Morgan McIntosh Limited

Request for Rezoning
25 Ashley Gorge Road, Oxford

Transportation Assessment

CARRIAGEWAY
CONSULTING
traffic engineering | transport planning

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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 25 Ashley Gorge Road (**the site**) is proposed by the Council to be zoned as General Rural 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 General Rural Zone.

1.3. This Transportation Assessment sets out a detailed analysis of the transportation issues associated with the proposed zoning of the site as a 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.

1.4. 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 on the northern boundary of Oxford and immediately continuous with it. It is bounded on the eastern side by High Street / Ashley Gorge Road and on the western side by Bay Road. As noted above, it is proposed to be zoned as General Rural Zone (**GRUZ**) but with a Large Lot Residential Zone (**LLRZ**) Overlay in the Proposed District Plan, and it is currently zoned as Rural in the operative District Plan. The site is approximately 49.7 ha in size.

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.

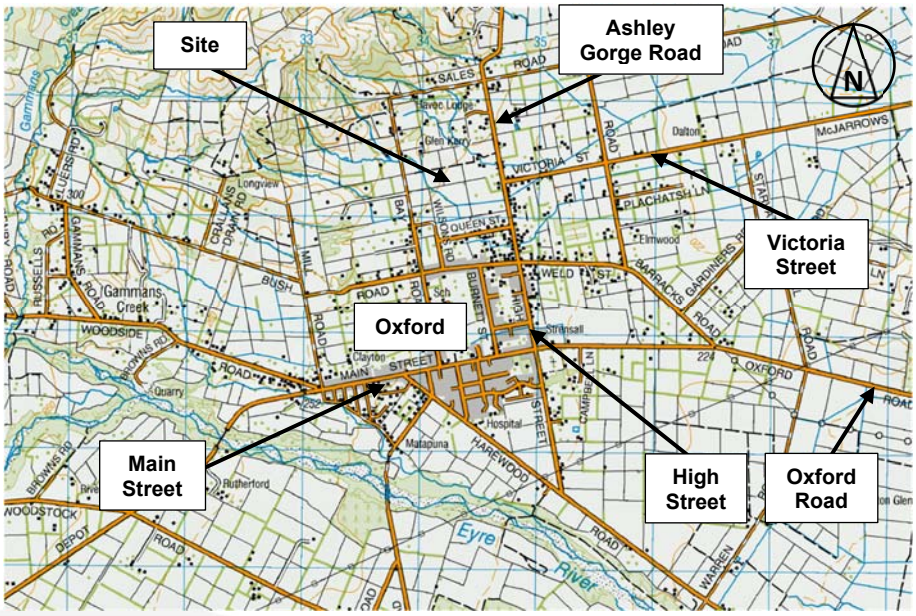

Figure 1: General Location of Site

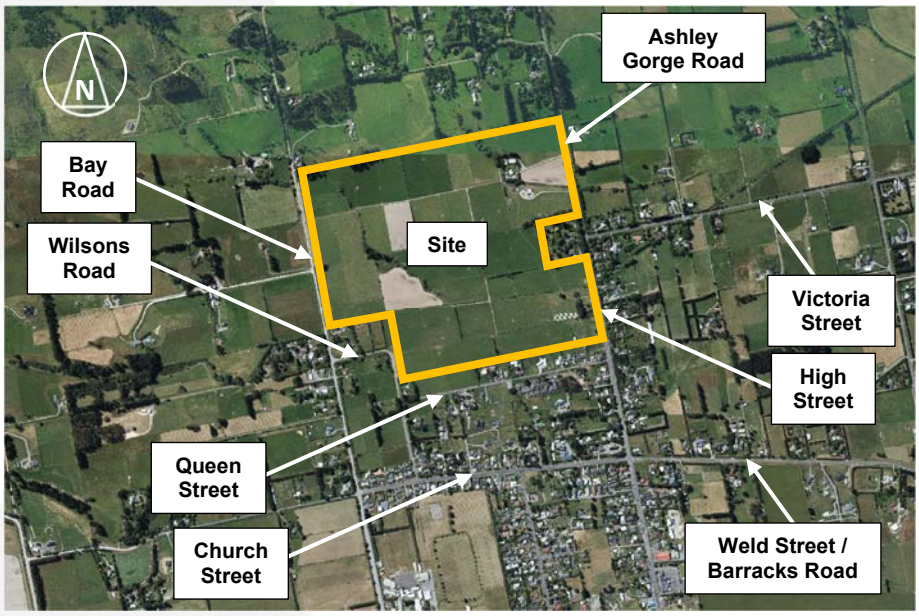

Figure 2: Aerial Photograph of Site and Environs

2.2. Roading Classification

2.2.1. The operative District Plan classifies High Street / Ashley Gorge Road as a Collector Road, indicating a role of providing direct property access as well as accommodating through traffic.

2.2.2. Oxford Road is a Strategic Road, indicating an important role in connecting settlements.

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 remain the same in the proposed District Plan, other than Weld Street is proposed to be an Arterial Road indicating a role of primary accommodating through traffic. This classification continues for the easternmost 270m of Church Street, but west of this, Church Street remains a Local Road.

3. Current Transportation Networks

3.1. Roading Network

3.1.1. On the eastern side of the site, Ashley Gorge Road has a straight alignment with the road rising towards the north. The carriageway is formed as a rural road with berms/swales on each side. Over the majority of the site frontage, the seal width is in the order of 6.5m to 7.0m with a centreline but no edgeline markings.

Photograph 1: Ashley Gorge Road Looking North (Site on Left)

3.1.2. Victoria Street joins Ashley Gorge Road approximately mid-way along the site frontage. This is a priority ('stop') controlled intersection, which does not have any auxiliary turning lanes and only minimal seal widening on Ashley Gorge Road.

Photograph 2: Ashley Gorge Road / Victoria Street Intersection Looking North

3.1.3. To the immediate south of Victoria Street, Ashley Gorge Road changes name to High Street although the road cross-section remains the same. There is a culvert approximately 140m south of Victoria Street, and just south of this, High Street widens to 10m and is formed with kerb+channel on the eastern side. The centreline is offset from this widened section, indicating that the widened seal is anticipated to provide for on-street car parking.

Photograph 3: Culvert and Parking Lane on High Street Looking North (Site on Left)

3.1.4. High Street continues with a flat and straight alignment, with several private driveways on the eastern side of the road associated with residential development. Approximately 240m south of the culvert, Queen Street joins High Street from the east. The High Street / Queen Street intersection is priority ('give-way') controlled with no auxiliary turning lanes.

Photograph 4: High Street / Queen Street Intersection Looking South

3.1.5. The carriageway width of High Street remains at around 10m for a further 300m, with a verge/berm on the western side and kerb+channel on the eastern side. Church Street and

Weld Street then join High Street from the west and east respectively at a priority ('give-way') intersection with no auxiliary turning lanes.

Photograph 5: High Street / Church Street / Weld Street Intersection Looking South

3.1.6. Immediately south of this intersection, High Street widens to 13m which allows for a parking lane in each side, and both sides have kerb+channel. The alignment remains flat and straight, and there are multiple private driveways on either side.

Photograph 6: High Street Looking South from Church Street

3.1.7. Approximately 750m south of Church Street, High Street joins Main Street, with the latter forming part of Inland Scenic Route 72. This intersection has an auxiliary lane for right-turning traffic (east to north), plus flaring on the approaches to allow for vehicles to queue side-by-side.

Photograph 7: Main Street / High Street Intersection Looking West

3.1.8. To the east of this intersection, Inland Scenic Route 72 is also known as Oxford Road, which provides a route to Rangiora some 30km to the east and also to State Highway 1. The road has a rural formation with a sealed shoulder in the order of 1m on either side. Approximately 1.5km east of High Street, Barracks Road joins Oxford Road from the north at a priority ('give-way') intersection.

Photograph 8: Oxford Road / Barracks Road Intersection Looking East

3.1.9. From this intersection, Barracks Road runs northwest and changes name to Weld Street, which in turn connects to High Street. In essence Barracks Road / Weld Street forms one side of a triangle, with Oxford Road and High Street forming the other two sides. In this regard, it therefore is the shortest route between the eastern side of the site and the wider roading network towards the east.

3.1.10. Barrack Road has a rural road formation with verges on either side and a carriageway width varying between 5.5m and 6.0m. The alignment is generally flat and straight, although there

is a series of two curves mid-way along it length (where the road name also changes). The curves have an advisory 55km/h speed limit

Photograph 9: Barracks Road Looking Northwest

3.1.11. On its western side, the site has frontage onto Bay Road. At the frontage, Bay Road is formed with a 4m wide metalled surface and wide grassed verges. The alignment is straight, with the road rising towards the north. There is signage to indicate that the route is unsuitable for truck+trailer units.

Photograph 10: Bay Road Looking South (Site on Left)

3.1.12. Towards the southwestern corner of the site, Bay Road is joined from the east by Wilsons Road. Just north of this intersection, and for the remainder of its length to the south, Bay Road is sealed and the carriageway widens to around 6m. The Bay Road / Wilsons Road intersection has no carriageway markings or signage.

Photograph 11: Bay Road / Wilsons Road Intersection Looking South

3.1.13. Wilsons Road provides a connection to the western end of Queen Street (and which in turn connects to High Street). Immediately east of Bay Road, it is formed with one metalled traffic lane.

Photograph 12: Wilsons Road East of Bay Road Looking East

3.1.14. Bay Road continues with a 6m wide seal width as far as a priority intersection with Church Street, some 400m south of Wilsons Road. The High Street / Church Street intersection (described above) lies approximately 830m to the east of this. Just north of the Bay Road / Church Street intersection, the carriageway of Bay Road widens to around 7.5m and there is kerb+channel on the eastern side.

Photograph 13: Bay Road / Church Street Intersection Looking South

3.1.15. Church Street has a flat and largely straight alignment over its whole length, with as 10m wide carriageway that allows for parking on either side.

Photograph 14: Church Street Looking East

3.1.16. South of Church Street, the carriageway of Bay Road widens to 10m to allow for a parking lane on the eastern side. The alignment remains flat and straight. Oxford Area School is located 350m to the south of Church Street, on the eastern side of Bay Road. On-street parking is controlled around the school and is limited to pick-up and drop-off activity at the start and end of the school day, and the parking lanes are marked. The A&P Showground is located adjacent to the school.

Photograph 15: Bay Road Adjacent to the School and Showgrounds, Looking North

3.1.17. Bay Road terminates at Main Street, 820m south of Church Street. The Main Street / Church Street intersection is priority ('stop') controlled with no auxiliary turning lanes.

Photograph 16: Main Road / Bay Road Intersection Looking Northeast

3.2. Vehicle Speeds

3.2.1. Bay Road adjacent to the site has a posted speed limit of 60km/h. This continues as far as the intersection with Church Street, where it transitions to a 50km/h towards the south.

3.2.2. Ashley Gorge Road adjacent to the site also has a posted speed limit of 60km/h, and this transitions to 50km/h approximately 65m north of Queen Street (at the southeastern corner of the site). This 50km/h limit continues further south.

3.2.3. Church Street also has a posted speed limit of 50km/h, but its continuation towards the east (Weld Street / Barracks Road) has an 80km/h speed limit.

3.2.4. Queen Street has a 30km/h speed limit, with Wilsons Road having a 40km/h speed limit.

Figure 3: Posted Speed Limits Around the Site

3.3. Non-Car Infrastructure

3.3.1. As the site is located in a rural area, there are no footpaths provided in the immediate vicinity on either Ashley Gorge Road or Bay Road (Photographs 1 and 10). However there are wide grassed berms and the low traffic flows (discussed subsequently) mean that pedestrians and other non-car road users are able to walk along the side of the seal.

3.3.2. Further south, footpaths are provided within the more urbanised area of Oxford. There is a footpath on the eastern side of High Street from the culvert (140m south of Victoria Street) southwards to Church Street (Photographs 3 and 4) and south of Church Street there are footpaths on each side as far as Main Street (Photograph 6). Church Street itself has a footpath on the southern side (Photograph 14).

3.3.3. Although there are no footpaths on Bay Road between the site and Church Street (Photograph 13), to the south of Church Street there is a footpath on the eastern side (Photograph 15).

3.3.4. Weld Street / Barracks Road, Queen Street and Wilsons Road do not have footpaths.

3.3.5. There is no specific infrastructure for cycling in the immediate area, and no public transport. However Oxford Area School is served by school buses.

3.4. Future Changes

3.4.1. 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 site carry the following daily traffic volumes[1]:

- Ashley Gorge Road adjacent to the site: 990 vehicles (two-way);
- Victoria Street: 230 vehicles (two-way);
- High Street: 1,160 vehicles (two-way);
- Bay Road adjacent to the site: 70 vehicles (two-way);
- Bay Road north of Church Street: 140 vehicles (two-way);
- Wilsons Road: 90 vehicles (two-way);
- Queen Street: 130 vehicles (two-way);
- Church Street: 510 vehicles (two-way);
- Weld Street / Barracks Road : 470 vehicles (two-way); and
- Oxford Road: 3,680 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 site[2]:

- Ashley Gorge Road adjacent to the site: 100 vehicles (two-way);
- Victoria Street: 25 vehicles (two-way);
- High Street: 120 vehicles (two-way);
- Bay Road adjacent to the site: 10 vehicles (two-way);
- Bay Road north of Church Street: 15 vehicles (two-way);
- Wilsons Road: 10 vehicles (two-way);
- Queen Street: 15 vehicles (two-way);
- Church Street: 55 vehicles (two-way);
- Weld Street / Barracks Road: 50 vehicles (two-way);
- Oxford Road: 370 vehicles (two-way)

4.1.3. It can be seen that these volumes are low with the greatest volume being equivalent to an average of just 1 vehicle movement every 30 seconds at the busiest time, other than on Oxford Road (which is the primary access route to the township).

4.1.4. 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.

[1] Rounded up the nearest 10 vehicles

[2] Rounded up to the nearest 5 vehicles

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)

4.1.5. It can be seen that in total least 650 vehicles need to pass through an intersection for a formal analysis to be justified. The traffic flows in the vicinity of the site fall well below this, and accordingly, no analysis has been carried out. In essence, at present all intersections will operate 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, 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. However while this outcome is supported by informal observations for utility travel on weekdays, it is also possible that the roading network is 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 site. In view of the very low traffic flows, a ten-year period has been adopted and thus all reported crashes between 2013 and 2022 were identified, plus the partial record for 2023, were identified for a distance of 200m around the site, and as far south as Church Street (and its intersections with High Street and Bay Street). Given the expected trip distribution the southern part of High Street and eastern past of Weld Street (as far as Oxford Road) have also been assessed.

4.3.2. This showed that there was a total of four crashes recorded in the immediate vicinity of the site:

- One crash occurred on High Street just south of Queen Street, when a driver reversed out of a driveway and directly into the path of a northbound vehicle. The crash did not result in any injuries;
- One crash occurred at the Bay Road / Church Street intersection, when a driver turning from east to south lost control of the vehicle and left the road. The crash did not result in any injuries and the police report notes that the driver was intoxicated and was already disqualified from driving;
- One crash occurred on Bay Road just north of Wilsons Road, when a driver that was deliberately losing traction on the loose road surface lost control of their vehicle, left the road and entered a ditch. The crash did not result in any injuries;
- One crash occurred on Bay Road just north of Wilsons Road, when an unrestrained dog in the vehicle jumped onto the driver's arm, causing them to inadvertently turn the steering wheel and drive off the road. The crash did not result in any injuries.

4.3.3. One crash was recorded on High Street, between Church Street and Oxford Street, when a driver appears to have deliberately driven into another vehicle. The crash did not result in any injuries.

4.3.4. Four crashes were recorded at the High Street / Oxford Road intersection:

- One crash occurred when a northbound driver on High Street failed to give-way to a westbound driver on Oxford Road, and the vehicles collided. The crash did not result in any injuries;
- One crash occurred when a northbound driver on High Street failed to give-way to an eastbound driver on Oxford Road, and the vehicles collided. The crash resulted in minor injuries;
- One crash occurred when a southbound driver on High Street failed to give-way to an eastbound driver on Oxford Road, and the vehicles collided. The crash resulted in minor injuries;
- One crash occurred when a southbound driver on High Street failed to give-way to a westbound driver on Oxford Road, and the vehicles collided. The crash resulted in minor injuries.

4.3.5. Three crashes were recorded at the Oxford Road / Weld Street intersection:

- One crash occurred when a southbound driver on Barracks Road failed to see the end of the road in heavy fog, and left the road. The crash did not result in any injuries;
- One crash occurred when a westbound driver on Oxford Road attempted to turn right onto Barracks Road, skidded on a wet road surface, and left the road. The crash did not result in any injuries;
- One crash occurred when an eastbound vehicle on Oxford Road that was towing a trailer started to weave, and the driver then lost control and left the road. The crash did not result in any injuries.

4.3.6. It is not considered that the historic pattern of crashes does not indicate any inherent road safety deficiency in the immediate area. The crashes all occurred within different contributing factors, in different locations or with different vehicle movements involved.

5. Proposal

5.1. The proposal is for the rezoning of the land from GRZ with LLRZ Overlay, to LLRZ. Under LLRZ there would be an increase in residential density compared to GRZ.

5.2. As the proposal is for a rezoning, there is no specific subdivision plan at this stage. However the Proposed District Plan requires proposals to have an Outline Development Plan (**ODP**) and this is shown below.

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

5.3. From a transportation perspective, the key feature of the ODP is a small internal roading network. The primary road is located towards the south of the site and provides a through route between High Street and Bay Road. There is also a secondary road which lies to the north of the through route and this is a cul-de-sac which connects onto Ashley Gorge Road towards the north of Victoria Street.

5.4. There is a stormwater corridor that runs diagonally through the site. Although this restricts vehicle access, the ODP shows that it can be crossed by pedestrians and cyclists to avoid creating circuitous routes for these road users. There is also a walking and cycling route provided towards the south, linking the primary road with Queen Street.

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 Oxford has 3 early childhood centres and Oxford Area School accommodating around 500 students of Years 1 to 13, meaning that there is no need to travel outside the township for schooling. There is also a supermarket and other community facilities.

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 a range of facilities within the township.

6.1.4. From information previously provided, it is understood that the site is expected to have 79 lots at full development, taking into account the minimum lot sizes required under the LLRZ provisions, stormwater and roading. Thus at full development, the site will generate peak hour traffic volumes of 79 vehicle movements (two-way).

6.1.5. In the morning peak hour, 85% of these vehicles are likely to be exiting the site, with 65% 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 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. The shortest route towards the east is via Weld Street / Barrack Road, and therefore it can be anticipated that most vehicles will use this route. Taking into account the general shape and proposed roading connections within the site, and allowing for drivers to choose the shortest route, it is considered that:

- 20% of lots (15 lots) will travel south on Bay Road, then east on Church Street to Weld Street and Oxford Road; and
- 80% of lots (64 lots) will travel south on Ashley Gorge Road / High Street and then east on Church Street to Weld Street and Oxford Road.

7. Effects on the Transportation Networks

7.1. Roading Capacity

7.1.1. With full development of the site, there would be an increase in the traffic flows on the roading network as follows:

- Ashley Gorge Road adjacent to the site: 164 vehicles (two-way);
- High Street: 199 vehicles (two-way);
- Bay Road adjacent to the site: 25 vehicles (two-way);
- Bay Road north of Church Street: 30 vehicles (two-way);
- Church Street: 70 vehicles (two-way);
- Weld Street / Barracks Road: 129 vehicles (two-way);
- Oxford Road: 449 vehicles (two-way)

7.1.2. The intersection with the greatest traffic flow (under the assumptions above) would be the Oxford Road / Barracks Road intersection. However the traffic flows remain below the threshold at which a formal intersection assessment is justified.

7.1.3. In the event that a proportion of vehicles were to instead travel and turn at the Main Street / High Street intersection, the traffic volumes would also remain below the threshold at which a formal intersection assessment is justified.

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

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

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, and will cycle a maximum distance of 3km. In this regard, the southwestern side of the site is 800m from Oxford Area School, with the southeastern corner being 1.5m away. These can easily be walked/cycled.

7.2.3. The supermarket is approximately 1.6km from both the southwestern and southeastern corners of the site, with other community facilities on Main Street all being located within 1.7km of the site.

7.2.4. Accordingly, it is considered that the site is well-located for accessibility to key destinations without the need to use a private car.

7.2.5. As set out above, there is no specific provision for walking and cycling on the roads in the immediate vicinity of the site. However the legal widths of the roads are sufficient that either a footpath could be provided without the need for third party land, or traffic flows (and speeds) would remain sufficiently low that pedestrians and motor vehicles could share the same surface.

7.2.6. The low traffic flows (even with full development of the site) do not indicate that any specific infrastructure is justified for cyclists.

7.2.7. 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 site.

7.2.8. The size of the site is not sufficient that it will give rise to the need for a public transport service. If a service was to be developed it future, it unlikely it would operate through the site due to the low number of passengers and a route via Main Street is more likely. That said, the primary road within the site 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 traffic volumes do not indicate that auxiliary turning lanes would need to be provided at any of the existing intersections. This will require confirmation at the time subdivision consents are sought, however the legal widths of the roads are such that auxiliary turning lanes (or localised widening of the seal) can be achieved.

7.3.3. None of the existing intersections have constrained sightlines. The matter of sightlines available at the proposed new intersections is discussed below.

7.3.4. The site is relatively flat and there are no reasons why the internal roading network could not meet appropriate designs guides and standards.

7.4. Site Accesses

7.4.1. The proposal will create three priority intersections, one onto Bay Road and two onto Ashley Gorge Road / High Street. 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 legal width of both Bay Road and Ashley Gorge Road / High Street is 18m, and although at this stage it does not appear that auxiliary lanes are required, any localised widening of the seal to accommodate turning movements can be easily achieved.

7.4.2. The alignments of Ashley Gorge Road / High Street and Bay 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 ODP 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. Bay Road and Ashley Gorge Road / High Street 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 due to the seal width being less than this on Ashley Gorge Road, part of Bay Road being unsealed, and no cycleways being provided.

8.2.1.2. The extent of traffic increase associated with development of the site is small. However it is reasonable to anticipate that upgrading of the northern part of Bay Road could be expected as part of the proposal. 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 site is 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 Ashley Gorge Road / High Street and Bay Road means that the anticipated sight distance at any accesses can be easily achieved.

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 vehicles crossings with respect to existing intersections, but secondly, the presence of new intersections in respect of existing vehicle crossings.

8.2.3.5. As Bay Road is a Local Road and only joins other local Roads, a separation distance of 60m is required where the speed limit is 60km/h, and 10m where the speed limit is 50km/h. This will be achieved, other than for one existing access near the new intersection, which is located around 30m away.

8.2.3.6. Assessment Matters for this are not specific, but refer generally to the "*operation of the transportation network*" and "*traffic and pedestrian safety*". In this case, the vehicle crossing is 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.

8.2.3.7. A similar scenario arises on Ashley Gorge Road / High Street where there are existing vehicle crossings on the eastern side of the road, less than 60m from the proposed new primary and secondary road intersections (typically around 30m). The same mitigation measures are present, with drivers unlikely to be confused about where another is turning, good intervisibilities and drivers travelling in a forwards direction.

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

8.2.3.9. 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 60km/h speed limit, there is a requirement for a separation of 160m between intersections.

8.2.4.2. The separation distance is achieved for the new intersection onto Bay Road, and between Victoria Street south to the primary road.

8.2.4.3. The separation distance between the primary road intersection onto High Street and Queen Street is 150m. Although this is a 10m shortfall, the speed limit of High Street changes to 50km/h over part of this distance, and the appropriate separation for a 50km/h speed limit is 125m. In practice then, the separation distance will meet the District Plan provisions.

8.2.4.4. There is a separation of 135m between the proposed intersection of the secondary road and Victoria Street.

8.2.4.5. 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 70km/h (the speed limit plus 10%), this suggests that a separation of 100m 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 intersection involving Local Roads.

8.2.4.6. This suggests that the anticipated 160m separation is excessive, since it represents more than 8 seconds of travel time at the design speed rather than the 5 seconds of travel time, and that a 100m separation is more appropriate where Local Roads are involved. This is achieved.

8.2.4.7. 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 site. 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 Ashley Gorge Road / High Street 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 site is 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
  - Bay Road and Ashley Gorge Road / High Street 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 site is small. The need for any widening or other improvements can be considered further when subdivision consents are sought.
- Conditions 30.6.1.32: Road Intersection Spacing
  - There is a requirement for a separation of 160m between intersections but this is not achieved in one location. However the separation for the proposed intersections easily achieve the appropriate separation distance under the Austroads Guide to Road Design and Standard NZS4404:2010.

8.4.2. 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 site 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 60km/h speed limit, a separation distance of 160m is required, which is the same as the operative District Plan.

8.5.2.2. As discussed in detail above, the location of one proposed new intersection shown on the ODP does 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 intersection is 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 one the site is subdivided, there is no reason why any lot would have more than one vehicle crossing.

8.5.3.3. Under Table TRAN-16, there is an expected separation distance of 40m between any new vehicle crossing and any other vehicle crossing on Bay Road and Ashley Gorge Road / High Street. No vehicle crossings are proposed at present. In the event that this is not achieved upon subdivision, Assessment Matters are set out in TRAN-MD3. However the size of the lots means that there is unlikely to be any on-street parking, and thus in practice there are and there are only two of relevance, "*the extent to which safety will be adversely affected by conflict between manoeuvring vehicles at vehicle crossings*" and "*the extent to which pedestrian and cycle safety may be adversely affected by a lack of complying separation distance between vehicle crossings*".

8.5.3.4. In this case, the other (existing) vehicle crossings would be located on the opposite side of the road to the site, and they will be very lightly trafficked since they serve only a small amount of residential development. Pedestrian and cyclist numbers will be low due to the location of the site, which further minimises the potential for conflict. Sight distances are excellent, and additionally, drivers exiting the vehicle crossings will be travelling in a forwards gear (rather than having to reverse) which further supports good intervisibility between road users. Accordingly, ***if*** vehicle crossings are proposed that have a reduced separation distance, then these can be supported.

8.5.3.5. Under Table TRAN-17, there is an expected separation distance of 45m for any new vehicle crossing onto Ashley Gorge Road / High Street or Bay Road, and any intersections on the road. No vehicle crossings are proposed at the current time. However ***if*** these were to be proposed, then relevant 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*".

8.5.3.6. In this case, the vehicle crossings would be 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 existing vehicle crossings on Bay Road and Ashley Gorge Road / High Street are lightly trafficked, and the sight distances available to road users are excellent. Additionally, drivers exiting the vehicle crossings will be travelling in a forwards gear (rather than having to reverse) which further supports good intervisibility between road users. Accordingly, the reduced separation distance can be supported. Accordingly, ***if*** vehicle crossings are proposed that have a reduced separation distance, then these can be supported.

8.5.3.7. The appropriate vehicle crossing widths can be provided.

8.5.3.8. 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 Bay Road and Ashley Gorge Road / High Street 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. Pedestrians 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 space

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 space 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 space and associated manoeuvring area

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 space and associated manoeuvring area

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 area, loading area, manoeuvring area, vehicle crossing or accessway

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 site does 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 site does 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 site is 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 site is not proximate to the airfield.

8.6. Summary of Proposed District Plan Assessment

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

- TRAN-R4: Formation of a New Road Intersection
  - o There is a requirement for a separation of 160m between intersections but this is not achieved in one location. However the separations for the proposed intersections easily achieve 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 new vehicle crossings and intersections, although the proposed District Plan limits this to "*new*" vehicle crossings whereas in this case new intersections are proposed. Irrespective, an assessment of the effects of the reduced separation distances between the proposed new intersections and the existing vehicle crossings on the opposite side of the roads shows that the low traffic volumes and excellent intervisibility means that there will be no driver confusion and accordingly, a reduced separation distance can be supported.

8.6.3. 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 to a Large Lot Residential Zone, able to accommodate in the order of 79 residences.

9.2. Overall it is considered that the traffic generated by the development of the site 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 very low at present, and development of the site generates comparatively little traffic, meaning that even the busiest intersection will operate with low queues and delays, and a good level of service.

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.

9.4. The nature of Large Lot Residential Zones means that they are typically located outside urban areas. In this case though, the site is within a viable walking / cycling distance of all amenities within Oxford, including the school, supermarket and other facilities.

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 160m between intersections but this is not achieved in one location. However the separation proposed easily achieves the appropriate separation distance under the Austroads Guide to Road Design and Standard NZS4404:2010.
- Separation of Vehicle Crossings and Intersections: There are existing driveways on Bay Road and Ashley Gorge Road / High Street, and the formation of new intersections would result in a lesser separation to driveways than expected. However the vehicle crossings are on the opposite side of the road to the minor approach of the intersections, and road user intervisibilities are excellent, plus the vehicle crossings serve only one residence each where drivers will be travelling forwards onto the frontage roads (rather than reversing). Consequently, the reduced separation distances can be supported.

9.6. The internal roads within the site 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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