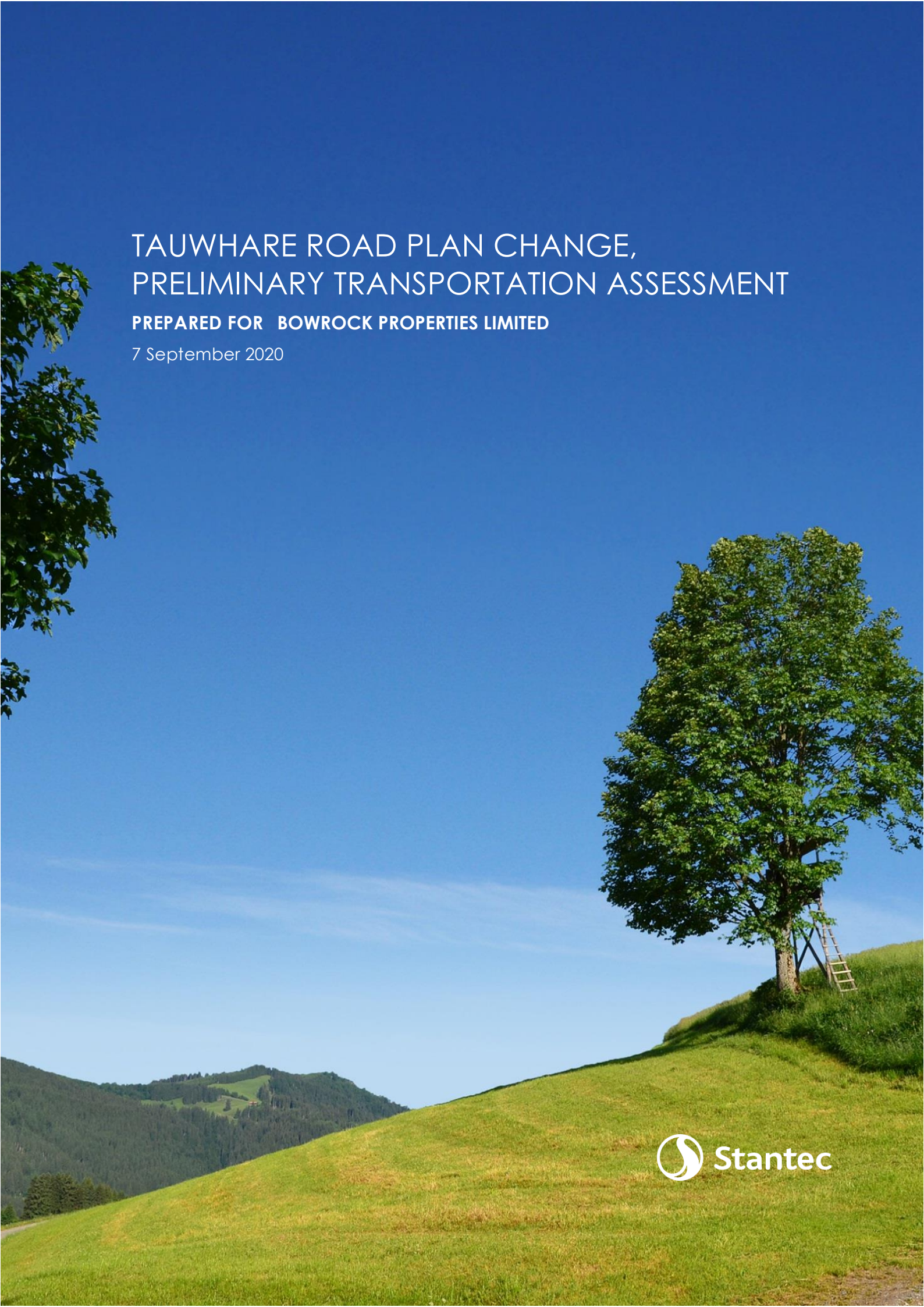
TAUWHARE ROAD PLAN CHANGE, PRELIMINARY TRANSPORTATION ASSESSMENT

PREPARED FOR BOWROCK PROPERTIES LIMITED

7 September 2020



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REVISION SCHEDULE

Rev No.	Date	Description	Signature or Typed Name (documentation on file)			
			Prepared by	Checked by	Reviewed by	Approved by
1	13/08/20	Draft for client review	AW/MA	MA	MA	MA
2	07/09/20	Final	AW/MA	MA	MA	MA

Abbreviations

BPL	Bowrock Properties Ltd
ODP	Operative District Plan
km/h	Kilometres per hour
L_d	Length of diverge taper
L_m	Length of merge taper
NZPPDG	New Zealand Pedestrian Planning and Design Guide
NZTA	New Zealand Transport Agency
PDP	Proposed District Plan
WDC	Waikato District Council
Vpd	Vehicles per day
Vph	Vehicles per hour

Bowrock Properties Limited

Tauwhare Road Plan Change, Preliminary Transportation Assessment

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1. Introduction

Stantec has been asked by Bowrock Properties Limited (BPL) to prepare a preliminary transportation assessment to support a submission to the Waikato District Council (WDC) District Plan review process.

The submission proposes to rezone approximately 20 hectares of land from Rural to Country Living. This report reviews the existing transportation environment in Tauwhare, assesses the effects of the proposed rezoning on that environment, and makes recommendations regarding the measures that would be required to support the movement of people and vehicles to and from the site.

By way of summary, it is concluded that with formation of a new access on Tauwhare Road, expansion of the existing off-road walking and cycling infrastructure, and adjustments to existing speed limits, the proposed change in zoning can be appropriately accommodated.

2. Site Location

The site is located at 1110 Tauwhare Road, on the western fringe of Tauwhare Village. It is made up of two properties, being Lot 3 DP 325499 and Lot 82 DP 81580. The site location is shown in red on Figure 2-1.

Figure 2-1: Site Location (Source: Paua Architects)

The site has approximately 450m of frontage to Tauwhare Road and an overall area of 20.15 Hectares (ha).

The zoning of the site and surrounding area is shown on Figure 2-2 and Figure 2-3, for the Operative and Proposed District Plans respectively. The site is again shown in red.

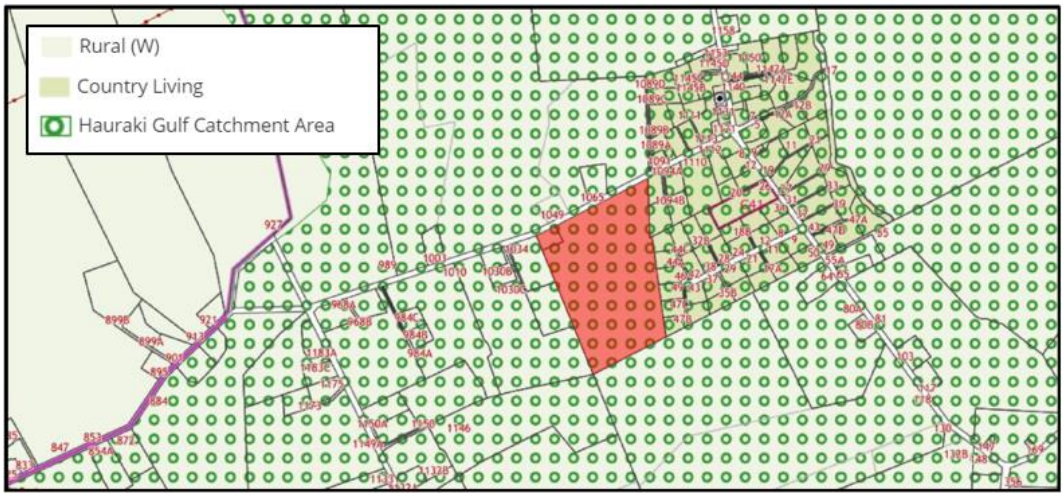


Figure 2-2: Operative District Plan Zoning (Source: Paua Architects, legend added)

Figure 2-3: Proposed District Plan Zoning (Source: Paua Architects, legend added)

The site is zoned Rural by both the Operative and Proposed WDC District Plans and abuts the Country Living zone to the east.

The surrounding land use is a mixture of rural residential, lifestyle and rural properties used for farming and agricultural activities. Tauwhare Village has a school, pre-school, and community hall. The school is located approximately 550m from the site.

3. Existing Transport Network

Tauwhare Road is classified as an Arterial Road in the WDC road hierarchy. Arterial roads provide for a combination of property access and through traffic movement. Their key functions[1] include providing for the collection and distribution of goods significant to the district's economy.

Along the frontage of the site, Tauwhare Road provides one traffic lane in each direction within an overall width of approximately 7m. It has a painted centreline, edge lines and 300 – 600mm sealed shoulders. Figure 3-1 and Figure 3-2 show the form of Tauwhare Road along the site frontage.

[1] ODP Appendix A Table 7 and PDP Table 14.12.5.5

Figure 3-1: Tauwhare Road, viewed looking east (site on right)

Figure 3-2: Tauwhare Road, viewed looking west (site on left)

The posted speed limit changes from 100km/h to 50km/h near the eastern boundary of the site. At this point there is a short painted median and gated signage to emphasize the change. This can be seen on Figure 3-1.

Within the village, Tauwhare Road has a slightly wider carriageway, including a narrow painted median and sealed shoulders of varying widths.

The intersection of Tauwhare Road/Scotsman Valley Road is controlled by a Give Way sign. Tauwhare Road has priority around the bend, from west to north. The intersection is shown as Figure 3-3.

Figure 3-3: Tauwhare Road/Scotsman Valley Road intersection, looking east from Tauwhare Road

The intersection was observed to operate well within its capacity, with no more than two vehicles queued on any approach throughout the morning and evening survey periods.

There is a footpath on the southern side of Tauwhare Road, starting approximately 240m from the site's eastern boundary. This extends around onto Scotsman Valley Road, past Tauwhare School and terminates at Glen Ida Way. There is also a footpath on the eastern side of Scotsman Valley Road. This extends as far as the bus stop opposite Tauwhare School.

Figure 3-4 summarises the features of the existing transportation network in the vicinity of the site.

Figure 3-4: Local Transport Context

Examples of the existing footpath network in Tauwhare are shown below.

Figure 3-5: Tauwhare Road southern footpath, looking east towards Scotsman Valley Road

Figure 3-6: Scotsman Valley Road eastern footpath, looking towards Tauwhare School

Figure 3-7: Scotsman Valley Road western footpath, looking towards Tauwhare School

4. Traffic Volumes

Count data from WDC indicates the following existing traffic volumes in and around Tauwhare Village:

- Tauwhare Road, west of Scotsman Valley Road 2,740 vpd 11% HCV[2]
- Tauwhare Road, north of Scotsman Valley Road 1,969 vpd 11% HCV
- Scotsman Valley Road, south of Tauwhare Road 1,290 vpd 4% HCV
- Chitty Road 49 vpd 4% HCV
- Glen Ida Way 100 vpd 4% HCV

The intersection of Tauwhare Road and Scotsman Valley Road was surveyed during July 2020. The survey covered the periods 7:30-8:30am and 4:30-5:30pm on a weekday. The observed traffic volumes are summarised as Figure 4-1.

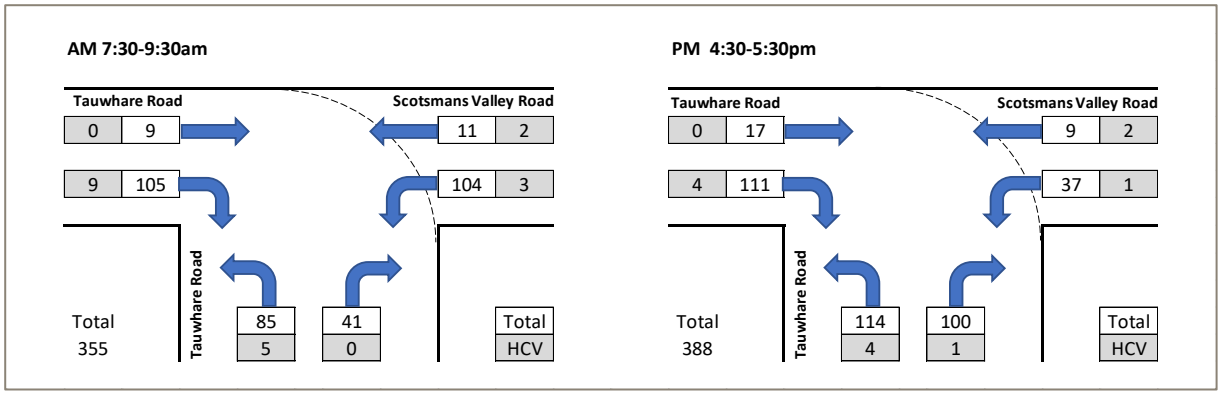


Figure 4-1: Intersection Counts

Based on these counts, the two-way volume along the site frontage is approximately 330-360 vph, with 3-5% HCV. During the morning, the directional split is 60/40 in favour of movement towards Hamilton. The reverse occurs in the evening when 60% of the traffic is travelling towards Tauwhare.

Pedestrian and cyclist movements were also surveyed. They can be summarised as:

- Three pedestrians and two cyclists (school-age) observed using off-road paths during the morning.
- 15 pedestrians and two cyclists (school-age) observed using the off-road paths during the evening.
- One cyclist traveling on-road during the morning, two travelling on-road during the evening.

Some pedestrians were observed to be walking to school, others were walking/running for exercise or social reasons.

5. Road Safety

A search of the road safety history of the area was undertaken using the New Zealand Transport Agency (NZTA) Crash Analysis System (CAS). The search covered Tauwhare Road from its intersection with Scotsman Valley Road to a point 500m west of the site, a total length of approximately 1.4km.

[2] Heavy commercial vehicles

The search captured all injury and non-injury crashes reported in the period 2015 to 2019 inclusive, as well as any data available from 2020.

Four crashes were reported. These can be summarised as:

- A serious injury crash involving an eastbound motorcycle crossing over the centreline at the intersection of Tauwhare Road/Scotsman Valley Road and hitting a car travelling the other way.
- A non-injury crash caused by a southbound driver failing to take the bend at the Tauwhare Road/Scotsman Valley Road intersection and crashing into a property fence. Alcohol was indicated as the cause of the crash.
- A non-injury crash on Tauwhare Road (540m east of Victoria Road) between a westbound vehicle and stray livestock in thick fog.
- A non-injury crash on Tauwhare Road (600m west of Scotsman Valley Road), involving a vehicle hitting the rear of a vehicle turning left off the road.

The crash history indicates a sporadic and dispersed occurrence of relatively low severity. There is nothing in the data that indicates a potentially high risk or frequent occurrence and therefore no apparent current adverse road safety locations in the area.

6. Proposed Zoning

6.1 Land Use

BPL seeks to have the site rezoned to Country Living. Under this zoning, the site could yield up to 25 lots. Indicative subdivision layouts prepared by Paua Architects are shown below as Figure 6-1.

Figure 6-1: Potential Subdivision Layouts (Source: Paua Architects)

The indicative internal transport network is shown in red. Vehicle, pedestrian and cycle access would be provided via one new intersection on Tauwhare Road. As described later in this report, the location of this intersection has been nominated based on considerations including sight distance, adjacent property and access separation; and also integration with the existing form of Tauwhare Road.

6.2 Traffic Generation

Reference has been made to the New Zealand Transport Agency (NZTA) Research Report RR453, Trips and Parking Related to Land Use.

Rural dwellings are expected to generate an average of 10.1 vehicle movements per day (vpd) and 1.4 vehicle movements per hour (vph). On this basis the proposed rezoning could generate up to 253 vpd and 35 vph, to and from Tauwhare Road.

The existing rural use of the two properties is estimated to generate up to 10-20 vpd, with variation through the year associated with seasonal agricultural activities.

6.3 Traffic Distribution

Based on the existing traffic patterns in the area, it is estimated that approximately 60% of the traffic movements generated by the site will travel to and from the west, towards Hamilton. The remaining 40% would travel to/from the east towards Tauwhare village.

The resulting forecast traffic movements at the proposed new intersection on Tauwhare Road are shown as Figure 6-2.

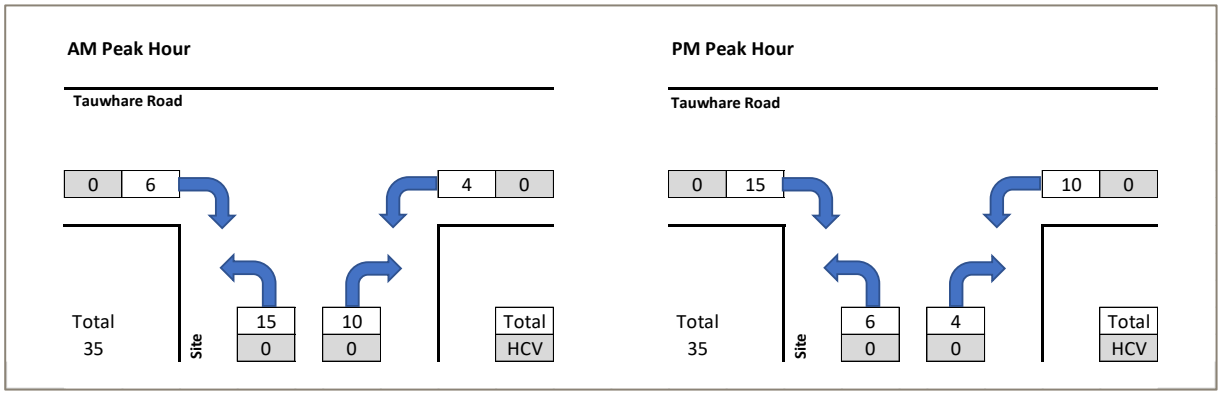


Figure 6-2: Forecast Traffic Movements Generated by Plan Change

The surveyed traffic volumes at the Tauwhare Road/Scotsman Valley Road intersection have been used to estimate traffic volumes travelling along Tauwhare Road through the new intersection. A growth rate of 2% per annum has been applied to produce estimated volumes at 2033. This allows a three-year planning, design and construction period, and a 10-year horizon beyond that. Figure 6-3 shows the forecast volumes.

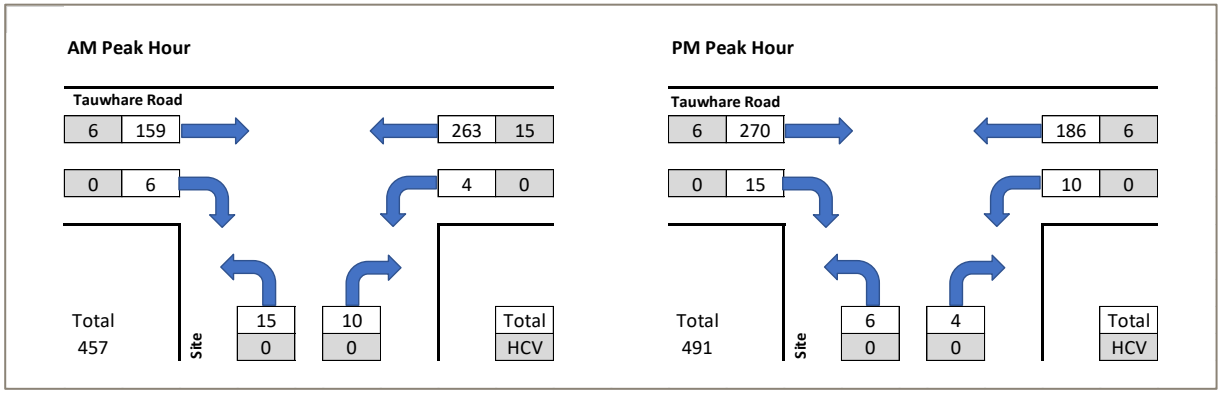


Figure 6-3: Forecast Traffic Movements at New Intersection, 2033

7. Transport Assessment

7.1 Active Transport

In terms of active transport options, the site is located approximately:

- 4.5 (nearest) to 15 minutes' (furthest point within the site) walk from the centre of Tauwhare Village;
- 1 to 5.5 minutes by bike from the centre of Tauwhare Village;
- 7 to 18 minutes' walk from Tauwhare School; and
- 2 to 6.5 minutes by bike from Tauwhare School.

An off-road shared user path along Tauwhare Road is recommended to integrate the site with the existing active transport network in Tauwhare. This should extend from the proposed new access intersection to the end of the existing path (a length of approximately 300m).

It is also recommended that the existing sections of footpath noted on Figure 7-1 (the south side of Tauwhare Road and the west side of Scotsman Valley Road) be upgraded to shared path status (permitting use by pedestrians and cyclists).

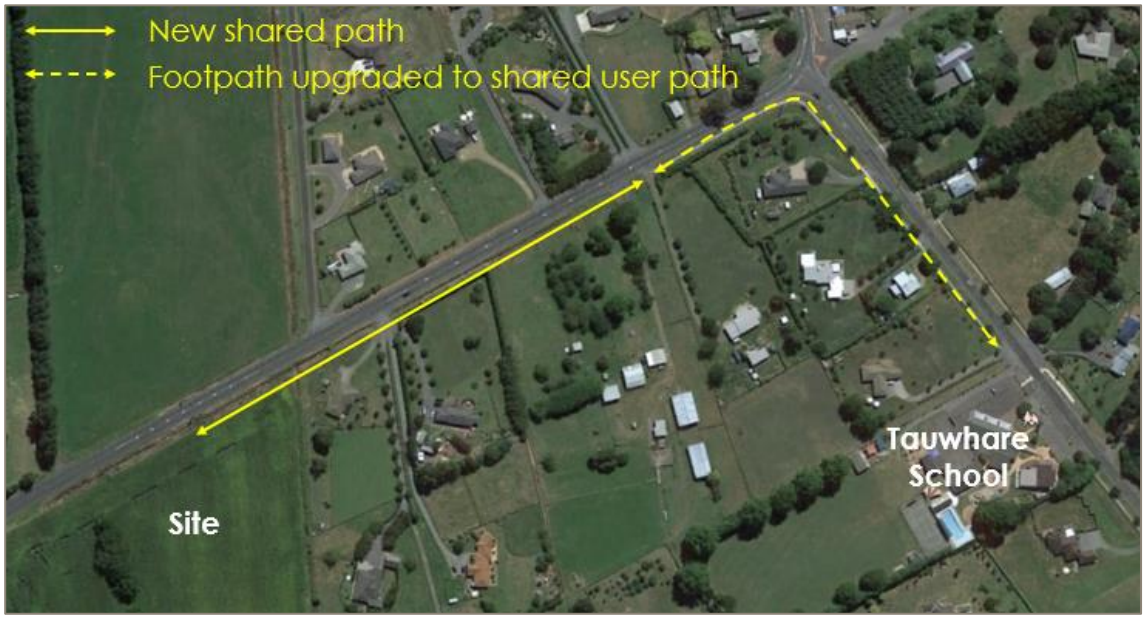


Figure 7-1: Recommended walking and cycling connections

Under current New Zealand law, cycling is only permitted on footpaths for the purpose of delivering mail or if the bike has wheels less than 355mm in diameter (14 inches). This is a very small child's bike, unlikely to be suitable for children of school age.

During 2020, the New Zealand Government publicly consulted on a raft of changes that would enable more use of footpaths by cyclists. At the time of writing this report, decisions regarding potential law changes were on hold. To formally enable cycling on the path between the site and Tauwhare School, a shared user path is required.

Austroads and the New Zealand Pedestrian Planning and Design Guide (NZPPDG) recommend a desirable width of 3m for shared paths. This is the recommended width for the new section of path. It is also the desirable width for the upgrade of the existing paths. However, if there are constraints on the existing sections of path that are not reasonably avoidable, both Austroads and NZPPDG note that a width of 2.5m is acceptable for a local access path.

7.2 Access

7.2.1 Location and Sight Distance

Access to the site would be via a new intersection on Tauwhare Road. The ODP (Table 4 of Appendix A) and PDP (Table 14.12.5.14) require a public road to serve developments with more than 8 lots (and expected traffic volumes in the range of 80 – 500 vpd). These roads are required to have a sealed width of 6m within a legal width of 20m.

The recommended location of the new intersection is approximately in line with the existing speed limit change, as shown on Figure 7-2.

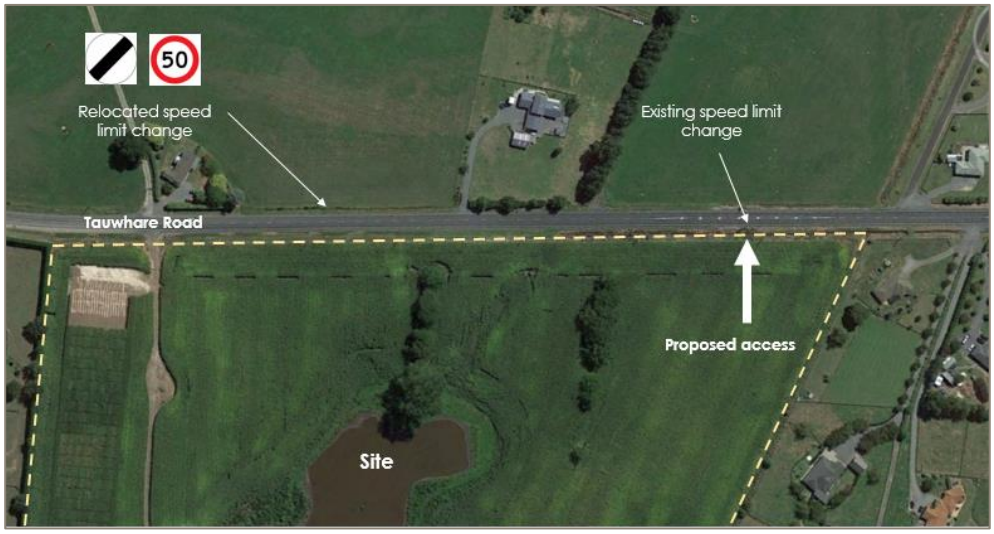


Figure 7-2: Proposed access and speed limit change

To support rezoning of the land, it is recommended that the existing 50km/h speed zone be extended further west. The proposed location is approximately midway between the two existing properties on the opposite side of the road.

This location would bring the new access intersection into a 50km/h speed zone and ensure that the gateway treatment could be remarked clear of these existing driveways.

In a 50km/h speed environment the new intersection would be required to comply with the following standards in the ODP/PDP:

- Be at least 125m from another side road intersection[3].
- Be at least 30m from property accesses[4].

These separation distances can be achieved in the proposed location.

Austroads[5] recommends that all intersections provide safe intersection sight distance (SISD). This is the distance required for a driver of a vehicle on Tauwhare Road to observe and react to a vehicle from the minor road (the proposed site access) moving into a collision potential situation. SISD provides the time for the driver to react, decelerate and stop before reaching the collision point.

In a 50km/h speed environment, SISD is 90m (minimum) and 97m (desirable). Although the ODP/PDP[6] only specifies requirements for 'vehicle entrances' as opposed to new roads, it's requirement is consistent with the Austroads minimum (90m).

More than 97m can be provided in both directions from the proposed access location, making it compliant with the Austroads standard for intersections and the ODP/PDP standard for high volume entrances.

[3] Dimension P of Table 5 and Figure 6 of ODP Appendix A (Traffic), or Table 14.12.5.1 and Figure 14.12.5.2 of the PDP.
[4] Dimension K of Table 5 and Figure 6 of ODP Appendix A (Traffic), or Table 14.12.5.1 and Figure 14.12.5.2 of the PDP.
[5] Part 4A, Unsignalised and Signalised Intersections, Section 3.2.2
[6] Table 6 of ODP Appendix A (Traffic) and Table 14.12.5.3 of the PDP.

7.2.2 Intersection Design

The Austroads Guide to Traffic Management Part 6 contains warrants for auxiliary right and left turn lane treatments at intersections. The detail of the warrant assessment is presented as **Appendix A**.

The assessment of expected traffic volumes at the year 2033 (shown earlier as Figure 6-3) shows that a basic left turn treatment (BAL) is adequate for the approach to the site from the east. The BAL layout is shown as Figure 7-3.

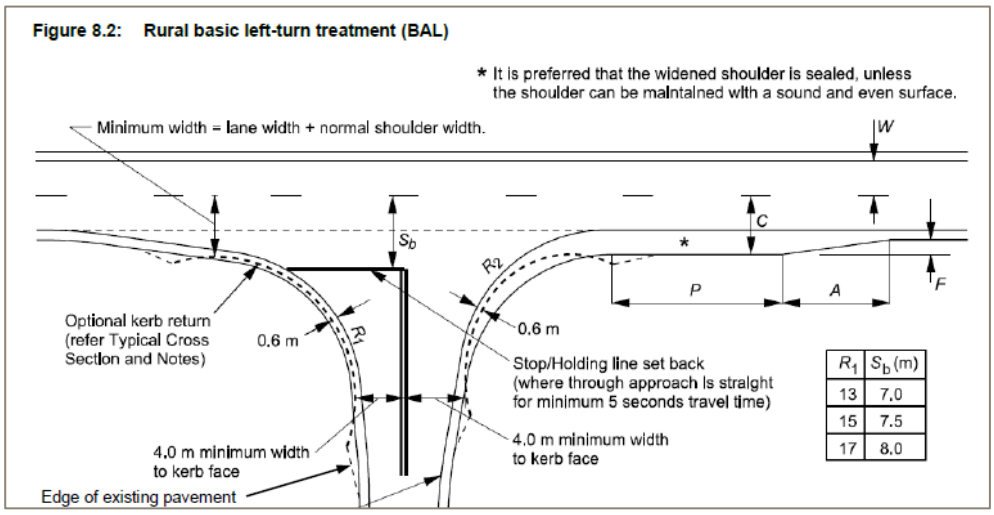


Figure 7-3: Rural BAL treatment, Austroads Part 4A Figure 8.2

The right turn assessment indicates that the expected combination of traffic movements exceeds the threshold for a basic right turn treatment (BAR). This means that some form of right turn bay may be appropriate.

One option to provide this functionality would be to adopt the existing cross-section markings that are used on Tauwhare Road through the existing 50km/h village speed zone. As shown on Figure 7-4, the cross-section provides one traffic lane in each direction, sealed shoulders of varying width, and a narrow central painted median.

Figure 7-4: Existing Tauwhare Road Cross-Section Through Tauwhare

This cross-section enables drivers turning into property accesses, or Scotsman Valley Road, to drive over the painted median and wait, if they are required to give way to oncoming traffic. The remaining width on each side of the road (4.5-5m) is adequate for following vehicles to pass, at low speed.

This cross-section could be extended along the site frontage, to the proposed new position of the speed transition, as indicated on Figure 7-5.

Figure 7-5: Indicative Extended Flush Median on Tauwhare Road

The site intersection could be treated with a painted median opening, as is provided at the Tauwhare Road/Scotsman Valley Road intersection. This intersection accommodates more than 100 right turning vehicles per hour, significantly more than the 15 expected at the site.

There is adequate width in the existing road reserve to accommodate this treatment. It would provide appropriately for the proposed use of the rezoned land and provide a consistent road layout through Tauwhare.

Alternatively, a rural right turn bay could be provided, in accordance with the Manual of Signs and Markings (MOTSAM) Part 2. An indicative layout at the intersection, and the length of tapers required are shown as Figure 7-6 and Figure 7-7 respectively. It has been assumed for the purpose of assessing space requirements that the northern side of the carriageway would remain where it is and widening would occur on the south (site) side of the road.

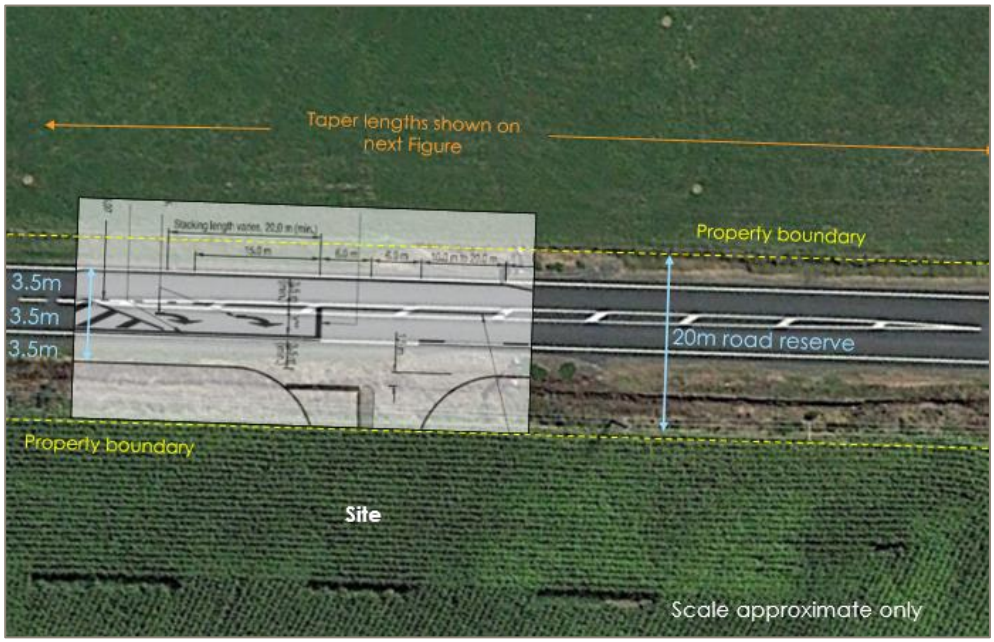


Figure 7-6: Indicative MOTSAM Right Turn Treatment

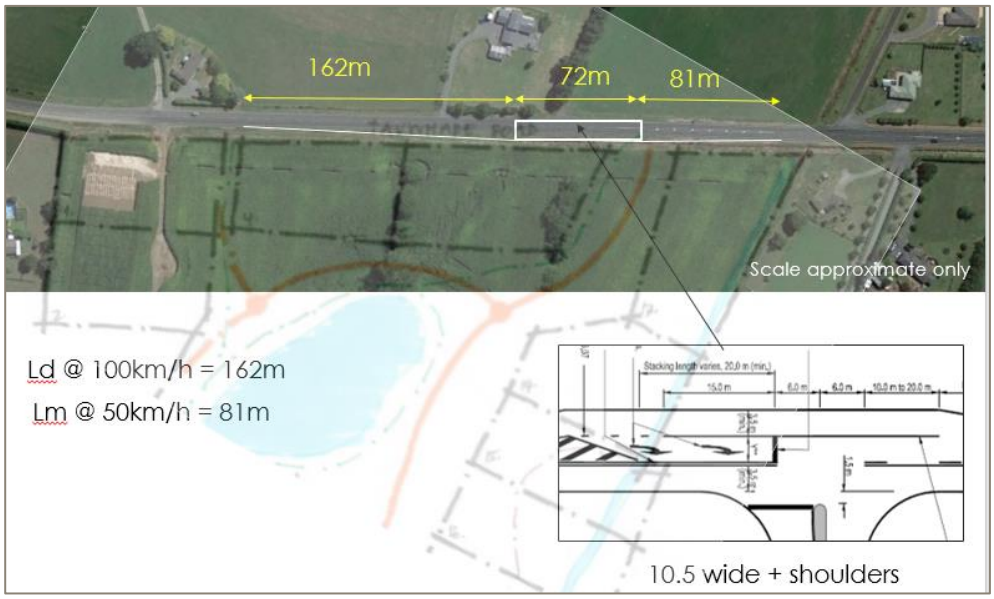


Figure 7-7: Indicative MOTSAM Right Turn Tapers

The right turn bay markings could be integrated into the central median markings associated with the proposed speed threshold to the west, and the existing flush median to the east.

It is evident from this analysis that if a right turn bay is required, it could be provided within in the existing road reserve, with additional land available from the site frontage, if it is required for left turn shoulder widening, a footpath, drainage and utilities.

The required taper lengths are contained within the boundaries of the site. Should additional width be needed for any reason, it can be provided from the site frontage, without reliance on third party land.

The preferred treatment should be determined in consultation with Council, as the road controlling authority, at the time of subdivision. This assessment has demonstrated that there is adequate land within the road reserve and the submitter's property to provide an appropriate intersection.

7.3 Broader Network Considerations

The following table summarises the expected changes in traffic volume on Tauwhare Road due to the proposed rezoning. Forecasts are presented for Tauwhare Road east and west of the proposed new intersection at the future year 2033. The analysis applies background traffic growth rate (irrespective of the rezoning) of 2% per annum.

Table 7-1: Forecast Traffic Volumes at 2033

	Tauwhare Road, east of site			Tauwhare Road, west of site		
	Daily	AM Peak	PM Peak	Daily	AM Peak	PM Peak
Existing Volume	2,740	335	362	2,740	335	362
Forecast 2033	3,452	422	456	3,452	422	456
Rezoned Site Generation	101	14	14	152	21	21
Total	3,553	436	470	3,604	443	477
% Increase	3%	3%	3%	4%	5%	5%

With the proposed rezoning, and other background growth, the daily volume on Tauwhare Road is expected to be approximately 3,600 vpd (two-way total) by 2033. This is well within the practical carrying capacity (at the 30 to 40% level) of a two-lane, two-way arterial road. The change due to the proposed rezoning represents in the order of a 3-5% change.

Peak hour volumes (presented again below as Figure 7-8) are forecast to be about 477 vph (two-way). Typical lane capacity is in the order of 900 vehicles per hour per lane (one-way), meaning Tauwhare Road remains well within its capacity during peak periods.

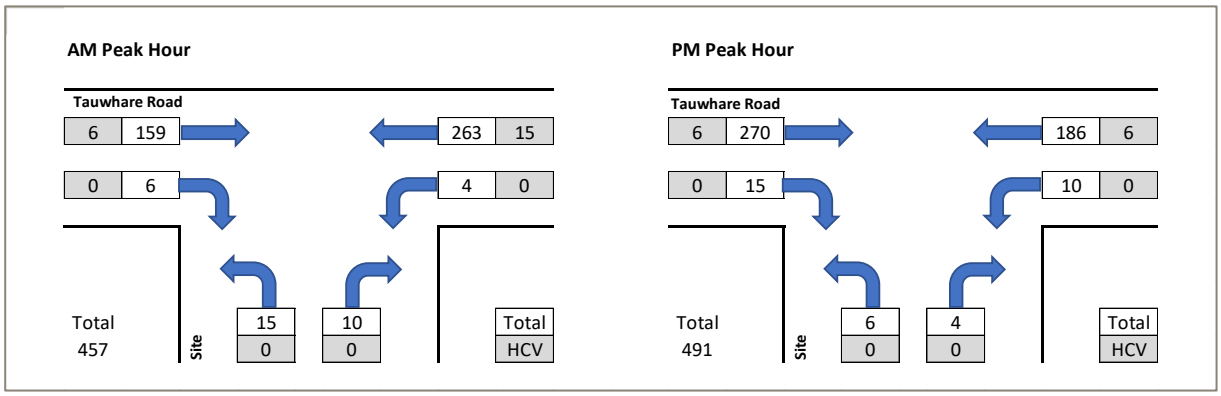


Figure 7-8: Forecast Traffic Movements at New Intersection, 2033

The addition of 21 vph (one vehicle approximately every three minutes at peak) to the west, and through the Tauwhare Road/Scotsman Valley Road intersection is not expected to generate any material operational effects. This intersection is currently operating under capacity and is expected to continue to do so under the forecast traffic volumes to 2033.

7.4 Safety

A search of the road safety history of Tauwhare Road in the vicinity of the site has not revealed any commonalities or underlying issues with the road network.

A change in speed limit is recommended, to bring the proposed access intersection within the 50km/h village speed limit zone. The identified location can comply with the relevant standards of the ODP/PDP for sight distance and separation from other accesses and sideroads.

A short right turn bay treatment is recommended on Tauwhare Road to assist vehicles turning in from the west.

With these access provisions in place, the surrounding transport network is expected to be able to safely accommodate the proposed change in zoning.

7.5 Internal Transport Network

Indicative subdivision layouts have been prepared for the purpose of assessing the capacity of the site and the likely effects of the rezoning. These layouts indicate a network of subdivision roads and associated walking and cycling paths serving the residential properties, common areas and wetlands.

Design of the internal network will be subject to the provisions of the Country Living Zone and the relevant traffic rules of the ODP/PDP. There are no evident reasons to preclude development of internal transport arrangements that would comply with the relevant provisions of the PDP.

8. Strategic Alignment

An assessment of the relevant regional and district policy and plans is set out as follows.

8.1 Regional Policy Statement (RPS)

The purpose of the RPS is to provide an overview of the how the Waikato Region will manage its natural and physical resources. It describes the issues, policies and methods to achieve integrated management. The RPS must be given effect to by the Waikato District Council District Plan.

Policy 6.1 – Planned and co-ordinated subdivision, use and development, states:

Subdivision, use and development of the built environment, including transport, occurs in a planned and co-ordinated manner which:

(a) Has regard to the principles in section 6A

(b) Recognises and addresses potential cumulative effects of subdivision, use and development;

(c) Is based on sufficient information to allow assessment of the potential long-term effects of subdivision, use and development; and

(d) Has regard to the existing built environment.

Section 6A outlines general principles of development. An assessment of those that are relevant to transport is presented below.

New development should:

(d) not compromise the safe, efficient and effective operation and use of existing and planned infrastructure, including transport infrastructure, and should allow for future infrastructure needs, including maintenance and upgrading, where these can be anticipated;

Comment: the traffic effects of the proposed rezoning have been assessed and will not compromise the safe and efficient operation of Tauwhare Road. A suitable intersection can be formed on Tauwhare Road using the existing road reserve and land owned by the submitter. The proposed rezoning is not expected to adversely affect future maintenance or upgrading of the surrounding network.

(e) connect well with existing and planned development and infrastructure;

Comment: the site directly abuts the existing Country Living Zone. A new intersection is proposed to Tauwhare Road, supported by extension and upgrading of the existing off-road shared path network. These provisions suitably integrate the proposed rezoning with the existing village and transport network,

(i) promote compact urban form, design and location to:

i) minimise energy and carbon use

ii) minimise the need for private motor vehicle use

iii) maximise opportunities to support and take advantage of public transport in particular by encouraging employment activities in locations that are or can in the future be served efficiently by public transport;

iv) encourage walking, cycling and multi-modal transport connections; and

v) maximise opportunities for people to live, work and play in their local area

Comment: the proposed upgrade and extension of the walking and cycling network encourages travel by these modes and provides an alternative to short car trips. The connection between the site and Tauwhare School provides opportunities for more live, work and play use of the path, not only by future residents of the subdivision, but the Tauwhare community generally.

Whilst there are no public transport services offered in Tauwhare at present, the extension of the shared path network will support access to future services through Tauwhare, were they to be implemented. The

shared path network also assists students who may be travelling on dedicated school bus services to schools outside Tauwhare, by making more of the village accessible on foot.

Principles specific to rural-residential development

(d) avoid ribbon development and, where practical, the need for additional access points and upgrades, along significant transport corridors and other arterial routes:

Comment: the proposed rezoning provides one consolidated access point that will serve all dwellings. This access point can be designed to integrate with the existing form of Tauwhare Road and provide a logical extension of the village environment and speed zone.

By way of summary, the transport connections to the Plan Change area have been designed to integrate with the existing network in Tauwhare. In particular, an enhanced off-road shared path network is proposed to connect the future subdivision network with the village and Tauwhare School. This will provide benefits to future residents of the subdivision, and the Tauwhare community more generally.

On this basis, the proposed rezoning supports the objectives of the RPS and is consistent with its transport-related development principles.

8.2 Waikato Regional Land Transport Plan

The Regional Land Transport Plan (RLTP) sets the strategic direction for land transport in the Waikato Region. It was most recently updated in 2018. It describes what the region is aiming to achieve for the land transport system and how this will contribute to an effective, efficient and safe land transport system, as required under the Land Transport Management Act 2003 (LTMA).

The priorities of the RLTP (Section 3.5) are:

- *Protecting the function of our interregional and intraregional strategic corridors (road and rail)*
- *Directing investment to priority strategic corridors*
- *Improving network resilience*
- *Growing connected regional cycle trails*
- *Providing transport options and infrastructure in high growth areas (Hamilton and North Waikato)*
- *Progressing key short-term road safety priorities – leadership, safe speeds and safe road use*
- *Maintenance of existing transport assets*
- *Maximising efficiencies/value for money*
- *Growing public transport and active transport mode share*
- *Improving access and mobility for rural areas and transport disadvantaged*
- *Growing interconnected cycle and pedestrian networks in urban areas.*

The proposed rezoning and accompanying infrastructure improvements support the enhancement of mobility in rural areas through the neighbourhood-integrated shared path and a move towards safer speeds. The rezoning does not conflict with any of the identified RLTP priorities.

8.3 Operative District Plan Objectives and Policies

The relevant objectives and policies of the ODP in relation to sustainable settlements and the land transport network are assessed as follows.

Objective 1A.4.5 (Sustainable Settlements)

Development patterns support the cost-effective maintenance, provision and efficient use of both existing and new infrastructure and services.

Policies

1A.4.6 The location, type and density of subdivision, use and development should ensure infrastructure and services can be provided economically and used efficiently, and facilitate the safe, efficient and effective operation of infrastructure.

1A.4.7 Subdivision, use and development should be located, designed and staged to ensure that it is adequately supported by existing or planned infrastructure, community facilities and local services.

1A.4.8 Structure plans for towns, villages and defined growth areas should take account of the wider infrastructure networks they connect with.

1A.4.9 Subdivision, use and development should be located, designed and staged to ensure that it does not adversely affect the adequacy, safety or efficiency of infrastructure, community facilities and services in the region.

1A.4.10 Subdivision, use and development must avoid adverse effects, including reverse sensitivity effects, upon regionally and nationally significant infrastructure to ensure the ongoing safe and efficient development, operation and maintenance of that infrastructure.

1A.4.11 Rural-residential subdivision and development should be at a location and scale that does not adversely affect the efficiency or provision of urban infrastructure, including transport and community facilities in Hamilton.

Comment: The proposed rezoning abuts the Country Living Zone in Tauwhare. The potential subdivision layouts have been designed to consolidate access to a single new intersection on Tauwhare Road, and a location that can be integrated with the existing village speed zone and road layout.

The traffic generating potential of the rezoning has been assessed and it has been demonstrated that expected traffic movements can be appropriately accommodated by the new access intersection and the surrounding network.

Supporting walking and cycling infrastructure is proposed to encourage active travel and integrate the rezoned land with the existing village and key destinations such as Tauwhare School.

Overall, the rezoning is assessed as being consistent with and supports the transportation aspects of this objective and supporting policies.

Objective 8.2.1(Land Transport Network) An integrated, safe, responsive and sustainable land transport network is maintained, improved and protected.

Policies

8.2.2 Design, construction and operation of roads should be consistent with their function in the road hierarchy.

8.2.2A Subdivision, use and development should not compromise the road function as specified in the road hierarchy.

8.2.2B Subdivision, use and development should be in a location and at a scale that

> ***(a) is consistent with the existing or planned capacity and design of the roading network, and***
>
> ***(aa) is consistent with the intended function of any roads that may be affected by the subdivision, use and development (roading hierarchy), and***

(b) does not compromise the safety and efficiency of the roading network, and

(c) does not compromise the safety and efficiency of the railway network.

8.2.3 The integrated, safe, responsive and sustainable operation of the land transport network should be promoted through:

(a) carriageway, intersection and site design

(b) appropriate siting of and access for traffic generating activities

(c) traffic management, signage, road marking, lighting, and rest areas and parking as appropriate

(d) provision for pedestrians, cyclists and the disabled, including off road routes and connections including pedestrian malls

(d) provision of public transport

(e) provision for network utilities

(f) appropriate access for existing land uses

(g) railway crossing design.

8.2.4 Subdivision and development should not obstruct future road linkages including access to adjoining land and to Hamilton City where relevant.

8.2.5 Subdivision, use and development should be located and designed to connect safely to an existing road.

8.2.5A Land use activities should provide adequate on-site parking.

8.2.6 Buildings, structures, night lighting, glare, advertising signs, aerial distractions and vegetation should not compromise the safe and efficient operation of the land transport network, or obscure RAPID numbers.

8.2.7 Stock and pedestrians should be provided with safe and appropriate means of crossing a road or railway line.

Comment: The proposed rezoning integrates appropriately with the road hierarchy by providing one intersection on its arterial road frontage, with all direct property access to be from a supporting network of local roads.

The location of the new intersection has been selected to provide appropriate sight distance, separation from other roads and accesses, and integration with the existing village road layout.

An appropriate form of intersection can be provided on Tauwhare Road using land within the existing road reserve and from the submitter's land as required.

Off-road path upgrades are proposed to support the movement of pedestrians and cyclists through the subdivision and around the village.

More detailed considerations such as traffic management, parking, signage and lighting are appropriately addressed at the time of subdivision. There are no evident reasons why the rezoned area cannot comply with the relevant DP rules.

Overall, the transport provisions of the rezoning support a safe, integrated, response and sustainable transport network in Tauwhare. The rezoning is not expected to adversely affect the network in Tauwhare or the wider District.

8.4 Proposed District Plan Objectives and Policies

The relevant objectives and policies of the PDP in relation to the Rural Environment and Transport Infrastructure are assessed as follows.

Rural Environment

5.3.1 Objective - Rural character and amenity

Rural character and amenity are maintained.

5.3.8 Policy - Effects on rural character and amenity from rural subdivision

(c) Ensure subdivision, use and development minimise the effects of ribbon development.

(f) Subdivision, use and development ensures the effects on public infrastructure are minimised.

5.6.3 Policy – Subdivision within the Country Living Zone

(a)Subdivision, building and development within the Country Living Zone ensures that:

(iv)existing infrastructure is not compromised;

Comment: The transport network proposed to support the rezoning has a single consolidated access point to Tauwhare Road, thus avoiding ribbon development with multiple individual accesses along the road.

The location of the new intersection has been selected to provide appropriate sight distance, separation from other roads and accesses, and integration with the existing village road layout.

An appropriate form of intersection can be provided on Tauwhare Road using land within the existing road reserve and from the submitter's property, as required. Analysis of traffic generation and existing network volumes confirms that the existing transport network will continue to operate at a good level of service.

Transport

6.5.1 Objective – Land transport network

An integrated land transport network where:

All transport modes are accessible, safe and efficient; and

Adverse effects from the construction, maintenance and operation of the transport network are managed.

6.5.2 Policy – Construction and operation of the land transport network

(a) Promote the construction and operation of an efficient, effective, integrated, safe, resilient and sustainable land transport network through:

> ***(i) Corridor, carriageway and intersection design which is appropriate to the road function as specified in the road hierarchy and in accordance with relevant guidelines;***
>
> ***(ii)The appropriate design and location of sites accesses;***
>
> ***(iii)Traffic signage, road marking, lighting, rest areas and parking as appropriate;***
>
> ***(iv) Provision for pedestrians and cyclists that addresses accessibility, including off-road facilities and connections;***
>
> ***(v) Corridor and carriageway design which is sufficient to enable provision of public transport;***
>
> ***(vi) Provision for other infrastructure, including where suitable low impact design stormwater facilities;***
>
> ***(vii)Provision for stock underpasses where suitable access is not readily available;***
>
> ***(viii) Discouraging the installation of new at grade road and pedestrian rail level crossings:***
>
> ***A. Controlling the location of buildings and other visual obstructions within the sightline areas of rail level crossings; and***
>
> ***B. Railway crossing design in accordance with the requirements of the rail operator.***

6.5.3 Policy – Road hierarchy and function

Provide a hierarchy of roads for different functions and modes of land transport while recognising the nature of the surrounding land use within the district.

6.5.4 Policy – Road standards

Ensure that the construction and operation of roads is consistent with their function in the road hierarchy.

6.5.5 Policy - Road safety

Ensure that structures, lighting, signage and vegetation are located and designed so as to not compromise the safe and efficient operation of the land transport network, or obscure RAPID numbers.

6.5.6 Policy – Network utility location

Encourage the location of network utility infrastructure within transport corridors where the function, safety and efficiency of the transport network will not be compromised.

6.5.7 Policy – Vehicle access

Control the location of new vehicle accesses to sites adjacent to other accesses and rail level crossings to improve the safety and efficiency of the land transport network.

Comment: The proposed rezoning integrates appropriately with the road hierarchy by providing one intersection on its arterial road frontage, with all direct property access to be from a supporting network of local roads.

The location of the new intersection has been selected to provide appropriate sight distance, separation from other roads and accesses, and integration with the existing village road layout.

An appropriate form of intersection can be provided on Tauwhare Road using land within the existing road reserve and from the submitter's land as required.

Off-road path upgrades are proposed to support the movement of pedestrians and cyclists through the subdivision and around the village.

More detailed considerations such as traffic management, parking, signage and lighting are appropriately addressed at the time of subdivision. There are no evident reasons why the rezoned area cannot comply with the relevant DP rules.

Overall, the transport provisions of the rezoning support a safe, integrated, response and sustainable transport network in Tauwhare. The rezoning is not expected to adversely affect the network in Tauwhare or the wider District.

9. Summary and Conclusion

The proposed rezoning of the site at 1110 Tauwhare Road could enable up to 25 rural residential dwellings. These dwellings could generate up to 253 vehicle movements per day on Tauwhare Road, including up to 35 vehicle movements per hour during peak periods of the day.

To support the integration of the rezoned land in the Tauwhare transport network, the following supporting measures would be required and are recommended:

- Extension of the existing 50km/h village speed limit to a point approximately 230m further west;
- Reinstatement of the gated speed threshold on Tauwhare Road at this point;
- Construction of a new access road approximately where the speed limit threshold is currently located, including a right turn bay or painted central median on Tauwhare Road and left turn lane shoulder widening. The preferred design should be determined in consultation with WDC at the time of subdivision.
- Construction of a new 3m wide shared user path on the south side of Tauwhare Road, from east of the new access, to join the existing path.
- Widening of the existing path to a 3m (desirable) or 2.5 (minimum) width and a change in designation to shared path, to better support local walking and cycling between the site and Tauwhare School.

The existing transport network, including the Tauwhare Road/Scotsman Valley Road intersection currently operates at a good level of service. It is expected to able to accommodate the likely 4-7% increase in traffic movements associated with the change in zoning.

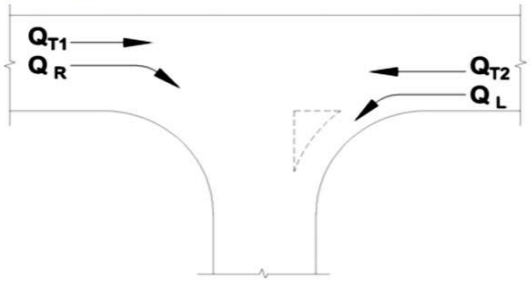
With the supporting measures described in place, it is concluded the rezoning proposal can be appropriate integrated into the surrounding transport network.

Appendices

Appendix A Austroads Turn Bay Warrants

Austroads Part 6 turn bay warrants

Figure 3.26: Calculation of the major road traffic volume Q_M

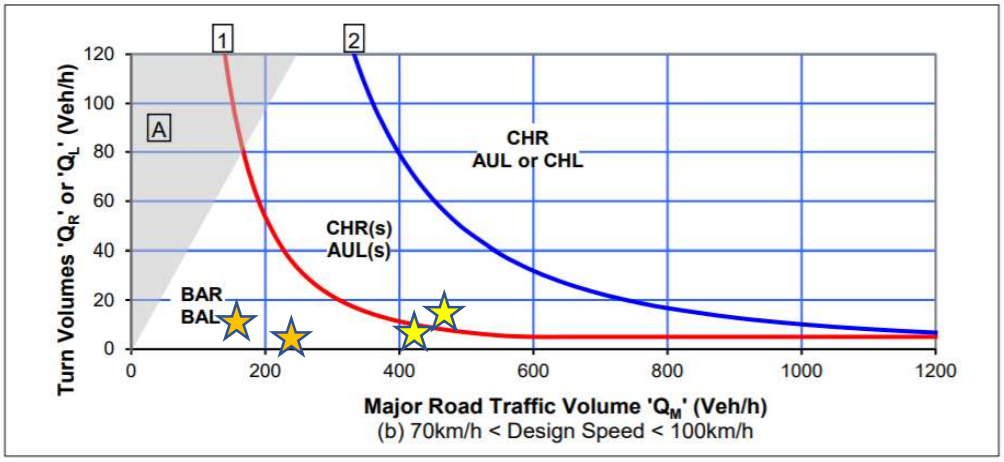


Road type	Turn type	Splitter island	Q_M (veh/h)
Two-lane two-way	Right	No	= $Q_{T1} + Q_{T2} + Q_L$
		Yes	= $Q_{T1} + Q_{T2}$
	Left	Yes or no	= Q_{T2}

Assumed growth rate on Tauwhare Road 2% pa

	2033 AM	2033 PM		
Q_{T1}	159	270		
Q_{T2}	263	186		
Q_L	4	10		
Q_R	6	15		
Right turn	★			
Q_M	426	466		
Left turn	★			
Q_M	263	186	0	0

Figure 3.25(b) 70-100km/hr or rural lower speed roads



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