

**BEFORE INDEPENDENT HEARING COMMISSIONERS APPOINTED
BY THE WAIMAKARIRI DISTRICT COUNCIL**

IN THE MATTER OF The Resource Management Act 1991

AND

IN THE MATTER OF Hearing of Submissions and Further Submissions on
the Proposed Waimakariri District Plan

AND

IN THE MATTER OF Hearing of Submissions and Further Submissions on
Variation 1 to the Proposed Waimakariri District Plan

AND

IN THE MATTER OF Submissions and Further Submissions on the
Proposed Waimakariri District Plan by **Doncaster
Developments Limited**

**TRANSPORTATION EVIDENCE OF RAYMOND JOHN EDWARDS
ON BEHALF OF DONCASTER DEVELOPMENTS LIMITED**

DATE 5 March 2024

Presented for filing by:
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Introduction

1. My name is Ray Edwards. I am a traffic engineering consultant practicing from Christchurch. My qualifications and experience are provided in **Appendix A** to this evidence.
2. Although I understand this is not an Environment Court, I have read the Environment Court's Code of Conduct and agree to comply with it. My qualifications as an expert are set out above. The matters addressed in my evidence are within my area of expertise, however, where I make statements on issues that are not in my area of expertise, I will state whose evidence I have relied upon. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in my evidence.
3. I have been asked by Doncaster Developments Limited to provide transportation evidence in support of their submission to the proposed Waimakariri District Plan (the proposed Plan) to rezone 11.6ha land from a Large Lot Residential Zone (LLRZ) to General Residential Zone (GRZ) at Arlington West, Rangiora. The brief from Doncaster to prepare this evidence follows on from my earlier work in relation to their site that included the preparation of a preliminary transportation assessment in November 2021, and then a more comprehensive Integrated Transport Assessment (ITA) in March 2024. The ITA is provided in **Appendix B** to this evidence. Rather than repeat the content of the ITA in full, this evidence will discuss the key points of the ITA. The reader is directed to the ITA itself for the complete assessment of transportation matters.
4. I undertook site visits on 26 July 2021 and 22 February 2024 to complete weekday PM peak hour traffic volume surveys at key intersections on the surrounding road network.

The Subject Site

5. 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. Parrott Road is alongside the National Grid 220kV power transmission lines;
- 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).

- 6. The site is located within North West Rangiora Outline Development Plan (ODP) area as identified in the operative District Plan on Planning Map #155 (refer Appendix C of the ITA). 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. In other words, the site is already identified in the District Plan for residential development, however Doncaster seek a higher development density than that anticipated by a LLRZ zoning.

The Road Network

7. In relation to the road network in the wider vicinity of the application site, the key points to note are:
- a) The site is directly connected to the arterial road network via Lehmans Road. This road carries traffic volumes well below what would normally be carried by an urban arterial road.
 - b) The site is directly connected to the collector road network via West Belt, Huntington Drive, Charles Upham Drive, Sandown Boulevard, Chatsworth Avenue and Kingsbury Street. Apart from West Belt, all these roads carry traffic volumes well below what would normally be carried by an urban collector road. West Belt carries traffic volumes more typical for an urban collector road, but still at a level well below the geometric capacity of the road.
 - c) Parrott Road is presently an unformed paper road than connects Sandown Boulevard almost to Lehmans Road. There is a triangle of land at the southern end of Parrott Road that is Lot 10 created from subdivision of Lot 1002 DP526328. I understand that this piece of land is 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.
 - d) 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. 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. This funding assumes that the land required to complete the link will be available.
 - e) 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. This funding assumes that the land and funding required to complete the roundabout upgrade will be available.
8. As part of the preparation of the earlier transport assessments I have 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 and then again at the Lehmans/oxford intersection in February 2023. 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.
9. Overall, the site is very well connected to the surrounding road network such that site generated traffic would be very well dispersed through a variety of possible routes to and from the site, and would be able to utilise spare capacity on the road network.
 10. The site is readily accessible to public transport and to the (limited) cycle network in Rangiora.
 11. 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. Analysis of the crash data confirms 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.

The Proposal

12. 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 2,500m² with a minimum average allotment size of 5,000m² 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 to the ITA.
13. Doncaster seek to develop the site at a higher density level matching that of the neighbouring subdivisions that have been developed to date. 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 to the ITA. This site plan does not include Lot 1003 DP526449 and 266 Lehmans Road which would likely provide for around 5 additional allotments. Therefore, the ITA considered a site yield under a GRZ of $105 + 5 = 110$ allotments.

14. 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'. Based on these rates:
- a) The 22-lot development under a LLRZ 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.
 - b) The 110-lot development under a GRZ would generate around 1,200 trips per day and around 130 trips in the weekday peak hour.
15. The traffic generation estimate for the GRZ option has been distributed onto the road network based on assumptions of likely route choices to be made. The predicted changes in daily traffic volumes are summarised in Table E1 below:

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 E1: Estimated future traffic volumes for weekday daily trips generated by the subject site



16. In terms of the more critical weekday PM peak hour traffic volumes, the same calculation methodology can be used. The predicted changes in daily traffic volumes are summarised in Table E2 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 E2: Estimated future traffic volumes for weekday PM peak hour trips generated by the subject site

Assessment of Road Network Effects

17. In my opinion, the key transportation related issues with the proposal; are:
- 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:

Future Road Network Mid-block Link Volumes

18. Table E1 above presents the estimated changes in weekday midblock road network link volumes. The surrounding collector roads 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.

19. 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.
 - 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 E13¹ 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.

20. In relation to the future performance of nearby intersections, Table E2 earlier showed that the proposal is expected to generate an additional 46 trips through the critical Lehmans/Oxford Intersection priority controlled intersection in the critical weekday PM peak hour. The calculations provided in Appendix J to the ITA show that the proposal would result in an additional vehicle every two minutes on the critical 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

¹ 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



last five years that would suggest limited gap availability in the Oxford Road traffic flow causing excessive delays exiting Lehmans Road south of Oxford Road.

21. For the West Belt/Oxford/High intersection, Table E2 earlier showed that the proposal is expected to generate an additional 33 trips through this priority controlled intersection in the weekday PM peak hour. This is also 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.
22. 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.

Proposed District Plan Objectives and Policies

23. I provide a list of relevant transport related Objectives and Policies as Appendix C to this evidence. In response to these I note 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 my opinion that the proposal is consistent with relevant transport related objectives and policies of the proposed District Plan.



Design Recommendations

24. If this development proposal is approved, then it is my opinion 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;
- 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;
- c) The east-west connection between Sandown Boulevard and Lehmans Road should be to a local road standard;
- 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.

25. I am happy to answer any questions.



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: Integrated Transport Assessment March 2024



APPENDIX C: Proposed District Plan Transport Objectives and Policies

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*

