



PlanCreative

## Integrated Transport Assessment

# Doncaster Developments Limited

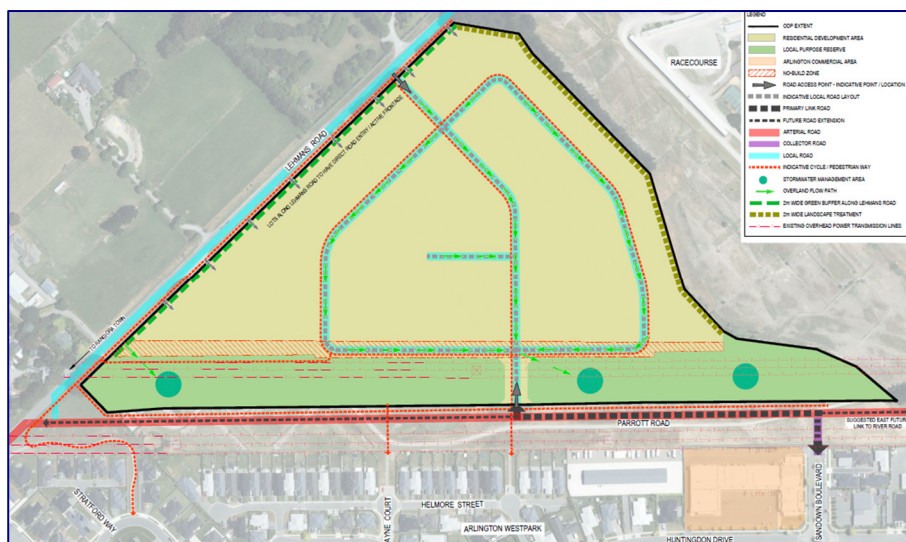
## Lehmans Road, Rangiora

5<sup>th</sup> March 2024

Waimakariri District Council

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## APPENDICES

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- Appendix B:** Legal Descriptions of the Subject Site
- Appendix C:** Operative North West Rangiora Outline Development Plan
- Appendix D:** Subdivision Plan for Lot 1002 DP526328
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- Appendix I:** Indicative Site Development Plan
- Appendix J:** Site Generated Traffic Distribution Calculations

## DOCUMENT CONTROL

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## 1.0 INTRODUCTION

This integrated transport assessment (ITA) relates to the establishment of a residential subdivision on 11.6 hectares of land located between Lehmans Road and Parrot Road in northwest Rangiora. This land is proposed to be zoned *Large Lot Rural Zone (LLRZ)* in the proposed Waimakiriri District Plan. This zoning would provide for residential subdivision of the site with a minimum average allotment area of 5,000m<sup>2</sup>. This would yield around 21 allotments from the subject site.

Instead, it is proposed to subdivide the site to provide for a smaller allotment size in the range of 400-700m<sup>2</sup> to provide for typical suburban development like that which has occurred immediately east of the subject site. The proposed smaller allotment size would increase the number of allotments within the subdivision to around 110 allotments.

This report considers the potential traffic effects of the proposed additional allotments on the operation of the surrounding road network. This report has been prepared by Ray Edwards whose qualifications and experience are summarised in **Appendix A**. This report is an update of an earlier preliminary transportation assessment prepared by the author in November 2021, and is based on site visits undertaken on 26 July 2021 and 22 February 2024, with weekday PM peak hour traffic surveys undertaken at key intersections in the vicinity of the site on 25 November 2021 and 26 February 2024.

This report includes a weekday PM peak hour assessment of the performance of adjacent road network links and the key intersections near to the site. This analysis, combined with site observations of weekday PM peak hour traffic flows, confirms that the road network in the vicinity of the site has capacity to cater for the proposed increased level of site development.

This report therefore concludes that the expected traffic generation from residential development of the subject site will have negligible effect upon the operation of the surrounding road network.



## 2.0 THE SUBJECT SITE AND SURROUNDS

### 2.1 Summary of Property Details

The four land parcels that constitute the subject site are detailed in Table 1 below:

Land Parcel	Legal Description	Area
a)	Lot 1 DP340848	4.0000ha
b)	Lot 1002 DP526449	4.0909ha
c)	Lot 1001 DP526449	2.4086ha
d)	Lot 1003 DP526449	1.0970ha
<b>Total</b>		<b>11.5965ha</b>

Table 1: Legal descriptions for the land parcels that constitute the subject site.

**Appendix B** contains a plan showing the location of these land parcels relative to Lehmans Road and Parrott Road. This plan shows how Lot 1003 DP526449 wraps around 266 Lehmans Road (Lot 192 DP437764) which has an area of 2519m<sup>2</sup>. For simplicity, 266 Lehmans Road will be considered as part of the subject site in this report.

The zoning of the subject site under the proposed District Plan is *Large Lot Rural Zone (LLRZ)*

### 2.2 Surrounds Information

Figure 1 on the next page shows that the subject site lies to the immediate west of the established Huntington residential subdivision that is in the northwest corner of the urban form of Rangiora. Figure 1 shows that:

- a) The site is bounded by Lehmans Road to the west and Parrott Road (an unformed road) to the southeast;
- b) Adjoining the southeastern side of Parrott Road is a recreation reserve under the ownership of the Council;
- c) Residential development is to the southeast of the reserve, and this includes a small shopping centre located at the intersection of Huntington Drive and Sandown Boulevard;
- d) Rural land use occurs to the west of Lehmans Road.
- e) The Rangiora Racecourse is located to the north of the subject site.



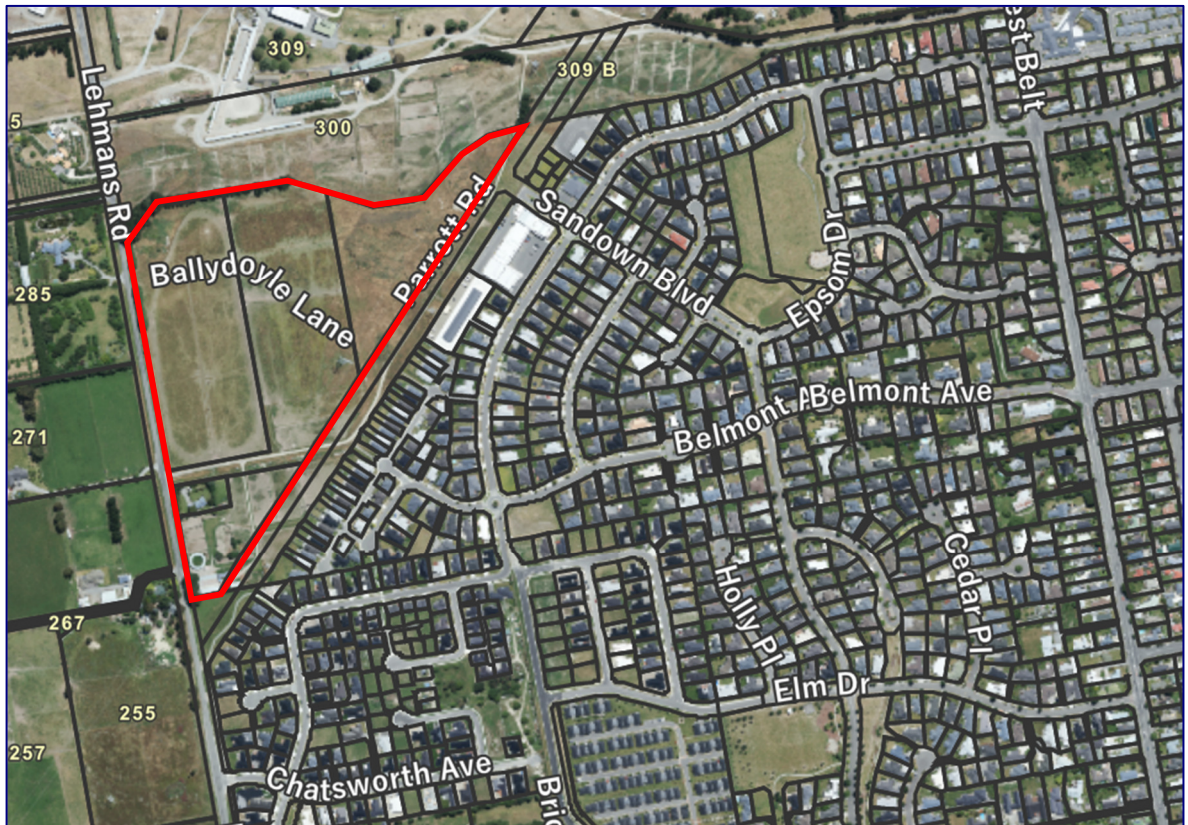


Figure 1: Location of the subject site, outlined in red (Image: Canterbury Maps 2024).

### 2.3 North West Rangiora Outline Development Plan

Under the operative District Plan, the site is located within *North West Rangiora Outline Development Plan* (ODP) area as identified on Planning Map #155 (refer **Appendix C**). A snip of this planning map is provided as Figure 2 on the next page. Figure 2 adds the location of the National Grid 220kV power transmission lines that run alongside the south-eastern site boundary (the dashed purple lines).

Figure 3 on the next page shows that under the proposed District Plan, the site remains as being identified within the proposed North West Rangiora ODP, with the ODP area being updated to show the residential and commercial subdivision and subsequent development that has been approved to date. This development matches that shown in the aerial image provided in Figure 1 above.

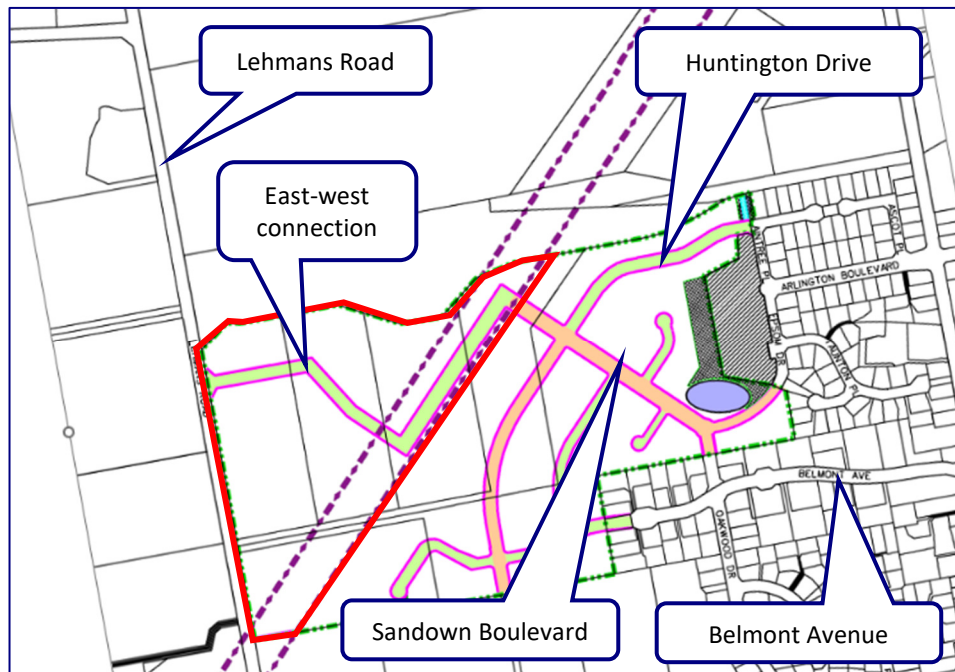


Figure 2: North West Rangiora ODP as shown on Planning map #155 of the operative Waimakariri District Plan. Location of the subject site + 266 Lehmans Road, outlined in red.

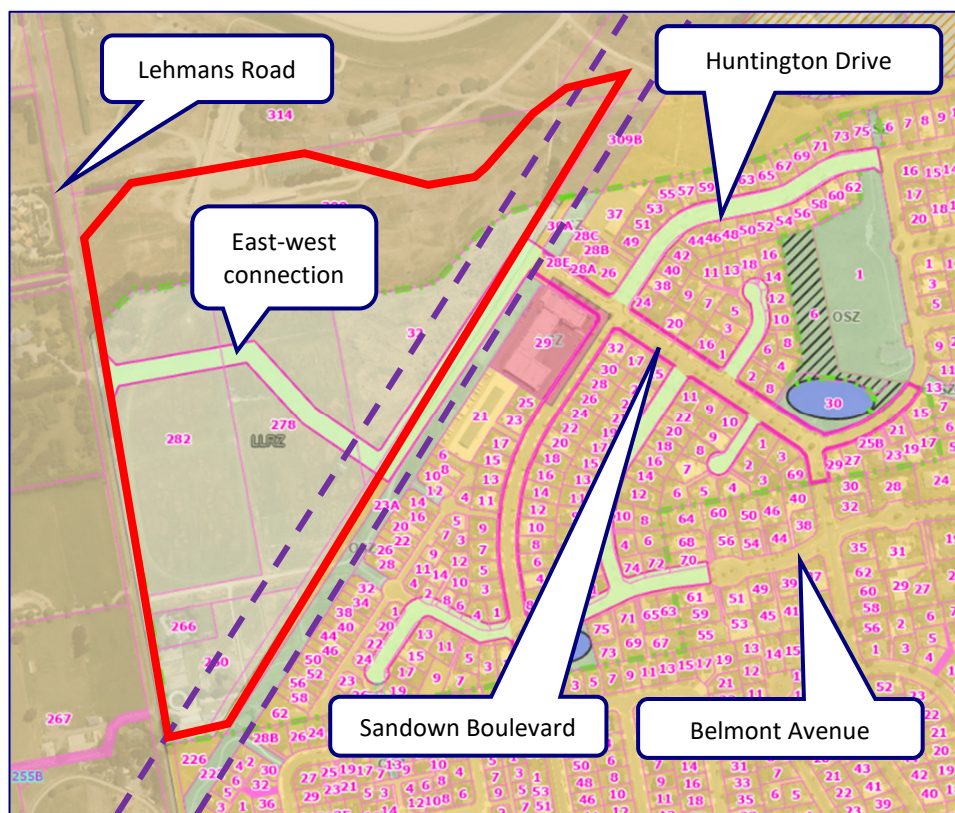


Figure 3: North West Rangiora ODP as shown on the planning maps website for the proposed Waimakariri District Plan. Location of the subject site, outlined in red



Comparing Figures 1, 2 and 3 shows that the road network that has been recently developed to the west of the site follows that shown on both ODPs, with the through connections of Huntington Drive, Sandown Boulevard, the western extension of Belmont Avenue, and Churchill Drive having all been constructed.

Figures 2 and 3 also show that the site is currently planned to include an east-west connection from the north-western end of Sandown Boulevard. This connection follows the alignment of Parrott Road before traversing across the subject site to connect with Lehmans Road.

### 3.0 THE ROAD NETWORK

#### 3.1 Legal Roads in the Vicinity of the Subject Site

Figure 4 below shows the legal roads in the immediate vicinity of the subject site. These roads match the layout shown on the ODP.

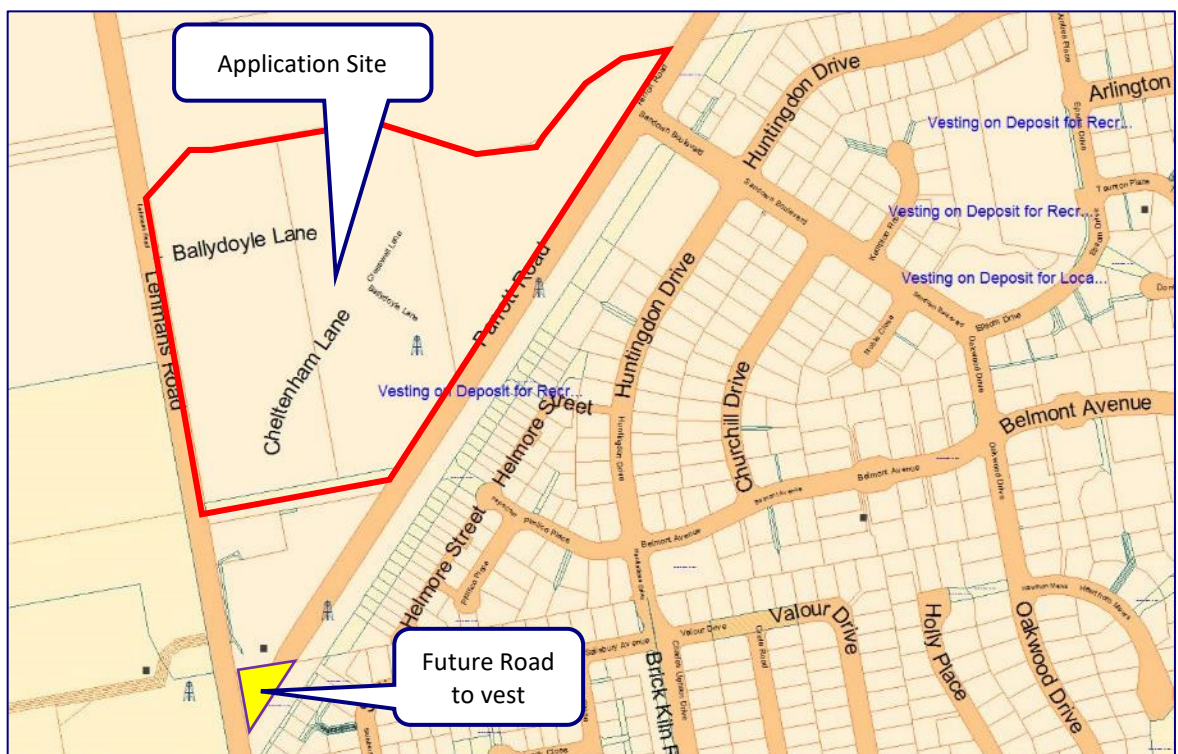


Figure 4: Location of the subject site, outlined in red, within the surrounding legal road network (dark orange)





Figure 4 also shows a triangle of land at the southern end of Parrott Road that is Lot 10 created from subdivision of Lot 1002 DP526328. The subdivision plan provided in **Appendix D** shows this piece of land as being vested in the Council as future road to vest. This means that there is the opportunity to extend Parrott Road to connect with Lehmans Road utilising what is existing road reserve.

### 3.2 Road Classification

The road classifications in the vicinity of the subject site, as specified in the proposed District Plan, are presented in Figure 5a below. The application site is shown in red, and the future road to vest is again shown as a yellow triangle:

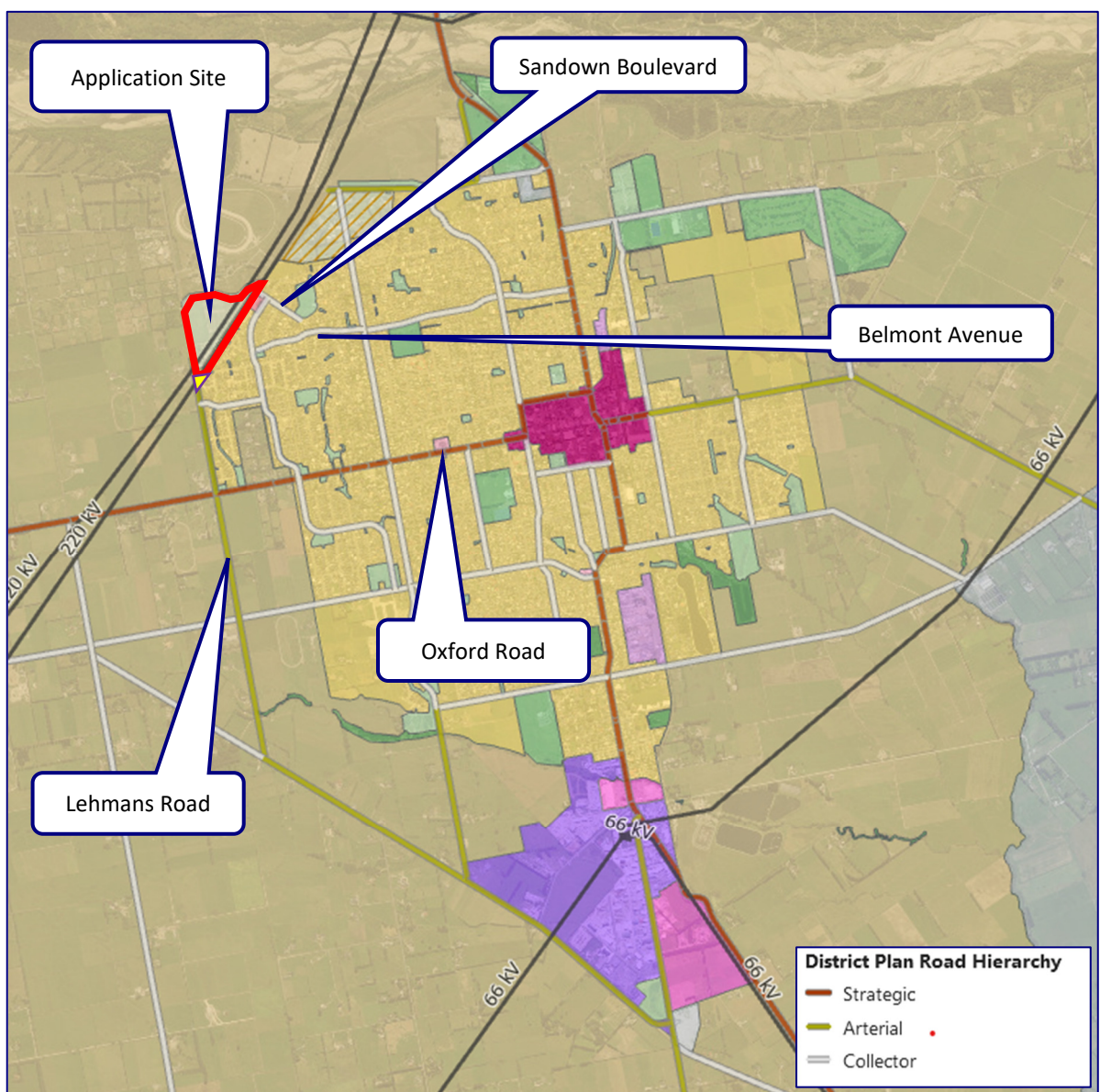


Figure 5a: Proposed District Plan Rangiora Road Classification Map in the wider vicinity of the application site



Figure 5 shows that:

- a) The nearest strategic route (brown) to the subject site is Oxford Road to the south;
- b) Lehmans Road has an arterial road classification (green) between Oxford Road and a point approximately 80 metres south of the southern boundary of the subject site. North of this point, past the subject site, Lehmans Road is a local road;
- c) West Belt, Huntington Drive, Charles Upham Drive, Sandown Boulevard, Chatsworth Avenue and Kingsbury Street are all classified as collector roads (grey), and;
- d) The balance of the roads in the vicinity of the site are classified as local roads.

### 3.3 The Northwest Rangiora Bypass

Figure 5b below zooms in on the top left corner of Figure 5a to provide a clearer view of the road hierarchy in the immediate vicinity of the application site:

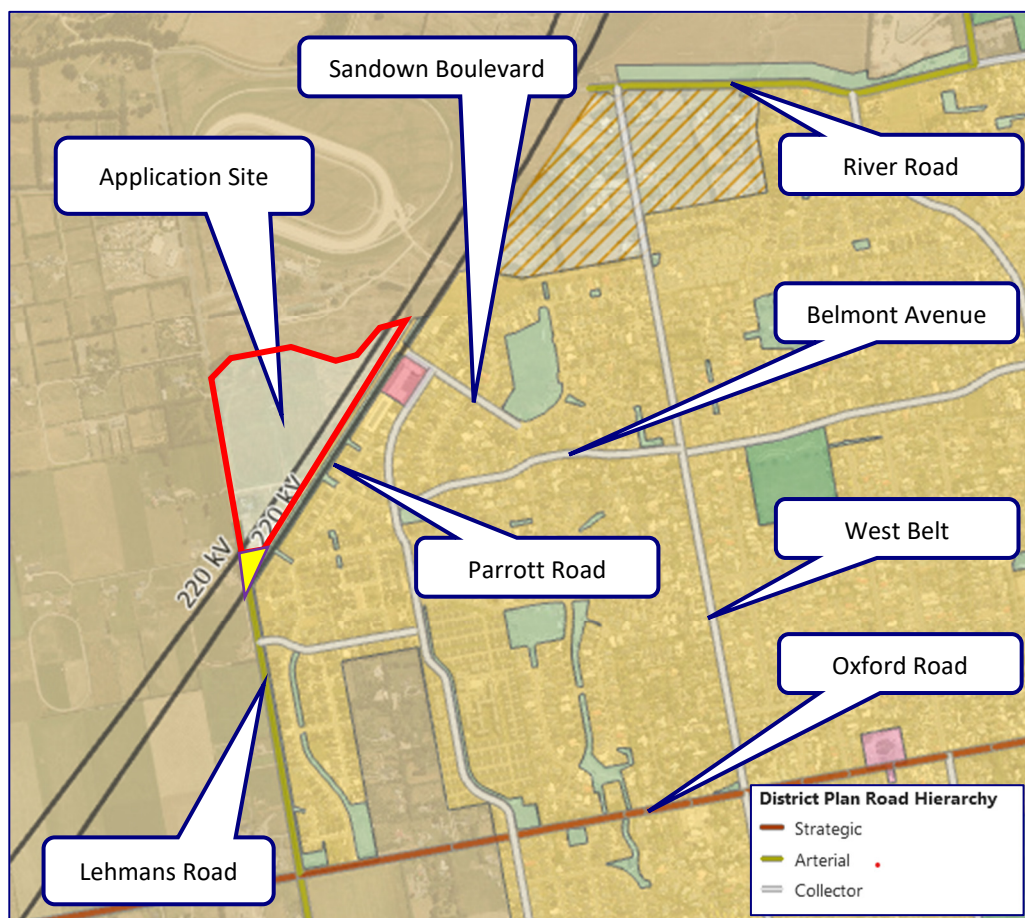


Figure 5b: Proposed District Plan Rangiora Road Classification Map in the immediate vicinity of the application site



Of note in Figure 5b is that:

- a) The arterial classification of Lehmans Road extends as far north as the southern end of the application site to a point essentially alongside the power transmission lines.
- b) River Road, which runs across the northern side of Rangiora, also has an arterial classification as far west as the power transmission lines.
- c) Parrott Road runs alongside the transmission lines between the southern side of the racecourse site and almost connects to Lehmans Road.
- d) The future road to vest at the southern end of the site will enable Parrott Road to connect to Lehmans Road.

Although not shown on either District Plan ODP, the formation of Parrott Road, and its connection to Lehmans Road, would implement the first stage of a Council desire to create a heavy vehicle bypass around the western side of Rangiora. The intention is to connect Lehmans Road with River Road and thus complete an arterial ring-road connection between Southbrook and Loburn. It is anticipated that this by pass will attract vehicles, and particularly heavy vehicles, away from the current use of Townshend Road and West Belt as a route bypassing the Rangiora CBD.

This project is identified in the Council's *Draft Infrastructure Strategy 2021 – 2051* with \$2.2 million of funding allocated in the 2030-2031 financial years<sup>1</sup>. This funding assumes that the land required to complete the link will be available.

The bypass project is supported by the proposed roundabout at the intersection of Lehmans Road and Oxford Road with \$1.2 million of funding allocated in the 2025-2027 financial years<sup>2</sup>. This funding assumes that the land and funding required to complete the roundabout upgrade will be available.

It follows that the construction of Parrott Road, from Lehmans Road to Sandown Boulevard should be to an arterial road standard. The junction of Parrott Road with Lehmans Road should be formed to provide priority to the arterial route, with the northern end of Lehmans Road forming a T-junction with a priority control against it.

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<sup>1</sup> Page 77 of the *Draft Infrastructure Strategy 2021 – 2051*

<sup>2</sup> Page 77 of the *Draft Infrastructure Strategy 2021 – 2051*



If this occurs, then the east-west connection between Sandown Boulevard and Lehmans Road (see Figures 2 and 3 earlier) should be to a local road standard because the northern end of Lehmans Road is also a local road.

### 3.4 Road Geometry and Features

Figures 1-5 earlier show that the subject site is very well connected to the wider road network. An inspection of the road layout, and of the locations of key intersections along Oxford Road, indicates that the likely route choices residents will make to access the wider road network will be as shown in Table 2 below:

Site location	Option 1	Option 2	Option 3
To/from South or Southeast	Via Lehmans Road to Fernside Road	Via Sandown Boulevard, Belmont Avenue and Kingsbury Avenue to West Belt then Townshend Road	Via Huntington Drive and Charles Upham Drive
To/from North	Via Lehmans Road to River Road	Via Sandown Boulevard, Belmont Avenue and Kingsbury Avenue to West Belt and then River Road	Via Sandown Boulevard and Belmont Avenue to Kingsbury Avenue and then Ashley Street
To/from East	Via Sandown Boulevard, Belmont Avenue and Kingsbury Avenue to Ashley Street and then Kippenberger Avenue	Via Sandown Boulevard, Belmont Avenue and Kingsbury Avenue to West Belt and then Blckett Street to Kippenberger Avenue.	Via Lehmans Road and Oxford Street then High Street to Kippenberger Avenue.
To/from West	Via Lehmans Road to Oxford Road	n/a	n/a

Table 2: Likely route choices for trips generated by the subject site

Noting the above likely routes to be used by site generated traffic, it is considered that the highest concentrations of site generated traffic would occur on Lehmans Road, Charles Upham Drive, Sandown Boulevard / Oakwood Drive, Belmont Avenue, and West Belt. Tables 3 to 7 below provide summary descriptions of these roads:



Road Name	Lehmans Road
Road Classification	Arterial Road between Oxford Road and a point approximately 80 metres south of the southern boundary of the subject site. North of this point, past the subject site, Lehmans Road is a local road
Speed Limit	50km/h between Oxford Road and a point 70 metres north of Oxford Road. 60km/h between a point 70 metres north of Oxford Road and a point 200m south of the subject site. 80km/h from a point 200m south of the subject site to River Road.
Carriageway Description	6.5-6.8m sealed carriageway accommodating two-way traffic flow. No painted centreline or edge line markings.  Localised widening at the Oxford Road and Chatsworth Avenue intersections.
Road Connections	Oxford Road to the south, controlled by a stop control against Lehmans Road.  Chatsworth Avenue to the south, controlled by a give way control against Chatsworth Avenue.  Priors Road to the north, controlled by a give way control against Priors Road.  Priors Road to the north, which continues as a priority through road with a marked centreline
Traffic Volume	400m north of Oxford Road, 1,800vpd, Council count data July 2021
Cycling Infrastructure	There is a shared cycle path and footpath located along the eastern side of Lehmans Road between 222 Lehmans Road and 15A Lehmans Road.
Pedestrian Infrastructure	
On Street Parking	There are no parking restrictions on Lehmans Road outside the subject site.

Table 3: Summary Description of the Road Geometry for Lehmans Road, north of Oxford Road.

Road Name	Charles Upham Drive
Road Classification	Collector Road between Oxford Road and Belmont Avenue
Speed Limit	50km/h
Carriageway Description	8.5m sealed carriageway accommodating two-way traffic flow. No painted centreline or edge line markings.



Road Connections	Oxford Road to the south, controlled by a give way control against Charles Upham Drive. Right turn bays provided on Oxford Road.  Elm Drive, controlled by a give way control against Elm Drive.  Valour Drive and Salisbury Avenue  Huntington Avenue, Belmont Avenue and Pimlico Place controlled by a roundabout.
Traffic Volume	Estimated 1,100vpd, Mobile Road, 2019.
Cycling Infrastructure	There is no dedicated cycling infrastructure along Charles Upham Drive
Pedestrian Infrastructure	There is a footpath provided along both sides of Charles Upham Drive between Oxford Road and a point 80m north of the main entrance into the retirement village. North of there the footpath runs along the eastern side of Charles Upham Drive only.
On Street Parking	There are no-stopping restrictions alternating along both sides of Charles Upham Drive from north of Oxford Road to Elm Drive.

Table 4: Summary Description of the Road Geometry for Charles Upham Drive, north of Oxford Road.

Road Name	Sandown Boulevard & Oakwood Drive
Road Classification	Sandown Boulevard = Collector Road between Huntington Drive and Epsom Drive.  Oakwood Drive = Local Road between Epsom Drive and Oxford Road.
Speed Limit	50km/h
Carriageway Description	Sandown Boulevard = 15m sealed carriageway accommodating two-way traffic flow. Opposing traffic lanes separated by a solid median with turn slots available at all side road intersections.  Oakwood Drive = 7-9m sealed carriageway accommodating two-way traffic flow. No painted centreline or edge line markings.
Road Connections	Sandown Boulevard = roundabouts at Huntington Drive and Oakwood Drive / Epsom Drive. Uncontrolled intersections at all other minor junctions.  Oakwood Drive = roundabout at Sandown Boulevard.  Oxford Road to the south, controlled by a give way control against Oakwood Drive.
Traffic Volume	Estimated 700vpd, Mobile Road, 2019.
Cycling Infrastructure	There is no dedicated cycling infrastructure along either road



Pedestrian Infrastructure	There is a footpath provided along both sides of Sandown Boulevard. There is a footpath provided along alternating sides of Oakwood Drive.
On Street Parking	Unrestricted along both roads.

Table 5: Summary Description of the Road Geometry for Sandown Avenue & Oakwood Drive.

Road Name	Belmont Avenue
Road Classification	Collector Road between Huntington Drive and West Belt.
Speed Limit	50km/h
Carriageway Description	7.0-9.0 metres accommodating two-way traffic flow. Localised islands and traffic calming features along the road. Recessed parking bay provided along the southern side of the Avenue between #5 and #23.
Road Connections	Huntington Drive, Churchill Drive, Oakwood Drive and West Belt. Belmont Avenue has priority at Churchill Drive. All other intersections are controlled by a give way control against Belmont Avenue.
Traffic Volume	50m west of West belt, 1,050vpd, Council count data July 2019
Cycling Infrastructure	There is no dedicated cycling infrastructure along Charles Upham Drive
Pedestrian Infrastructure	There is a footpath provided along the southern side of Belmont Avenue
On Street Parking	Unrestricted along both sides of the road.

Table 6: Summary Description of the Road Geometry for Belmont Avenue.

Road Name	West Belt
Road Classification	Collector Road
Speed Limit	50km/h
Carriageway Description	13.5m sealed carriageway accommodating two-way traffic flow. Painted centreline provided along the road.
Road Connections	Oxford Road, Blakett Street, Elm Drive, Seddon Street, Belmont Avenue, Kingsbury Avenue, Arlington Boulevard, Kensington Avenue, Franklin Drive and River Road. West belt has priority at all side road junctions. Roundabout control at Oxford Road. Atop control against West Belt at River Road.



Traffic Volume	100m north of High Street, 6,000vpd, Council count data September 2021 150m north of Seddon Street, 3229vpd, Council count data July 2019
Cycling Infrastructure	There is no dedicated cycling infrastructure along Charles Upham Drive
Pedestrian Infrastructure	There is a footpath provided along both sides of Charles Upham Drive between Oxford Road and a point 80m north of the main entrance into the retirement village. North of there the footpath runs along the eastern side of Charles Upham Drive only.
On Street Parking	There are no-stopping restrictions alternating along both sides of Charles Upham Drive from north of Oxford Road to Elm Drive.

Table 7: Summary Description of the Road Geometry for West Belt.

### 3.5 Weekday PM Peak Hour Traffic Volumes

Having considered the various potential routes to/from the subject site, as presented in Table 2 earlier, it is considered that the key intersections that would carry site notable volumes of site generated traffic in the vicinity of the subject site are:

- a) The intersection of Lehmans Road with Oxford Road;
- b) The intersection of West Belt with Oxford Road and High Street, and;
- c) The intersection of West Belt with Belmont Street and Kingsbury Street.

Beyond these locations it is likely that site generated traffic volumes will form only a small portion of overall traffic flows on the wider road network.

As part of the preparation of the earlier transport assessment prepared for this site, the weekday PM peak hour traffic volumes were recorded at these three key intersections in the vicinity of the subject site in November 2021. Noting the location of the subject site in the northwestern corner of Rangiora, the weekday PM peak hour was chosen as the critical time as the proposed development of the subject site will generate higher volumes of more critical right turn manoeuvres from Oxford Road into Lehmans Road and West Belt compared to the AM peak where most of the site generated traffic would be a left turn from Lehmans Road and West Belt into Oxford Road. A summary of the surveyed traffic count data is presented in Table 8 on the next page.





			16:00 - 16:15	16:15 - 16:30	16:30 - 16:45	16:45 - 17:00	17:00 - 17:15	17:15 - 17:30	17:30 - 17:45	17:45 - 18:00
Lehmans/Oxford	Northbound	↖	1	3	1	0	2	1	2	0
		↑	8	17	10	14	5	27	16	12
		↗	5	3	4	19	6	12	9	5
	Eastbound	↖	0	10	14	8	15	13	10	9
		→	59	38	63	61	66	60	53	59
		↘	7	1	1	1	2	0	1	1
	Southbound	↘	2	7	6	7	7	9	3	2
		↓	11	9	8	7	7	6	6	4
		↙	12	14	12	13	18	11	11	16
	Westbound	↖	2	6	7	7	8	9	4	10
←		61	70	79	59	73	78	76	67	
↙		6	7	3	4	3	6	1	4	
<b>Intersection Totals</b>			<b>174</b>	<b>185</b>	<b>208</b>	<b>200</b>	<b>212</b>	<b>232</b>	<b>192</b>	<b>189</b>
West Belt/Oxford/High	Northbound	↖	8	19	14	15	15	11	14	12
		↑	37	38	53	58	71	46	58	47
		↗	16	16	9	15	18	15	22	12
	Eastbound	↖	9	20	21	20	28	19	20	16
		→	53	52	62	50	59	66	59	55
		↘	13	12	11	9	9	13	9	6
	Southbound	↘	5	12	12	6	7	6	10	3
		↓	22	22	32	20	25	18	26	13
		↙	34	42	31	39	51	39	50	31
	Westbound	↖	5	4	3	4	1	6	1	7
←		44	69	76	51	71	78	71	68	
↙		13	6	8	8	10	6	7	5	
<b>Intersection Totals</b>			<b>259</b>	<b>312</b>	<b>332</b>	<b>295</b>	<b>365</b>	<b>323</b>	<b>347</b>	<b>275</b>
West Belt/Belmont/Kingsbury	Northbound	↖	10	10	6	9	11	8	14	8
		↑	50	28	32	34	34	42	39	32
		↗	11	6	21	9	16	14	8	15
	Eastbound	↖	2	1	2	0	4	3	2	2
		→	7	5	11	5	10	4	6	7
		↘	4	3	6	5	3	5	4	2
	Southbound	↘	1	2	3	1	6	3	6	2
		↓	32	23	29	16	33	29	31	20
		↙	0	1	3	1	1	2	5	1
	Westbound	↖	2	2	5	3	4	4	3	2
←		12	4	10	8	10	7	4	6	
↙		15	3	9	4	1	4	5	4	
<b>Intersection Totals</b>			<b>146</b>	<b>88</b>	<b>137</b>	<b>95</b>	<b>133</b>	<b>125</b>	<b>127</b>	<b>101</b>

Table 8: Recorded weekday PM peak traffic count data for Thursday 25 November 2021 in the vicinity of the subject site.

The survey data confirms that the peak hour within the two-hour survey period was 4:30pm to 5:30pm. The surveyed intersection volumes within this hour were 852 vehicles at the Lehmans/Oxford intersection, 1315 vehicles at the West Belt/Oxford/High intersection, and 490 vehicles at the West belt/Belmont/Kingsbury intersection.

The counts also revealed that:

- a) The Lehmans / Oxford intersection and operates with relatively low side road flows and a high level of service. Queues on the Lehmans Road approaches did not exceed 1-2 vehicles in the weekday PM peak hour;



- b) The West Belt / Oxford / High intersection operated with much higher traffic volumes with the roundabout being an effective intersection control measure and queues on the approaches did not exceed 2-3 vehicles in the weekday PM peak hour.
- c) The West Belt / Belmont / Kingsbury intersection operates with very low side road flows and a very high level of service. Queues on the Belmont and Kingsbury approaches were not observed in the weekday PM peak hour.

In general terms, these three key intersections have spare capacity to cater for additional traffic flow. Estimated future traffic flows through these intersections is discussed later in this report.

Noting that the weekday PM peak hour count data presented in Table 8 is now 3 years old, a comparison has been made of the occupied residential zoned land area in the immediate vicinity of the site utilising aerial imagery sourced from both Google and Canterbury Maps. This comparison confirmed that there has been no noticeable increase in dwelling numbers or commercial floor space the immediate vicinity of the site since 2021 such that it is unlikely that the peak hour traffic volumes recorded would have changed much in the time that has elapsed since the counts were undertaken.

To test this, an additional weekday PM peak hour traffic count was undertaken on Monday 26<sup>th</sup> February 2024 between 4:30pm and 5:30pm at the critical Lehmans/Oxford intersection. This data is presented in Table 9 below. The surveyed intersection volume within the hour was 798 vehicles at the intersection. This is less than the 852 vehicles recorded in 2021 and confirms that traffic volumes have changed little in the 2021-2023 period. Therefore the intersection count data presented in Table 8 earlier is considered to still be valid.

			16:30 - 16:45		16:45 - 17:00		17:00 - 17:15		17:15 - 17:30	
			Light	Heavy	Light	Heavy	Light	Heavy	Light	Heavy
<b>Lehmans/Oxford</b>	Northbound	↗	1		0		2	1	1	
		→	18		10		16	1	15	
		↘	8		4	1	6		4	
	Eastbound	↗	10	3	9	1	8	3	7	2
		→	46		45	3	52		51	
		↘	1		0		1			
	Southbound	↘	2		11		8		7	
		←	4	1	9		4		4	
		↙	9		14	1	15	1	13	
	Westbound	↗	2		2		7		6	
		←	99	2	77	2	82		76	
		↙	0		5		3		2	
<b>Intersection Totals</b>			<b>206</b>		<b>194</b>		<b>210</b>		<b>188</b>	

Table 9: Recorded weekday PM peak traffic count data for Monday 26 February 2024 at the Lehmans Oxford intersection.



### 3.6 Public Transport

There are two public transport routes that service the northern side of Rangiora:

- a) The #1 Rangiora to Cashmere route travels along West Belt between Belmont Avenue and River Road. The nearest stops to the application site are #54740, #54738, #54764 and #54755 which are all located on West belt either side of the Arlington/Kensington intersection approximately 900 metres east of the application site. This operates on an approximately 15 minute frequency across the day with express services to/from Christchurch provided in the AM and PM peak periods.
- b) The #91 Rangiora to City direct route travels along King Street and Enverton Drive, and uses stops #44453, and #44476 which are located on King Street south of the Kingsbury Avenue intersection approximately 1800 metres east of the application site. This operates on a 30 minute frequency to/from Christchurch in the AM and PM peak periods.

Importantly, both routes access the northern park and ride parking area located on River Road between Cones Road and Ashley Street. This means that the application site is readily connected to the wider public transport network through use of this facility and only a short trip (<2km) by private transport means.

### 3.7 Cycle Network

**Appendix E** contains a copy of the *Waimakariri Eastern Cycle Trails* brochure. This confirms that there are no dedicated cycle paths in the vicinity of the subject site apart from the *Rakahuri Trail* which is located alongside the Ashley River. That said, it is noted that the existing subdivision located south of the site provides various connections to the shared path located along the eastern side of Lehmans Road, and that the other roads in the wider vicinity of the subject site are all sufficiently low volume that they can be readily used for cycling purposes.

### 3.8 Reported Road Safety Record

A search of the NZTA CAS database for the most recent 5-year data period (January 2018 to December 2023) was undertaken for the area encapsulated by Lehmans Road, Oxford Road, West Belt, Huntington Drive and Arlington Boulevard. This area was selected to include the three critical intersections presented in Table 8 earlier. The search revealed 25 reported crashes which are summarised in the location diagram presented as Figure 6 below. A diagram showing the types and locations of these crashes is provided in **Appendix F**.



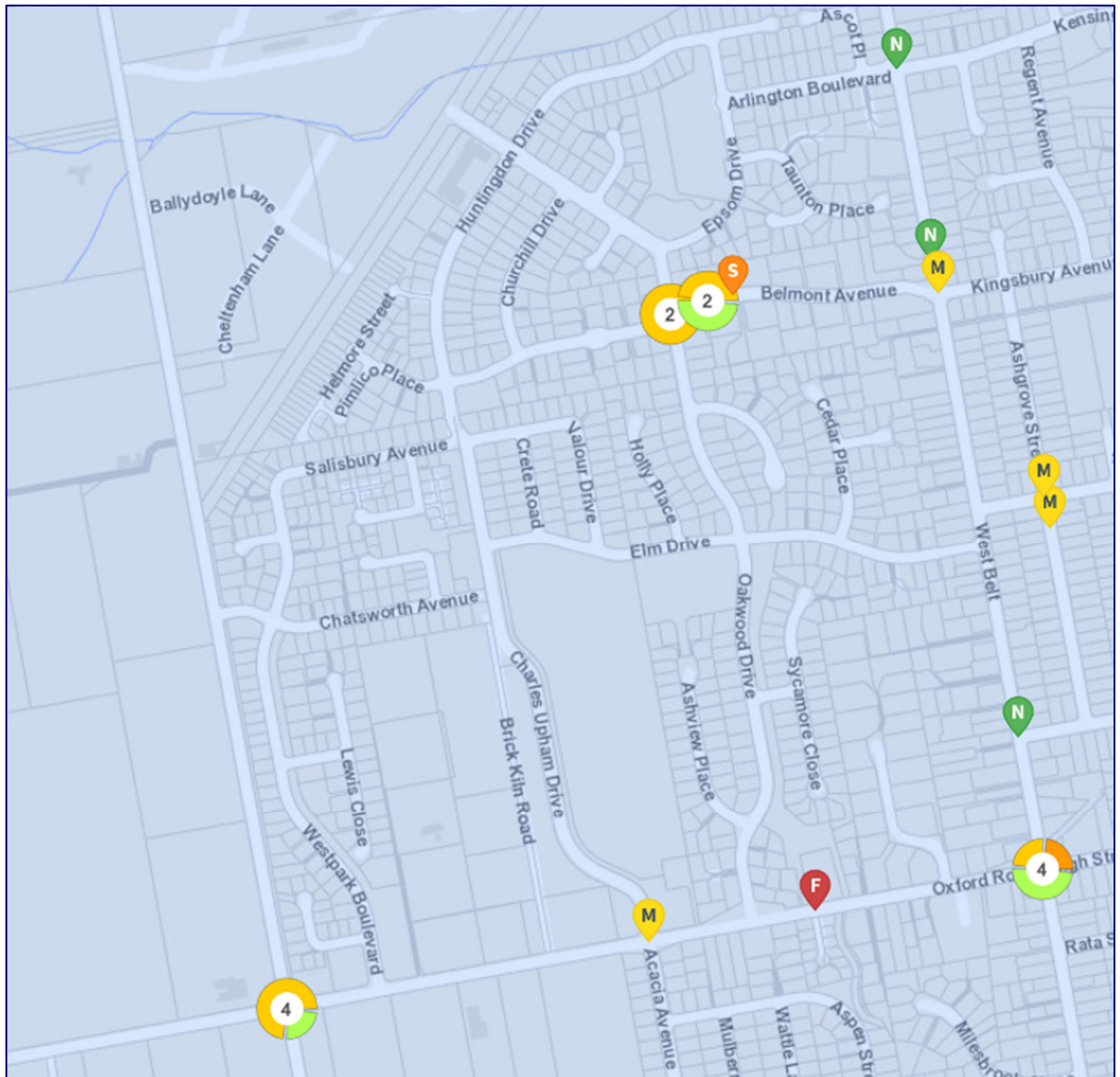


Figure 6: Reported crashes within the wider vicinity of the subject site (Source = NZTA CAS database).



### The Intersection of Lehmans Road with Oxford Road

Figure 7 below shows the general layout of this priority controlled intersection. This intersection is likely to receive the most use by site generated traffic because it provides a direct connection to Oxford Road for east west route choice, and Fernside Road for a southern route choice.



Figure 7: View looking east along Oxford Road of the existing priority controls at the intersection of Lehmans Road with Oxford Road. (Source = Google Streetview).

Figure 8 below provides a diagram of the four reported crashes at this intersection. The police reports for these crashes have been reviewed and it is noted that:

- a) Non-injury crash 201983713 occurred on 23 October 2019 at midday and involved a westbound motorist on Oxford Road failing to notice a vehicle already stopped on the road and waiting to turn right into Lehmans Road. The weather was fine and dry. There were no specific contributing factors.
- b) Minor-injury crash 2020161185 occurred on 10 August 2020 at 9:20am and involved a southbound motorist on Lehmans Road, who had stopped, but then failing to give way to an approaching westbound vehicle on Oxford Road. The weather was fine and dry. There were no specific contributing factors.



- c) Minor-injury crash 2021195984 occurred on 16 July 2021 at 9:20pm and also involved a southbound motorist on Lehmans Road, who had stopped, but then failing to give way to an approaching westbound vehicle on Oxford Road. The weather was dark and wet. There were no specific contributing factors.

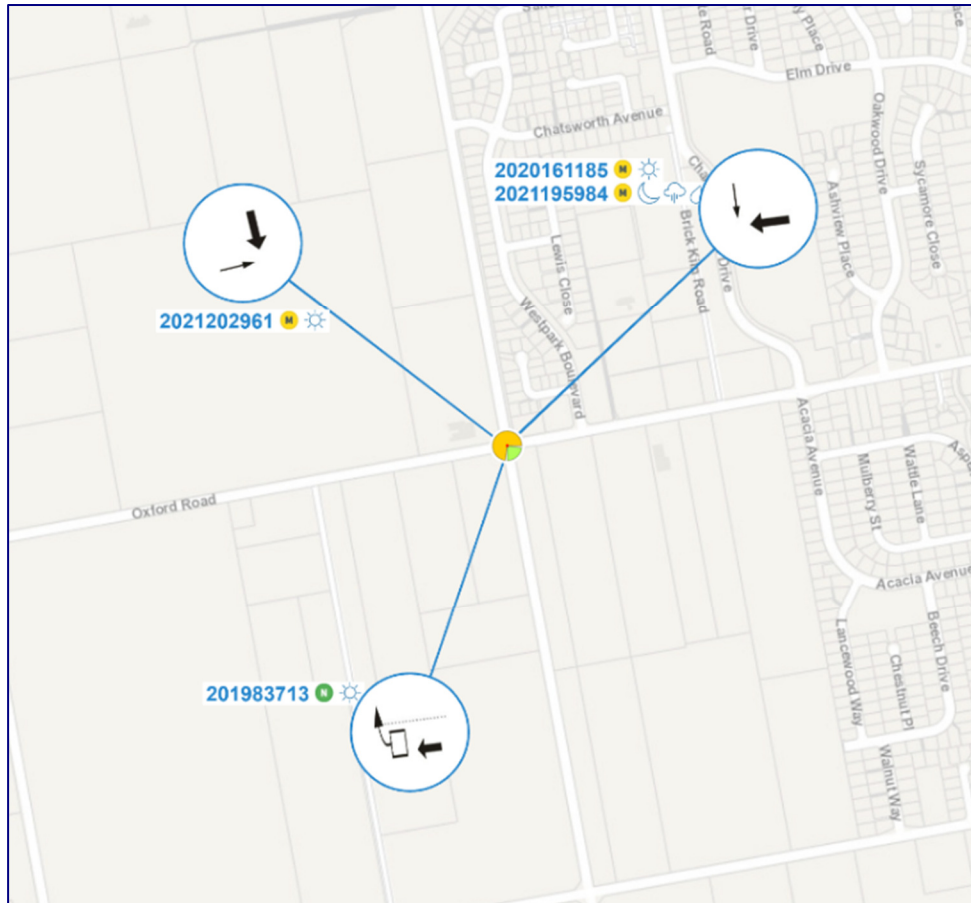


Figure 8: Reported crashes at the intersection of Lehmans Road with Oxford Road 2018-2023 (Source = NZTA CAS database).

- d) Minor-injury crash 2021202961 occurred on 18 October 2021 at 9:55am and involved a southbound truck driver on Lehmans Road failing to stop, and failing to see an approaching eastbound vehicle on Oxford Road. The weather was fine and dry. There were no specific contributing factors.

In relation to the crashes b), c) and d) above, it is noted that Oxford Road has a straight and flat alignment for some distance either side of the Lehmans Road intersection. Visibility along Oxford Road, when stopped at the stop control, is excellent in both directions as shown in Figures 9 and 10 below:





Figure 9: Available visibility looking east along Oxford Road from the Lehmans Road intersection. (Source = Google Streetview).



Figure 10: Available visibility looking west along Oxford Road from the Lehmans Road intersection. (Source = Google Streetview).

Figure 11 below shows the Lehmans Road southbound approach to the Oxford Road intersection. This approach has a painted median leading to a splitter island, with dual stop signs.



Figure 11: Lehmans Road southbound approach to the Oxford Road intersection. (Source = Google Streetview).

Noting the lack specific contributing factors in the three crashes involving failure of southbound vehicles to either stop or give way at the stop control, and noting the excellent visibility in both directions along Oxford Road from the stop control limit lines, it is concluded that these three crashes related to driver error rather than an inherent deficiency in the design of the intersection. These types of crash will be reduced with the proposed roundabout at the intersection of Lehmans Road and Oxford Road

In relation to the crash a) above, given that there is ample sealed width on Oxford Road for a westbound motorist to drive pass a vehicle stopped waiting to turn right into Lehmans Road, this crash was clearly attributable to driver error rather than an inherent deficiency in the design of the intersection.



### The Intersection of West Belt with Oxford Road and High Street

Figure 12 below shows the general layout of this roundabout controlled intersection. It is noted that each approach has a splitter island with dual give way signs. The roundabout itself has a raised design, and visibility across the intersection is excellent (i.e., there is no landscaping in the central island that potentially hinders visibility such as what occurs at large roundabouts).



Figure 12: View looking east along Oxford Road of the existing roundabout at the intersection of West Belt with Oxford Road and High Street. (Source = Google Streetview).

Figure 13 on the next page provides a diagram of the four reported crashes at this intersection. The police reports for these crashes have been reviewed and it is noted that:

- a) Non-injury crash 2020150806 occurred on 21 April 2020 at 7:08pm and involved a westbound motorist on Oxford Road failing give way to a southbound vehicle on West Belt approaching from their right. The weather was fine and dry. Light conditions were dark with street lights being on. The Police determined the westbound vehicle was at fault.
- b) Non-injury crash 2020155431 occurred on 20 June 2020 at 2:00am and involved an eastbound motorist on Oxford Road failing to negotiate the roundabout. The weather was fine and dry. Light conditions were dark with street lights being on. The driver of the vehicle fled the scene of the crash before Police arrived.



- c) Serious-injury crash 2023246364 occurred on 21 January 2023 at 3:15pm and involved a southbound motorist on West Belt failing to give way to an eastbound cyclist on Oxford Road approaching from their right. The weather was fine and dry. The Police determined the southbound vehicle was at fault.

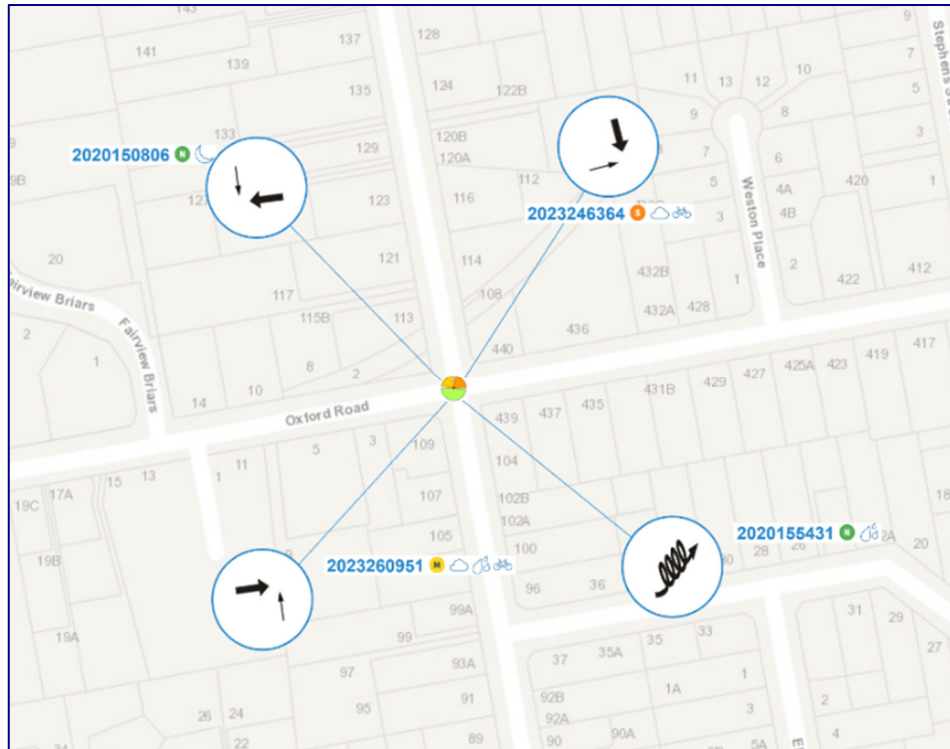


Figure 13: Reported crashes at the intersection of West Belt with Oxford Road and High Street 2018-2023 (Source = NZTA CAS database).

- d) Minor-injury crash 2023260951 occurred on 1 July 2023 at 8:06am and involved an eastbound motorist on Oxford Road failing to give way to a northbound cyclist on West Belt. The weather was overcast and wet. The Police determined the eastbound vehicle was at fault.

These types of crash are typical for a roundabout controlled intersection. West Belt and Oxford Road each carry around 6,500 vehicles per day through the intersection and, given the relatively small size of the central island for the traffic volumes carried by the roundabout, the number of reported crashes is low and as such its safety record is good. As noted earlier, this roundabout is an effective intersection control measure and queues on the approaches did not exceed 2-3 vehicles in the weekday PM peak hour.

The Intersection of West Belt with Belmont Street and Kingsbury Street

Figure 14 below shows the general layout of this priority controlled intersection. It is noted that the Belmont Avenue and Kingsbury Avenue approaches have give way controls against them with the Kingsbury Avenue approach having a splitter island. The straight alignment of West belt means that visibility from the side road approaches is excellent. There have been no reported crashes at this intersection in the last five years.



Figure 14: View looking east along Oxford Road of the existing roundabout at the intersection of West Belt with Belmont Street and Kingsbury Street. (Source = Google Streetview).

Overall, it is concluded that there are no existing road safety issues with the operation of the surrounding transport environment in the wider vicinity of the subject site that would preclude it from accommodating additional traffic flows.



## 4.0 THE PROPOSAL

### 4.1 Revised Outline Development Plan

Figures 2 and 3 earlier showed the North West Rangiora ODP for both the operative Waimakariri District Plan and the proposed replacement proposed Waimakariri District Plan. They are essentially the same. From a transportation perspective, the key component of the two ODP's is the proposed through road connection between the western end of Sandown Boulevard and Lehmans Road. It is presumed that this would have a collector road status to be consistent with the balance of the road network as shown in Figure 5 earlier.

Figure 4 earlier showed a triangle of land at the southern end of Parrott Road that is Lot 10 created from subdivision of Lot 1002 DP526328. This land is vested in the Council as being future road. This means that there is the opportunity to extend Parrott Road to connect with Lehmans Road utilising what is existing road reserve. Given that most site generated traffic will head to/from south of the subject site, such a connection is more logical as the primary connection compared to what is shown on the District Plan ODPs.

The proposed outline plan layout provided in **Appendix G** shows how the proposed ODP could be amended to show the primary (arterial) link instead following Parrott Road to Lehmans Road. The east-west connection to Lehmans Road could then be a local road as discussed earlier. The balance roads within the subdivision would also be local roads. This report assumes that the relevant design requirements of Rule TRAN-S1 and Table TRAN-3 of the proposed District Plan are followed including the requirement to provide a shared cycle/pedestrian path along the collector road route.

Additional pedestrian access would be provided via 'green links' to Helmore Street in two locations.

### 4.2 Anticipated Development of the Subject Site under the District Plan

The proposed District Plan supersedes the design requirements of the operative District Plan and shows current Council thinking for development of the subject site (refer to Figure 2 earlier). Therefore, this report concentrates on the design requirements of the proposed District Plan.

The subject site is zoned '*Large Lot Residential Zone*' (LLRZ) in the proposed District Plan. The subject site is also subject to the ODP layout controls as shown in Figure 2 earlier. The minimum allotment size in the LLRZ is 2,500m<sup>2</sup> with a minimum average allotment size of 5,000m<sup>2</sup> across the subdivision.



A site plan showing a possible 22 allotment development of the site, and that follows the road connection requirements of the ODP, is provided in **Appendix H**. This report considers this to be the baseline scenario.

#### 4.3 Proposed Development of the Subject Site

Instead of a lower density residential development of the land in accordance with the rules of the proposed District Plan, it is proposed to develop the site at a higher density level matching that of the neighbouring subdivisions that have been developed to date (Huntington Drive, Sandown Boulevard, Churchill Drive etc) and shown in Figures 1, 2 and 5 earlier. An indicative layout plan and a matching subdivision plan showing a possible 105 allotment development of the site, and that also follows the road connection requirements of the ODP, is provided in **Appendix I**. This site plan does not include Lot 1003 DP526449 and 266 Lehmans Road which would likely provide for around 5 additional allotments. Therefore, this assessment considers a site yield of  $105 + 5 = 110$  allotments.

#### 4.4 Estimated Traffic Generation

Traffic generation research of suburban low-density residential activity indicates that a dwelling unit located within a major metropolitan area will generate around ten trips per day. However, this research also shows that increasing separation from a major CBD reduces the generation rate owing to trip linking. For this reason, it is unlikely that the average generation per dwelling unit within the subject site would exceed 8 trips per day. That said, for the purpose of this assessment, traffic generation rates have been adopted from data presented in Table 7.4 of NZTA Research Report 453 '*Trips and Parking Related to Land Use November 2011*'. These rates are:

- a) Design daily trips = 10.9 trips per unit per day, and;
- b) Design peak hour trips = 1.2 trips per unit per hour.

Based on the above rates:

- a) The 22-lot baseline development would generate around 240 trips per day and around 26 trips in the weekday peak hour. This level of traffic generation is insignificant and would have no measurable effect on the operation of the surrounding road network. Therefore, the baseline development option shown in **Appendix H** is not discussed further in this report.
- b) The 110-lot proposed development would generate around 1,200 trips per day and around 130 trips in the weekday peak hour.



#### 4.5 Estimated Traffic Distribution

As discussed above, the proposed site layout follows the ODPs and connects to the wider road network via an extension to Sandown Boulevard and a primary connection to Lehmans Road that utilises Parrott Road. Table 1 earlier provided information on likely route choices for trips generated by the subject site. If it is assumed that site generated traffic from the site heads 60% to or from the south or southeast, 10% to or from the north, 20% to or from the east, and 10% to or from the west, then these directional flows can be further split onto relevant links within the surrounding road network as shown in Table 10 below:

Origin / Destination	Split	Option 1	Split	Option 2	Split	Option 3	Split
To/From South or Southeast	60%	Via Lehmans Road to Fernside Road	25%	Via Sandown Boulevard, Belmont Avenue and Kingsbury Avenue to West Belt then Townshend Road	25%	Via Huntington Drive and Charles Upham Drive (once connected)	10%
To/From North	10%	Via Lehmans Road to River Road	5%	Via Sandown Boulevard, Belmont Avenue and Kingsbury Avenue to West Belt and then River Road	2.5%	Via Sandown Boulevard and Belmont Avenue to Kingsbury Avenue and then Ashley Street	2.5%
To/From East	20%	Via Sandown Boulevard, Belmont Avenue and Kingsbury Avenue to Ashley Street and then Kippenberger Avenue	10%	Via Sandown Boulevard, Belmont Avenue and Kingsbury Avenue to West Belt and then Blackett Street to Kippenberger Avenue.	5%	Via Lehmans Road and Oxford Street then High Street to Kippenberger Avenue.	5%
To/From West	10%	Via Lehmans Road to Oxford Road	10%	n/a		n/a	

Table 10: Estimated traffic distribution for trips generated by the subject site

Noting the above estimated route choice splits, and an estimated daily trip generation for the site of around 1,200 trips per day, the estimated future weekday daily and weekday PM peak hour traffic volumes on the relevant road network links can be calculated as shown in **Appendix J** and summarised in Tables 11 and 12 on the next page:



Network Link	Road Classification	Existing Volume (vpd)	Estimated Future Volume (vpd)	Change
Lehmans Road	Arterial / Local	1610	2030	+420
Huntington Drive	Collector	1500	1620	+120
Charles Upham Drive	Collector	1500	1620	+120
Sandown Boulevard	Collector	500	1040	+540
Belmont Avenue	Collector	1092	1632	+540
Kingsbury Avenue	Collector	1500	1920	+420
West Belt (north of High St)	Collector	6449	6749	+300
West Belt (north of Seddon)	Collector	3327	3687	+360
Oxford Road (west of Lehmans)	Strategic	5823	5943	+120
Oxford Road (east of Lehmans)	Strategic	6519	6579	+60

Table 11: Estimated future traffic volumes for weekday daily trips generated by the subject site

In terms of the more critical weekday PM peak hour traffic volumes, the same calculation methodology can be used. Again, noting the above estimated route choice splits, and an estimated peak hour trip generation for the site of around 130 trips, the estimated future PM peak hour traffic volumes on the relevant road network links can be calculated also as shown in Appendix J and summarised in Table 11 below:

Network Link	Road Classification	Estimated Existing Volume (vph)	Estimated Future Volume (vph)	Change
Lehmans Road	Arterial / Local	163	209	+46
Huntington Drive	Collector	150	163	+13
Charles Upham Drive	Collector	150	163	+13
Sandown Boulevard	Collector	50	109	+59
Belmont Avenue	Collector	107	166	+59
Kingsbury Avenue	Collector	150	196	+46
West Belt (north of High St)	Collector	614	647	+33
West Belt (north of Seddon)	Collector	352	392	+40
Oxford Road (west of Lehmans)	Strategic	551	564	+13
Oxford Road (east of Lehmans)	Strategic	587	594	+7

Table 12: Estimated future traffic volumes for weekday PM peak hour trips generated by the subject site



## 5.0 ASSESSMENT OF ROAD NETWORK EFFECTS

Under Section 104 1) a) of the Resource Management Act (RMA) the consent authority must consider any actual and potential effects on the environment of allowing the activity. The consent authority is unrestricted in its assessment of potential effects given the plan change nature of this proposal. However, it is considered that the any adverse road network effects only relate to the following matters:

- a) The estimated future road network link volumes and the ability of the road network to carry these volumes;
- b) Suitable provision for pedestrians and cyclists in a connected network, and;
- c) Any changes to the road network required to accommodate expected site generated traffic.

Discussing these matters in turn:

### 5.1 Future Road Network Mid-block Link Volumes

#### Weekday Daily Traffic Flows

Table 10 earlier presented the estimated changes in weekday midblock road network link volumes. This showed that the collector roads of Huntington Drive (+120vpd to 1620vpd), Charles Upham Drive (+120vpd to 1620vpd), Kingsbury Avenue (+420vpd to 1920vpd), and Oxford Road east of Lehmans Road (+60-120vpd to <6700vpd) will only experience very minor changes in daily traffic volumes that are well within the traffic volumes anticipated given the collector or arterial classification of these roads. The current geometric standard of these roads is readily able to accommodate the expected additional traffic flow generated by the proposal. No further assessment of the potential road network effects of this proposal on these midblock network links is considered necessary.

Instead, the key road network links likely to be affected by the proposal are:

- a) Lehmans Road north of Oxford Road (+420vpd to 2030vpd). Lehmans Road has an arterial classification and this reflects the Council's desire to establish the northwest bypass route. There is no guarantee of when this may occur as land is required north of Parrott Road and funding is not secured for the Lehmans/Oxford roundabout upgrade. In the interim, the predicted future traffic volume of circa 2,000vpd is what would be typically carried by an urban collector road and would be readily capable of being carried by the existing road with





- a 6.0-6.5m carriageway width according to classification E12 *NZS4404:2010 Land Development and Infrastructure*.<sup>3</sup>.
- b) The Sandown/Belmont collector route (+540vpd to 1630vpd) has a varying carriageway width of 6+ metres plus recessed parking bays. The layout of Belmont Avenue also meets the design requirements of NZS4404 classification E12 carrying up to 2,000 vehicles per day.
- c) West Belt between Oxford Road and Belmont Avenue (+300-360vpd to 6749vpd north of High Street). The 13.5m carriageway width meets NZS4404 classification E13<sup>4</sup> which has a design capacity of 8,000 vehicles per day.

Overall, the estimated future traffic volumes on the network links described above remain within suitable volume envelopes given the hierarchy classification and planned function of these roads.

## 5.2 Effects on Intersection Performance

### Lehmans/Oxford Intersection

Table 11 earlier showed that the proposal is expected to generate an additional 46 trips through this priority controlled intersection in the weekday PM peak hour. The calculations provided in **Appendix J** show that this is estimated to be 33 north + south movements across Oxford Road and 13 right turn out +left turn entry movements to/from Oxford Road west of Lehmans Road. The critical movement is the north-south movement owing to the higher volume. If it is assumed that 80% of the 33 movements are northbound across the intersection, then this is around one additional vehicle very two minutes on the northbound approach and would have negligible effect in intersection delays. It is also noted that there have been no reported crashes involving northbound traffic movement across this intersection in the last five years (refer Figure 8 earlier) that would suggest limited gap availability in the Oxford Road traffic flow causing excessive delays exiting Lehmans Road south of Oxford Road.

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<sup>3</sup> Nearest NZS 4404:2010 Design Classification and carriageway width. E12 – Live/Play / Primary access to housing up to 200 dwelling units (2,000vpd). Carriageway width = 5.5-5.7m consisting of 2 x traffic lanes. Separated parking required for access to over 100 dwelling units.

<sup>4</sup> Nearest NZS 4404:2010 Design Classification and carriageway width. E13 – Live/Play / Primary access to housing up to 800 dwelling units (8,000vpd). Carriageway width = 8.4m plus additional width for two parking lanes



### West Belt/Oxford/High Intersection

Table 11 earlier showed that the proposal is expected to generate an additional 33 trips through this priority controlled intersection in the weekday PM peak hour. The calculations provided in **Appendix J** show that this is estimated to be 33 north + south movements across Oxford Road to/from Townshend Road. Again, if it is assumed that 80% of the 33 movements are northbound across the intersection, then this is around one additional vehicle every two minutes and would also have negligible effect on intersection delays. It is also noted that there have been no reported crashes involving northbound traffic movement across this intersection in the last five years (refer Figure 13 earlier).

Overall, it is considered that when the estimated additional site generated volumes are spread across the one-hour weekday PM peak period, the estimated change in traffic flow will be imperceptible within ambient traffic volumes, and unlikely to have any material effect on the performance of the identified key intersections in the vicinity of the site.



## 6.0 PROPOSED DISTRICT PLAN OBJECTIVES AND POLICIES

### 6.1 TRAN – Transport

The following comments are made in relation to relevant objectives and policies within the transport section of the proposed District Plan:

**TRAN-O1** *A safe, resilient, efficient, integrated, and sustainable transport system*

*An integrated transport system, including those parts of the transport system that form part of critical infrastructure, strategic infrastructure, regionally significant infrastructure, and strategic transport networks, that:*

- 1. is safe, resilient, efficient and sustainable for all transport modes;*
- 2. is responsive to future needs and changing technology;*
- 3. enables economic development, including for freight;*
- 4. supports healthy and liveable communities;*
- 5. reduces dependency on private motor vehicles, including through public transport and active transport; and*
- 6. enables the economic, social, cultural and environmental well-being of people and communities*

**TRAN-O4** *Effects of activities on the transport system*

*Adverse effects on the District's transport system from activities, including reverse sensitivity, are avoided, remedied or mitigated*

**TRAN-P2** *Environmentally sustainable outcomes*

*Seek more environmentally sustainable outcomes associated with transport, including by promoting:*

- 1. the use of public transport, active transport and sustainable forms of transport;*
- 2. the use of green infrastructure;*
- 3. the increased utilisation of renewable resources;*
- 4. the use of low impact approaches (such as in site, route or structure selection or construction methodology);*
- 5. using low carbon materials in construction;*



6. *changing the way activities that generate high greenhouse gas emissions are delivered;*
7. *offsetting greenhouse gas emissions through activities such as planting carbon sequestering trees or the establishment and restoration of wetlands; and*
8. *energy efficiency and conservation practices*

**TRAN-P3** *District Plan Road Hierarchy*

*Maintain a road hierarchy in the District Plan and protect the functioning of the roads within it to enable the District's roads to function efficiently with minimal conflict between activities, traffic, and people through controls on activities according to the District Plan road hierarchy classification of roads adjoining those activities*

**TRAN-53** *High traffic generating activities*

*Manage the adverse effects of high traffic generating activities on the transport system according to the extent that they:*

1. *generate additional vehicle movements beyond what the existing road design can safely or efficiently accommodate or what the classification of the road within the District Plan road hierarchy intends to accommodate;*
2. *are accessible by a range of transport modes and encourage public and active transport use;*
3. *do not compromise the safe, efficient or effective use of the transport system, including ease of access by service and emergency service vehicles;*
4. *provide patterns of development that optimise the use of the transport system;*
5. *maximise positive transport effects;*
6. *avoid, remedy or mitigate adverse transport effects;*
7. *mitigate other adverse effects, such as effects on communities, and on the amenity values of the surrounding environment, including through travel demand management measures;*
8. *provide for the transport needs of people whose mobility is restricted; and*
9. *integrate and coordinate with the transport system, including proposed land transport infrastructure and service improvements.*



**TRAN-P9** *Cycle transport*

*Encourage cycle transport through measures such as the provision of wider sealed road shoulders, marked on-road cycle lanes, separated cycle lane, shared use path and off-road formed cycle paths; the provision of cycle parking that is safe, convenient, visible, and secure; and the provision of cycling end-of-journey facilities for staff such as showers and lockers.*

**TRAN-P15** *Effects of activities on the transport system*

*Ensure, to the extent considered reasonably practicable, that other activities do not compromise the safe and efficient operation, maintenance, repair, upgrading or development of the transport system, including through:*

- 1. managing access to the road corridor, and activities and development adjacent to road/rail level crossings, particularly where it is necessary to achieve protection of the safe and efficient functioning of the transport system, including those parts of the transport system that form part of critical infrastructure, strategic infrastructure and regionally significant infrastructure;*
- 2. avoiding, remedying or mitigating adverse reverse sensitivity effects on the transport system; and*
- 3. providing for ease of access for service and emergency service vehicle*

In response to the above it is noted that:

- a) The proposed road layout follows the District Plan road hierarchy by providing the network links as specified in the District Plan ODP's. These roads will be designed to relevant District Plan and/or NZS4404 design requirements.
- b) The site is located close to the Rangiora north park n ride facility which provides a direct public transport connection to Christchurch. The proposed site-specific ODP provides for cyclists and pedestrians through individual road link design as well as specifically identified connections to the neighbouring subdivisions to the east of the site;
- c) While the proposed subdivision will place additional traffic load onto the existing road network that surrounds the site, this network has ample spare geometric capacity to cater for this traffic and the proposal will not result in traffic volumes on road network links considered inappropriate for the planned road classification of these links;

Overall, it is considered that the proposal is consistent with relevant transport related objectives and policies of the proposed District Plan.



## 7.0 DESIGN RECOMMENDATIONS

If this development proposal is approved, then it is considered that it should be subject to the following design recommendations:

- a) That the construction of Parrott Road, from Lehmans Road to Sandown Boulevard should be to an arterial road standard as shown on the proposed ODP for the site (**Appendix G**);
- b) The junction of Parrott Road with Lehmans Road should be formed to provide priority to the arterial route, with the northern end of Lehmans Road forming a T-junction with a give way priority control against it as shown on the proposed ODP for the site (**Appendix G**);
- c) The east-west connection between Sandown Boulevard and Lehmans Road should be to a local road standard as shown on the proposed ODP for the site (**Appendix G**);
- d) The speed limit on Lehmans Road, between Oxford Road and Parrott Road be 50km/h;
- e) The speed limit on Lehmans Road, between Parrott Road and the east-west connection between Sandown Boulevard and Lehmans Road be 50km/h;
- f) The speed limit on all roads within the subject site be 50km/h;
- g) The shared path connecting into 28C Salisbury Avenue be extended in a northeast direction to Sandown Boulevard, with connections to Helmore Street in two locations;
- h) The side road intersections with Parrot Road have give way controls against the side roads;
- i) That a 'stop sign ahead' control be placed on Lehmans Road, north of Oxford Road.

If the above design recommendations are adopted (or something similar as determined by the Council) then the potential road network effects of the proposal will be suitably mitigated.



## 8.0 CONCLUSION

The preceding assessment considers the potential road network effects of intensifying development of the subject site from a minimum average allotment area of 5,000m<sup>2</sup> to provide for a smaller allotment size in the range of 400-700m<sup>2</sup> to provide for typical suburban development like that which has occurred immediately east of the subject site. It is estimated that this would increase the yield from the site from around 21 allotments to around 110 allotments.

Analysis of traffic count data for the road network in the wider vicinity of the subject site confirms that it has the spare geometric capacity for increased traffic loading because of this proposal.

Analysis of reported crash data for the road network in the wider vicinity of the subject site confirms that there are no existing road network safety deficiencies that would be exacerbated by this proposal.

While the proposal would generate notably more traffic from the site than what could currently occur, the site is very well connected to the surrounding road network such that there are multiple route choices for site generated traffic. Once site generated traffic is distributed across this network, the predicted changes to existing traffic volumes on key road network links and intersections will be minimal and readily accommodated.

The site is convenient to public transport and the proposed ODP for the site includes provision for alternate transport modes.

The proposal is consistent with relevant proposed District Plan objectives and policies.



## APPENDIX A: Qualifications and Experience of the Author

Ray Edwards holds the qualifications of a New Zealand Certificate in Civil Engineering, and a Certificate of Transport Planning, Management and Control from the University of New South Wales. He is also an accredited RMA Commissioner. Mr Edwards has 38 years employment in the field of civil engineering, transportation planning and resource management related planning including:

- 6 years (1886 to 1992) being employed by the Christchurch City Council initially as a road engineering officer, then as assistant area traffic engineer;
- 2 years (1992-1994) being employed by the Christchurch City Council as a transportation planner;
- 2 years (1994-1996) being employed by Davie, Lovell-Smith Limited as a traffic engineer and transportation planner;
- 9 years (1996-2004) being employed by the Christchurch City Council as their senior transportation planner including involvement with resource consent applications for over 3,000 land development projects;
- 19 years (2004-2023) as the Director of Urbis TPD Limited (Urbis) which is a Christchurch based consultancy that provided resource management, transportation planning and traffic engineering related advice to government agencies, local authorities, and private land developers.

During the 1992-2022 time period Mr Edwards provided expertise in relation to over 5,000 land development projects.

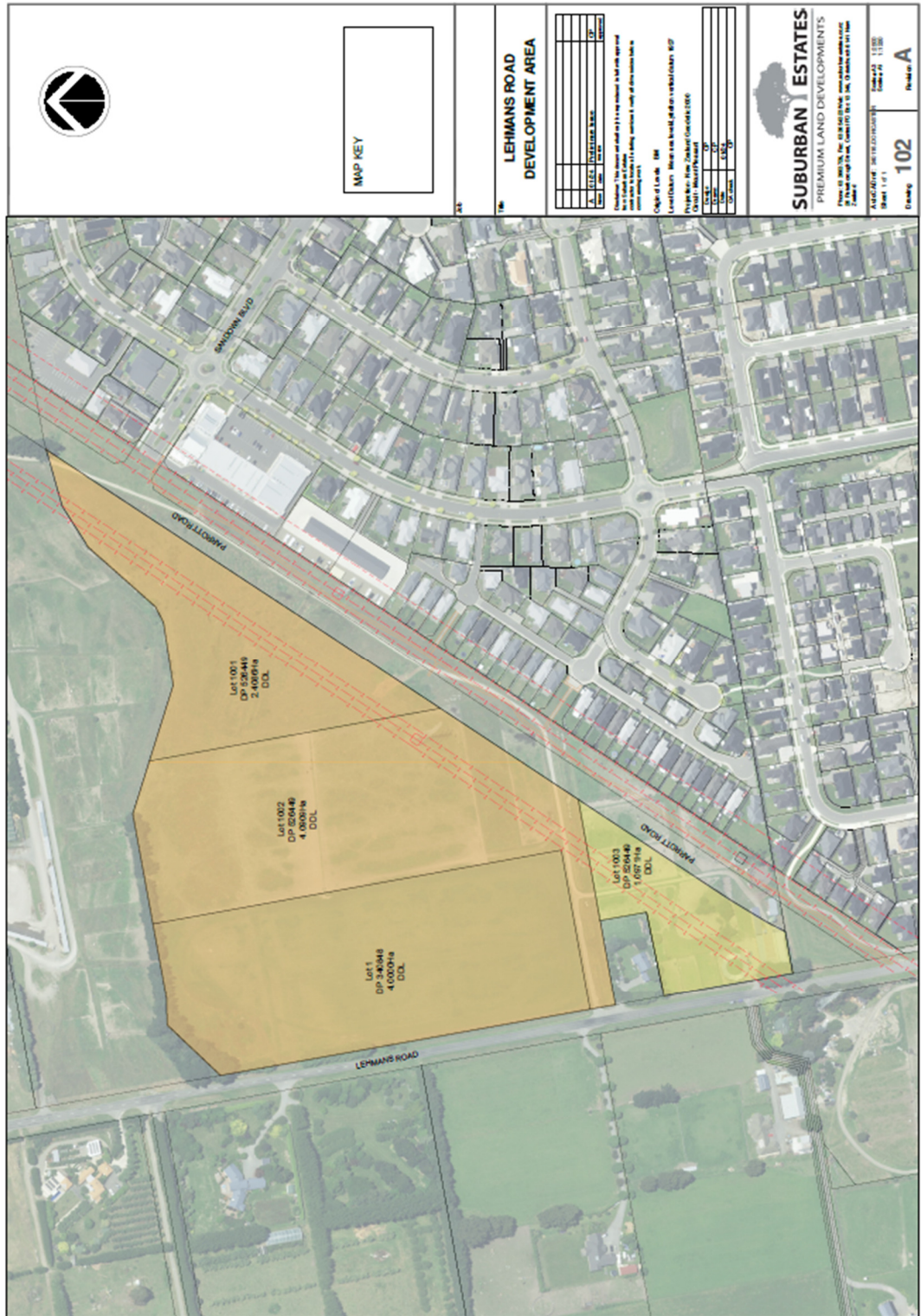
Mr Edwards has subsequently established Plan Creative Limited in 2022 to provide more focused planning and transportation planning advice in relation to predominantly commercial land development projects, as well as providing traffic engineering design advice relating to subdivisions, road layouts, cycleways and privately initiated land developments.

Over the last 37 years Mr Edwards has gained extensive experience acting as an expert witness on traffic related issues associated with land use development, as well as the preparation and implementation of District Plans. His experience also includes many appearances before the Environment Court.

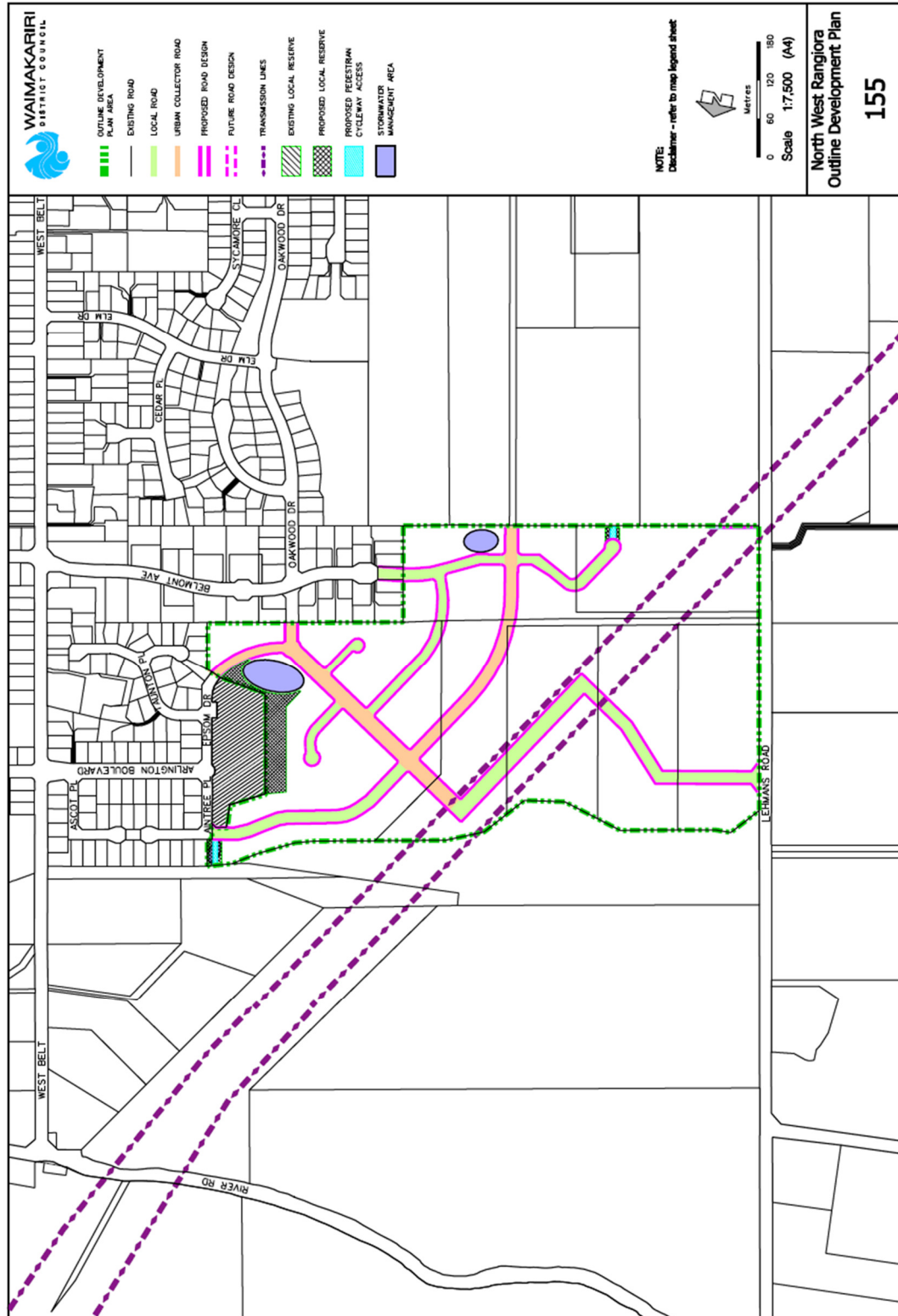




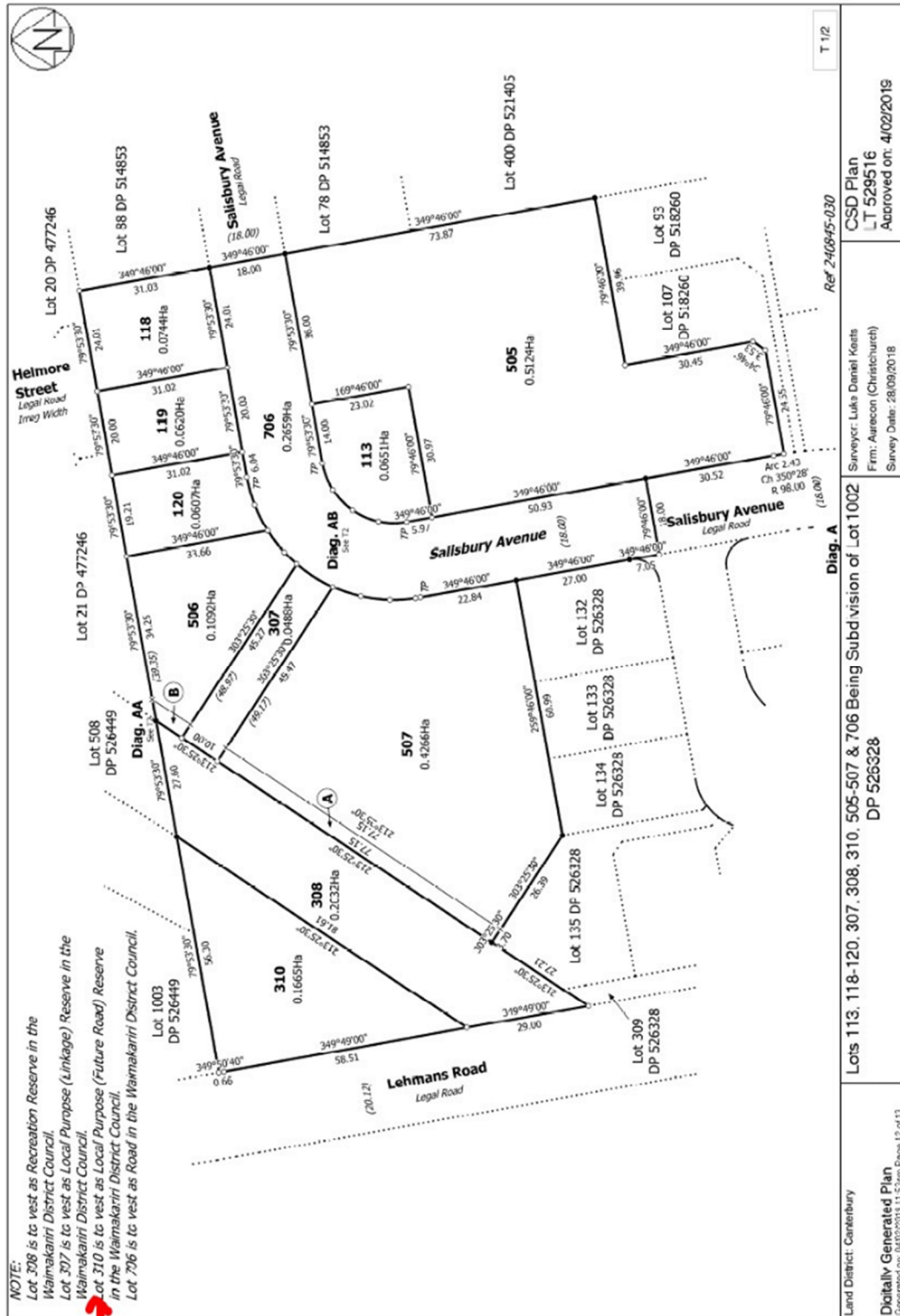
APPENDIX B: Legal Descriptions of the Subject Site



## APPENDIX C: Operative North West Rangiora Outline Development Plan



Appendix D: Subdivision Plan for Lot 1002 DP526328

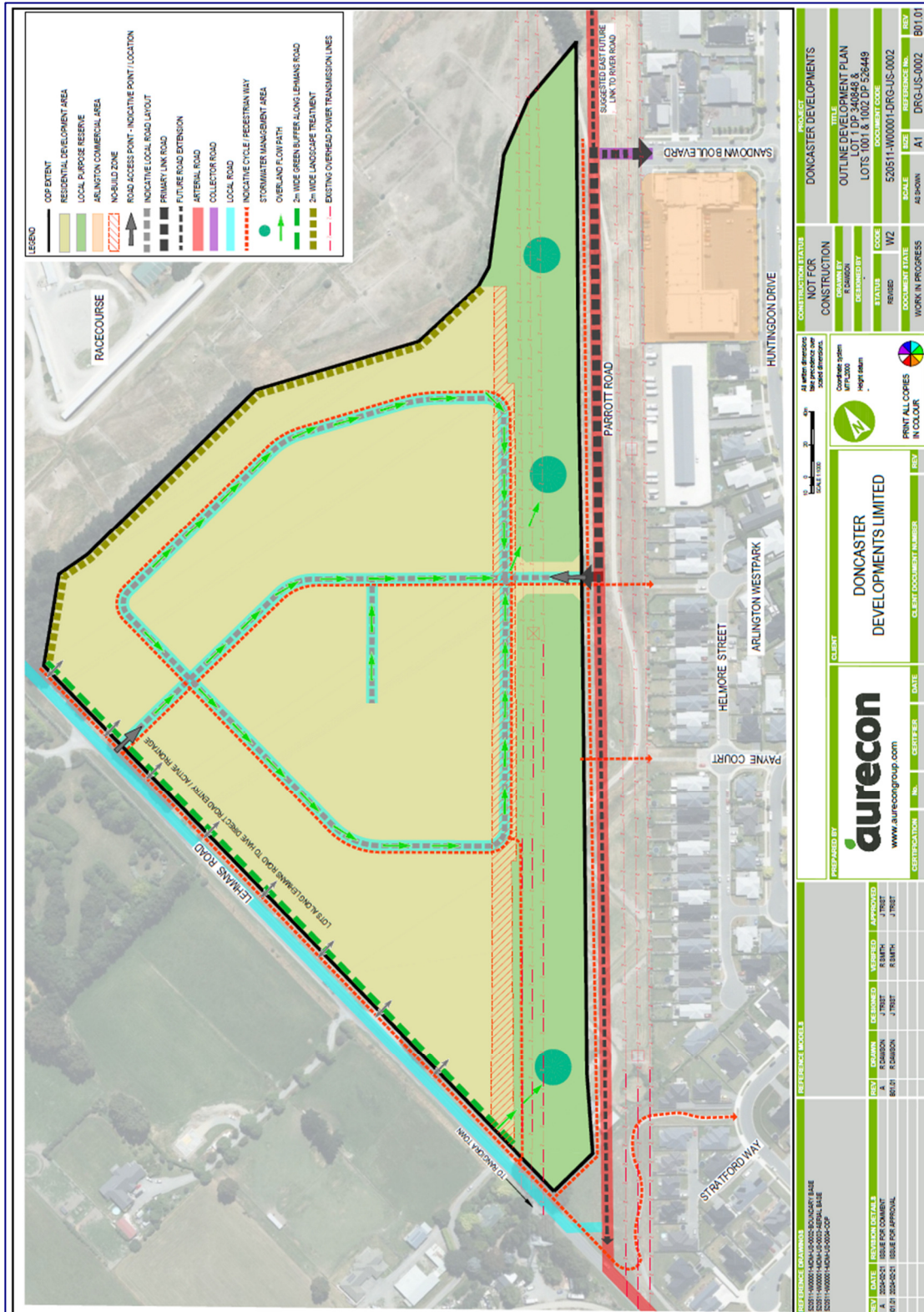


## APPENDIX E: Waimakariri Eastern Cycle Trails Brochure





## Appendix G: Proposed Outline Development Plan





## Appendix I: Indicative Site Development Plan





## Appendix J: Site Generated Traffic Distribution Calculations

