High Level Transport Assessment of Proposed Industrial Land Areas

GREAT LAKE TAUPŌ
Taupō District Council

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 Industrial land in the vicinity of Taupō Township.

This assessment comprises a multi-criteria analysis which assesses eight sites 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. 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 7 is the most suitable for potential Industrial rezoning from a transportation perspective.

Clusters 1 (Sites 1, 2 & 8A) and 2 (Sites 3 & 4) have identical mid-range scores. Of note is that the scale of these Clusters is such that the full (or near full) development of these areas has the potential to require new roading connections and/or additional network capacity to be established especially if the industrial activities have relatively high traffic generation rates. It is recommended that a more conservative approach to limit traffic effects may be to rezone some but not all of these clusters.

This assessment has shown that comparatively, Site 6 is less suitable due to its anticipated impact on safety and network capacity, its proximity to existing and planned residential development, and its remote location away from the State Highway network.

Contents

Tables

Figures

High Level Transport Assessment of Proposed Industrial Land Areas in Proximity to Taupō Township

Quality Assurance Information

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1. Introduction

This technical note is a high-level assessment of the land areas proposed to be included in Taupō District Council's (TDC) proposed plan change. It is understood that the intent of the plan change is to increase the supply of Industrial zoned land in proximity to Taupō township. Figure 1.1 shows the eight sites that are being considered by TDC for this purpose, noting that Site 5 has been removed, and Site 8A added.

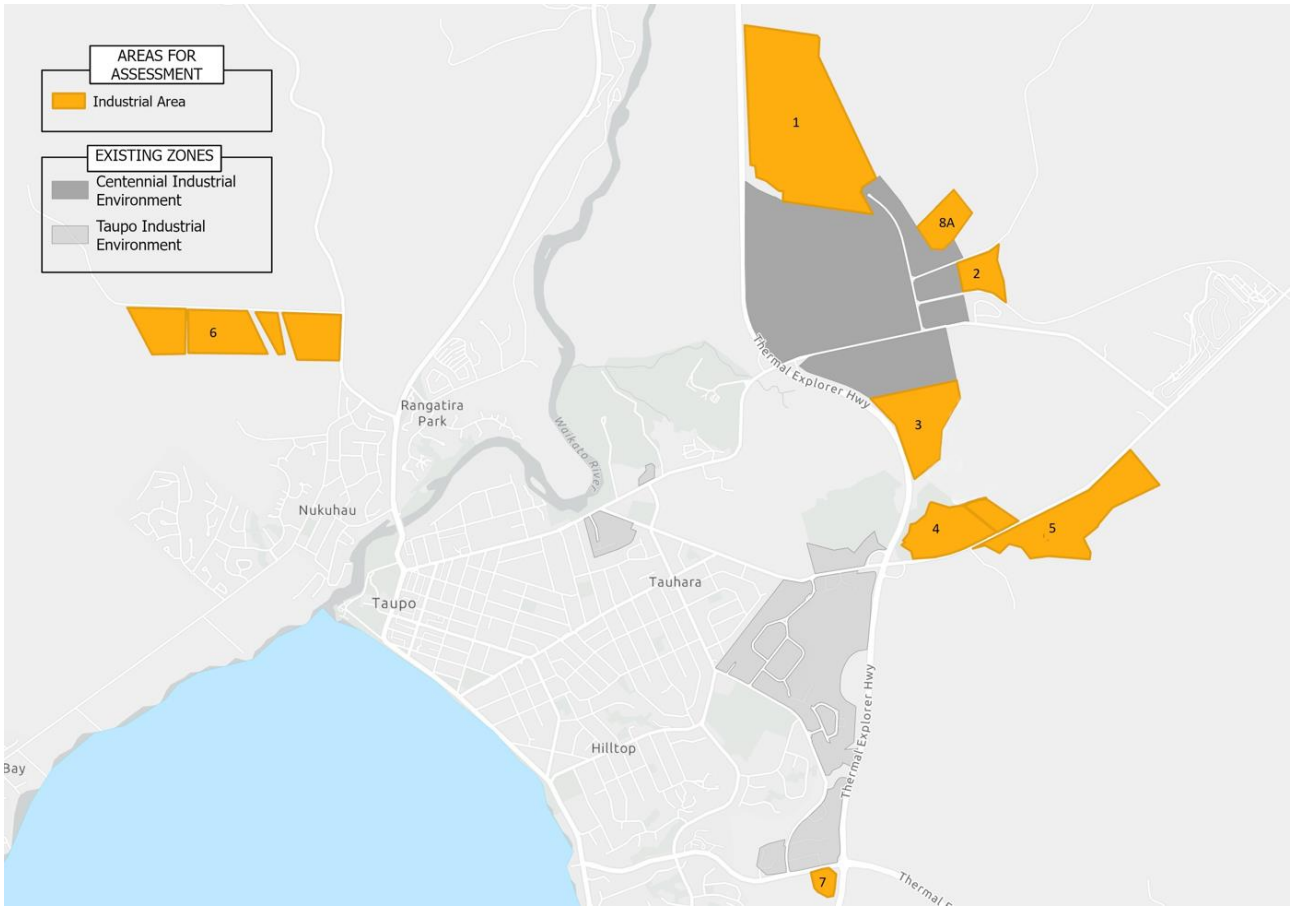

Figure 1.1 Map provided to Ableby TDC showing potential industrial sites in orange

This technical note is intended to assist TDC in being able to better understand the transportation implications for the rezoning of each industrial site. It is intended to inform TDC's future decision making in respect of industrial 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 relevant for all sites except Site 6.

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.

The results of this multi-criteria analysis can be used to compare each site against one another. Given that some sites are located close to one another, we have adopted a 'cluster' approach whereby we have assessed several sites collectively in cases where they will all affect the same part of the roading network.

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, based on the land areas provided. A traffic generation rate of 15 vehicle movements/ha in peak hour has been applied which is broadly representative of light industrial activity traffic generation. It is noted that there may be some activities permitted in the Industrial zone that have the potential to generate a higher volume of traffic than this (such as trade-related retail activity), but equally there would be some activities that have the potential to generate a lower volume of traffic (such as some heavy industrial activities and warehousing). Hence it is considered that 15 vehicle movements/ha during peak hour is a reasonable figure, that will provide a realistic basis for comparing effects on the transport network.

The results of this multi-criteria analysis can be used to compare each site against one another, which will be useful for if TDC in the event that only a select number of sites are required to be rezoned. For the sake of clarity, whether or not sites are 'required' to be rezoned is to be determined by others.

2.2 Road safety performance

The collective and personal risk rating of each road has been extracted from Waka Kotahi's Mega Maps[1] 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)[2].The crash query has been used to determine if there are any obvious safety issues on the local

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

[2] https://cas.nzta.govt.nz.

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 the 7 priorities contained within the Taupō District Council Transport Strategy – Connecting Taupō 2020-2050

Each site has been reviewed against the seven priorities in the Transport Strategy. As noted in the executive summary, 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.

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. However as noted, 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 1, 2 & 8A, and Sites 3 & 4.

3. Site Identification & High-Level Review

3.1 Cluster 1 – Sites 1, 2 and 8A

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

Figure 3.1 GIS Image depicting locations of Sites 1, 2 and 8A (Cluster 1).

The following properties and accompanying land areas form Cluster 1

- Site 1: 887 Rakaunui Road – 105ha
- Site 2: 40 Aratiatia Road – 10.03ha
- Site 8A: 870 Rakaunui Road – 45ha (approx.)
- Total: **160.03ha** (approx.)

The site is located on the eastern side of the Eastern Taupō Arterial and is on the fringe of existing industrial activity to the south and west.

Network Capacity

Based on the above land area, a traffic generation of 2,400vph in the peak hours has been assumed at 15 vehicle movements/Ha in peak hour. This reflects the size of the land area (site one especially) and equates to 40 vehicles per minute if averaged across the full hour. This is a significant amount of traffic and would likely require additional arterial roads and/or connections to SH1 to be established. If direct access to the East Taupō Arterial were not achieved, the site one traffic would need to travel down

Rakaunui Road which is a cul de sac intersecting with Centennial Drive. This is a priority 'GIVE WAY' controlled intersection with GIVE WAY signage and road markings and a continuity line. There are currently no dedicated turning lanes. Rakaunui Road has a posted speed limit of 70km/h and Centennial Drive has a posted speed limit of 100km/h. With the anticipated increases in traffic volumes at this intersection improvements will need to be investigated for safety and efficiency reasons and other connections to the wider network will likely need to be established. It is noted that the Council's asset managers have already identified this is a consideration.

Once on Centennial Drive, traffic is provided with excellent access to the state highway network via existing on and off ramps connecting Centennial Drive with the East Taupō Arterial. Access to the town centre is also available via Spa Road. Depending on the extent of development across the 160 hectares and mix of activities, additional lane capacity may need to be established on some of these key corridors.

It is assumed that access to Site 8A would be obtained via Lot 11 DPS 37689, which is an approximately 10m wide corridor between 910 and 804 Rakaunui Road. Figure 3.1R of the Taupō Code of Practice[3] requires a 23m wide reserve width for an industrial road such as this. It is therefore considered that options for alternative access would need to be considered if this land was developed for industrial purposes. Site 2 appears to have frontage to both Aratiatia Road and Off-Road Highway. This would also for suitable distribution of new development traffic onto Rakaunui Road.

Overall, this site is well located to access the State Highway network though there are localised network capacity effects that need to be considered prior to rezoning these sites, especially if the full land areas were developed with activities corresponding to traffic generation rates at the middle-upper end of the scale.

Road Safety Performance

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

Table 3.1 Personal and Collective Risk Ratings

Road	Collective Risk	Personal Risk
Rakaunui Road	Low	Low
Aratiatia Road	Low	Low
Centennial Drive	Low-Medium	High

The below collision diagram from CAS shows the reported crashes in the vicinity of the site in the most recent 5-year period. The search area included all of Rakaunui Road and Aratiatia Road, and Centennial Drive from the Rakaunui Road intersection up to the State Highway on and off ramps. Ten crashes were reported. Four of these crashes resulted in minor injuries, one was serious, and one was fatal. The remaining four crashes did not result in any injuries.

[3] https://www.taupodc.govt.nz/repository/libraries/id:25026fn3317q9slqygym/hierarchy/our-council/policies-plans-and-bylaws/documents/Code%20of%20Practice%20Sept%202009.pdf

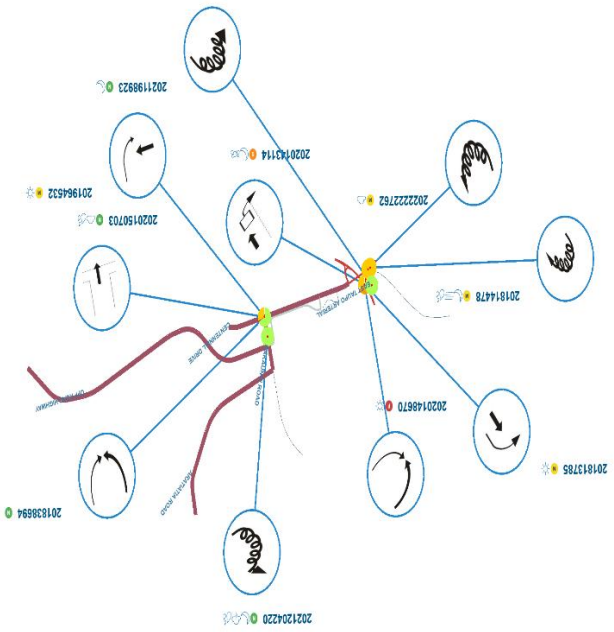

Figure 3.2 Collision diagram, Site 1

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, Cluster 1

Transport Strategy Priority	Alignment Rating	Comments
Safe	⇆ 3 points	The 'average' safety rating acknowledges the 'high' personal risk on Centennial Drive.
Maintaining Predictable travel times in the face of growth	⇆ 3 points	There is the potential for the proposed rezoning to have a significant impact on the Council's ability to predict travel times in the future if the scale and nature of the activity is realised without sufficient new roading connectivity and lane capacity. This cluster is provided with excellent access to the State Highway network and avoids the need for industrial traffic to pass through residential areas thereby reducing the potential to impact on commuter travel times. Some localised capacity issues have been identified in the Network Capacity Assessment and these may be extensive depending on the scale and nature of the activity. These issues would be reduced if the size of the land area to be rezoned were to be reduced.
Inclusive	✕✕ 1 point	The site is distant from residential areas such that industrial workers are likely to rely

Transport Strategy Priority	Alignment Rating	Comments
		on private motor vehicle when travelling to the site.
Walking and cycling friendly to support sustainable choices	✗ ✗ 1 point	There are no footpaths or cycle lanes on Centennial Drive or Rakaunui Road and the Transport Strategy does not indicate any future plans to provide these.
Supporting the vibrancy of Taupō 's town centres and fostering social and economic interactions	✓ ✓ 5 points	The location of Cluster 1 is such that industrial traffic will be able to access the state highway network without having to pass through the Taupō Town Centre.
Well connected to the rest of New Zealand	✓ ✓ 5 points	As noted above, the location of Cluster 1 provides excellent access to the state highway network with existing motorway on and off ramps connecting Centennial Drive with State Highway 1.
Resilient and reliable	✓ 4 points	The transport network in proximity to Cluster 1 affords an adequate level of resilience because Centennial Drive links onto Broadlands Road as well as Spa Road. These linkages provide an alternative transport connection in the event of road closure during times of repair or emergency. However depending on the scale and nature of the activity additional arterial connections are likely to be required.
Total Points	22 points	

3.2 Cluster 2 – Sites 3 & 4

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

Figure 3.3 GIS Image depicting locations of Sites 3 &4 (Cluster 2)

The following properties and accompanying land areas form Cluster 2

- Site 3: Part 261 Broadlands Road – **30ha** (approx.)
- Site 4: 63 Broadlands Road – 20ha with only **14ha** (approx.) developable
- Total: **44** (approx.)

Transport Network Capacity

Based on the above land area, a traffic generation of 660vph in the peak hours has been assumed at 15 vehicle movements/Ha in peak hour. This equates to 11 vehicles per minute if averaged across the full hour. Based on the site locations, it is expected that access to these sites would only be available via Broadlands Road although it is plausible that Site 3 may gain access via Centennial Drive as well, creating a local connection between Broadlands Road and Centennial Drive. Most vehicles would access to/from the west with traffic dispersing via SH1 and Broadlands Road to the west of SH1.

According to Mobile Roads, Broadlands Road has an estimated ADT of 2702 with 25.5% being heavy traffic. It is commonly accepted that peak hour traffic volumes equate to in the order of 10% of daily traffic volumes. Hence, Broadlands Road is currently estimated to carry approximately 270 vehicles in the peak hour (two-way). The introduction of an additional 660 two-way vehicle movements in the peak hour is therefore significant and depending on the full extent and nature of the activity has the potential to add congestion to Broadlands Road. However, it is expected that this is likely to remain within the capacity of Broadlands Road which would be in the order of 1400-1800 vehicles per lane per hour. There does remain some likelihood that additional capacity may be required between the accesses and SH1 if the traffic generation of the activities is at the upper end of the scale.

It is noted that as is the case for Cluster 1, Cluster 2 is similarly well located to access the State Highway network and therefore aligns with the Transport Strategy's policy to zone industrial land close to the State Highway network. This improves accessibility and avoids the need for industrial traffic to pass through residential areas.

Road Safety Performance

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

Table 3.3 Personal and Collective Risk Ratings

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

The below collision diagram from CAS shows the reported crashes in the vicinity of the site in the most recent 5-year period. The search area included Broadlands Road from the East Taupō Arterial, past the intersection with Centennial Drive. A total of 14 crashes were reported. Three were fatal, one resulted in serious injuries, three resulted in minor injuries and the remaining seven did not result in any injuries. The reported crash data indicates existing safety issues on Broadlands Road between Centennial Drive and the East Taupō Arterial. With new conflict points and significant traffic increases this would require further investigation.

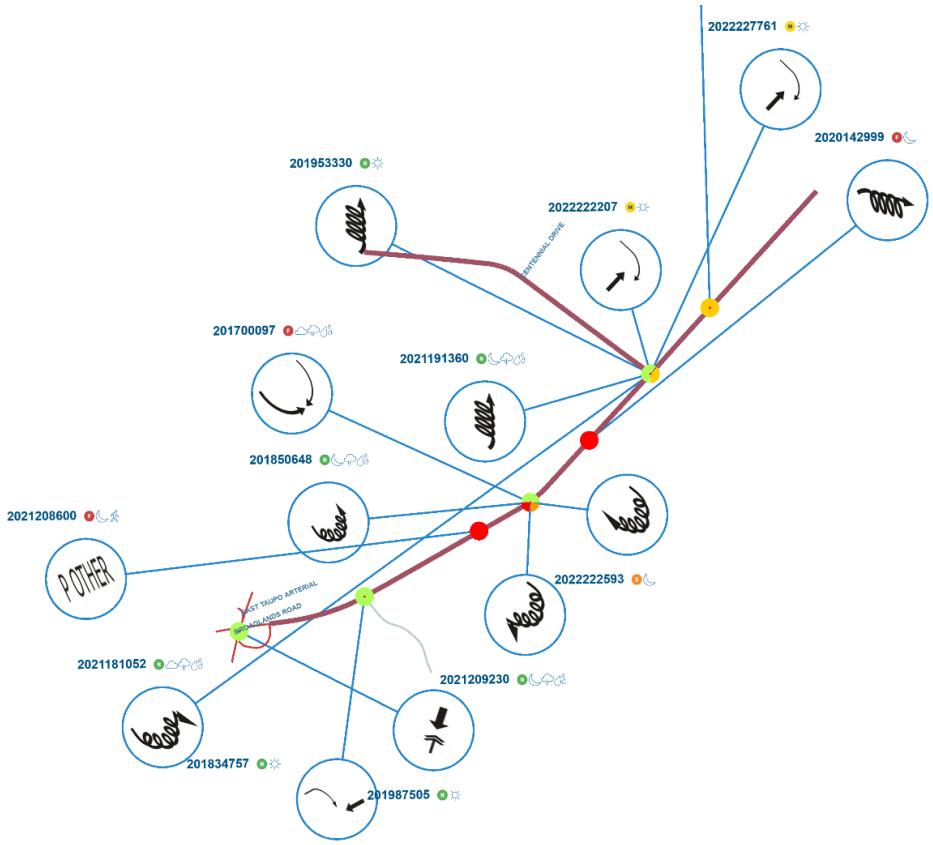

Figure 3.4 Collision diagram, Cluster 2

It is noted that the Council Asset Managers have highlighted Broadlands Road as having safety issues and have suggested vehicle speed reductions and limited access onto this road.

Alignment with Transport Strategy Priorities

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

Table 3.4 Alignment with Transport Strategy priorities, Cluster 2

Transport Strategy Priority	Alignment Rating	Comments
Safe	✗ 2 points	The CAS data indicates that there are safety issues on Broadlands Road. This will require further investigation if this land is to be rezoned and is likely to require reduction in vehicle speeds and access management as part of any development. It is acknowledged that the Transport Strategy highlighted Broadlands Road as being part of the ongoing Rural Road Safety Programme which suggests safety is likely to be improved in the future. Hence, this site receives a 'poor' rating as opposed to 'very poor'.
Maintaining Predictable travel times in the face of growth	⇆ 3 points	There is the potential for the proposed rezoning to have a significant impact on the Council's ability to predict travel times in the future if the scale and nature of the activity is realised without sufficient new roading connectivity and lane capacity. It is noted that the Council is also considering rezoning land for 'Rural Lifestyle' purposes further northeast along Broadlands Road. This would further increase traffic volumes and affect the composition of traffic due to a mix of industrial and residential land uses. Some localised improvements to increase capacity on Broadlands Road between the accesses and SH1 may be required depending on the scale and nature of the activity. These issues would be reduced if the size of the land area to be rezoned were to be reduced.
Inclusive	✗ 2 points	The site is approximately 2km from the nearest residential area which is considered to be a walkable and cyclable distance for workers. However, there are no facilities for pedestrians or cyclists beyond (east) the Eastern Taupō Arterial overbridge. Therefore, this site receives a 'poor' rating for inclusivity.
Walking and cycling friendly to support sustainable choices	✗✗ 1 point	There are no footpaths or cycle lanes on Broadlands Road east of the Eastern Taupō Arterial overbridge. It is therefore not considered that pedestrians and cyclists could safely access this land from the town centre.
Supporting the vibrancy of Taupō 's town centres and fostering social and economic interactions	✓✓ 5 points	The location of Cluster 2 is such that industrial traffic will be able to access the state highway network without having to pass through the Taupō Town Centre.
Well connected to the rest of New Zealand	✓✓ 5 points	As noted above, the location of Cluster 2 provides excellent access to the state highway network with existing motorway on and off ramps connecting Centennial Drive with State Highway 1.
Resilient and reliable	✓ 4 points	The transport network in proximity to Cluster 2 affords an adequate level of resilience because Broadlands Road links onto Centennial Drive as well as Tauhara Road / Spa Road. These linkages

Transport Strategy Priority	Alignment Rating	Comments
		provide alternative transport connections in the event of road closure during times of repair or emergency. However, depending on the scale and nature of the activity additional connections may improve resilience including establishing a local connection Broadlands Road and Centennial Drive.
Total Points	22 points	

3.3 Site 6

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

Figure 3.5 GIS Image depicting location of Site 6.

Information provided to Ableys confirms an area of 45ha for Site 6.

Network Capacity

Based on the above land area, a traffic generation of 675vph in the peak hour has been assumed. This equates to 11.25 vehicles per minute if averaged across the full hour. This traffic would need to travel down Poihipi Road and Wairakei Drive, over the Control Gates Bridge when travelling into the Town Centre or toward State Highway 1. This will result in heavy traffic travelling past established residential land near the Poihipi Road / Wairakei Drive intersection. This intersection has already been highlighted as an area of concern by the Council's asset managers from a capacity and safety perspective.

The Control Gate Bridge is the most direct connection between Site 6 to the town centre and the majority of residential areas which is an important consideration for staff commuting. Notably however the staff would likely be travelling across the bridge in contra-flow direction from the main commuter tidal flows but this would likely put additional pressure on the Wairakei Drive/Norman Smith intersection

and intersections along the length of Spa Road. Development of this site is envisaged to exacerbate existing capacity issues at these locations.

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 2

Road	Collective Risk	Personal Risk
Poihipi Road	Medium	Medium
Wairakei Drive	Medium-High	Medium

The below collision diagram from CAS shows the reported crashes in the vicinity of the site in the most recent 5 year period. The search area included Poihipi Road from Scoria Road to the intersection with Wairakei Drive. 18 crashes were reported. Two of these resulted in serious injuries, four resulted in minor injuries and the remaining 12 did not result in any injuries. Of particular note is that there are a cluster of injury crashes at the Poihipi Road / Wairakei 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.

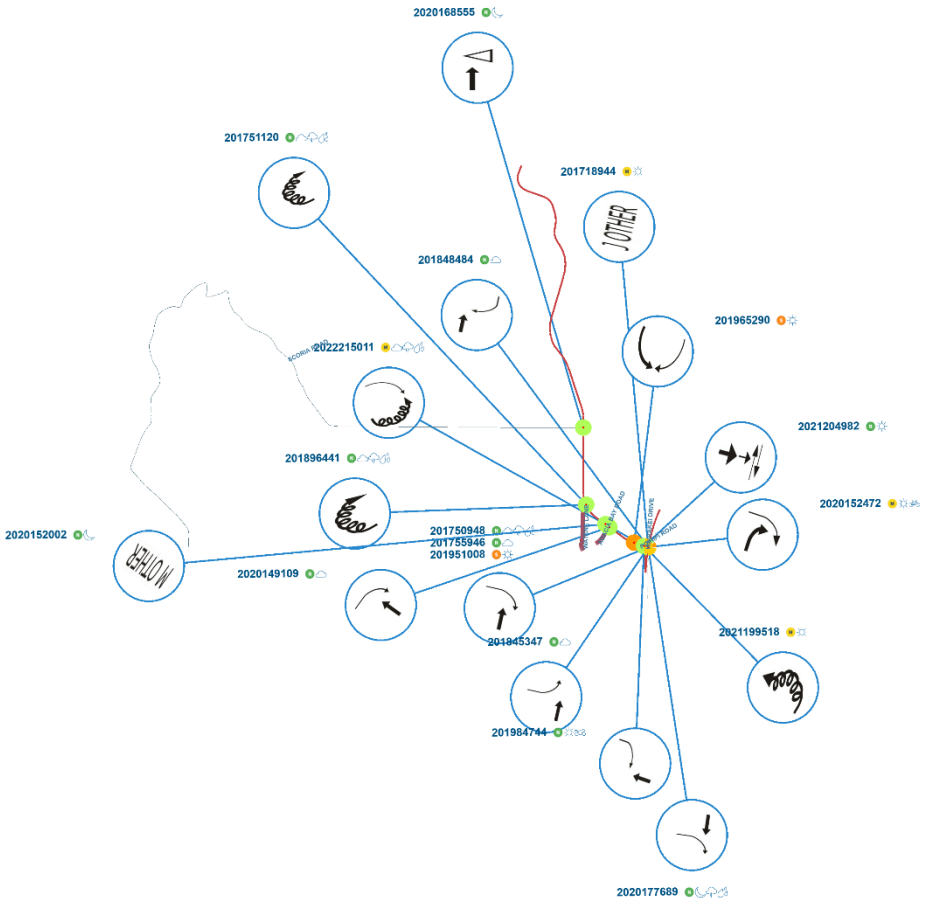

Figure 3.6 Collision diagram, Site 6

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 6

Transport Strategy Priority	Alignment Rating	Comments
Safe	✕ ✕ 1 point	The Council has already identified the Poihipi Road / Wairakei Drive intersection as a concern. This development would add heavy traffic movements through this intersection and also past existing and planned residential development areas. This is likely to increase existing safety concerns and from a safety perspective this would not be a good outcome.
(Network Capacity) Maintaining Predictable travel times in the face of growth	✕ ✕ 1 point	Development in this location would likely have a significant effect on travel times as it would add demand to part of the network that is already at or near capacity. Hence, additional flows over the Control Gate Bridge and at adjacent intersections during the commuter peak periods would exacerbate current congestion at peak times.
Inclusive	⇆ 3 points	The site is close to residential areas and relatively close to the town centre. It would therefore be feasible for some staff to use active modes of transport when travelling to the site for work.
Walking and cycling friendly to support sustainable choices	⇆ 3 points	The Transport Strategy recognises Poihipi Road as being a strategic long distance / sport riding road. As such, measures to support cycling safety are likely to be considered in the short-medium term. However, given the uptake of residential development in the area, introduction of industrial zoning would be incompatible with walking and cycling associated with those activities due to increased heavy vehicle movements.
Supporting the vibrancy of Taupō 's town centres and fostering social and economic interactions	✕ ✕ 1 point	Rezoning this land would increase the potential and amount of industrial traffic travelling through Taupō Township. This would not support the vibrancy of Taupō 's town centre.
Well connected to the rest of New Zealand	✕ ✕ 1 Point	The site is significantly distant from the state highway network. Furthermore, to access State Highway 1, there is the potential that some industrial traffic travelling to/from the south may travel down Spa Road and/or Lake Terrace to connect to SH1 south.
Resilient and reliable	✕ 2 points	Alternative routes are available if Wairakei Drive was closed but depending on destination these are much longer. Hence, this reduces the resilience and reliability.
Total Points	10	

3.4 Site 7

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

Figure 3.7 GIS Image depicting location of Site 7.

We have not been provided with the land area for Site 7, however, the Council's rates maps show an area of about 3.5ha.

Network Capacity

Based on the above land area, a traffic generation of 52vph in the peak hour has been assumed. This equates to 0.86 vehicles per minute if averaged across the full hour. This traffic can turn right to access State Highway 1 or left toward the town centre but would require the access to be appropriately offset from adjacent intersections such that sight distances meet appropriate standards. Effects of this level of development on the capacity of the network would be imperceptible.

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 7

Road	Collective Risk	Personal Risk

Napier Road (near roundabout)	Low-Medium	Medium
Napier Road (west of site)	Low	Low
State Highway 1 (north of roundabout)	Low-medium	Low
State Highway 1 (south of roundabout	Low	Low

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 non-injury and minor injury reported crashes at the State Highway roundabout. This is as expected given the the traffic volumes and out of the 11 reported crashes at the roundabout only 2 resulted in minor injuries. The remaining 10 did not result in any injuries. This is typical for a roundabout where any collisions are less likely to result in DSI crashes due to lower operating speeds.

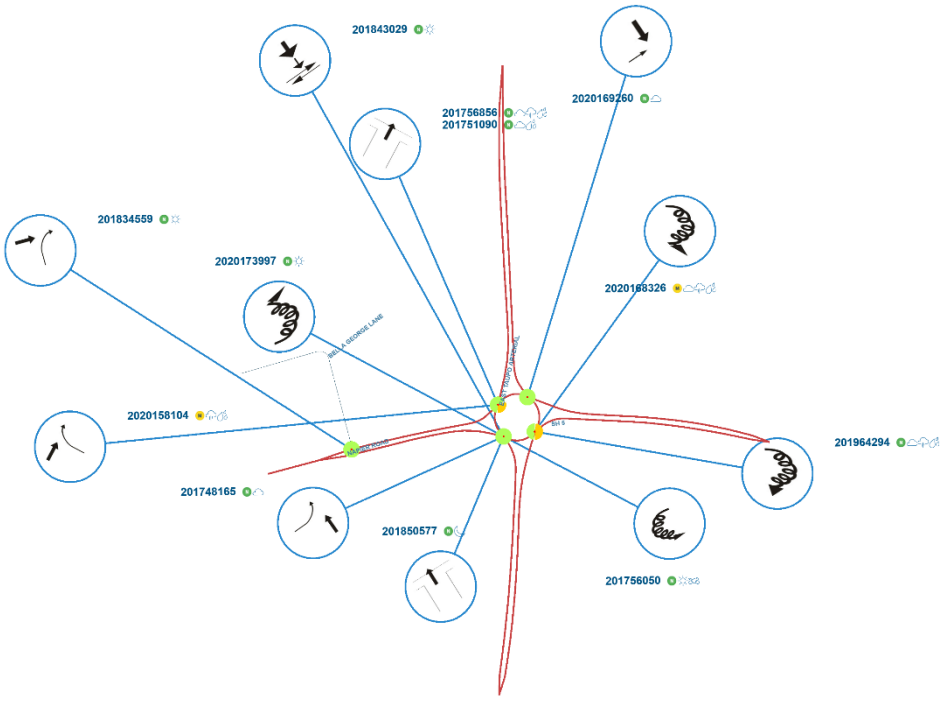

Figure 3.8 Collision diagram, Site 7

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 6

Transport Strategy Priority	Alignment Rating	Comments
Safe	✓✓ 5 points	The CAS data shows a cluster of non-injury and minor injury reported crashes at the State Highway roundabout. This is as to be expected given the traffic volumes and out of the 11 reported crashes at the roundabout only 2 resulted in minor injuries. The remaining 10 did not result in any injuries. This is typical for a roundabout where any collisions are less likely to result in DSI crashes due to lower operating speeds.
(Network Capacity) Maintaining Predictable travel times in the face of growth	✓✓ 5 points	Given the size of the area (and corresponding potential traffic generation) is small, development of this land would have minimal impact on travel times.
Inclusive	✗ 2	The lack of footpaths, cycle lanes and bus servicing to the site results in a 'poor' rating. However, its proximity to the town centre is acknowledged and consequently avoids receiving a 'very poor' rating.
Walking and cycling friendly to support sustainable choices	✗ 2	There are no footpaths or cycle lanes on Napier Road. However, this site receives a 'poor' rating rather than 'very poor' because of its proximity to the town centre.
Supporting the vibrancy of Taupō 's town centres and fostering social and economic interactions	✓✓ 5 points	Industrial traffic would be able to access the state highway network without travelling through the Town Centre. This would have positive effects on its vibrancy.
Well connected to the rest of New Zealand	✓✓ 5 points	The site is directly adjacent to the state highway network and aligns with the Transport Strategy commitment to zone industrial land close to state highway connections, therefore minimising industrial traffic travelling through residential areas.
Resilient and reliable	✓ 4 points	Alternative connections to the state highway network are readily available, but these are convoluted and would require mixing industrial traffic with other types of traffic.
Total Points	28	

4. Summary

This technical note has evaluated eight sites (six of which assessed as two separate clusters comprising three sites each) 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, 2 & 8A	22
3, & 4	22
6	10
7	28

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 7 is the most suitable for potential Industrial rezoning from a transportation perspective however it has a low yield. The relatively confined scale of Site 7 results in a lesser impact on the transport network, therefore scoring higher than other sites.

Clusters 1 (Sites 1, 2 & 8A) and 2 (Sites 3 & 4) have identical mid-range scores. Of note the scale of these Clusters is such that the full (or near full) development of these areas has the potential to require new roading connections and/or additional network capacity to be established especially if the industrial activities have relatively high traffic generation rates. It is recommended that a more conservative approach to limit traffic effects may be to rezone some but not all of the sites within these clusters.

Cluster 1 would be an extension of existing industrial zoning and is assessed as being generally suitable for rezoning from a transportation perspective but will require further investigation to address localised capacity issues, primarily at the Rakaunui Road / Centennial Drive intersection. Similarly with Cluster 2, road safety effects require further consideration due to existing safety issues identified on Broadlands Road.

This assessment has confirmed that Site 6 is the least suitable for potential industrial rezoning from a transport perspective out of all sites assessed, and scored poorly in terms of safety, connectivity, network resilience and travel time reliability priority areas.

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