BEFORE THE HEARINGS COMMISSIONERS
APPOINTED BY THE CENTRAL OTAGO DISTRICT COUNCIL

UNDER	the Resource Management Act 1991
IN THE MATTER	of a Plan Change 19
BY	**ROWAN AND JOHN KLEVSTUL (#163)**
	Submitter

STATEMENT OF EVIDENCE OF ANDY CARR

TRAFFIC ENGINEERING

16 MAY 2023

Statement of evidence of Andy Carr

Introduction

[1] My name is Andrew David Carr.

[2] I am a Chartered Professional Engineer and an International Professional Engineer (New Zealand section of the register). I hold a Masters degree in Transport Engineering and Operations and also a Masters degree in Business Administration.

[3] I served on the national committee of the Resource Management Law Association between 2013-14 and 2015-17, and I am a past Chair of the Canterbury branch of the organisation. I am also a Chartered Member of Engineering New Zealand (formerly the Institution of Professional Engineers New Zealand), and an Associate Member of the New Zealand Planning Institute.

[4] I have more than 33 years' experience in traffic engineering, over which time I have been responsible for investigating and evaluating the traffic and transportation impacts of a wide range of land use developments, both in New Zealand and the United Kingdom.

[5] I am presently a director of Carriageway Consulting Ltd, a specialist traffic engineering and transport planning consultancy which I founded in early 2014. My role primarily involves undertaking and reviewing traffic analyses for both resource consent applications and proposed plan changes for a variety of different development types, for both local authorities and private organisations. I have previously been a Hearings Commissioner and acted in that role for Greater Wellington Regional Council, Ashburton District Council, Waimakariri District Council and Christchurch City Council.

[6] Prior to forming Carriageway Consulting Ltd I was employed by traffic engineering consultancies where I had senior roles in developing the business, undertaking technical work and supervising project teams primarily within the South Island.

Code of Conduct for Expert Witnesses

[7] I confirm I have read the Code of Conduct for expert witnesses contained in the Environment Court of New Zealand Practice Note 2023 and that I have complied with it when preparing my evidence. Other than when I state I am relying on the advice of another person, this evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

Scope of Evidence

[8] I have been instructed by the submitter, Rowan and John Klevstul to give expert traffic advice in respect of their submission on Plan Change 19 by the Central Otago District Council with regard to their site (**the site**) at Schoolhouse Road, Bannockburn.

[9] Prior to being instructed to prepare this Statement of Evidence, I was not involved in the submission. Accordingly, I firstly evaluated the transportation-related effects of the development that would be facilitated by the submission (if accepted). The first part of my evidence summarises my findings. I then briefly discuss the s 42A report of Ms White, consultant planner to the council.

[10] I visited the site during February and April 2023, and am generally familiar with the Bannockburn area through visits made for personal business.

Executive Summary

[11] Since I was not previously involved in the submission, I have assessed the transportation related effects associated with the development of the site (if rezoned) and set these out in a Transportation Assessment.

[12] My analysis was based on the rezoned site being developed for 35 residences, with 50% of these having an ancillary residential unit (that is, my assessment was based on 53 residences). I found that the traffic generated from these could be easily accommodated on the adjacent roading network without adverse effects on capacity or road safety.

[13] The crash history in the vicinity of the site does not indicate that there would be any adverse safety effects from the proposal.

[14] A site access can be located onto Schoolhouse Road that achieves suitable sight distances for turning drivers, as well as an appropriate separation from Bannockburn Road. The low traffic volumes at the site access mean that no auxiliary turning lanes will be required, and it can be formed as a simple priority intersection.

[15] Using the Council's Code of Practice for appropriate widths for roading, Schoolhouse Road will require upgrading between the site access and Bannockburn Road. Bannockburn Road itself has a very minor deficiency in seal width at present, but even allowing for development of the site, in practice the current carriageway width will function adequately.

[16] There is an existing sightline deficiency for drivers exiting Schoolhouse Road and looking towards the north. Subdivision of the site creates an opportunity to rectify this.

[17] All of these roading upgrades and new/improved intersections can easily be accommodated within the legal road reserve or within the site, meaning that they do not represent an impediment to the requested rezoning. They can be addressed in detail at the time subdivision consents are sought.

[18] Although no layout is currently proposed for the site, it is highly likely in my view that it would be possible to devise a layout that complies with all relevant transportation-related provisions. I consider that any internal roads within the site can be constructed to fully meet the Code of Practice.

[19] I have reviewed the s 42A report of Ms White, but note that she does not address transportation matters at the submitter's site.

[20] Overall, I am able to support the rezoning request from a traffic and transportation perspective.

Summary of Transportation Assessment

[21] Since I was not previously involved in the submission, I have assessed the transportation related effects associated with the development of the site (if rezoned) and set these out in a Transportation Assessment. The Transportation Assessment is attached as Annexure A to this Statement of Evidence.

[22] In summary, my analysis has relied on information provided to me which indicates that up to 35 residential properties could be developed if the site was rezoned. I understand that ancillary residential units could be developed at each lot, but in practice, not all lots will have such a unit and not all units will be occupied at any one time. I therefore made an allowance for 50% of lots to have such an occupied unit and tested the site allowing for 53 residences.

[23] My analysis found that the vehicles generated by these residences could easily be accommodated on the adjacent roading network without adverse effects on capacity or road safety. Overall, the traffic flows on Schoolhouse Road and Bannockburn Road are very low at present, and development of the site generates comparatively little traffic, meaning that the roads continue to provide Level of Service A (the best available) and the Schoolhouse Road / Site Access and Bannockburn Road / Schoolhouse Road intersections operate under 'free flow' conditions.

[24] The crash history in the vicinity of the site does not indicate that there would be any adverse safety effects from the proposal.

[25] A site access can be located to achieve suitable sight distances for turning drivers, and an appropriate separation from Bannockburn Road. The low traffic volumes at the site access mean that no auxiliary turning lanes will be required, and it can be formed as a simple priority intersection.

[26] The Council has a Code of Practice which sets out appropriate widths for roading. Using this I identified that Schoolhouse Road will require upgrading between the site access and Bannockburn Road. Bannockburn Road itself has a very minor deficiency in seal width at

present, but development of the site generates only a modest amount of traffic, and Bannockburn Road is already lightly-trafficked, meaning that in practice the current carriageway width will function adequately.

[27] I consider that the opportunity should be taken to rectify an existing sightline deficiency for drivers exiting Schoolhouse Road and looking towards the north.

[28] The detail of these roading matters is more appropriately addressed at the time subdivision consents are sought. However all roading upgrades and new/improved intersections can easily be accommodated within the legal road reserve or within the site, meaning that they do not represent an impediment to the requested rezoning.

[29] Although no layout is currently proposed for the site, I reviewed the likelihood that transportation-related non-compliances with the District Plan would result from subdivision of the site. In my view, it would be possible to devise a site layout that was able to comply with all relevant transportation-related provisions.

[30] In the Transportation Assessment I therefore concluded that the rezoning request could be supported from a traffic and transportation perspective. I remain of this opinion.

Officers' Reports

[31] I have been reviewed the s 42A report of Ms White but I note that when considering the site she does not mention transportation matters. I appreciate that it is possible that she has not turned her mind to this given her recommendation that the submission is not accepted, but this means that I am therefore unable to identify the council's views on traffic and transport issues associated with the site.

Conclusions

[32] On the basis of my assessment of traffic and transportation matters, I consider that there are no reasons why the site could not be rezoned as requested.

Andrew David Carr

16 May 2023

Annexure A

Rowan and John Klevstul

Proposed Rezoning Schoolhouse Road Bannockburn

Transportation Assessment

CARRIAGEWAY
CONSULTING
traffic engineering | transport planning

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1. Introduction

1.1. Rowan and John Klevstul have made a submission to the Central Otago District Council's Plan Change 19 (**PC19**) regarding their site at 2 Schoolhouse Road, Bannockburn (**the site**). The site is not presently within the area identified through PC19, but the submission seeks to include the site and for it to be rezoned as Large Lot Residential Zone (**LLRZ**).

1.2. This Transportation Assessment sets out a detailed analysis of the transportation issues associated with the requested rezoning request including changes in travel patterns that are likely to arise from subsequent development of the rezoned site. Where potential adverse effects are identified, ways in which these can be addressed are set out.

1.3. 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. The site is located around 700m south of the centre of the existing Bannockburn township, and has frontage onto Bannockburn Road to the east and Schoolhouse Road to the south. It is currently zoned as Rural Resource Area in the Central Otago District Plan ('*District Plan*') and is currently used for rural activities.

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

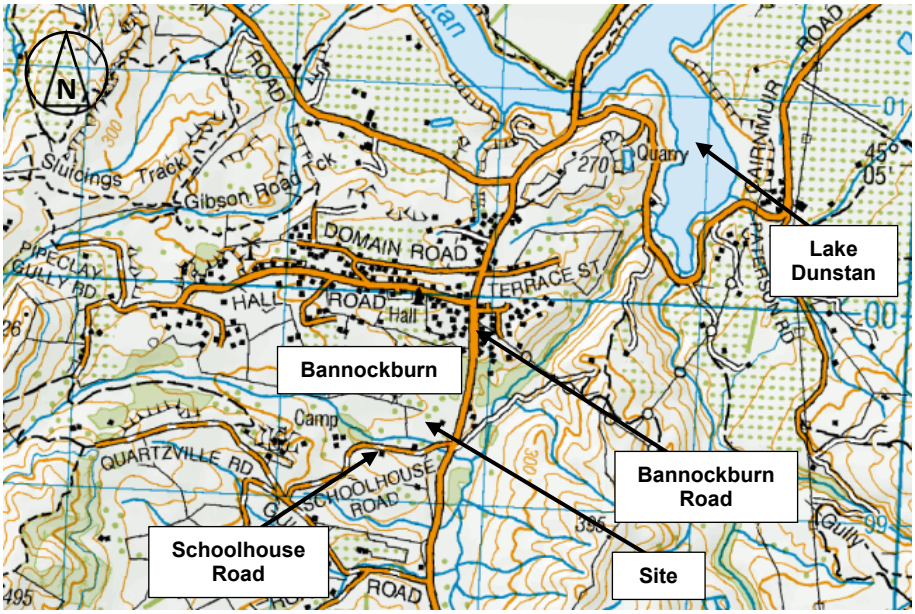

Figure 1: General Location of Site

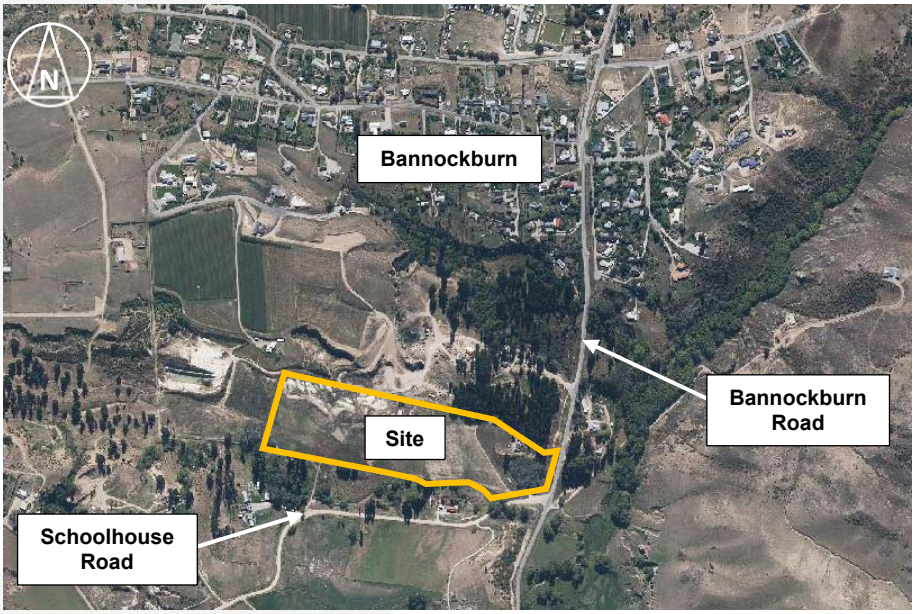

Figure 2: Aerial Photograph of Site and Environs

2.2. Roading Classification

2.2.1. The District Plan classifies “Cromwell – Bannockburn Road” as a Rural Arterial Road, but no such formal naming has been able to be found on any plans. The primary role of this type of road is to carry through traffic, but given that the site lies on the southern side of Bannockburn and does not serve any major settlements further south, it is unlikely that it would function as an Arterial Road. Accordingly, it has been assessed as a Local Road within this report.

2.2.2. Schoolhouse Road is a Local Road, meaning it provides for local journeys and property access.

3. Current Transportation Networks

3.1. Roading Network

3.1.1. In the vicinity of the site, Schoolhouse Road has a legal width of 20m (although fencing appears to have encroached on this) and has an unsealed carriageway surface in the order of 5m width. The alignment is curving with a left-right curve of approximately 60m radius, and the road ascending from east to west. The road is subject to a 100km/h speed limit, but the alignment and formed width means that this is highly unlikely to be achieved. On-site tests suggests that an operating speed at the site frontage of 40km/h is most likely, noting the need to slow to pass through an intersection and the curves.

Photograph 1: Schoolhouse Road Looking East (Site on Left)

3.1.2. Towards the northwest of the site, the carriageway is sealed in place but remains with an approximate 5m width. Around 400m west of the site, Schoolhouse Road serves Bannockburn School Camp, a cluster of buildings, facilities and paddocks that caters for school groups staying in the area. Otherwise, the road serves rural residential properties.

3.1.3. At the southeastern corner of the site, Schoolhouse Road meets Bannockburn Road at a priority intersection. The intersection does not have any associated signage or carriageway markings for drivers (other than signage on Schoolhouse Road indicating that the speed limit of Bannockburn Road is 80km/h) and is not well-formed having an unusually large seal width at the end of Schoolhouse Road.

Photograph 2: Bannockburn Road / Schoolhouse Road, Looking Northeast

3.1.4. Sightlines towards the south for drivers exiting Schoolhouse Road are in excess of 210m, but towards the north are limited by an earthwork which serves to limit sight distances to around 170m.

Photographs 3 and 4: Sight Distances along Bannockburn Road to Left and Right

3.1.5. Bannockburn Road itself is formed with a 6.8m sealed carriageway and 0.3m metalled shoulders, and with a centreline provided but no edgelines. The road has a 20m legal width and is subject to an 80km/h speed limit.

Photograph 5: Bannockburn Road Looking North

3.1.6. South of Schoolhouse Road, Bannockburn Road serves rural residential properties.

3.1.7. North of Schoolhouse Road, Bannockburn Road has a very gently curving horizontal alignment, and rises with a gradient to a crest curve approximately 700m to the north of Schoolhouse Road. The speed limit reduces to 50km/h at 440m north of Schoolhouse Road, as the road enters the more urbanised parts of Bannockburn.

3.1.8. Around 1km from Bannockburn, Bannockburn Road crosses Lake Dunstan by way of a bridge, and 3.4km to the north of the bridge, enters Cromwell. At the outskirts of Cromwell, the road is renamed as Barry Avenue, which extends through Cromwell town centre and terminates at State Highway 8B.

3.2. Non-Car Infrastructure

3.2.1. There is no specific provision for pedestrians or cyclists on either Schoolhouse Road or Bannockburn Road. The closest footpath lies 600m to the north, on the western side of Bannockburn Road.

3.2.2. There is no scheduled public transport service in the area. However school bus route 8008 operates along the full length of Schoolhouse Road and along Bannockburn Road, and therefore passes the site.

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, Schoolhouse Road carries 100 vehicles per day (two-way), with Bannockburn Road adjacent to the site carrying 500 vehicles per day (two-way). A road typically carries around 10% of its daily traffic flows in the peak hours, which suggests that the peak hour traffic flow on Schoolhouse Road is around 100 vehicles per hour (two-way) with Bannockburn Road carrying 50 vehicles (two-way) in the peak hours.

4.1.2. 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)

4.1.3. It can be seen that the volumes passing through the Bannockburn Road / Schoolhouse Road intersection fall well below these thresholds, and accordingly, no analysis has been carried out. In essence, at present the intersection will operate under 'free-flow' conditions, where the movement of vehicles is largely unhindered by the presence of other vehicles.

4.1.4. The Austroads Guide to Traffic Management Part 3 also sets out a process by which the level of service of a road can be calculated. This shows that under the current traffic flows, both Schoolhouse Road and Bannockburn Road provide Level of Service A, the best available. This is unsurprising given the low traffic volumes.

4.2. Non-Car Modes of Travel

4.2.1. Given that the area is predominantly rural, it can reasonably be expected that it will be relatively lightly used by pedestrians and cyclists. It is considered that the absence of infrastructure for these road users is therefore not unreasonable. In practice, the low traffic volumes means that cyclists are able to share the road with motorised vehicles, and grassed verges provided for some degree of pedestrian movement.

4.2.2. As noted previously, there is a school bus route that operates along the full length of Schoolhouse Road and along Bannockburn Road, and past the site.

4.3. Road Safety

4.3.1. The NZTA Crash Analysis System has been used to establish the location and nature of the recorded traffic crashes in the vicinity of the site. All reported crashes between 2013 and 2022

were identified[1], plus the partial record for 2023, for the whole length of Schoolhouse Road and Bannockburn Road for 500m to the north and south of the site.

4.3.2. This showed that there have been no crashes recorded.

4.3.3. For completeness, the search was extended by a further 10 years, and this showed that only one crash had been recorded, which occurred on Schoolhouse Road where a driver swerved to avoid straying livestock and struck a fence.

4.3.4. Accordingly, the historic pattern of crashes does not indicate any particular safety-related deficiencies on this part of the roading network.

[1] A ten-year period has been used due to the traffic volumes on both frontage roads being less than 1,000 vehicles per day.

5. Proposal

5.1. It is understood that as notified, PC19 proposes to zone the site as Rural Resource Area, but the submitters seek that it is zoned as Large Lot Residential Zone.

5.2. Since the proposal is for a rezoning, there is no confirmed scheme plan for development of the area. However, given the location of the site, it can be concluded that access onto the roading network will be gained at the southeastern corner of the site, as there are no roading links available to other parts of the roading network.

5.3. It is also understood that assessments show that 35 residences could establish on the site under this zoning, and that each could have an auxiliary residential unit.

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 during the morning and evening peak hours will be associated with employment locations in Cromwell, Alexandra or potentially further afield. There is no school in Bannockburn, with the closest education facilities being in Cromwell (and the associated school bus runs past the site as discussed above).

6.1.3. As Cromwell is only around 6km away, 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.

6.1.4. Under the requested zoning, 35 residential units could be achieved for the site, but each could have an associated ancillary unit. In practice, it is unlikely that each and every residence would have such a unit, and for those that do have such a unit, many will not be occupied on a full-time basis. For similar scenarios, an allowance has been made for a 50% increase in the notional site yield for the purposes of assessing traffic generation, therefore for the purposes of this report, an assumed yield of 53 residences has been adopted.

6.1.5. In the morning peak hour, 80% of these vehicles are likely to be exiting the site, with 60% of the generated vehicle movements entering the site 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 Bannockburn, Cromwell and other destinations towards the north. For the purposes of this analysis, an allowance has been made for 95% of vehicles to travel to/from the north.

6.2.2. The traffic generation of the site when fully developed under the requested zoning is therefore as follows:

Scenario	Traffic Volumes							
	Morning Peak Hour				Evening Peak Hour			
	In from south	In from north	Out to South	Out to North	In from south	In from north	Out to South	Out to North
Submitter Requested Zoning	1	10	2	40	2	30	1	20

Table 2: Traffic Generation of Site Under Requested Zoning

7. Effects on the Transportation Networks

7.1. Roading Capacity

7.1.1. Based on the traffic flows above, the increases due to development of the site will be:

- Daily Traffic Volumes:
  - Schoolhouse Road (east) prior to rezoning: 100 vehicles (two-way)
  - Schoolhouse Road (east) after rezoning: 634 vehicles (two-way)
  - Bannockburn Road (north of site) prior to rezoning: 500 vehicles (two-way)
  - Bannockburn Road (north of site) after rezoning: 903 vehicles (two-way)
  - Bannockburn Road (south of site) prior to rezoning: 500 vehicles (two-way)
  - Bannockburn Road (south of site) after rezoning: 521 vehicles (two-way)
- Peak Hour Traffic Volumes:
  - Schoolhouse Road (east) prior to rezoning: 10 vehicles (two-way)
  - Schoolhouse Road (east) after rezoning: 63 vehicles (two-way)
  - Bannockburn Road (north of site) prior to rezoning: 50 vehicles (two-way)
  - Bannockburn Road (north of site) after rezoning: 92 vehicles (two-way)
  - Bannockburn Road (south of site) prior to rezoning: 50 vehicles (two-way)
  - Bannockburn Road (south of site) after rezoning: 53 vehicles (two-way)

7.1.2. These volumes are still well within the capacity of the roads. The heaviest hourly flow of 92 vehicles per hour equates to an average of just one vehicle movement every 39 seconds.

7.1.3. Even when allowing for the increase in traffic flows, the Bannockburn Road / Schoolhouse Road intersection continues to have traffic flows that lie well below the thresholds at which a formal assessment of intersection performance is required. The intersection will therefore continue to operate under ‘free flow’ conditions.

7.1.4. Since the traffic flows at the site access intersection with Schoolhouse Road must necessarily be lower than at the Bannockburn Road / Schoolhouse Road intersection, this intersection must also operate under ‘free flow’ conditions.

7.1.5. The Austroads Guide to Traffic Management Part 3 has been used to identify the level of service of Schoolhouse Road and Bannockburn Road under the increased traffic flows. This shows that both roads would continue to provide Level of Service A, the best available.

7.1.6. Overall then, the traffic generated by full development of the rezoned site can easily be accommodated on the road network.

7.2. Non-Car Modes of Travel

7.2.1. The development of the site 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. Within 1km of the site is the General Store and Black Rabbit Kitchen and Bar, and just beyond this is the Bannockburn Hotel / Wine Country Restaurant.

7.2.3. A distance of 3km is accepted as being the maximum that people will cycle to a destination. All of Bannockburn lies within 2km of the site.

7.2.4. The size of the subdivision that would result from development of the site is not sufficient that it will give rise to the need for a public transport service.

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. The existing sight distance towards the south at the Bannockburn Road / Schoolhouse Road intersection is appropriate for the prevailing 80km/h speed limit. Towards the north however, the 170m distance provided is more suited to a speed limit of 70km/h, meaning that there is a slight shortfall. Given that the proposed rezoning will result in an increase in traffic passing through this intersection, it is recommended that the opportunity is taken to increase this sight distance to around 210m. This can be achieved by trimming back the earthwork slightly, on the western side of the road, and which will therefore only involve land either within the road reserve or within the site. This can be assessed in detail at the time subdivision consents are sought and does not represent an impediment to the requested rezoning.

7.4. Site Access

7.4.1. The earthwork on the western side of Bannockburn Road is likely to preclude site access from being achieved due to the likelihood of the access road gradient being too steep. Accordingly, site access is most likely to be achieved from Schoolhouse Lane.

7.4.2. Towards the east of the site access, an appropriate separation distance is required from Bannockburn Road. The District Plan suggests a distance of 60m (if Bannockburn Road was to be considered as a Rural Collector Road). The Austroads Guide to Road Design Part 4 (‘*Intersections and Crossing General*’) (Parts B.2.2) which sets out that it is desirable for intersections to be separated from one another by five seconds of travel time in order to allow drivers to process the intersection and roading layout. Allowing for a 40km/h vehicle speed, in a five second timeframe the distance covered is 55m.

7.4.3. It is also important that suitable sight distances are available at the site access. The Austroads Guide to Road Design Part 4A (‘*Unsignalised and Signalised Intersections*’) indicates that a sight distance of 75m is required for an operating speed of 40km/h.

7.4.4. Although Schoolhouse Road will require improvements as part of any future subdivision of the site (as discussed below), the position of the legal width of the road means that the left-right curves will be maintained. This is it unlikely that vehicle speeds will materially increase at the site frontage.

7.4.5. Taking these matters into account, locating a site access on Schoolhouse Road at a distance of 75m to 85m from the edge of seal on Bannockburn Road, will achieve both the necessary sight distances and also an appropriate separation between intersections, using only land within the road reserve or within the site.

7.4.6. The low traffic volumes at the site access mean that no auxiliary turning lanes will be required, and the access can be formed as a simple priority intersection. This can easily be accommodated within the legal road reserve.

7.4.7. Again, it is considered that these matters can be assessed in detail at the time subdivision consents are sought, and they do not represent an impediment to the requested rezoning.

7.5. Roading Cross-Sections

7.5.1. Development of the site will increase traffic flows on Schoolhouse Road. Given the traffic volumes, the Council's Engineering Code of Practice suggests that a 6.5m seal width with 0.25m metalled shoulder would be appropriate between the site access and Bannockburn Road, and this can easily be achieved within the legal width of 20m.

7.5.2. Traffic flows on Bannockburn Road would also increase. The current width of 6.8m is marginally below the expected width of 7.0m for the current traffic volumes, but in view of the excellent road safety record, the road evidently operates satisfactorily. Accordingly, it is not considered that any improvement would be required.

7.5.3. It is recommended that the Schoolhouse Road / Site Access and Bannockburn Road / Schoolhouse Road intersections are formed/re-formed to meet current guides and standards.

7.5.4. There are no reasons why roads formed within the site could not meet the Code of Practice.

7.5.5. The detail of all of these roading matters is more appropriately addressed at the time subdivision consents are sought. However the legal widths available means that they do not represent an impediment to the requested rezoning.

8. Statutory Framework

8.1. Introduction

8.1.1. Given that the proposal is for the rezoning of the site, there is no specific site layout presently available. This assessment focusses on whether the transportation-related provisions of the District Plan can be achieved through a subdivision of the site.

8.2. Central Otago District Plan

8.2.1. 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 impediments to a complying subdivision layout and which might affect the desirability of rezoning.

8.2.2. Consequently an assessment of the transportation rules has been undertaken and the results are summarised below.

8.2.3. District Plan Part 12.7.1: Access Standards from Roads: Part (ii): Sight Distances

8.2.3.1. Under the District Plan, assuming that roads within the site are subject to a speed limit of 50km/h (being typical for a residential subdivision) then each lot requires a sight distance of 40m at its access. It is likely that this can be achieved through careful site layout design, or that reduced sight distances can be justified due to lower operating speeds than 50km/h.

8.2.4. District Plan Part 12.7.1: Access Standards from Roads: Part (v): Access to Rural Local Roads

8.2.4.1. This part of the District Plan requires accesses within the site to be separated from one another by at least 30m, and this can be achieved.

8.2.5. District Plan Part 12.7.2: Parking: Part (i): Number of Spaces

8.2.5.1. At this stage, no detailed layout has been produced for the individual lots. However their likely size means that each will be able to provide several car parking spaces, meeting Plan requirements.

8.2.6. District Plan Part 12.7.2: Parking: Part (ii): Parking in Excess of Three Spaces

8.2.6.1. It is not expected that any lots will provide more than three parking spaces.

8.2.7. District Plan Part 12.7.3: Loading and Manoeuvring: Part (i): Servicing Activities

8.2.7.1. The proposal is for residential activities and therefore the loading and unloading of goods is not expected to occur frequently.

8.3. Council's Engineering Code of Practice

8.3.1. The Council has a Code of Practice which sets out appropriate widths for roading outside and within the site, and this has been discussed in detail above. In brief, it is possible to upgrade Schoolhouse Road between the site access and Bannockburn Road to meet the Code of Practice. The existing seal width of Bannockburn Road has a very minor shortfall (or 0.2m) compared to the expected width under the Code of Practice, but the road currently operates

satisfactorily under current volumes, and will continue to do so with the small traffic increase associated with the site.

8.3.2. A fully complying roading network can be constructed within the site.

8.3.3. If it is proposed to deviate from the Code of Practice, an application would need to be made and considered at the appropriate time. However it is highlighted that there are no site constraints that would require such a deviation.

8.4. Summary

8.4.1. It is considered that the site layout is likely to be able to comply with all the transportation requirements of the District Plan and with the Engineering Code of Practice.

9. Conclusions

9.1. This report has identified, evaluated and assessed the various transport and access elements of a rezoning request for residential activities (facilitating up to 35 lots) at Schoolhouse Road, Bannockburn.

9.2. Overall it is considered that the traffic generated by the development of the rezoned site can be accommodated on the adjacent roading network without capacity or efficiency issues arising. In practice, the traffic flows on Schoolhouse Road and Bannockburn Road are very low at present, and development of the site generates comparatively little traffic, meaning that the roads continue to provide Level of Service A (the best available) and the Schoolhouse Road / Site Access and Bannockburn Road / Schoolhouse Road intersections operate under 'free flow' conditions.

9.3. The crash history in the vicinity of the site does not indicate that there would be any adverse safety effects from the proposal. However the opportunity should be taken to rectify an existing sightline deficiency for drivers exiting Schoolhouse Road and looking towards the north.

9.4. A site access can be located to achieve suitable sight distances for turning drivers, and an appropriate separation from Bannockburn Road. The low traffic volumes at the site access mean that no auxiliary turning lanes will be required, and it can be formed as a simple priority intersection. Schoolhouse Road will require upgrading between the site access and Bannockburn Road. Both the road upgrade and intersection can easily be accommodated within the legal road reserve.

9.5. The internal roads within the site are likely to be able to comply with the Council's standards. Bannockburn Road itself has a very minor deficiency in seal width at present, but development of the site generates only a modest amount of traffic, and Bannockburn Road is already lightly-trafficked, meaning that in practice the current carriageway width will function adequately.

9.6. Although the request is for a rezoning, it is likely that there will be a high degree of compliance with the transportation requirements of the District Plan and at this stage no non-compliances are expected.

9.7. Overall, and subject to the preceding comments, the rezoning request can be supported from a traffic and transportation perspective and it is considered that there are no traffic and transportation reasons why the request could not be approved.

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