

Memorandum

TO: **Christine McMillan**

FROM: **Glenn O'Connor**

DATE: 19 February 2021

SUBJECT: **Te Puawai ITA Addendum No 1 – Response to ICC RFI 1**

Background

ICC have asked that the implications of the existing speed limits remaining on Rockdale Road and Tramway Road be considered as part of the ITA for the Te Puawai development plan change application. They have also requested advice on what a safe speed would be on Rockdale Road given available sight distances at the proposed intersections to these Roads.

In addition to the above they have requested that comment be made on the proposed staging of the development and the timing of the Roding infrastructure to support the development. These issues are addressed in the following Te Puawai ITA addendum report.

Rockdale Road

The following diagram is a reproduction of Fig 18 from the ITA which identifies intersection naming and turning volumes which will be referred to in this addendum.



Intersection design for existing posted speed

The posted speed on Rockdale Road increases from 70km/h to 100km/h 90m south of the intersection with Centre street. This is approximately the same location as intersection 1 shown on Fig 18. The 100km/h speed restriction applies south of this location.

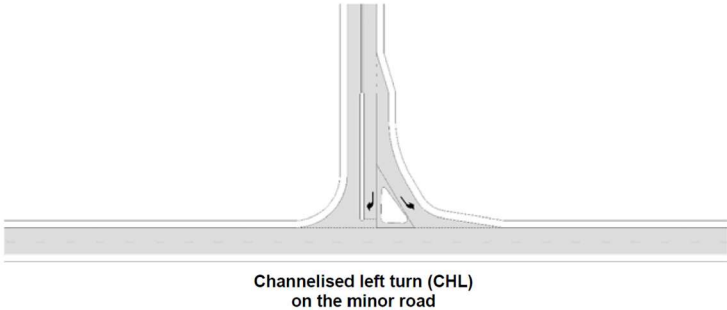
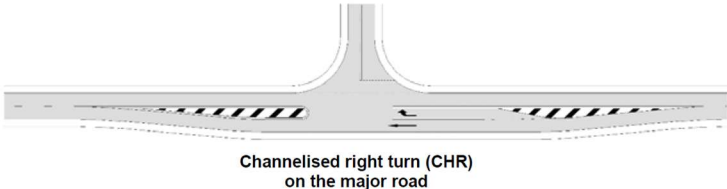
Intersection 1

Based on a peak hour traffic volume of 654 veh/h (15% of Rockdale Road AADT) and the estimated left turn and right turn peak hour traffic volumes as shown on Figure 18. AustRoads GTRD Part 4 Fig A10 recommends that a channelised

intersection is required. Either a giveaway controlled intersection with channelisation or a roundabout may be appropriate in this location.

Examples of rural (high speed intersection channelisation) are shown given in Figure A8 of AustRoads and reproduced below

Figure A 8: Rural channelised (CH) intersection turn treatments



Intersection 2

The proposed location for intersection 2 on Rockdale Road adjoins opposite the existing Mason Road intersection. Using a similar assessment as undertaken for intersection 1, AustRoads GTRD Part 4 Fig A10 recommends that a channelised intersection would be required. To avoid the creation of a new crossroads intersection with Mason Road, it is recommended that Intersection 2 be constructed as a roundabout. Crossroad type intersections in high speed environments have a high crash risk and should not be implemented without some form of additional treatment such as staggered approaches or the construction of a roundabout.

Due to the traffic volumes involved, channelisation of intersections 1 and 2 is also recommended by Austroads for posted speeds below 100km/h.

Existing Rockdale Road / Tramway Road intersection

The existing Rockdale Road / Tramway Road intersection is located in the 100km/h posted speed zone and is currently a channelised intersection with a right turn bay and associated widening on Rockdale Road for traffic turning right into Tramway Road. As discussed in the ITA, due to imbalanced flow a roundabout is not recommended in this location however vehicle stacking lengths within the right turn bay and the requirement for left turn lanes should be investigated during the detailed design phase of the development.

Recommended Safe Speed for Rockdale Road

For a 100km/hr posted speed limit AustRoads recommends that 250m of Safe Intersection Site Distance (SISD) is required at intersections. A sight inspection was undertaken on the 19/2/21 to determine available sight distance at proposed intersection locations 1, 2 and the intersection of Rockdale Road and Tramway Road. From the site inspection it was determined that for intersection 2 at least 250m of SISD was available in each direction and 250m of SISD was also available from the Tramway Road intersection with Rockdale Road. From the intersection 1 location, 250m of SISD is available looking south, and good sight distance was also available looking north to the traffic exiting the new roundabout with Centre Street (some 90m to the north).

Whilst the provision of adequate sight distance for a 100km/h posted speed should not be an issue at the proposed intersection locations above, the relatively close spacing of the intersections is not conducive to a 100km/h speed environment. Intersection 2 is located approximately 400m north of the Rockdale Road / Tramway Road intersection and intersection 1 is located a further 550m north of intersection 2. Based on AustRoads GTRD Part 4 table E7, the recommended minimum spacing between intersections on a road with a posted speed of 100km/h is 600m with the absolute minimum criteria being a spacing equal to the 100km/h SISD value of 250m. Whilst the spacing of intersections 1 and 2 are generally in compliance with these criteria, the context of the road would not suit a 100km/hr posted speed limit.

Should council not wish to adopt the 100/50km/h threshold treatment south of the Rockdale Road / Tramway Road intersection as recommended in the ITA, then as an alternative we recommend that a 100/70km/h speed restriction be installed on the northbound approach to the proposed roundabout at Mason Road. The northbound approach to the roundabout is an ideal transition zone between the 100km/h rural zone and the 70km/h semi urban zone. Side friction through the use of planting, a median island and kerb and channel in conjunction with gated speed limit signs could be used in this location as the threshold between the rural and urban areas.

If Council chooses to adopt a posted speed of 70km/h or more for Rockdale Road, then intersections 1 and 2 will need to be designed appropriately for the higher speed environment in accordance with AustRoads standards and MOTSAM (Manual of Traffic Signs and Markings). This will include the inclusion of longer lane tapers and traffic islands than would be required in a lower speed urban zone.

Tramway Road

Intersection design for existing 70km/h Posted speed

The posted speed on Tramway Road currently increases from 50km/h to 70km/h just prior to the intersection with McMillan Street when heading east.

Intersection 3

Intersection 3 adjoins Tramway Road within the 70km/h posted speed limit section. Based on a peak hour traffic volume of 232 veh/h (15% of Tramway Road AADT) and the estimated left turn and right turn peak hour traffic volumes as shown on Figure 18, AustRoads GTRD Part 4 Fig A10 recommends that a channelised intersection would be required. Therefore, either a giveway controlled intersection with channelisation or a roundabout may be appropriate in this location.

Recommended Safe Speed for Tramway Road

For a 70km/h posted speed limit AustRoads recommends that 150m of Safe Intersection Site Distance (SISD) is required at intersections. A sight inspection was undertaken on the 19/2/21 to determine available sight distance at proposed intersection location 3. From this site inspection it was determined that at least 150m of sight distance was available in each direction at the proposed location of intersection 3.

Should council not wish to adopt the 100/50km/h threshold treatment south of the Rockdale Road Tramway Road intersection as recommended in the ITA, then as an alternative the 70km/h posted speed limit on Tramway Road could remain in place based on the following conditions

1. 150m + Available sight distance meets SISD criteria for 70km/h
2. There are minimal property accessways or side friction which would be expected with a lower posted speed
3. It is not proposed to construct any new accessways from the Te Puawai development onto Tramway Road

If the 70km/h posted speed remains in place for Tramway Road then Intersection 3 will need to be designed appropriately for the higher speed environment in accordance with AustRoads standards and MOTSAM. This will include the inclusion of longer lane tapers and traffic islands than would be required in a lower speed urban zone.

Staging

Whilst staging of the development is still under consideration, the high level roading infrastructure staging concept consists of the following

Stage 1 – Construction of the main East / West road through the development connecting Regent Street through to Rockdale Road at the Mason Street intersection (Intersection 2). The proposed roundabout at Mason Street will form the main entrance to the development.

Stage 2 – Development will move south and the main North / South road through the development will be constructed south of the main East / West road through to Tramway Road connecting at the location of Intersection 3.

Stage 3 – Development will move North of the East / West road with the main North / South road being constructed through to Rockdale Road connecting at the location of Intersection 1.

Summary

Based on the estimated future traffic volumes generated by the Te Puawai development and available sight distance on both Rockdale Road and Tramway Road we advise that intersections 1, 2 and 3 can all be designed to operate safely in a 70km/h speed environment.