

Andrew McAllister

**Request for Rezoning
1419, 1401, 1379 & 1275 Tram Road**

Transportation Assessment



**CARRIAGEWAY
CONSULTING**

traffic engineering | transport planning



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CCL file reference	14964 swannanoa ta final
Status	Final
Issued	23 February 2024



1. Introduction

- 1.1. Waimakariri District Council is presently reviewing its District Plan, as part of which it is also considering the rezoning of land. Land at 1379, 1401 and 1401 Tram Road, Swannanoa (**the western site**) is proposed by the Council to be zoned as Rural Lifestyle Zone but with a Large Lot Residential Zone Overlay. One difference between the two zonings relates to the number of lots which could be formed.
- 1.2. It is understood that the intent of the 'overlay' is to ensure that a detailed assessment is carried out of the larger number of lots which would be permitted under a Large Lot Residential Zone compared to a Rural Lifestyle Zone.
- 1.3. 1275 Tram Road (**the eastern site**) is proposed by the Council to be rezoned as Rural Lifestyle Zone.
- 1.4. Andrew McAllister has made a submission to the District Plan review process, seeking that these lots are all zoned as Large Lot Residential Zone.
- 1.5. This Transportation Assessment sets out a detailed analysis of the transportation issues associated with the requested zoning of the sites as Large Lot Residential Zone, including changes in travel patterns that are likely to arise. Where potential adverse effects are identified, ways in which these can be addressed are set out.
- 1.6. This report is cognisant of the guidance specified in the New Zealand Transport Agency's '*Integrated Transport Assessment Guidelines*' and although travel by private motor vehicle is addressed within this report, in accordance with best practice the importance of other transport modes is also recognised. Consequently, travel by walking, cycling and public transport is also considered.

2. Site Overview

2.1. Location

2.1.1. Swannanoa is located approximately 10.5km southwest of Rangiora. The eastern site lies to the east of, and is immediately contiguous with, the existing urban area of Swannanoa (Swannanoa is currently zoned as Residential 4B but proposed to be rezoned as Large Lot Residential Zone¹), on the southern side of Tram Road. The western site occupies the southwestern quadrant of the Tram Road / Two Chain Road intersection.

2.1.2. As noted above, the eastern site is proposed by the Council to be rezoned as Rural Lifestyle Zone (**RLZ**) with the western site also proposed to be zoned as RLZ with a Large Lot Residential Zone (**LLRZ**) Overlay.

2.1.3. The eastern site is approximately 21.25 ha in size, while the western site is approximately 16.36ha.

2.1.4. The location of the sites in the context of the local area is shown in Figure 1 and in more detail in Figure 2.

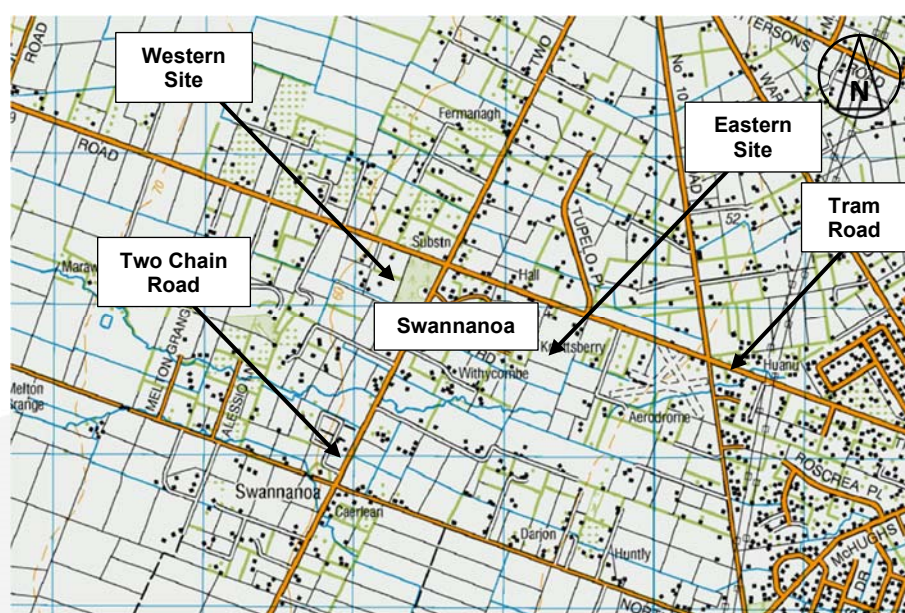


Figure 1: General Location of Sites

¹ Residential 4B is not a standard name for a zone under the National Planning Standards, but it is essentially the same as Large Lot Residential Zone in most respects



Figure 2: Aerial Photograph of Sites and Environs

2.2. *Roading Classification*

- 2.2.1. The proposed District Plan classifies Tram Road as an Arterial Road, indicating a role of primarily providing for through traffic and a connection between settlements.
- 2.2.2. Two Chain Road is a Collector Road, indicating a role of providing direct property access as well as accommodating through traffic.
- 2.2.3. All other roads in the vicinity of the site, are Local Roads, meaning that they provide for local journeys and property access.
- 2.2.4. These classifications are the same in the operative District Plan.



3. Current Transportation Networks

3.1. *Roading Network*

- 3.1.1. On the northern side of both sites, Tram Road has a flat and straight alignment and provides one traffic lane in each direction. The carriageway has a 7.2m width with a marked centreline and edgelines, and narrow sealed shoulders of 0.3m or less, with grassed verge of typically 6m width. The speed limit is 100km, but temporarily reduces to 60km/h at the school.



Photograph 1: Tram Road West of Western Site, Looking East (Western Site on Right)

- 3.1.2. Two Chain Road joins Tram Road at the northeastern corner of the western site. This is a priority ('stop') controlled intersection, which has auxiliary lanes for vehicles turning right and left off Tram Road. There are splitter islands on both minor approaches.



Photograph 2: Tram Road / Two Chain Road Intersection Looking West (Western Site on Far Left)

- 3.1.3. Two Chain Road has a flat and straight alignment, and provides one traffic lane in each direction. The carriageway is approximately 6.5m wide, and there is a centreline but no edgelines. There are grass verges of at least 4m width on each side, and the road has a posted speed limit of 100km/h.



Photograph 3: Two Chain Road Looking South (Western Site on Right)

- 3.1.4. Winter Road joins the eastern side of Two Chain Road approximately 200m south of Tram Road. The intersection is priority ('give-way') controlled and is formed to a Diagram E standard, with seal widening on the western side of Two Chain Road. There is an access almost directly opposite Winter Road which serves a council pumping station.



Photograph 4: Two Chain Road/ Winter Road Looking North (Western Site on Left)

- 3.1.5. Approximately 350m east of Two Chain Road, there are build-outs on either side of Tram Road and signage associated with a temporary speed limit reduction to 60km/h which applies at times of school drop-off and pick-up. A flush median is developed to the immediate east of the build-outs, which extends for a distance of 440m, terminating at another build-out which is



marked with 100km/h speed limit signs for eastbound vehicles (the situation is reversed for westbound drivers, with the temporary speed limit applying from the easternmost build-outs and reverting to 100km/h at the western build-outs).



Photograph 5: Eastern Build-Out on Tram Road Looking East

- 3.1.6. There are two vehicle crossings on Tram Road between the two build-outs, one serving Swannanoa Primary School and the other serving Swannanoa Preschool. Both accesses lead to car parks within the two sites, used for drop-off and pick-up. The flush median transitions to form a right-turn lane into both of these accesses.
- 3.1.7. Tupelo Place joins Tram Road approximately 2100m east of the eastern build-out. This is a priority ('give-way') intersection which is formed as a Diagram D arrangement, with localised widening on the southern side of Tram Road and flaring on the northern side of the road. Tupelo Place itself is a cul-de-sac that serves a number of rural residential properties.

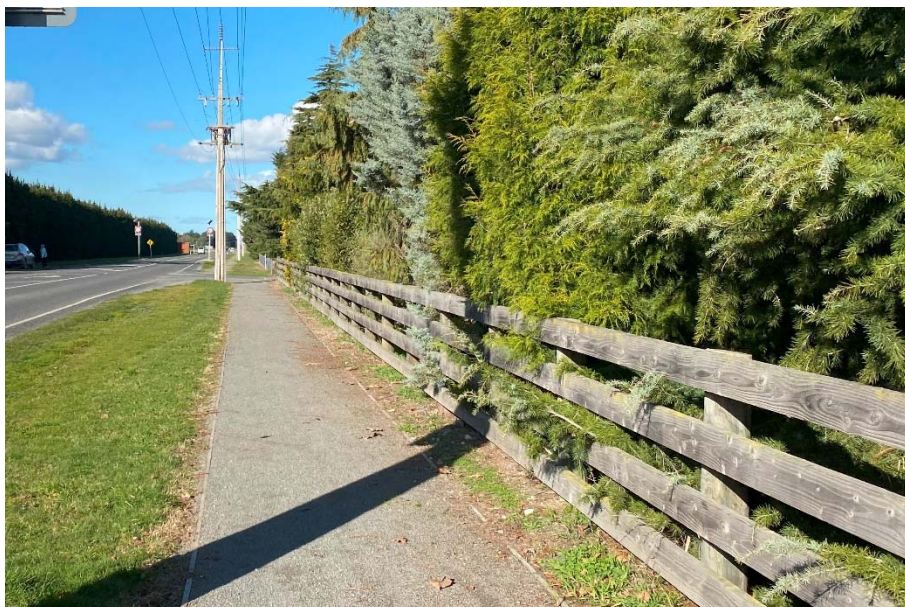


Photograph 6: Tram Road / Tupelo Place Intersection Looking West (Eastern Site on Left)



3.2. Non-Car Infrastructure

- 3.2.1. There is a footpath along the southern side of Tram Road, extending between the school and No 10 Road approximately 1.3km to the east. The footpath provision appears informal to the east of the preschool but there are wooden battens on each side of the formed surface between the school and the preschool.



Photograph 7: Formed Footpath on the Southern Side of Tram Road

- 3.2.2. There is no formal provision for cyclists in the area, and therefore they either ride using the footpath, or within the grassed verges, or share the traffic lanes with motorised vehicles.
- 3.2.3. There is no public transport that serves Swannanoa, although there is a school bus route that runs along Tram Road and Two Chain Road and serves Swannanoa Primary School. There is also a school bus that services Rangiora High School, which runs along Two Chain Road.

3.3. Future Changes

- 3.3.1. There are no known changes to the roading environment in the immediate area that are set out in any overarching strategies or guides.

4. Current Transportation Patterns

4.1. Traffic Flows

4.1.1. According to the MobileRoad website, the roads in the vicinity of the sites carry the following daily traffic volumes²:

- Tram Road west of Two Chain Road: 2,870 vehicles (two-way);
- Tram Road east of Two Chain Road: 3,750 vehicles (two-way);
- Two Chain Road south of Tram Road: 680 vehicles (two-way);
- Two Chain Road north of Tram Road: 2,390 vehicles (two-way);
- Winter Road: 130 vehicles (two-way); and
- Tupelo Place: 60 vehicles (two-way).

4.1.2. It is commonly accepted that roads carry around 10% of their daily traffic volumes in the peak hours. Applying this to the volumes above indicates the following peak hour volumes on the roads in the vicinity of the site³:

- Tram Road west of Two Chain Road: 290 vehicles (two-way);
- Tram Road east of Two Chain Road: 375 vehicles (two-way);
- Two Chain Road south of Tram Road: 70 vehicles (two-way);
- Two Chain Road north of Tram Road: 240 vehicles (two-way);
- Winter Road: 15 vehicles (two-way); and
- Tupelo Place: 10 vehicles (two-way).

4.1.3. As part of this commission, intersection turning count surveys were undertaken at the Tram Road / Two Chain Road intersection during September 2023. The results are summarised below.

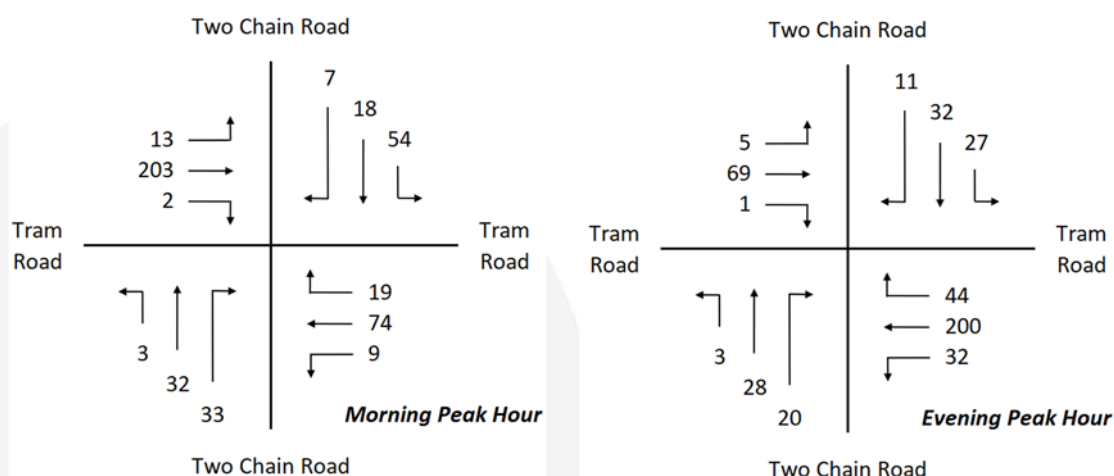


Figure 3: Tram Road / Two Chain Road Intersection, 2023 Observed Turning Volumes

4.1.4. The survey shows a good alignment with the estimated volumes on Tram Road (within 12 vehicles). Traffic volumes on Two Chain Road are different to those estimated (up to 46 vehicles more to the south of Tram Road, but 100 vehicles less to the north of Tram Road).

² Rounded up the nearest 10 vehicles

³ Rounded up to the nearest 5 vehicles



The volumes observed in the survey have therefore been used for the remainder of this assessment.

- 4.1.5. The Austroads Guide to Traffic Management Part 3 (*Traffic Studies and Analysis*) sets out thresholds regarding the need for detailed traffic analyses at intersections, and the traffic flows below which detailed analyses of unsignalised intersections are unnecessary since the intersection operates under 'free-flow' conditions. An extract from this is replicated below.

Major Road Type	Traffic Volumes (Vehicles Per Hour)	
	Major Road	Minor Road
Two lane road	400	250
	500	200
	600	100

Table 1: Extract from Table 6.1 of Austroads Guide to Traffic Management Part 3 (Intersection Volumes below which Capacity Analysis is Unnecessary)

- 4.1.6. In the case of the Tram Road / Two Chain Road intersection, the major road (Tram Road) carries 400 vehicles per hour (two-way) meaning that the minor road (Two Chain Road) would need to carry 250 vehicles per hour for a formal assessment to be justified. The peak volume on Two Chain Road is 150 vehicles per hour (two-way), and accordingly, no analysis has been carried out. In essence, at present the intersection operates under 'free-flow' conditions, where the ability to turn and manoeuvre is largely unrelated to the presence of other vehicles. Accordingly, queues and delays will be very low (an outcome observed during the surveys), with an excellent level of service provided.

4.2. Non-Car Modes of Travel

- 4.2.1. Given that the area is predominantly rural / rural residential, it can reasonably be expected that it will be relatively lightly used by pedestrians and cyclists. Although there may be some walking and cycling associated with the school and preschool, on-site observations showed that this was minimal (as would be expected, given the age of the students). It is also possible that the roading network might be used by groups of cyclists at weekends for recreational riding.
- 4.2.2. In view of demand, and the low traffic flows, the current level of infrastructure for walking and cycling is considered appropriate.

4.3. Road Safety

- 4.3.1. The Waka Kotahi Crash Analysis System has been used to establish the location and nature of the recorded traffic crashes in the vicinity of the sites. All reported crashes between 2018 and 2022, plus the partial record for 2023, were identified on Tram Road for a distance of 200m to the west of the western site and east of the eastern site, and for a distance of 200m south of the western site along Two Chain Road.

- 4.3.2. This showed that there was a total of three crashes recorded:

- One crash occurred at the Tram Road / Two Chain Road intersection when a southbound driver on Two Chain Road failed to give-way to an eastbound car on Tram Road. The police report notes that the view of the at-fault driver was obscured by a street sweeper. The crash did not result in any injuries;



- One crash occurred on Tram Road approximately mid-way between the eastern site and Two Chain Road, when a westbound driver left the road and collided with a tree. The police report notes that the driver may have been intoxicated. The crash resulted in serious injuries; and
- One crash occurred on Tram Road at the entrance to the school, when a westbound driver left the road and collided with a powerpole and a hedge. No reason is given in the police reports for the factors contributing to the crash as the driver fled the scene. The crash did not result in any injuries.

4.3.3. It is not considered that the historic pattern of crashes indicates any inherent road safety deficiencies in the immediate area. The crashes all occurred with different contributing factors and in different locations.



5. Proposal

- 5.1. The proposal is for the rezoning of the land from RLZ with LLRZ Overlay and RLZ, to LLRZ. Under LLRZ there would be an increase in residential density compared to RLZ.
- 5.2. As the proposal is for a rezoning, there are no specific subdivision plans at this stage. However the Proposed District Plan requires proposals to have an Outline Development Plan (**ODP**) and these are shown below.



Figure 4: Outline Development Plan for Western Site (Extract from Survus Consultants Drawing)

- 5.3. From a transportation perspective, the key feature of the western site ODP is a small internal roading network which connects to both Tram Road and Two Chain Road via new priority intersections. This roading means that lots within the site will not be required to gain direct access from either Tram Road or Two Chain Road.



Figure 5: Outline Development Plan for Eastern Site (Extract from Survus Consultants Drawing)



- 5.4. From a transportation perspective, the key feature of the eastern site ODP is one point of access from Tram Road, which leads to a loop road and meaning that vehicles are easily able to circulate without the need for any reversing movement (such as a three-point turn). The roading means that lots within the site will not be required to gain direct access from Tram Road.
- 5.5. A walking/cycling link is proposed between the site and the eastern boundary of the preschool (and school).





6. Traffic Generation and Distribution

6.1. Traffic Generation

- 6.1.1. Traffic generated by residential developments is known to vary for a variety of reasons, with one such reason being the proximity (or otherwise) to employment and community facilities. Where a dwelling is some distance from these types of facilities, the traffic generation rates tend to be lower than for residences that are closer due to 'trip chaining', that is, the tendency of a resident to carry out multiple visits to different destinations during the same trip away from the dwelling.
- 6.1.2. In this case, it is likely that traffic will be associated with employment locations in Rangiora or further afield in Christchurch. However Swannanoa has a primary school and a preschool, meaning that there is no need to travel outside the township for schooling until High School (which is in Rangiora). The closest supermarket and other facilities lie approximately 3.7km to the east.
- 6.1.3. Consequently, for this analysis a rate of 8 vehicle movements per day per residence has been used, with 1 vehicle movement per residence occurring in each of the peak hours. The latter is considered to represent a conservative assessment in view of the ability to access early schooling within the settlement.
- 6.1.4. From information previously provided, it is understood that the western site is expected to have 27 lots at full development, and the eastern site is expected to have 37 lots at full development, taking into account the minimum lot sizes required under the LLRZ provisions, stormwater and roading. Thus at full development, the sites will generate peak hour traffic volumes of 27 and 37 vehicle movements (two-way) respectively.
- 6.1.5. In the morning peak hour, 85% of these vehicles are likely to be exiting the sites, with 65% of the generated vehicle movements entering the sites in the evening peak hour.

6.2. Trip Distribution

- 6.2.1. With regard to the distribution of these vehicles, it is anticipated that the vast majority will be associated with travel to/from Rangiora or Christchurch. While there may be a small amount of traffic that travels west or north, these volumes will be low and easily accommodated on the road network.
- 6.2.2. Due to the presence of the Waimakariri River, the shortest route to Christchurch is via Tram Road. With regard to travel to/from Rangiora, Two Chain Road provides the shortest route.
- 6.2.3. An allowance has been made for 20% of travel to be to/from Rangiora, with the balance being to/from Christchurch (although as noted above this distribution of trips does not materially affect the outcomes of the analysis).
- 6.2.4. This leads to the following additional traffic on the road network:

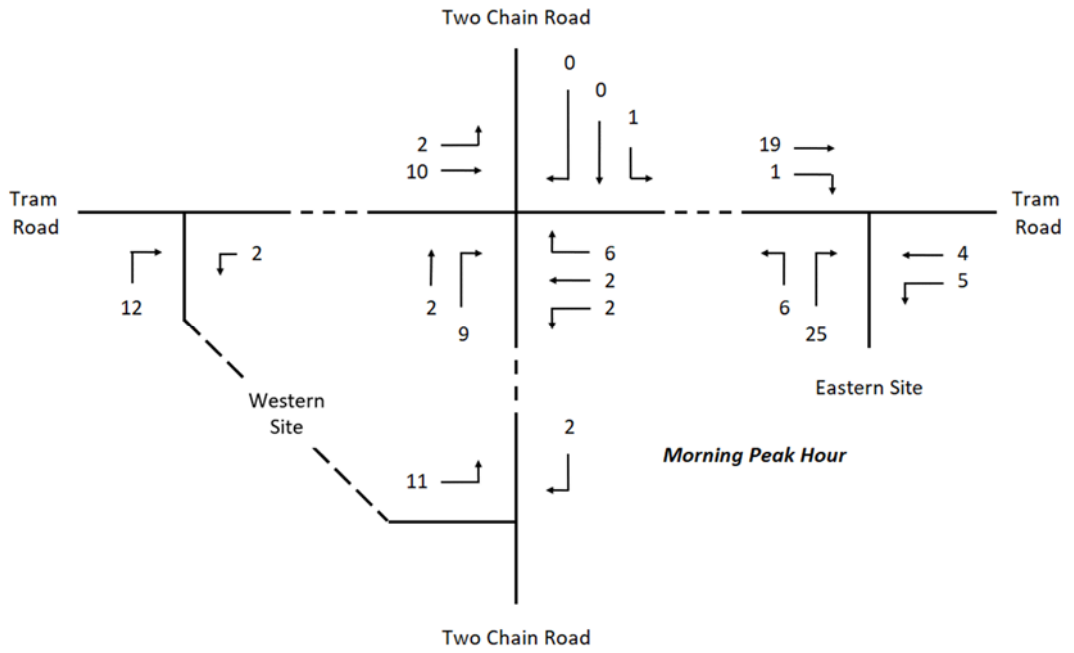


Figure 6: Traffic Generation of Proposed Sites, Morning Peak Hour

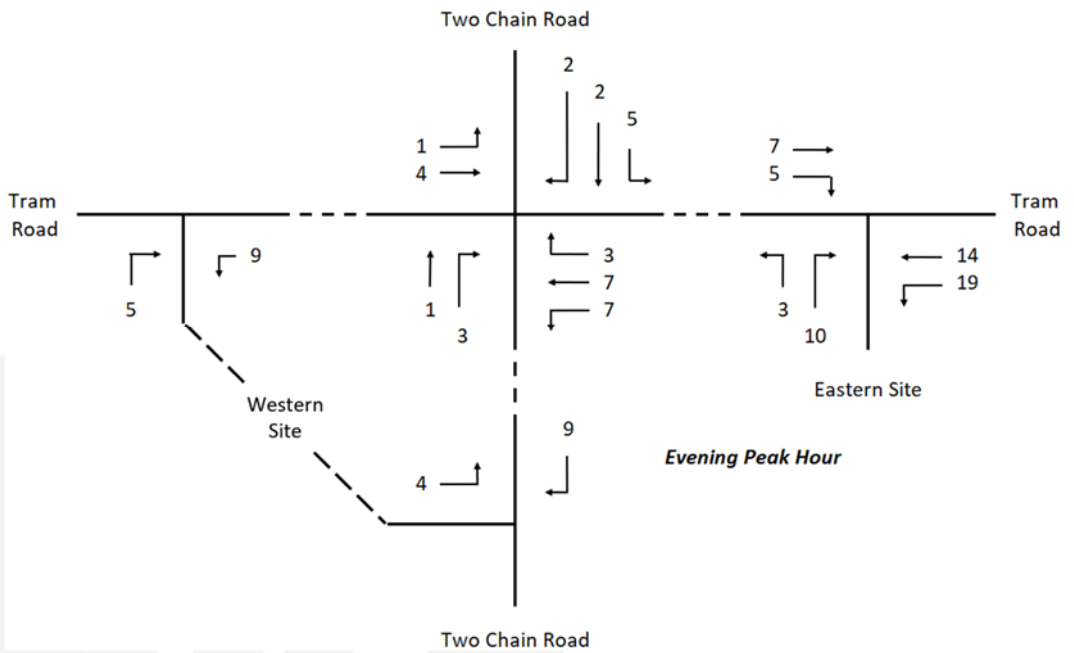


Figure 7: Traffic Generation of Proposed Sites, Evening Peak Hour



7. Effects on the Transportation Networks

7.1. *Roading Capacity*

7.1.1. With full development of the sites, there would be an increase in the traffic flows on the roading network as follows (based on the surveyed peak hour traffic volumes, and rounded up):

- Tram Road west of Two Chain Road:
 - 300 vehicles (two-way) at present;
 - Increase of 14 vehicles (two-way)
- Tram Road east of Two Chain Road:
 - 400 vehicles (two-way) at present;
 - Increase of 51 vehicles (two-way)
- Two Chain Road south of Tram Road:
 - 120 vehicles (two-way) at present;
 - Increase of 14 vehicles (two-way)
- Two Chain Road north of Tram Road:
 - 150 vehicles (two-way) at present;
 - Increase of 13 vehicles (two-way)

7.1.2. Even with full development of both sites, the traffic flows at the Tram Road / Two Chain Road intersection remain below the threshold at which a formal intersection assessment is justified.

7.1.3. The traffic flows generated by the two sites are low, and therefore these will also fall below the threshold at which a formal intersection assessment is justified.

7.1.4. Accordingly, even with full development of the sites, it is not expected that any intersection will experience any material change in efficiency, and they operate under 'free-flow' conditions.

7.1.5. An assessment of the current formation of the roads and intersections is set out subsequently.

7.1.6. It should be noted that there is likely to be ambient traffic growth on both Tram Road and Two Chain Road due to development elsewhere in the District which results in increases in traffic volumes. While there is no data for this, rates of 2-3% are typically observed on a road. The above conclusions do not change even if ambient traffic growth is applied.

7.2. *Non-Car Modes of Travel*

7.2.1. The development of the sites may result in increased levels of walking and cycling in the immediate area. However, these will only be moderate because of the scale of development.

7.2.2. It is typically accepted that people will walk a maximum of 1km to reach a particular destination, and will cycle a maximum distance of 3km. In this regard, the school and preschool are within walking distance of both sites. Some upgrading of walking facilities may need to be considered in due course, but the 20m legal widths of Tram Road and Two Chain Road are easily able to accommodate additional walking infrastructure if needed.

7.2.3. There are also tennis courts and a community hall located on the northern side of Tram Road, opposite the school. These are also within walking distance of the two sites.

7.2.4. Accordingly, it is considered that the sites are well-located for accessibility to the key community facility in Swannanoa.



- 7.2.5. The low traffic flows (even with full development of the sites) do not indicate that any specific infrastructure is justified for cyclists.
- 7.2.6. In both cases however, the matter of whether additional walking and cycling infrastructure is required can be considered when consents are sought to subdivide the sites.
- 7.2.7. The size of the sites is not sufficient that they will give rise to the need for a public transport service. If a service was to be developed in the future, it is unlikely it would operate through the sites due to the low number of passengers and a route via Tram Road is more likely. That said, the primary roads within the sites could be designed to allow for the movement of a bus, if necessary.

7.3. Road Safety

- 7.3.1. Based on a review of the road safety records, the proposal is unlikely to result in adverse road safety effects arising as a result of the increase in traffic flows on the road network.
- 7.3.2. One aspect of road safety relates to ensuring that the intersections have the appropriate generalised layout. In this regard, the expected low traffic volumes do not indicate that any modifications are required to the Tram Road / Two Chain Road intersection. The intersection also has excellent sightlines.
- 7.3.3. Within the sites, the relatively flat topography means that there are no reasons why the internal roading networks could not meet appropriate design guides and standards.

7.4. Site Accesses

- 7.4.1. The proposal will create three priority intersections, two onto Tram Road and one onto Two Chain Road. Under the warrants set out in the Austroads Guide to Traffic Management Part 6 (*Intersections, Interchanges and Crossings*), and taking into account the through traffic on these roads, auxiliary turning lanes are not warranted at any location. The matter can be considered further once subdivision consents are sought, but the 20m legal width of Tram Road and Two Chain Road means that any auxiliary turning lane, or other localised widening of the seal to accommodate turning movements can be easily achieved.
- 7.4.2. The alignments of Tram Road and Two Chain Road are straight and largely flat, meaning that appropriate sightlines will be achieved.



8. District Plan

8.1. Introduction

8.1.1. The District Plan sets out a number of transportation-related rules with which any development is expected to comply. Although the proposal is for a rezoning, consideration of these rules is important at this stage in order to identify whether there are any likely non-compliances within the ODPs or impediments to a complying subdivision layout in future. Consequently an assessment of the transportation rules has been undertaken and the outcomes are summarised below.

8.2. Operative District Plan Chapter 30, Utilities and Traffic Management: Condition 30.6

8.2.1. Conditions 30.6.1.1 to 30.6.1.11 – Access to Roads

8.2.1.1. Tram Road and Two Chain Road have already been constructed and evidently carry current traffic flows without any difficulty. However neither fully meet the provisions of Table 30.1 of the District Plan because as an Arterial and Collector Roads respectively, they are anticipated to provide a seal width of 7m, with sealed shoulders of 0.75m on Tram Road, and cycleways on each side. These are not provided.

8.2.1.2. The extent of traffic increase associated with development of the sites is small and is unlikely that any upgrading will be necessary. However the legal widths of the roads are sufficient that any upgrades could be implemented without the use of third party land. Such upgrades can be assessed in more detail at the time of subdivision.

8.2.1.3. The internal roads can be constructed to meet the requirements of Table 30.1 (Condition 30.6.1.2).

8.2.1.4. Conditions 30.6.1.3 to 11 relate to activities or locations which are not relevant to this site.

8.2.2. Conditions 30.6.1.12 to 30.6.1.18 – Accessways

8.2.2.1. Under Condition 30.6.1.13, accessways must achieve certain minimum widths. Accessways could potentially be used in due course but can be formed to meet the required dimensions. They can be formed to an all-weather standard (Condition 30.6.1.15a)

8.2.2.2. Conditions 30.6.1.12, 14, 16, 17 and 18 relate to activities or locations which are not relevant to this site.

8.2.3. Conditions 30.6.1.19 to 30.6.1.31 – Vehicle Crossings

8.2.3.1. Under Condition 30.6.1.19 there is a maximum number of vehicle crossings per site. Once the sites are subdivided, there is no reason why any lot would have more than one vehicle crossing.

8.2.3.2. Condition 30.6.1.24 specifies the sight distances required from vehicle crossings. While no vehicle crossings are proposed at this stage, the straight alignment of Tram Road and Two Chain Road means that the anticipated sight distance at any accesses can be easily achieved (if any are proposed).

8.2.3.3. Within the site, there are similarly no reasons why vehicle crossings could not be located to achieve the appropriate sight distances.



- 8.2.3.4. Conditions 30.6.1.26 and 27 specify the minimum distance between new vehicle crossings and intersections. In this case, there are two issues that arise – firstly, the presence of new vehicle crossings with respect to existing intersections, but secondly, the presence of new intersections in respect of existing vehicle crossings.
- 8.2.3.5. In respect of new vehicle crossings, the ODPs show that all lots could be accessed from the proposed internal roads, and that there is no requirement for any direct vehicle crossings onto either Tram Road or Two Chain Road. Any vehicle crossing onto the new internal roads would meet the expected separation (or any non-compliance can be assessed at the time of subdivision).
- 8.2.3.6. In respect of existing vehicle crossings and proposed new intersections:
- There is a vehicle crossing located 130m west of the proposed Tram Road / western site access road intersection. A 90m separation is required.
 - There is a vehicle crossing located 110m north of the proposed Two Chain Road / western site access road intersection. A 60m separation is required.
 - There is a vehicle crossing to 924 Two Chain Road located 65m south of the proposed Two Chain Road / western site access road intersection. A 60m separation is required.
 - There are two vehicle crossings to 928 Two Chain Road located 30m and 5m south of the proposed Two Chain Road / western site access road intersection. A 60m separation is required.
 - There is a vehicle crossing to a disused church located 60m west of the proposed Tram Road / eastern site access road intersection. A 90m separation is required.
- 8.2.3.7. As such, there are two non-compliances – for the driveways to 928 Two Chain Road and also the access serving the disused church.
- 8.2.3.8. Assessment Matters for this are not specific, but refer generally to the “*operation of the transportation network*” and “*traffic and pedestrian safety*”.
- 8.2.3.9. In the case of the driveways to 928 Two Chain Road, the vehicle crossings are located on the opposite side of the road to the site meaning that there would be no confusion about where a vehicle is turning. The sight distances available to road users are excellent, and additionally, drivers exiting the existing vehicle crossing will be travelling in a forwards gear (rather than having to reverse) which further supports good intervisibility between road users. It is also noted that the LLRZ sought for the western site means that even in the peak hours, traffic flows exiting the proposed new road will be very low.
- 8.2.3.10. It is understood that the church was closed following the 2010/2011 Canterbury Earthquake Sequence, and is unlikely to reopen without significant works being undertaken. However if it was to reopen then the greatest traffic generation would be on a Sunday, when the eastern site generated little traffic. It would also be possible to devise a subdivision plan whereby the church gained access through the eastern site. Accordingly, it is considered that the reduced separation between this access and the proposed eastern site access intersection can be supported.
- 8.2.3.11. Accordingly, the reduced separation distances can be supported.
- 8.2.3.12. Conditions 30.6.1.20 to 23, 25, and 28 to 31 relate to activities or locations which are not relevant to this site.



8.2.4. Conditions 30.6.1.32 to 30.6.1.33 – Road Intersection Spacing

- 8.2.4.1. The proposal involves the formation of Local Roads onto existing roads, and hence the creation of new intersections. Given that both frontage roads are subject to a 100km/h speed limit, there is a requirement for a separation of 800m between intersections.
- 8.2.4.2. At the western site, a separation distance of around 325m is proposed between the new intersection on Tram Road and the Tram Road / Two Chain Road intersection. A separation distance of around 325m is proposed between the new intersection on Two Chain Road and the Tram Road / Two Chain Road intersection, with a separation distance of around 130m between the new intersection on Two Chain Road and Two Chain Road / Winter Road intersection.
- 8.2.4.3. At the eastern site, a separation distance of around 150m is proposed between the new intersection on Tram Road and the Tram Road / Tupelo Place intersection.
- 8.2.4.4. There is no discussion in the District Plan as to why this separation is proposed. For example, the Austroads Guide to Road Design Part 4 (*Intersections and Crossings – General*) sets out that intersections should be “*desirably*” separated by at least five seconds of travel time at the design speed, as this provides sufficient time for drivers to process information related to traffic, the road layout, and traffic signs. At a design speed of 110km/h (the speed limit plus 10%), this suggests that a separation of 150m is appropriate. It is noted that Standard NZS4404:2010 (*Land Development and Subdivision Infrastructure*) sets out a separation of 150m for intersections where Collector Roads join other Collector Roads should be 150m apart, but no separation distance is given for intersections involving Local Roads.
- 8.2.4.5. This suggests that the anticipated separations at both sites will be appropriate. It is also noted that both Winter Road and Tupelo Place are on the opposite side of the road to the roads serving the sites, which means that drivers on the main roads will not be confused about where vehicles are turning. Accordingly, the reduced separation distance between intersections can be supported.

8.2.5. Conditions 30.6.1.34 to 30.6.1.45 – Parking, Loading and Manoeuvring

- 8.2.5.1. Conditions 30.6.1.34 to 36 set out the requirements for parking at the sites. At this stage the proposal is for a rezoning, but there are no reasons why the provisions of these Conditions could not be met in future.
- 8.2.5.2. Condition 30.6.1.37 requires that vehicles do not reverse onto Tram Road or Two Chain Road and the layout shows that this will not be necessary due to the continuous route provided through the site.
- 8.2.5.3. Conditions 30.6.1.38 to 44 relate to activities or locations which are not relevant to this site.

8.2.6. Conditions 30.6.1.46 – Traffic Sight Lines at Railway Level Crossings

- 8.2.6.1. The sites are not near to any railway lines and this rule therefore is not applicable.

8.3. Operative District Plan Chapter 30, Utilities and Traffic Management: Condition 30.8

- 8.3.1. Under Condition 30.8.2, where a site includes 20 or more new car parking spaces, a development is a discretionary activity (restricted). At this stage the proposal is for a rezoning and therefore this Condition is not applicable.



8.4. Summary of Operative District Plan Assessment

8.4.1. Based on the review above, the proposal may have the following non-compliances with the operative District Plan:

- Condition 30.6.1.1: Access to Roads
 - Tram Road and Two Chain Road are presently constructed to a slightly lesser standard than the District Plan requires, but they carry current traffic flows without any difficulty, and the extent of traffic increase associated with development of the sites is small. The need for any widening or other improvements can be considered further when subdivision consents are sought.
- Condition 30.6.1.32: Road Intersection Spacing
 - There is a requirement for a separation of 800m between intersections but this is not achieved. However the separation for the proposed intersections achieves the appropriate separation distance under the Austroads Guide to Road Design and Standard NZS4404:2010.

8.4.2. One potential further non-compliance would be in respect of the minimum distance between vehicle crossings and intersections (Conditions 30.6.1.26 and 30.6.1.27) although the District Plan limits this to “new” vehicle crossings whereas in this case new intersections are proposed and the vehicle crossings are existing.

8.4.3. There are two locations where there is a reduced separation distance and an assessment of the effects of the reduced separation distances between the proposed new intersections and the existing vehicle crossings has been undertaken. In one location, the vehicle crossings are on the opposite side of the road to the minor intersection approach meaning that there would be no confusion about where a vehicle is turning. In both locations, the low traffic volumes and excellent intervisibility means that a reduced separation distance can be supported.

8.4.4. Overall, it is not considered that these non-compliances will give rise to any adverse roading efficiency or road safety effects.

8.5. Proposed District Plan: Transport Rules

8.5.1. TRAN-R3: Formation of a New Road

8.5.1.1. Under this Rule, new roads are to meet Standard TRAN-S1 (design standards for new roads). There are no reasons why the roads within the sites could not comply with the expected cross-sections.

8.5.2. TRAN-R4: Formation of a New Road Intersection

8.5.2.1. Under this Rule, new roads are to meet Standard TRAN-S2 (minimum road intersection separation distances). For roads with a 100km/h speed limit, a separation distance of 800m is required, which is the same as the operative District Plan.

8.5.2.2. As discussed in detail above, the locations of the proposed new intersections shown on the ODPs do not meet this separation distance. Assessment Matters (MD-1 and MD20) are not specific for non-compliance with this Rule, as they mention “safe and efficient access and use” but also “Any other relevant assessment matters”. However for the reasons set out above, it is considered that the proposed intersections are located with adequate separation.



8.5.3. TRAN-R5: Formation of a New Vehicle Crossing

8.5.3.1. Under this Rule, new vehicle crossings are to meet Standard TRAN-S3 (design standards for new vehicle crossings).

8.5.3.2. No vehicle crossings are proposed at this stage, but once the sites are subdivided, there is no reason why any lot would have more than one vehicle crossing.

8.5.3.3. Under Table TRAN-17, there is an expected minimum separation distance between any new vehicle crossing and existing intersections.

8.5.3.4. In respect of new vehicle crossings, the ODPs show that all lots could be accessed from the proposed internal roads, and that there is no requirement for any direct vehicle crossings onto either Tram Road or Two Chain Road. Any vehicle crossing onto the new internal roads would meet the expected separation (or any non-compliance can be assessed at the time of subdivision).

8.5.3.5. Considering the matter of existing vehicle crossings:

- There is a vehicle crossing located 130m west of the proposed Tram Road / western site access road intersection. A 200m separation is required.
- There is a vehicle crossing located 110m north of the proposed Two Chain Road / western site access road intersection. A 60m separation is required.
- There is a vehicle crossing to 924 Two Chain Road located 65m south of the proposed Two Chain Road / western site access road intersection. A 60m separation is required.
- There are two vehicle crossings to 928 Two Chain Road located 30m and 5m south of the proposed Two Chain Road / western site access road intersection. A 60m separation is required.
- There is a vehicle crossing to a disused church located 60m west of the proposed Tram Road / eastern site access road intersection. A 200m separation is required.

8.5.3.6. In passing, the separation distances for vehicle crossings on Two Chain Road remain the same as under the operative District Plan. However the separation distance for the accesses on Tram Road are more than twice as large under the proposed District Plan.

8.5.3.7. In respect of the latter, Assessment Matters are set out in TRAN-MD4. The size of the lots and the low traffic volumes they carry means that in practice, the relevant matters are “*the extent to which any potential confusion between vehicles turning at the crossing or the intersection may adversely affect safety*” and “*the extent of effects on the safety of users of all transport modes*”.

8.5.3.8. In the case of the driveways to 928 Two Chain Road, the vehicle crossings are located on the opposite side of the road to the site meaning that there would be no confusion about where a vehicle is turning. The sight distances available to road users are excellent, and additionally, drivers exiting the existing vehicle crossing will be travelling in a forwards gear (rather than having to reverse) which further supports good intervisibility between road users. It is also noted that the LLRZ sought for the western site means that even in the peak hours, traffic flows exiting the proposed new road will be very low.

8.5.3.9. It is understood that the church was closed following the 2010/2011 Canterbury Earthquake Sequence, and is unlikely to reopen without significant works being undertaken. However if it was to reopen then the greatest traffic generation would be on a Sunday, when the eastern



site generated little traffic. It would also be possible to devise a subdivision plan whereby the church gained access through the eastern site. Accordingly, it is considered that the reduced separation between this access and the proposed eastern site access intersection can be supported.

8.5.3.10. Accordingly, the reduced separation distances can be supported.

8.5.3.11. The appropriate vehicle crossing widths can be provided.

8.5.3.12. The matter of sight distances is discussed in detail above, but in short, the required distances can be achieved.

8.5.4. TRAN-R6: Formation of a New Vehicle Accessway

8.5.4.1. Under this Rule, new vehicle crossings are to meet Standard TRAN-S4 (design standards for new vehicle accessways). The proposal is for a rezoning, but there are no reasons why compliance with these provisions could not be achieved.

8.5.5. TRAN-R7: Formation of a New Vehicle Accessway on a sealed road where the posted speed limit is 60km/hr or above

8.5.5.1. Under this Rule, new vehicle crossings are to meet Standard TRAN-S5 (design standard for a new vehicle crossing on a sealed road where the posted speed limit is 60km/hr or above). The legal width of Tram Road and Two Chain Road means that there are no reasons why a complying vehicle crossing layout could not be provided if a new vehicle crossing is proposed in due course. Pedestrian splays can be provided

8.5.6. TRAN-R8: Formation of a new vehicle crossing on a site with frontage to more than one road

8.5.6.1. The proposal is for a rezoning, and so at this stage there are no vehicle crossings proposed. However there are no reasons why compliance with this Rule could not be achieved in future.

8.5.7. TRAN-R9: Provision of accessible car parking spaces

8.5.7.1. The proposal is for a rezoning, and at this stage this Rule is therefore not applicable.

8.5.8. TRAN-S7: Minimum car parking spaces and associated manoeuvring area dimensions

8.5.8.1. The proposal is for a rezoning, and at this stage this Rule is therefore not applicable. However there are no reasons why compliance with the Rule could not be achieved in future.

8.5.9. TRAN-R10: Provision of car parking spaces and associated manoeuvring areas

8.5.9.1. The proposal is for a rezoning, and at this stage this Rule is therefore not applicable. However there are no reasons why compliance with the Rule could not be achieved in future.

8.5.10. TRAN-R11: Provision of loading spaces and associated manoeuvring areas

8.5.10.1. The proposal is for a rezoning, and at this stage this Rule is therefore not applicable. However there are no reasons why compliance with the Rule could not be achieved in future.



8.5.11. *TRAN-R12: Formation of parking areas, loading areas, manoeuvring areas, vehicle crossings or accessways*

8.5.11.1. The proposal is for a rezoning, and at this stage this Rule is therefore not applicable. However there are no reasons why compliance with the Rule could not be achieved in future.

8.5.12. *TRAN-R13: Landscaping of a new car parking area*

8.5.12.1. The proposal is for a residential zoning and therefore this Rule is not applicable.

8.5.13. *TRAN-R14: Provision of New Footpaths*

8.5.13.1. The proposal is for a residential zoning, and there are no reasons why the provision of footpaths could not be achieved as required under this Rule.

8.5.14. *TRAN-R15: Provision of New Cycle Parking*

8.5.14.1. Cycle parking is not required at residential activity and therefore this Rule is not applicable.

8.5.15. *TRAN-R16: Provision of Cycling End-of-Trip Facilities for Staff*

8.5.15.1. Cycle parking is not required at residential activity and therefore this Rule is not applicable.

8.5.16. *TRAN-R17: Installation of new charging facilities for electric vehicles*

8.5.16.1. The proposal is for a zoning of land and therefore this Rule is not applicable.

8.5.17. *TRAN-R18: Provision of a parking area or loading area and associated manoeuvring area on a site with frontage to a Principal Shopping Street in Oxford*

8.5.17.1. The sites do not have frontage onto the Principal Shopping Street of Oxford.

8.5.18. *TRAN-R19: Provision of a parking area or loading area and associated manoeuvring area on a site with frontage to a Principal Shopping Street in Rangiora or Kaiapoi*

8.5.18.1. The sites do not have frontage onto a Principal Shopping Street.

8.5.19. *TRAN-R20: High Traffic Generators*

8.5.19.1. Under this Rule, any activity that generates more than 200 vehicle movements per day is a High Traffic Generator, for which a Transportation Assessment is required. This report responds to this issue.

8.5.20. *TRAN-R21: Activities Adjacent to a Road/Rail Level Crossing*

8.5.20.1. The sites are not proximate to a level crossing.

8.5.21. *TRAN-R22: Installation of a new stock underpass beneath a road corridor or rail corridor*

8.5.21.1. The proposal does not involve a stock underpass.

8.5.22. *TRAN-R23: Rangiora Airfield*

8.5.22.1. The sites are not proximate to the airfield.



8.6. Summary of Proposed District Plan Assessment

8.6.1. Based on the review above, the proposal (and ODPs) has the following non-compliance with the proposed District Plan:

- TRAN-R4: Formation of a New Road Intersection
 - There is a requirement for a separation of 800m between intersections but this is not achieved. However the separation for the proposed intersections achieves the appropriate separation distance under the Austroads Guide to Road Design and Standard NZS4404:2010.

8.6.2. One potential further non-compliance would be in respect of the minimum distance between vehicle crossings and intersections (TRAN-R5) although the District Plan limits this to “new” vehicle crossings whereas in this case new intersections are proposed and the vehicle crossings are existing.

8.6.3. There are two locations where there is a reduced separation distance and an assessment of the effects of the reduced separation distances between the proposed new intersections and the existing vehicle crossings has been undertaken. In one location, the vehicle crossings are on the opposite side of the road to the minor intersection approach meaning that there would be no confusion about where a vehicle is turning. In both locations, the low traffic volumes and excellent intervisibility means that a reduced separation distance can be supported.

8.6.4. Overall, it is not considered that these non-compliances will give rise to any adverse roading efficiency or road safety effects.



9. Conclusions

- 9.1. This report has identified, evaluated and assessed the various transport and access elements of a proposed rezoning of land in two parcels to a Large Lot Residential Zone, able to accommodate in the order of 64 residences in total.
- 9.2. Overall it is considered that the traffic generated by the development of the sites can be accommodated on the adjacent roading network without capacity or efficiency issues arising. In practice, the traffic flows on the adjacent roading network are low at present, and development of the sites generates comparatively little traffic, meaning that even the busiest intersection (Tram Road / Two Chain Road) will operate with low queues and delays, and a good level of service.
- 9.3. The crash history in the vicinity of the sites does not indicate that there would be any adverse safety effects from the proposal.
- 9.4. The nature of Large Lot Residential Zones means that they are typically located outside urban areas. In this case though, the sites are within a viable walking / cycling distance of the amenities within Swannanoa of the school, preschool and community hall
- 9.5. The ODP shows there will be a high degree of compliance with the transportation requirements of the operative and proposed District Plans. There are likely to be non-compliances with the following:
 - Road Intersection Spacing: There is a requirement for a separation of 800m between intersections but this is not achieved. However the separation proposed achieves the appropriate separation distance under the Austroads Guide to Road Design and Standard NZS4404:2010.
 - Separation of Vehicle Crossings and Intersections: There are two locations where there is a reduced separation distance between existing vehicle crossings and proposed new intersection, and an assessment of the effects of this has been undertaken. In one location, the vehicle crossings are on the opposite side of the road to the minor intersection approach meaning that there would be no confusion about where a vehicle is turning. In both locations, there are low traffic volumes and excellent intervisibility, meaning that a reduced separation distance can be supported.
- 9.6. The internal roads within the sites are able to meet the Council's standards.
- 9.7. Overall, and subject to the preceding comments, the rezoning can be supported from a traffic and transportation perspective and it is considered that there are no traffic and transportation reasons why the zoning is inappropriate in this location.

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December 2023



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