

■ **Annexure 2**

Integrated Transport
Assessment, Stantec New
Zealand

RAVENSWOOD TOWN CENTRE PLAN CHANGE INTEGRATED TRANSPORT ASSESSMENT

PREPARED FOR RAVENSWOOD DEVELOPMENTS LTD

20 August 2020

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Ravenswood Developments Ltd

Ravenswood Town Centre Plan Change Integrated Transport Assessment

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1. Introduction

Ravenswood Developments Limited is progressing with a proposed Private Plan Change Request (**PPCR**) to re-zone the Ravenswood Commercial Area (**RCA**) as a combination of Business 1 and Business 2 zones under the operative Waimakariri District Plan.

The PPCR will result in an increase to the size of the RCA, a corresponding reduction in the area of residentially zoned land in Ravenswood, and an increase in the area of higher-intensity Business 1 zoned land in the RCA. The PPCR is expected to result in increases to the traffic volumes generated by the RCA, and Ravenswood generally, and an Integrated Transport Assessment (**ITA**) is required to assess transport related effects of the proposal.

This ITA report includes:

- Descriptions of the site location, existing transport infrastructure, existing traffic volumes and relevant road safety records;
- Descriptions of planned developments including the SH1 Woodend Bypass and future plans for Ravenswood;
- A summary of the PPCR and an assessment of possible increases to the traffic generation of the RCA associated with the PPCR;
- An assessment of related traffic effects on the key intersections and the wider road network;
- Discussion on individual lot access;
- Discussion on public transport and active travel mode accessibility; and
- Discussion on the consistency of the PPCR with relevant objectives and policies in the Canterbury Regional Policy Statement and the Waimakariri District Plan.

2. Site Location

Ravenswood is located north of Woodend and between Rangiora Woodend Road and State Highway 1 (**SH1**), as indicated in **Figure 1**.

The main access to Ravenswood is provided via Bob Robertson Drive, a spine road which will ultimately run from opposite Pegasus, at the SH1 / Pegasus Boulevard roundabout, to a roundabout on Rangiora Woodend Road. The RCA is located in the eastern part of Ravenswood.

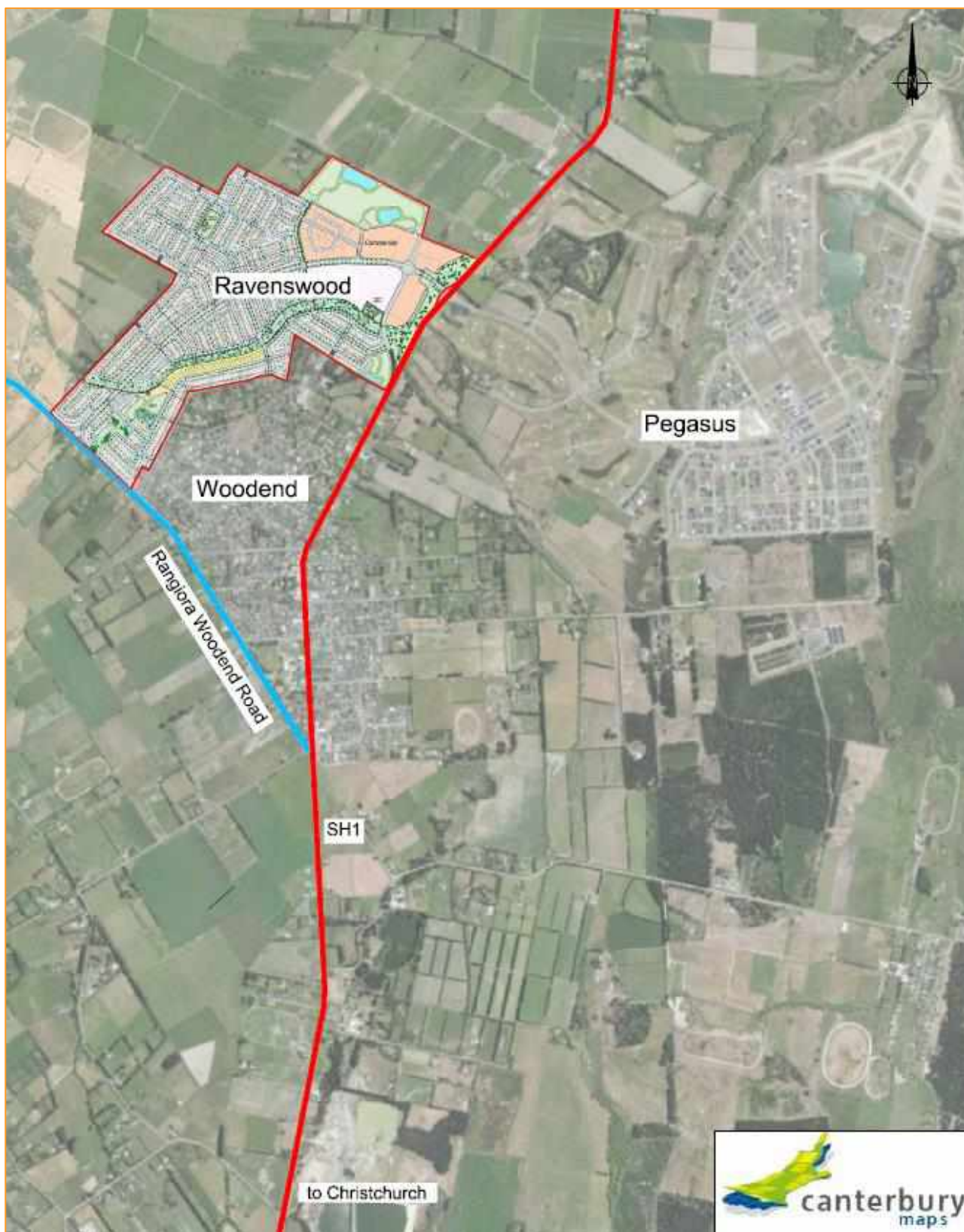


Figure 1: Location of Ravenswood Relative to Woodend and Pegasus

3. Existing Transport Infrastructure

3.1 Overview

The existing roading in the eastern part of Ravenswood is shown in **Figure 2**.

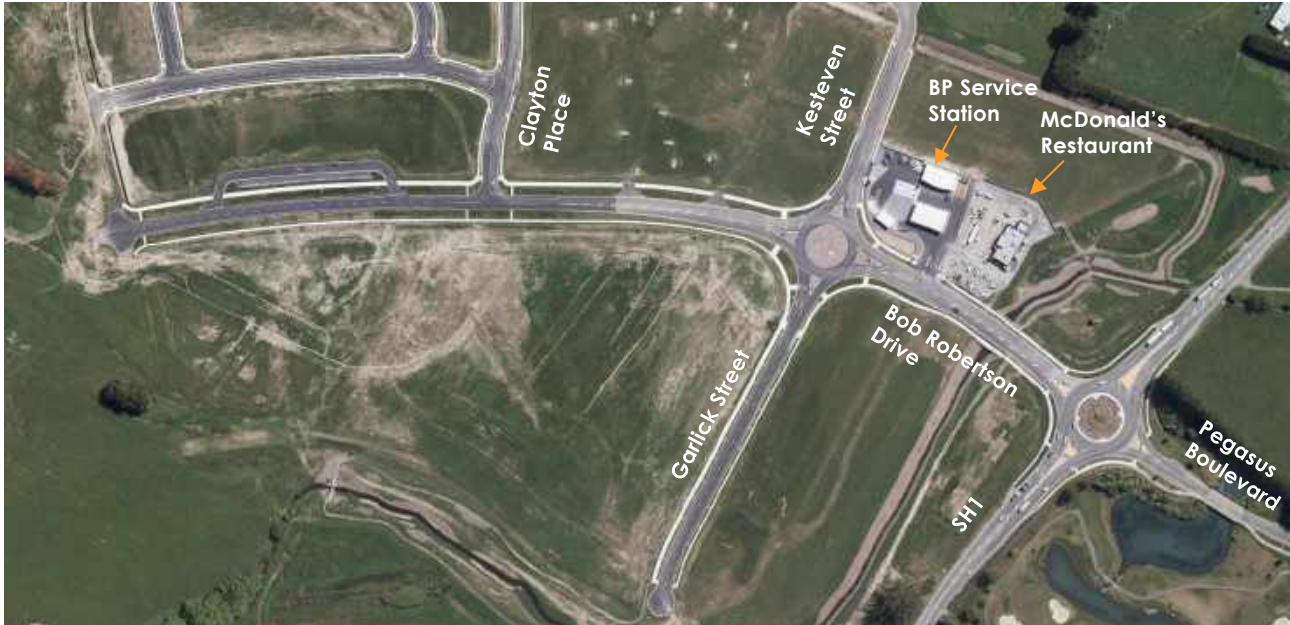


Figure 2: Existing Ravenswood Commercial Area Roading (Canterbury Maps)

3.2 SH1 / Pegasus Boulevard / Bob Robertson Drive Roundabout

Bob Robertson Drive, which is the main road into and through Ravenswood, meets SH1 and Pegasus Boulevard at a multi-lane four-leg roundabout (**Figure 3**).

There are two through lanes in each direction on SH1, while there are two approach lanes on both Bob Robertson Drive and Pegasus Boulevard but only one through/right turn lane. A reduced speed limit of 70km/h is in place through the roundabout on the highway.

Shared pedestrian/cycle paths and crossings are provided so that cyclists can avoid using the roundabout if they choose to. There are cycle ramps to and from SH1 each side of the roundabout, shared crossings on the western and southern legs of the roundabout and a cycle crossing on the eastern leg. There are shared paths along Pegasus Boulevard and Bob Robertson Drive so cyclists can continue off-road.



Figure 3: SH1 / Pegasus Boulevard / Bob Robertson Drive Roundabout (Canterbury Maps)

3.3 Bob Robertson Drive

The initial length of Bob Robertson Drive from SH1 (**Figure 4**) has single lanes in each direction and a flush median. A right turn bay has been marked in the flush median for access to the BP service station and the McDonald's restaurant. Paths on both sides of the road are wide enough (2.5m) for shared use by pedestrians and cyclists.



Figure 4: Initial Length of Bob Robertson Drive

West of the Garlick Street roundabout (**Figure 5**), a short right turn lane is marked in the flush median for access to the future supermarket site. West of this, the flush median is terminated and a 10.4m wide carriageway is provided with two 3.6m wide traffic lanes and 1.6m wide shoulders. No on-street car parking is allowed for in the existing formation.

A 3m wide path for shared pedestrian/cycle use is provided along the northern side of the road and a standard footpath is provided along the southern side.



Figure 5: Bob Robertson Drive West of Garlick Street

3.4 Bob Robertson Dr / Garlick Street / Kesteven Street Roundabout

The Bob Robertson Drive / Garlick Street / Kesteven Street roundabout (**Figure 6**) has been constructed with a single circulating lane and with two approach lanes on each leg. Crossings with central refuges suitable for pedestrians and cyclists are provided on all four legs.



Figure 6: Bob Robertson Drive / Garlick Street / Kesteven Street Roundabout

3.5 Garlick Street

Garlick Street (**Figure 7**) has been constructed with 3.5m traffic lanes and 1.6m shoulders. A 3m wide shared pedestrian/cycle path is provided on the western side of the road and a standard footpath is provided on the eastern side. The initial length of the road has been constructed as a cul-de-sac with a turning head.

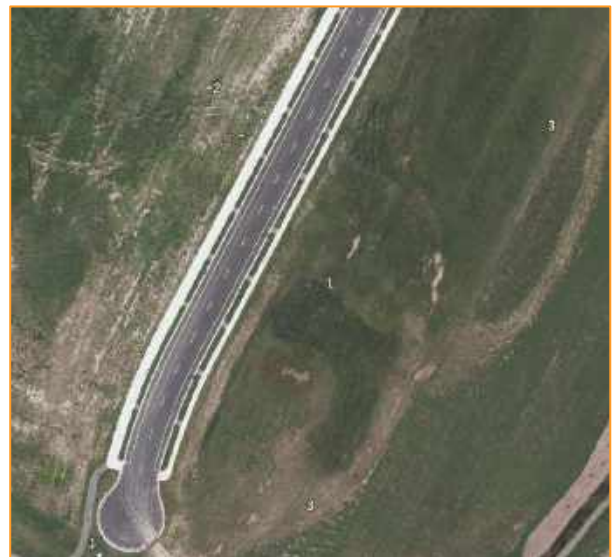


Figure 7: Garlick Street South of Bob Robertson Drive

3.6 Bus Network

The 95 Waikuku and Pegasus to City bus service (**Figure 8**) runs between Pegasus and Christchurch from 6:00am to 10:00pm.

It runs hourly in each direction, with increased frequency and express services during commuter hours. The service extends to Waikuku during commuter times only (indicated by the dashed line).

There are bus stops on Pegasus Boulevard, just to the east of the SH1 roundabout (visible in **Figure 3**).

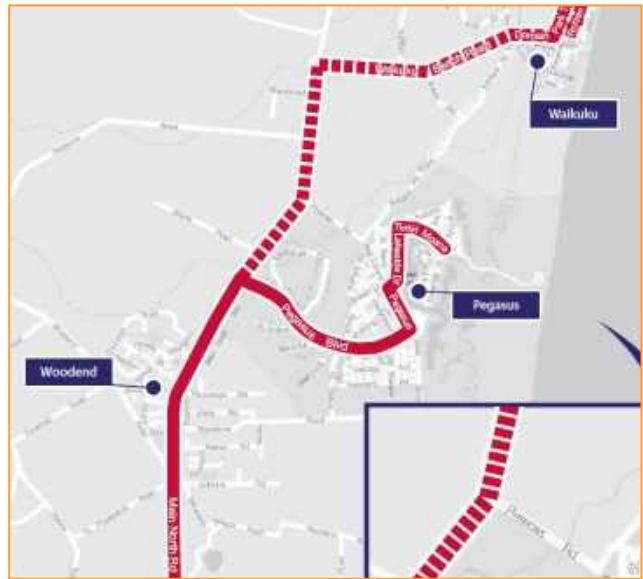


Figure 8: 95 Waikuku and Pegasus to City Bus Service Route

4. Current Traffic Volumes

2018 annual average daily traffic (**AADT**) volumes for SH1 in the vicinity of Woodend have been obtained from the Waka Kotahi - New Zealand Transport Agency (**NZTA**) and are shown in **Table 4-1**. Current daily traffic volumes for Rangiora Woodend Road and Pegasus Boulevard are also reported. Traffic volumes on Bob Robertson Drive will be low currently with limited activity being served by the road.

Table 4-1: Daily Traffic Volumes on Nearby Main Roads

Road	Count Location	2018 AADT
SH1	South of Waikuku township	12,500vpd
	Woodend School	17,400vpd
	South of Rangiora Woodend Road	19,900vpd
Rangiora Woodend Road	West of Woodend	6,700vpd*
Pegasus Boulevard	East of SH1	6,000vpd*

* Daily traffic volumes from Mobile Road App

SH 1 is a two-lane single carriageway road at all of these locations. The traffic volumes on SH1 increase closer to Christchurch with the volume south of Woodend being at a high level for a rural two-lane road, particularly at peak times.

Figure 9 below shows the hourly traffic patterns on SH1 south of Waikuku, for an average weekday, in addition to Friday, Saturday and Sunday.

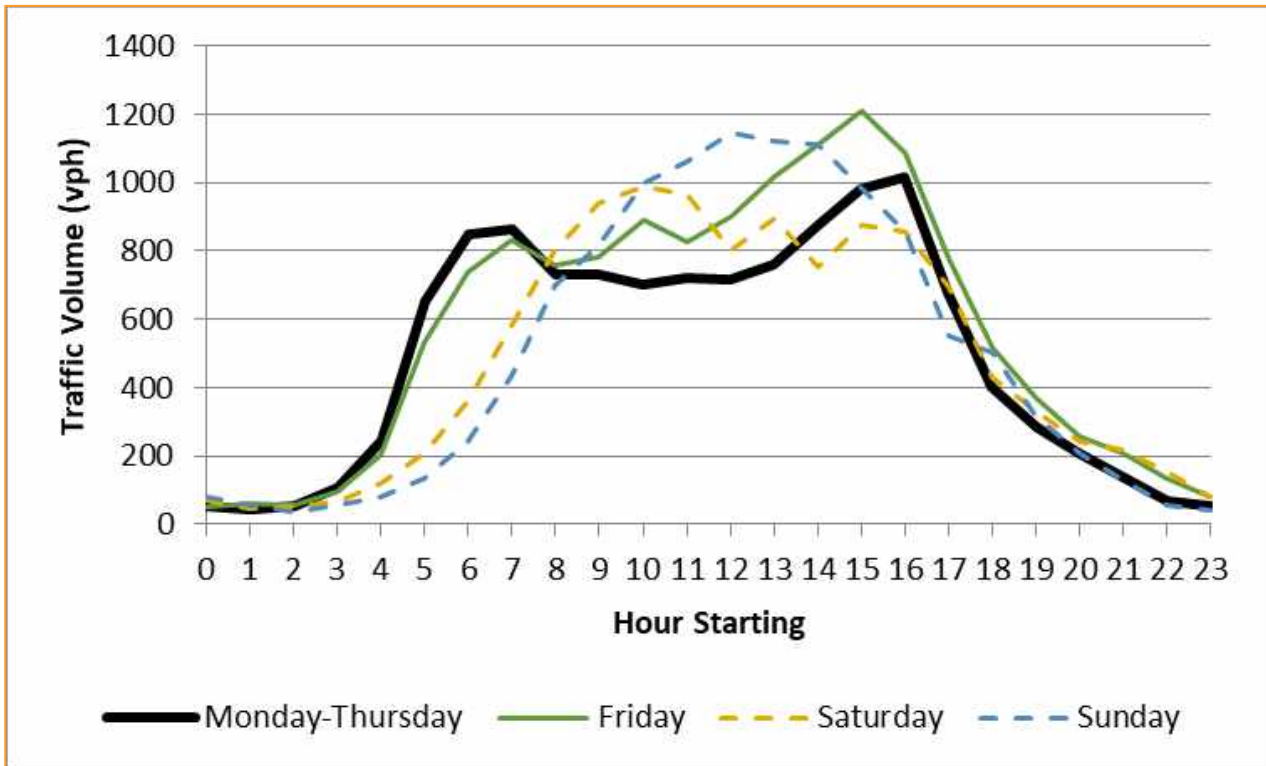


Figure 9: Average Hourly Traffic Volumes SH1 South of Waikuku, Week of 14 October – 20 October 2019

It can be seen that there are morning and evening commuter peaks exhibited during weekdays, a late Friday peak associated with travel out of Christchurch, and high hourly flows throughout the middle of the day on weekends. On weekends, SH1 carries lower daily traffic volumes than it does during weekdays.

Figure 10 shows further detail of the Monday to Thursday average hourly traffic volumes by direction on SH1 south of Waikuku.

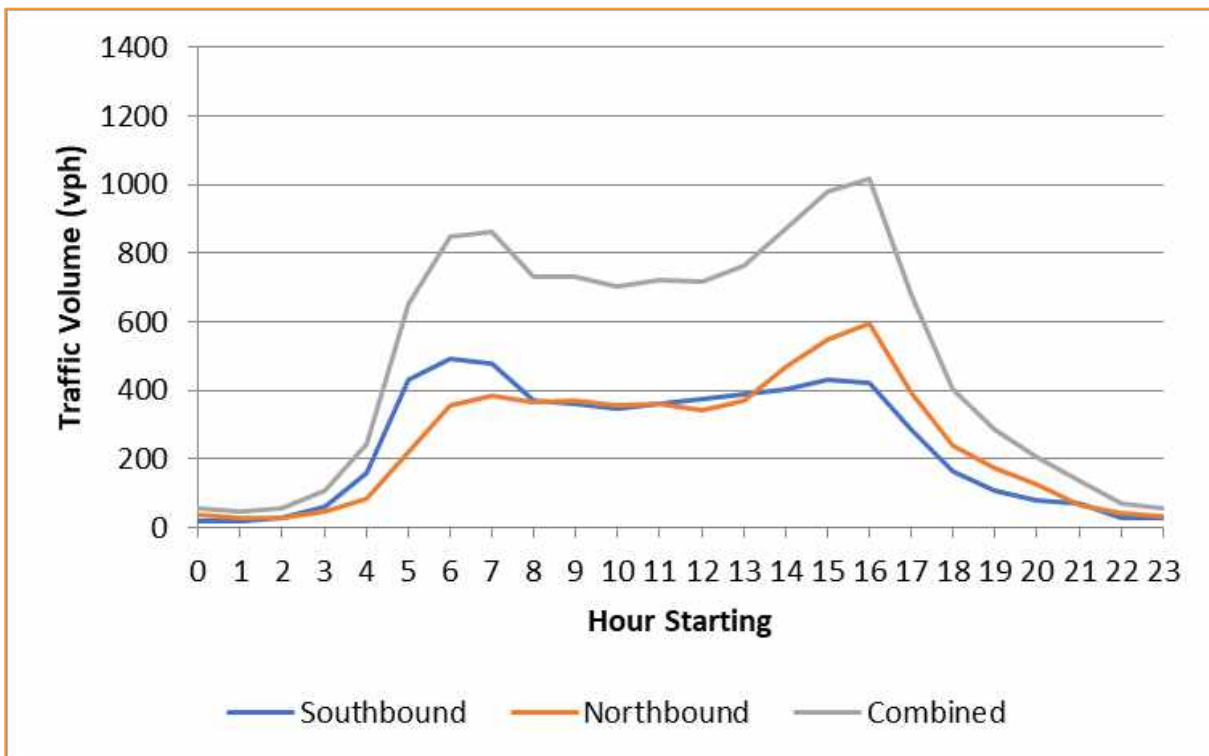


Figure 10: Monday to Thursday Average Hourly Traffic Volumes by Direction, SH1 South of Waikuku, Week of 14 October – 20 October 2019

There is a peak of approximately 500vph in southbound traffic during the hour of 6:00am-7:00am, while northbound traffic volumes remain lower through the early morning period. Between 9:00am and 3:00pm traffic volumes in each direction are similar and approximately 400vph. Northbound traffic volumes peak at approximately 600vph between 4:00pm and 5:00pm, at which time there are approximately 1,000vph two-way.

5. Road Safety

The NZTA's Crash Analysis System was used to review the crash history of the SH1 / Pegasus Boulevard / Bob Robertson Drive intersection. In the full five-year period of 2015-2019, there have been 18 crashes reported at the roundabout. Two involved minor injuries and the remainder were non-injury crashes. Most of the crashes were either loss of control, lane change or rear-end crashes, which are typical crash types at roundabouts. Roundabouts also typically result in relatively low-speed impacts and the fact that almost all of the crashes recorded were non-injury crashes suggests that the roundabout is operating as expected.

6. Future Development

6.1 SH1 Woodend Bypass

A new four lane SH1 bypass to the east of Woodend (the "Woodend Bypass") is planned, with a designation in place to protect the land required. **Figure 11** shows the planned alignment of the bypass. It will extend from the northern end of the existing Christchurch Northern Motorway at Pineacres, around Woodend to the east, to SH1 south of the Pegasus / Ravenswood roundabout.

The designation allows for a larger roundabout to be constructed to the west of the existing Pegasus / Ravenswood roundabout to suit the Bypass alignment. The intention is that the southern leg of the roundabout will connect only to the bypass and that the existing Main North Road will divert to join Garlick Street in Ravenswood.

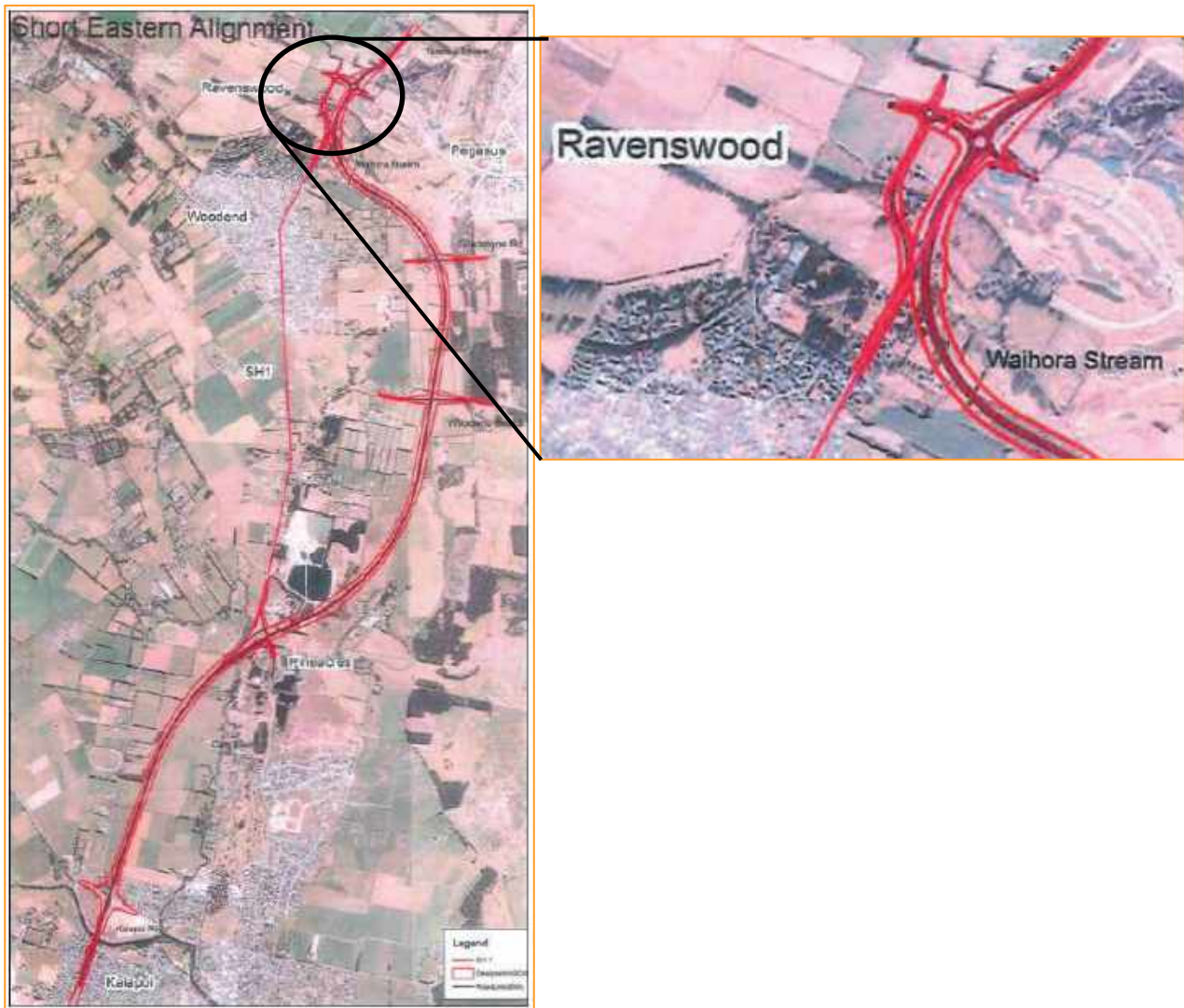


Figure 11: Proposed Woodend Bypass Alignment

There is no mention of the Woodend Bypass in the NZTA National Land Transport Programme or the Canterbury Regional Land Transport Plan, meaning there is no certainty around a construction date. However, there is continued political pressure for the bypass to be constructed to remove the large volumes of SH1 through traffic from the centre of Woodend. Furthermore, it is understood the Woodend Bypass has been put forward by the Waimakariri District Council to the Government as a regional economic stimulus project that would support the Covid-19 response and could follow the completion of the Christchurch Southern Motorway Stage 2 and the Christchurch Northern Corridor projects.

6.2 Key Activity Centre

The Regional Policy Statement at Chapter 6 (Recovery and Rebuilding of Greater Christchurch) identifies a "Key Activity Centre" (**KAC**) at Woodend / Pegasus with the location indicatively shown at Ravenswood. An extract of the Greenfield Priority and KAC locations is shown in **Figure 12** below.

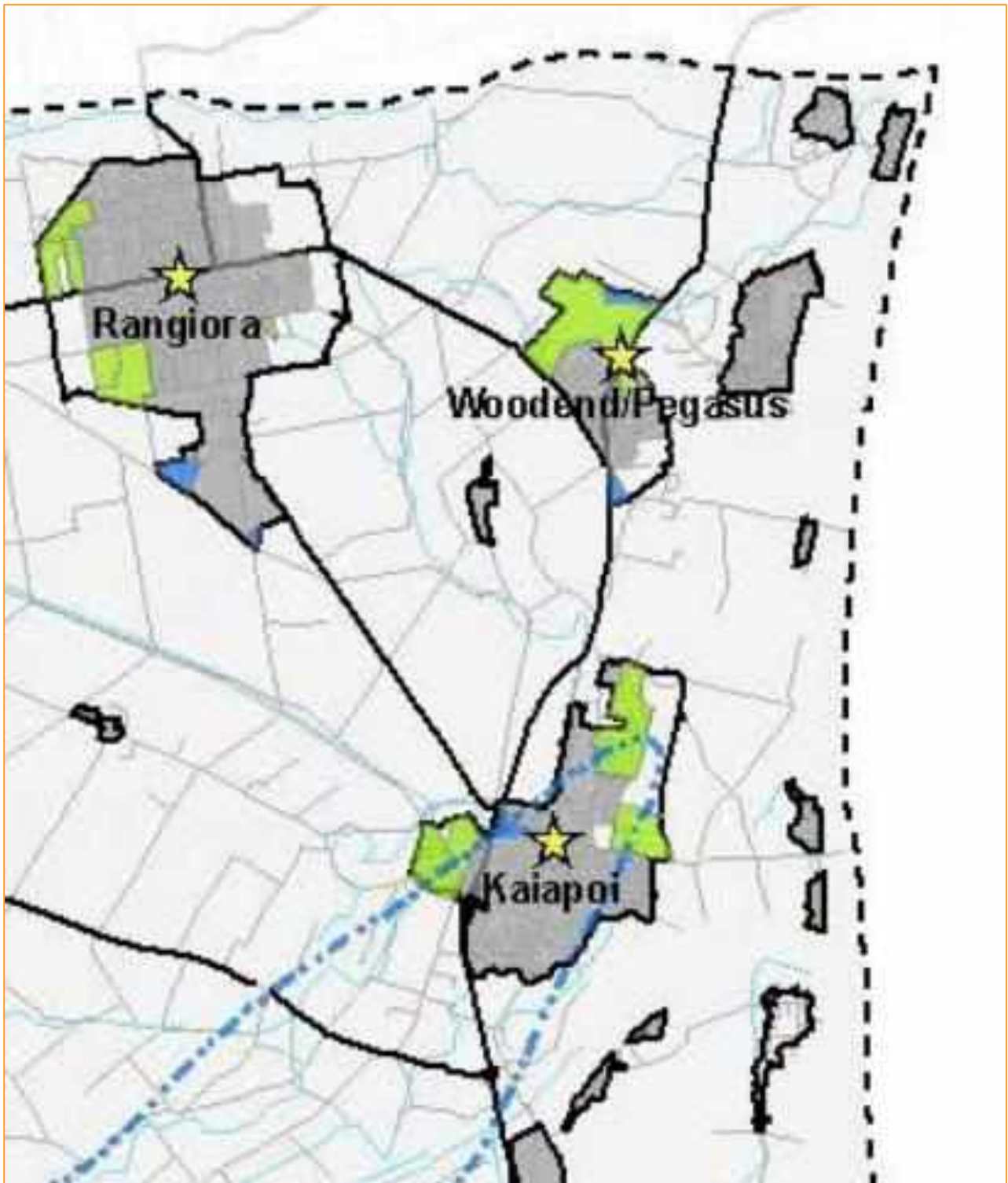


Figure 12: Greenfield Priority Areas – Extract of Map A in Chapter 6 of the RPS

It is understood that the previously zoned commercial area in Pegasus has been developed with neighbourhood commercial activity, such that Ravenswood is now the most logical location for achieving the KAC provisions.

6.3 Consented Ravenswood Development

Figure 13 is the Outline Development Plan (ODP) for Ravenswood as included in the Waimakariri District Plan. It shows commercial areas zoned Business 1 and Business 2 close to SH1, as well as Residential 6 zones to the west and Residential 6A zones around the Business 1 area.



Figure 13: Ravenswood ODP

The 2019 master plan for Ravenswood is shown in **Figure 14**. It shows the planned residential layout, including a possible retirement village, the commercial area and one large undivided lot next to the commercial area.



Figure 14: 2019 Ravenswood Master Plan

Figure 15 provides a more recent version of the Masterplan showing lots that have been sold. As can be seen, the western end of the residential development (Stages 1 and 2) have been sold, and many of the commercial and industrial sites have also been sold. The large undivided lot is highlighted for the proposed Plan Change.

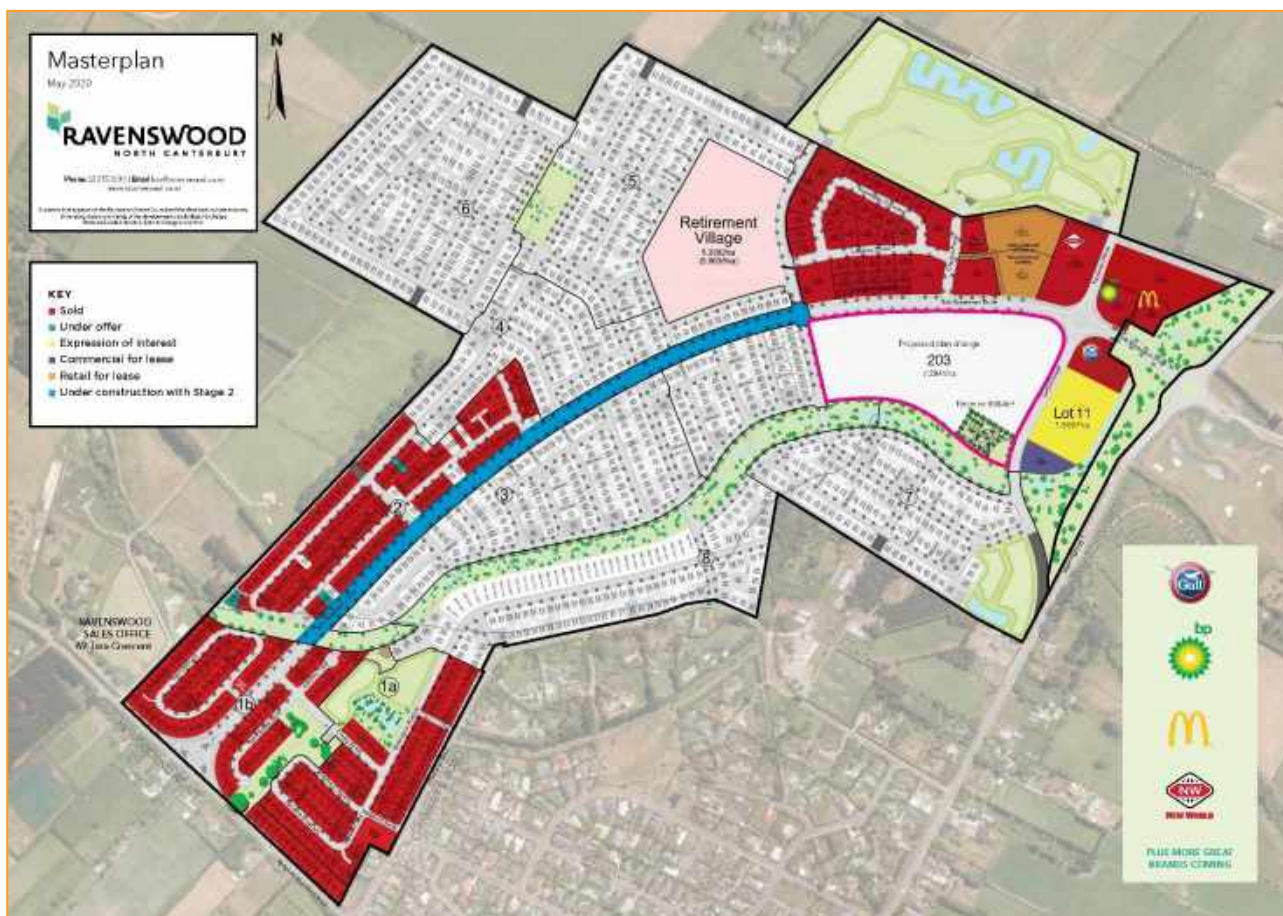


Figure 15: Latest Ravenswood Master Plan

6.4 Ravenswood Internal Rooding

As described earlier, it is intended that Bob Robertson Drive extends, as a spine road for the whole of Ravenswood, from Rangiora Woodend Road to SH1. The road will be classified as an Urban Collector Road and will provide for considerable through movements as well as access to both the residential and commercial areas of Ravenswood.

Garlick Street is proposed to run from Bob Robertson Drive in the commercial area to the south. It is included in the NZTA designation for the Woodend Bypass, and as such will eventually connect directly into Main North Road, north of Woodend, when the Woodend Bypass is built. The road will provide a primary connection between Woodend and Ravenswood / Pegasus.

6.5 Ravenswood Traffic Forecasts

Stantec (previously TDG) carried out traffic analysis for the BP service station, McDonald's restaurant and New World supermarket resource consents in 2016. As the assessments considered full development of Ravenswood and Pegasus, the traffic modelling used at the time is adopted as the basis for the assessment of the proposed Plan Change. The sections of the 2016 report discussing the traffic modelling are contained in **Appendix A** of this report.

Figure 16 is a map showing the zones that make up the traffic model.

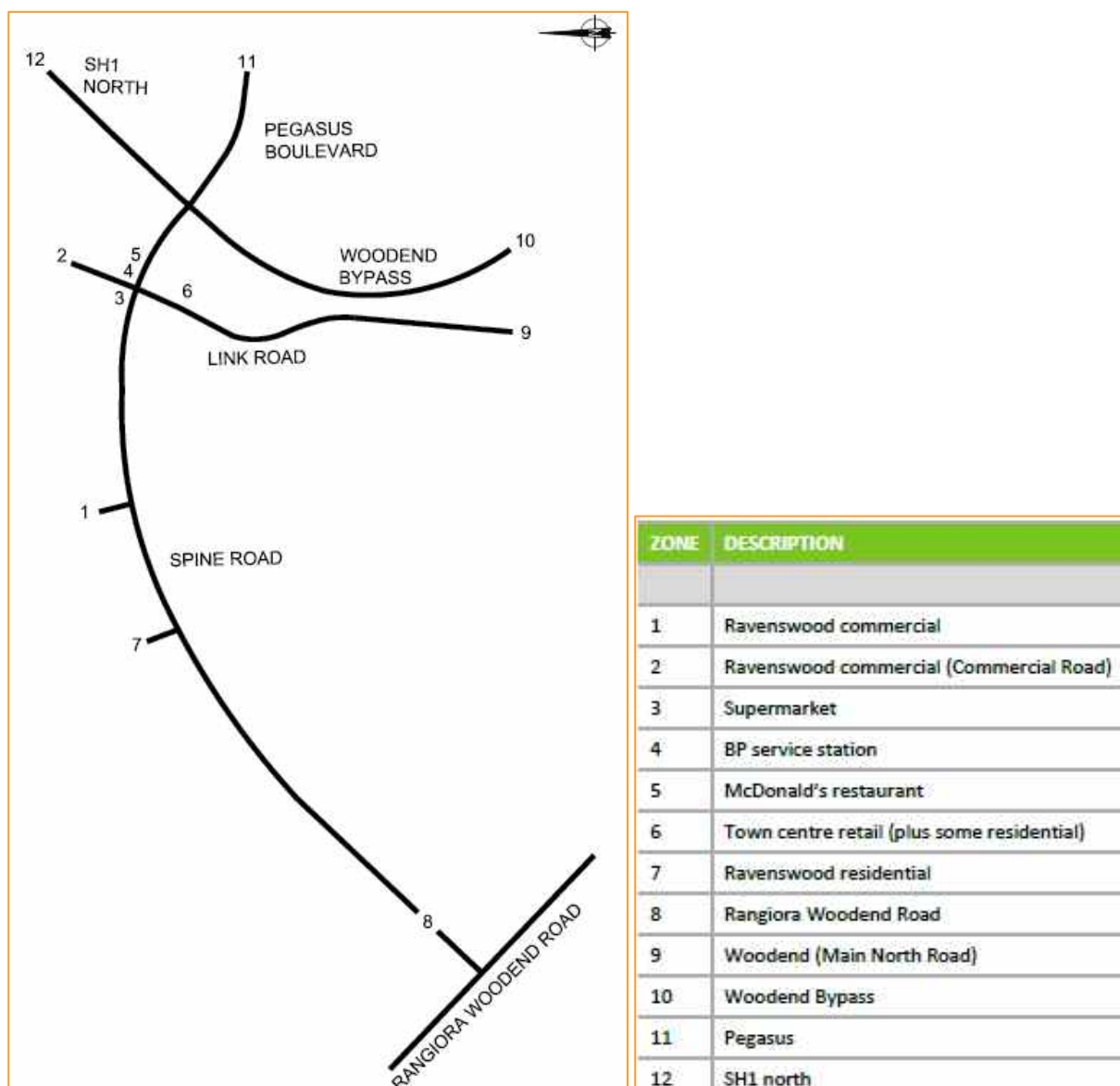


Figure 16: 2016 Traffic Model Zones

6.6 Future Cycling Network

In the Waimakariri Walking and Cycling Strategy 2017-2022, 'Ravenswood- spine road- short term' is listed as a current/committed subdivision/development project aimed at ensuring walking and cycling linkages are provided in new urban subdivision areas. It is understood this will ensure the off-road shared path adjacent to Bob Robertson Drive will continue right through Ravenswood to Rangiora Woodend Road.

A network of off-road walkways and cycleways are planned along the Taranaki Stream, visible in the southern part of the Ravenswood master plan, and throughout the subdivision.

7. Proposed Plan Change Overview

Figure 17 shows the outline of the RCA and the proposed zoning within it. The red coloured lots are proposed to be zoned Business 1 and the pink lots are proposed to be zoned Business 2. Several existing consents for land-use development are also highlighted.



Figure 17: Proposed Plan Change- Business 1 Pink, Business 2 Red

The table in **Appendix B** of this report outlines the proposed changes by lot for the commercial area. The key proposed changes from a transport perspective are:

- Lot 203, 7.8ha, previously zoned for residential use, is proposed for Business 1 use; and
- Lots 11, 15 and 202 are proposed to be zoned for Business 1 use.

Lots 13 and 14, which are currently zoned Business 2, are also proposed for Business 1 zoning, but there are existing resource consents for retail developments on these lots.

As highlighted in the proposed new ODP for Ravenswood (**Figure 18**), the Business 1 zoned area is proposed as a new 'Key Activity Centre' within the Waimakariri District.

The commercial area will be accessed primarily by the Urban Collector Road routes of Bob Robertson Drive, and also Garlick Street.

The inclusion of Garlick Street in the ODP as an Urban Collector Road reflects its future through-traffic carrying function as a result of the Woodend Bypass designation. The through function will only be achieved on Garlick Street when the Woodend Bypass is completed, however the District Plan access standards can be applied for site development in the interim with the expectation of the future increased use.

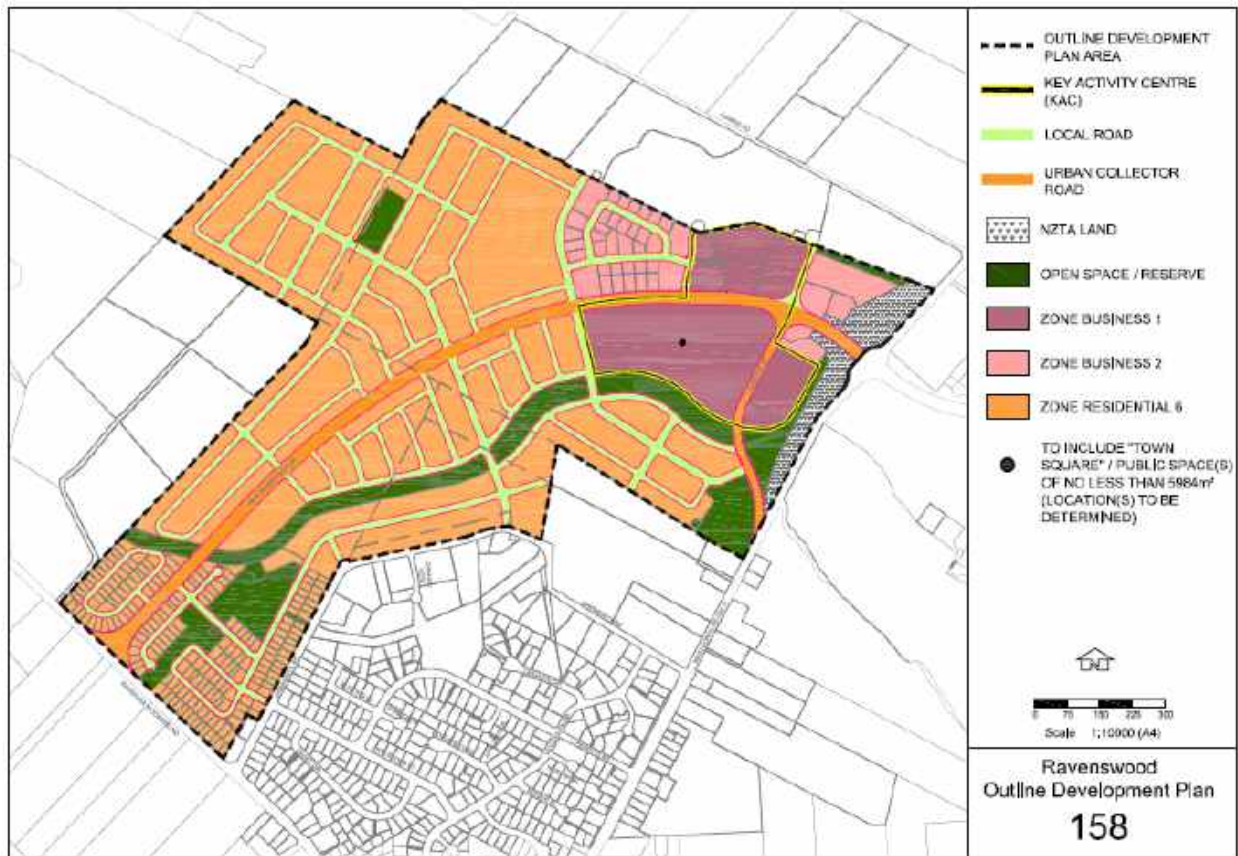


Figure 18: Proposed Ravenswood ODP

8. Traffic Generation / Distribution

8.1 Traffic Generation Rates

The NZTA Research Report 453 'Trips and Parking Related to Land Use' provides recorded traffic generation rates for large shopping centres, which it defines as shopping centres with a gross floor area (GFA) greater than 10,000m². A median traffic generation rate of 7.1 vehicle movements per hour (vph) per 100m² GFA, and a 15th percentile traffic generate rate of 3.8vph/100m² GFA, are reported for these shopping centres.

A traffic generation rate of 4vph/100m² GFA has been adopted for this assessment for 'Core Retail' activities in the Business 1 zones. This is considered an appropriate traffic generation rate given the following:

- The proposed Business 1 zones could accommodate over 30,000m² GFA of core retail;
- The remote location of the RCA relative to the largest residential catchments i.e. Christchurch;
- The high traffic generating supermarket is treated separately in the traffic analysis that follows;
- It is considered that the background volumes in the adopted traffic modelling are high; and
- The time of peak traffic generation of the various activities will not be coincident, and indeed will not all occur during the evening peak period.

A traffic generation rate of 1.5vph/100m² GFA has been used for future 'Other Business' areas in the Business 1 zones and all future activities in the Business 2 zones. This is consistent with the traffic generation rate used for Business 2 zoned activities in the 2016 assessment. It is an average traffic generation rate for manufacturing and office type activities and is still considered appropriate.

8.2 Changes to Traffic Generation Resulting from PPCR

Using the development zones from the 2016 traffic modelling, the PPCR will only alter traffic generated by Zone 1 (Ravenswood Commercial) and Zone 6 (Town Centre). Zone 1 loads onto Bob Robertson Drive, west of Garlick Street, and Zone 6 loads onto Garlick Street.

Zone 2 (to the rear of the McDonald's site) remains of an appropriate scale. The zones representing the McDonald's, BP and New World sites (3, 4 and 5) can remain unchanged. The residential zone (Zone 7) was modelled to accommodate approximately 1,350 households, which is still appropriate.

Changes to the total traffic generation of the two zones resulting from the PPCR have been calculated and are summarised in the two tables below. Activity in the proposed Business 1 zoned Lot 203 has been evenly split between Zones 1 and 6, since it is expected to have vehicle access to both frontage roads.

Table 8-1: Changes to Traffic Generation Forecast for Zone 1

Activity	Quantity	Traffic Generation Rate	Traffic Generation
Zone 1 -Previously Modelled			
90% of total Business 2	45,850m ² GFA*	1.5vph/100m ² GFA	690vph
Zone 1- Proposed			
Business 2 subdivision	25,200m ² GFA*	1.5vph/100m ² GFA	380vph
Lot 12- Business 2	600m ² GFA	1.5vph/100m ² GFA	10vph
Lot 13/14- Business 1	3,700m ² GFA	4vph/100m ² GFA	150vph
50% Lot 203- Business 1			
- Core retail	10,090m ² GFA	4vph/100m ² GFA	400vph
- Other business	4,320m ² GFA	1.5vph/100m ² GFA	60vph
Lot 15- Business 1			
- Core retail	1,310m ² GFA	4vph/100m ² GFA	50vph
- Other business	560m ² GFA	1.5vph/100m ² GFA	10vph
TOTAL			1,070vph
Increase			380vph (55%)

* GFA calculated from assumed 60% site coverage

Table 8-2: Changes to Traffic Generation Forecast for Zone 6

Activity	Quantity	Traffic Generation Rate	Traffic Generation
Zone 6 -Previously Modelled			
Town centre- Business 1	4,200m ² GFA	12vph/100m ² GFA	500vph
Residential- 10% total	150 lots	0.8vph/household	120vph
TOTAL			620vph
Zone 6- Proposed			
50% Lot 203- Business 1			
- Core retail	10,090m ² GFA	4vph/100m ² GFA	400vph
- Other business	4,320m ² GFA	1.5vph/100m ² GFA	60vph
Lots 1 and 2- Business 2	1,740m ² GFA*	1.5vph/100m ² GFA	30vph
Lots 11 and 202- Business 1			
- Core retail	5,400m ² GFA	4vph/100m ² GFA	220vph
- Other business	2,310m ² GFA	1.5vph/100m ² GFA	30vph
TOTAL			740vph
Increase			120vph (19%)

* GFA for Lot 1 assumed 300m²

The change in trip generation to/from Zones 1 and 6 associated with the Plan Change is predicted to be an increase of approximately 500vph.

9. Traffic Effects Assessment

9.1 Positive Effects

It is considered the PPCR will result in positive transportation effects, particularly a reduction in long distance vehicle trips. This is because of the proximity of the RCA to the growing residential catchment in this part of the Waimakariri District. Having more employment and shopping opportunities for people living in Ravenswood, Woodend and Pegasus in the immediate vicinity, as well as in Kaiapoi, Amberley and

Rangiora, will reduce the need for people living in these areas to travel further afield, primarily to Christchurch, for work and shopping, which is supportive of the Regional Policy Statement provision for a KAC in this area.

It is noted that Pegasus has less commercial development than originally planned. It is zoned for 10 hectares of Business 1 use, but much of that land (at least 40%) is now allocated for housing.

9.2 Method of Assessment

The traffic modelling work carried out in 2016 for the initial developments in the RCA has been built on to assess the traffic effects of the PPCR.

The traffic volumes on the main Ravenswood and Pegasus Roads from that modelling exercise are considered high as they reflect high trip generation from fully developed Pegasus and Ravenswood land. It is understood that they are very high compared to more recent land-use based traffic forecasts which have anticipated less than full buildout of zoned residential land. It is considered that the 2016 assessment gives a worst-case scenario which reflects a long-term scenario.

The previous traffic modelling work includes the Woodend Bypass and this is appropriate because it is considered the bypass will be warranted and constructed before the time that traffic volumes reach the previously forecast levels.

In the interim, before the Woodend Bypass is constructed, traffic volumes on the Ravenswood and Pegasus roads are expected to be considerably lower than those previously forecast and the road network to the north of Woodend is expected to continue to operate efficiently. Furthermore, it is possible that the PPCR and the associated increased opportunities for employment and shopping in the area could reduce the need for travel through Woodend.

The assessment that follows is focussed on the possible increases to the traffic generation of Zones 1 and 6 associated with the Plan Change, and the consequential effects of that extra traffic generation on the SH1 roundabout and the internal roundabout during a weekday evening peak period.

Previous traffic analysis focussed on these two roundabouts because traffic volumes are expected to be highest in the eastern part of Ravenswood. It is also important to demonstrate that the SH1 roundabout can continue to operate efficiently. This is still considered appropriate for this assessment.

The weekday evening peak period is the focus of this assessment because previous assessments have indicated it is the critical time in terms of traffic effects when traffic volumes on the key roads are highest.

The additional traffic generation forecast for Zones 1 and 6, outlined in the previous section of the report, has been added to the Origin-Destination matrix previously developed.

During the evening peak period, when passing traffic volumes on Bob Robertson Drive and Garlick Street are high, a relatively high proportion of traffic generated by the retail developments would be expected to come directly from the passing traffic streams on these roads. This pass-by traffic generation would not add to the traffic volumes passing through either of the roundabouts assessed below. The additional traffic volumes generated by Zones 1 and 6 have been reduced by 30% for the roundabout analysis that follows to allow for this. There will also be traffic diverted to the RCA from nearby traffic streams e.g. from the traffic flow from the Woodend Bypass to Pegasus. These traffic movements do not involve new vehicles on the road network. Diverted traffic movements have not been allowed for in the analysis that follows, which is considered conservative, since allowing for them would likely involve reducing some turning volumes.

Traffic has been assigned to the various turning movements at the SH1 roundabout and the internal roundabout in the same way as in the 2016 assessment. It is noted that the Gull service station on the south-eastern corner of the Bob Robertson Drive / Garlick Street roundabout has direct vehicle access to Bob Robertson Drive. For simplicity, this site has been included in Zone 6. This is considered acceptable since some extra turning traffic will be added to the internal roundabout in the analysis that follows and in practice most service station traffic will come directly from the passing traffic streams.

Figure 19 summarises the increases to two-way external traffic volumes forecast.

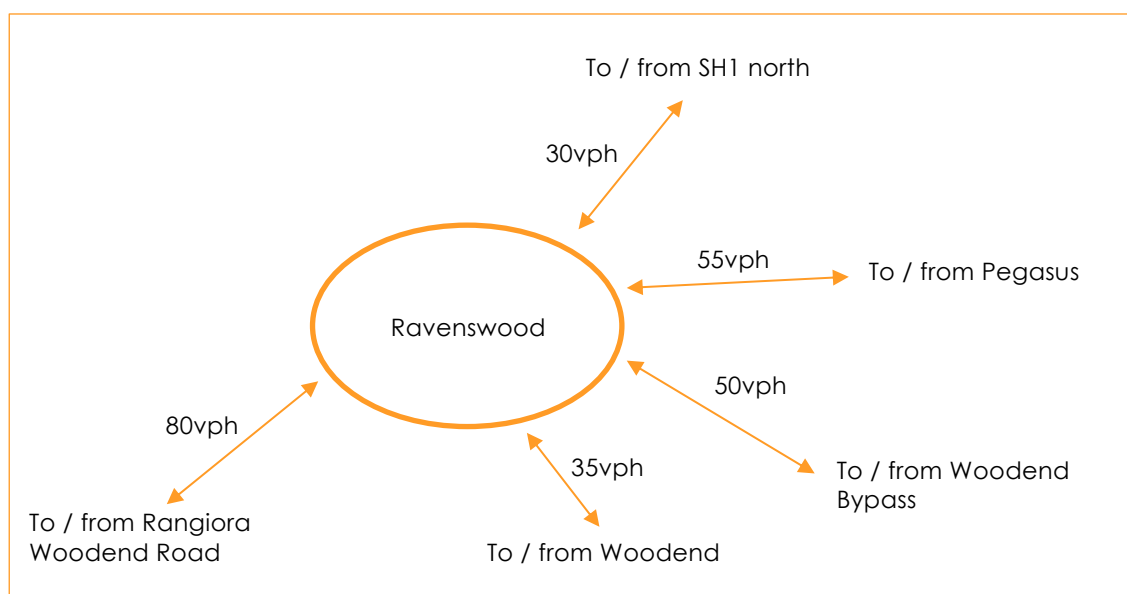


Figure 19: Forecast External Traffic Generation

9.3 Internal Roundabout Performance

The roundabout at the Bob Robertson Drive / Garlick Street intersection has been modelled with SIDRA Intersection. The following table contains the forecast performance of the roundabout with the future traffic volumes previously forecast in 2016.

Table 9-1: Internal Roundabout Modelled Performance- Without Plan Change

Approach	Movement	Volume	Average Delay	95% Queue Length
Kesteven Street	Left	100vph	9s	1 veh
	Through	50vph	10s	
	Right	20vph	15s	
Bob Robertson Drive East	Left	190vph	4s	5 veh
	Through	580vph	4s	
	Right	110vph	9s	
Garlick Street	Left	180vph	7s	2 veh
	Through	70vph	6s	
	Right	170vph	11s	
Bob Robertson Drive West	Left	10vph	4s	6 veh
	Through	560vph	5s	
	Right	220vph	10s	
Intersection Total		2,270vph	6s / A	

These results show that the internal roundabout is forecast to operate efficiently with low delays and good levels of service.

The roundabout has also been modelled with the additional traffic movements associated with the PPCR assigned to it. The following table contains a summary of the forecast performance.

Table 9-2: Internal Roundabout Modelled Performance- With Plan Change

Approach	Movement	Volume	Average Delay / LOS	95% Queue Length
Kesteven Street	Left	100vph	11s / B	2 veh
	Through	50vph	13s / B	2 veh
	Right	20vph	18s / B	
Bob Robertson Drive East	Left	210vph (+20)	5s / A	2 veh
	Through	630vph (+50)	4s / A	6 veh
	Right	110vph	10s / A	
Garlick Street	Left	210vph (+30)	8s / A	3 veh
	Through	70vph	6s / A	3 veh
	Right	190vph (+20)	12s / B	
Bob Robertson Drive West	Left	20vph (+10)	5s / A	1 veh
	Through	630vph (+70)	7s / A	10 veh
	Right	260vph (+40)	12s / B	
Intersection Total		2,500vph (+230)	7s / A	

The internal roundabout is forecast to operate effectively with the additional traffic associated with the proposed Plan Change. Only small increases in delays are forecast and the roundabout would still operate efficiently. Queues on the eastern approach are relatively short, meaning they would not have any effect on the operation of the SH1 roundabout.

9.4 SH1 Roundabout Performance

The performance of the SH1 roundabout with and without the proposed Plan Change has been assessed. It is noted that this analysis is based on the geometry of the existing roundabout.

The planning and concept design work done for the Woodend Bypass designation anticipated a new, larger roundabout being constructed slightly to the west of the existing roundabout, to suit the alignment of the four-lane Bypass. The land required for the altered roundabout has been protected through the designation process, however there is no certainty about whether the roundabout would be altered at the time that the Bypass is constructed or the existing roundabout could/would be retained. Regardless, the roundabout geometry would be similar, and it is considered this analysis is helpful to demonstrate the effect of the assessed additional traffic generation on the SH1 roundabout performance.

The following table summarises the forecast performance of the SH1 roundabout from the 2016 assessment without the proposed Plan Change.

Table 9-3: SH1 Roundabout Modelled Performance- Without Plan Change

Approach	Movement	Volume	Average Delay / LOS	95% Queue Length
SH1 North	Left	40vph	9s / A	2 veh
	Through	280vph	9s / A	4 veh
	Right	150vph	15s / B	
Pegasus Boulevard	Left	180vph	4s / A	1 veh
	Through	480vph	3s / A	3 veh
	Right	40vph	9s / A	
SH1 South (Woodend Bypass)	Left	230vph	9s / A	2 veh
	Through	530vph	12s / B	9 veh
	Right	310vph	18s / B	
Bob Robertson Drive	Left	160vph	6s / A	1 veh
	Through	460vph	10s / B	9 veh
	Right	190vph	15s / B	
Intersection Total		3,040vph	10s / A	

The roundabout was forecast to operate efficiently with low delays and good levels of service.

The following table summarises the forecast performance of the SH1 roundabout with the additional traffic associated with the proposed Plan Change added to it.

Table 9-4: SH1 Roundabout Modelled Performance- With Plan Change

Approach	Movement	Volume	Average Delay / LOS	95% Queue Length
SH1 North	Left	40vph	10s / B	3 veh
	Through	280vph	11s / B	5 veh
	Right	160vph (+10)	17s / B	
Pegasus Boulevard	Left	180vph	4s / A	1 veh
	Through	500vph (+20)	3s / A	3 veh
	Right	40vph	9s / A	
SH1 South (Woodend Bypass)	Left	250vph (+20)	9s / A	2 veh
	Through	530vph	13s / B	11 veh
	Right	310vph	20s / C	
Bob Robertson Drive	Left	180vph (+20)	6s / A	2 veh
	Through	490vph (+30)	18s / B	15 veh
	Right	210vph (+20)	23s / C	
Intersection Total		3,180vph (+140)	12s / B	

Overall, the roundabout is still forecast to operate with good levels of service. There is a small increase in the average delays and queuing on the Bob Robertson Drive approach forecast. However, the forecast delays on this approach are still acceptable and the queuing is not forecast to block the entry to the BP service station / McDonald's restaurant site, based on the existing roundabout layout.

If an altered roundabout is constructed further west as part of the Woodend Bypass works, the queue could extend to be close to the Garlick Street roundabout. As a result, some interaction between the queue on Bob Robertson Drive and traffic turning to/from the commercial sites (BP/McDonalds and Gull on the other side of the road) may occur at peak times. It is noted that the concept roading design that accompanied the designation indicated a median along this section of Bob Robertson Drive, which would not allow right turns to/from these sites. It should be reiterated that this analysis is considered to be very conservative, with the background traffic volumes considered high.

9.5 Rangiora Woodend Road

Rangiora Woodend Road carries relatively low traffic volumes compared to SH1 and is not considered critical for this assessment. A large roundabout has been constructed at the Rangiora Woodend Road / Bob Robertson Drive intersection and it is expected it will have plenty of capacity for future traffic volumes. The PPCR is only forecast to increase the traffic volumes using that roundabout by approximately 80vph during peak times. This would be expected to have a negligible effect on the performance of the roundabout.

9.6 Wider Road Network

The proposed Plan Change is not expected to have a noticeable effect on the transport network beyond the SH1 roundabout. Any additional traffic external to Ravenswood that could be generated by the PPCR will be dispersed across the various routes in different directions, as indicated in Figure 15 as previously referred to. Using the assessment method adopted, additional traffic volumes on the external routes are all forecast to be up to or less than 80vph. As described earlier, the PPCR could decrease the number of longer distance trips being made to and from this part of the Waimakariri District due to increased employment and shopping opportunities for locals.

10. Subdivision Roads and Lot Access

It is expected that most of the additional traffic movements associated with the PPCR will be made to and from Bob Robertson Drive and Garlick Street. Both of these roads have been designed to accommodate high volumes of traffic, with wide traffic lanes and shoulders and off-road cycle facilities. The possible increases in traffic volumes generated by the PPCR are relatively small compared to the high traffic

volumes previously forecast to be carried by these roads. It is considered they will be able to accommodate any additional traffic movements resulting from the PPCR.

The traffic analysis carried out indicates that Bob Robertson Drive within the commercial area could carry in excess of 1,500vph in the future. Considering the existing road hierarchy in the surrounding area and conservative, long term assessment of the traffic volumes, the retention of an Urban Collector Road classification is considered appropriate, and would suitably allow for the mix of through and access function to be considered in the commercial town/centre environment. Most of the key access-related decisions in the vicinity of the roundabouts that could be influenced by the road hierarchy have already been considered and addressed through existing consents. In addition, any high trip generating activities are assessed as Discretionary Activities.

Bob Robertson Drive would be a busy road for a large retail development to directly access, and localised road upgrades may be necessary at new access points e.g. for Lot 203. Possible upgrades could include formation of auxiliary turning lanes e.g. a right turn bay or signalisation of an access if traffic volumes warrant it. Bob Robertson Drive has a wide 30m corridor which will provide flexibility for road upgrades. The need for upgrades at specific access points can be considered at the resource consent stage and/or in the future as part of standard Council monitoring of the road network. It will likely be preferable to separate any vehicle access to Lot 203 from the Clayton Place intersection and other major vehicle accesses. This will keep potentially conflicting vehicle movements separate for the safety of the corridor.

Garlick Street has a narrower 20m road reserve, providing less flexibility for road upgrades. The road has wide traffic lanes and shoulders but there is limited space between the kerb lines and the footpaths for localised road widening. Garlick Street is forecast to carry lower traffic volumes than Bob Robertson Drive in the future (approximately 450vph south of the commercial area but increasing up to possibly 1,000vph through the commercial area). At these traffic volumes, it is considered an Urban Collector Road status would be appropriate. An option could be to treat Garlick Street with traffic calming measures, encouraging slower speeds, and without road widening, drivers waiting to turn right into a site would have to stop within the traffic lane and temporarily slow following traffic. This could allow Garlick Street to be a higher amenity street for pedestrians, cyclists and shoppers. Regardless, access provisions for specific developments will need to be addressed at the resource consent stage.

The Lot 13/14 development is already consented to have access to Clayton Place. This means the suitability of that road to accommodate traffic associated with retail development in Lots 13/14 should already have been confirmed. The PPCR is not expected to substantially increase traffic volumes on Clayton Place.

It is noted that Lot 203 will have a local road frontage along its western edge. A roundabout is proposed where the local road meets Bob Robertson Drive, and this could provide convenient access to/from Lot 203. This road could also provide convenient access for service vehicles, to avoid needing to turn to/from driveways on the busier frontages. However, effects on the potentially more sensitive residential land use adjacent would need to be considered. As already stated, access arrangements for lots will be considered at the resource consent stage.

11. Alternative Travel Modes

11.1 Pedestrians / Cyclists

Pedestrians and cyclists have been well catered for in the provision of off-road shared paths and footpaths along the various subdivision roads. Off-road networks of pedestrian and cycle paths are proposed throughout the wider subdivision, including along the Taranaki Stream.

The Business 1 zoning being on both sides of Bob Robertson Drive and Garlick Street will result in pedestrian crossing demand across both roads. There are crossings provided at the roundabout, and the need for additional midblock pedestrian crossing points can be considered as the Business 1 zoned land is developed and traffic volumes increase.

Wide berms mean there is plenty of space for paths to be widened as/if required, particularly along the Lot 203 Bob Robertson Drive frontage, where a wider footpath consistent with the Business 1 zoning should be provided by the developer of the site.

11.2 Public Transport

Bus routes are periodically reviewed by Environment Canterbury and they can be altered, or new bus routes can be introduced to suit development patterns. Environment Canterbury consulted the public in

2019 regarding public transport connectivity in Waimakariri. The following map shows additional bus routes that were proposed following the consultation. The two additional routes would connect Rangiora and Pegasus with Kaiapoi, both via Woodend.

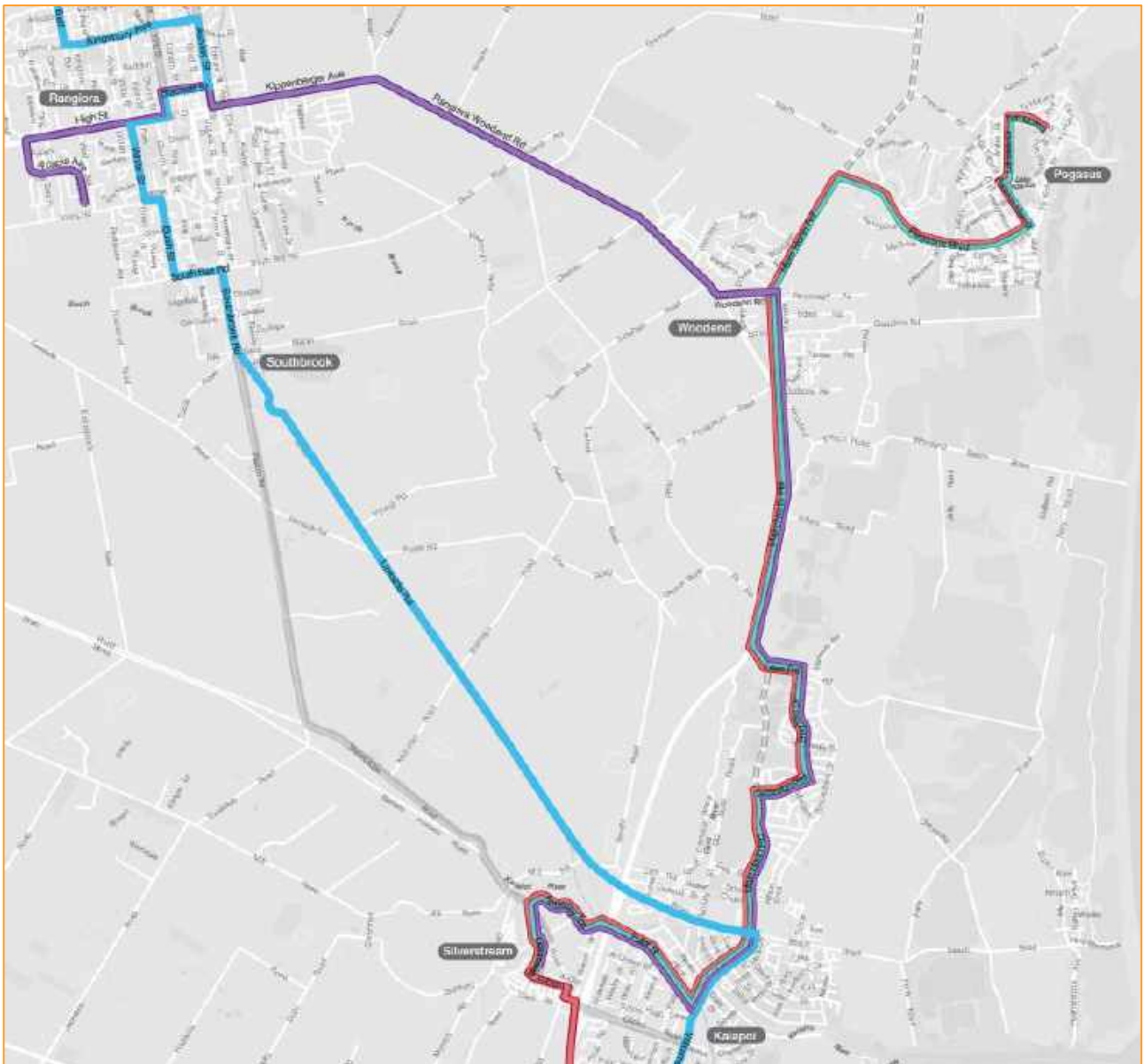


Figure 20: Proposed Waimakariri Bus Routes (ECan Website)

If Ravenswood is developed as planned, it is considered that it would be desirable to have a public bus route run through the subdivision at some stage. Where the bus route links to and how frequently it runs would come down to commercial decisions made by the service operators.

Bob Robertson Drive is considered the logical bus route within Ravenswood and the wide berms could readily accommodate indented bus bays.

Garlick Street could also accommodate bus movements with its wide carriageway. Partly indented bus bays would be able to fit between the existing lane edge lines and the footpaths.

12. Canterbury Regional Policy Statement

Chapter 5 of the Canterbury Regional Policy Statement (**RPS**) contains objectives and policies aimed at addressing issues related to land use and infrastructure. These have been reviewed and the transportation relevant policies are contained in **Appendix C**.

There are recurring themes across the policies and the following are the key points from a transportation perspective:

- Energy efficiency and alternative travel modes
- Urban consolidation and coordinated development
- Integrated land use and transport network
- Residential, employment and recreational options
- Avoiding effects on strategic land transport infrastructure

Providing more employment and shopping opportunities close to the growing residential catchments in the Woodend / Ravenswood / Pegasus area as well as in Rangiora and Amberley is expected to reduce the need for longer distance travel to/from Christchurch.

There will be an increased opportunity for residents to travel by non-car modes given the shorter travel distances required and the Ravenswood master plan further encourages non-car travel through a network of off-road paths.

The proposed Plan Change is forecast to have negligible adverse effects on the performance of the strategic/arterial road network (SH1 traffic movements at the roundabout).

It is considered that the proposed Plan Change is consistent with the policies, and therefore the objectives, in Chapter 5 of the RPS from a transportation perspective.

13. Waimakariri District Plan Objectives and Policies

The objectives and policies in the Waimakariri District Plan have been reviewed. The most relevant objective is Objective 13.1.1 from the 'Resource Management Framework' chapter. Objective 13.1.1 is to:

Recognise and provide for the community's social and economic relationships within the District and external to the District, particularly those with Christchurch City, so that the District's natural, living, and productive environments:

- *are managed in an integrated and sustainable way;*
- *provide for and safeguard the community's wellbeing, health, and safety;*
- *are managed to enable the protection and enhancement of natural and physical resources; and*
- *are not adversely affected by resource use, development and protection.*

The relevant transportation related policy is Policy 13.1.1.4 which is to:

Encourage patterns and forms of settlement, transport patterns and built environment that:

- *reduce the demand for transport;*
- *provide choice of transport modes which have low adverse environmental impact;*
- *decrease the production of motor vehicle emissions;*
- *make efficient use of regional transport network;*
- *reduce the rate of use of non-renewable energy sources;*
- *enable opportunities for intensification and redevelopment within town centres; and*
- *efficiently manage parking and loading within town centres.*

These are similar to the policies reviewed in the RPS, with more of a focus on specific issues in Waimakariri related to the need for travel to and from Christchurch. It is considered that the proposed Plan Change is even more aligned with these objectives and policies due to the increased ability of the Ravenswood commercial area to cater to the surrounding Waimakariri settlements (and Amberley). It will provide increased employment and shopping opportunities for especially the immediate areas of Woodend,

Ravenswood and Pegasus, reducing their reliance on travel to/from Christchurch. It also recognises that land at Pegasus previously zoned for commercial development has not been developed for that purpose.

Objective 15.1.2 of the 'Urban Environment' chapter is related to the role of Key Activity Centres (KAC). It is specifically related to KACs in Rangiora and Kaiapoi, however it is considered relevant for this assessment given the Ravenswood Business 1 zones is proposed to be a KAC. The relevant Policy 15.1.2.1 is to:

Provide for activities within Key Activity Centres in a way that:

- *achieves efficient utilisation and redevelopment of sites;*
- *considers integrated public transport linkages;*
- *allows for the efficient movement of pedestrians;*
- *avoids reverse sensitivity effects on existing Key Activity Centre activities; and*
- *anticipates appropriately located commercial tenancies that fulfil a retail anchor function.*

From a transport perspective, good public transport accessibility and pedestrian provision are important for a KAC. As previously outlined, it is considered that Bob Robertson Drive is a logical future bus route and Garlick Street could also accommodate buses. If the level of development in Ravenswood warrants a bus service(s) in the future, then the KAC will be well located for convenient public transport access to/from the surrounding area. Also as already outlined, it is considered important that pedestrians will be able to safely and conveniently cross Bob Robertson Drive and Garlick Street between different parts of the KAC. Midblock crossings are expected to be warranted at some point. Catering to on-site pedestrian demands is also important and this would be addressed at the resource consent stage as sites are developed.

14. Waimakariri District Plan Transport Rules

The "Traffic Management" rules in Chapter 30 of the Waimakariri District Plan have been reviewed for suitability for future developments within the sites that the proposed Plan Change will apply to. **Table 14-1** summarises the relevant transport related rules. They are all considered appropriate to be relied on for future developments within the proposed Business 1 and Business 2 zones and at this stage there are considered to be no reasons for non-compliance.

Table 14-1: Relevant Transport Related District Plan Rules

Rule Number	Subject of Rule
30.6.1.13-14	Accessway widths, formation
30.6.1.19	Vehicle crossing numbers, spacings, widths
30.6.1.21	Vehicle crossing pedestrian sightlines
30.6.1.24	Vehicle crossing sight distances
30.6.1.26	Distances of vehicle crossings from intersections
30.6.1.34	Numbers and dimensions of car parking, loading and cycle parking spaces
30.6.1.37	On-site manoeuvring requirements
30.6.1.39	Accessible parking space provision

It is noted that Rule 31.23.3 in the 'Health, Safety and Wellbeing' chapter sets a development traffic generation threshold of 250vpd, above which Council has discretion over a range of matters, including traffic effects in terms of Policy 15.1.1.2 (effects on efficient and effective functioning of roads, ease and efficiency of access and cycleways). This would be applied to new resource consent applications within the commercial area.

15. Conclusion

The PPCR is considered consistent with the relevant local planning objectives and policies from a transportation perspective. It will result in increased employment and shopping opportunities primarily for the growing and immediately surrounding residential catchments of Woodend, Pegasus and Ravenswood, as well as for Rangiora, Kaiapoi and Amberley and it is consistent with the Regional Policy Statement provision of a KAC at this location. This will result in a reduced need for residents in these areas to travel longer distances to primarily Christchurch. The proximity of the Ravenswood commercial area to the immediately surrounding residential catchments and the proposed pedestrian and cycle networks through Ravenswood, will make more trips by active travel modes possible.

The potential additional traffic demands to/from the commercial area associated with the PPCR have been calculated, and a traffic effects assessment has been carried out utilising previous traffic modelling as a basis. The analysis showed that the possible additional traffic could be accommodated on the surrounding road network, with negligible adverse effects on the performance of the two key roundabouts or the wider road network. It is reiterated in this regard that the analysis undertaken is conservatively demanding given the expected decreases to traffic volumes external to Ravenswood due to the Ravenswood commercial area intercepting otherwise longer existing trips to other centres.

Taken overall, it is concluded that based on the transportation analyses that have been described in this report, the PPCR can be supported from a transportation perspective.

Appendices



Appendix A **2016 Traffic Modelling**

Approach	Movement	Volume (vph)	Average Delay (s)	LOS
SH1 North	Left	24	8	A
	Through	458	8	A
	Right	59	14	B
Pegasus Boulevard	Left	178	4	A
	Through	125	3	A
	Right	55	9	A
SH1 South	Left	209	6	A
	Through	652	7	A
	Right	293	13	B
Ravenswood 'Spine Road'	Left	92	5	A
	Through	178	4	A
	Right	123	10	B
Intersection Total		2,446	7	A

Table 8: Modelled Performance of SH1 Roundabout with 20% Growth in External Traffic Volumes

The increases in external traffic volumes had a minimal effect on the expected intersection performance, with all movements still expected to operate with LOS A or B.

8.2 Scenario 2: Full Development

8.2.1 TRIPS Model

TDG developed a TRIPS model for the original planning of Pegasus and this has also been used for Ravenswood previously. It was considered that it would be most convenient if this model was used to guide the traffic forecasting for the analysis carried out in assessing the transportation effects of the proposed BP service station, McDonald's restaurant and New World supermarket. This is because the TRIPS model contains more detail relating to Ravenswood when compared to the coarser Christchurch Transport Model (CTM). In particular the CTM only includes 1,031 dwellings and 287 jobs in its 2031 land use forecasts.

To test the continued suitability of the TRIPS model, forecast volumes on strategic links, forming a cordon around Ravenswood, were compared with existing volumes and volumes forecast by the CTM.

The three locations where traffic volumes were compared were SH1 north of Ravenswood, SH1 south of Woodend and Rangiora Woodend Road west of Ravenswood. **Table 9** shows the respective existing and forecast two-way PM peak hour volumes at the three locations.

LOCATION	EXISTING	TRIPS MODEL	CTM
Year	2015	2021	2031
SH1 North of Ravenswood	1,040	1,156	1,402
Main North Road South of Woodend	1,850	1,043	770
Woodend Bypass	-	1,760	1,546
South of Woodend Combined	1,850	2,803	2,336
Rangiora Woodend Road West of Ravenswood	600	1,815	1,304

Table 9: Comparison of External Link Traffic Volumes (PM Peak)

The volumes reported from the TRIPS model and the CTM south of Woodend include traffic on the bypass as well as traffic on the existing SH1 Main North Road.

The TRIPS model output includes significantly higher PM peak hour traffic volumes south of Woodend and west of Ravenswood than those from the CTM. It is worth noting that the latest CTM does have a higher volume on Rangiora Woodend Road than the previous one.

The TRIPS model has a lower volume on SH1 north of Ravenswood than the CTM. The latest CTM has a significantly lower volume on this section of road than the previous CTM and also the CTM volumes are 2031 forecasts whereas the TRIPS model was originally a 2021 forecast.

Overall the TRIPS model is still considered to be relatively consistent with the strategic traffic forecasts provided by the CTM.

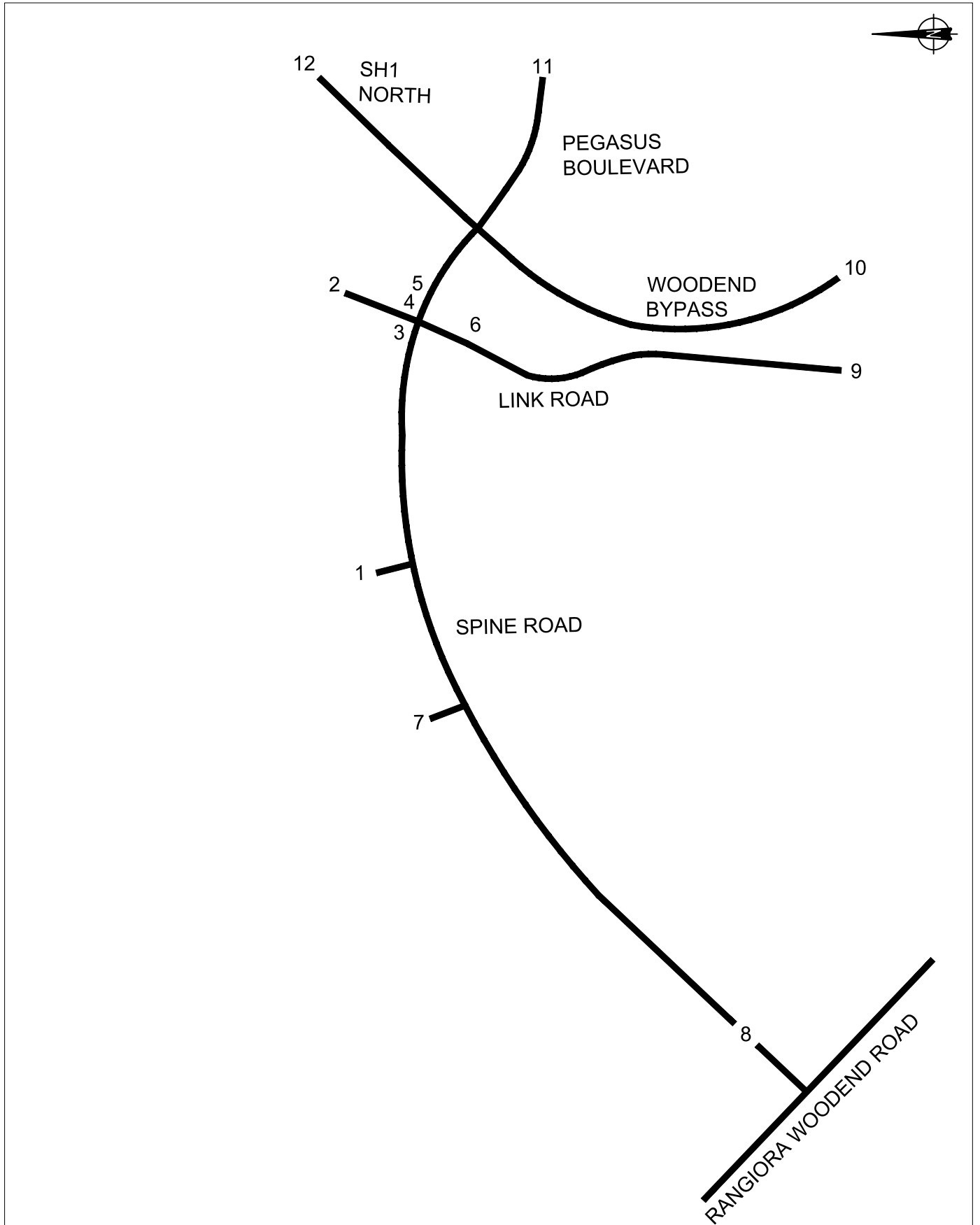
The adjusted TRIPS model to be used for the assessment is described in the following section of this report. The traffic volumes on the surrounding strategic roads were adjusted to be generally more in accordance with the CTM 2031 volumes than those from the unadjusted version. This approach is justified because the TRIPS model includes more detail within Ravenswood which makes it more reliable than the CTM for assessing the effects at local intersections and driveways.

8.2.2 Assessment Model

Having confirmed the suitability of the TRIPS model, the origin-destination (O-D) matrix was modified and disaggregated further to inform the analysis of the expected performance of the key intersections. A total of 12 zones were used for the analysis, as outlined in **Table 10**. **Figure 8** shows the model layout with the zones labelled in accordance with Table 10.

Other than the BP service station, McDonald's restaurant and New World supermarket, which are not permitted activities, the rest of the business zoned area has been assumed to be occupied by permitted activities.

Wednesday, 6 April 2016 0 20mm



RAVENSWOOD COMMERCIAL
TRAFFIC MODEL ZONE NUMBERS



8

SCALE: NTS

ZONE	DESCRIPTION	TRIP ENDS	
		In	Out
1	Ravenswood commercial	264	421
2	Ravenswood commercial (Commercial Road)	32	44
3	Supermarket	270	238
4	BP service station	107	89
5	McDonald's restaurant	77	71
6	Town centre retail (plus some residential)	285	327
7	Ravenswood residential	648	418
8	Rangiora Woodend Road	506	609
9	Woodend (Main North Road)	235	160
10	Woodend Bypass	639	1,077
11	Pegasus	814	692
12	SH1 north	734	468

Table 10: Trip Ends for Zones in Ravenswood Model (PM Peak)

The distributions from the TRIPS model were used to seed the new O-D matrix.

Further adjustments made to the O-D matrix included:

- Increased trips between Ravenswood residential and Ravenswood commercial, reduced external trips by same amount;
- Supermarket, McDonald's and BP traffic 50% in / 50% out;
- Increased external residential trips and reduced external commercial trips by the same amount;
- Reduced volume from Pegasus to Rangiora Woodend Road to match strategic CTM demand;
- Factored up residential traffic to reflect 1522 residential lots instead of 930 originally proposed;
- Reallocated 10% of residential traffic to town centre zone.

The resulting zone trip ends are indicated in Table 10 above. The full PM Peak O-D matrix is in **Appendix A** of this report. The adjusted matrix reflects the 2031 CTM strategic forecasts and this is consistent with the Ravenswood development which is unlikely to be completed much before that date.

Table 11 shows a comparison between the CTM forecast traffic volumes and the traffic volumes forecast by the adjusted TRIPS model.

LOCATION	CTM	Adjusted TRIPS Model
Year	2031	2031
SH1 North of Ravenswood	1,402	1,200
Woodend Bypass	1,546	1,714
Rangiora Woodend Road West of Ravenswood	1,304	1,311

Table 11: Comparison of CTM and Adjusted Trips Model External Link Traffic Volumes

The adjusted TRIPS model has a volume closer to the CTM than the previous TRIPS model for SH1 north of Ravenswood.

The NZTA evidence for the Woodend Bypass included a predicted traffic volume of 18,400vpd along the Woodend Bypass. A peak hour traffic volume of approximately 1,800vph would be associated with this daily volume. Accordingly, the adjusted TRIPS model has a peak hour traffic volume on the Woodend Bypass more similar to the NZTA volume than the CTM.

The peak hour volume on Rangiora Woodend Road in the adjusted TRIPS model is very similar to that in the CTM.

8.2.3 Intersection Performances

The expected future performance of the 'spine road' / 'link road' roundabout and the SH1 / 'spine road' roundabout in the PM peak, with the two proposed developments, has been forecast using SIDRA 6.1.

Table 12 shows the expected performance of the internal roundabout. The average delays reported include geometric delays of 2-6 seconds for the various movements.

Appendix A

Future Ravenswood Origin-Destination Matrix

	1	2	3	4	5	6	7	8	9	10	11	12		
1	-	3	29	10	6	25	73	52	83	51	64	60	37	421
2	3	-	3	1	1	3	10	6	9	6	2	7	4	44
3	12	1	-	4	3	16	36	36	52	26	20	48	21	238
4	3	0	3	-	1	5	12	17	18	10	6	19	7	89
5	3	0	3	1	-	4	12	9	16	8	6	14	6	71
6	15	3	20	7	5	-	50	41	77	47	19	56	35	327
	36	8	58	23	16	53	194							
7	35	4	34	18	9	26	-	104	39	68	54	28		418
8	66	7	53	19	16	74	194	-	4	0	173	3		609
9	15	2	26	9	8	16	32	4	-	0	30	20		160
10	44	5	27	10	8	45	92	0	0	-	314	532		1077
11	47	5	50	20	14	48	124	140	27	176	-	40		692
12	22	2	23	8	7	22	45	3	18	278	40	-		468
	264	32	270	107	77	285	648	506	235	639	814	734		

Appendix B Details of Proposed Plan Change

RAVENSWOOD COMMERCIAL AREA AND KEY ACTIVITY CENTRE Existing and Proposed Land Use and Zoning Scenarios

Lot	Land Area (ha)	Existing Land Use ¹	Scenario 1 Current District Plan	Scenario 1 ²		Scenario 2 Proposed Rezoning	Scenario 2 ³		Key Activity Centre Land Area (ha)
				Core Retail GFA ⁴ (m ²)	Other Commercial GFA (m ²)		Core Retail GFA (m ²)	Other Commercial GFA (m ²)	
203	7.20	Vacant	Residential	Nil	Nil	Business 1	20173	8645	7.20
1 (DP 845570)	0.20	Vacant	Gull Consent	Nil	N/A	Business 2	Nil	N/A	-
2 (DP 845570)	0.36	Vacant	Business 2 zone purposes ⁴	Nil	1444	Business 2	1011	433	-
11	1.57	Vacant	Business 2 zone purposes ⁴	Nil	5263	Business 1	4384	1879	1.57
202	0.36	Vacant	Motel Consent ⁵	Nil	1444	Business 1	1011	433	0.36
9	0.44	BP	BP Consent	Nil	292	Business 2	Nil	292	-
10	0.31	McDonalds	McDonalds Consent	414	Nil	Business 2	414	Nil	-
201 ⁶	1.28	Vacant	Business 2	Nil	5115	Business 2	Nil	5115	-
2	1.16	Vacant	Supermarket Consent	3297	Nil	Business 1	3297	Nil	1.16
13 & 14	1.79	Vacant	Retail Consent	3705	Nil	Business 1	3705	Nil	1.79
15	0.47	Vacant	Business 2	Nil	1872	Business 1	1311	561	0.47
12	0.24	Vacant	Childcare Consent	Nil	600	Business 1	Nil	600	0.24
100 to 135	4.20	Bus Subdivision under construction	Business 2	N/A	N/A	Business 2	N/A	N/A	-
Total Areas:	19.56⁷			7416	17030		35308⁸	17958⁸	12.79

- As at 1 June 2020.
- The typical building footprint GFA for "Town Centre" activities is estimated at 40% of land area with the ratio of Core Retail GFA and Other Commercial GFA assumed at a 70/30 split of total footprint GFA.
- Consented (7416m²) and consentable (7717m²) Core Retail GFA under current District Plan (Scenario 1).
- The Computer Freehold Register for Lot 11 (from which Lots 1 and 2 DP 845570 have been since subdivided) confirms WDC acceptance in principle that this land can be used for Business 2 zone purposes, subject to the required resource consents being obtained. Haines Planning advises that Large Format Retail activity (occupying 40% of site area) is a consentable proposition under the current District Plan for "non-Town Centre" retail in the case of Business 2 zone land.
- The Motel consent (1000m² GFA) is treated as not being given effect to and reckoned as available for Core Retail and Other Commercial purposes.
- It is anticipated that Lot 201 will be used for Other Commercial activities including automotive related retail.
- It is proposed that the Key Activity Centre (KAC) comprise the Business 1 zone land in Scenario 2 totalling 12.9ha (excluding roads) in area. This compares with the KAC areas for Rangiora (20.9ha) and Kaiapoi (13.0ha) (both including public roads).
- Scenario 2 provides for 35308m² Core Retail GFA. Deducting the already consented Core Retail activities (7416m² GFA), the additional Core Retail GFA sought through the PPCR is 27892m². Other Commercial GFA is non-sensitive in terms of RIMA-based retail distribution effects. The additional Core Retail GFA represents 39.1% of the total 71,000m² GFA growth opportunity projected to year 2040 by Insight Economics.

Appendix C Canterbury RPS Land Use and Infrastructure Policies

5.3.1 Regional growth (Wider Region)

To provide, as the primary focus for meeting the wider region's growth needs, sustainable development patterns that:

1. ensure that any
 - a. urban growth; and
 - b. limited rural residential development

occur in a form that concentrates, or is attached to, existing urban areas and promotes a coordinated pattern of development;

2. encourage within urban areas, housing choice, recreation and community facilities, and business opportunities of a character and form that supports urban consolidation;
3. promote energy efficiency in urban forms, transport patterns, site location and subdivision layout;
4. maintain and enhance the sense of identity and character of the region's urban areas; and
5. encourage high quality urban design, including the maintenance and enhancement of amenity values.

5.3.2 Development conditions (Wider Region)

To enable development including regionally significant infrastructure which:

1. ensure that adverse effects are avoided, remedied or mitigated, including where these would compromise or foreclose:
 - a. existing or consented regionally significant infrastructure;
 - b. options for accommodating the consolidated growth and development of existing urban areas;
 - c. the productivity of the region's soil resources, without regard to the need to make appropriate use of soil which is valued for existing or foreseeable future primary production, or through further fragmentation of rural land;
 - d. the protection of sources of water for community supplies;
 - e. significant natural and physical resources;
2. avoid or mitigate:
 - a. natural and other hazards, or land uses that would likely result in increases in the frequency and/or severity of hazards;
 - b. reverse sensitivity effects and conflicts between incompatible activities, including identified mineral extraction areas;and
3. integrate with:
 - a. the efficient and effective provision, maintenance or upgrade of infrastructure; and
 - b. transport networks, connections and modes so as to provide for the sustainable and efficient movement of people, goods and services, and a logical, permeable and safe transport system

5.3.3 Management of development (Wider Region)

To ensure that substantial developments are designed and built to be of a high-quality, and are robust and resilient:

1. through promoting, where appropriate, a diversity of residential, employment and recreational choices, for individuals and communities associated with the substantial development; and
2. where amenity values, the quality of the environment, and the character of an area are maintained, or appropriately enhanced.

5.3.7 Strategic land transport network and arterial roads (Entire Region)

In relation to strategic land transport network and arterial roads, the avoidance of development which:

1. adversely affects the safe efficient and effective functioning of this network and these roads, including the ability of this infrastructure to support freight and passenger transport services; and
2. in relation to the strategic land transport network and arterial roads, to avoid development which forecloses the opportunity for the development of this network and these roads to meet future strategic transport requirements.

5.3.8 Land use and transport integration (Wider Region)

Integrate land use and transport planning in a way:

1. that promotes:
 - a. the use of transport modes which have low adverse effects;
 - b. the safe, efficient and effective use of transport infrastructure, and reduces where appropriate the demand for transport;
2. that avoids or mitigates conflicts with incompatible activities; and
3. where the adverse effects from the development, operation and expansion of the transport system:
 - a. on significant natural and physical resources and cultural values are avoided, or where this is not practicable, remedied or mitigated; and
 - b. are otherwise appropriately controlled.

