





Planning | Surveying | Engineering | Environmental

B23175—193 Te Mawhai Road

Transportation Assessment Report

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1 Introduction

CKL has been engaged to provide a transportation assessment for a proposed demolition of the existing buildings and infrastructure of the Tokanui Psychiatric Hospital located at 193 Te Mawhai Road in Te Awamutu. The proposal comprises a three-phase demolition and remediation process where Stage one is above ground demolition of buildings and exporting of demolition material while phases two and three include removal of horizontal infrastructure, the removal and potential exporting of contaminated fill and importing of suitable fill.

This report addresses the transportation matters of the proposal and includes the following:

- Levels of vehicular traffic likely to be generated by the proposed demolition.
- Associated effects on the performance and safety of the surrounding road network.
- Consideration of the transportation related provisions within the Waipa District Plan.

These and other matters will be addressed in the detail of the report that follows. By way of summary, it is concluded that the proposed demolition can be executed such that there will be less than minor effects to the function, capacity and safety of the surrounding transportation network.

2 Existing Environment

2.1 Site Location

Figure 1 is an aerial photograph with the subject site at 193 Te Mawhai Road outlined in yellow. The site comprises the Tokanui Psychiatric Hospital which is to be demolished.

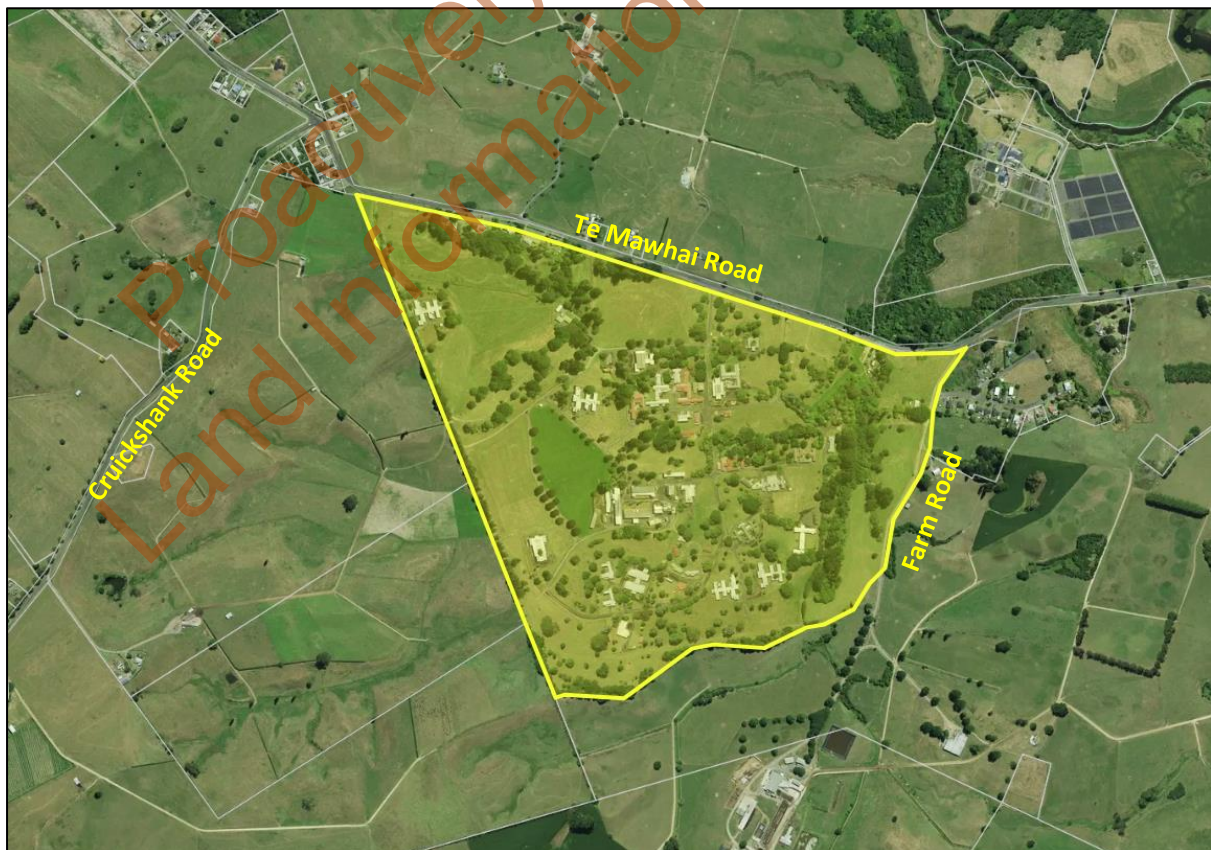


FIGURE 1: AERIAL PHOTOGRAPH OF SITE

The site is located on the southern side of Te Mawhai Road and is within the rural zone as stipulated in the District Plan. The Te Awamutu town centre is located approximately 6km to the north which contains a wide range of amenities such as dairies, school, library, gas station and eateries.

2.2 Road Network

Figure 2 portrays the site outlined in red in the context of the wider road network.

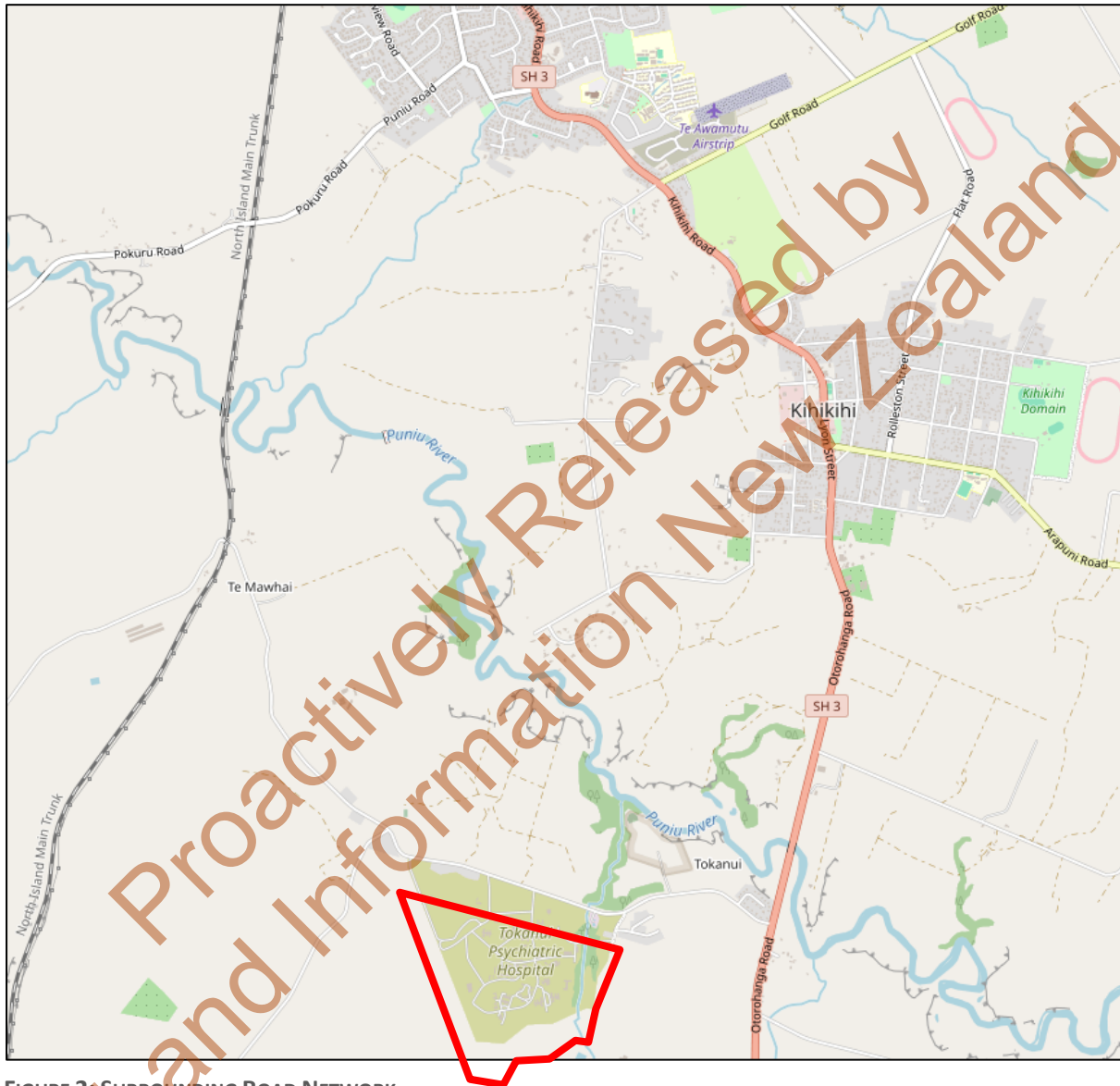


FIGURE 2: SURROUNDING ROAD NETWORK

The site has frontage to Te Mawhai Road and is surrounded by predominantly rural land. Te Mawhai Road is classified as a local road in the District Plan and has direct connection to State Highway 3 (SH3) to the east. Te Mawhai Road is a two-way, two-lane road with a marked centreline. The posted speed limit on the western half of the site frontage is 70km/h and increases to 100km/h across the eastern half of the site frontage.

2.3 Public Transport

There are no public transport services in the vicinity of the site.

2.4 Walking and Cycling

There is no dedicated footpath or cycling lane on either side of Te Mawhai Road. Pedestrians are therefore expected to walk on the berm and cyclists share the road with motorists which is common in rural environments.

2.5 Traffic Volumes

A traffic survey was undertaken on Wednesday 10 April 2024 at the SH3 / Te Mawhai Road intersection. The survey was conducted from 7am to 9am and 4pm to 6pm to capture the morning and evening peak hours respectively. The survey was done outside of the school holiday period and considered to be representative of typical traffic volumes at this intersection.

The MobileRoad traffic count database (MobileRoads) was used to obtain the daily traffic volumes for Te Mawhai Road and SH3 as the traffic surveys only capture the peak hour volumes. Table 1 below shows a summary of the existing traffic volumes.

TABLE 1: EXISTING TRAFFIC VOLUMES

Road	Location	AM Peak (vph)	PM Peak (vph)	Daily (vpd)
Te Mawhai Road	West of Cruickshank Road	106	102	585
SH3	North of Te Mawhai Road	804	1,041	8,370

2.6 Road Safety

2.6.1 CAS Analysis

A search was made in the NZTA Crash Analysis System (CAS) for all reported crashes within a 50m radius of the site frontage to Te Mawhai Road, including the intersections to Cruickshank Road and SH3 over the last full five-year period. The search found that six crashes which resulted in property damage only. Figure 3 below shows the CAS diagram.

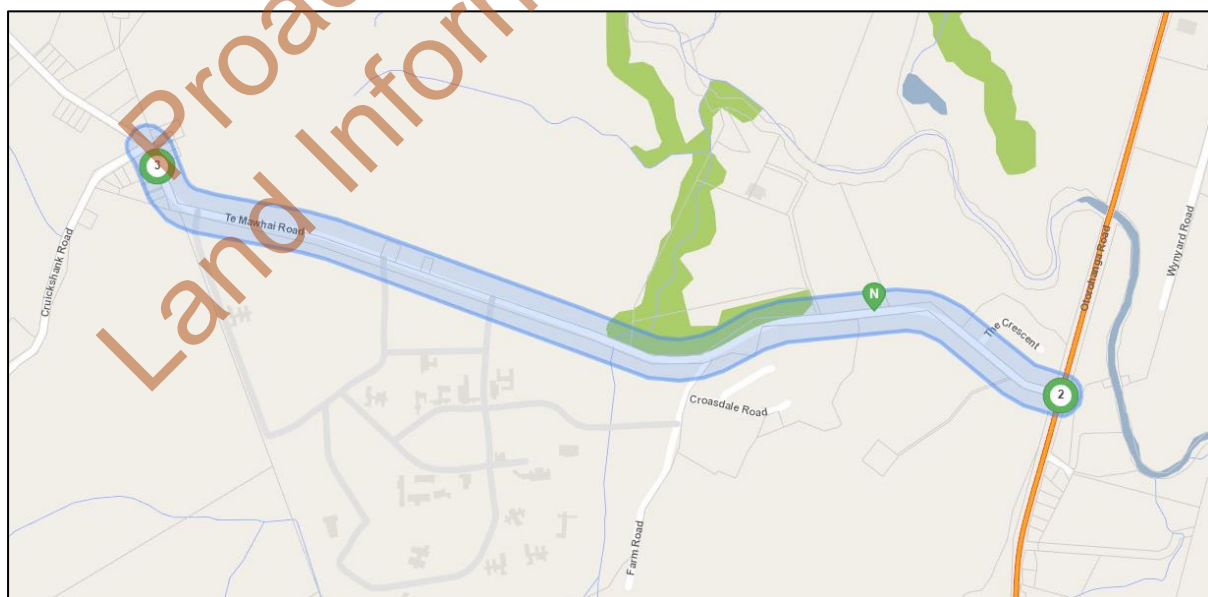


FIGURE 3: CAS DIAGRAM

Three crashes occurred at the Te Mawhai Road / Cruickshank Road intersection west of the site. Of these, two were caused by drunk drivers going off the road and one was due to failure to give-way.

One occurred midblock on Te Mawhai Road east of the site which was caused by a drunk driver going off the road.

Two crashes occurred at the SH3 / Te Mawhai Road intersection. Of these, one was due to failure to give way and the other was due to a driver evading police losing control.

Overall, no crashes were reported that involved the subject site and no crashes involved any pedestrians or cyclists. There is a common crash factor identified which is associated with drunk drivers however no common crash trends or factors have been identified in relation to the road design.

2.6.2 MegaMaps Analysis

The Waka Kotahi MegaMaps database has been used to identify both the personal and collective risk ratings for the roads described above.

- Collective risk is the measure of how likely a crash is to happen along a given stretch of road network.
- Personal risk relates to the chance that if a crash does occur that it involves a given individual. It is not unusual to see higher personal risks on a road, particularly when there are low traffic numbers.

Table 2 below shows a summary of the MegaMaps Risk Ratings for surrounding roads.

TABLE 2: MEGAMAPS RISK RATINGS

Road	Collective Risk	Personal Risk
Te Mawhai Road	Low	Low
SH3	Low / Medium	Low

The associated risk ratings of low personal and collective risks except SH3 which has a low / medium collective risk aligns with the observed crash record in the vicinity of the site and therefore demonstrates that the road corridor operates in what can be considered relative safety.

2.7 Committed Environmental Change

There are no known developments or roading upgrades that are committed that would have a noticeable impact on traffic patterns across the frontage of the site.

3 Proposal

It is proposed to demolish the existing buildings and infrastructure of the Tokanui Psychiatric Hospital located at 193 Te Mawhai Road in Te Awamutu. The demolition will be split into three phases as listed below.

Phase 1 – Above ground demolition of buildings, anticipated to take at least 12 months

- 45,000m³ of construction and demolition waste

Phase 2/3 – Horizontal infrastructure removal and contaminated soil remediation, anticipated to take at least 18 months, potentially overlapping with Phase

- 9,000m³ of building foundations
- 5,500m³ of potentially contaminated soil
- Up to 20,500m³ of roading material
- 2,400m³ infrastructure services
- 850m³ of material associated with culvert 2 removal
- Importing of up to 30,000m³ soil backfill and hardfill top up on return trips

Working hours will be 7:30am to 7pm Monday to Saturday. Truck and trailer units with an 18 tonne or 28m³ to 38m³ capacity will be used for the proposed demolition. The expected staffing and truck loads are summarised below.

Phase 1:

- 33 to 35 staff on-site (3 vans and 3 utes per day)
- 3 to 4 truck and trailers (3 trips per truck per day), while working under a Certificate of Compliance until Phase 2 begins (meaning a maximum of 250 vpd permitted)

Phases 2/3:

- 21 to 25 staff (3 vans and 3 utes per day)
- Up to 5 truck and trailers (3 trips per truck per day)

4 Traffic Effects

4.1 Trip Generation

The decommissioning of the old psychiatric hospital will be undertaken in three phases. The expected movements are shown in Table 3 below.

TABLE 3: TRIP GENERATION SUMMARY

Movement	Vehicles	Peak Hour (vph)	Daily (vpd)
Phase 1			
Staff	3 minivans and 3 utes	6	12
Trucks	3 to 4 truck and trailers (3 trips per truck per day)	4	18 to 24
Total		10	30 to 36
Phase 2/3			

Movement	Vehicles	Peak Hour (vph)	Daily (vpd)
Staff	3 minivans 3 utes	6	12
Trucks	Up to 5 truck and trailers (3 trips per truck per day)	5	30
Total		11	44
Phase 1 and 2 Overlap		21	80

The construction traffic is expected to generate a maximum of 10vph and up to 36vpd in Phase 1. This increases to 11vph and 44vpd in Phases 2 and 3. A single lane typically supports 1,000vph to 1,400vph. The addition of up to 11vph is expected to be within the carrying capacity of the surrounding road network given the existing volumes are less than 200vph on Te Mawhai Road and less than 1,100vph on SH3. A scenario where Phase 1 and Phase 2 overlap which equates to 21vph has also been assessed in this report to ensure robustness and represents a theoretical worst-case scenario.

For further context, the expected trip generation has been compared to typical trip generation for when the hospital would have been operational. The Institute of Transportation Engineers *Trip Generation Manual* (ITE Manual) has been reviewed to calculate the number of trips associated with the hospital development. The Hospital activity (Land Use 610) is considered to best represent the facility and has a reported peak hour trip rate of 1.04 trips per 100sqm and an average daily trip rate of 11.5 trips per 100sqm. With a total floor area over 20,000sqm, this would equate to over 200 peak hour trips and over 2,500 trips per day which is well above what is expected to be generated during the decommissioning process. It is therefore expected that the trip generated during decommission would have less of an effect than what was generated when the site was operational.

Notwithstanding the above, traffic modelling has been undertaken using SIDRA Intersection 9.1 (SIDRA) in section 4.3 below.

4.2 Trip Distribution

All trips generated by the demolition are expected to go to a landfill site in Hampton Downs except that there is a possible option for low level contaminated soil to be disposed of on-site. This means that all truck traffic is expected from the north of the site and will therefore use the SH3 / Te Mawhai Road intersection. Similarly, staff are expected to come from Te Awamutu town and also use the SH3 / Te Mawhai Road intersection.

The Phase 1 and 2 overlapping scenario has been assessed to ensure robustness. The morning peak hour will therefore have an additional 21vph turning right from SH3 into Te Mawhai Road and an additional 21vph turning left from Te Mawhai Road to SH3 in the evening.

4.3 SIDRA Modelling

SIDRA Intersection 9.1 has been used to model the SH3 / Te Mawhai Road intersection. The Level of Service (LOS) metric to assess the intersection performance where LOS A represents free-flowing conditions and LOS F represents breakdown in flow.

The existing morning and evening peak hour results can be seen in Table 4 and Table 5 below.

TABLE 4: MORNING PEAK HOUR SIDRA RESULTS

Approach	Movement	Existing AM			Future AM Phase 2/3 Only			Future AM Phase 1 and 2		
		Avg Delay (s)	LOS	95%tile Queue (m)	Avg Delay (s)	LOS	95%tile Queue (m)	Avg Delay (s)	LOS	95%tile Queue (m)
SH3 (South)	Left	8.6	A	0.0	8.6	A	0.0	8.6	A	0.0
	Through	0.0	A	0.0	0.0	A	0.0	0.0	A	0.0
SH3 (North)	Through	0.0	A	0.0	0.0	A	0.0	0.0	A	0.0
	Right	9.0	A	1.3	9.5	A	1.8	9.7	A	2.2
Te Mawhai Road (West)	Left	12.3	B	2.1	12.3	B	2.1	12.3	B	2.1
	Right	25.4	D	2.1	25.9	D	2.1	26.3	D	2.1
All Vehicles		1.4	NA	-	1.6	NA	-	1.7	NA	-

TABLE 5: EVENING PEAK HOUR SIDRA RESULTS

Approach	Movement	Existing PM			Future PM Phase 2/3 Only			Future PM Phase 1 and 2		
		Avg Delay (s)	LOS	95%tile Queue (m)	Avg Delay (s)	LOS	95%tile Queue (m)	Avg Delay (s)	LOS	95%tile Queue (m)
SH3 (South)	Left	7.9	A	0.0	7.9	A	0.0	7.9	A	0.0
	Through	0.0	A	0.0	0.0	A	0.0	0.0	A	0.0
SH3 (North)	Through	0.0	A	0.0	0.0	A	0.0	0.0	A	0.0
	Right	10.6	B	1.7	10.6	B	1.7	10.6	B	1.7
Te Mawhai Road (West)	Left	14.1	B	2.4	15.7	C	3.4	16.5	C	4.2
	Right	27.1	D	2.4	27.5	D	3.4	27.8	D	4.2
All Vehicles		1.3	NA	-	1.5	NA	-	1.6	NA	-

The results show that the addition of 21vph turning right from SH3 into Te Mawhai Road in the morning peak hour increases the average delay of this movement by 0.7 seconds but maintains the same LOS A. The additional right turn movements into Te Mawhai Road increase the average delay by 0.9 seconds for vehicles waiting to turn right into SH3 as they have to give way to an additional 21vph but maintains the same LOS D.

The results from the additional 21vph of left turns from Te Mawhai Road to SH3 in the evening peak hour increases the average delay of both left and right turns out of Te Mawhai Road. This also increases the left turn out from LOS B to LOS C but maintains the LOS D of the right turn out onto SH3. An increase in average delay of 2.4 seconds is unlikely to be noticed by drivers and not expected to result in any adverse material effects on the surrounding road network.

4.4 Summary

The additional traffic volumes generated by the proposed demolition are not expected result in any adverse material effects on the surrounding road network and are temporary.

5 Wider Access Effects

All construction traffic is expected to use the SH3 / Te Mawhai Road intersection. There is good visibility available at the intersection in both directions as well as inclusion of a right turn bay to assist vehicle turning right. No changes to the wider road network are required to accommodate vehicles associated with the demolition.

6 Site Access Effects

6.1 Overview

There are a total of five existing vehicle crossings which served the site. These are illustrated in Figure 4 below.

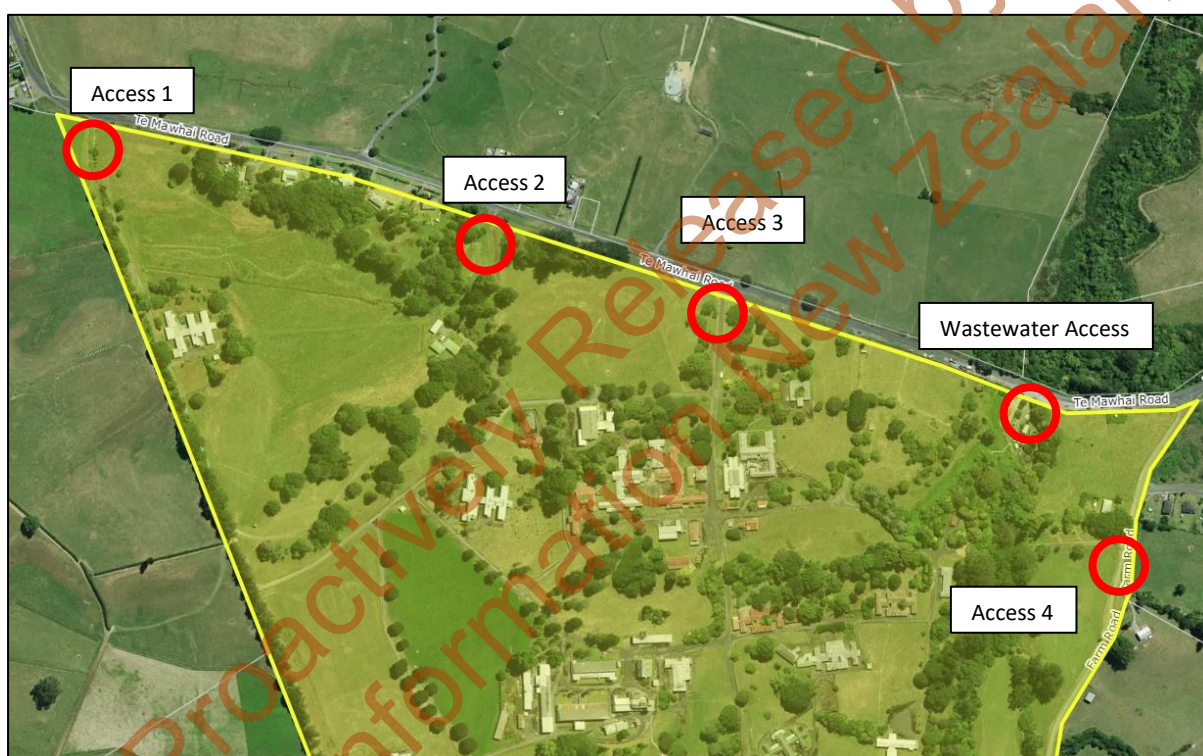


FIGURE 4: EXISTING ACCESS LOCATIONS

There are four existing vehicle crossings to Te Mawhai Road and one to Farm Road. The majority of traffic generated is expected to use Access 3. The other accesses are generally overgrown and do not connect to the bulk of the site where decommissioning would occur. Hence, only this access has been assessed in detail in this report.

6.2 Separation

The District Plan requires 200m from vehicle crossings to intersections or other vehicle crossings where the posted speed limit is 100km/h. There is over 200m separation for Accesses 1-3 to any nearby intersection or other vehicle crossing.

6.3 Visibility

Austrroads: Guide to Road Design Part 4A: Unsignalised and signalised intersections (Austrroads) has been used to assess the visibility at Access 3. The minimum Safe Intersection Sight Distance (SISD) required by Austrroads for an access fronting a road with a speed environment of 110km/h which is 10km/h above the posted speed limit is 285m. Access 3 has over 300m of visibility available in both directions which complies with Austrroads.

6.4 Width

The Regional Infrastructure Technical Specification (RITS) has been used to assess the vehicle crossing width of Access 3. RITS requires Industrial accesses serving one lot to be at least a 4m wide carriageway. The Access 3 carriageway is approximately 6.5m wide which complies with RITS.

Notwithstanding that, vehicle tracking has been undertaken using a 25m HPMV vehicle to ensure the demolition vehicles can efficiently access the site using Access 3. This can be seen in Figure 5 and Figure 6 below.

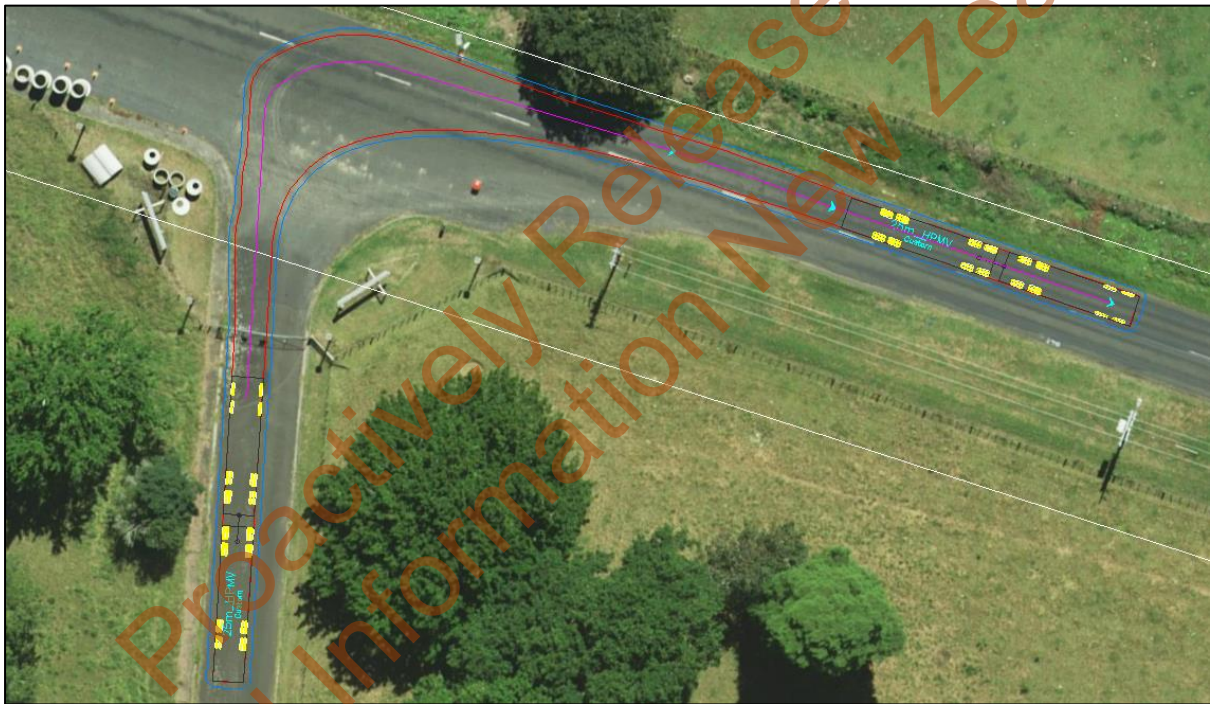


FIGURE 5: TRUCK AND TRAILER LEFT IN

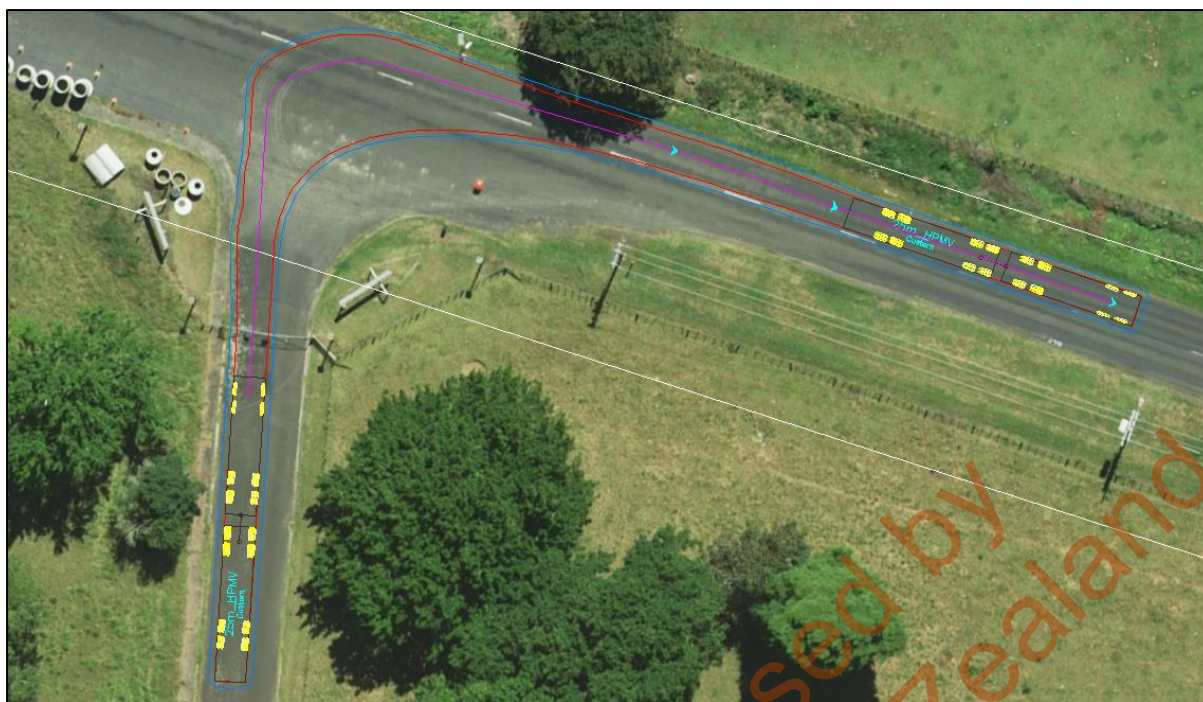


FIGURE 6: TRUCK AND TRAILER RIGHT OUT

The above tracking demonstrates that the truck and trailers expected during demolition can access the site in an efficient manner.

It is also proposed to move the gate to allow two truck and trailers to wait on the access without overhanging onto the road if the gate to access 3 is closed. This can be seen in Figure 7 below.



FIGURE 7: GATE RELOCATION

Overall, Access 3 is compliant with the District Plan and assessed as being appropriate to serve the proposed demolition.

7 Parking Effects

Sufficient space for informal parking will be provided throughout to accommodate all demolition vehicles given the large size of the site. Any car parking or loading areas would be informal and relocated throughout the site as different areas are decommissioned. No parking or loading is expected to be required from within the road reserve.

8 Road Safety Effects

The road safety report in Section 2.6 suggests that there are no discernible existing road safety issues associated with this part of Te Mawhai Road. The proposed demolition is assessed as being unlikely to have a detrimental effect on road safety and temporary.

9 Statutory Assessment

The proposed development is located within the Waipa District and is required to meet the provisions set out in Section 16 of the District Plan. Table 6 below summarises the relevant transportation rules and whether the proposed development complies with these criteria:

TABLE 6: DISTRICT PLAN COMPLIANCE ASSESSMENT

Rule	Requirement	Proposed	Compliance
Road Hierarchy			
16.4.2.1	All structure plans, plan changes, developments, and subdivision must be consistent with the road hierarchy, as contained in Appendix T5.	No changes to the road hierarchy are proposed.	N/A
16.4.2.2	To maintain the effectiveness of the road hierarchy, a road network must be designed so that a road connects to a road at the same level in the hierarchy, or directly above or below its place in the hierarchy	No road network additions are included as part of the proposed development.	N/A
16.4.2.3	To maintain the effectiveness of the road hierarchy, when a site has two road frontages, vehicle access and egress must be from the lesser road type	The site has existing vehicle crossings to both frontages to Te Mawhai Road and Farm Road which will be removed.	N/A
Vehicular Access to Sites in All Zones			
16.4.2.4	Every site shall be provided with vehicle access to a formed road that is constructed to a permanent standard. The vehicle access shall be designed to accommodate the demands of all traffic from the activity on that site, taking into account the form and function of the road.	Access is provided to a formed road.	Complies
Vehicle Entrance Separation from Intersections and Other Vehicle Entrances			
16.4.2.5	The minimum distance of a vehicle entrance (accessway) from an intersection or other entrance shall be as follows. Values K, M and N are 30m, 20m and either less than 4m or greater than 11m.	Access used for decommissioning complies with separation criteria	Complies
Vehicle Entrance Separation from Railway Level Crossings			
16.4.2.6	New vehicle access ways shall be located a minimum of 30m from a railway level crossing.	There are no level crossings within 2.5km of the site.	N/A
Minimum Sight Distance Requirements for a Railway Level Crossing			

16.4.2.7	Any buildings, structure or land use shall be located to comply with the minimum rail level crossing sightline requirements within Appendix T2.	The closest level crossing is approximately 2.5km west of the site.	N/A
Vehicle Access to Compact Housing Development			
16.4.2.8	Compact housing development must only have one access point to a strategic road	Development does not include compact housing	N/A
Vehicle Access to Sites in the Commercial Zone			
16.4.2.9	No new vehicle access is permitted across any 'pedestrian frontage' as identified on the Planning Maps	Site not in this zone	N/A
16.4.2.10	No direct vehicle access onto the State Highway is permitted from properties fronting State Highway 3.	Site not in this zone	N/A
16.4.2.11	Where a site has frontage to a road and a service lane, all vehicle access shall be from the service lane.	Site not in this zone	N/A
Vehicle Access to Sites in the Industrial Zone			
16.4.2.12	Where a site has a frontage greater than 50m to a road which is not a State Highway or a major arterial road, two vehicle crossings will be allowed from that road, subject to the requirements of Rule 16.4.2.5.	Site not in this zone	N/A
Parking, Loading and Manoeuvring Area			
16.4.2.13	<p>All activities that involve the erection, construction or substantial reconstruction, alteration or addition to a building on any site, or changes the use of any land or building, shall provide loading/unloading spaces for vehicles on the site as set out in Appendix T1.</p> <p>If parking is provided in the Residential Zone:</p> <p>(a) One of the car parks allocated to a single dwelling may be stacked (i.e. located in such a way that it cannot be accessed directly from the associated access or manoeuvring area) provided that the stacked car park does not:</p> <p>(i) Encroach on or interfere with any shared access on the site; or</p> <p>(ii) Encroach on any required building setback, side boundaries, or outdoor living area; or</p> <p>(iii) Compromise the ability for any vehicle to manoeuvre within the site</p>	It is proposed to remove on-site infrastructure. Sufficient space available within large site to accommodate vehicles expected on site during demolition.	Complies
16.4.2.14	<p>Vehicle parking (if provided), loading/unloading, and manoeuvring areas shall:</p> <p>(a) Not encroach on any setback, outdoor living area, or bicycle parking spaces; and loading/unloading areas and manoeuvring areas shall not encroach over vehicle parking spaces; and</p> <p>(b) Be designed, formed, and constructed to ensure that the surface of the required area provides a dust free environment; and</p> <p>(c) Provide for the safe and efficient disposal of surface stormwater clear of any adjoining access or road surface in a way that does not result in ponding or scouring; and</p> <p>(d) Be constructed to accommodate the anticipated use of the area by all traffic likely to access the site in the zone in which it is located, including construction traffic taking into account pavement, surfacing, demarcation of spaces, aisles and circulation roads; and</p> <p>(e) Be provided on the site on which the building, activity or proposal is located, except where the provisions of Rules 16.4.2.15 and 16.4.2.16 apply.</p>	It is proposed to remove on-site infrastructure. Only informal parking/loading spaces proposed	N/A

Exemption for On-Site Vehicle Manoeuvring Areas in the Residential Zone			
16.4.2.15	On front or corner sites in the Residential Zone, on-site vehicle manoeuvring areas may be exempt from Rule 16.4.2.14(e) and shall not be required where: (a) The site contains a single, primary dwelling; and (b) The garage doors, or vehicle entrance to the carport faces the road where the vehicle will access (refer to diagram following Rule 16.4.2.16); and (c) The distance between the garage door, or vehicle entrance to the carport and the road boundary on the site is no more than 12m (refer to diagram following Rule 16.4.2.16); and (d) The driveway does not encroach on any minimum outdoor living area as required under Rule 2.4.2.19 or road boundary setback other than at the vehicle entrance.	Site is not in this zone.	N/A
16.4.2.16	On sites in the Residential Zone with access to a right of way, manoeuvring may occur in the right of way and sites may be exempt from Rule 16.4.2.14(e) where: (a) The site contains a single, primary dwelling; and (b) The garage doors, or vehicle entrance to the carport face the right of way where the vehicle will access; and (c) The distance between the garage door, or vehicle entrance to the carport and the site boundary with the right of way is no more than 12m; and (d) The driveway does not encroach on any minimum outdoor living area as required under Rule 2.4.2.19; and (e) Rights over the right of way shall be apportioned so as to provide legal access to all sites for the purposes of vehicle manoeuvring; and (f) The right of way shall be of sufficient dimension to provide for a vehicle manoeuvring area of a standard adequate to accommodate a 99.8 percentile car, in order to ensure that all vehicles have the ability to access the adjoining road in a forward direction after no more than a three point turning manoeuvre on the site.	Site is not in this zone.	N/A
16.4.2.17	The design and layout of sites shall ensure that access to each required loading and unloading space, or parking space if provided is directly from the required access or manoeuvring area.	It is proposed to remove on-site infrastructure but direct access to all existing parking spaces will be available.	Complies
16.4.2.18	Vehicle manoeuvring areas loading and unloading spaces, and if provided, parking spaces, including those spaces located in a garage, shall be provided on a site, of a standard adequate to accommodate a 99.8 percentile car, or a 99 percentile truck, in order to ensure that all vehicles have the ability to access the adjoining road in a forward direction after no more than a three point turning manoeuvre on the site, except where Rule 16.4.2.16 applies.	It is proposed to remove on-site infrastructure but there is sufficient space on-site to accommodate truck and trailers during demolition.	Complies
16.4.2.19	All car parks (if provided) shall be marked or delineated on site, except in the Residential Zone and in the St Peters School Zone.	No formal parking is proposed and the existing parking spaces will be removed as demolition is completed.	N/A
Car Park Landscaping and Lighting			
16.4.2.20	Other than in the St Peters School Zone, all car parks must: (a) Provide at least one tree planted for every 5 car parking spaces at a grade of no less than PB95. For the avoidance of doubt, PB95 is equivalent to a tree that is at least 1.5m	Existing parking spaces will be removed after demolition is completed.	N/A

	tall at the time of planting; and (b) Ensure lighting is designed to avoid shading areas or isolating areas of public use.		
Provision of Bicycle Parking Facilities			
16.4.2.21	In areas other than the Rural Zone and Pedestrian Frontages, activities employing more than ten people must provide bicycle parking facilities at a rate of one bicycle park for every ten people employed	Site is within the Rural Zone.	N/A
Provision of an Integrated Transportation Assessment			
16.4.2.22	A Simple or Broad Integrated Transport Assessment (ITA) shall be prepared for activities as required by this rule. A Simple ITA is required for a development generating more than 250 'car equivalents' per day onto a Collector or Local Road Truck movements are equivalent to 10 car movements.	Up to 12 car movements and 30 truck movements are expected which equates to 312cem. A Simple ITA is required and provided.	Complies

The above assessment of the proposed demolition against the District Plan has not triggered any non-compliances. The effects of the proposed demolition are temporary and not expected to result in a material effect on the surrounding road network.

10 Conclusion

It is proposed to demolish the existing buildings and infrastructure of the Tokanui Psychiatric Hospital located at 193 Te Mawhai Road in Te Awamutu. Access during decommissioning is expected to be provided via the main entrance (Access 3) as other access are overgrown and no longer connect through to the bulk of the site. The site is also sufficiently sized such that parking and loading can occur where required. No parking or loading is expected to occur from within the road reserve.

The number of trips generated during decommissioning has been calculated to be in the order of 21 vehicles in the peak hour. The traffic volumes generated by the proposed demolition are within the carrying capacity of the surrounding road network and temporary. This is likely to be less than what was previously generated by the hospital. As such, no adverse effects are anticipated on the surrounding road network as a result of traffic generated by the proposed demolition.

Overall, it is concluded that there are no traffic engineering or transport planning reasons to preclude approval of the proposed demolition.