from low to medium. Given that Council has already raised concerns with respect to safety at Poihipi Road (including the Wairakei Road intersection) and also Whangamata Road, this site scores 'poor' in terms of safety. It is also noted that that this intersection is classified as a 'high risk' intersection in MegaMaps.
Maintaining Predictable travel times in the face of growth	✘ ✘ 1 point	While alternative routes are available, traffic will be required to cross the control gates bridge which is an existing pressure point in the network.

Transport Strategy Priority	Alignment Rating	Comments
Inclusive	 1 point	The site is isolated and increased development in this location would increase reliance on private motor car.
Walking and cycling friendly to support sustainable choices	 1 point	<p>There is no dedicated cycling or pedestrian infrastructure linking the site with Taupō Township.</p> <p>It is noted, however, that the Transport Strategy identifies Poihipi Road as a strategic long distance/sport riding route, which means that improvements for cyclists are a possible prospect.</p>
Supporting the vibrancy of Taupō's town centres and fostering social and economic interactions	 3 points	It is not considered that rezoning this area would have any significant impact on the vibrancy of the Taupō Town Centre and would not directly foster social and economic interactions.
Well connected to the rest of New Zealand	 1 point	Compared with other sites being considered in this analysis, these sites are distant from the state highway network.
Resilient and reliable	 2 points	The site has alternative access if the control gates bridge is congested or closed but the route is significantly longer and therefore receives a 'poor' rating rather than 'very poor'.
Total Points	11 points	

4. Summary

This technical note has evaluated eight sites (four of which assessed as two separate clusters) in terms of road safety and network capacity performance. These have directly informed an assessment against the 'safety' and 'maintaining predictable travel times' priorities under the Transport Strategy. Each site has been scored based on its alignment with the full set of seven Transport Strategy priorities and the results are summarised in Table 4.1.

Table 4.1 Table showing comparative scores of multi-criteria analysis

Site	Result (points)
1	21
2	26
3	20
4	22
6 & 7	13
5 & 8	11

It is noted that this assessment has not applied any weightings to the seven priorities so essentially treats them as having equal importance. Should some priorities be considered to have more impact in terms of transportation impacts, it is recommended that a sensitivity test could be undertaken to improve the robustness of the assessment.

The unweighted results demonstrate that Site 2 is the most suitable for potential RL rezoning from a transportation perspective, followed by Sites 4, 1 and 3. These sites are closer in proximity to the existing urban area and are expected to have a lower impact on transportation network than other sites. This assessment has shown that comparatively, sites 5-8 are less suitable than sites 1-4. This is primarily due to the projected impact these sites would have on the already constrained areas in the transport network, most notably the Control Gates Bridge and due to their relatively remote location.

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