

BEFORE THE WAIMAKARIRI DISTRICT PLAN REVIEW HEARINGS PANEL

IN THE MATTER OF the Resource Management Act 1991

AND

IN THE MATTER OF the hearing of submissions and further submissions on the Proposed Waimakariri District Plan

AND

hearing of submissions and further submissions on Variations 1 and 2 to the Proposed Waimakariri District Plan

Hearing Stream 12E: Rezoning Requests

**FIRST STATEMENT OF EVIDENCE OF LISA MARIE WILLIAMS
(TRANSPORT)
FOR RICHARD AND GEOFF SPARK
(PDP SUBMITTER 183 / VARIATION 1 SUBMITTER 61)**

Dated 4 March 2024

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INTRODUCTION

1. My full name is Lisa Marie Williams. I am a senior transport engineer and planner employed by Novo Group Limited, a Christchurch based resource management and traffic engineering consulting company. I hold the qualifications of a Bachelor of Environmental Management from Lincoln University and Master of Engineering (Transport) from the University of Canterbury. I have nearly 20 years of experience as a Transport Engineer and Planner in New Zealand. I am a Transportation Group member of Engineering New Zealand.
2. My specific experience relevant to this evidence includes processing and preparing traffic assessments under the Resource Management Act 1991, for notified and non-notified applications on a range of land-use activities. This specifically includes a variety of land use consents, plan changes, subdivision applications, and Outline Plans in the Waimakariri District; as well as other locations around New Zealand.

Code of Conduct

3. Although this is a Council hearing, I have read the Code of Conduct for Expert Witnesses (contained in the Environment Court Practice Note 2023) and I agree to comply with it. Except where I state that I rely on the evidence of another person, I confirm that the issues addressed in this statement of evidence are within my area of expertise, and I have not omitted to consider material facts known to me that might alter or detract from my expressed opinions. My qualifications as an expert are set out above.
4. In preparing my evidence, I have reviewed:
 - (a) The submission by Richard and Geoff Spark (#183) on the proposed Waimakariri District Plan (pWDP) and on Variation 1 (#61).
 - (b) The relevant provisions of the Proposed District Plan (as Notified), specifically the South East Rangiora Development Area and the Transport Chapter.
 - (c) The Designation (WDC-47) for the Rangiora East Road (Also known as the Rangiora Eastern Link) including the supporting Appendices related to transport matters.

Scope of Evidence

5. I have been asked to present transport engineering evidence for Richard and Geoff Spark's Submissions which relate to 17 and 19 Spark Lane, 197 and 234 Boys Road, Rangiora. Specifically for this hearing, their submissions relate to the rezoning of land north and south of Boys Road and west of the future Rangiora Eastern Link Road.

EXECUTIVE SUMMARY

6. The submissions seek the rezoning of Blocks A and B for residential use (12-15 households per hectare) and a Future Light Industrial Zone for Block C. Changes to the Rangiora South East Development Plan and an extension of the Outline Development Plan are shown in **Attachment 1**. The proposed Outline Development Plan includes key transport infrastructure including primary and secondary roads, pedestrian and cycle connections, and frontage road upgrades which are appropriate in the context of the existing and planned transport network. These provide for development to be co-ordinated and integrated with the existing and planned road network, adjacent land, existing residential areas and other infrastructure such as stormwater management areas.
7. A detailed assessment of Blocks A and B has been undertaken in the Integrated Transport Assessment (ITA) in **Attachment 2** as well as a high level transport assessment of the Future Light Industrial zone for Block C.
8. In summary, the proposed changes and residential zones for Blocks A and B are considered to be appropriate and ensure that the anticipated residential development can be integrated into the transport network in a safe, efficient, and appropriate manner which provides for the travel needs of the future residents.
9. The Light Industrial use proposed for Block C is, I understand, for a deferred or future zoning. At a high level, subject to appropriate road upgrades and design, this use could be accommodated on Block C in a way that; maintains the safe and efficient operation of the transport network; provides for the efficient distribution of freight; provides local employment and activity mode commutes to work; and avoids adverse traffic effects on the existing residential and lifestyle properties north of the site.
10. As also outlined in the ITA, I consider the zonings and transport network proposed to be generally consistent with the transport related objectives and policies of the pWDP.
11. Overall, the ODP and zonings sought are considered to be appropriate from a Transport Perspective.

RICHARD AND GEOFF SPARK SUBMISSIONS

12. I have read the submissions on the proposed Waimakariri District Plan (pWDP) and on Variation 1.
13. The submission on the pWDP seeks amendments to the Rangiora Southeast Development Plan and rezoning of their land on the north and south sides of Boys Road.
14. The submission seeks residential rezoning and changes to the notified Rangiora South East Outline Development Plan (ODP) in respect of road and pedestrian / cycle connections in the area identified as Block A below. This includes an additional Local Centre to accommodate an approx. 650m² Gross Floor Area (GFA) cafe.
15. The submission also seeks residential rezoning and an ODP on the south side of Boys Road, west of the Rangiora Eastern Link Road. This area will provide for approximately 290-300 future residential dwellings¹ in the Area shown as Block B below.
16. At the southern end, between the Rangiora Eastern Link Road and Marsh Road, a Future Light Industrial is proposed (Block C). This will allow for light industrial activities such as storage and distribution with access to Marsh Road or a future road intersection with the Rangiora Eastern Link.
17. An Outline Plan has been prepared for each block and is provided in **Attachment 1**.

¹ The ITA was based on an estimate of 290 dwellings for Block B. More recent estimates suggest this could be 300 dwellings. For the avoidance of doubt, an additional 10 dwellings is not considered to change the conclusions of the transport assessment.

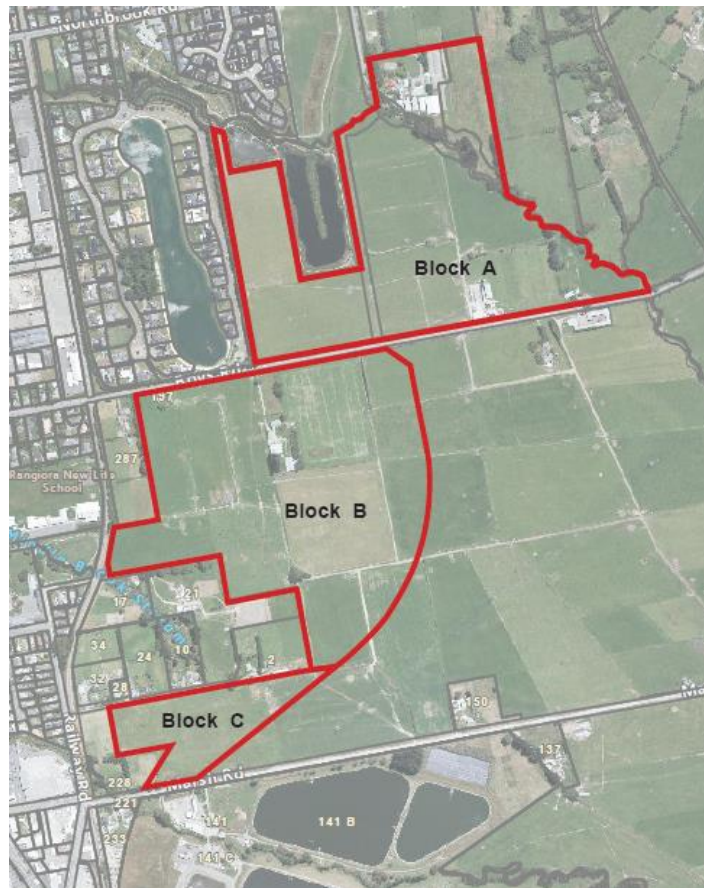


Figure 1: Site Location [Extract from ODP – Refer to Attachment 1 for full details]

18. The key transport related aspects are summarised below in respect of each Block.

Block A

19. The submission seeks residential zoning of Block A and includes some changes to the transport network for part of the Rangiora South East Outline Development Plan (ODP). The relevant section of the Rangiora South ODP (as notified) is shown in Figure 2.



Figure 2: Extract From the Notified Proposed District Plan - Rangiora South East Development Plan

20. The transport related changes are summarised as:
- (a) Amendments to the Primary Road alignment to reflect the updated positioning of the Rangiora Eastern Link (REL) Road. The alignment now continues south from Spark Lane to Boys Road.
 - (b) Changes to the Secondary Road shown across the Northbrook Stream to preserve the river ecology, and related adjustments to the Secondary Road locations and pedestrian and cycle connections.
 - (c) Repositioning of a Secondary Road along the northern side of 17 and 19 Spark Lane to provide a road connection more suited to retaining the existing built form and further from the Northbrook Stream.
 - (d) Inclusion of a Secondary Road connection to Boys Road along the western boundary of the ODP to service that area and noting the repositioning of the Primary Road (REL) slightly towards the east of the notified location.
 - (e) A Local centre to accommodate a small café or similar. This may be around 650m² GFA is located between the Northbrook Stream, existing reserve and the REL. Indicatively generating around 33 trips² in the peak hour.

Block B

21. The submission seeks Rural to Residential rezoning for Block B, which is generally bounded by Boys Road, the REL, the Railway Line and north of an Odour setback from the treatment plant. This is anticipated to accommodate around 290 future residential dwellings³ which are anticipated to generate 261 vehicle movements in the peak hour⁴. This is anticipated to comprise 68 arrivals and 193 departures in the AM Peak and 164 arrivals and 97 departures in the PM peak.
22. The key transport related aspects are summarised as:
- (a) Repositioning of the REL (Primary Road) arising from discussions between the Council and landowners, which improves the alignment of this road south of Spark Lane.

² Based on the RTA Guide to Traffic Generating Developments rate for restaurants which suggests an evening peak hour rate of 5 trips per 100 m² gross floor area equating to around 33 trips in the peak hour.

³ The ITA was based on an estimate of 290 dwellings for Block B. More recent estimates suggest this could be 300 dwellings. For the avoidance of doubt, an additional 10 dwellings is not considered to change the conclusions of the transport assessment.

⁴ Refer to the ITA in Attachment 2 for traffic generation calculations.

- (b) Provision of two Secondary Road connections to each of Boys Road and the REL.
- (c) A reserve to allow future pedestrian / cycle connectivity to the west towards Denchs Road and / or Gefkins Road.
- (d) Provision for future connections to adjacent undeveloped land at 287 Boys Road.
- (e) Shared paths provided for by a mixture of green corridors and along parts of the secondary roads. These achieve key walking and cycling desire lines, connecting to the future path along the REL, future connections to the west and south, and a connection north, to Block A on the northern side of Boys Road.

Block C

- 23. The southern part of the site (Block C) is located within an odour setback from the wastewater treatment ponds and as such is proposed to be a Future Light Industrial Zone. Road access would be provided either from Marsh Road or via a future connection to the REL.
- 24. Noting this is a Future zoning, detailed traffic assessment would be undertaken at a later date. High level estimates suggest this could accommodate up to 20,000 m² GFA which could generate around 100-200 trips⁵ in the peak hours. It is noted that such activities would also provide local employment opportunities and some of those trips may replace trips that would otherwise commute to other industrial areas.
- 25. The location is generally appropriate to accommodate this traffic with a road connection to Marsh Road, which would need to be upgraded to an urban standard, and / or to a new road connection directly connecting to the REL. The location is close to the existing industrial and service type activities centred around Southbrook. The site is generally located in a suitable position for access to the wider road network nothing the proximity to the REL and Lineside Road.
- 26. It is noted that this area is bounded by Dunlops Road to the north which services some existing residential / lifestyle properties. It is understood that Council are considering connecting Dunlops Road to the REL and as such this possible connection is shown on the proposed ODP. No road connections for heavy vehicle traffic are proposed to Dunlops Road to protect the amenity of the existing houses however a small local road

⁵ The RTA Guide to Traffic Generating Developments suggests rates of 0.5-1.0 trips per 100m² GFA in the peak hour, depending on the type of industrial activity. Applied to 20,000m² GFA, this would equate to 100-200 trips in the peak hour.

connection could be provided for light traffic, and / or shared paths could provide for local walking and cycling connectivity.

Traffic Effects Assessment

27. I have prepared an Integrated Transport Assessment (ITA) covering all three blocks which is provided in **Attachment 2**. This includes a summary of the existing and proposed road network in the vicinity of the site and a co-ordinated assessment of transport related effects associated with each Block.
28. The following provides a summary of the key aspects from a transport perspective, based on the findings of the ITA:
 - (a) Boys Road is anticipated to transition to an urban form as adjacent residential subdivision occurs, including footpaths and cycle infrastructure. A shared path is proposed along the REL. The proposed ODP has been designed to ensure good integration with the planned transport network.
 - (b) The repositioning of the REL provides an improved alignment and is in an appropriate location from a transport perspective, including in respect to other proposed intersections with Boys Road.
 - (c) Proposed changes to the secondary roads in Block A allow for greater flexibility to service the ODP noting the REL repositioning, in the event that the second bridge⁶ over the Northbrook Stream is not viable, or that the only appropriate location is further south, and to avoid existing buildings on 17 and 19 Spark Road. The amendments ensure that there are direct connections to the wider road network for all destinations to service this part of the residential zone (north of Boys Road). Residential growth in Block A was anticipated in the analysis provided for the REL which showed the traffic associated with this residential area could be readily accommodated (refer to the Future Transport Network discussion in the ITA).
 - (d) The layout of Block B has been specifically designed to integrate with the existing and planned transport network including co-ordination with Block A and the REL. It allows for Councils preference to provide 'T' Intersections on Boys Road and maintain the required spacings between intersections and also the existing Rail Level Crossing. Connections to the adjacent undeveloped site at 287 Boys Road has also been designed for to enable future integration.

⁶ The first being the REL bridge south of Spark Lane.

- (e) The proposed residential area Block B can be accommodated within the existing and planned road network capacity generally. The proposed secondary road intersections to Boys Road will have sufficient capacity to operate safely and efficiently for all movements. The analysis of the proposed road intersections suggests some capacity constraints for the right turn to the REL but otherwise good levels of service. Noting that there are options available to cater for the right turn demand, overall, I consider that the future residential traffic can be safely and efficiently accommodated.
- (f) The residential zones are considered to be well located within the existing and planned transport network to provide good access for future residents to all destinations and particularly to encourage use of active and micro mobility modes. The existing public transport routes and park and ride services offer a viable option for public transport use.
- (g) All blocks provide good connections for walking and cycling providing integration between the residential areas north and south of Boys Road, provision for connections to the existing areas to the west and to the proposed path along the REL as well as connections to the Future Light Industrial area in Block C. This will assist with encouraging use of active modes and achieving well integrated communities.
- (h) A Future Light Industrial zone on Block C has been considered at a high level. Marsh Road would need to be upgraded to a suitable urban standard and to cater for heavy traffic. An upgrade or closure of the Marsh Road Rail Level Crossing would need to be agreed by Council and Kiwi Rail however is not critical given primary access to the road network is indicated to be via Marsh Road or a new Road connection to the REL. That new road intersection would need appropriate design to cater for heavy vehicle movements but noting detailed design has not yet progressed this is feasible to include. No heavy vehicle access should be provided to Dunlops Road however light vehicle and or shared paths could provide for local connectivity. Overall, future Light Industrial traffic associated with Block C is acceptable from a transport perspective subject to detailed design analysis and appropriate transport network upgrades.
- (i) The development can be staged to co-ordinate with the relevant upgrades to transport infrastructure and this can be readily managed through the subdivision process.

- (j) The proposal is considered to be generally consistent with the proposed District Plan transport related Objectives and Policies.

Summary

- 29. Overall, based on the assessment the proposed changes and residential zones for Blocks A and B are considered to be appropriate and ensure that the anticipated residential development can be integrated into the transport network in a safe, efficient, and appropriate manner which provides for the travel needs of the future residents.
- 30. The Light Industrial use proposed for Block C is a future zoning. At a high level, subject to appropriate road upgrades and design, this use could be accommodated on Block C in a way that; maintains the safe and efficient operation of the transport network; provides for the efficient distribution of freight; provides local employment and activity mode commutes to work; and avoids adverse traffic effects on the existing residential and lifestyle properties north of the site.
- 31. Overall, therefore the ODP and rezonings sought are considered to be appropriate from a Transport Perspective.

FURTHER SUBMISSIONS

- 32. There are no further submissions that directly relate to transport matters of the Spark Submission. Where other re-zonings are sought these do not directly affect the proposed submission and cumulative transport effects of population growth have been discussed in the ITA.

CONCLUSION

- 33. In summary, the submission seeks the rezoning of Blocks A and B for residential use and a Future Light Industrial Zone for Block C. Changes to the Rangiora South East Development Plan and an extension of the Outline Development Plan are shown in **Attachment 1**.
- 34. A detailed assessment of Blocks A and B has been undertaken in the Integrated Transport Assessment (ITA) in **Attachment 2** as well as a high level transport assessment of the Future Light Industrial zone for Block C.
- 35. Based on the assessment within the ITA, from a transport perspective I note the following key conclusions:
 - (a) Boys Road is anticipated to transition to an urban form.

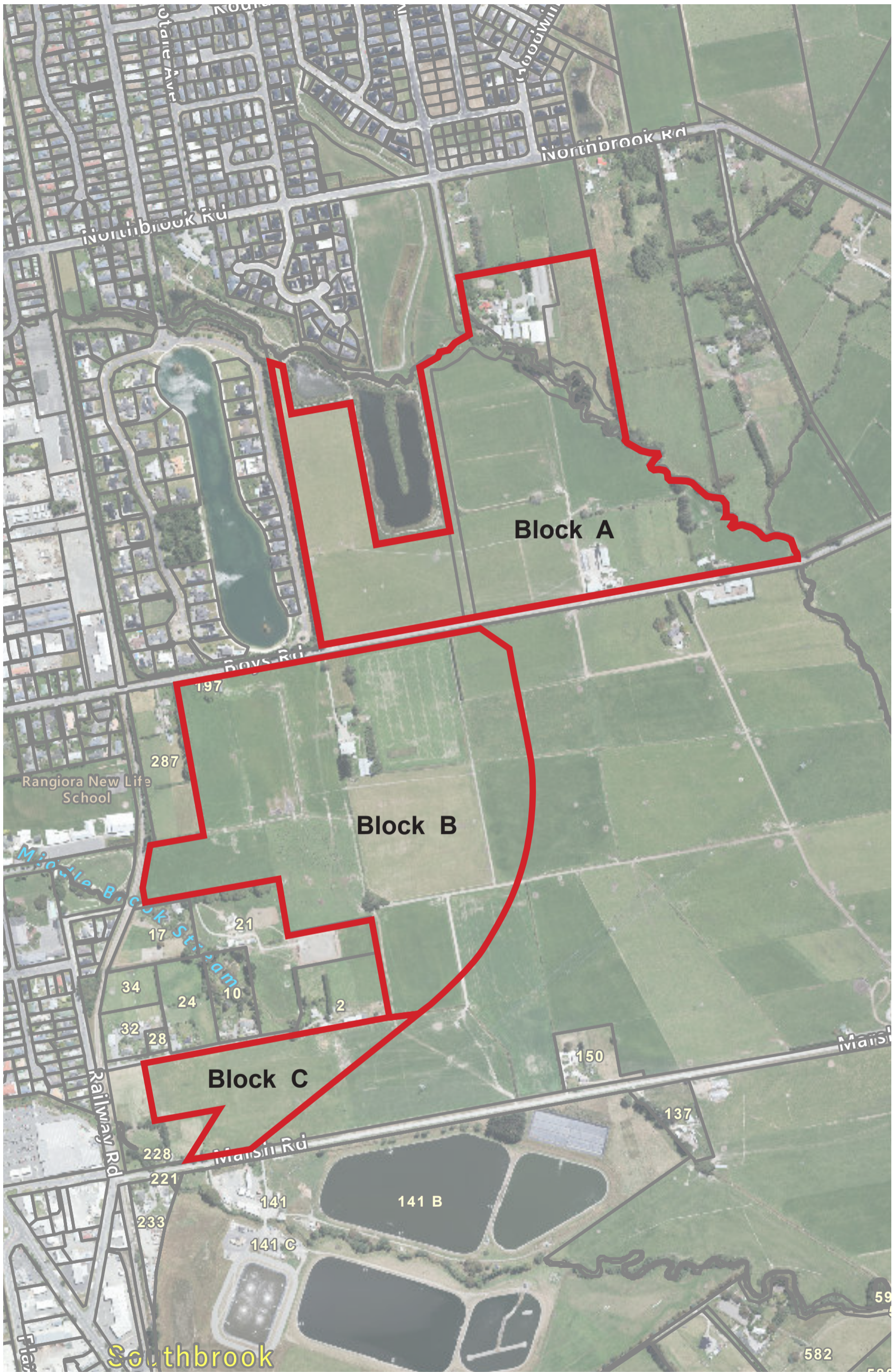
- (b) The repositioning of the REL is appropriate and provides an improved alignment.
 - (c) Proposed changes to the secondary roads in Block A allow for greater flexibility to service the ODP areas and ensure that there are direct connections to the wider road network.
 - (d) The layout of the Block B ODP is well integrated with the existing and planned transport network including co-ordination with Block A, the REL, undeveloped land at 287 Boys Road, Stormwater Reserves and Block C, and existing residential areas.
 - (e) The proposed residential areas can be accommodated within the existing and planned road network capacity generally subject to appropriate detailed design.
 - (f) The residential zones are well located for access to all destinations and to encourage use of active and micro mobility modes. The existing public transport routes and park and ride services offer a viable option for public transport use.
 - (g) A Future Light Industrial zone on Block C is generally considered appropriate subject to upgrades of Marsh Road and changes to the rail level crossing. Connection to the road network is anticipated to be via Marsh Road or a new road connection to the REL. No heavy vehicle access should be provided to Dunlops Road however light vehicle and or shared paths could provide for local connectivity.
 - (h) The residential development can be staged to co-ordinate with the relevant upgrades to transport infrastructure and this can be readily managed through the normal subdivision process.
36. In summary, the proposed changes and residential zones for Blocks A and B are considered to be appropriate and ensure that the anticipated residential development can be integrated into the transport network in a safe, efficient, and appropriate manner which provides for the travel needs of the future residents.
37. The Light Industrial use proposed for Block C is a future zoning. At a high level, subject to appropriate road upgrades and design, this use could be accommodated on Block C in a way that; maintains the safe and efficient operation of the transport network; provides for the efficient distribution of freight; provides local employment and activity mode commutes to work; and avoids adverse traffic effects on the existing residential and lifestyle properties north of the site.
38. As outlined in the ITA, I consider the zonings and transport network proposed to be generally consistent with the transport related objectives and policies of the pWDP.

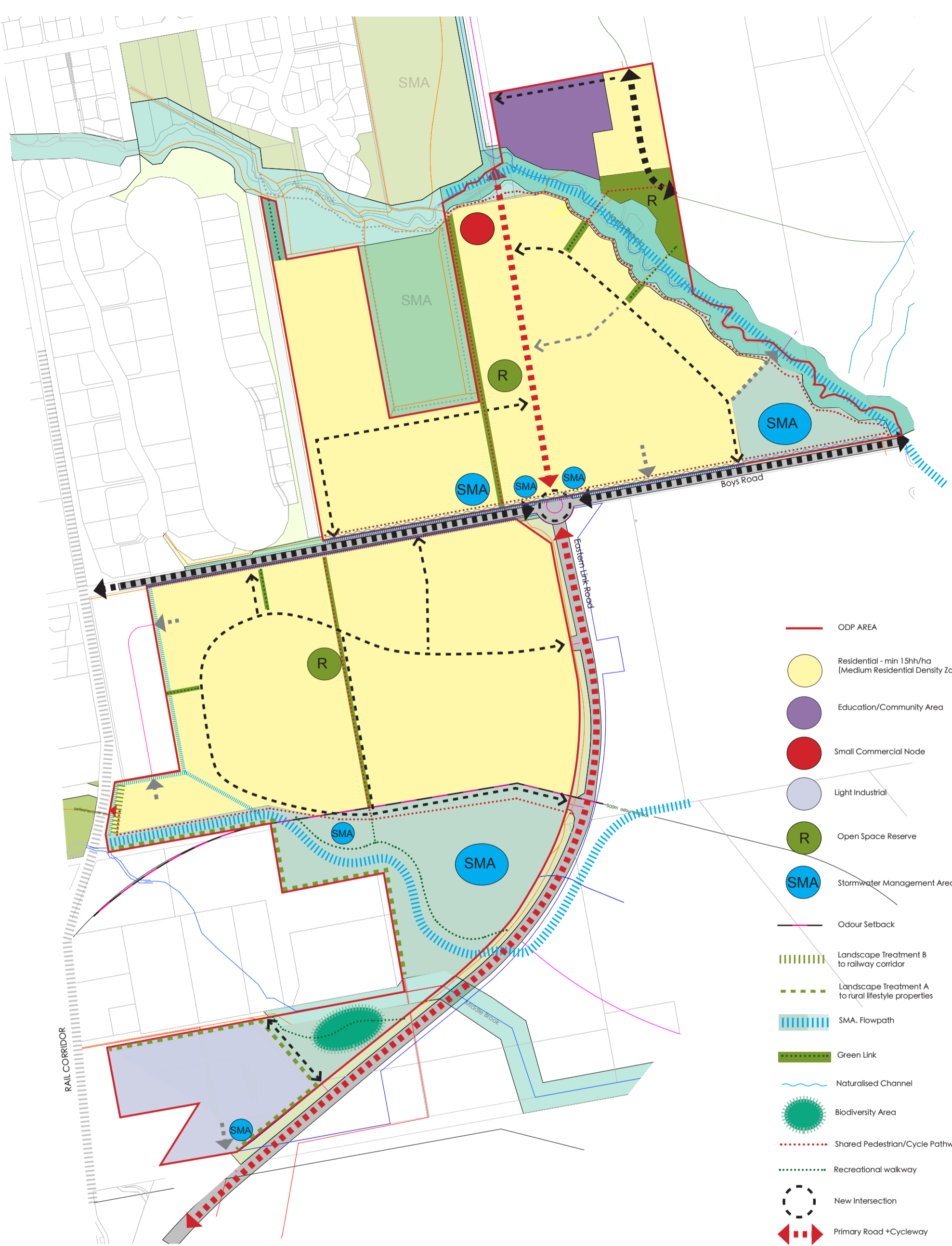
39. Overall, the ODP and zonings sought are considered to be appropriate from a transport perspective. As such, I can support the submission from a transport perspective.

Lisa Williams

4 March 2024

ATTACHMENT 1: PROPOSED OUTLINE DEVELOPMENT PLAN

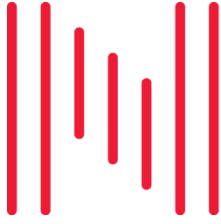




- ODP AREA
- Residential - min 15hh/ha (Medium Residential Density Zone)
- Education/Community Area
- Small Commercial Node
- Light Industrial
- R Open Space Reserve
- SMA Stormwater Management Area
- Odour Setback
- Landscape Treatment B to railway corridor
- Landscape Treatment A to rural lifestyle properties
- SMA, Flowpath
- Green Link
- Naturalised Channel
- Biodiversity Area
- Shared Pedestrian/Cycleway
- Recreational walkway
- New Intersection
- Primary Road + Cycleway
- Primary Road
- Secondary Road
- Key Local Road
- Future Connection
- Road Frontage Upgrade



ATTACHMENT 2: INTEGRATED TRANSPORT ASSESSMENT



NOVO group
Planning. Traffic. Development.

Integrated Transport Assessment
prepared for

**RICHARD AND GEOFF
SPARK**

**17 & 19 Spark Lane, 197 & 234 Boys Road,
Rangiora**

February 2024



Integrated Transport Assessment
prepared for

RICHARD AND GEOFF SPARK

17 & 19 Spark Lane, 197 & 234 Boys Road, Rangiora

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Appendices

Appendix 1 Proposed ODP

Appendix 2 Summary of Commuter Waka Departures for Work and Education and Directional Allocation of Trips

Appendix 3 Summary of Peak Hour Through and Turning Volume Estimates

Appendix 4 SIDRA 9 Intersection Movement Summaries

Appendix 5 District Plan Objectives and Policies – Block B



Introduction

1. Richard and Geoff Spark have commissioned Novo Group to prepare an Integrated Transport Assessment (ITA) in respect of their submissions on the Proposed Waimakariri District Plan (#183) and Variation 1 (#61).
2. This report provides an assessment of the transport aspects of the submissions. It also describes the transport environment in the vicinity of the site and describes the transport related components of the proposed changes sought. It has been prepared broadly in accordance with the Integrated Transportation Assessment Guidelines specified in New Zealand Transport Agency Research report 422, November 2010.
3. The submissions seek changes to the notified Rangiora South East Outline Development Plan (ODP) in respect of road and pedestrian / cycle connections in the area identified as 'Block A' below. This includes an additional Local Centre to accommodate an approximately 650m² café or similar type activity.
4. The submissions also seeks extension of the Rangiora South East ODP to cover a proposed residential zone south of Boys Road. This area will provide for approximately 290 future residential dwellings in the Area shown as 'Block B' in Figure 1.
5. At the southern end, between the Rangiora Eastern Link Road and Marsh Road, a Future Light Industrial zone is proposed ('Block C'). This would allow for light industrial activities such as storage and distribution, with access to Marsh Road or a future road intersection with the Rangiora Eastern Link (REL).

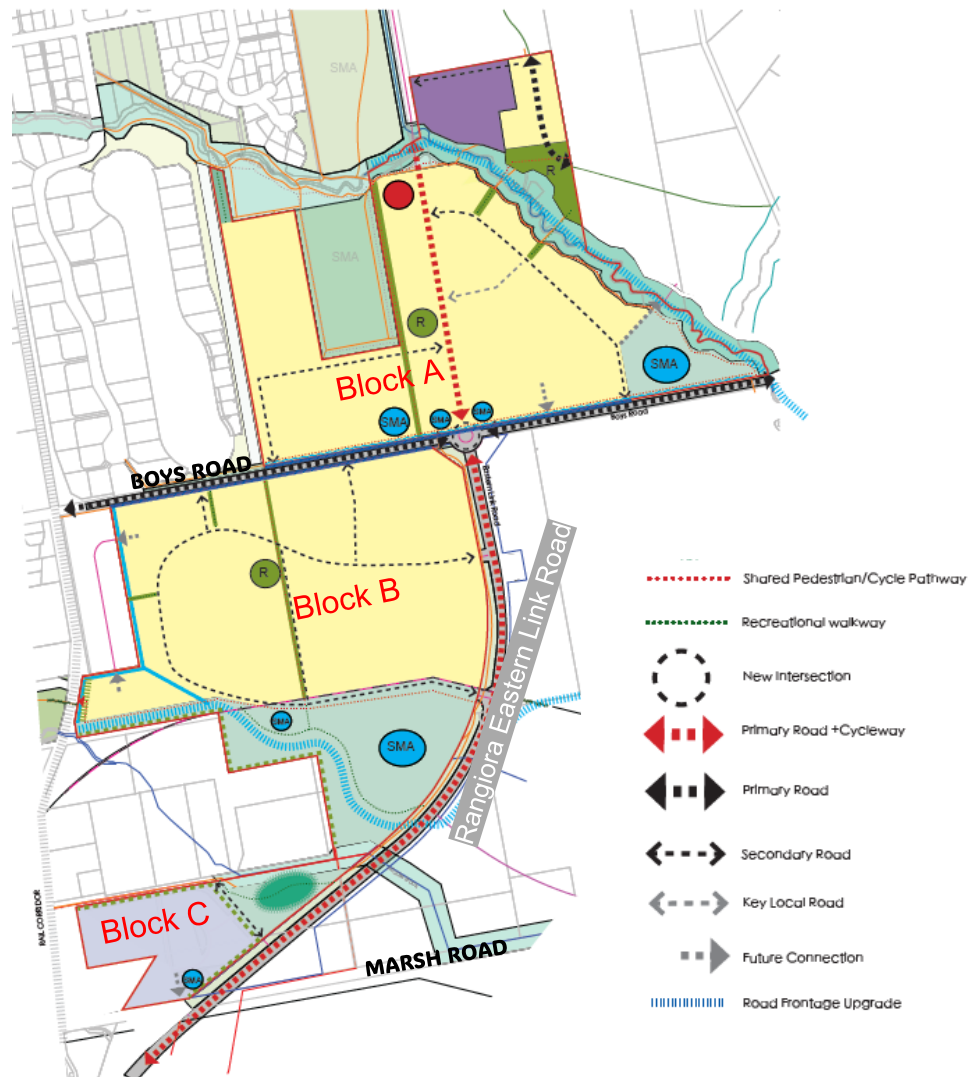


Figure 1: Site Location [Extract from ODP]

The Submissions

- Richard and Geoff Spark have submitted on the Proposed Waimakariri District Plan (#183) and Variation 1 (#61). The submissions cover rezoning of land at 17 and 19 Spark Lane and 197 and 234 Boys Road, which for ease of discussion are broken into Blocks A-C (refer to Figure 1).
- The changes proposed are shown on the ODP and described in the associated narrative provided in **Appendix 1**. The key transport aspects are summarised below in respect of each Block.



Block A

8. The submissions seek residential zoning and some changes to the transport network for part of the Rangiora South East Outline Development Plan (ODP). The relevant section of the Rangiora South ODP (as notified) is shown in Figure 2.



Figure 2: Extract From the Notified Proposed District Plan - Rangiora South East Development Plan

9. The transport related changes are summarised as:
- Amendments to the Primary Road alignment to reflect the updated positioning of the Rangiora Eastern Link (REL) Road. The alignment now continues south from Spark Lane to Boys Road.
 - Changes to the Secondary Road shown across the Northbrook Stream to preserve the river ecology, and related adjustments to the Secondary Road locations and pedestrian and cycle connections.
 - Repositioning of a Secondary Road along the northern side of 17 and 19 Spark Lane to provide a road connection more suited to retaining the existing built form and which further from the Northbrook Stream.
 - Inclusion of a Secondary Road connection to Boys Road along the western boundary of the ODP to service that area and noting the repositioning of the Primary Road (REL) slightly towards the east of the notified location.
 - A Local centre to accommodate a small café or similar. This may be around 650m² GFA is located between the Northbrook Stream, existing reserve and the REL. Indicatively generating around 33 trips¹ in the peak hour.

¹ Based on the RTA Guide to Traffic Generating Developments rate for restaurants which suggests an evening peak hour rate of 5 trips per 100 m² gross floor area equating to around 33 trips in the peak hour.



Block B

10. The submissions seek *Rural to Residential* rezoning for Block B, which is generally bounded by Boys Road, the REL, the Railway Line and north of an Odour setback from the treatment plant. This is anticipated to accommodate around 290 future residential dwellings.
11. The key transport related aspects are summarised as:
 - a. Repositioning of the REL (Primary Road) arising from discussions between the Council and landowners, which improves the alignment of this road south of Spark Lane.
 - b. Provision of two Secondary Road connections to each of Boys Road and the REL.
 - c. A reserve to allow future pedestrian / cycle connectivity to the west towards Denchs Road and / or Gefkins Road.
 - d. Provision for future connections to adjacent undeveloped land at 287 Boys Road.
 - e. Shared paths provided for by a mixture of green corridors² and along parts of the secondary roads. These provide for key walking and cycling desire lines, connecting to the future path along the REL, including future connections to the west and south, and a connection north to “Block A” on the northern side of Boys Road.
12. The NZ Transport Agency Research Report 453 (*Trips and Parking Related to Land Use*) for residential trip generation suggests an 85th percentile traffic generation rate of 0.9 vehicle movements per dwelling per hour in the peak hours. The ITE *Trip Generation* guidebook suggests a split of 26% arrivals and 74% departures in the AM Peak and 63% arrivals and 37% departures in the weekday PM peak. This suggests the proposed 290 dwellings will generate **261 vehicle movements** in the **peak hour**. This is anticipated to comprise 68 arrivals and 193 departures in the AM Peak and 164 arrivals and 97 departures in the PM peak.

Block C

13. The southern part of the site (Block C) is located within an odour setback from the wastewater treatment ponds and as such is proposed to be a Future Light Industrial Zone. Road access would be provided either from Marsh Road or via a future connection to the REL Road.
14. Noting this is a Future zoning, a detailed traffic assessment would be undertaken at a later date. High level estimates suggest this could accommodate up to 20,000 m² Gross Floor Area (GFA) which could generate around 100-200 trips in the peak hours³. It is noted that

² A section of the north-south route follows the water services easement.

³ The RTA Guide to Traffic Generating Developments suggests rates of 0.5-1.0 trips per 100m² GFA in the peak hour, depending on the type of industrial activity. Applied to 20,000m² GFA, this would equate to 100-200 trips in the peak hour.



such activities would also provide local employment opportunities and some of those trips may replace trips that would otherwise commute to other industrial areas.

15. The location is generally appropriate to accommodate this traffic with a local road connection to Marsh Road (which would need to be upgraded to an urban standard), and / or to a new Road connection directly to the REL. The site location is close to the existing industrial and service type activities centred around Southbrook. The site is generally located in a suitable position for access to the wider road network noting the proximity to the REL and Lineside Road.
16. It is noted that this area is bounded by Dunlops Road to the north which services some existing residential / rural lifestyle properties. It is understood that Council are considering connecting Dunlops Road to the REL and as such this possible connection is shown on the proposed ODP. No road connections for heavy vehicle traffic are proposed to Dunlops Road to protect the amenity of the existing houses however a small local road connection could be provided for light traffic, and / or shared paths could provide for local walking and cycling connectivity.

Transport Environment

17. The submissions relate to land both north and south of Boys Road, adjoining Spark Lane at the northern end, generally bounded to the west by the existing residential areas and the Railway Line and to the east by the designation for the REL with Marsh Road at the southern end.
18. The future and existing transport network near the site are summarised below as well as the existing public transport services and facilities for active and micro mobility travel.

Future Transport Network

19. The REL designation forms part of a future route ultimately intended to connect Lineside Road through to Coldstream Road. Relative to the alignment in the notified version of the Proposed District Plan, it is understood that the REL designation is being shifted slightly east as a result of discussions between the Council and landowners. This improves the alignment south of Spark Lane and is supported by the Submitter.
20. Some of the supporting documents refer to the REL as an Arterial Route. However, it is understood that some sections (or all) may be more appropriately formed as a Collector Road. It is understood that the speed limit will vary depending on the section of the road and its functions. The section south of Boys Road is not anticipated to provide for direct property access. We understand that a separated path for walking and cycling is proposed along or generally following a similar route to the REL.
21. From the northern boundary of Block A, the proposed REL realignment will connect along the existing section of Spark Lane, crossing the Northbrook Stream and continuing south to a roundabout at the intersection with Boys Road then curving generally south-west towards Lineside Road.



22. The supporting documents for the Notice of Requirement include a Transport Assessment by WSP (Appendix C of that NoR⁴) which indicates estimated traffic volumes⁵ for the REL. In 2038 the section north of Boys Road is predicted to carry around 11,800 vpd and the section to the south will carry around 14,700 vpd.
23. The WSP Transport Assessment predicts traffic volumes on Boys Road will halve from an estimated 4,400 per day without the REL to around 2,200 per day with it (comprising 1,200 vpd⁶ eastbound and 1,000 vpd westbound.).
24. We note that the reporting mentioned above included population growth⁷ for the South-Eastern side of Rangiora that appears to be commensurate with residential zoning in the area occupied by Block A. Some allowance was also included for the area in Block B, based on assumed Rural Lifestyle development.
25. A summary of all proposed intersection controls for the REL are provided below (and are extracts from the Notice of Requirement, Appendix C⁸).

Intersection	Type
Lineside Road	Roundabout (two circulating lanes)
Marsh Road	Priority giveway (Marsh gives way)
Boys Road	Roundabout (one circulating lane)
Northbrook Road	Roundabout (one circulating lane)
Koura Drive	Priority giveway (Koura gives way)
Kippenberger Ave	Roundabout (one circulating lane)
Coldstream	Priority giveway (Eastern Link gives way)

Figure 3: Extract from the Rangiora Eastern Link Road Notice of Requirement (Table 3-1)

26. The report indicates that all REL intersections will operate at good levels of service⁹ across all intersections as shown in the extract below.

⁴ NoR = Notice of Requirement.

⁵ From Table 4-2 of the WSP Assessment.

⁶ vpd = vehicles per day.

⁷ Being some 4,300 people in the eastern side of Rangiora by 2048 (Ref. REL NOR Appendix C, Traffic Assessment by WSP section 3.1.1).

⁸ https://www.waimakariri.govt.nz/_data/assets/pdf_file/0035/98189/WDC-New-designation-Rangiora-East-Road-Connection-Notice-of-Requirement-Appendix-C-Part-1.pdf

⁹ A rating of the overall performance of the intersection from A (best) to F (worst) and with A-C generally being considered good, D and in some cases E being acceptable on key routes in the peak hours and generally seeking to avoid F other than for very short periods of time or specific non-priority turning movements.



	Delays AM (s)	Delays IP (s)	Delays PM (s)	LOS
Coldstream Priority	3	2	4	A
Koura Priority	2	2	2	A
Kippenberger Roundabout	11	11	11	B
Northbrook Roundabout	11	10	11	B
Boys Roundabout	11	11	12	B
Marsh Priority	3	4	5	A
Lineside Roundabout	12	12	12	B

Figure 4: Extract From NOR Appendix C Traffic Assessment (by WSP) from Table 4-1 (AM Delays, Average across all movements)

27. Overall, in respect of the NoR reporting the relevant findings to this submission are summarised as:
- The REL is considered to have a positive effect on the transport network primarily by increasing capacity, reducing journey times, and provides an alternative north-south route (to the existing route north of SH71 i.e., Lineside Road / Southbrook Road, which experiences congestion in peak times).
 - The REL separates the western parts of the existing farm on 197 Boys Road and if this area was to continue to be used for farming, stock underpasses (and assumingly some property access) would need to be provided for.
 - The modelling shows low degrees of saturation / good Levels of Service and ample spare capacity including at the nearby intersections of the REL with Boys Road, Marsh Road and Lineside Road.
 - The modelled results indicate a decrease in traffic flows on parallel routes such as the Lineside Road and local streets, except for those closest to and that connect directly to / feed the REL such as Northbrook Road and Coldstream Road¹⁰.
28. The submission supports the designation for the REL subject to the revised alignment discussed elsewhere. It is particularly noted that the REL and associated road upgrades will improve transport outcomes for the eastern side of Rangiora generally and in the vicinity of the site, providing additional capacity to accommodate the traffic anticipated from population growth in this area of town.

Existing Transport Network

29. The key parts of the existing transport network near the site relate to Boys Road, Marsh Road and Spark Lane. Other local roads in close proximity to the site include Dunlops Road, Gefkins Road, Palmview Drive, and Denchs Road which are also discussed briefly below. The Main North Railway Line is also located to the west of the site.

¹⁰ Also assumes that local area traffic management / calming is used to mitigate potential 'rat-running' through local streets.



Boys Road

30. Boys Road is classified as a Collector Road and has a 7.6m wide sealed carriageway with flush grass berms and an 80 km/h speed limit east of the Main North Railway Line. West of the Railway Line it has kerb and channel initially with a 9.6m carriageway, then widening to 13.3m. This section has footpaths on both sides and a 50km/h speed limit.
31. The rail level crossing is controlled by lights and bells. West of the level crossing, Boys Road becomes South Belt.
32. The Mobile Road¹¹ database indicates a daily average volume of 2,894 vehicles per day on Boys Road near the site.
33. It is anticipated that Boys Road will be upgraded to an urban form and 50km/h speed limit adjacent to the new residential areas.

Marsh Road

34. Marsh Road is a Local Road with a generally rural formation including a metalled carriageway and flush grass berms. A short section is sealed immediately west of the site where it crosses a bridge / culvert and on the approach to the intersection with Railway Road and Station Road. There is a 60km/h speed limit.
35. West of the site, Marsh Road intersects the Main North Rail Line, and forms a stop controlled intersection with Station Road and Railway Road. The rail level crossing is stop controlled and there are no lights, bells or barrier arms.
36. The Mobile Road database indicates Marsh Road near the site has approximately 300 vehicles per day.

Spark Lane

37. Spark Lane is currently a sealed no-exit road. It forms a give-way controlled intersection with Northbrook Road opposite MacPhail Avenue, with Northbrook Road having the priority. Spark Lane and MacPhail Avenue are planned to be incorporated into the REL with associated upgrades to Spark Lane and a roundabout provided at the intersection.

Other Local Roads

38. Palmview Drive is a Local Road located on the northern side of, but not intersecting with, Boys Road. This is understood to be a private road within a gated residential community and there are no opportunities to connect with this road.
39. Dunlops Road, Gefkins Road, and Denchs Road are all Local Roads servicing existing residential areas generally west and south of Block B. Gefkins Road is private at the point where it crosses the Railway Line and Denchs Road is separated from Block B by both Hegan Reserve and the Railway Line.

¹¹ <https://mobileroad.org/desktop.html>



Main North Railway Line

40. The Main North Railway line runs in a north-south direction roughly parallel to the site, to the west. There are currently public road rail level crossings at Marsh Road, Dunlops Road, and Boys Road. We understand the Council are in the very early stages of working with KiwiRail towards reviewing the rail level crossings and may look to consolidate the number of level crossings and upgrade those remaining.

Crash History

41. The NZ Transport Agency Crash Analysis System (CAS) has been reviewed to identify crashes that have been reported on the nearby and frontage roads between 2017 and 2023. The output from the CAS database identified eight crashes in the locations shown in Figure 5.
42. The search identified one serious crash on Palmview Drive, which was a deliberate collision. The other seven crashes were minor or non-injury crashes. The two crashes on Boys Road were both loss of control crashes (although in different locations) one was a driver under instruction in wet conditions and the other involved alcohol and the driver's attention being diverted.
43. Three crashes occurred mid-block on Marsh Road. One minor injury and one non-injury crash associated with loss of control on the gravel surface (in different sections of the road). There was also one non-injury crash due to a driver swerving to avoid wildlife.
44. There was a non-injury crash at the Marsh Road rail level crossing due to a car stopping too close to the tracks and the train colliding with the front of the vehicle.
45. There was also a crash on Station Road (West of Marsh Road) due to misjudgement of another vehicle / space whilst kerb side parking.

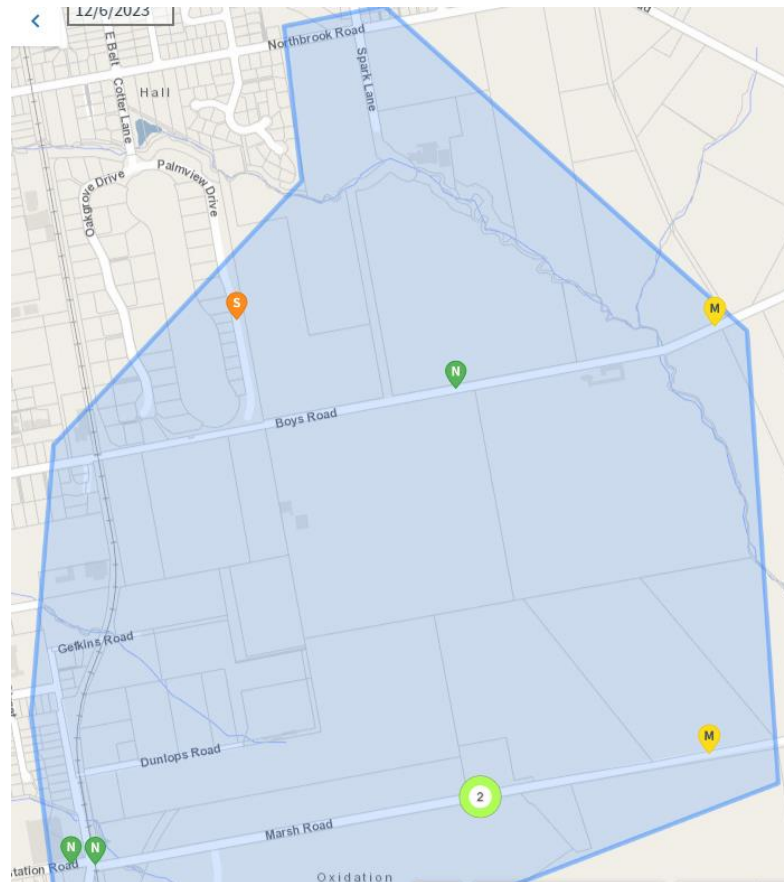


Figure 5: Location of reported crashes [Waka Kotahi NZTA CAS]

46. It is noted that the various road upgrades associated with the REL and future residential development will change both the speed and road environment to a more urban form within this part of the road network. As noted above, we understand Council are also considering a review of the rail level crossings through this section of Rangiora (irrespective of the rezoning requests). Noting these aspects, we would expect the transport network to change noticeably in the foreseeable future and those upgrades would include consideration of improving safety outcomes as part of those upgrades.

Passenger Transport

47. Rangiora is serviced by three bus routes which are summarised in Figure 6 below.

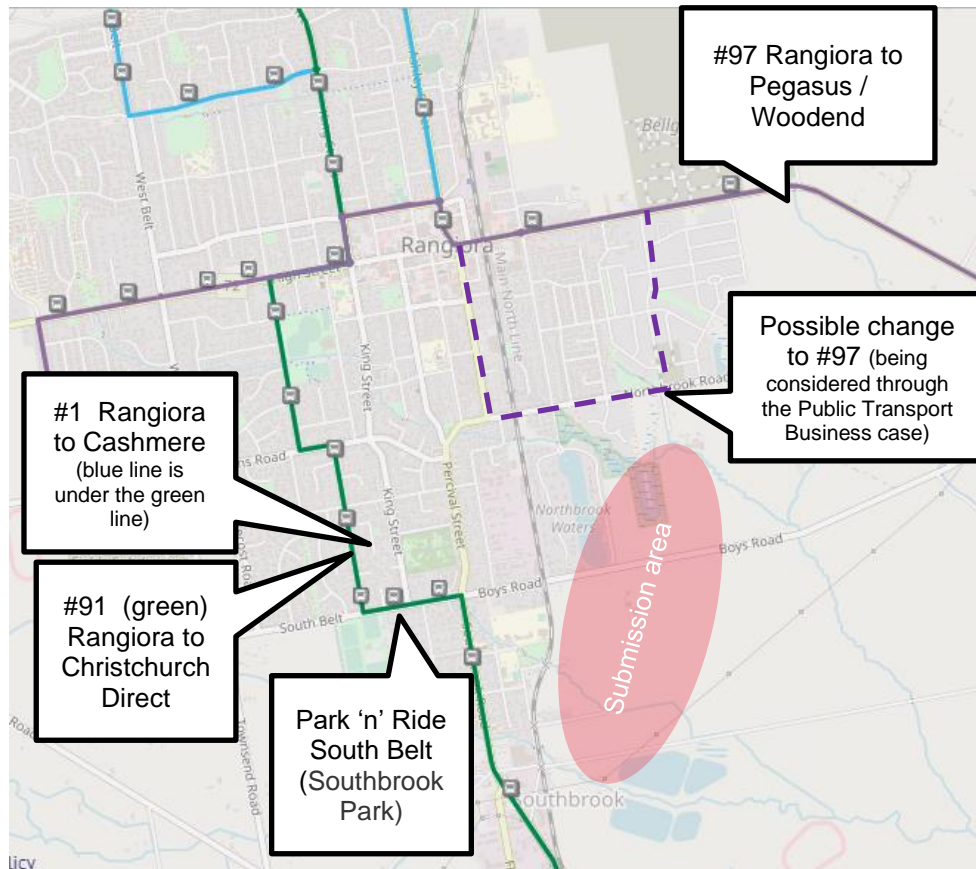


Figure 6: Existing Bus Routes [Source: MetroInfo¹²]

48. There is an expectation that, as the eastern side of Rangiora develops, public transport routes will be adjusted to better service this side of town. The REL would provide a key opportunity for such a future public transport service.
49. In the interim, there are however three park and ride¹³ sites in Rangiora. The closest park and ride is located on South Belt which connects directly to Boys Road towards the west. This is an approximately 800m to 1,600m drive, walk or cycle from the closest and furthest parts of the ODP's. This provides a viable and convenient option for commuter trips to Christchurch (and other destinations such as Kaiapoi).

Active Transport and Micro Mobility Modes

50. Rangiora has a variety of existing (blue) and planned (yellow) cycleways near the site as shown in **Figure 7**. Existing cycleways include connections to Woodend (Rangiora Woodend Path) and Kaiapoi (Passchendaele Memorial Path) with connections also

¹² <https://go.metroinfo.co.nz/mtbp/en-gb/arrivals/content/routes>

¹³ 1. Northern Rangiora - River Road (the current small Park and Ride area has been moved beside the dog park parking area)
2. Central Rangiora - White Street
3. Southern Rangiora - South Belt (at Southbrook Park).



provided from Kaiapoi to Belfast and along the Christchurch Northern Motorway and Northern Corridor to Cranford Street, Christchurch.



Figure 7: Existing (blue) and proposed (orange) cycle routes [Source: WDC¹⁴]

51. It is understood that the REL will include another cycleway and connect to the Passchendaele cycleway to the south¹⁵. There are also plans for future shared paths following the Northbrook. The site will therefore be well connected for cycling trips within Rangiora and also for longer cycle trips to Woodend, Kaiapoi and Christchurch.
52. There are a variety of landuse destinations within walking and cycling distance of the proposed residential areas in Block A and B, including¹⁶:
 - Southbrook Park (recreation / community and Park 'n' Ride) approx. 800-1600m.
 - Rangiora New Life School approx. 100-1200m.
 - Southbrook School approx. 100-1200m.
 - Pack 'n' Save and Southbrook shops 800m-2,200m.
 - Matawai Park 600-1300m.

¹⁴ <https://letstalk.waimakariri.govt.nz/78233/widgets/375029/documents/234095>

¹⁵ https://www.waimakariri.govt.nz/__data/assets/pdf_file/0035/98189/WDC-New-designation-Rangiora-East-Road-Connection-Notice-of-Requirement-Appendix-C-Part-1.pdf

¹⁶ Measured from the nearest edge of the development area.



- Various Shops / Services / Employment on Newham Street approx. 300-1500m.
53. As such the location is suitable for residential use and well connected to existing local services, community and recreational destinations.

Assessment of Transport Effects

54. The assessment of effects associated with the proposed submissions has been considered in three parts relating to the different aspects for Blocks A-C.

Transport Effects - Block A

55. Block A (Refer to Figure 1) includes General and Medium Density Residential use within the Rangiora South East Outline Development Plan (ODP). This area was anticipated for residential development and was considered in the analysis provided for the REL. That analysis showed the traffic associated with this residential area could be readily accommodated (refer to the Future Transport Network discussion above). As such only the transport related effects associated with the proposed changes to the ODP are considered. These are summarised as:
- a. Amendments to the Primary Road (REL) alignment to reflect the updated alignment south from Spark Lane to Boys Road.
 - b. Changes to a Secondary Road shown across the Northbrook Stream to preserve the river ecology, and subsequent adjustments to the secondary road locations and pedestrian and cycle connections.
 - c. Repositioning of a Secondary Road along the northern side of 17 and 19 Spark Lane to retain the existing built form and be located further from the Northbrook Stream.
 - d. Inclusion of a Secondary Road connection to Boys Road along the western boundary of the ODP to service that area and noting the repositioning of the Primary Road (REL) further east.
 - e. A Local Centre to accommodate a small café or similar. This may be around 650m² GFA is located between the Northbrook Stream, existing reserve and the REL. Indicatively generating around 33 trips in the peak hour.
56. The effects discussion is grouped under the key topics of: Changes to the Primary Road Alignment; Secondary Road Changes; and the additional Local Centre / Cafe.

Primary Road Alignment

57. The Primary Road known as the REL is proposed to be slightly realigned following consultation with Council. The amended alignment brings it straight down from Spark Lane to Boys Road avoiding the western “kink” shown on the ODP as notified and on the REL designation. The amended alignment also avoids impacts on some existing pumping stations on Boys Road. The change in alignment achieves a more direct route for the REL. The amended intersection location with Boys Road is appropriate in respect of separation



to other intersections. It is anticipated that this intersection will be roundabout controlled and there is sufficient land available in that location to achieve this. These changes are considered to offer benefits in respect to transport related effects.

Secondary Road Changes

58. Following a report on the ecological and environmental qualities of the Northbrook Stream and a review of the geology of the river banks by others, it is understood that the Secondary Road crossing of the Northbrook Stream may not be acceptable. Alternatively, it may need to be in a different location. Noting this, the Secondary Road network has been adjusted to allow greater flexibility to service the ODP areas in the event that the second bridge is not viable or that the only appropriate location is further south. The changes ensure that each part of the Secondary Road network still has two connections, one each to a Primary Road and to either Boys Road or Northbrook Road. There is also a direct east-west Secondary Road provided between the two Primary Roads, north of the stream. Overall, the amendments ensure that there are direct connections to the wider road network for all destinations to service this residential zone.
59. It is understood from others that bridges for pedestrian and cycle connections can be established without unacceptable impacts on the environmental outcomes and as such local area connectivity between the two sides of the stream will be provided by the three walking and cycling connections proposed.
60. The only loss of connectivity is vehicular connections between residential neighbours either side of the Northbrook Stream. This would result in vehicles having to travel around the road network to cross the stream either at the secondary connection to the north or to the south via Boys Road. Given most trips to adjacent residential areas could be undertaken by walking and cycling and that three pedestrian / cycle connections are proposed, good local connectivity is maintained.
61. There is also a slight repositioning of the Secondary Road on the northern side of 17 and 19 Spark Road. This simply reflects a more appropriate location for that road to avoid existing buildings and further separation from the Northbrook Stream. This change will still achieve similar connections and does not otherwise have any transport related effects relative to the position notified (which cut through the existing community buildings).
62. The final change is an additional Secondary Road connection to Boys Road, along the western edge of the ODP. This will service the land on that side of the Primary Road. Identifying this road also assists with co-ordination of transport infrastructure and particularly with the Boys Road – secondary road connections to Block B. The intersection is approximately 340m west of the proposed REL and well separated from other intersections (discussed further in respect of Block B). As such this is considered to be an appropriate and direct connection and provide a good framework for residential development in that 'corner' of the ODP.

Local Centre / Cafe

63. The provision of an additional Local Centre, intended to provide for a café or similar near the Northbrook Stream and existing reserve is small scale and anticipated to generate around 33 trips in the peak hour and would be within comfortable walking and cycling



distance for many future residents. This is considered to complement the residential development of the area and not generate any noticeable wider traffic generation related effects. The District Plan transport rules will cover key aspects to ensure appropriate design in respect of access and on-site design. As such, noting the small scale and location, we consider it can be readily accommodated without undue transport related effects.

Block A Summary of Effects

64. Overall, the proposed changes to the ODP in Block A are considered to improve the transport related outcomes and form the basis for co-ordinated provision of transport infrastructure for residential subdivisions. This will support the development of a safe and efficient transport network which is well connected and meets the travel needs of future residents.

Transport Effects - Block B

65. In respect of Block B (refer to Figure 1), the submissions seek *Rural to Residential* rezoning for the land generally bounded by Boys Road, the REL Road, the Railway Line and north of an odour setback from the oxidation ponds. This is anticipated to accommodate around 290 future residential dwellings.
66. The key transport related aspects are summarised as:
 - a. Repositioning of the REL Road (Primary Road) for the same reasons as set out in respect of Block A above.
 - b. Provision of two Secondary Road connections between Boys Road and the REL.
 - c. A reserve to allow future pedestrian / cycle connectivity to the west, towards Denchs Road and / or Gefkins Road to connect to the school and existing residential areas.
 - d. Provision for future connections to adjacent undeveloped land at 287 Boys Road.
 - e. Shared paths provided for by a mixture of green corridors and along parts of the Secondary Roads. These achieve key walking and cycling desire lines, connecting to the future path along the REL, future connections to the west and south, and a connection north, to "Block A" on the northern side of Boys Road.
67. As set out earlier in this report we anticipate the future residential use will generate **261 trips** in the **peak hour**, comprising around 68 arrivals and 193 departures in the AM Peak and 164 arrivals and 97 departures in the PM peak.
68. Noting that the alignment of the REL has already been addressed above, the effects of this are not repeated in this section. The key transport related effects are considered to be; the design and layout of the ODP, local area connectivity and the ability to safely and efficiently integrate with the capacity of the surrounding road network. These are discussed in turn below.



Design and Layout of the ODP (Block B)

69. The layout of the Block B ODP has been specifically designed to integrate with the existing and planned transport network particularly the Secondary Road connections to Boys Road and the REL. The key consideration for the location of the Secondary Roads relates to safety and efficiency. In particular, direction from Council has indicated a preference for 'T' intersections rather than cross roads intersections. The proposed District Plan rules suggest intersection separation distances of 125m for a 50km/h speed limit and 160m for a 60km/h speed limit.
70. It is understood that the 50km/h speed limit on Boys Road would be moved to the east to co-ordinate with the residential development and urban upgrades of Boys Road. The Secondary Road intersections with Boys Road are designed to be 'T' intersections (priority to Boys Road) and are located to achieve at least 125m separation to the Rail Level Crossing, the Secondary Road on the northern side of Boys Road (Refer to the Block A ODP) and the REL intersections. This is considered to provide a good balance between servicing property access, an efficient ODP layout and allows sufficient space for intersections to be designed to accommodate turning lanes, achieve appropriate sight distances and otherwise form the basis for a well-integrated road network.
71. It is understood that road design for the REL is yet to be completed along with decisions regarding the future speed limits. In this respect, we expect that a 50km/h speed limit would apply north of Boys Road (noting the existing speed limit on McPhail Avenue and Spark Lane and anticipated on Boys Road). South of Boys Road, near Block B we would logically anticipate this to be a transitional area with perhaps a 60km/h speed limit. For a 60km/h speed limit a 160m intersection spacing is required by the Proposed District Plan rules (as notified). The spacings between the two proposed roads and Boys Road intersections with the REL are approximately 200m. This is considered appropriate to provide good flexibility for intersection designs at the two proposed 'T' intersections and avoid impacting on the Boys Road / REL roundabout.
72. The Secondary Road designs within the ODP are likely to be formed as Local Roads and provide the main framework from which lower volume Local Roads can be incorporated to efficiently service property access. These Secondary Roads will need to be designed to balance access to both Boys Road and the REL, whilst avoiding creating short-cuts through the future residential neighbourhood. This can be readily achieved through good design of these road alignments at subdivision stage.
73. The ODP provides for integration of the adjacent undeveloped land at 287 Boys Road both to connect these future communities and also noting that direct access to Boys Road would be difficult from this site, given the proximity to the Boys Road Rail Level Crossing. The ODP provides two road connections for 287 Boys Road, one each on the southern and eastern boundaries. This is intended to provide the framework for servicing property access and good connections to and through this block, should it be developed for residential use in the future.
74. It is noted that the existing residential and lifestyle properties as well as the location of the Middlebrook Stream do not provide for road connections to the south. The curving alignment of the REL in this part of the site already provides a direct connection towards the south-west and avoids additional road infrastructure compromising the proposed



stormwater ponds and potential wetland areas. Pedestrian and cycle connections are however provided through this area.

75. The layout has also been designed to maximise walking and cycling connections which are discussed further below in respect of connectivity.
76. In terms of the future roads within the ODP, these Local Road connections are to be designed such that they are not attractive through routes to avoid 'rat-running'. These road will have low traffic volumes which can be catered for with basic giveaway controlled intersections. Property access / lower volume local road locations would be considered through the subdivision process.
77. All roads are anticipated to be formed to designs consistent with the District Plan and/or the Code of Practice or can otherwise be determined through detailed design at subdivision stage.
78. Overall, the layout is considered to be appropriate to provide for both good integration with Boys Road and the REL, to enable the area to be safely and efficiently connected to the road network. It also provides a good framework for property access to the future dwellings and for integration with the adjacent site at 287 Boys Road. The layout also offers good co-ordination between on-road and off-road pedestrian and cycle connections which is discussed further in the following section.

Local Area Connectivity (Block B)

79. The ODP has been designed to provide for connectivity through the ODP and to the adjacent network, specifically this includes:
 - a. Key road, walking and cycling connections to the east along the Secondary Roads and green spaces, to connect to the REL. The REL is anticipated to include a walking and cycling connection forming part of a wider network of existing and planned paths connecting Rangiora, Woodend, Kaiapoi and Christchurch.
 - b. A north-south walking and cycling connection centrally through the site and connecting to the Secondary Road north of Boys Road (in Block A). This connection is achieved through a mixture of internal roads and reserves following the water services easements. This provides a direct connection to integrate the two sides of Boys Road (whilst avoiding cross roads intersections) and is intended to encourage walking cycling or other micro mobility mode use for local trips.
 - c. Provision for two additional walking and cycling connections to Boys Road via the proposed Secondary Roads.
 - d. Provision for a possible walking and cycling connection to Hegan Reserve and Denchs Road. This connection is considered to be desirable for access to the schools and integration with the existing residential areas. Achieving this connection will however be subject to a detailed investigation¹⁷ of a safe and appropriate

¹⁷ Requiring input and specialist assessments from KiwiRail and the Council.



crossing point over the Railway Line. If this connection cannot be achieved it is noted that the site is still connected to the west via Boys Road.

- e. Local Road connections are also indicated to the adjacent undeveloped land at 287 Boys Road to provide integration and connections with any future development on that site.
 - f. Various walking and cycling connections are also proposed through the stormwater reserve at the southern end connecting to Block C, the REL and providing recreational opportunities.
80. Noting the above, good connectivity is provided for the variety of destinations walking and cycling distance of the site, as set out in paragraphs 50-53.
81. As outlined in paragraphs 47-48 the existing public transport routes and South Belt Park 'n' Ride are located in reasonable proximity to the site to allow future residents to walk / cycle or drive to these services for connections to Kaiapoi, Woodend and Christchurch. The site is also appropriately located such that any future service for the eastern side of Rangiora could efficiently service this site, for example a route along Boys Road and or the REL. Noting this, the site is considered to be well located in respect of existing and future public transport. It is also noted that whilst no commuter rail services are anticipated in the near future, the proximity to the Main North Railway Line would also be advantageous in terms connections via commuter rail services (if any were provided in the longer term).
82. The site is also well connected for vehicular travel to the Rangiora Town Centre and various existing commercial and recreational activities within Rangiora, via Boys Road (west). Boys Road to the east also provides a convenient connection to Woodend via Rangiora Woodend Road.
83. Both the Boys Road to Woodend and the REL to Lineside Road routes provide for good connections to Kaiapoi, Christchurch and State Highway 1 for inter-regional travel.
84. Overall, the site is considered to be very well located within the existing and planned transport network to provide good access for future residents to all destinations and particularly to encourage use of active and micro mobility modes. The existing public transport routes, and park and ride services, offer a viable option for public transport use.

Surrounding Road Network Capacity (Block B)

85. In order to consider the future operation of the Secondary Road intersections with Boys Road and the REL, estimates of the movements through these intersections have been modelled in *SIDRA Intersection 9* to allow a broad consideration of the potential performance of these intersections.
86. As outlined above, the future residential use is anticipated to result in generate **261 trips** in the **peak hour**, comprising around 68 arrivals and 193 departures in the AM Peak and 164 arrivals and 97 departures in the PM peak.



87. In order to estimate turning movements to and from Block B, Commuter Waka¹⁸ departures¹⁹ for work and education have been analysed (refer to **Appendix 2**). This enables estimates for travel destinations to be proportionately allocated to the most likely turning movement. The key assumptions and resultant movement estimates are set out in **Appendix 3**.
88. The results of the SIDRA modelling are provided in **Appendix 4**. In summary, these indicate that:
- The proposed road intersections with Boys Road can operate with good levels of service with basic 'T' intersections. This includes the potential 2038 scenario where traffic volumes remain at 4,400vpd on Boys Road rather than decreasing to 2,200vpd as indicated by the REL modelling (Refer to paragraph 23).
 - The proposed road intersections with the REL are assumed to be 'T' intersections with separate left and right turn lanes on the proposed road and a right turn lane²⁰ on the REL. This layout would result in good levels of service (A-C) for all movements except for the right turn from the proposed road to REL which would have considerable delay and operate at LOS F.
89. The poor performance of the right turn from the proposed roads to the REL is not surprising given the relatively high opposing traffic volumes (volume of traffic on the REL to give-way to). Consideration could be given to a variety of right turn treatments or formation of one of the intersections as a roundabout. Alternatively, this right turn movement could be banned with traffic instead being directed through to Boys Road and via the Boys Road – REL roundabout. This later scenario was considered by adding the “banned” right turn volumes to the Boys Road intersection analysis. The Boys Road intersection continued to operate at good levels of service for all movements under this scenario (results included in **Appendix 4**).
90. It is also noted that modelling done by WSP as part of the REL NoR included analysis of the REL and Boys Road intersection and indicated there was spare capacity at that intersection (Refer to Figure 4).
91. Given the design of the REL is understood to be at the preliminary stages, any of the above options could be considered as the design of the REL is progressed. Noting that if all right turn traffic to the REL was instead diverted through the Boys Road intersections that this could be accommodated within the capacity of basic 'T' intersections we do not consider there are any capacity constraints for the development which cannot be addressed through the subdivision design phases, at which time more information would be available to enable better modelling and more refined analysis to be undertaken to inform decisions regarding the intersection designs.
92. Noting there are options available to accommodate the right turn demand to the REL and travel in all other directions can be readily accommodated, we consider safe and efficient

¹⁸ <https://commuter.waka.app/>

¹⁹ Commuter Waka – although Block B is in Tuahiwi this is predominantly rural and the best estimates for residential travel are considered to be the existing trip patterns of Rangiora South East (just north of Boys Road)

²⁰ And associated medians / treatments.



movement of future residential traffic can be readily provided for by way of appropriate intersection design and analysis at subdivision / design stage.

93. In terms of wider capacity within Rangiora, the TA by WSP supporting the NoR for the REL indicated that:
- a. The REL is considered to have a positive effect on the transport network primarily by increasing capacity, reducing journey times, and provides an alternative north-south route (to the existing route north of SH71 i.e., Lineside Road / Southbrook Road, which experiences congestion in peak times).
 - b. The modelling shows low degrees of saturation / good levels of service and ample spare capacity including at the nearby intersections of the REL with Boys Road, Marsh Road and Lineside Road.
 - c. The Project is modelled to result in a decrease in traffic flows on parallel routes such as the Lineside Road / and local streets, except for those closest to and that connect directly to / feed the REL such as Northbrook Road and Coldstream Road²¹.
94. We note that the reporting mentioned above included a small amount of population growth in the area occupied by Block B based on assumed Rural Lifestyle development. The proposed residential density could increase the number of dwellings in this part of the network, albeit there is not necessarily a direct link between rezoning and population growth for a township overall. Regardless, the additional traffic is considered to be relatively small scale in respect of the overall growth considered for Rangiora²². Noting the above, and that traffic is reasonably well distributed across the wider road network associated with the various travel destinations (Refer to **Appendix 2**), we anticipate the additional traffic associated with the proposed residential zoning can also be readily accommodated within the surrounding network capacity resulting from development of the REL.

Transport Effects Summary – Block B

95. As a summary of the Block B effects assessment, the ODP layout is considered to be appropriate to provide for both good integration with Boys Road and the REL to enable the area to be safely and efficiently connected to the road network. It also provides a good framework for property access to the future dwellings and integration with 287 Boys Road.
96. The site is considered to be very well located within the existing and planned transport network to provide good access for future residents to all destinations and particularly to encourage use of active and micro mobility modes. The existing public transport routes and park and ride services offer a viable option for public transport use.
97. In respect of road network capacity, the REL is anticipated to improve capacity across the road network in Rangiora generally and particularly on nearby sections of the road network on the eastern side of Rangiora. The analysis of the proposed road intersections suggests some capacity constraints for the right turn to the REL but otherwise good levels of service.

²¹ Also assumes that local area traffic management / calming is used to mitigate potential 'rat-running' through local streets.

²² Being some 4,300 people in the eastern side of Rangiora by 2048 (Ref. REL NOR Appendix C, Traffic Assessment by WSP section 3.1.1).



Noting that there are options available to cater for the right turn demand, we consider that there are solutions available to provide intersection designs that accommodate the future residential traffic safely and efficiently.

98. Overall, the proposed residential zoning of Block B is considered to be appropriate in that it can be accommodated safely and efficiently subject to appropriate detailed design and otherwise noting that the ODP provides an appropriate framework to develop good transport networks that provide for the future residents needs and there is good connectivity for all modes of travel to local destinations.

Transport Effects – Block C

99. The southern part of the submission, known as Block C, is located within an odour setback from the oxidation ponds and as such is not suitable for either residential use or commercial use. This area is also somewhat isolated from the remaining rural land by the proposed REL, compromising the viability of rural use for this section of land. Noting these factors and following various discussions with the Council, the submission seeks a Future *Light Industrial* zone for this area of the site.
100. The location is close to the existing industrial and service type activities centred around Southbrook. The site is generally located in a suitable position for access to the wider road network nothing the proximity to the REL and Lineside Road.
101. As outlined above this is estimated to generate around 100-200 trips in the peak hours. It is noted that such activities would also provide local employment opportunities and some of those trips may replace trips that would otherwise commute to other industrial areas.
102. Road access would be provided either from Marsh Road or via a future connection to the REL. Either of these scenarios are considered feasible subject to appropriate design considerations at the time of development.
103. Marsh Road would need to be upgraded, including a sealed carriageway of at least 8m width²³ to cater for heavy vehicle traffic between the site and the REL. The main route for industrial traffic is anticipated to be from Marsh Road to the REL. Depending on the outcomes of the Council and KiwiRail review of the Marsh Road Rail Level Crossing (and related changes to the operation of Station Road and Railway Road) there may also be a small amount of travel in that direction directly to the existing businesses in Southbrook²⁴. The REL provides a direct connection to the wider road network for the movement of goods between the light industrial area and commercial / industrial areas of Rangiora, Kaiapoi and Christchurch.
104. Dunlops Road to the north, services some existing residential / lifestyle properties. It is understood that Council are considering connecting Dunlops Road to the REL and as such this possible connection is shown on the proposed ODP. No road connections for heavy vehicle traffic are proposed to Dunlops Road, to protect the amenity of the existing houses.

²³ Based on PWDP Table TRAN-3 (as notified), and additional width would be required if kerb side parking is to be provided.

²⁴ However, it is noted that if the level crossing was closed these areas are still readily accessible via the Rangiora Eastern Link Road and the new intersection proposed with Lineside Road.



A small local road connection could be provided for light traffic, and / or shared paths could provide for local walking and cycling connectivity.

105. Overall future use of Block C for Light Industrial activities is considered appropriate from a transport perspective subject to detailed design considerations at a later stage.

Proposed District Plan Objectives and Policies

106. Consideration of the changes sought in the submissions against the relevant²⁵ transport Objectives and Policies has been undertaken from a technical perspective to inform the overall planning considerations. The conclusions in respect of each Block are set out below.

Objectives and Policies - Block A

107. Noting the conclusions of the assessment of effects above and that the changes to Block A are not substantially altering the transport network compared to the notified ODP, Block A is considered to remain consistent with the proposed transport related objectives and policies. Specifically, the changes proposed ensure the safe and efficient operation of the transport network and integration and connections to meet future residents travel needs.

Objectives and Policies - Block B

108. For the proposed transport network and residential rezoning in Block B, the transport related objectives and policies have been discussed in turn in **Appendix 5**. In summary, the proposed rezoning is considered to be well aligned with the transport related objectives and policies. This includes protecting the safety and efficiency of the transport network and providing good connections for travel via walking and cycling to services within the local community and access to public transport. As such the proposal is considered to be generally consistent with those provisions from a transport perspective.

Objectives and Policies - Block C

109. The Light Industrial use proposed for Block C is a future zoning, at a high level and subject to appropriate road upgrades and design, Block C would be generally consistent with the transport related Objectives and Policies briefly noting that:
- a. The location, subject to development of appropriate infrastructure, can provide for the safe and efficient distribution of freight with good access to the wider road network.
 - b. Appropriate road, intersection, and rail level crossing, upgrades can ensure the safe and efficient functioning of the transport network is maintained.

²⁵ Some matters relating to amenity and environmental effects of transport networks are best assessed by others. Where policies relate to specific development outcomes such as parking and manoeuvring it is assumed that the future subdivision and development in accordance with the District Plan rules will achieve these outcomes.



- c. The location is suitable to encourage local employment and activity mode commutes from existing and proposed residential catchments.
- d. Separate road access to Marsh Road or a new Road to the REL can avoid adverse effects on existing residential and lifestyle activities on Dunlops Road / north of the site.

Conclusion

110. In summary, the submissions seek the rezoning of Blocks A and B for residential use and a Future Light Industrial Zone for Block C. It also includes changes to the Rangiora South East Development Plan and an extension of the Outline Development Plan to cover Blocks B and C. The proposed ODP in Appendix 1 shows the key transport infrastructure including primary and secondary roads, pedestrian and cycle connections, and frontage road upgrades which are appropriate in the context of the existing and planned transport network. These provide for development to be co-ordinated and integrated with the existing and planned road network, adjacent land, existing residential areas and other infrastructure such as stormwater management areas.
111. Based on the assessment of effects outlined above, the key transport conclusions are:
- a. Boys Road is anticipated to transition to an urban form including footpaths and cycle infrastructure. A shared path is proposed along the Rangiora Eastern Link (REL) Road. The proposed ODP has been designed to ensure good integration with the planned transport network.
 - b. The repositioning of the REL provides an improved alignment and is in an appropriate location from a transport perspective.
 - c. Proposed changes to the secondary roads in Block A allow for greater flexibility to service the ODP areas and ensure that there are direct connections to the wider road network for all destinations to service this part of the residential zone (north of Boys Road).
 - d. The layout of the Block B ODP has been specifically designed to integrate with the existing and planned transport network including co-ordination with Block A, the REL, undeveloped land at 287 Boy Road, Stormwater Reserves and Block C, and existing residential areas.
 - e. The proposed residential areas can be accommodated within the existing and planned road network capacity generally subject to appropriate intersection design.
 - f. All blocks provide good connections for walking and cycling. This will assist with encouraging use of active modes and achieving well integrated communities.
 - g. The residential zones are considered to be well located within the existing and planned transport network to provide good access for future residents to all destinations and particularly to encourage use of active and micro mobility modes.

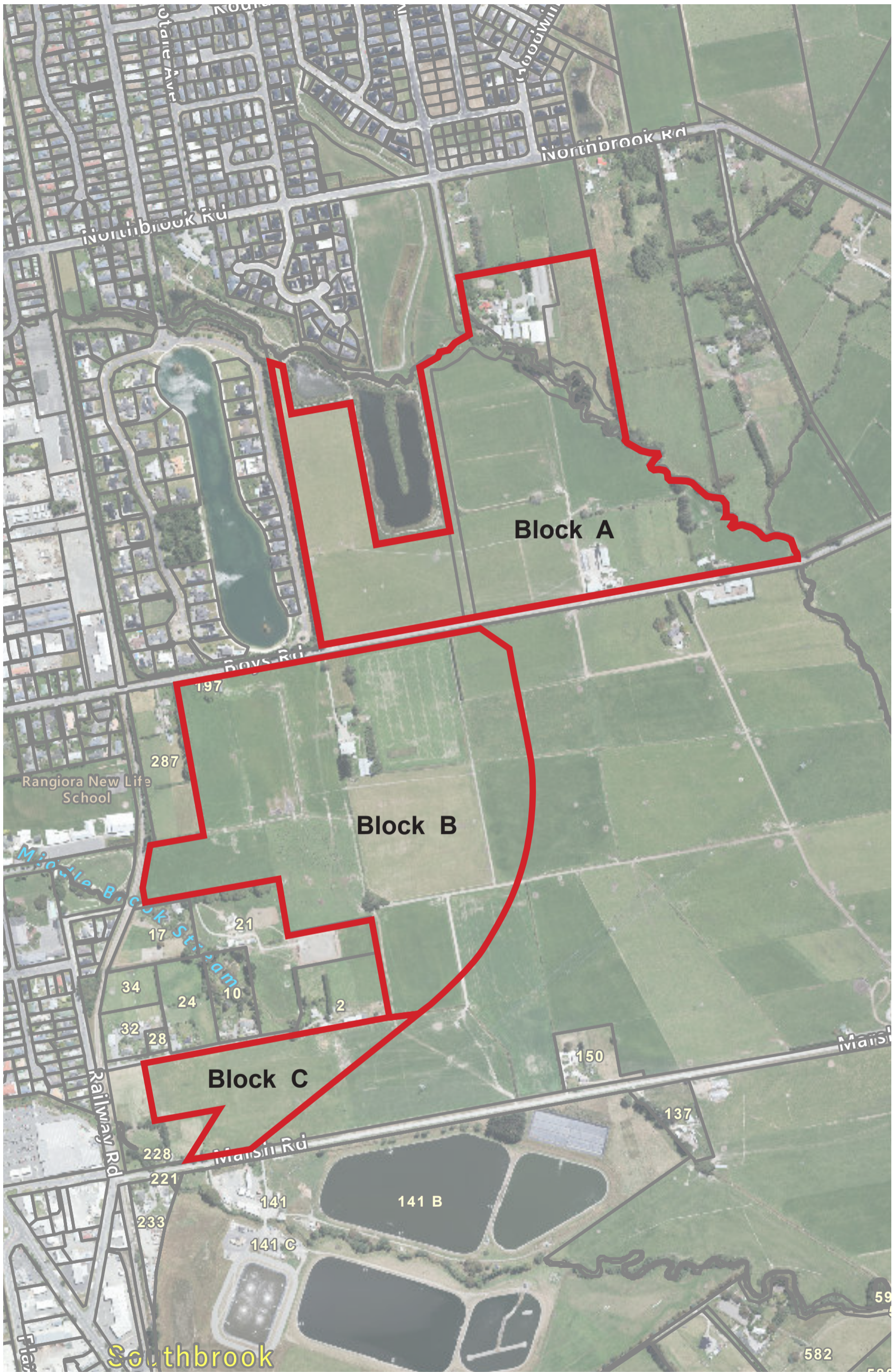


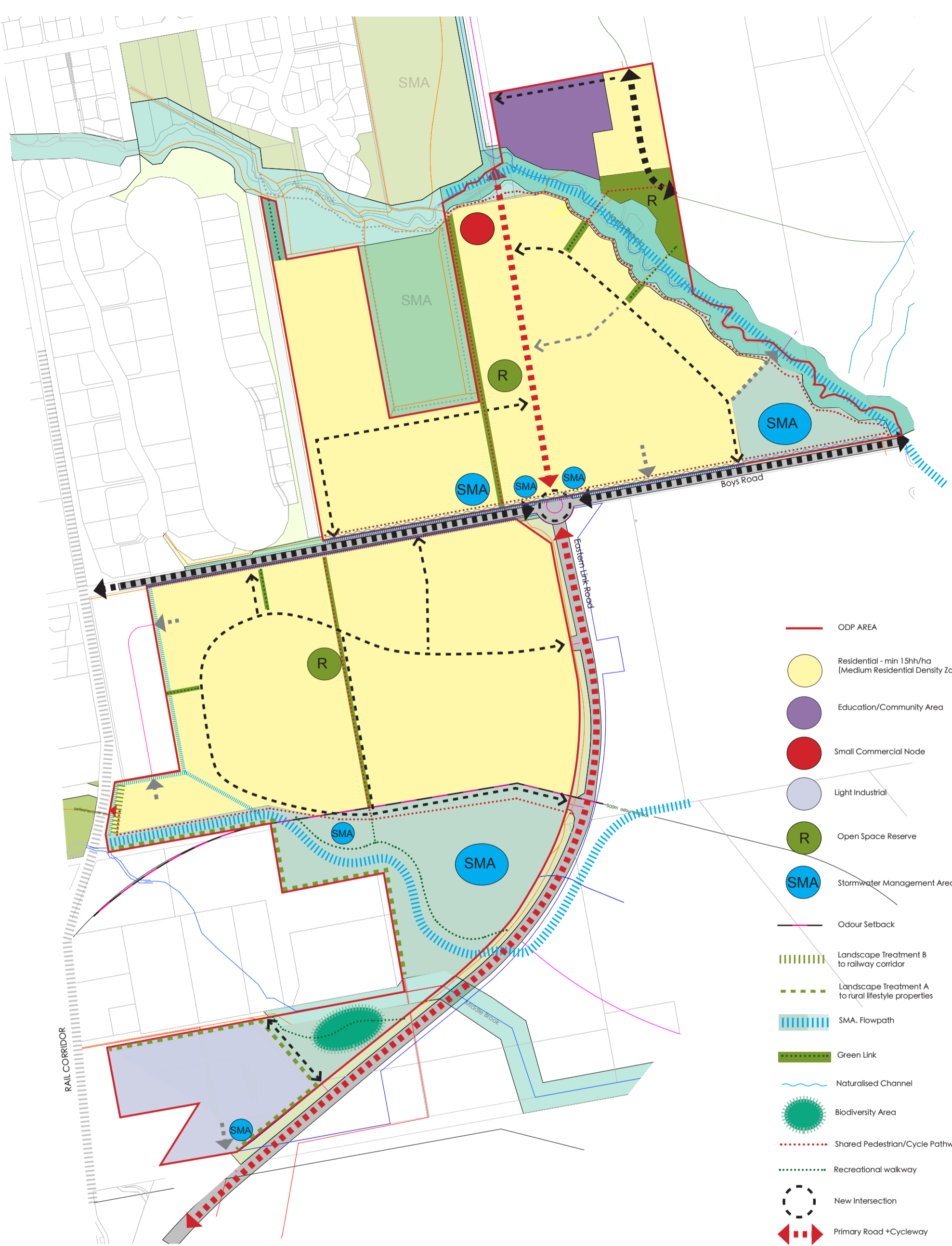
- The existing public transport routes and park and ride services offer a viable option for public transport use.
- h. A Future Light Industrial zone on Block C has been considered at a high level. Marsh Road would need to be upgraded to a suitable urban standard and to cater for heavy traffic including changes to the rail level crossing. The main vehicular connection to the road network is anticipated to be via Marsh Road or a new road connection to the REL. No heavy vehicle access should be provided to Dunlops Road however light vehicle and or shared paths could provide for local connectivity.
 - i. The development can be staged to co-ordinate with the relevant upgrades to transport infrastructure and this can be readily managed through the normal subdivision process.
112. In summary, the proposed changes and residential zones for Blocks A and B are considered to be appropriate and ensure that residential development can be integrated into the transport network in a safe, efficient, and appropriate manner which provides for the travel needs of the future residents.
113. The Light Industrial use proposed for Block C is a future zoning. At a high level, subject to appropriate road upgrades and design, this use could be accommodated on Block C in a way that; maintains the safe and efficient operation of the transport network; provides for the efficient distribution of freight; provides local employment and active travel to work opportunities; and avoids adverse traffic effects on the existing residential and lifestyle properties north of the site.
114. Overall, the ODP and zonings sought are considered to be appropriate from a transport perspective. As such, I can support the submissions from a transport perspective.



Appendix 1

Proposed ODP





- ODP AREA
- Residential - min 15hh/ha (Medium Residential Density Zone)
- Education/Community Area
- Small Commercial Node
- Light Industrial
- R Open Space Reserve
- SMA Stormwater Management Area
- Odour Setback
- Landscape Treatment B to railway corridor
- Landscape Treatment A to rural lifestyle properties
- SMA, Flowpath
- Green Link
- Naturalised Channel
- Biodiversity Area
- Shared Pedestrian/Cycleway
- Recreational walkway
- New Intersection
- Primary Road + Cycleway
- Primary Road
- Secondary Road
- Key Local Road
- Future Connection
- Road Frontage Upgrade





Appendix 2

Summary of Commuter Waka Departures for Work and Education and Directional Allocation of Trips



Rangiora South East²⁶ Commuter Waka Destination	Commuter Waka Departure Volumes	%	Proportionate Travel (261 peak hour trips)	Direction	Allocation
Stay in RSE	162	16.8%	44	50/50 EW	Boys
Southbrook	138	14.3%	37	South	REL
RNE	111	11.5%	30	North	REL
Lillybrook	108	11.2%	29	West	Boys
RC	84	8.7%	23	West	Boys
Chch Airport	33	3.4%	9	South	REL
Chch Central					
South	27	2.8%	7	South	REL
Sockburn sth	21	2.2%	6	South	REL
Ashgrove	18	1.9%	5	West	Boys
Islington hornby	18	1.9%	5	South	REL
Russley	18	1.9%	5	South	REL
Sydenham	18	1.9%	5	South	REL
Chch Central	15	1.6%	4	South	REL
Chch Central West	15	1.6%	4	South	REL
Ilam	15	1.6%	4	South	REL
Kaiapoi Central	15	1.6%	4	South	REL
Tower Junction	15	1.6%	4	South	REL
Ashley Sefton	12	1.2%	3	North	REL
Bromley North	12	1.2%	3	South	REL
Fernside	12	1.2%	3	West	Boys
Lancaster Park	12	1.2%	3	South	REL
Rangiora NW	12	1.2%	3	West	Boys
Belfast East	9	0.9%	2	South	REL
Middleton	9	0.9%	2	South	REL
Pegasus	9	0.9%	2	South / E	Boys / REL
Tuahiwi	9	0.9%	2	South / E	Boys / REL
Waikuku	9	0.9%	2	50/50 NE	Boys REL
Hornby Central	6	0.6%	2	South	REL
Loburn	6	0.6%	2	North	REL
Strowan	6	0.6%	2	South	REL
Woolston S	6	0.6%	2	South	REL
Woodend	6	0.6%	2	50/50 NE	Boys REL

²⁶ Although Block B is in Tuahiwi this is predominantly rural and the best estimates for residential travel are considered to be the existing trip patterns of Rangiora South East (just north of Boys Road)



Appendix 3

Summary of Peak Hour Through and Turning Volume Estimates



The following assumptions have been made with regards to traffic distribution and volume estimates:

- REL direction flows are assumed to be similar to other north-south roads through Rangiora – broadly 40% northbound and 60% southbound in the AM Peak and 65% northbound and 35% southbound in the PM peak. Peak hour volumes on key commuter routes appear to be approximately 10% of daily volumes however 12% has been adopted to allow for a robust analysis.
- Boys Road peak hour volumes have been estimated at 15% of daily traffic (to allow robust analysis). It is noted that the model predicted 2200 vehicles per day on Boys Road once the REL was constructed. This was an approx. 50% reduction in volumes on Boys Road. A sensitivity test was also run assuming no reduction to Boys Road Traffic²⁷.
- Commuter Waka travel departure destinations for work and education have been used to estimate the split of traffic between Boys Road and REL based on directions of travel. Arrival and departure estimates have been applied to the directions of travel to estimate turning volumes.
- Traffic to / from the ODP is likely to be reasonably evenly split between each of the two road intersections with Boys Road and REL based on the intersection closest to the dwelling. However, to enable a robust SIDRA analysis a 65% loading for one of these intersections has been analysed i.e., assuming that one intersection with each of Boys Road and REL takes more traffic than the other intersection with the same road.

This results in the following movements volumes which have been used for the SIDRA Intersection Analysis.

Proposed Road -Boys Road Intersection (65% loading)	Turning Movement			
	West (R turn)	East (L turn)	South L Turn	South R turn
Peak Hour Movements				
AM Arrivals	14	4		
AM Departures			41	13
PM Arrivals	35	11		
PM Departures			20	6

Boys Road Through Movements Peak hour (15% Daily)	East bound	West bound
AM	78	252
PM	252	78

²⁷ This tests the scenario that volumes may not reduce as much as the model anticipates and or that traffic volumes take a while to re-route.



Proposed Road - REL Intersection (65% loading)	Turning Movement			
	North (R turn)	South (L turn)	West L Turn	West R turn
Peak Hour Movements				
AM Arrivals	6	19		
AM Departures			18	54
PM Arrivals	15	46		
PM Departures			9	27

REL Through Movements	North bound	South bound
Peak Hour (12% daily)		
AM (40% north, 60% south)	706	1058
PM (65% north, 35% south)	1147	617



Appendix 4

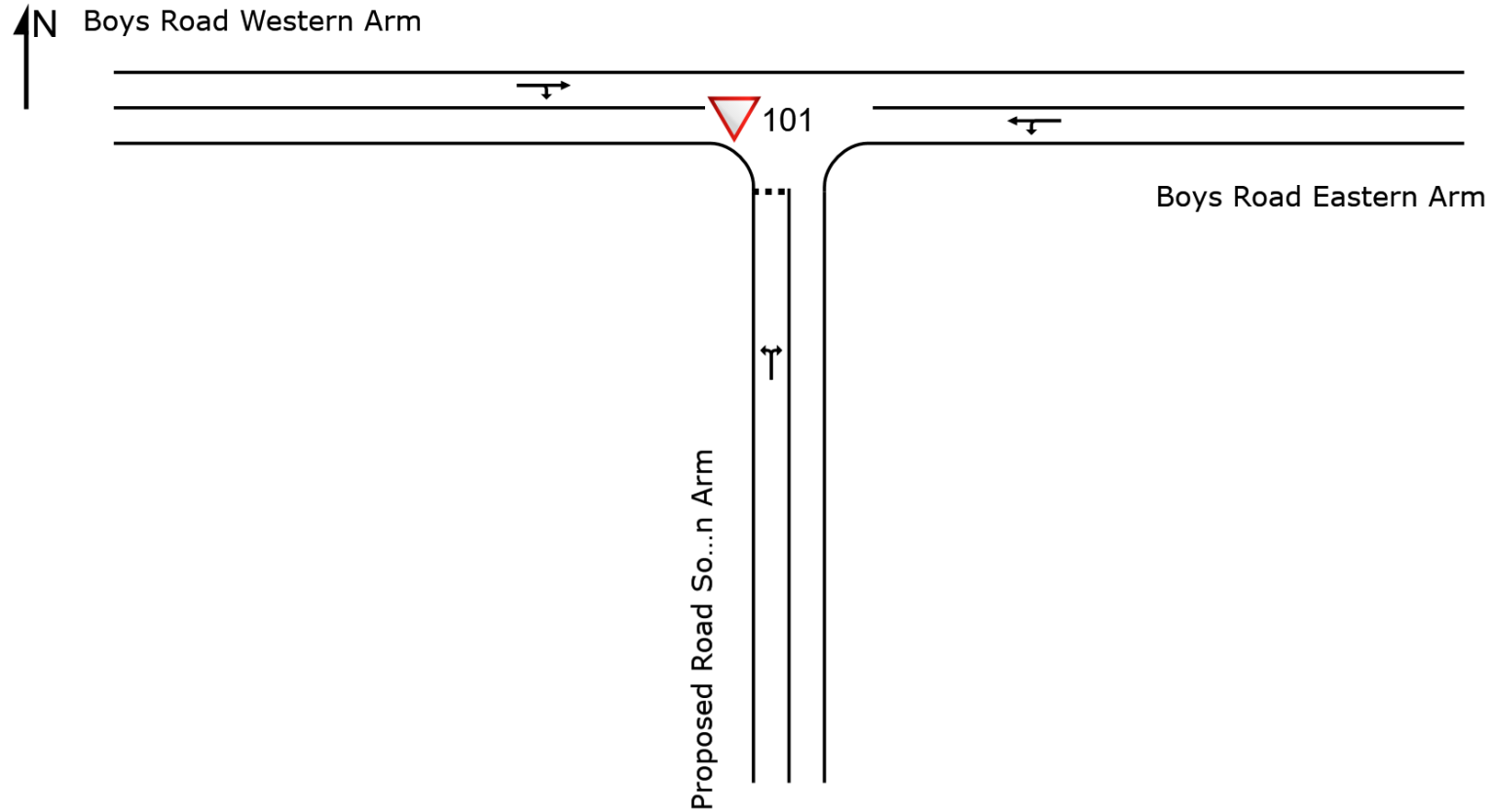
SIDRA 9 Intersection Movement Summaries

SITE LAYOUT

▽ Site: 101 [Boys Road - Proposed AM (Site Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [Boys Road - Proposed AM (Site Folder: General)]

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total HV] veh/h %		DEMAND FLOWS [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Dist] veh m		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Proposed Road Southern Arm														
1	L2	11	0.5	12	0.5	0.049	5.4	LOS A	0.2	1.2	0.36	0.60	0.36	45.8
3	R2	35	0.5	37	0.5	0.049	6.0	LOS A	0.2	1.2	0.36	0.60	0.36	45.4
Approach		46	0.5	48	0.5	0.049	5.9	LOS A	0.2	1.2	0.36	0.60	0.36	45.5
East: Boys Road Eastern Arm														
4	L2	4	0.5	4	0.5	0.140	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.4
5	T1	252	2.0	265	2.0	0.140	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach		256	2.0	269	2.0	0.140	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
West: Boys Road Western Arm														
11	T1	78	2.0	82	2.0	0.053	0.2	LOS A	0.1	0.8	0.13	0.09	0.13	49.2
12	R2	14	0.5	15	0.5	0.053	5.5	LOS A	0.1	0.8	0.13	0.09	0.13	48.2
Approach		92	1.8	97	1.8	0.053	1.0	NA	0.1	0.8	0.13	0.09	0.13	49.0
All Vehicles		394	1.8	415	1.8	0.140	1.0	NA	0.2	1.2	0.07	0.10	0.07	49.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Boys Road - Proposed PM (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total HV] veh/h %		DEMAND FLOWS [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Dist] veh m		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Proposed Road Southern Arm														
1	L2	20	0.5	21	0.5	0.021	4.8	LOS A	0.1	0.5	0.16	0.52	0.16	46.2
3	R2	6	0.5	6	0.5	0.021	6.1	LOS A	0.1	0.5	0.16	0.52	0.16	45.8
Approach		26	0.5	27	0.5	0.021	5.1	LOS A	0.1	0.5	0.16	0.52	0.16	46.1
East: Boys Road Eastern Arm														
4	L2	11	0.5	12	0.5	0.049	4.6	LOS A	0.0	0.0	0.00	0.07	0.00	49.1
5	T1	78	2.0	82	2.0	0.049	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	49.6
Approach		89	1.8	94	1.8	0.049	0.6	NA	0.0	0.0	0.00	0.07	0.00	49.5
West: Boys Road Western Arm														
11	T1	252	2.0	265	2.0	0.161	0.1	LOS A	0.3	1.8	0.06	0.07	0.06	49.4
12	R2	35	0.5	37	0.5	0.161	4.9	LOS A	0.3	1.8	0.06	0.07	0.06	48.5
Approach		287	1.8	302	1.8	0.161	0.6	NA	0.3	1.8	0.06	0.07	0.06	49.3
All Vehicles		402	1.7	423	1.7	0.161	0.9	NA	0.3	1.8	0.05	0.10	0.05	49.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

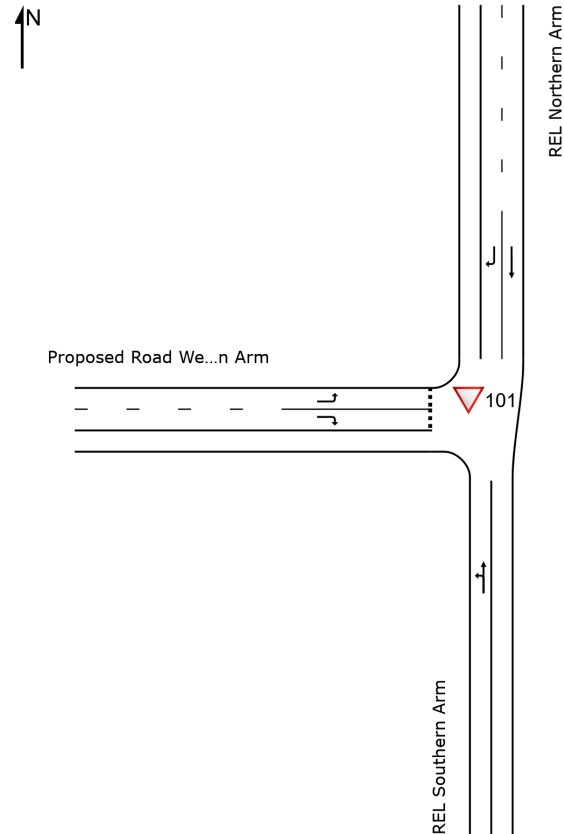
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

▽ Site: 101 [REL Road - Proposed Road AM (Site Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

▽ Site: 101 [REL Road - Proposed Road AM (Site Folder: General)]

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total HV] veh/h %		DEMAND FLOWS [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Dist] veh m		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: REL Southern Arm														
1	L2	19	0.0	20	0.0	0.392	5.7	LOS A	0.0	0.0	0.00	0.02	0.00	58.0
2	T1	706	0.0	743	0.0	0.392	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
Approach		725	0.0	763	0.0	0.392	0.3	NA	0.0	0.0	0.00	0.02	0.00	59.6
North: REL Northern Arm														
8	T1	1058	0.0	1114	0.0	0.571	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
9	R2	6	0.0	6	0.0	0.009	9.1	LOS A	0.0	0.2	0.60	0.69	0.60	47.4
Approach		1064	0.0	1120	0.0	0.571	0.3	NA	0.0	0.2	0.00	0.00	0.00	59.4
West: Proposed Road Western Arm														
10	L2	18	0.0	19	0.0	0.027	8.1	LOS A	0.1	0.6	0.57	0.72	0.57	47.5
12	R2	54	0.0	57	0.0	1.553	654.7	LOS F	17.3	121.3	1.00	1.98	4.91	4.8
Approach		72	0.0	76	0.0	1.553	493.0	LOS F	17.3	121.3	0.89	1.67	3.83	6.2
All Vehicles		1861	0.0	1959	0.0	1.553	19.4	NA	17.3	121.3	0.04	0.07	0.15	44.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [REL Road - Proposed Road PM (Site Folder: General)]

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total HV] veh/h %		DEMAND FLOWS [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Dist] veh m		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: REL Southern Arm														
1	L2	46	0.0	48	0.0	0.645	5.9	LOS A	0.0	0.0	0.00	0.02	0.00	57.6
2	T1	1147	0.0	1207	0.0	0.645	0.4	LOS A	0.0	0.0	0.00	0.02	0.00	59.1
Approach		1193	0.0	1256	0.0	0.645	0.6	NA	0.0	0.0	0.00	0.02	0.00	59.0
North: REL Northern Arm														
8	T1	617	0.0	649	0.0	0.333	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
9	R2	15	0.0	16	0.0	0.065	20.0	LOS C	0.2	1.4	0.87	0.95	0.87	41.5
Approach		632	0.0	665	0.0	0.333	0.6	NA	0.2	1.4	0.02	0.02	0.02	59.2
West: Proposed Road Western Arm														
10	L2	9	0.0	9	0.0	0.036	16.8	LOS C	0.1	0.7	0.84	0.93	0.84	42.7
12	R2	27	0.0	28	0.0	0.955	319.9	LOS F	3.7	26.1	1.00	1.21	1.85	9.4
Approach		36	0.0	38	0.0	0.955	244.1	LOS F	3.7	26.1	0.96	1.14	1.60	11.6
All Vehicles		1861	0.0	1959	0.0	0.955	5.3	NA	3.7	26.1	0.03	0.04	0.04	54.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

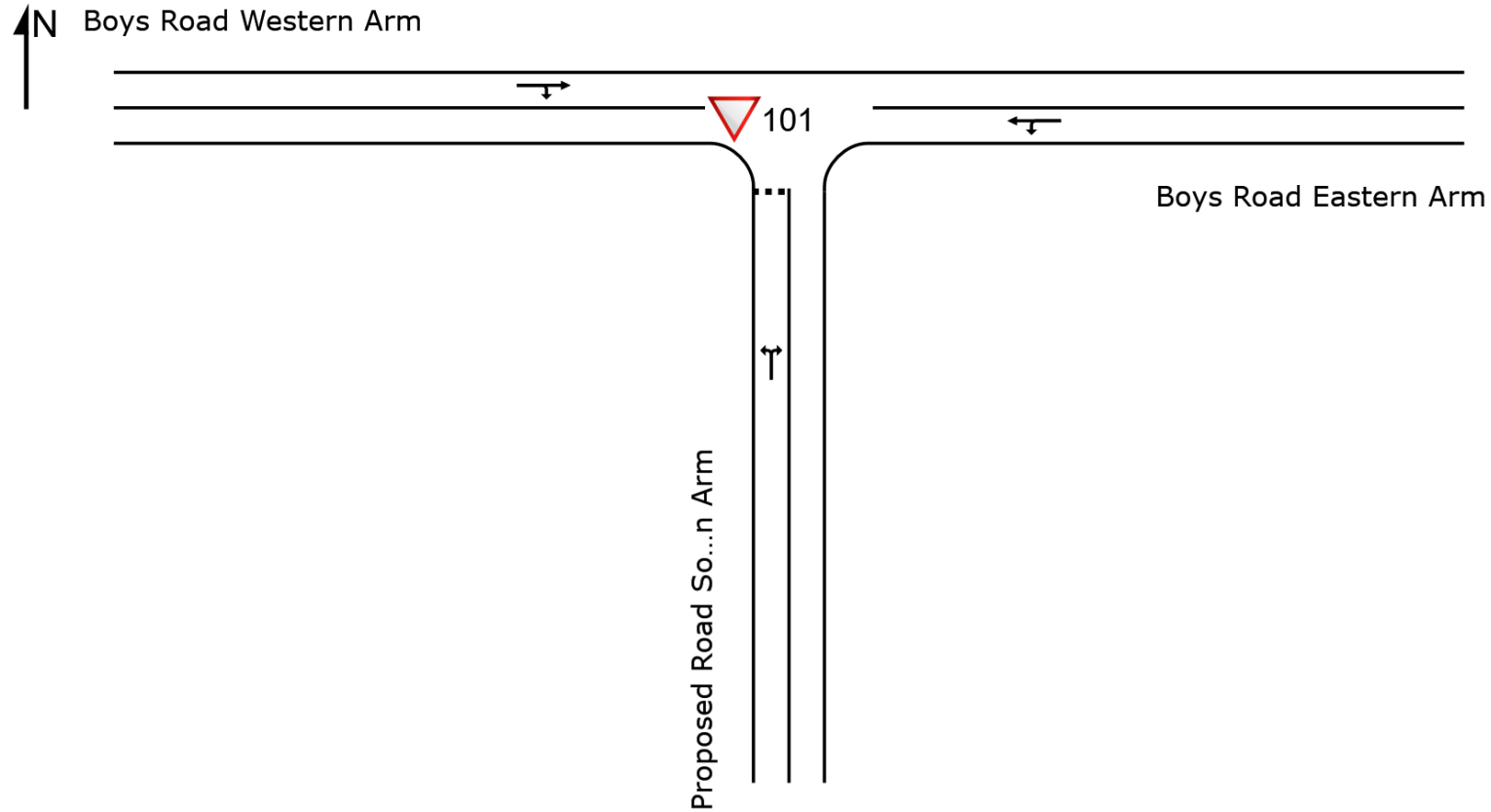
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

▽ Site: 101 [Boys Road - Proposed AM (Site Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

▽ Site: 101 [Boys Road - Proposed AM - Double Boys Rd vol. (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total HV] veh/h %		DEMAND FLOWS [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Dist] veh m		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Proposed Road Southern Arm														
1	L2	11	0.5	12	0.5	0.073	6.7	LOS A	0.2	1.7	0.52	0.75	0.52	44.6
3	R2	35	0.5	37	0.5	0.073	8.4	LOS A	0.2	1.7	0.52	0.75	0.52	44.2
Approach		46	0.5	48	0.5	0.073	8.0	LOS A	0.2	1.7	0.52	0.75	0.52	44.3
East: Boys Road Eastern Arm														
4	L2	4	0.5	4	0.5	0.278	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	49.4
5	T1	504	2.0	531	2.0	0.278	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.8
Approach		508	2.0	535	2.0	0.278	0.1	NA	0.0	0.0	0.00	0.00	0.00	49.8
West: Boys Road Western Arm														
11	T1	156	2.0	164	2.0	0.100	0.4	LOS A	0.2	1.2	0.12	0.05	0.12	49.4
12	R2	14	0.5	15	0.5	0.100	7.0	LOS A	0.2	1.2	0.12	0.05	0.12	48.4
Approach		170	1.9	179	1.9	0.100	0.9	NA	0.2	1.2	0.12	0.05	0.12	49.3
All Vehicles		724	1.9	762	1.9	0.278	0.8	NA	0.2	1.7	0.06	0.06	0.06	49.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Boys Road - Proposed PM - Double Boys Rd Vol (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total HV] veh/h %		DEMAND FLOWS [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Dist] veh m		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Proposed Road Southern Arm														
1	L2	20	0.5	21	0.5	0.026	5.0	LOS A	0.1	0.6	0.26	0.54	0.26	45.9
3	R2	6	0.5	6	0.5	0.026	8.5	LOS A	0.1	0.6	0.26	0.54	0.26	45.5
Approach		26	0.5	27	0.5	0.026	5.8	LOS A	0.1	0.6	0.26	0.54	0.26	45.8
East: Boys Road Eastern Arm														
4	L2	11	0.5	12	0.5	0.092	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	49.3
5	T1	156	2.0	164	2.0	0.092	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.8
Approach		167	1.9	176	1.9	0.092	0.3	NA	0.0	0.0	0.00	0.04	0.00	49.7
West: Boys Road Western Arm														
11	T1	504	2.0	531	2.0	0.300	0.1	LOS A	0.3	2.3	0.06	0.04	0.06	49.6
12	R2	35	0.5	37	0.5	0.300	5.3	LOS A	0.3	2.3	0.06	0.04	0.06	48.7
Approach		539	1.9	567	1.9	0.300	0.4	NA	0.3	2.3	0.06	0.04	0.06	49.6
All Vehicles		732	1.9	771	1.9	0.300	0.6	NA	0.3	2.3	0.05	0.05	0.05	49.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Boys Road - Proposed AM - Double Boys Rd vol. + extra R turn (Site Folder: General)]

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Proposed Road Southern Arm														
1	L2	11	0.5	12	0.5	0.166	6.9	LOS A	0.6	3.9	0.56	0.80	0.56	44.4
3	R2	89	0.5	94	0.5	0.166	8.7	LOS A	0.6	3.9	0.56	0.80	0.56	44.0
Approach		100	0.5	105	0.5	0.166	8.5	LOS A	0.6	3.9	0.56	0.80	0.56	44.0
East: Boys Road Eastern Arm														
4	L2	4	0.5	4	0.5	0.278	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	49.4
5	T1	504	2.0	531	2.0	0.278	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.8
Approach		508	2.0	535	2.0	0.278	0.1	NA	0.0	0.0	0.00	0.00	0.00	49.8
West: Boys Road Western Arm														
11	T1	156	2.0	164	2.0	0.100	0.4	LOS A	0.2	1.2	0.12	0.05	0.12	49.4
12	R2	14	0.5	15	0.5	0.100	7.0	LOS A	0.2	1.2	0.12	0.05	0.12	48.4
Approach		170	1.9	179	1.9	0.100	0.9	NA	0.2	1.2	0.12	0.05	0.12	49.3
All Vehicles		778	1.8	819	1.8	0.278	1.4	NA	0.6	3.9	0.10	0.12	0.10	48.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [Boys Road - Proposed PM - Double Boys Rd Vol + Extra R turn (Site Folder: General)]

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total HV] veh/h %		DEMAND FLOWS [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Dist] veh m		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Proposed Road Southern Arm														
1	L2	20	0.5	21	0.5	0.074	5.1	LOS A	0.2	1.7	0.36	0.64	0.36	45.0
3	R2	33	0.5	35	0.5	0.074	8.7	LOS A	0.2	1.7	0.36	0.64	0.36	44.6
Approach		53	0.5	56	0.5	0.074	7.3	LOS A	0.2	1.7	0.36	0.64	0.36	44.8
East: Boys Road Eastern Arm														
4	L2	11	0.5	12	0.5	0.092	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	49.3
5	T1	156	2.0	164	2.0	0.092	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.8
Approach		167	1.9	176	1.9	0.092	0.3	NA	0.0	0.0	0.00	0.04	0.00	49.7
West: Boys Road Western Arm														
11	T1	504	2.0	531	2.0	0.300	0.1	LOS A	0.3	2.3	0.06	0.04	0.06	49.6
12	R2	35	0.5	37	0.5	0.300	5.3	LOS A	0.3	2.3	0.06	0.04	0.06	48.7
Approach		539	1.9	567	1.9	0.300	0.4	NA	0.3	2.3	0.06	0.04	0.06	49.6
All Vehicles		759	1.8	799	1.8	0.300	0.9	NA	0.3	2.3	0.06	0.08	0.06	49.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.



Appendix 5

District Plan Objectives and Policies – Block B



Objective and Policies	Transport Comments
<p>TRAN-O1 A safe, resilient, efficient, integrated and sustainable transport system</p> <p>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:</p> <ol style="list-style-type: none"> 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 single-occupant motor vehicles, including through prioritising public transport, and active transport, and micro mobility; and 6. enables the economic, social, cultural and environmental well-being of people and communities. 	<p>The assessment above outlines that residential zoning of Block B with the framework proposed in the ODP and subject to appropriate detailed design would:</p> <ul style="list-style-type: none"> • Be able to be well integrated into the existing and proposed transport network. • Enable development of safe and efficient transport connections for all modes, including for increasing use of micro mobility devices. • Support active travel to local destinations and contribute to recreational walking and cycling opportunities. • Overall provide for the travel needs (all modes) of the future residents
<p>TRAN-O3 Adverse effects from the transport system</p> <p>The District's transport system provides for the transportation needs of people and freight whilst adverse effects from the transport system are avoided, remedied or mitigated.</p>	<p>The assessment confirms that the transportation needs of future residents can be accommodated and effects on the transport system can be appropriately avoided or mitigated.</p>
<p>TRAN-P1 Recognising the benefits of, and providing for, transport</p> <p>Recognise the benefits of transport by:</p> <ol style="list-style-type: none"> 1. enabling the maintenance, repair, removal or minor upgrade of the transport system including land transport infrastructure; 2. ensuring adverse effects of more than minor or significant upgrades to, or the development of new, transport connections and land transport infrastructure are avoided, remedied or 	



<p>mitigated,; taking into account the functional need and operational need of the infrastructure and</p> <p>3. recognising the social and economic importance of the transport system, including those parts of the transport system that form part of critical infrastructure, strategic infrastructure and regionally significant infrastructure, and the functions and responsibilities of the transport system as a lifeline utility during an emergency.</p>	
<p>TRAN-P2 Environmentally sustainable outcomes</p> <p>Promote environmentally sustainable outcomes associated with transport, including:</p> <ol style="list-style-type: none"> 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, where there is a strong likelihood that the offsets will be achieved in perpetuity, through activities such as planting carbon sequestering trees (excluding wilding or pest species) or the establishment and restoration of wetlands; and 8. energy efficiency and conservation practices. 	<p>The site is considered to be very well located within the existing and planned transport network to provide good access for future residents to all destinations and particularly to encourage use of active and micro mobility modes. The existing public transport routes and park and ride services offer a viable option for public transport use.</p> <p>(Matters 2-8 are best assessed by others)</p>
<p>TRAN-P3 District Plan Road Hierarchy</p> <p>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</p>	<p>The ODP and proposed roads reflect and appropriately integrates with the existing and planned road hierarchy in the vicinity of the site.</p>



<p>classification of roads adjoining those activities.</p>	
<p>TRAN-P6 Road/rail level crossings Maintain safe visibility at road/rail level crossings.</p>	<p>The proposed Secondary Road intersections maintain good separation and appropriate visibility to the Boys Road Rail Level Crossing.</p> <p>The potential for a pedestrian / cycle crossing near Hegan Reserve would require detailed consideration as part of the subdivision design process.</p>
<p>TRAN-P7 Connections between new development and public transport Achieve connections between public transport and new developments in major settlements by requiring:</p> <ol style="list-style-type: none"> 1. new residential neighbourhoods to be designed to ensure convenient and safe walking distances from proposed residential allotments to public transport and other amenities; and 2. roading design that facilitates the provision of an efficient and conv 	<p>The existing public transport routes and South Belt Park 'n' Ride are located in reasonable proximity to the site to allow future residents to walk / cycle or drive to these services for connections to Kaiapoi, Woodend and Christchurch. The site is also appropriately located such that any future service for the eastern side of Rangiora could efficiently service this site, for example a route along Boys Road and or the REL. Noting this the site is considered to be well located in respect of existing and future public transport. It is also noted that whilst no commuter rail services are anticipated in the near future, the proximity to the Main North Railway Line would also be advantageous in terms connections via commuter rail services (if any were provided in the longer term).</p>
<p>TRAN-P9 Cycle transport Encourage cycle transport through measures such as:</p> <ol style="list-style-type: none"> 1. the provision of wider sealed road shoulders, marked on-road cycle lanes, separated cycle lane, shared use path and off-road formed cycle paths throughout the transport system; 2. new development designed to maximise convenient and safe connections to the active transport network; and 3. the provision of cycle parking that is safe, convenient, visible and secure; and 4. the provision of cycling end-of-journey facilities for staff such as showers and lockers at larger-scale office, commercial, health, and tertiary education and research activities . 	<p>The site is considered to be very well located within the existing and planned transport network to provide good access for cycling both for local destinations and further a field by existing and planned cycle connections to Woodend, Kaiapoi and Christchurch.</p>



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 vehicles.

The assessment above outlines that residential zoning of Block B can be appropriately designed to accommodate travel and connections to the existing and planned road network safely and efficiently.