Private Plan Change 75: Yoursection Ltd

Transportation Hearing Report

September 2021

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TRANSPORTATION SPECIALISTS

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Project: **Private Plan Change 75: Yoursection Ltd**
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SUMMARY OF MY PEER REVIEW

Selwyn District Council (Council) has requested Flow Transportation Specialists (Flow) to review the transportation matters associated with Private Plan Change 75 (PPC75), which has been lodged by Yoursection Ltd. As part of my review, I have considered the cumulative transport effects of seven additional private plan changes (PPCs) within Rolleston, being

- PPC64: Rolleston, 969 residential lots
- PPC66: Rolleston, rural zone to industrial zone
- PPC70: Rolleston, 800 residential lots plus commercial
- PPC71: Rolleston, 660 residential lots
- PPC73: Rolleston, 2100 residential lots plus commercial
- PPC75: Rolleston, 280 residential lots
- PPC76: Rolleston, 150 residential lots
- PPC78: Rolleston, 750 residential lots.

This report focuses on my review of PPC75, however I include comments on the cumulative effect of the additional seven PPCs to assist Council's understanding of the potential future effects on the transport network should all PPCs be approved.

Key transport matters identified in my review are

- The cumulative effect of the 8 PPCs on the Rolleston transport network, and the proportional effect of PPC75
- The safety and efficiency effects of PPC75 on key intersections, and what intersection and road upgrades are required to support PPC75
- Connectivity of the Outline Development Plan within the site, and to the adjacent existing and future transport network
- Consideration of the Rolleston Structure Plan.

In terms of the immediate effects of PPC75, and the proposed ODP

- The Lincoln Rolleston Road/Ed Hillary Drive intersection is indicated to operate acceptably in 2033 when traffic from all 8 Rolleston Plan changes is modelled and is assumed to be a roundabout. The ITA recommends that this intersection is formed as a roundabout, subject to further assessment at the time of subdivision. I recommend that the ODP legend be updated as follows

  "~~Possible Future~~ Roundabout ~~(pending development east of Lincoln Rolleston Road)~~"

- I recommend that the ODP indicates a frontage upgrade for Lincoln Rolleston Road. Detailed upgrade of this road should be determined by the developer in collaboration with Council at subdivision stage and in accordance with Council Engineering Code of Practice requirements. Refer to my discussion in Section 6.2

- I recommend that the ODP should be amended to include walking and cycling routes within PPC75, including north/south and east/west cycle routes. Refer to my discussion in Section 6.3
- I recommend that the ODP should extend the secondary east/west road to connect to Lincoln Rolleston Road. The secondary north/south road should be realigned to form a logical extension of one of the key secondary north/south roads proposed by PPC78. Refer to my discussion in Section 6.4
- PPC75 is generally consistent with the Rolleston Structure Plan. It provides for the alignment of the CRETS Collector Road somewhat north of the indicative alignment in the Structure Plan, however it is consistent with the alignment consented to the west of the site and I consider that the deviation from the Structure Plan is acceptable. Further, I understand that this alignment is consistent with the current thinking of Council's Transportation team. Refer to my discussion in Section 7.

I recommend that Council consider the following matters regarding effects on the wider transport network

- I recommend that Council consider the proportional effect that each PPC will have on network hotspots and assumed intersection improvements contained in the 2033 Rolleston Paramics model, as identified in Table 3. Council should consider whether the proportional effects of PPC75 affect programmed funding within the Long Term Plan, whether new projects should be added to the Long Term Plan, and how Development Contributions are calculated. I note that the 2033 Rolleston Paramics model does not incorporate the change to the SH1/Rolleston Drive South intersection, proposed as part of Waka Kotahi New Zealand Transport Agency New Zealand Upgrade Programme (NZUP). Should NZUP implement these changes, it is likely that our reporting of traffic effects on Dunns Crossing Road, Brookside Road, Lowes Road (among others) is under indicated. Refer to my discussion in Section 4
- The Lincoln Rolleston Road/Selwyn Road intersection is indicated to operate with high delays for the right turn on the Lincoln Rolleston approach during the 2033 PM peak, however very few vehicles are indicated to make this turning movement. Delays at this intersection are likely to exacerbate existing safety issues. PPC75 contributes around 1.5% of peak hour traffic movements at this intersection by 2033. I understand that Council is investigating whether the planned seagull upgrade for this intersection should instead be amended to a safer arrangement such as a roundabout, which I consider to be an appropriate course of action. I recommend that Council consider whether the planned upgrade should be completed earlier than the programmed date of 2028/29, and whether the current Development Contributions policy is sufficient to reflect traffic demand through this intersection generated by PPC75. Refer to my discussion in Section 5.4
- The Selwyn Road/Weedons Road intersection is indicated to operate acceptably in 2033 when traffic from all 8 Rolleston Plan changes is modelled, when upgraded to a double lane roundabout. PPC75 contributes almost 1.5% of peak hour traffic movements at this intersection by 2033. I recommend that Council investigate whether the planned upgrade of the intersection should be completed earlier than the programmed date of 2027/28, and whether the current Development Contributions policy is sufficient to reflect traffic demand through this intersection generated by PPC75. Refer to my discussion in Section 5.5.

Should my recommendations be adopted I consider that the safety and efficiency effects on the localised transport network can be appropriately addressed through the future resource consent process and Council's Long Term Plan.

I consider that PPC75 will generate safety and efficiency effects on the wider transport network, however these are more appropriate to be addressed by Council due to PPC75 being just a proportion of the cumulative growth effects anticipated in Rolleston.

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APPENDICES

1 INTRODUCTION

This report has been completed by Mat Collins (Associate) with assistance from Qing Li (Principal) and review by Ian Clark (Director). Ian, Qing and I are experts in the field of transport planning and engineering. Ian and I frequently attend Council and Environment Court mediation and hearings as transport experts for local government, road controlling authorities and private concerns.

In July 2021 Selwyn District Council (Council) requested Flow Transportation Specialists (Flow) to assist with the review of transportation matters associated with 7 Private Plan Changes (PPCs) within Rolleston

- PPC64: Rolleston, 969 residential lots
- PPC70: Rolleston, 800 residential lots plus commercial
- PPC71: Rolleston, 660 residential lots
- PPC73: Rolleston, 2100 residential lots plus commercial
- PPC75: Rolleston, 280 residential lots
- PPC76: Rolleston, 150 residential lots
- PPC78: Rolleston, 750 residential lots.

In addition, PPC66 in Rolleston (which seeks to rezone 27ha of rural land to industrial zone) has been included in our consideration of the cumulative traffic effects of the PPCs within the Rolleston area.

Yoursection Limited (requestor) has lodged a PPC to change the Selwyn District Plan to rezone approximately 25 hectares of Rural Inner Plains zoned land to Living Z (PPC75). This report details my review of PPC75. Where relevant I also make comments about the cumulative effects of all 8 Rolleston PPCs so that Council may understand how the future transport network may operate should all PPCs be approved.

The scope of this specialist transport report is to assist Council in determining the transport outcomes of PPC75 and includes the following

- A summary of PPC75 focusing on transport matters
- An overview of transport projects contained within the Long Term Plan (LTP), which are relevant to PPC75
- A summary of the modelled traffic effects of the 8 Rolleston PPCs
- A review of the material provided to support the application for PPC75, and discussion of the potential effects of PPC75
- Summary of submissions, relating to transport matters only
- My recommendations.

I have reviewed the following documents, as they relate to transport matters

- Request for Change to the Selwyn District Plan, prepared by Novo Group, dated April 2021, including

  - Appendix D Integrated Transport Assessment, prepared by Stantec, dated 9 February 2021
- Response to Council information requests, prepared by Novo Group, dated March 2021
- Third party traffic model files, as discussed in Section 4
- Submissions as outlined in Section 8.

2 A SUMMARY OF PPC75

PPC75 proposes to rezone approximately 25 hectares of Rural Inner Plains zoned land to Living Z, with an Outline Development Plan (ODP) proposed to guide the form and layout of future development. PPC75 is north of PPC78, south of Falcons Landing, and east of Acland Park, with road frontage to Lincoln Rolleston Road, as shown in Figure 1 and Figure 2.

The ODP is shown in Figure 4 and is intended to provide

- Approximately 280 residential lots
- Connections to the surrounding existing and future transport network
- Provision for the CRETS Collector Road
- Identification of one key intersection with Lincoln Rolleston Road.

Lincoln Rolleston Road is identified as an arterial road in the Operative District Plan and the Proposed District Plan.

For clarity, I have included the ODP for PPC78 in Figure 4, as this gives context to the transport connections between the two ODPs.

Figure 1: Overview of PPC75 and other nearby Rolleston PPCs[1]

[1] Adapted from Council's "Current plan change requests" website, available at https://www.selwyn.govt.nz/property-And-building/planning/strategies-and-plans/selwyn-district-plan/plan-changes

Figure 2: PPC75 and PPC78 extent

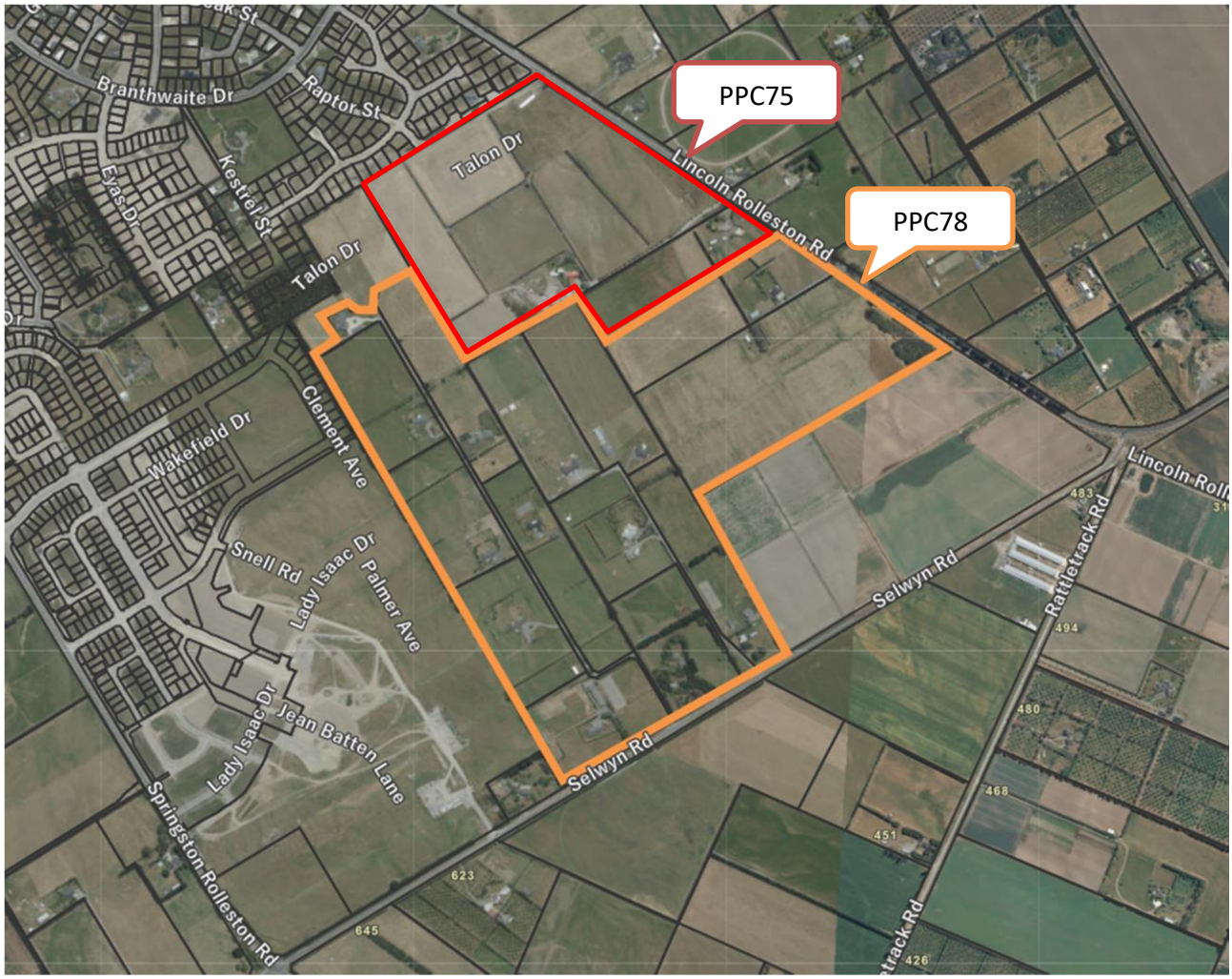
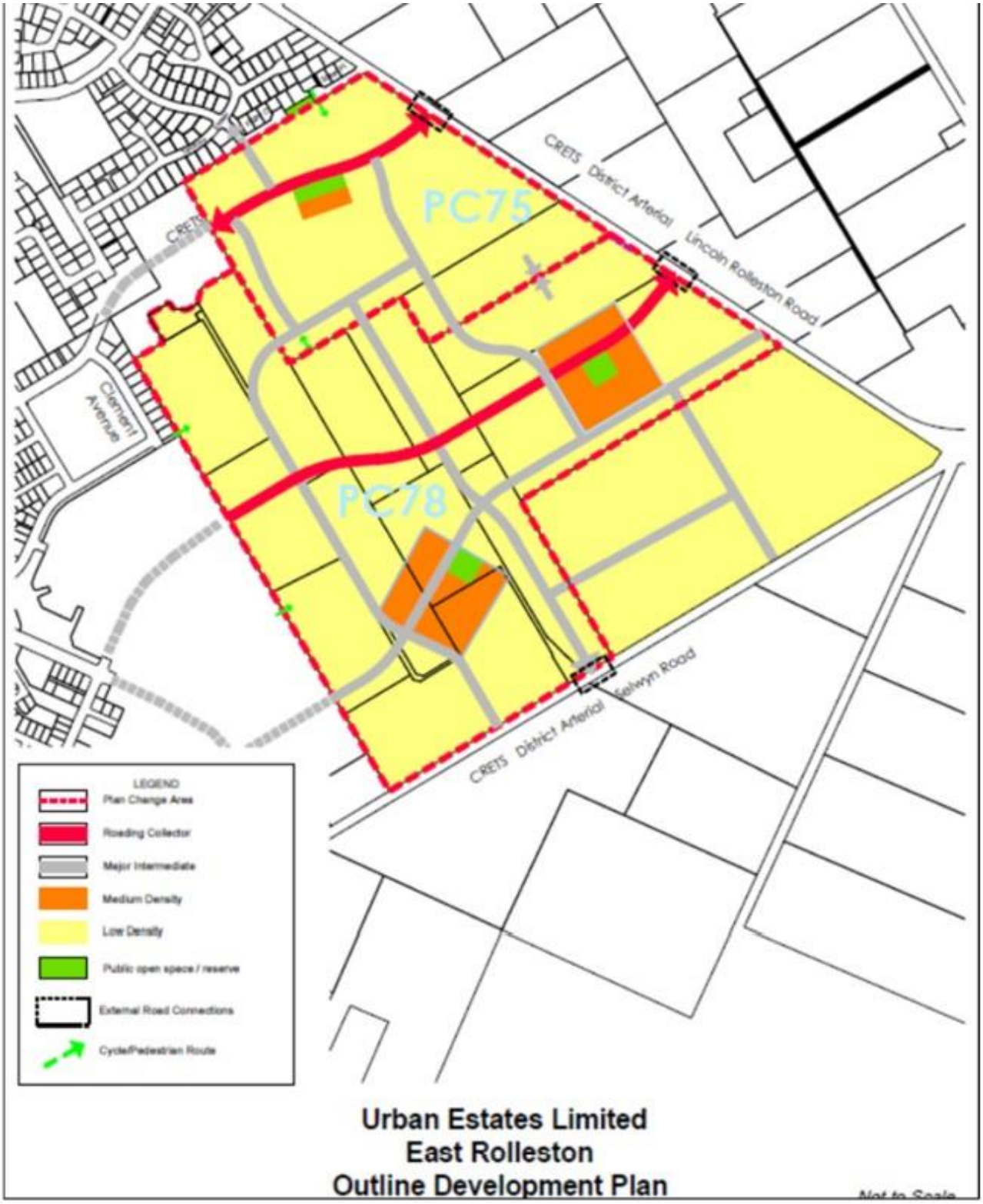


Figure 3: PPC75 ODP

Figure 4: PPC78 ODP, including PPC75[2]



[2] Note that this image includes an older version of the PPC75 ODP.

3 ROLLESTON TRANSPORT PROJECTS RELEVANT TO PPC75

This section discusses various funded and planned transport projects in Rolleston that have relevance to PPC75.

3.1 Transport projects in the Long Term Plan

Council has provided a list of transport projects within the LTP that I consider to be relevant to PPC75. I have reproduced these in Table 1 below. Further discussion of how PPC75 is anticipated to affect various parts of the transport network is provided in Section 4.

Table 1: LTP transport projects relevant to PPC75

Project	Scheduled year	Description	Relevance to PPC75
Traffic Signals at Rolleston Drive/Tennyson Street	2021/22	Safety upgrade, including safer pedestrian crossing	PPC75 contributes less than 1% of peak hour traffic movements in 2033
Foster Park - Park N Ride	2023/24	improved parking to access express bus services	Supports improved Public Transport access between Rolleston and Christchurch
Brookside Road/Rolleston Drive Roundabout	2024/25	Safety upgrade	PPC75 contributes less than 1% of peak hour traffic movements in 2033
Springston Rolleston Road/Selwyn Road intersection	2024/27	Safety upgrade under NLTP (Waka Kotahi)	PPC75 contributes less than 1% of peak hour traffic movements in 2033
Lowes Road/Levi Drive/Masefield Drive Intersection Upgrade	2025/26	Safety upgrade - link to Southern Motorway Interchange	PPC75 contributes around 2% of peak hour traffic movements in 2033
Tennyson/Moore Street Roundabout	2026/27	Safety upgrade as part of Moore Street extension	PPC75 contributes under 1% of peak hour traffic movements in 2033
Selwyn/Weedons Road Roundabout	2027/28	Safety upgrade - Rolleston southern arterial link	PPC75 contributes over 1% of peak hour traffic movements in 2033
Jones Road Cycleway	2027/28	Between Jones Road and Weedons Road - links to Rolleston to Templeton Cycleway	Some relevance to PPC75, Weedons interchange is approximately 3km from the site, this will increase cycle accessibility
Lincoln Rolleston Road/Selwyn Road Intersection Upgrade	2028/29	Safety upgrade - Rolleston southern arterial link	PPC75 contributes over 1% of peak hour traffic movements in 2033

Walkers Road/Two Chain Road Roundabout	2028/29	Safety upgrade - Rolleston Industrial Zone southern link	PPC75 contributes under 1% of peak hour traffic movements in 2033
Goulds/East Maddisons Road Roundabout	2029/30	Connects Farrington and new subdivisions to Goulds Road	PPC75 contributes around 1% of peak hour traffic movements in 2033
Rolleston to Burnham Cycleway	2029/30	From Elizabeth St to Aylesbury Road along the northside of SH1 and along Runners Road	Some relevance to PPC75, this is within 5km, which is cyclable distance
Rolleston 'Park N Ride'	2030/31	New facilities for parking to access to express bus services	Supports improved Public Transport access between Rolleston and Christchurch
Burnham School Road/Dunns Crossing Road Traffic Signals	2032/33	Project funded beyond the 2021-31 LTP	PPC75 contributes 1.5% of peak hour traffic movements in 2033
Rolleston South to Rolleston Industrial Zone Cycleway	2033/34		Some relevance to PPC75, this is within 5km, which is cyclable distance
West Melton to Rolleston Cycleway	2034/35		
Lowes Road/Dunns Crossing Road Roundabout	2035/36		PPC75 contributes under 1% of peak hour traffic movements in 2033
Burnham School Road Widening	2042/43		Some relevance, however PPC75 generates under 1% of peak hour traffic movements at the Burnham School Road/Dunns Crossing Road intersection in 2033

3.2 Transport projects in the New Zealand Upgrade Programme

The New Zealand Upgrade Programme (NZUP) projects in Canterbury are intended to manage growth effects by providing residents with safer and better travel choices, as well as improving freight links to support economic growth and the opening of the Christchurch Southern Motorway through to Rolleston. The NZ Upgrade Programme includes $300 million for six projects to support growth in the south-west sector of Christchurch and neighbouring Selwyn District. Projects relevant to PPC75 are discussed in Table 2.

Table 2: NZUP[3] transport projects relevant to PPC75

Project	Scheduled year	Description	Relevance to PPC75
SH1 Rolleston and Rolleston Flyover[4]	2024/2026	$125 million has been provided to create safer and better access from the residential area across State Highway 1 (SH1) and the Main South Line (railway) to the industrial zone. A new two-lane overbridge will be built to connect the two areas and provide improved walking and cycling facilities. It will cross SH1 from Rolleston Drive to Hoskyns Road. Four intersections along SH1 between Burnham and Rolleston will also be upgraded, with a range of safety improvements to reduce deaths and serious injuries and better manage the forecast future growth in traffic volumes along this section of the highway	Includes upgrade of SH1/Dunns Crossing Road, and potential changes to SH1/Rolleston Drive. The 2033 Rolleston Paramics model assumes that the NZUP projects in Rolleston have been implemented, however it does not include the potential conversion of the SH1/Rolleston Drive intersection to a left in/left out. While there are identified safety issues with the existing intersection, traffic modelling indicates that PPC75 will only generate 10 peak hour movements through the intersection by 2033.

[3] NZUP Canterbury Package, available online https://www.nzta.govt.nz/planning-and-investment/nz-upgrade/canterbury-package/

[4] Rolleston flyover and transport improvements feedback form, July 2021, available online https://www.nzta.govt.nz/assets/projects/sh1-rolleston/SH1-Rolleston-flyover-and-transport-improvements-brochure.pdf

4 MY REVIEW OF TRAFFIC MODELLING FOR THE ROLLESTON AREA

Flow has used the following existing transport models to assess the potential effect of the 8 PPCs within the Rolleston area (as shown in Figure 1)

- 2028 Rolleston Paramics model, produced by Abley (which excludes the 8 PPCs)
- 2033 Rolleston Paramics model, produced by Abley, as summarised in the Abley memo "Rolleston Plan Change Modelling" to Council, dated 5 May 2021 (which includes the 8 PPCs).

Flow interrogated the models to understand the potential traffic effects of PPC75 both in isolation and as a cumulative effect in conjunction with the other 7 PPCs. Further detail on the methodology is provided in Appendix B, and our findings are summarised below.

I note that concurrently with the development of the Rolleston Plan Change Modelling, Waka Kotahi has developed an alternative version of the Rolleston Model to investigate how the SH1 NZUP project might affect the transport network. I understand that this model includes the conversion of the SH1/Rolleston Drive South intersection into a left in/left out intersection.

This is not reflected in the 2028 or 2033 Rolleston Paramics model and is likely to have a consequential effect on the traffic movements on Dunns Crossing Road, Brookside Road, and Lowes Road, among others.

4.1 PPC75 proportion of the cumulative network effects of all PPCs

The 2033 Rolleston Paramics model identifies that the following intersections will be operating near to or over capacity by 2033 if all 8 PPCs in Rolleston proceed

- SH1/Weedons Interchange South roundabout
- Lowes Road/Broadlands Drive priority intersection
- Levi Road/Ruby Drive priority intersection
- Levi Road/Strauss Drive priority intersection
- Levi Road/Weedons Road priority intersection
- Dunns Crossing Road/Newman Road priority intersection
- Selwyn Road/Lincoln Rolleston Road priority intersection with seagull treatments
- Jones Road/Weedons Road roundabout.

To determine the extent to which PPC75 is contributing to the capacity effects at these intersections, Flow interrogated the traffic flows generated by each PPC as a proportion of the modelled vehicle flow through each intersection (presented as the combination of both the 1 hour AM and PM peak hour flows, which are generally between 7am-8am and 5pm-6pm). Further, we have included intersections where improvements have been assumed in the 2033 Rolleston Paramics (for example signalisation or conversion to a roundabout).

These results are presented in Table 3, which I have colour coded to assist interpretation

- no shading: the PPC contributes less than 2.5% of total traffic movements at this intersection, which I consider to be less than minor
- orange shading: the PPC contributes between 2.5% and 5% of total traffic movements at this intersection, which I consider to be minor
- red shading: the PPC contributes more than 5% of total traffic movements at this intersection, which I consider to be more than minor.

In relation to intersections with indicated congestion/high delays in 2033, PPC75 has less than minor contribution to congestion effects, with no more than 1.5% of traffic movements being attributable to PPC75.

In relation to intersections that are not indicated to have congestion/high delays in 2033, but are assumed to have improvements, PPC75 has less than minor contribution to congestion effects, with less than 2% of traffic movements being attributable to PPC75.

A Select Link Analysis output from the 2033 Rolleston Paramics model is provided in Appendix C, demonstrating traffic flows from PPC75.

Information on the proportional effect of each PPC may assist Council in its consideration of how the eight PPCs may affect funding within the Long Term Plan (LTP), either by bringing forward the timing of planned infrastructure upgrades, or by introducing new projects that are needed within the LTP (for example, those assumed in the 2033 Rolleston Paramics model).

Outcome: I recommend that Council consider the proportional effect that each PPC will have on network hotspots and assumed intersection improvements contained in the 2033 Rolleston Paramics model, as identified in Table 3. Council should consider whether the proportional effects of PPC75 affect programmed funding within the Long Term Plan, whether new projects should be added to the Long Term Plan, and how Development Contributions are calculated.

I note that the 2033 Rolleston Paramics model does not incorporate the change to the SH1/Rolleston Drive South intersection, proposed as part of NZUP. Should NZUP implement these changes, it is likely that our reporting of traffic effects on Dunns Crossing Road, Brookside Road, Lowes Road (among others) is under indicated.

Table 3: future network hotspots, planned Council projects, and proportional PPC effects

Intersection	Existing Layout	Intersection form assumed in models (2028/2033)	2028 performance without PPCs (red for LOS F)	2033 performance with all 8 PPCs (red for LOS F)	2033 traffic movements With all PPCs (AM and PM combined)	Percentage of traffic associated with each PPC as a proportion of total traffic movements through each intersection (AM and PM combined) [5]							
						PPC73	PPC64	PPC66	PPC70	PPC71	PPC75	PPC76	PPC78
						%	%	%	%	%	%	%	%
Intersections with congestion/high delays in the 2033 Rolleston Paramics model													
Dunns Crossing Road/Granite Road	Priority	Priority/Signals	LOS A in both AM and PM	LOS E on Granite Rd east in AM	2,450 veh	30.0%	2.2%	0.0%	3.3%	0.3%	0.1%	0.5%	0.7%
Dunns Crossing Road/Newman Road	Priority	Priority in both years	LOS A in both AM and PM	LOS F on Newman Rd and PC73 access in AM	2,590 veh	25.1%	1.8%	0.0%	2.8%	0.2%	0.1%	0.4%	0.5%
Jones Road/Weedons Road	Roundabout	Roundabout in both years	LOS A in both AM and PM	LOS F on Weedons Ross Rd north and Jones Rd east in PM	3,620 veh	2.1%	1.0%	0.7%	0.9%	0.8%	0.3%	0.2%	0.9%
Levi Road/Ruby Drive	Priority	Priority in both years	LOS B and C in AM and PM respectively	LOS F on PC71 Access in AM, Ruby Dr and Lowes Rd in PM	2,890 veh	1.7%	2.1%	0.0%	3.0%	5.4%	0.8%	0.5%	0.9%
Levi Road/Strauss Drive	Priority	Priority in both years	LOS D and C in AM and PM respectively	LOS F on Strauss Dr and Levi Rd east in AM	3,210 veh	1.2%	1.7%	0.0%	2.5%	4.0%	0.7%	0.5%	0.7%
Levi Road/Weedons Road	Priority	Priority in both years	LOS F on Weedons Rd South and Levis Rd west in PM	LOS F on Weedons Rd South in both AM and PM, and on Levis Rd west in PM	3,480 veh	1.2%	2.3%	0.0%	2.2%	3.7%	0.8%	0.4%	1.8%
Lowes Road/Broadlands Drive	Priority	Priority in both years	LOS B and C in AM and PM respectively	LOS F on Broadlands Dr in AM, Lowes Rd west in PM	1,910 veh	10.6%	1.9%	0.0%	2.9%	2.1%	0.8%	0.5%	1.2%
Selwyn Road/Lincoln Rolleston Road	Priority	Priority/ Priority with Seagull Treatment	LOS F on Lincoln Rolleston Rd north in PM	LOS F on Lincoln Rolleston Rd north in PM	3,990 veh	4.1%	5.3%	0.0%	1.8%	1.4%	1.5%	0.3%	5.3%
SH1/Weedons Interchange South	Roundabout	Roundabout in both years	LOS F on SH1 West, AM and PM	LOS F on SH1 West and Weedons Rd, AM and PM	3,870 veh	1.3%	2.1%	0.2%	2.0%	3.3%	0.7%	0.4%	1.6%
Other intersection with upgrades assumed in the 2033 Rolleston Paramics model													
Burnham School Road/Dunns Crossing Road	Priority cross road	Signals	LOS A in both AM and PM	LOS B and A in AM and PM respectively	2,150	33.2%	3.7%	0.0%	4.8%	0.9%	0.5%	0.7%	1.5%
Dunns Crossing Road/Brenley Drive/Skellerup Primary Access	No intersection	Priority T/Priority Cross Road with Right Turn bays	LOS A in both AM and PM	LOS C in both AM and PM	2,280 veh	33.2%	3.6%	0.0%	5.9%	0.4%	0.2%	0.7%	0.9%
Dunns Crossing Road/East West Primary	Priority	Priority/Roundabout	LOS A in both AM and PM	LOS A in both AM and PM	1,670 veh	32.6%	5.5%	0.0%	8.7%	1.0%	0.5%	0.2%	1.6%

[5] Orange shading: the PPC contributes between 2.5% and 5% of total traffic movements at this intersection. Red shading: the PPC contributes more than 5% of total traffic movements at this intersection

Intersection	Existing Layout	Intersection form assumed in models (2028/2033)	2028 performance without PPCs (red for LOS F)	2033 performance with all 8 PPCs (red for LOS F)	2033 traffic movements With all PPCs (AM and PM combined)	Percentage of traffic associated with each PPC as a proportion of total traffic movements through each intersection (AM and PM combined) [5]							
						PPC73	PPC64	PPC66	PPC70	PPC71	PPC75	PPC76	PPC78
						%	%	%	%	%	%	%	%
Dunns Crossing Road/Goulds Road/Selwyn Road	Priority	Priority/Roundabout with Priority control at Goulds /Dunns Crossing Intersection	LOS C in both AM and PM	LOS A in both AM and PM, at both intersections	1,640 veh	14.2%	3.0%	0.0%	5.8%	0.8%	0.4%	0.2%	2.2%
Dunns Crossing Road/ODP12 Access/ Skellerup Secondary Access	No intersection	Priority T/Priority Cross Road with Right Turn bays	LOS A in both AM and PM	LOS A in both AM and PM	1,450 veh	30.8%	5.3%	0.0%	8.5%	0.1%	0.2%	0.0%	1.2%
Goulds Road /East Maddisons Road	Priority	Priority/Roundabout	LOS A and B in AM and PM respectively	LOS A in both AM and PM	2,480 veh	9.5%	8.6%	0.0%	13.6%	2.2%	1.0%	1.2%	2.1%
Lowes Road/Dunns Crossing Road	Priority	Priority/Roundabout	LOS A in both AM and PM	LOS A in both AM and PM	2,690 veh	30.9%	3.1%	0.0%	4.9%	0.9%	0.4%	0.6%	1.2%
Lowes Road/East Maddisons Road	Priority	Priority/Roundabout	LOS B and D in AM and PM respectively	LOS B and A in AM and PM respectively	2,320 veh	13.1%	2.0%	0.1%	2.1%	1.5%	0.7%	1.3%	1.6%
Lowes Road/Levi Drive/Masefield Drive	Roundabout	Signals in both years	LOS B and C in AM and PM respectively	LOS C in both AM and PM	4,300 veh	3.4%	1.6%	0.1%	2.1%	4.6%	1.7%	0.4%	3.4%
Lowes Road/Tennyson Street	Signals	Signals in both years	LOS B and C in AM and PM respectively	LOS B and C in AM and PM respectively	4,540 veh	4.1%	3.6%	0.1%	3.1%	1.0%	0.4%	0.6%	0.8%
Rolleston Drive/Brookside Road	Priority	Roundabout in both years	LOS A and C in AM and PM respectively	LOS D and C in AM and PM respectively	3,390 veh	7.1%	0.5%	0.2%	1.4%	0.8%	0.3%	0.6%	0.7%
Rolleston Road/Tennyson Street	Roundabout	Signals in both years	LOS B and C in AM and PM respectively	LOS B and C in AM and PM respectively	4,320 veh	2.8%	3.1%	0.2%	2.5%	1.1%	0.4%	0.5%	1.0%
Selwyn Road /Weedons Road	Priority	Roundabout in both years	LOS A in both AM and PM	LOS A in both AM and PM	4,270 veh	4.1%	4.9%	0.0%	1.7%	1.3%	1.4%	0.3%	4.8%
Springston Rolleston Road/Selwyn Road	Priority	Roundabout in both years	LOS A in both AM and PM	LOS A in both AM and PM	3,080 veh	5.9%	10.1%	0.0%	3.1%	1.1%	0.6%	0.4%	3.1%
Tennyson Street/Moore Street	Priority	Roundabout in both years	Not provided	Not provided	1,660veh	2.0%	1.4%	0.2%	0.9%	0.6%	0.3%	0.2%	0.7%
Walkers Road/Two Chain Road	Priority	Roundabout in both years	LOS A in both AM and PM	LOS A in both AM and PM	970 veh	6.9%	1.3%	0.2%	1.6%	0.6%	0.2%	0.3%	0.7%

5 MY REVIEW OF THE ITA

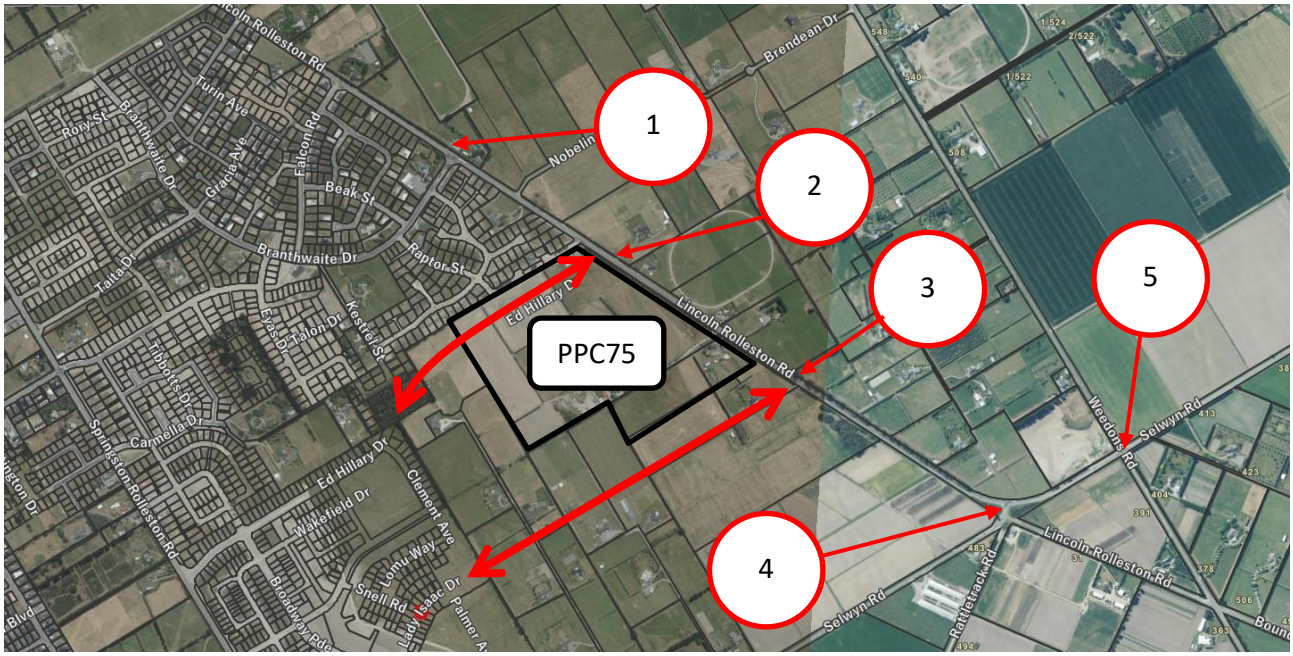
The ITA provides an assessment of the following intersections (shown in Figure 5)

1. Lincoln Rolleston Road/Braithwaite Drive intersection
2. Lincoln Rolleston Road/Ed Hillary Drive
3. Lincoln Rolleston Road/Lady Isaac Drive
4. Lincoln Rolleston Road/Selwyn Road intersection
5. Selwyn Road/Weedons Road.

The ITA used the 2028 and 2048 Rolleston Model. I note that the 2028 Rolleston Model only assumes 25% of the future urban area within Rolleston has been developed, whereas the 2033 Rolleston Model assumes full development including the 8 PPCs discussed in Section 4. Therefore, there are some differences in the performance of several intersections between the 2028 Rolleston model, and the 2033 Rolleston Model which indicates more congestion due to a higher level of development.

I discuss my review of these intersections in the following subsections and note any differences between the 2028 and 2033 model results where relevant.

Figure 5: Intersections assessed in the ITA



5.1 Lincoln Rolleston Road/Braithwaite Drive intersection

The intersection of Lincoln Rolleston Road and Braithwaite Drive is located to the west of the site and is currently a priority controlled intersection with priority given to Lincoln Rolleston Road.

I have summarised the modelling results for this intersection

- The ITA indicates that this intersection will operate acceptably in 2028 without any traffic from PPC75
- The ITA indicates that this intersection will operate acceptably in 2028 with full buildout traffic from PPC75
- The 2033 Rolleston Paramics Model indicates that this intersection will operate acceptably in 2033, with traffic from all 8 Rolleston Plan changes

Outcome: The Lincoln Rolleston Road/Braithwaite Drive intersection is indicated to operate acceptably in 2033 when traffic from all 8 Rolleston Plan changes is modelled.

5.2 Lincoln Rolleston Road/Ed Hillary Drive intersection

The CRETS Collector Road is identified in the Rolleston Structure Plan as an east-west link (refer to Section 7 for discussion of the Rolleston Structure Plan). The CRETS Collector Road is being delivered in sections as individual subdivisions along the route are implemented. Sections of the CRETS Collector Road are already constructed, as Shillingford Boulevard and Ed Hillary Drive. PPC75 proposes the extension of Ed Hillary Drive to Lincoln Rolleston Road as the continuation of the CRETS Collector Road, noting that there will be a further section to complete on land parcels between the Acland subdivision and PPC75.

The ITA has assumed that the intersection will be a priority controlled intersection in 2028, and a roundabout in 2048. The 2033 Rolleston Paramics model assumes that this intersection will be a roundabout.

Section 6.2.1 of the ITA states (my emphasis added)

> *"The connection at the western end is aligned for connection to the existing section of the road further west. The eastern connection with Lincoln Rolleston Road is at a position that bisects existing residential dwellings on the eastern side of Lincoln Rolleston Road. The Rolleston Structure Plan (and the CRETS network before that) anticipate future connectivity through to Weedons Road. As there will be an arterial (Lincoln Rolleston Road) intersection with a Collector Road,* ***allowance for the land requirement of a future roundabout (which would be subject to assessment at the time of subdivision) has been made at that location****."*

The ODP identifies this intersection as

> *"Possible Future Roundabout (pending development east of Lincoln Rolleston Road)"*

I support the ITA's recommendation that the detail of this intersection can be determined as part of future subdivision consents. However, I consider that the ODP does not reflect this recommendation. Should development within PPC75 proceed development on the eastern side of Lincoln Rolleston Road, the roundabout recommended by the ITA may not be provided.

I recommend that the ODP is updated to reflect the recommendations of the ITA and deliver a future proofed intersection form that is appropriate for a collector road intersection with an arterial road. Refer to my amendment shown in Figure 7. I note that this is consistent with the agreed form of the

CRETS Collector intersection with Goulds Road, where Council has recently agreed a roundabout intersection form with the Faringdon developer.

I have summarised the modelling results for this intersection

- The ITA indicates that this intersection will operate acceptably in 2028 without any traffic from PPC75
- The ITA indicates that this intersection will operate acceptably in 2028 with full buildout traffic from PPC75
- The 2033 Rolleston Paramics Model assumes that this intersection will be a roundabout, and it indicates that this intersection will operate acceptably in 2033, with traffic from all 8 Rolleston Plan changes.

Outcome: The Lincoln Rolleston Road/Ed Hillary Drive intersection is indicated to operate acceptably in 2033 when traffic from all 8 Rolleston Plan changes is modelled and is assumed to be a roundabout. The ITA recommends that this intersection is formed as a roundabout, subject to further assessment at the time of subdivision. I recommend that the ODP legend be updated as follows

"~~Possible Future~~ Roundabout ~~(pending development east of Lincoln Rolleston Road)~~"

5.3 Lincoln Rolleston Road/Lady Isaac Drive intersection

The intersection of Lincoln Rolleston Road and Lady Isaac Drive will be formed as part of PPC78 and is assumed to be a priority controlled intersection with priority given to Lincoln Rolleston Road.

I have summarised the modelling results for this intersection

- The ITA indicates that this intersection will operate acceptably in 2028 without any traffic from PPC75
- The ITA indicates that this intersection will operate acceptably in 2028 with full buildout traffic from PPC75
- The 2033 Rolleston Paramics Model indicates that this intersection will operate acceptably in 2033, with traffic from all 8 Rolleston Plan changes.

Outcome: The Lincoln Rolleston Road/Lady Isaac Drive is indicated to operate acceptably in 2033 when traffic from all 8 Rolleston Plan changes is modelled.

5.4 Lincoln Rolleston Road/Selwyn Road intersection

The intersection of Lincoln Rolleston Road and Selwyn Road located to the east of the site is a stop controlled intersection. The existing intersection has the priority given to Lincoln Rolleston Road (northwest arm) and Selwyn Road (northeast arm), and the southwest arm of Selwyn Road is stop controlled.

As identified in Table 1, the intersection is programmed to be upgraded to a seagull-type intersection in 2028/29. My review of the 2033 Rolleston Model indicates that PPC75 contributes around 1.5% of peak hour traffic movements at this intersection by 2033.

I have summarised the modelling results for this intersection

- The ITA indicates that high delays (LOS F) occur for right turns on the Lincoln Rolleston approach during the PM peak
- The 2033 Rolleston Paramics Model indicates that high delays (LOS F) occur for right turns on the Lincoln Rolleston approach during the PM peak
- While the right turn on the Lincoln Rolleston approach is expected to operate with high delay during the PM peak in both scenarios, the expected number of vehicles performing this movement is low (less than 10 vehicles in the peak hour).

Outcome: The Lincoln Rolleston Road/Selwyn Road intersection is indicated to operate with high delays for the right turn on the Lincoln Rolleston approach during the 2033 PM peak, however very few vehicles are indicated to make this turning movement. Delays at this intersection are likely to exacerbate existing safety issues. PPC75 contributes around 1.5% of peak hour traffic movements at this intersection by 2033. I understand that Council is investigating whether the planned seagull upgrade for this intersection should instead be amended to a safer arrangement such as a roundabout, which I consider to be an appropriate course of action. I recommend that Council consider whether the planned upgrade should be completed earlier than the programmed date of 2028/29, and whether the current Development Contributions policy is sufficient to reflect traffic demand through this intersection generated by PPC75.

5.5 Selwyn Road/Weedons Road intersection

The intersection of Selwyn Road and Weedons Road is located to the east of the site and is currently a stop-controlled priority crossroads with priority given to Selwyn Road.

As identified in Table 1, the intersection is programmed to be upgraded to a roundabout in 2027/28. The ITA assumes that this intersection has been upgraded to a single lane roundabout, however the 2033 Rolleston Model assumes that this intersection is a double lane roundabout. I understand that Council is currently investigating the design of the future roundabout, including consideration of capacity requirements.

Our review of the 2033 Rolleston Model indicates that PPC75 contributes almost 1.5% of peak hour traffic movements at this intersection by 2033.

We have summarised the modelling results for this intersection

- The ITA indicates that this intersection will operate acceptably in 2028 without any traffic from PPC75
- The ITA assumes that the intersection is upgraded to a single lane roundabout by 2028 and indicates that this intersection will operate with some delay with full buildout traffic from PPC75
- The 2033 Rolleston Paramics Model assumes that this intersection is upgraded to a double lane roundabout, and indicates that it will operate acceptably in 2033, with traffic from all 8 Rolleston Plan changes

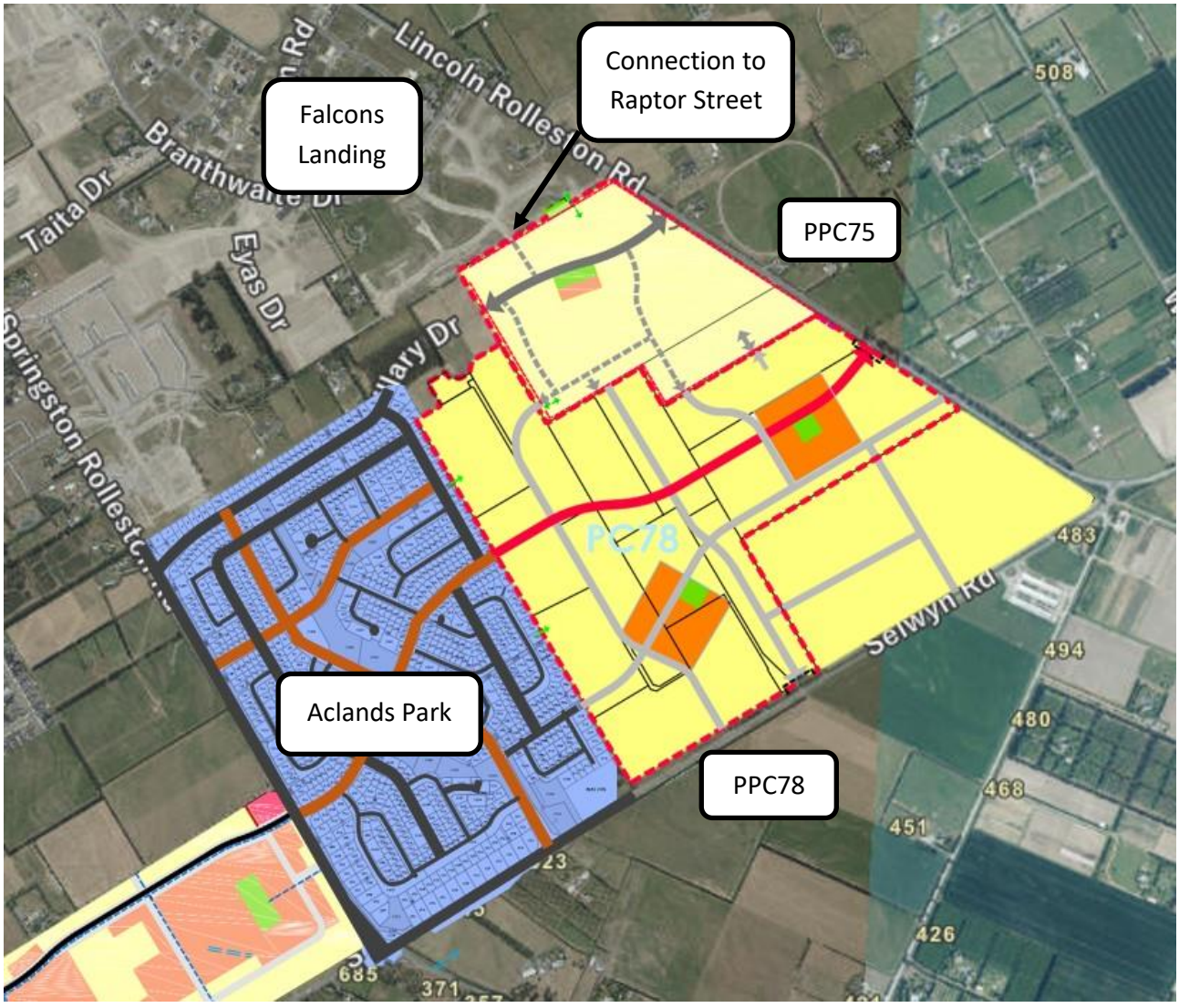
Outcome: The Selwyn Road/Weedons Road intersection is indicated to operate acceptably in 2033 when traffic from all 8 Rolleston Plan changes is modelled, when upgraded to a double lane roundabout. I understand that Council is currently developing a concept design for this intersection, including the consideration of the capacity constraints of a single lane roundabout. PPC75 contributes almost 1.5% of peak hour traffic movements at this intersection by 2033. I recommend that Council investigate whether the planned upgrade of the intersection should be completed earlier than the programmed date of 2027/28, and whether the current Development Contributions policy is sufficient to reflect traffic demand through this intersection generated by PPC75.

6 MY CONSIDERATION OF MATTERS NOT INCLUDED IN THE ITA

6.1 Integration with surrounding developments

PPC75 is north of PPC78, south of Falcons Landing, and east of Acland Park. I have indicatively shown the adjacent developments in Figure 6. I consider that the ODP for PPC75 generally aligns adjoining development, however I recommend that amendments are made to PPC75 to align with PPC78. I discuss these amendments in Section 6.4.

Figure 6: PPC75 with road networks from adjacent developments



6.2 Frontage upgrade

Section 6.5 of the ITA discusses a frontage upgrade to Lincoln Rolleston Road. I consider that PPC75 should provide frontage upgrades, as is common practice where greenfield sites front existing rural roads and has occurred on other sections of Lincoln Rolleston Road (e.g. Falcons Landing subdivision). Figure 8.4 of the Rolleston Structure Plan identifies that Lincoln Rolleston Road is a cycle route, which should be incorporated in the frontage upgrade (noting that Lincoln Rolleston Road already has a shared use path along the site frontage).

In my view the ODP should indicate that an upgrade to the frontage with Lincoln Rolleston Road is required to be delivered by the developer. I have suggested amendments to the OPD in Figure 7.

Outcome: I recommend that the ODP indicates a frontage upgrade for Lincoln Rolleston Road. Detailed upgrade of this road should be determined by the developer in collaboration with Council at subdivision stage and in accordance with Council Engineering Code of Practice requirements.

6.3 Provision for walking and cycling

The ODP indicates several "Cycle/Pedestrian Route" connections along the boundary of PPC75 to the north and west of the site, which I understand connect with existing and/or proposed networks external to the site, such as the Falcon Crossing to the north of the site.

However, I am uncertain how these connections will link to any walking and cycling facilities within PPC75. In my view these connections should be extended within PPC75 to connect to, and align with, the proposed road network to provide north/south and east/west cycle "spines" through PPC75.

The internal walking and cycling links could follow proposed road alignments, or green networks. I have suggested amendments to the OPD in Figure 7, although alternative alignments may also be acceptable.

Outcome: I recommend that the ODP should be amended to include walking and cycling routes within PPC75, including north/south and east/west cycle routes.

6.4 Secondary roads

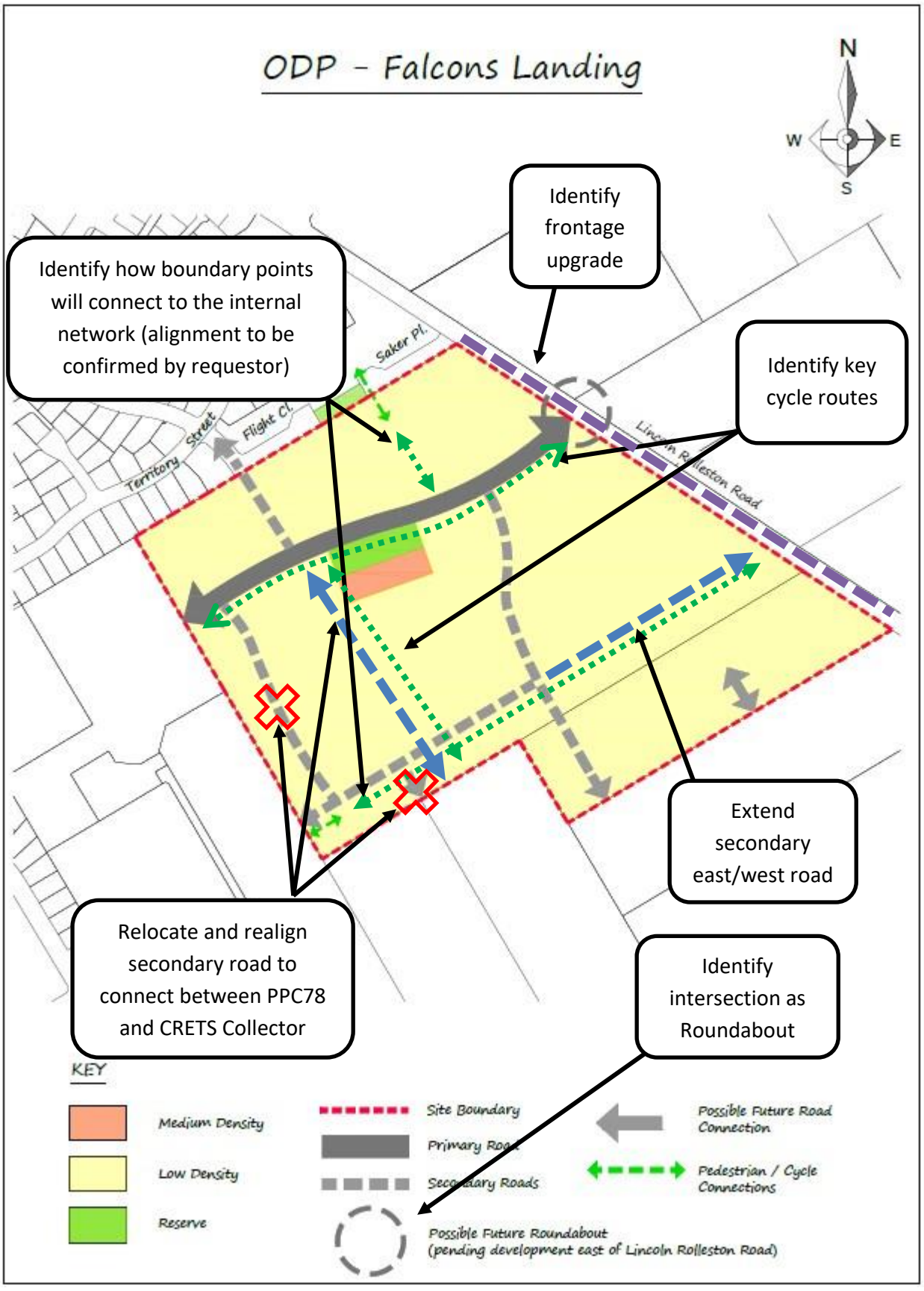
I consider that the secondary east/west road shown in the south western portion of the ODP should be extended to Lincoln Rolleston Road. This will provide for greater permeability and connectivity for all transport users and provide a transition in roading hierarchy between Lincoln Rolleston Road (as an arterial) and future local roads that will be developed within PPC75.

I consider that the western most north/south secondary road should be relocated, to form an extension of the one of the north/south secondary roads provided by PPC78 (which is shown in Figure 6). This will form a direct connection between the CRETS Collector Road and Selwyn Road, via PPC75 and PPC78.

I have suggested amendments to the OPD in Figure 7.

Outcome: I recommend that the ODP should extend the secondary east/west road to connect to Lincoln Rolleston Road. The secondary north/south road should be realigned to form a logical extension of one of the key secondary north/south roads proposed by PPC78.

Figure 7: Recommended amendments to the ODP



7 THE ROLLESTON STRUCTURE PLAN

As part of my review, I have considered the Rolleston Structure Plan (Structure Plan)[6].

The Structure Plan was prepared in 2009 and provides a high-level plan that shows the arrangement of land-use types, and identifies public infrastructure, such as streets, schools, rail, reservoirs and natural features. The Structure Plan's purpose is to consider how existing and future development in Rolleston should be integrated in order to ensure that sustainable development occurs and makes best use of natural resources.

PPC75 sits within the anticipated urban area, as shown in Figure 8. Key aspects of the Structure Plan relevant to PPC75 include

- Lincoln Rolleston Road is anticipated to be an arterial road
- CRETS Collector Road is intended to pass through the middle of PPC75.

Outcome: PPC75 is generally consistent with the Rolleston Structure Plan. It provides for the alignment of the CRETS Collector Road somewhat north of the indicative alignment in the Structure Plan, however it is consistent with the alignment consented to the west of the site and I consider that the deviation from the Structure Plan is acceptable. Further, I understand that this alignment is consistent with the current thinking of Council's Transportation team.

[6] Rolleston Structure Plan, available online https://www.selwyn.govt.nz/__data/assets/pdf_file/0015/14361/Final-Rolleston-Structure-Plan-230909.pdf

Figure 8: Rolleston Structure Plan with PPC75 location

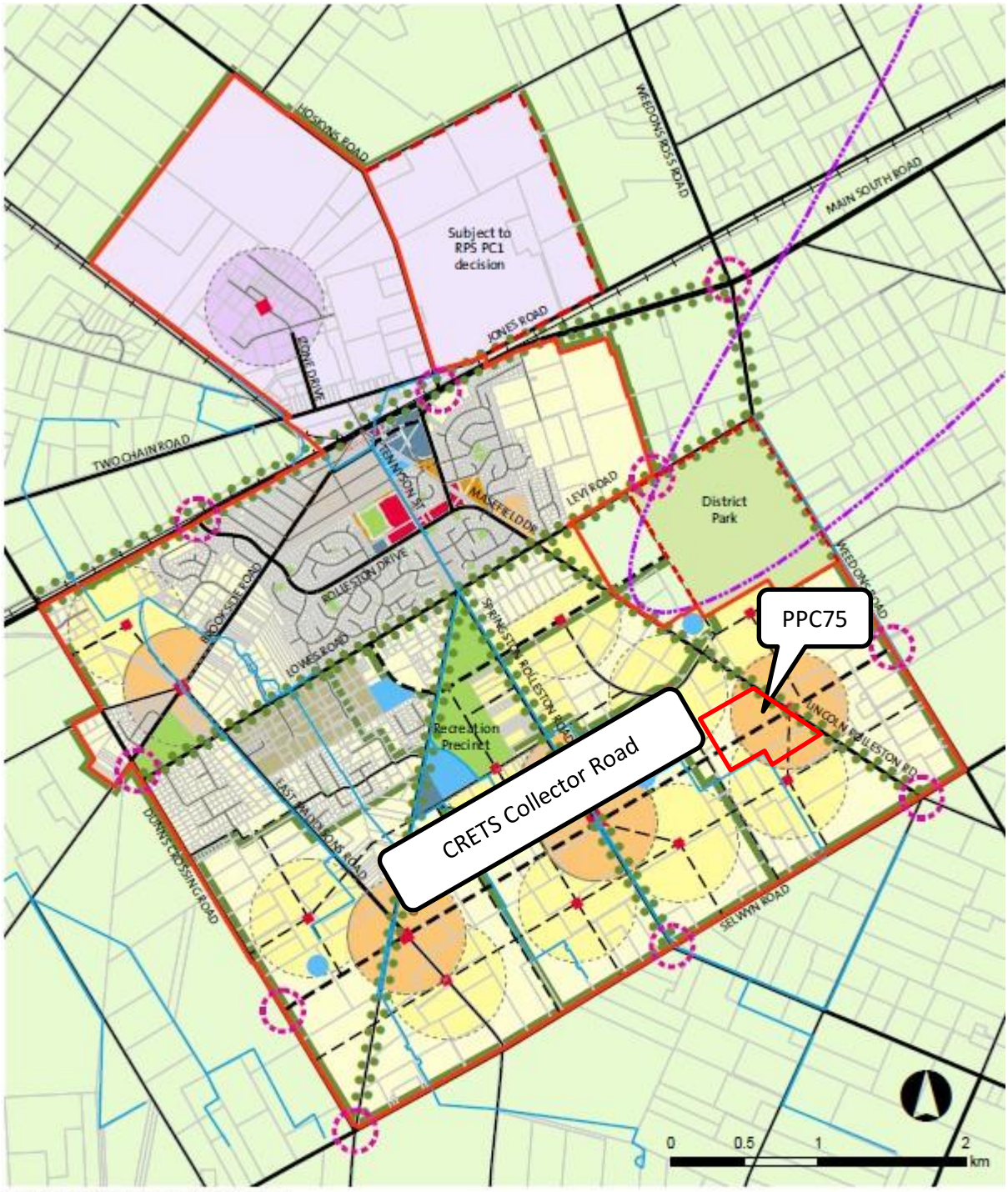


Figure 5.2: Rolleston Structure Plan

Study Area
Railway
National Arterial
Main (primary) roads
Proposed main (primary) roads
Local (secondary) roads
Proposed local (secondary) roads
Local (minor) roads
Walking and Cycling Link
Town Centre
Neighbourhood Centre
Local Centre
Comprehensive Housing
Medium Density Residential (20HH/Ha)
Medium Density Residential (15HH/Ha)
Low Density Residential (10HH/Ha)
Low Density Residential (7HH/Ha)
Community Facilities
Education Facilities
Green Corridors and Green Belt
District Park
Recreation Precinct and Reserves
Rural land
Avenue Planting
Izone Southern Business Hub
Water Races
Noise Contour
5 Minute Walk (400m)
Key Gateways

8 MY REVIEW OF SUBMISSIONS

Four submissions related to transport matters were received. Transport matters contained in submissions can be grouped into the following broad topics

- Extension of the collector road network
- Zoning for a neighbourhood centre
- Provision of public transport services, and residential density to support services.

Details of the submissions, and my comments, are provided in Table 4 in Appendix A. In summary, I recommend that

- Council's Planner consider whether the proposed zoning unnecessarily restricts the potential residential density of the site
- From a transportation perspective, there are no transport related concerns with PC75-0007/001, which requests that a neighbourhood centre be zoned at the corner of Lincoln Rolleston Road and Ed Hillary Drive/CRETS Collector Road
- Council's Transport team continue to advocate for the provision of improved public transport services in Rolleston.

9 SUMMARY AND CONCLUSION

I have reviewed the PPC75 application documents, responses to Council information requests, and submissions.

In terms of the immediate effects of PPC75, and the proposed ODP

- The Lincoln Rolleston Road/Ed Hillary Drive intersection is indicated to operate acceptably in 2033 when traffic from all 8 Rolleston Plan changes is modelled and is assumed to be a roundabout. The ITA recommends that this intersection is formed as a roundabout, subject to further assessment at the time of subdivision. I recommend that the ODP legend be updated as follows

  "~~Possible Future~~ Roundabout ~~(pending development east of Lincoln Rolleston Road)~~"

- I recommend that the ODP indicates a frontage upgrade for Lincoln Rolleston Road. Detailed upgrade of this road should be determined by the developer in collaboration with Council at subdivision stage and in accordance with Council Engineering Code of Practice requirements. Refer to my discussion in Section 6.2
- I recommend that the ODP should be amended to include walking and cycling routes within PPC75, including north/south and east/west cycle routes. Refer to my discussion in Section 6.3
- I recommend that the ODP should extend the secondary east/west road to connect to Lincoln Rolleston Road. The secondary north/south road should be realigned to form a logical extension of one of the key secondary north/south roads proposed by PPC78. Refer to my discussion in Section 6.4
- PPC75 is generally consistent with the Rolleston Structure Plan. It provides for the alignment of the CRETS Collector Road somewhat north of the indicative alignment in the Structure Plan, however it is consistent with the alignment consented to the west of the site and I consider that the deviation from the Structure Plan is acceptable. Further, I understand that this alignment is consistent with the current thinking of Council's Transportation team. Refer to my discussion in Section 7.

I recommend that Council consider the following matters regarding effects on the wider transport network

- I recommend that Council consider the proportional effect that each PPC will have on network hotspots and assumed intersection improvements contained in the 2033 Rolleston Paramics model, as identified in Table 3. Council should consider whether the proportional effects of PPC75 affect programmed funding within the Long Term Plan, whether new projects should be added to the Long Term Plan, and how Development Contributions are calculated. I note that the 2033 Rolleston Paramics model does not incorporate the change to the SH1/Rolleston Drive South intersection, proposed as part of NZUP. Should NZUP implement these changes, it is likely that our reporting of traffic effects on Dunns Crossing Road, Brookside Road, Lowes Road (among others) are under indicated. Refer to my discussion in Section 4
- The Lincoln Rolleston Road/Selwyn Road intersection is indicated to operate with high delays for the right turn on the Lincoln Rolleston approach during the 2033 PM peak, however very few vehicles are indicated to make this turning movement. Delays at this intersection are likely to

exacerbate existing safety issues. PPC75 contributes around 1.5% of peak hour traffic movements at this intersection by 2033. I understand that Council is investigating whether the planned seagull upgrade for this intersection should instead be amended to a safer arrangement such as a roundabout, which I consider to be an appropriate course of action. I recommend that Council consider whether the planned upgrade should be completed earlier than the programmed date of 2028/29, and whether the current Development Contributions policy is sufficient to reflect traffic demand through this intersection generated by PPC75. Refer to my discussion in Section 5.4

- The Selwyn Road/Weedons Road intersection is indicated to operate acceptably in 2033 when traffic from all 8 Rolleston Plan changes is modelled, when upgraded to a double lane roundabout. I understand that Council is currently developing a concept design for this intersection, including the consideration of the capacity constraints of a single lane roundabout. PPC75 contributes almost 1.5% of peak hour traffic movements at this intersection by 2033. I recommend that Council investigate whether the planned upgrade of the intersection should be completed earlier than the programmed date of 2027/28, and whether the current Development Contributions policy is sufficient to reflect traffic demand through this intersection generated by PPC75. Refer to my discussion in Section 5.5.

Should my recommendations be adopted I consider that the safety and efficiency effects on the localised transport network can be appropriately addressed through the future resource consent process and Council's Long Term Plan.

I consider that PPC75 will generate safety and efficiency effects on the wider transport network, however these are more appropriate to be addressed by Council due to PPC75 being just a proportion of the cumulative growth effects anticipated in Rolleston.

APPENDIX A Submission summary

Table 4: Submission summary and commentary

Submitter	Summary of submission	Flow comment	Status
PC75-0001/002 (S. Loeffler)	Support as the plan change is essential to completing the Rolleston collector road system.	Support in part. However, while PPC75 provides for the alignment of the CRETS Collector Road, it will be reliant on extension through adjoining properties to the west of the plan change area before it connects to Ed Hillary Drive. Refer to my discussion in Section 5.2.	
PC75-0005/001 (CCC)	Considers that wider transport effects on Christchurch City must be addressed. Requests Council to reject the plan change unless a funded and implemented public transport system to service the site is established prior to any residential development.	I consider that the ODP provides for a transport network within PPC75 that does not preclude the efficient provision of public transport services. The network within PPC75 provides several route options, and has reasonable connectivity, and therefore reasonable walkable catchments to future bus stops (if provided). In my view, the funding and implementation of a public transport system is a matter for Rolleston as a whole, rather than a site specific matter relating to this plan change. I consider it would be difficult to require the developer of these sites to fund and implement a public transport system to service the site, nor is it likely that such services would be provided by a third party prior to any development occurring.	Neither support nor oppose
PC75-0005/002 (CCC)	Considers that a higher minimum density requirement of 15 households per hectare should be applied to better achieve efficiencies in the coordination of land use and infrastructure, support mixed land use activities and multi-modal transport systems and protect the productive rural land resource. Requests Council to reject the plan change unless provision is made for a minimum net density of 15 households per hectare.	I agree with the submitter that higher residential densities can support greater mode share for public transport. However, residential densities should be determined after considering a number of factors, not just public transport catchments. I am not opposed to higher densities, however I consider that this should be addressed via the land-use zoning applied to the site, rather than through specific mechanisms applied to PPC75. I note that even if higher density is permitted by the land use zoning that is applied, higher densities may not be realised unless there is a subsequent market demand for higher density in this location. Finally, the 2033 Rolleston Paramics model has assessed the stated yields of the 8 Rolleston Plan Changes. Should yields be increased, Council would need to rerun the model to determine what effect a higher yield for PPC75 would have on the transport network.	Support in part, however the transport effects of the requested relief would require assessment.

PC75-0007/001	Requests that a portion of land be included as a Neighbourhood Centre (NCZ) to provide for small scale commercial activities and community activities consistent with the preferred option set out in the Rolleston Structure Plan. Requests Council to approve the plan change and to re-zone the land to provide for a Neighbourhood Centre Zone (NCZ) as set out in the attached plans.	The submitter has provided a transport statement to support the rezoning, which estimates that the potential peak hour traffic generation of the neighbourhood centre to be some 120 veh/hr in the morning peak, and 190 veh/hr in the evening peak for a centre of approximately 2,000 m^2 GFA. I agree with the submitter that a reasonable proportion of these trips would be existing trips that would otherwise be on the network. As discussed in Section 5.2, the adjacent Lincoln Rolleston Road/Ed Hillary Road intersection is not expected to have capacity issues during the morning or evening peak. In Sections 5.4 and 5.5 I discuss potential safety and efficiency issues at the Lincoln Rolleston Road/Selwyn Road and Selwyn Road/Weedons Road intersections. However, in my view the neighbourhood centre would be unlikely to have noticeable additional effect beyond what has been identified in the 2033 Rolleston Paramics Model, which I discuss in Section 4. In my view it is likely that the neighbourhood centre will generate a low number of trips through these intersections, as they're on the edge of the planed urban area and the neighbourhood centre is unlikely to attract many peak hours trips from areas outside of the Rolleston urban area. I consider that there are potential transport benefits to including a local centre within PPC75, as this "soak up" some trips from local residents that would otherwise have to travel further afield to access a centre. I note that under the Proposed District Plan, TRAN-TABLE 2[7] requires a basic Integrated Transport Assessment and a full Integrated Transport assessment for retail over 250 m^2 and 900 m^2 GFLA respectively. This provides opportunity for Council to further consider the effects of the neighbourhood centre, for example access provisions and congestion effects, as part of any future resource consent application.	Support. From a transport perspective, there are no transport related concerns with the requested zoning.
PC75-0010/002 (ECan)	Considers that a determination needs to be made on how the plan change implements Policies 6.3.4 and 6.3.5 of the CRPS, which seeks to ensure an efficient and effective transport network across Greater Christchurch. Requests Council to consider how timely and effective public transport provision to and through the site can be achieved and any integrated transport options that would encourage uptake of existing services.	In my view, the funding and implementation of a public transport system is a matter for Rolleston as a whole, rather than a site specific matter relating to this plan change. I consider it would be difficult to require the developer of these sites to fund and implement a public transport system to service the site, nor is it likely that such services would be provided by a third party prior to any development occurring. I understand the Selwyn District Council has been lobbying the submitter to provide bus services into new subdivisions within Rolleston as early as possible, subject to funding availability.	Support in part. I recommend that Council's Transport team continue to advocate for the provision of improved public transport services in Rolleston.

[7] Selwyn District Council Proposed District Plan Transport Chapter (as notified), available online at https://eplan.selwyn.govt.nz/review/default.html#Rules/0/304/1/0/0

APPENDIX B Traffic modelling technical note

flow
TRANSPORTATION SPECIALISTS

technical note

PROJECT	**SELWYN DISTRICT PLAN CHANGE 73**
SUBJECT	**TRAFFIC MODELLING REVIEW**
TO	**SELWYN DISTRICT COUNCIL**
FROM	QING LI (FLOW)
REVIEWED BY	MAT COLLINS (FLOW)
DATE	13 AUGUST 2021

1 INTRODUCTION

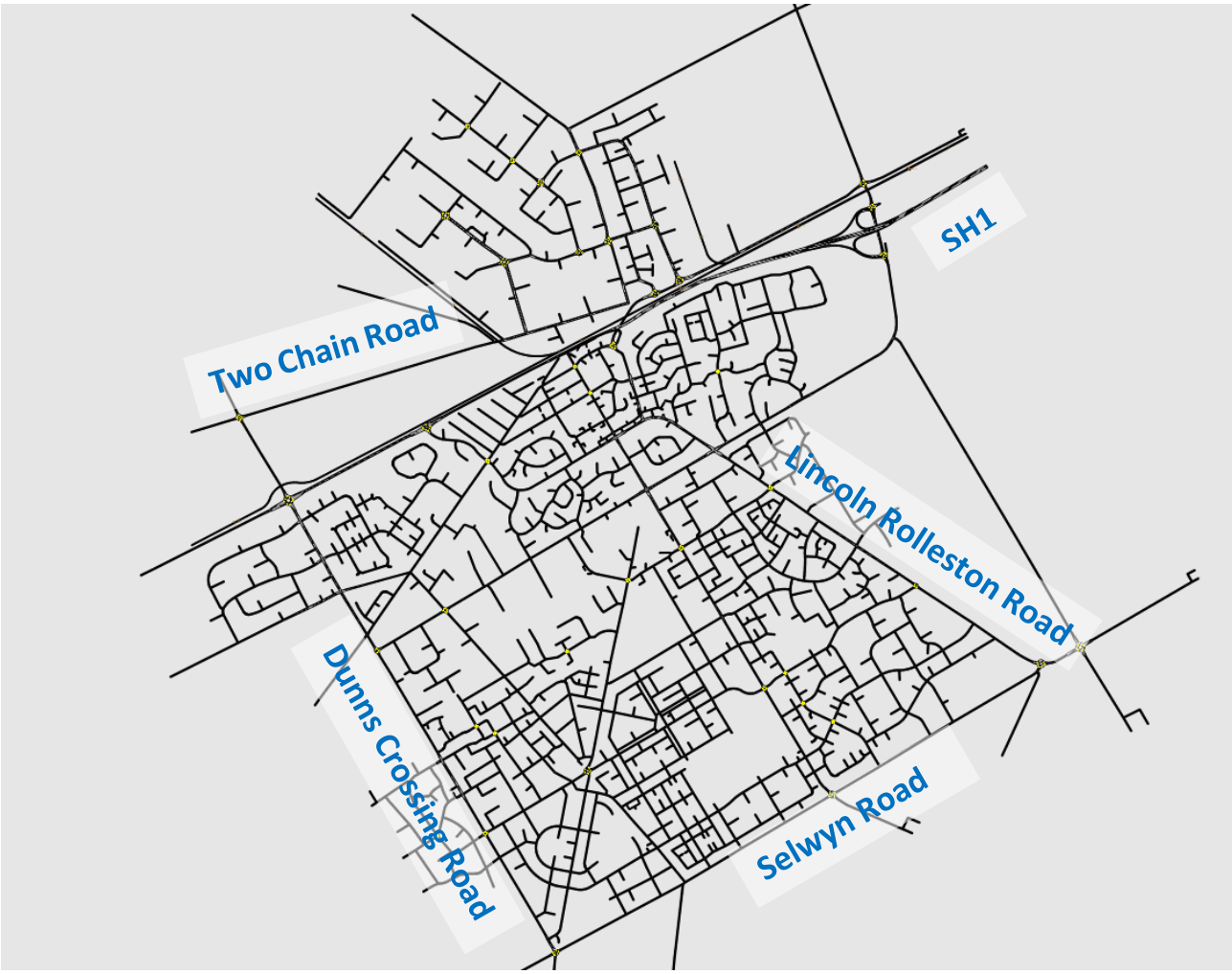
This technical note provides a summary of the traffic modelling assessment completed for Private Plan Change 73 (PPC73) in Rolleston, Selwyn District. The assessment has been based on the Paramics model developed by Abley Limited (Abley). This model was developed in May 2021 and it assumes a 2033 background traffic/network scenario and the full development of the Outline Development Plans (ODPs).

It includes the following Private Plan Changes (PPCs) in Rolleston

- PPC64: Rolleston, 969 residential lots
- PPC66: Rolleston, rural zone to industrial zone
- PPC70: Rolleston, 800 residential lots plus commercial
- PPC71: Rolleston, 660 residential lots
- PPC73: Rolleston, 2100 residential lots plus commercial
- PPC75: Rolleston, 280 residential lots
- PPC76: Rolleston, 150 residential lots
- PPC78: Rolleston, 750 residential lots.

The development of the model and the associated transport network assessment is summarised in the Abley technical note ”Rolleston Plan Change Modelling (May 2021)”. An overview of the Paramics model is provided in Figure 1 overleaf.

Figure 1: Rolleston Plan Change Paramics Model



In August 2021, Flow Transportation Specialists (Flow) was commissioned by Selwyn District Council to review the traffic effects associated with PPC73. We have therefore obtained the 2033 Plan Change model to understand the cumulative effects of the various plan changes. The results are discussed and summarised in this technical note.

2 HIGH LEVEL REVIEW OF THE PARAMICS MODEL

As part of our review of the Paramics mode we noted the following

- The model assumes 2033 background traffic informed by the 2028 and 2038 Christchurch Assignment and Simulation Transportation (CAST) model. In our view this is appropriate
- Traffic generation of each PPCs in the Rolleston area has been based on the land use/trip rates information provided in the Integrated Transport Assessments (ITAs) prepared for each PPC (if available). A common vehicle trip rate of 0.9 trips per hour per household has been applied to all PPCs in both the morning and evening peaks. We consider that this trip rate is reasonable, given the existing low public transport (PT) and active mode shares in the area[1]

[1] 2018 Census Main Means of Travel to Work data (retrieved from https://commuter.waka.app/) suggested a mode share of 3%, 7% and 3% for PT, walking and cycling respectively for the Rolleston Central, North East, North West, South West and South East areas.

- In addition, we also note that the model has assumed a PT modal shift of some 6% to 8% between Rolleston and Christchurch (SH1 East) and 2.5% for trips to/from Lincoln (including walking and cycling). A 5% mode shift to walking and cycling within Rolleston has also been assumed. These adjustments have resulted in reductions of some 5% to 10% to the raw traffic generation for each PPC area, we consider that this is reasonable, however it is likely that improvements to PT and active modes access will be required within Rolleston to achieve this mode share
- The traffic distribution of each PPC in the 2033 model has been based on the origins and destinations of existing residential trips. We have looked at the predicted trip distribution for the PPC73 area, and note the following
    - A high percentage of PPC73 demands are assumed to travel to/from zones within Rolleston (40% and 55% in AM and PM respectively). These figures are similar to the existing 40% distribution reported in the 2018 Means of Travel to Work data (AM peak only)
    - Traffic to /from SH1 East (to Christchurch) is predicted to be some 15% to 20% of the total traffic generated by PPC73, making it the second highest trip origin/destination of the PPC73 demands. (A detailed trip distribution summary for PPC73 is included as an Appendix to this technical note)
- The network assumptions included in the 2033 Plan Change model were based on Counil's Long Term Plan (up to 2032-33). The model also assumes the SH1 changes proposed west of the SH1/Weedons Road interchange as part of the Government's NZUP programme. This is reasonable as the 2021 update from Waka Kotahi states that construction is due to start in 2024[2]
- We note the following from these assumptions
    - As discussed in Section 3 of the Abley technical note, the Business Case for the Rolleston component of the NZUP programme is on-going and its outcome may change the access/route choice options between the Rolleston area and SH1
    - We note that a more recent model has been developed which includes a roundabout layout at the Lincoln Rolleston Road/Selwyn Road intersection. We however note that this is unlikely to significantly change the vehicle routing in the model
    - The model predicts that the SH1/Weedons Road interchange will operate with high delays with the existing layout, and roundabout metering signals have been assumed in the model at the Weedons Road southern roundabout to reduce delays. We note that these appeared to be a temporary solution and congestion is still predicted in the 2033 model with the PPCs

In summary, we consider that the 2033 Rolleston Paramics Plan Change model is is fit for purpose for our high level assessment of the potential effects of the eight PPCs in the Rolleston area.

In addition, the Abley technical note also included the results of a 2028 model which assumed no PPC developments in Rolleston. To investigate the background traffic growth predicted between the 2028

[2] https://www.nzta.govt.nz/planning-and-investment/nz-upgrade/canterbury-package/

and 2033 models, we have compared the total traffic demands in the non-PPC zones between the two models.

Table 1: Background Traffic Demand Comparison

Peak	Morning Peak		Evening Peak	
Years	**2028**	**2033**	**2028**	**2033**
Total Traffic Demands	21,300	21,400	24,410	24,530

The above table indicates that background traffic demands are not predicted to change significantly between 2028 and 2033. We however note that some of the growth between 2028 and 2033 may have been reduced by the PT/active mode shift assumptions in the 2033 models. The assumed pass-by trips for the PPCs may also have reduced background traffic in the 2033 models.

3 PREDICTED HOT SPOTS WITHIN ROLLESTON

Based on the model results provided in the Abley technical note, the following intersections are predicted to operate at Level of Service (LOS) F, for one or more movements during the morning and/or evening peak periods with the proposed PPC developments. We have undertaken Select Link Analysis to determine the traffic flows through each of these intersections, which provides understanding of the proportion of traffic flows associated with each PPC. This analysis has also been done for the intersections with layout improvements assumed in the 2033 Plan Change models.

The proportions are displayed in Figure 1 below and the detailed percentages for each PPC are provided in Table 1 overleaf. We have used the following colour code to assist interpretation:

- no shading: the PPC is predicted to contribute less than 2.5% towards the traffic volumes at this intersection
- orange shading: the PPC contributes between 2.5% and 5% towards the traffic volumes at this intersection
- red shading: the PPC contributes more than 5% towards the traffic volumes at this intersection.

The predicted intersection performance in 2028, without the proposed PPCs in the Rolleston area, has also been obtained from the Abley technical note and provided in the table for comparison. In this assessment, we have focused on the peak hours, being 7 am – 8 am in the morning and 5 pm – 6 pm in the evening.

Figure 2: Predicted Percentage of Traffic from PPCs at Each 'Hot Spot'

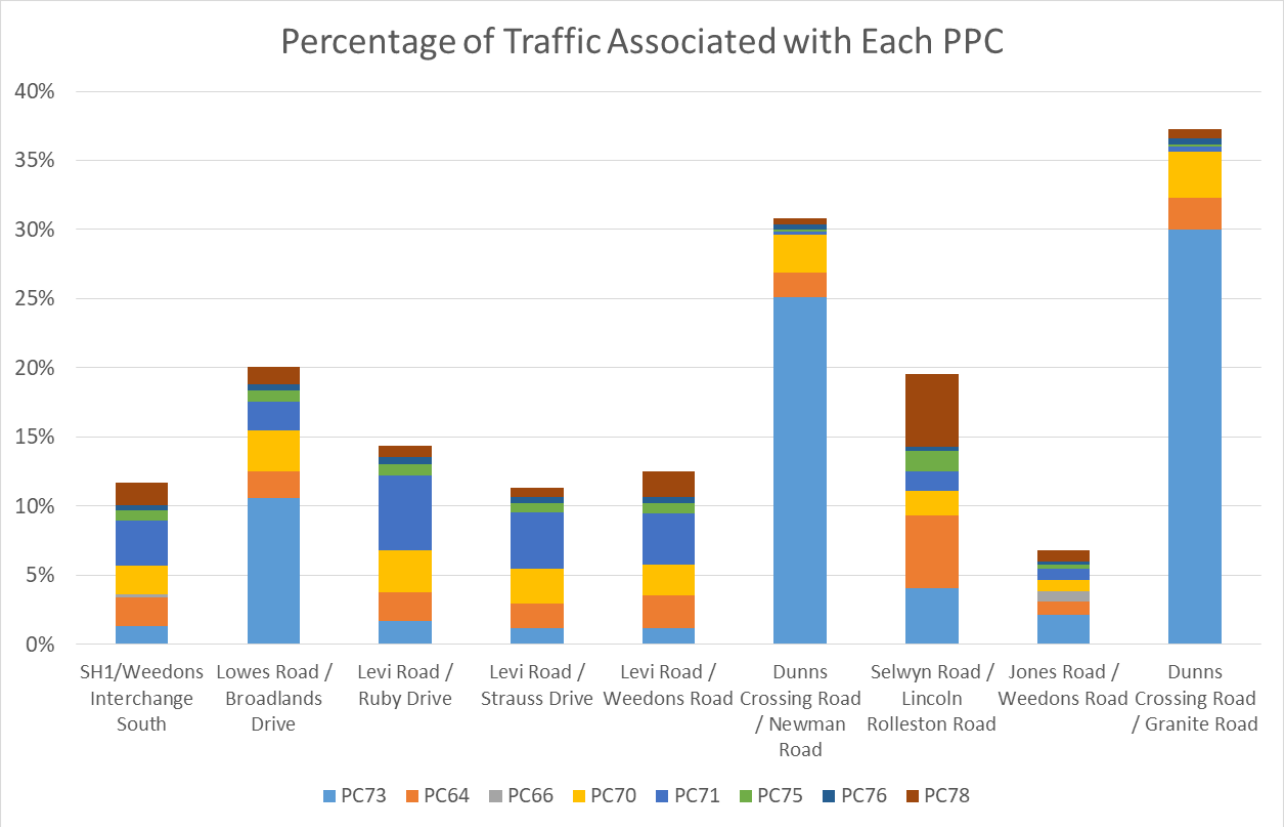


Table 2: 2033 network performance and individual PPC effects

Intersection	Existing Layout	Intersection form assumed in models (2028/2033)	2028 performance without PPCs	2033 performance with all 8 PPCs	2033 traffic movements With all PPCs (AM and PM combined)	Percentage of traffic associated with each PPC as a proportion of total traffic movements through each intersection (AM and PM combined)							
						PPC73	PPC64	PPC66	PPC70	PPC71	PPC75	PPC76	PPC78
						%	%	%	%	%	%	%	%
Intersection with Congestion/High Delays													
SH1/Weedons Interchange South	Roundabout	Roundabout in both years	LOS F on SH1 West, AM and PM	LOS F on SH1 West and Weedons Rd, AM and PM	3,870 veh	1.3%	2.1%	0.2%	2.0%	3.3%	0.7%	0.4%	1.6%
Lowes Road / Broadlands Drive	Priority	Priority in both years	LOS B and C in AM and PM respectively	LOS F on Broadlands Dr in AM, Lowes Rd west in PM	1,910 veh	10.6%	1.9%	0.0%	2.9%	2.1%	0.8%	0.5%	1.2%
Levi Road / Ruby Drive	Priority	Priority in both years	LOS B and C in AM and PM respectively	LOS F on PC71 Access in AM, Ruby Dr and Lowes Rd in PM	2,890 veh	1.7%	2.1%	0.0%	3.0%	5.4%	0.8%	0.5%	0.9%
Levi Road / Strauss Drive	Priority	Priority in both years	LOS D and C in AM and PM respectively	LOS F on Strauss Dr and Levi Rd east in AM	3,210 veh	1.2%	1.7%	0.0%	2.5%	4.0%	0.7%	0.5%	0.7%
Levi Road / Weedons Road	Priority	Priority in both years	LOS F on Weedons Rd South and Levis Rd west in PM	LOS F on Weedons Rd South in both AM and PM, and on Levis Rd west in PM	3,480 veh	1.2%	2.3%	0.0%	2.2%	3.7%	0.8%	0.4%	1.8%
Dunns Crossing Road / Newman Road	Priority	Priority in both years	LOS A in both AM and PM	LOS F on Newman Rd and PC73 access in AM	2,590 veh	25.1%	1.8%	0.0%	2.8%	0.2%	0.1%	0.4%	0.5%
Selwyn Road / Lincoln Rolleston Road	Priority	Priority/ Priority with Seagull Treatment[3]	LOS F on Lincoln Rolleston Rd north in PM	LOS F on Lincoln Rolleston Rd north in PM	3,990 veh	4.1%	5.3%	0.0%	1.8%	1.4%	1.5%	0.3%	5.3%
Jones Road / Weedons Road	Roundabout	Roundabout in both years	LOS A in both AM and PM	LOS F on Weedons Ross Rd north and Jones Rd east in PM	3,620 veh	2.1%	1.0%	0.7%	0.9%	0.8%	0.3%	0.2%	0.9%
Dunns Crossing Road / Granite Road	Priority	Priority / Signals	LOS A in both AM and PM	LOS E on Granite Rd east in AM	2,450 veh	30.0%	2.2%	0.0%	3.3%	0.3%	0.1%	0.5%	0.7%
Intersection with Layout Changes													
Tennyson Street / Moore Street	Priority	Roundabout in both years	Not provided	Not provided	1,660veh	2.0%	1.4%	0.2%	0.9%	0.6%	0.3%	0.2%	0.7%
Rolleston Road / Tennyson Street	Roundabout	Signals in both years	LOS B and C in AM and PM respectively	LOS B and C in AM and PM respectively	4,320 veh	2.8%	3.1%	0.2%	2.5%	1.1%	0.4%	0.5%	1.0%
Rolleston Drive / Brookside Road	Priority	Roundabout in both years	LOS A and C in AM and PM respectively	LOS D and C in AM and PM respectively	3,390 veh	7.1%	0.5%	0.2%	1.4%	0.8%	0.3%	0.6%	0.7%
Dunns Crossing Road / Goulds Road / Selwyn Road	Priority	Priority / Roundabout with Priority control at Goulds /Dunns Crossing Intersection	LOS C in both AM and PM	LOS A in both AM and PM, at both intersections	1,640 veh	14.2%	3.0%	0.0%	5.8%	0.8%	0.4%	0.2%	2.2%
Dunns Crossing Road / East West Primary	Priority	Priority / Roundabout	LOS A in both AM and PM	LOS A in both AM and PM	1,670 veh	32.6%	5.5%	0.0%	8.7%	1.0%	0.5%	0.2%	1.6%

[3] As discussed in Section 2, we understand that Abley has recently completed another version of the 2033 Plan Change model to include a roundabout layout at this intersection, we note that this change is unlikely to change the traffic routing in the area significantly.

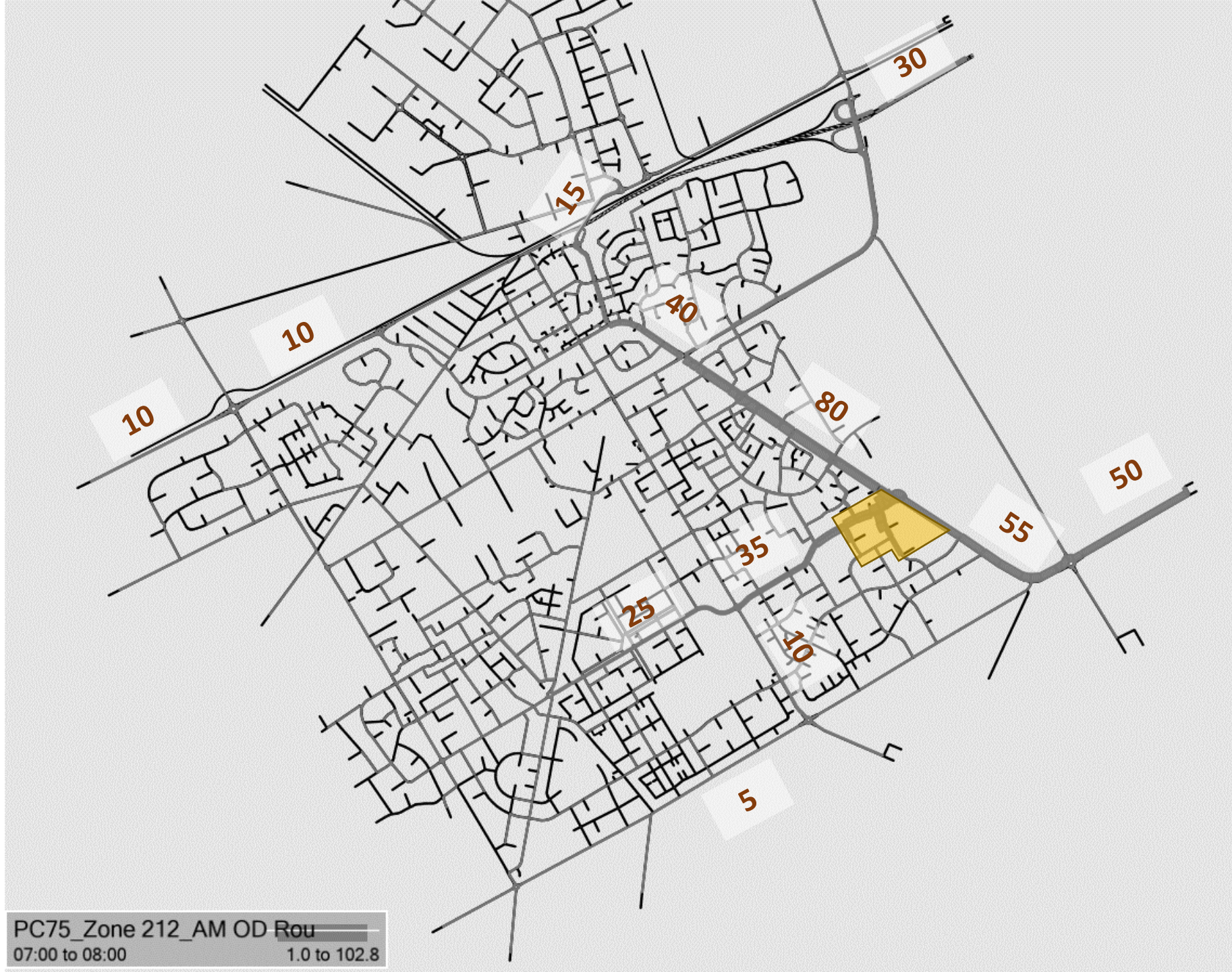
Intersection	Existing Layout	Intersection form assumed in models (2028/2033)	2028 performance without PPCs	2033 performance with all 8 PPCs	2033 traffic movements With all PPCs (AM and PM combined)	Percentage of traffic associated with each PPC as a proportion of total traffic movements through each intersection (AM and PM combined)							
						PPC73	PPC64	PPC66	PPC70	PPC71	PPC75	PPC76	PPC78
						%	%	%	%	%	%	%	%
Dunns Crossing Road / Brenley Drive / Skellerup Primary Access	No intersection	Priority T / Priority Cross Road with Right Turn bays	LOS A in both AM and PM	LOS C in both AM and PM	2,280 veh	33.2%	3.6%	0.0%	5.9%	0.4%	0.2%	0.7%	0.9%
Dunns Crossing Road / ODP12 Access/ Skellerup Secondary Access	No intersection	Priority T / Priority Cross Road with Right Turn bays	LOS A in both AM and PM	LOS A in both AM and PM	1,450 veh	30.8%	5.3%	0.0%	8.5%	0.1%	0.2%	0.0%	1.2%
Lowes Road / Tennyson Street	Roundabout	Signals in both years	LOS B and C in AM and PM respectively	LOS B and C in AM and PM respectively	4,540 veh	4.1%	3.6%	0.1%	3.1%	1.0%	0.4%	0.6%	0.8%
Lowes Road / East Maddisons Road	Priority	Priority / Roundabout	LOS B and D in AM and PM respectively	LOS B and A in AM and PM respectively	2,320 veh	13.1%	2.0%	0.1%	2.1%	1.5%	0.7%	1.3%	1.6%
Lowes Road / Dunns Crossing Road	Priority	Priority / Roundabout	LOS A in both AM and PM	LOS A in both AM and PM	2,690 veh	30.9%	3.1%	0.0%	4.9%	0.9%	0.4%	0.6%	1.2%
Lowes Road / Levi Drive / Masefield Drive	Roundabout	Signals in both years	LOS B and C in AM and PM respectively	LOS C in both AM and PM	4,300 veh	3.4%	1.6%	0.1%	2.1%	4.6%	1.7%	0.4%	3.4%
Springston Rolleston Road / Selwyn Road	Priority	Roundabout in both years	LOS A in both AM and PM	LOS A in both AM and PM	3,080 veh	5.9%	10.1%	0.0%	3.1%	1.1%	0.6%	0.4%	3.1%
Selwyn Road /Weedons Road	Priority	Roundabout in both years	LOS A in both AM and PM	LOS A in both AM and PM	4,270 veh	4.1%	4.9%	0.0%	1.7%	1.3%	1.4%	0.3%	4.8%
Walkers Road / Two Chain Road	Priority	Roundabout in both years	LOS A in both AM and PM	LOS A in both AM and PM	970 veh	6.9%	1.3%	0.2%	1.6%	0.6%	0.2%	0.3%	0.7%
Goulds Road /East Maddisons Road	Priority	Priority / Roundabout	LOS A and B in AM and PM respectively	LOS A in both AM and PM	2,480 veh	9.5%	8.6%	0.0%	13.6%	2.2%	1.0%	1.2%	2.1%

APPENDIX A - Predicted PPC73 Trip Distribution

	SH1 East	SH1 West	South	Selwyn Rd East	North	within Rolleston
Total AM	24%	4%	11%	9%	13%	40%
Total PM	17%	3%	9%	6%	10%	55%

Reference: P:\SDCX\001 PC73 Dunns Crossing\Reporting\TN1A210809.docx - Qing Li

APPENDIX C Traffic modelling Select Link Analysis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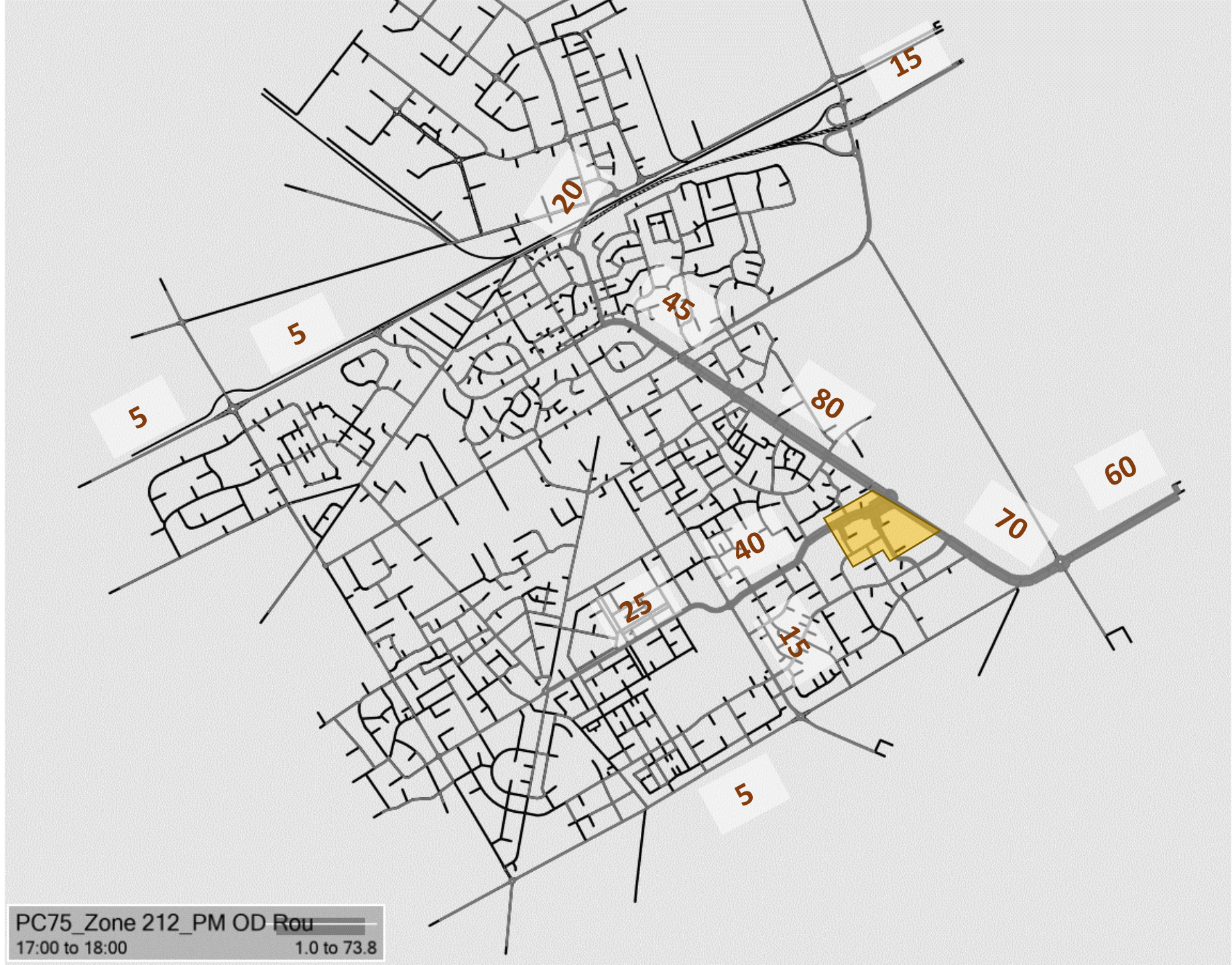
1.0 to 102.8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17:00 to 18:00
1.0 to 73.8