Private Plan Change 78: Urban Estates Ltd

Transportation Hearing Report

September 2021

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TRANSPORTATION SPECIALISTS

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Project: **Private Plan Change 78: Urban Estates 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 78 (PPC78), which has been lodged by Urban Estates 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 PPC78, 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 PPC78
- The safety and efficiency effects of PPC78 on key intersections, and what intersection and road upgrades are required to support PPC78
- 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 PPC78, and the proposed ODP

- I consider that the proposed transport network shown in the ODP generally aligns with adjacent developments, however the requestor should confirm whether minor adjustments to the ODP are required to ensure integration. Refer to my discussion in Section 6.2
- I recommend that the ODP indicates frontage upgrades for Lincoln Rolleston Road and Selwyn Road. Detailed upgrades of these roads 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 6.3
- I recommend that the ODP should be amended to include walking and cycling routes within PPC78, including north/south and east/west cycle routes. Refer to my discussion in Section 6.4

- PPC78 is generally consistent with the Rolleston Structure Plan. It does not provide for the alignment of the CRETS Collector Road, however this is anticipated to be delivered by PPC75 via the extension of Ed Hillary Drive, which I understand is consistent with the current thinking of Council's Transportation team. PPC78 does not provide for a key north/south cycle route through the site, which I recommend be identified in the ODP. 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 PPC78 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. This is consistent with the requestors response to Council's Information Request Question 2. 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 Selwyn Road/Weedons Road intersection is indicated to operate acceptably in 2033 when traffic from all 8 Rolleston Plan changes is modelled. The ITA assumes that this intersection has been upgraded to a roundabout, and PPC78 contributes almost 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 PPC78. Refer to my discussion in Section 5.1
- 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. PPC78 contributes over 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 PPC78. Refer to my discussion in Section 5.2
- The Lincoln Rolleston Road/CRETS Collector Road intersection is indicated to operate acceptably in 2033 when traffic from all 8 Rolleston Plan changes is modelled. The ITA assumes that this intersection is a priority controlled intersection and will be constructed by others (as part of PPC75), whereas the 2033 Rolleston Paramics model assumes that this intersection will be a roundabout. I consider that a roundabout is a more appropriate intersection type, as it provides for improved safety outcomes. Refer to my discussion in Section 5.3

- The existing Lincoln Rolleston Road/Selwyn Road intersection is indicated to operate over capacity in the 2028 PM peak, without development in PPC78. With the addition of PPC78 traffic in 2028, the intersection will continue to operate over capacity in the PM peak. The 2033 Rolleston Paramics assumes that this intersection has been upgraded to a double lane roundabout, which we understand is programmed 2024/2027. Upon upgrade, the intersection is expected to perform acceptably. PPC78 contributes around 3% 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 2024/27, and whether the current Development Contributions policy is sufficient to reflect traffic demand through this intersection generated by PPC78. Refer to my discussion in Section 5.4
- I recommend that Council consider whether the programmed funding for the Lowes Road/Levi Drive/Masefield Drive intersection is sufficient to include signalisation, as assumed in the 2033 Rolleston Paramics model, and whether the current Development Contributions policy is sufficient to reflect traffic demand through this intersection generated by PPC78. Refer to my discussion in Section 6.1.

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 PPC78 will generate safety and efficiency effects on the wider transport network, however these are more appropriate to be addressed by Council due to PPC78 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.

Urban Estates Limited (requestor) has lodged a PPC to change the Selwyn District Plan to rezone approximately 63 hectares of Rural Inner Plains zoned land to Living Z (PPC78). This report details my review of PPC78. 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 PPC78 and includes the following

- A summary of PPC78 focusing on transport matters
- An overview of transport projects contained within the Long Term Plan (LTP), which are relevant to PPC78
- A summary of the modelled traffic effects of the 8 Rolleston PPCs
- A review of the material provided to support the application for PPC78, and discussion of the potential effects of PPC78
- 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 McCracken & Associates Limited, dated 22 December 2020, including

  - Appendix D Integrated Transport Assessment, prepared by Abley, dated 10 December 2020
- Response to Council information requests, prepared by Urban Estates, dated March 2021
- Third party traffic model files, as discussed in Section 4
- Submissions as outlined in Section 8.

2 A SUMMARY OF PPC78

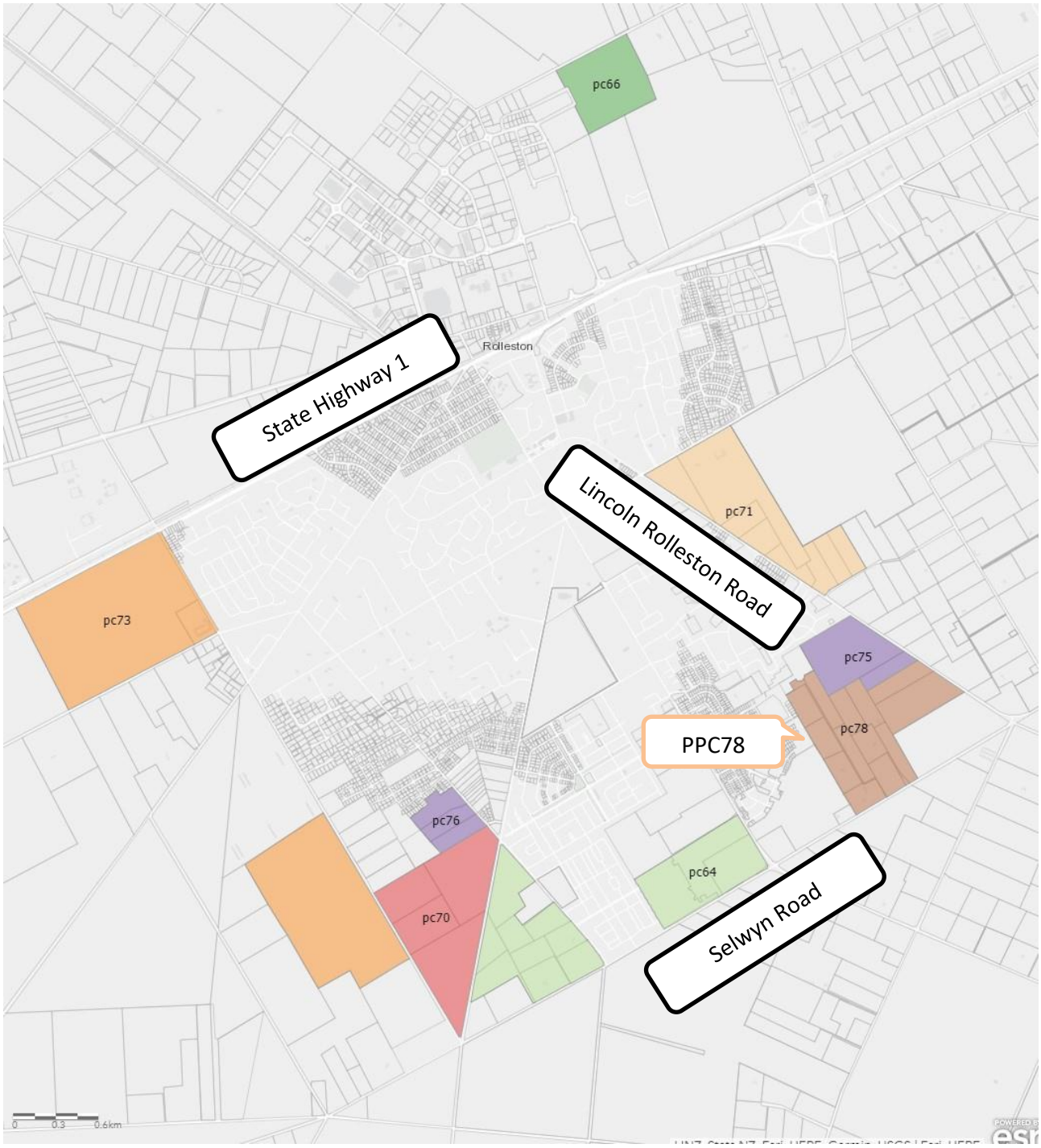
PPC78 proposes to rezone approximately 63 hectares of Rural Inner Plains zoned land to Living Z, with an Outline Development Plan (ODP) proposed to guide the form and layout of future development. PPC78 is south of PPC75 and east of Acland Park, with road frontages to Lincoln Rolleston Road and Selwyn Road, as shown in Figure 1 and Figure 2.

The ODP is shown in Figure 3 and is intended to provide

- Approximately 756 residential lots
- Connections to the surrounding existing and future transport network
- Identification of two intersections with Lincoln Rolleston Road
- Identification of two key intersections with Selwyn Road.

Lincoln Rolleston Road is identified as an arterial road in the Operative District Plan and the Proposed District Plan. Selwyn Road along the site frontage is identified as a Local Road in the Operative District Plan and an arterial road in the Proposed District Plan.

Figure 1: Overview of PPC78 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: PPC78 extent

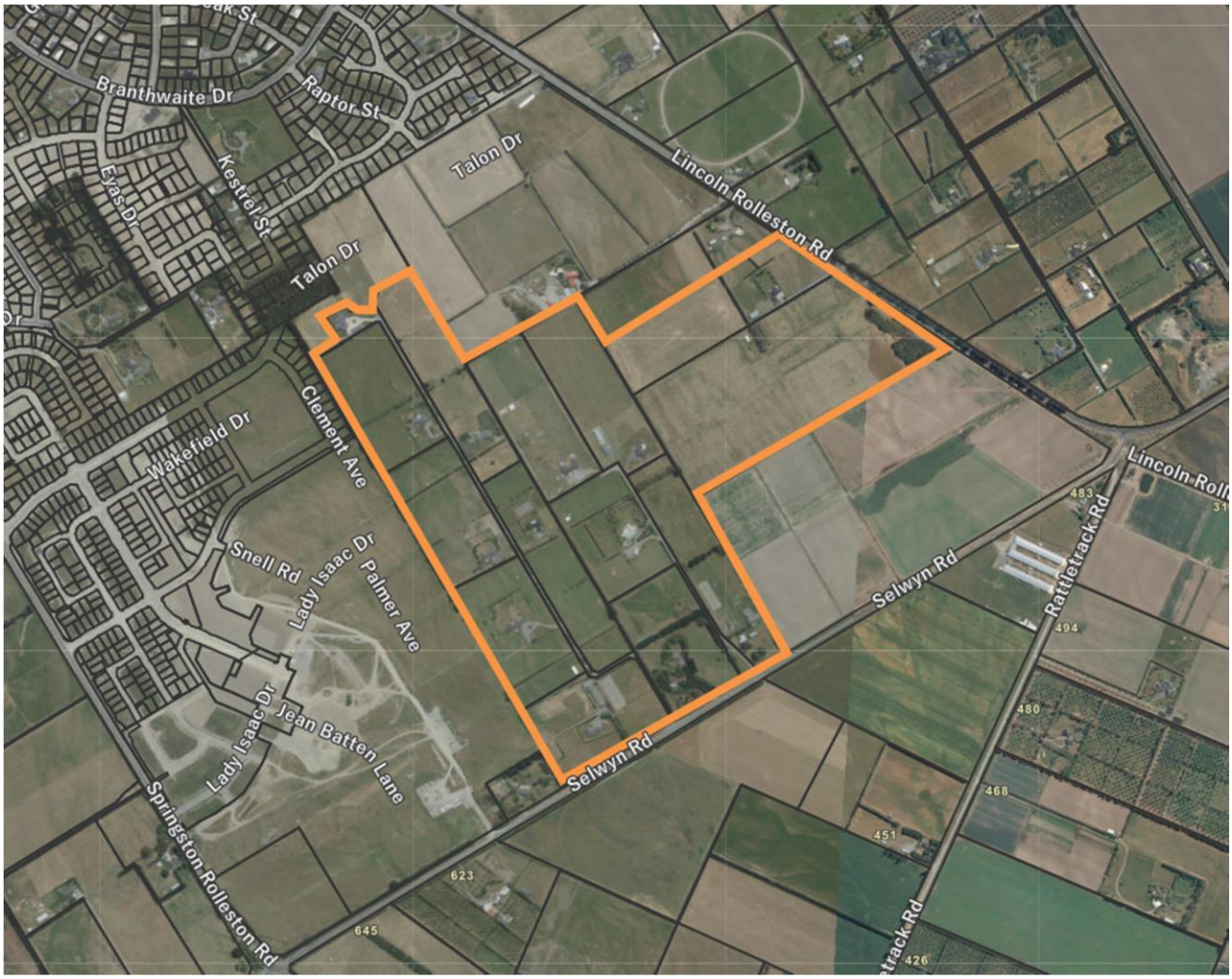
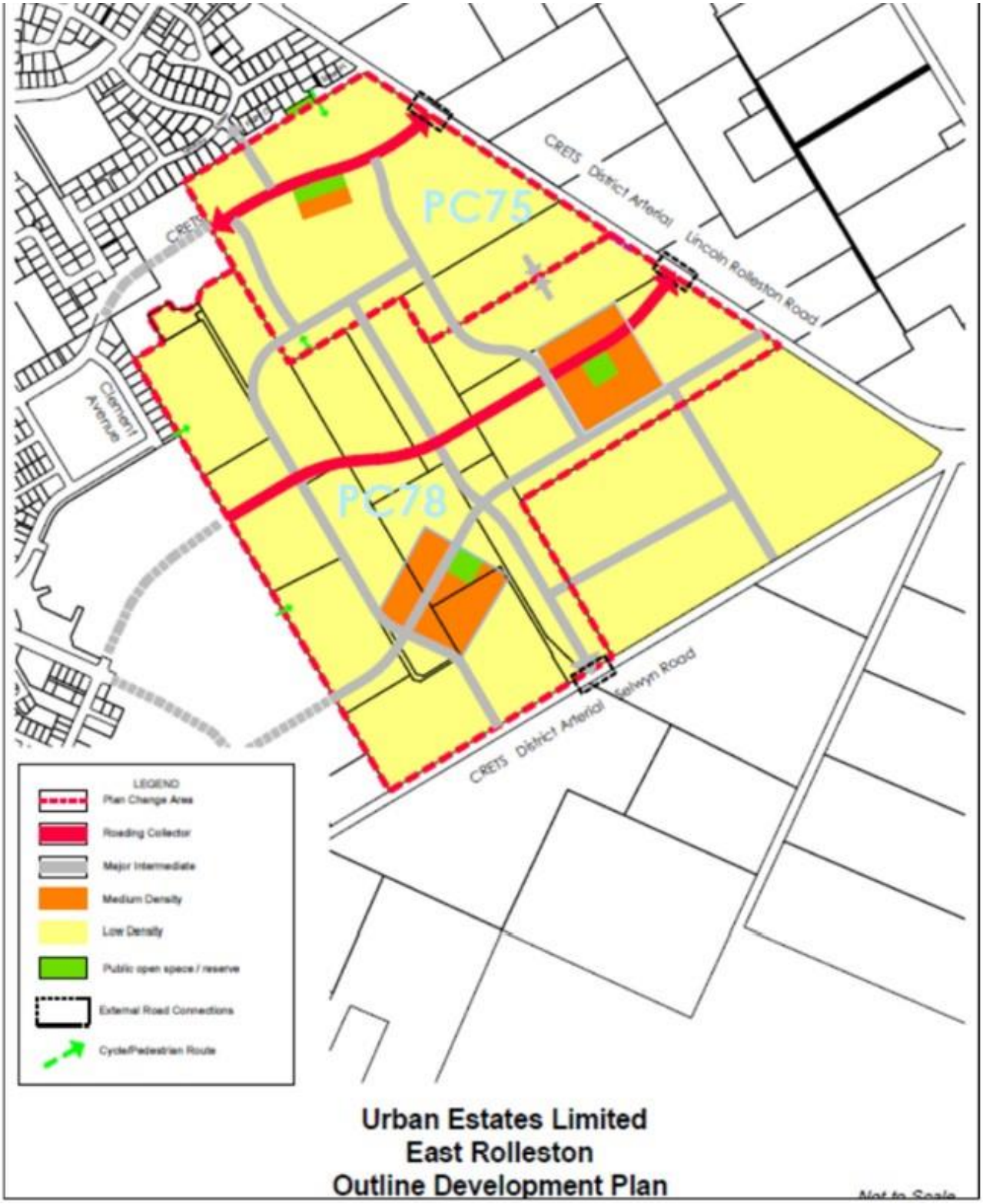


Figure 3: ODP, including PPC75[2]



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

3 ROLLESTON TRANSPORT PROJECTS RELEVANT TO PPC78

This section discusses various funded and planned transport projects in Rolleston that have relevance to PPC78.

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 PPC78. I have reproduced these in Table 1 below. Further discussion of how PPC78 is anticipated to affect various parts of the transport network is provided in Section 4.

Table 1: LTP transport projects relevant to PPC78

Project	Scheduled year	Description	Relevance to PPC78
Traffic Signals at Rolleston Drive/Tennyson Street	2021/22	Safety upgrade, including safer pedestrian crossing	PPC78 contributes 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	PPC78 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)	PPC78 contributes around 3% of peak hour traffic movements in 2033
Lowes Road/Levi Drive/Masefield Drive Intersection Upgrade	2025/26	Safety upgrade - link to Southern Motorway Interchange	PPC78 contributes over 3% of peak hour traffic movements in 2033
Tennyson/Moore Street Roundabout	2026/27	Safety upgrade as part of Moore Street extension	PPC78 contributes under 1% of peak hour traffic movements in 2033
Selwyn/Weedons Road Roundabout	2027/28	Safety upgrade - Rolleston southern arterial link	PPC78 contributes almost 5% 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 PPC78, 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	PPC78 contributes over 5% of peak hour traffic movements in 2033

Walkers Road/Two Chain Road Roundabout	2028/29	Safety upgrade - Rolleston Industrial Zone southern link	PPC78 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	PPC78 contributes around 2% 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 PPC78, 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	PPC78 contributes 1.5% of peak hour traffic movements in 2033
Rolleston South to Rolleston Industrial Zone Cycleway	2033/34		Some relevance to PPC78, this is within 5km, which is cyclable distance
West Melton to Rolleston Cycleway	2034/35		
Lowes Road/Dunns Crossing Road Roundabout	2035/36		PPC78 contributes over 1% of peak hour traffic movements in 2033
Burnham School Road Widening	2042/43		Some relevance, however PPC78 only generates 1.5% 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 PPC78 are discussed in Table 2.

Table 2: NZUP[3] transport projects relevant to PPC78

Project	Scheduled year	Description	Relevance to PPC78
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 PPC76 will only generate around 30 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 also 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 PPC78 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 PPC78 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 PPC78 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

- Selwyn Road/Lincoln Rolleston Road priority intersection is indicated to be overcapacity by 2028 without the addition of traffic from the 8 PPCs. With the upgrade of the intersection to a seagull arrangement, along with the addition of traffic from the 8 PPCs, the intersection is indicated to be overcapacity by 2033. PPC78 has a significant contribution to congestion effects in 2033 (over 5% of total traffic movements). Refer to my discussion in Section 5.2.

In relation to intersections that are not indicated to have congestion/high delays in 2033, but are assumed to have improvements

- Lowes Road/Levi Drive/Masefield Drive is assumed to be upgraded from a roundabout to a signalised intersection. PPC78 generates over 3% of total peak hour movements through this intersection. Refer to my discussion in Section 6.1
- Springston Rolleston Road/Selwyn Road is assumed to be upgraded from a priority intersection to a roundabout. PPC78 generates around 3% of total peak hour movements through this intersection. Refer to my discussion in Section 5.4
- Selwyn Road/Weedons Road is assumed to be upgraded from a priority intersection to a roundabout. PPC78 generates almost 5% of total peak hour movements through this intersection. Refer to my discussion in Section 5.1.

A Select Link Analysis output from the 2033 Rolleston Paramics model is provided in Appendix C, demonstrating traffic flows from PPC78.

In summary, I consider that PPC78 has a

- significant effect on congestion at the Selwyn Road/Lincoln Rolleston Road, including if the intersection is upgraded to a seagull arrangement
- minor effect on the need for an upgrade of the Lowes Road/Levi Drive/Masefield Drive intersection
- minor effect on the need for an upgrade of the Springston Rolleston Road/Selwyn Road intersection
- minor effect on the need for an upgrade of the Selwyn Road/Weedons Road intersection.

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 PPC78 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. This is consistent with the requestors response to Council's Information Request Question 2[5].

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.

[5] Response to Information Request for Plan Change 78 – Selwyn Road and Lincoln Rolleston Road, March 2021, available online https://www.selwyn.govt.nz/__data/assets/pdf_file/0003/413076/Response-to-Information-Request.pdf

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) [6]							
						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%

[6] 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) [6]							
						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

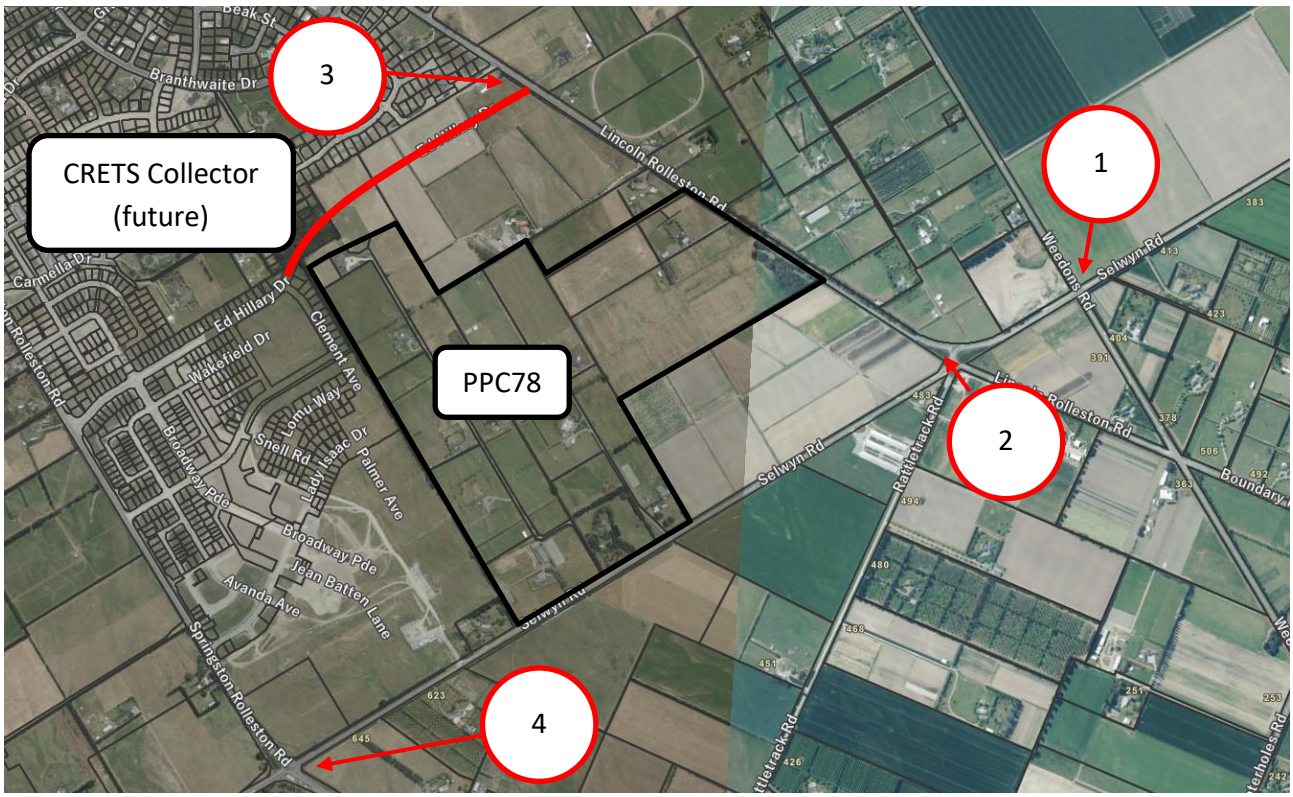
The ITA provides an assessment of the following intersections (shown in Figure 4)

1. Selwyn Road/Weedons Road intersection
2. Lincoln Rolleston Road/Selwyn Road intersection
3. Lincoln Rolleston Road/CRETS Collector Road intersection
4. Springston Rolleston Road/Selwyn Road priority intersection.

The ITA used the 2028 Rolleston Model, however this was an early version of the 2028 model discussed in Section 4. 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. Therefore, there are some differences in the performance of several intersections between the two 2028 Rolleston models (due to different model assumptions), 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 4: Intersections assessed in the ITA



5.1 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. Our review of the 2033 Rolleston Model indicates that PPC78 contributes almost 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 PPC78
- The ITA indicates that this intersection will operate acceptably in 2028 with full buildout traffic from PPC78
- The 2033 Rolleston Paramics Model indicates that this intersection 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. The ITA assumes that this intersection has been upgraded to a roundabout, and PPC78 contributes almost 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 PPC78.

5.2 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. Our review of the 2033 Rolleston Model indicates that PPC78 contributes over 5% of peak hour traffic movements at this intersection by 2033.

We have summarised the modelling results for this intersection

- The ITA indicates that, overall, this intersection will operate acceptably in 2028 with full buildout traffic from PPC78. However high delays (LOS F) occur for right turns on the Lincoln Rolleston approach during the PM peak
- The 2033 Rolleston Paramics Model indicates that, overall, this intersection will operate acceptably in 2033, with traffic from all 8 Rolleston Plan changes. However 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. PPC78 contributes over 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 PPC78.

5.3 Lincoln Rolleston Road/CRETS Collector Road 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.

The ITA has assumed that the CRETS Collector Road has been constructed between Lincoln Rolleston Road. The ITA has assumed that the intersection of the CRETS Collector Road with Lincoln Rolleston Road will be a priority controlled intersection, constructed as part of PPC75. The 2033 Rolleston Paramics model assumes that this intersection will be a roundabout.

We have summarised the modelling results for this intersection

- The ITA indicates that this intersection will operate acceptably in 2028 without any traffic from PPC78
- The ITA indicates that this intersection will operate acceptably in 2028 with full buildout traffic from PPC78
- 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/CRETS Collector Road intersection is indicated to operate acceptably in 2033 when traffic from all 8 Rolleston Plan changes is modelled. The ITA assumes that this intersection is a priority controlled intersection and will be constructed by others (as part of PPC75), whereas the 2033 Rolleston Paramics model assumes that this intersection will be a roundabout. I consider that a roundabout is a more appropriate intersection type, as it provides for improved safety outcomes.

5.4 Springston Rolleston Road/Selwyn Road intersection

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

The 2028 Rolleston Paramics Model used for the ITA assumes that this intersection remains in its current arrangement. The more recently developed 2028 and 2033 Rolleston Paramics Models, discussed in Section 4, assume that this intersection has been upgraded to a roundabout. As identified in Table 1, the intersection is programmed to have a safety upgrade between 2024/2027, which we understand includes the upgrade to a roundabout. Our review of the 2033 Rolleston Model indicates that PPC78 contributes around 3% 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 (in its current form) will be over capacity on the Selwyn Road east approach in the 2028 PM peak, without any traffic from PPC78
- The ITA indicates that this intersection (in its current form) will be over capacity on the Selwyn Road east approach in the 2028 PM peak, with full buildout traffic from PPC78
- The 2033 Rolleston Paramics Model indicates that this intersection (when upgraded to a double lane roundabout) will operate acceptably in 2033, with traffic from all 8 Rolleston Plan changes.

Outcome: The existing Lincoln Rolleston Road/Selwyn Road intersection is indicated to operate over capacity in the 2028 PM peak, without development in PPC78. With the addition of PPC78 traffic in 2028, the intersection will continue to operate over capacity in the PM peak.

The 2033 Rolleston Paramics assumes that this intersection has been upgraded to a double lane roundabout, which we understand is programmed 2024/2027. Upon upgrade, the intersection is expected to perform acceptably. PPC78 contributes around 3% 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 2024/27, and whether the current Development Contributions policy is sufficient to reflect traffic demand through this intersection generated by PPC78.

6 MY CONSIDERATION OF MATTERS NOT INCLUDED IN THE ITA

6.1 Lowes Road/Levi Drive/Masefield Drive

The 2033 Rolleston Paramics model assumes that the roundabout at this intersection is upgraded to traffic signals. The LTP has programmed funding for a safety upgrade to this intersection in 2025/26 (refer to Table 1).

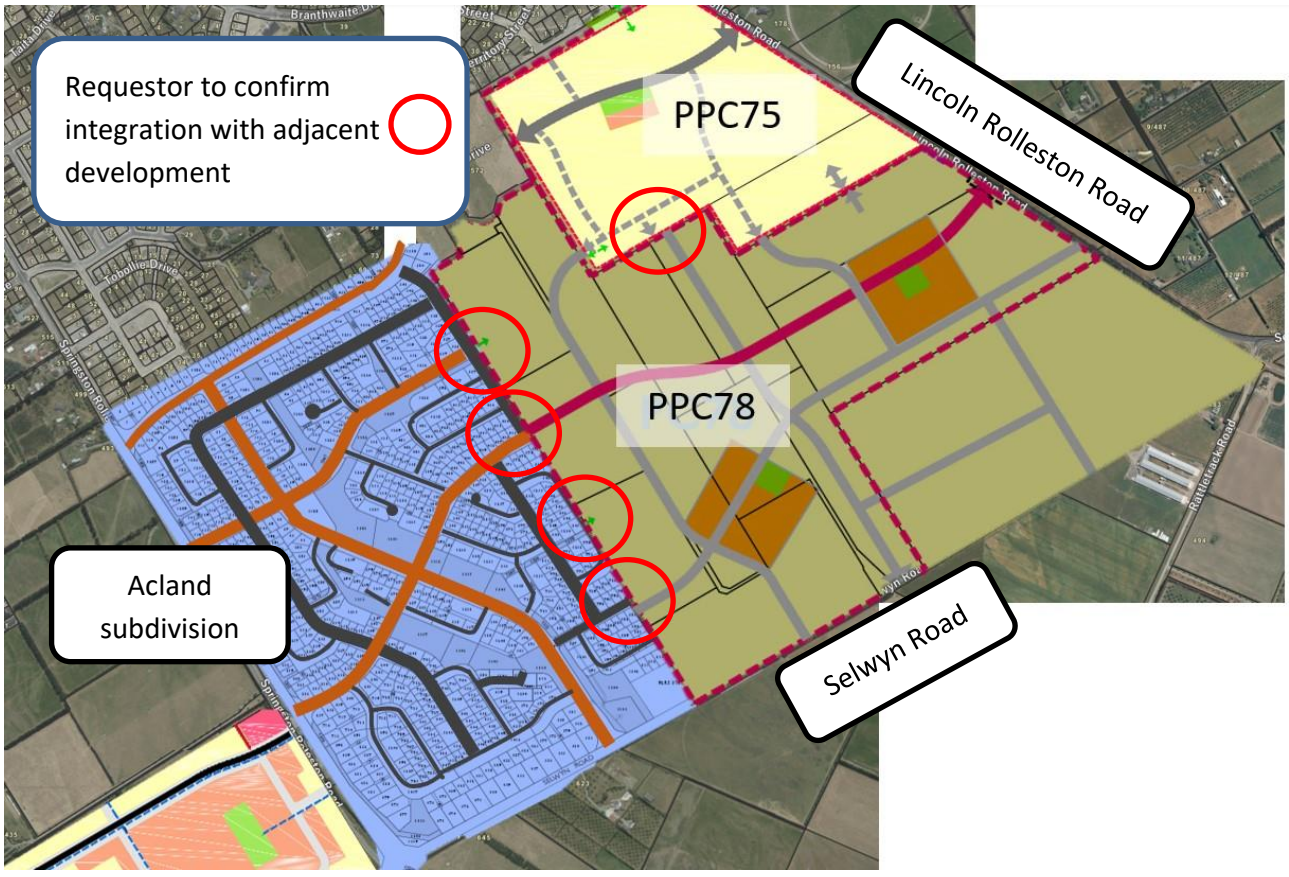
As identified in Table 3, PPC78 is expected to generate over 3% of traffic movements through this intersection in 2033. I recommend that Council consider whether the programmed funding for this intersection is sufficient to include signalisation, and whether the current Development Contributions policy is sufficient to reflect traffic demand through this intersection generated by PPC78.

Outcome: I recommend that Council consider whether the programmed funding for the Lowes Road/Levi Drive/Masefield Drive intersection is sufficient to include signalisation, as assumed in the 2033 Rolleston Paramics model, and whether the current Development Contributions policy is sufficient to reflect traffic demand through this intersection generated by PPC78.

6.2 Integration with surrounding developments

PPC78 is to the south of PPC75, and east of the Acland subdivision. I have indicatively shown the adjacent developments in Figure 5. I consider that minor amendments to boundary connections with the Acland subdivision and PPC75 may be required to ensure integration.

Figure 5: PPC76 with road networks from adjacent developments



Outcome: I consider that the proposed transport network shown in the ODP generally aligns with adjacent developments, however the requestor should confirm whether minor adjustments to the ODP are required to ensure integration.

6.3 Frontage upgrades

The AEE and ITA do not discuss frontage upgrades to Lincoln Rolleston Road or Selwyn Road. I consider that PPC78 should provide frontage upgrades, as is common practice where greenfield sites front existing rural roads and has occurred on other sections of Selwyn Road (e.g. Farringdon South and Acland subdivisions) and Lincoln Rolleston Road (Falcons Landing subdivision). Figure 8.4 of the Rolleston Structure Plan identifies that both roads are cycle routes, 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 upgrades to road frontages with Lincoln Rolleston Road and Selwyn Road are required to be delivered by the developer. I have suggested amendments to the OPD in Figure 6.

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

6.4 Provision for walking and cycling

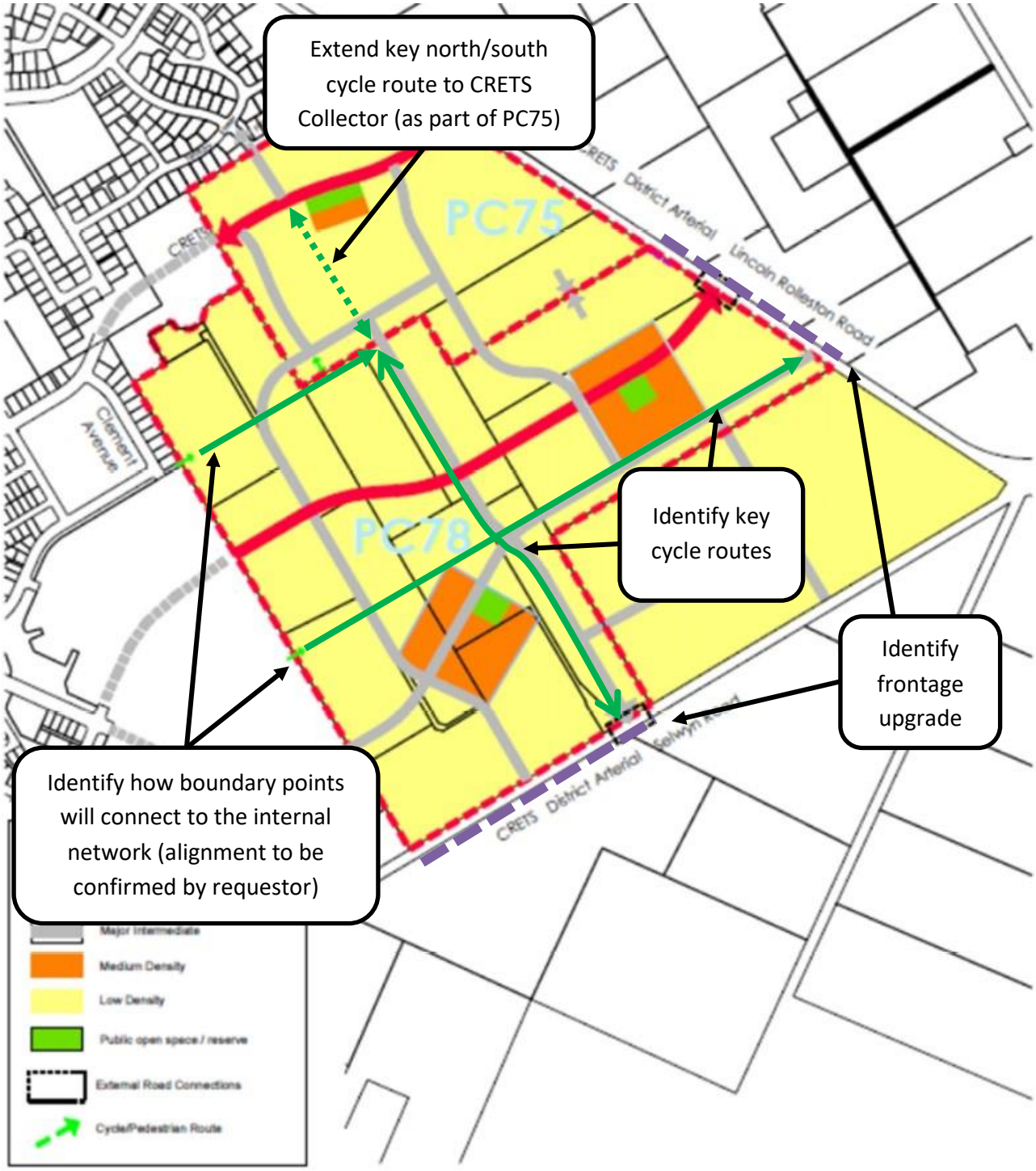
The ODP indicates several "Cycle/Pedestrian Route" connections along the boundary of PPC78 to the north and west of the site, which I understand connect with existing and/or proposed networks external to the site, such as the Acland Park Special Housing Area to the immediate west of PPC78.

However, I am uncertain how these connections will link to any walking and cycling facilities within PPC78. In my view these connections should be extended within PPC78 to connect to, and align with, the proposed road network to provide north/south and east/west cycle "spines" through PPC78. Further, Figure 8.4 of the Structure Plan identifies a key north/south cycle route through the site.

The internal walking and cycling links could follow proposed road alignments, or green networks. I have suggested amendments to the OPD in Figure 6, although alternative alignments may also be acceptable.

Outcome: I recommend that the ODP should be amended to include walking and cycling routes within PPC78, including north/south and east/west cycle routes.

Figure 6: Recommended amendments to the ODP



7 THE ROLLESTON STRUCTURE PLAN

As part of my review, I have considered the Rolleston Structure Plan (Structure Plan)[7].

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.

PPC78 sits within the anticipated urban area, as shown in Figure 7. Key aspects of the Structure Plan relevant to PPC78 include

- Lincoln Rolleston Road and Selwyn Road are both anticipated to be arterial roads
- Figure 8.4 of the Structure Plan identifies a key north/south cycle route through the site, and along Lincoln Rolleston Road and Selwyn Road
- the CRETS Collector Road is intended to pass through the northern section of PPC78. PPC78 does not provide for the CRETS Collector Road, as it is anticipated to be delivered by PPC75 via the extension of Ed Hillary Drive.

Outcome: PPC78 is generally consistent with the Rolleston Structure Plan. It does not provide for the alignment of the CRETS Collector Road, however this is anticipated to be delivered by PPC75 via the extension of Ed Hillary Drive, which I understand is consistent with the current thinking of Council's Transportation team. PPC78does not provide for a key north/south cycle route through the site, which I recommend be identified in the ODP.

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

Figure 7: Rolleston Structure Plan with PPC78 location

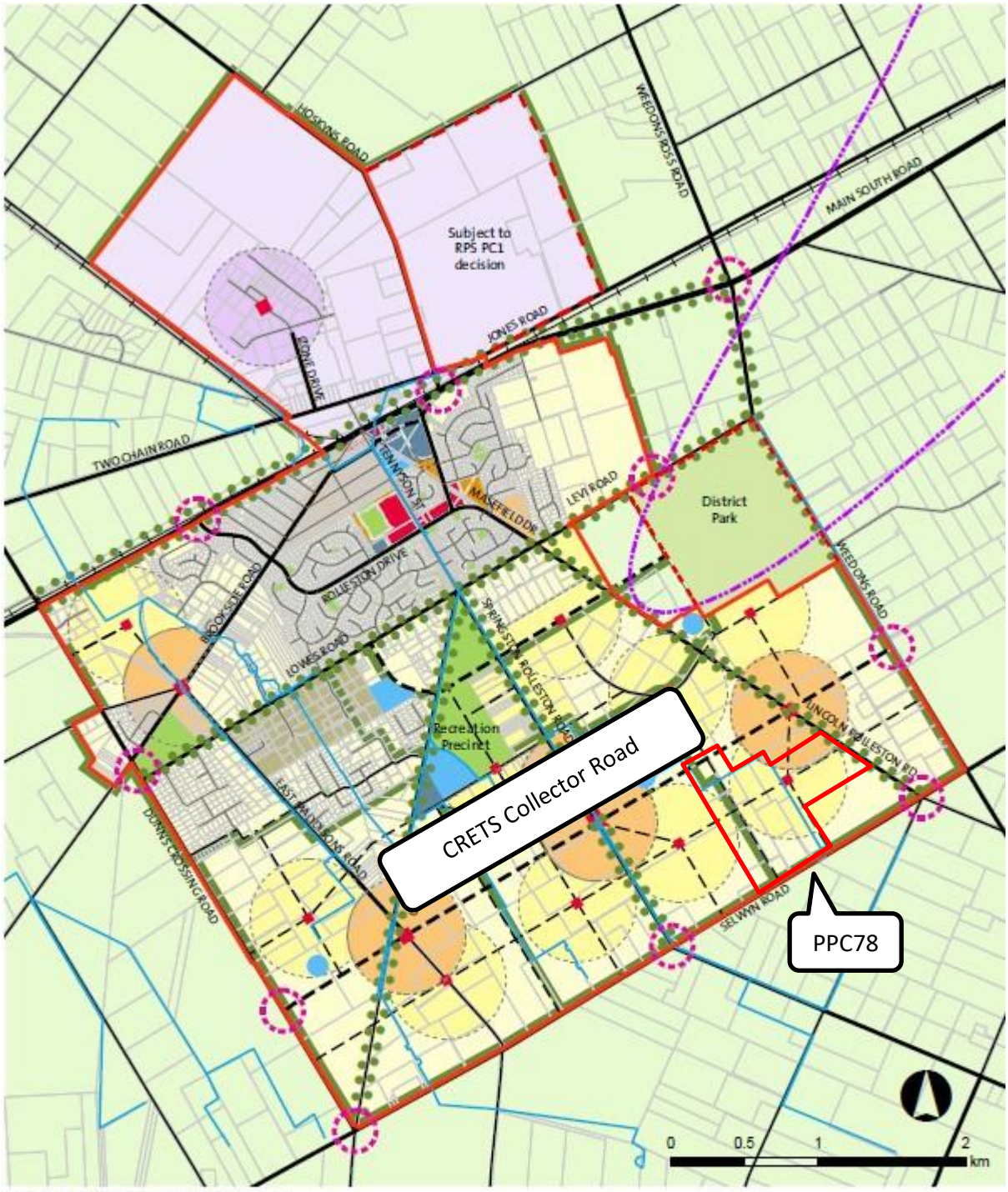
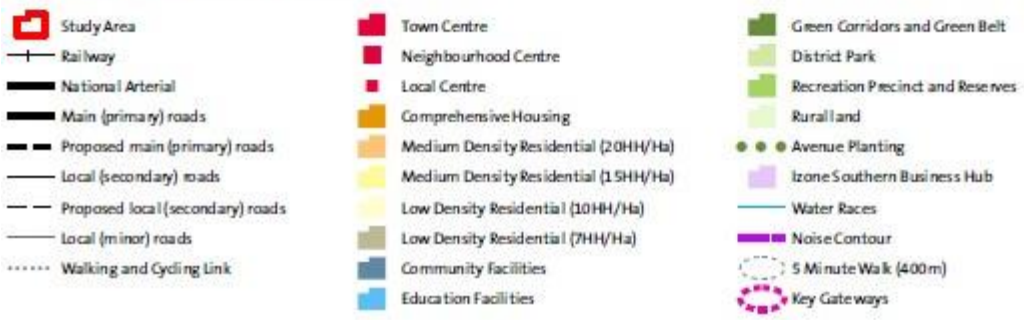


Figure 5.2: Rolleston Structure Plan



8 MY REVIEW OF SUBMISSIONS

8.1 Submissions

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

- Equitable and efficient provision of infrastructure within the site
- Provision of public transport
- Walking and cycling facilities within the site.

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 equitable and efficient provision of infrastructure within the site is within the scope of the Plan Change
- Council's Planner consider whether the proposed zoning unnecessarily restricts the potential residential density of the site
- 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 PPC78 application documents, responses to Council information requests, and submissions.

In terms of the immediate effects of PPC78, and the proposed ODP

- I consider that the proposed transport network shown in the ODP generally aligns with adjacent developments, however the requestor should confirm whether minor adjustments to the ODP are required to ensure integration. Refer to my discussion in Section 6.2
- I recommend that the ODP indicates frontage upgrades for Lincoln Rolleston Road and Selwyn Road. Detailed upgrades of these roads 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 6.3
- I recommend that the ODP should be amended to include walking and cycling routes within PPC78, including north/south and east/west cycle routes. Refer to my discussion in Section 6.4
- PPC78 is generally consistent with the Rolleston Structure Plan. It does not provide for the alignment of the CRETS Collector Road, however this is anticipated to be delivered by PPC75 via the extension of Ed Hillary Drive, which I understand is consistent with the current thinking of Council's Transportation team. PPC78 does not provide for a key north/south cycle route through the site, which I recommend be identified in the ODP. 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 PPC78 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. This is consistent with the requestors response to Council's Information Request Question 2. 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. Refer to my discussion in Section 4
- The Selwyn Road/Weedons Road intersection is indicated to operate acceptably in 2033 when traffic from all 8 Rolleston Plan changes is modelled. The ITA assumes that this intersection has been upgraded to a roundabout, and PPC78 contributes almost 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 PPC78. Refer to my discussion in Section 5.1
- 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 over 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 PPC78. Refer to my discussion in Section 5.2

- The Lincoln Rolleston Road/CRETS Collector Road intersection is indicated to operate acceptably in 2033 when traffic from all 8 Rolleston Plan changes is modelled. The ITA assumes that this intersection is a priority controlled intersection and will be constructed by others (as part of PPC75), whereas the 2033 Rolleston Paramics model assumes that this intersection will be a roundabout. I consider that a roundabout is a more appropriate intersection type, as it provides for improved safety outcomes. Refer to my discussion in Section 5.3
- The existing Lincoln Rolleston Road/Selwyn Road intersection is indicated to operate over capacity in the 2028 PM peak, without development in PPC78. With the addition of PPC78 traffic in 2028, the intersection will continue to operate over capacity in the PM peak. The 2033 Rolleston Paramics assumes that this intersection has been upgraded to a double lane roundabout, which we understand is programmed 2024/2027. Upon upgrade, the intersection is expected to perform acceptably. PPC78 contributes around 3% 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 2024/27, and whether the current Development Contributions policy is sufficient to reflect traffic demand through this intersection generated by PPC78. Refer to my discussion in Section 5.4
- I recommend that Council consider whether the programmed funding for the Lowes Road/Levi Drive/Masefield Drive intersection is sufficient to include signalisation, as assumed in the 2033 Rolleston Paramics model, and whether the current Development Contributions policy is sufficient to reflect traffic demand through this intersection generated by PPC78. Refer to my discussion in Section 6.1.

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 PPC78 will generate safety and efficiency effects on the wider transport network, however these are more appropriate to be addressed by Council due to PPC78 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
PC78-0001/002 (Selwyn 564 Ltd)	Raises a concern regarding the fragmented ownership within PPC78 and seeks an agreement administered by Selwyn District Council to allow a methodology for all lots within PPC78 to have accesses to necessary infrastructure services. The submitter requests that all current land owners are required to enter into an agreement for the delivery of services, and suggests that Council's "Point Strip Policy" provides an example of how this might work.	In my view fragmented ownership within an ODP area can result in inequitable costs or delayed delivery of infrastructure in some cases. However, I am unsure whether requiring all land owners within PPC78 to enter into an infrastructure agreement is within the scope of a Plan Change. Further, I am not familiar with Council's Point Strip Policy or whether this provides an appropriate framework to address the submitters concerns.	Neither support nor oppose. I recommend that Council's Planner considers whether the requested relief is within the scope of a Plan Change.
PC78-0002/001 (CCC)	The submitter seeks an urban form and development controls to ensure a funded and implemented public transport system to service the site, including connections to Christchurch City, prior to any residential development.	I consider that the ODP provides for a transport network within PPC78 that does not preclude the efficient provision of public transport services. The network within PPC78 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
PC78-0002/002 (CCC)	The proposal seeks a minimum density of 12 households per hectare. The Council seeks a higher minimum density requirement of 15 households/hectare. This is consistent with the Greater Christchurch Partnership's report on density. Increased densities would better achieve efficiencies in coordination of land use and infrastructure, support mixed land use, support multi-modal transport systems and protect the productive land resource.	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 PPC78. 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 PPC78 would have on the transport network.	Support in part, however the transport effects of the requested relief would require assessment.
PC78-0003/001 (MoE)	The outline development plan (ODP) of the site shows the proposed roading and cycle/pedestrian connections between Private Plan Change 75 (PPC75), PPC78, and the surrounding environment including to Te Rōhutu Whio. However, the ODP does not specify cycle/pedestrian routes within the site. Therefore, there is no indication of how the proposed cycle/pedestrian connections between Te Rōhutu Whio and the PPC78 site then connect to the network of roads and cycle/pedestrian routes within the PPC78 site. The Ministry is generally supportive of infrastructure to encourage modes of active travel such as walking and cycling. However, as the connections are unclear in the ODP, the Ministry is unable to assess whether adequate provisions are in place to ensure safe and accessible travel routes are proposed for school staff and students traveling to and from school	I agree with the submitter that the ODP is somewhat unclear about how the proposed cycle/pedestrian connections at the boundaries of the site will connect within the site. I also note that the Rolleston Structure Plan indicates a key north/south cycle route through the site. Refer to my discussion in Section 6.4.	Support. Refer to my discussion in Section 6.4.

PC78-0004/002 (ECan)	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.

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

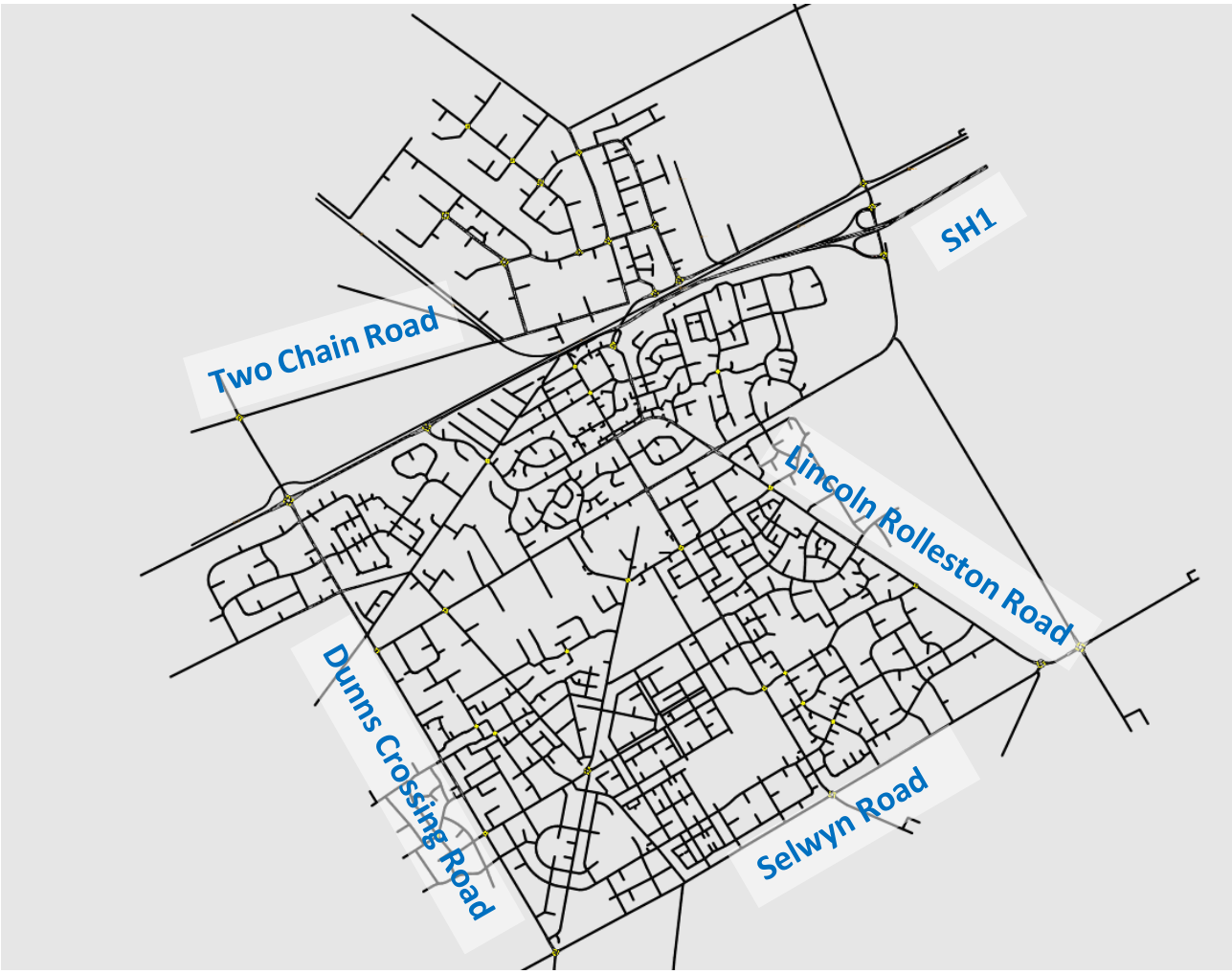
This technical note provides a summary of the traffic modelling assessment completed for Private Plan Change 73 (PPC73) in Rolleston, Selwyn District. The assessment has been based on the Paramics model developed by Abley Limited (Abley). This model was developed in May 2021 and it assumes a 2033 background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

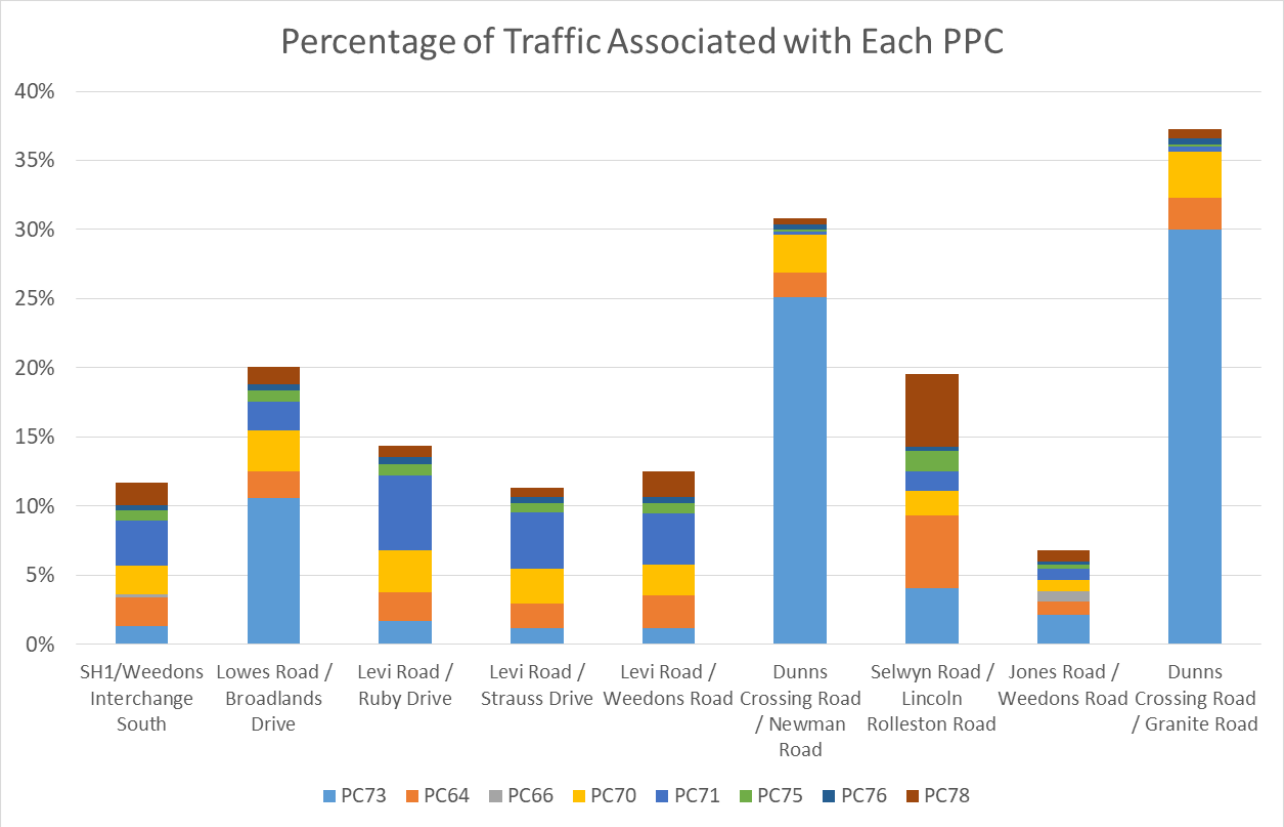


Table 2: 2033 network performance and individual PPC effects

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.

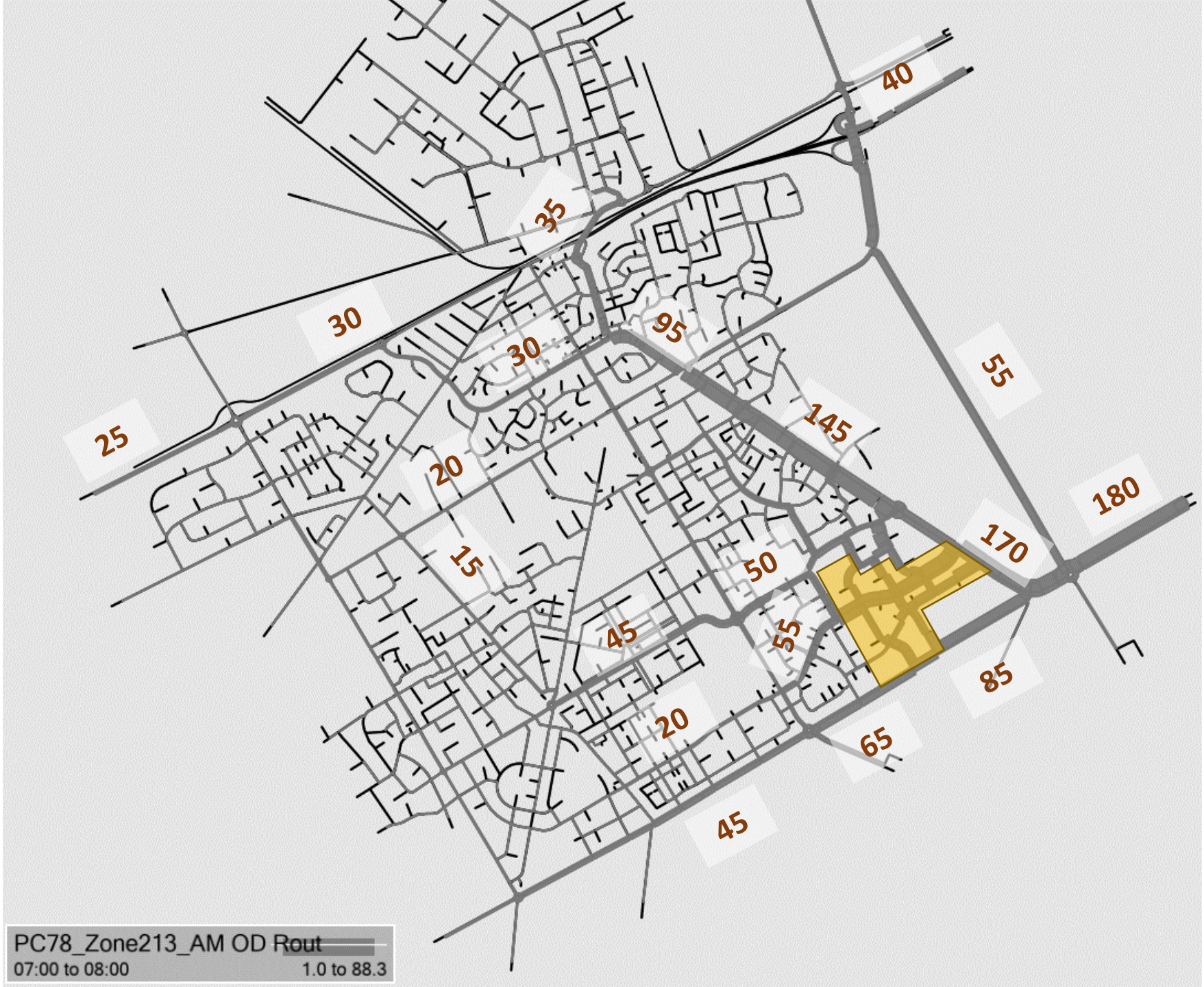
Intersection	Existing Layout	Intersection form assumed in models (2028/2033)	2028 performance without PPCs	2033 performance with all 8 PPCs	2033 traffic movements With all PPCs (AM and PM combined)	Percentage of traffic associated with each PPC as a proportion of total traffic movements through each 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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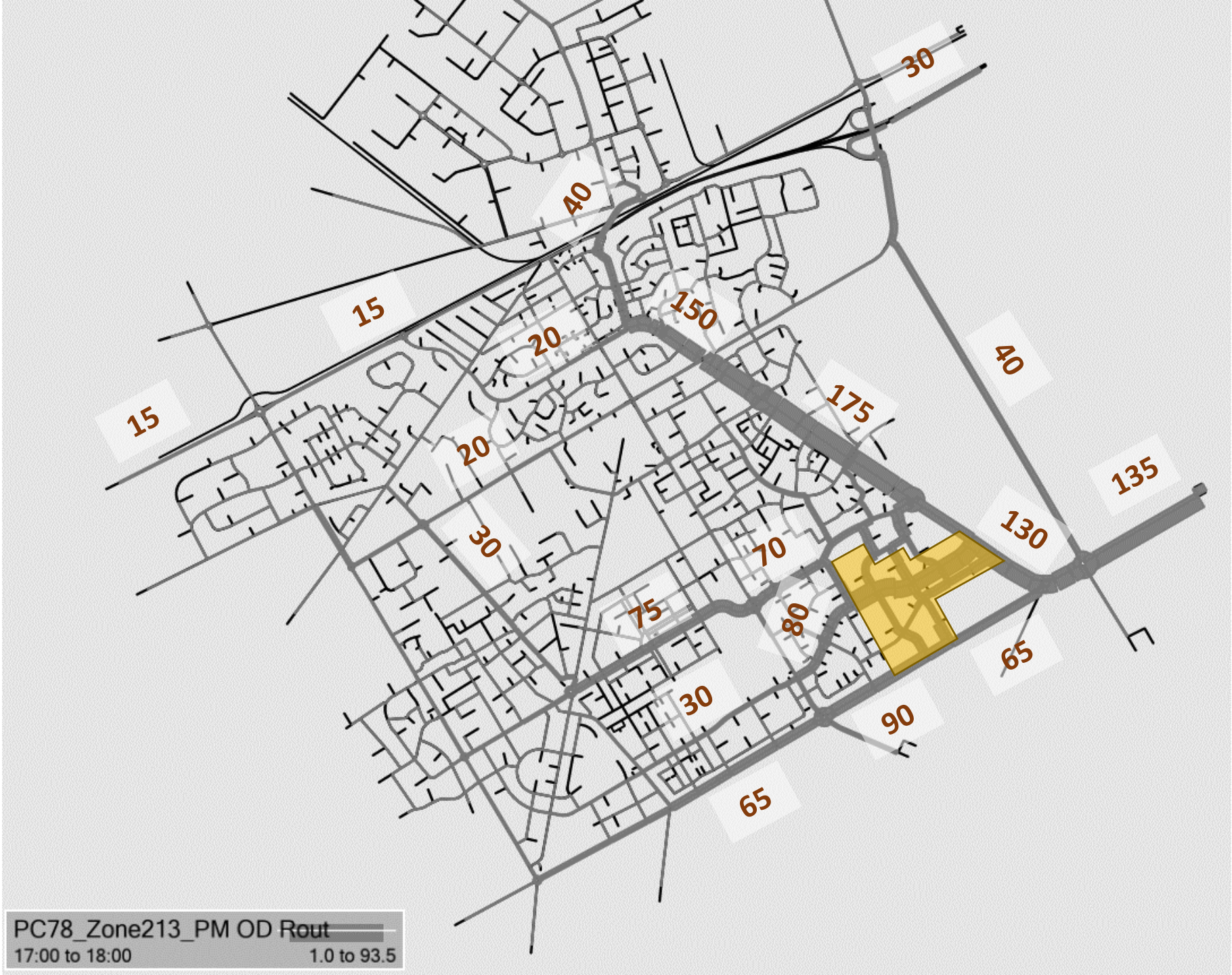
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17:00 to 18:00
1.0 to 93.5