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Aston Consultants
Attention: Fiona Aston

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PLAN CHANGE 71 ROLLESTON TRANSPORT RFI RESPONSE:

1. Please find below a response to the transport matters raised in the RFI response from Selwyn District Council in respect of Plan Change 71 in Rolleston. Each matter has been responded to in turn.

The Application refers to Council undertaking an upgrade of the Levi/Lowes/Masefield Dr/Lincoln Rolleston Rd intersection. This is proposed for 2025/26 In the Draft Long Term Plan. While I originally envisaged a roundabout, recent work undertaken with the SH1/Rolleston Access Business Case with the NZTA suggested traffic signals, with this PC and likely development and more pedestrians cyclists in the area this would add weight to this. LTP funding should cover either decision but if this PC was approved it would likely cement traffic signals relating to the extra local traffic generated in the area.

2. Noted, we support the adoption of traffic signals at this intersection.

The alteration of original ODP 4 is really important to get that section of Broadlands Dr to line up across Lincoln Rolleston Road.

3. Agreed, it is understood that changes to this ODP are being sought through the District Plan Review to ensure the alignment of Broadlands Drive.

Note that a section of Broadlands Dr ext is still under the noise contours – I pushed back on that originally as that section would be on unzoned land and they could build it to a lesser standard, but if they build it to a full urban standard from the outset to service any future urban development inside the contour area if its lifted, then that's OK so we then don't have any inconsistencies of standard from the outset or asked to upgrade it later on if the contours get pulled back.

4. It is proposed that Broadlands Drive would be constructed to the Local Major Standards of the District Plan (being 16-20m legal, 8.5-9m carriageway) and footpath on at least one side and with provision for connection to the existing cycleway on Lincoln Rolleston Road.

I note a couple of LoS E issues with the Ruby Drive/new ODP road intersection etc on Levi Rd. As Levi Rd is the main arterial route from the Weedons Interchange it is important that this route is still effective. I would like to query what more could be considered here.

5. This relates to the through and right turn volumes from the proposed Road, rather than relating to traffic on the Levi Road approaches. As such, the efficiency of Levi Road would not be affected. It is noted that LOS E is generally considered acceptable in peak hour conditions, it also affects only the proposed road with Levi Road and Ruby Road approaches all operating at LOS A-C.

6. A preliminary analysis suggested that providing additional lanes on the minor arms or median strips did not improve the performance of the right and through movements from the proposed road. A roundabout could be considered, although this would likely reduce efficiency for traffic on Levi Road and risk encouraging undesirable short-cutting through the Plan Change Area (i.e., avoiding the arterial route along Lincoln Rolleston Road, Levi Road).

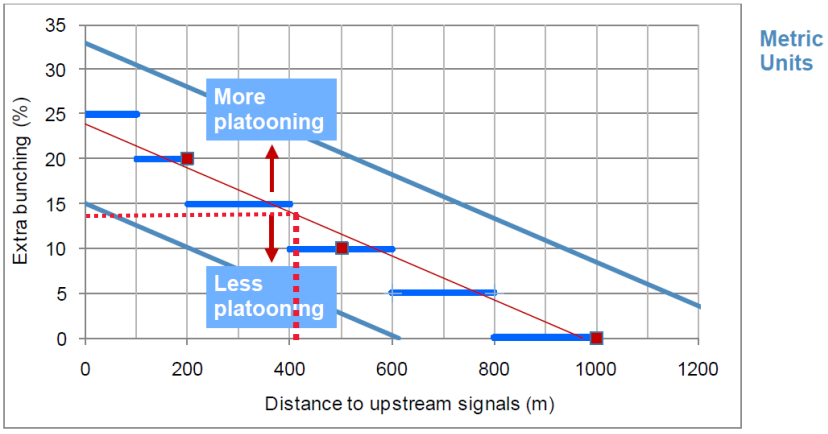
7. In terms of traffic flows, it is noted that a reasonably high proportion of traffic generated by the Plan Change area has been attributed to the Levi Road – Ruby Drive intersection (noting the direct link to the State highway). During the peak hours, a higher delay for right turning vehicles may result in some of that traffic, particularly from the southern end of the Plan Change area diverting via Broadlands Drive and using the proposed roundabout to turn onto Lincoln Rolleston Road and then the future signals to turn right from Lincoln Rolleston Road onto Levi Road. Noting there is ample capacity at the Broadlands Drive roundabout (refer to the SIDRA Results in the TA) this would be acceptable.

8. Regardless of the above, we have reassessed the capacity of the Levi Road / Ruby Drive / Proposed Road intersection in light of the proposed traffic signals at the Levi Road / Lincoln Rolleston Road / Lowes Road / Masefield Drive intersection. The traffic lights will result in some bunching of traffic (i.e., gaps in traffic will occur between signal phases), which will make it easier to turn at the Levi Road - Ruby Road intersection.

9. The Levi Road / Ruby Drive intersection is approximately 420m from the Lincoln Rolleston Road - Levi Road intersection and based on Table 5.2.1 of the Sidra Intersection User Guide a bunching factor of approximately 13% is appropriate.

Table 5.2.1 - A rough guide for specifying Extra Bunching when the Input option is selected

Distance to upstream signals (m)	< 100	100-200	200-400	400-600	600-800	> 800
(ft)	< 350	350-700	700-1300	1300-2000	2000-2600	> 2600
Extra bunching (%)	25	20	15	10	5	0



10. Once this is applied to the SIDRA Model the through and right turn movements are predicted to operate at LOS D[1] in the morning peak hour as shown in the movement summaries in **Attachment 1**. In the evening peak hour, the right turn movement remains at LOS E but with a delay of 35.9 seconds it is on the threshold with LOS D (being 25-35 seconds). There is a relatively small volume undertaking this right turn movement (26 vehicles per hour) and as outlined above there are alternative routes available if drivers find this delay to be unacceptable.

11. For these reasons we consider that the basic intersection layout shown in the TA and signalisation of the Levi Road, Lincoln Rolleston Road, Lowes Road, Masefield Drive intersection is the most preferable outcome.

On the ODP it shows these ped/cycle connections which is fine, but I would like to see these as also able to accommodate roading as well in case there is a need to service the District Park with say road extensions into it to for carparks etc. Maybe a "future transport link"?

12. It is agreed these should be amended to allow flexibility over the use of these links.

As per normally expected the frontages of Lincoln Rolleston Rd and Levi Road are to be upgraded to an urban standard as will be expecting direct lot access. Same with ODP4 to be consistent.

13. Noted / agreed.

14. We trust the above will address the transport related questions raised by Council, however, should you require any further clarification, please do not hesitate to contact me directly.

Yours sincerely,

Novo Group Limited

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[1] The operation is well within the LOS D range being 32.9 seconds delay (LOS D ranging from 25-35 seconds).

ATTACHMENT 1: SIDRA RESULTS – LEVI ROAD / RUBY ROAD INTERSECTION WITH BUNCHING

MOVEMENT SUMMARY

Site: 101 [Levi Ruby Rd Extension 2028 - AM - with Bunching (Site Folder: General)]

Levi Ruby Rd Extension 2028
Site Category: Future Conditions 1
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Proposed Road														
1	L2	34	5.0	36	5.0	0.027	5.3	LOS A	0.1	0.8	0.30	0.53	0.30	48.8
2	T1	9	5.0	9	5.0	0.669	27.9	LOS D	3.1	22.5	0.93	1.17	1.63	34.4
3	R2	128	5.0	135	5.0	0.669	32.9	LOS D	3.1	22.5	0.93	1.17	1.63	35.9
Approach		171	5.0	180	5.0	0.669	27.1	LOS D	3.1	22.5	0.80	1.04	1.36	37.8
East: Levi Road														
4	L2	12	5.0	13	5.0	0.130	9.8	LOS A	0.2	1.9	0.11	0.05	0.11	52.8
5	T1	202	10.0	213	10.0	0.130	0.6	LOS A	0.2	1.9	0.11	0.05	0.11	58.6
6	R2	7	5.0	7	5.0	0.130	12.2	LOS B	0.2	1.9	0.11	0.05	0.11	52.6
Approach		221	9.6	233	9.6	0.130	1.4	NA	0.2	1.9	0.11	0.05	0.11	58.0
North: Ruby Road														
7	L2	45	5.0	47	5.0	0.151	10.1	LOS B	0.5	3.8	0.73	0.87	0.73	44.8
8	T1	2	5.0	2	5.0	0.151	15.9	LOS C	0.5	3.8	0.73	0.87	0.73	42.4
9	R2	12	5.0	13	5.0	0.151	21.1	LOS C	0.5	3.8	0.73	0.87	0.73	44.6
Approach		59	5.0	62	5.0	0.151	12.5	LOS B	0.5	3.8	0.73	0.87	0.73	44.7
West: Levi Road														
10	L2	28	5.0	29	5.0	0.491	6.8	LOS A	0.8	6.0	0.07	0.05	0.07	53.3
11	T1	803	10.0	845	10.0	0.491	0.2	LOS A	0.8	6.0	0.07	0.05	0.07	59.2
12	R2	45	5.0	47	5.0	0.491	7.2	LOS A	0.8	6.0	0.07	0.05	0.07	53.3
Approach		876	9.6	922	9.6	0.491	0.7	NA	0.8	6.0	0.07	0.05	0.07	58.7
All Vehicles		1327	8.8	1397	8.8	0.669	4.8	NA	3.1	22.5	0.20	0.21	0.28	54.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.

MOVEMENT SUMMARY

Site: 101 [Levi Ruby Rd Extension 2028 PM - With Bunching (Site Folder: General)]

Levi Ruby Rd Extension 2028
Site Category: Future Conditions 1
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Proposed Road														
1	L2	54	5.0	57	5.0	0.293	11.3	LOS B	1.0	7.0	0.76	0.90	0.82	42.6
2	T1	4	5.0	4	5.0	0.293	28.9	LOS D	1.0	7.0	0.87	0.98	1.01	37.0
3	R2	26	5.0	27	5.0	0.293	35.9	LOS E	1.0	7.0	0.87	0.98	1.01	38.7
Approach		84	5.0	88	5.0	0.293	19.7	LOS C	1.0	7.0	0.80	0.93	0.89	41.0
East: Levi Road														
4	L2	96	5.0	101	5.0	0.525	7.3	LOS A	1.5	11.4	0.13	0.08	0.18	52.7
5	T1	788	10.0	829	10.0	0.525	0.5	LOS A	1.5	11.4	0.13	0.08	0.18	58.5
6	R2	41	5.0	43	5.0	0.525	9.5	LOS A	1.5	11.4	0.13	0.08	0.18	52.4
Approach		925	9.3	974	9.3	0.525	1.6	NA	1.5	11.4	0.13	0.08	0.18	57.5
North: Ruby Road														
7	L2	13	5.0	14	5.0	0.246	8.0	LOS A	0.8	5.6	0.82	0.90	0.90	38.6
8	T1	2	5.0	2	5.0	0.246	31.0	LOS D	0.8	5.6	0.82	0.90	0.90	36.8
9	R2	26	5.0	27	5.0	0.246	34.2	LOS D	0.8	5.6	0.82	0.90	0.90	38.4
Approach		41	5.0	43	5.0	0.246	25.7	LOS D	0.8	5.6	0.82	0.90	0.90	38.4
West: Levi Road														
10	L2	20	5.0	21	5.0	0.332	15.1	LOS C	1.8	13.8	0.38	0.10	0.48	50.2
11	T1	392	10.0	413	10.0	0.332	3.1	LOS A	1.8	13.8	0.38	0.10	0.48	55.4
12	R2	47	5.0	49	5.0	0.332	15.9	LOS C	1.8	13.8	0.38	0.10	0.48	50.2
Approach		459	9.3	483	9.3	0.332	5.0	NA	1.8	13.8	0.38	0.10	0.48	54.6
All Vehicles		1509	8.9	1588	8.9	0.525	4.3	NA	1.8	13.8	0.26	0.16	0.33	54.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.

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

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

Queue Model: SIDRA Standard.

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

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