Before the Selwyn District Council

under: the Resource Management Act 1991

in the matter of: Proposed Private Plan Change 80 to the Operative District Plan

and: **Two Chain Road Limited**
Applicant

Summary of evidence of Chris Blackmore (transport modelling)

Dated: 20 October 2022

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SUMMARY OF EVIDENCE OF CHRIS BLACKMORE

1 My full name is Christopher John Blackmore. I hold the position of Senior Transportation Planner at Abley.

2 I have undertaken modelling of the future transport environment using the Rolleston Paramics microsimulation model. The model was updated in 2019 for Council by myself and the Abley team and has subsequently been used to support transportation planning across the township.

3 Following Mr Collins' review of the modelling presented in his Transport Hearing Report, I have revisited several assumptions and updated the modelling accordingly for Mr Fuller's consideration. This update addresses the difference in activity between the modelling undertaken as part of the individual PC81 and PC82 transport assessments and how the combined western boundary plan changes interact with Plan Change 80. This modelling is consistent with the updated traffic modelling presented at the recent Hearing for Plan Changes 81 and 82. I consider this represents a consolidated assessment for the Rolleston Plan Changes. The updated results are appended to this summary as **Appendix 1**.

4 As noted by Mr Collins and Mr Fuller, the amount of activity in the model is in excess of the Waka Kotahi Rolleston NZUP 2038 project model. The plan change model represents a full development scenario and includes all currently zoned residential, commercial, and industrial land, as well as development of the private plan changes lodged and assessed at this time.

5 As such the 2033 future year is a nominal year which corresponds to the full development of all of the Plan Changes that have been lodged and assessed, and based on Statistics New Zealand growth forecasts is realistically a high growth 35 year forecast model.

6 Updated modelling results demonstrate that in the morning peak hour the State Highway 1/ Dunns Crossing Road/ Walkers Road roundabout operates acceptably at LOS D for the intersection overall. The northern Walkers Road approach operates at LOS D, indicating that approach is operating withing capacity limits. The 38 seconds of total delay on the Walkers Road approach accounts for all delay on the approach experienced by average vehicles including stop-line delay, any delay experienced traversing the roundabout, and reduction in free-flow speed travelling as part of a rolling queue while approaching the roundabout.

7 In the evening peak hour modelling results indicate that the northern Walkers Road approach operates at LOS E, with 68 seconds of delay. This indicates that the Walkers Road approach is approaching the

functional capacity limit in the evening peak hour when all current plan change proposal developments are included.

8 As part of assessing the effects of PC81 and PC82 Mr Fuller has also asked me to undertake a modelling sensitivity test to explore the impact of altering the infrastructure constructed at the State Highway 1/ Rolleston Drive South intersection as part of the Waka Kotahi State Highway 1 Rolleston Transport Improvements programme, from the proposed left-in left-out configuration to an appropriately sized roundabout. These tests are relevant to Plan Change 80 and I have summarised them here also.

9 It is my view that overall, the operation of the State Highway 1 connections to Rolleston operate much more efficiently with the inclusion of the State Highway 1/ Rolleston Drive South roundabout.

10 The additional connectivity leads to reductions in circulating volumes at the State Highway 1/ Dunns Crossing Road/ Walkers Road roundabout of between 15% and 20% in the morning peak hour. Delays are also significantly improved, with a reduction of 36 seconds of delay on the Dunns Crossing Road southern approach and a 12 second reduction in delay on the intersection overall. Improving the performance of the southern approach reduces the number of gaps available for the Walkers Road approach, leading to an increase in delay of 16 seconds for Walkers Road although the level of service in unchanged at LOS D. In my opinion the overall intersection performance improves such that the outcome would still generally be preferred in practice. The changes are indicated in the results contained in Appendix 1 (refer to 'With Rolleston Dr S RBT' columns).

11 A second test was also requested by Mr Fuller comprising of converting the State Highway 1/ Dunns Crossing Road/ Walkers Road roundabout to an appropriately sized traffic-signal controlled crossroads, while maintaining the State Highway 1/ Rolleston Drive South intersection as a left-in left-out only, priority-controlled intersection.

12 My modelling of this intersection configuration demonstrates a significant increase in capacity at the State Highway 1/ Dunns Crossing Road/ Walkers Road intersection, compared to the currently proposed roundabout configuration. Vehicle delay on the Dunns Crossing Road southern approach reduces in peak hour from 97s to 48s, while intersection delay and the delay on Walkers Road remain similar overall (refer to 'With Signalised Crossroads' column in Appendix 1).

13 In my opinion the intersection layout demonstrates sufficient reserve capacity to be operated in a way which maintains low delays along

the State Highway while providing a higher level of flexibility than a roundabout configuration.

14 I consider that the modelling has been undertaken in line with best practice and appropriately demonstrates the cumulative effects of the Plan Changes on the Rolleston transport network.

Dated: 20 October 2022

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Chris Blackmore

APPENDIX ONE – STATE HIGHWAY 1/ DUNNS CROSSING ROAD/ WALKERS ROAD INTERSECTION PERFORMANCE

SH1 / Dunns Crossing Road / Walkers Road roundabout

		Updated Baseline 07:00 to 08:00						With Rolleston Dr S Rbt 07:00 to 08:00						With Signalised Corssroads 07:00 to 08:00					
Approach	Movement	Flow	Max Delay	Avg Delay	LOS	Approach delay	Approach LOS	Flow	Max Delay	Avg Delay	LOS	Approach delay	Approach LOS	Flow	Max Delay	Avg Delay	LOS	Approach delay	Approach LOS
Walkers Road North	Left	26	96	19	B	38	D	37	156	31	C	54	D	27	95	44	D	48	D
Walkers Road North	Through	88	136	43	D			83	291	65	E			89	128	50	D		
Walkers Road North	Right	23	115	43	D			24	211	51	D			24	100	46	D		
SH1 East	Left	91	13	5	A	8	A	83	11	5	A	7	A	70	73	21	C	46	D
SH1 East	Through	731	37	8	A			708	26	7	A			711	173	49	D		
SH1 East	Right	157	35	11	B			128	31	9	A			140	105	42	D		
Dunns Crossing Road South	Left	113	306	75	F	97	F	136	159	42	D	61	E	137	128	40	D	48	D
Dunns Crossing Road South	Through	194	402	128	F			240	234	82	F			244	130	42	D		
Dunns Crossing Road South	Right	559	362	91	F			540	211	57	E			727	150	52	D		
SH1 West	Left	139	74	21	C	37	D	92	82	22	C	32	C	129	82	31	C	35	C
SH1 West	Through	416	179	30	C			575	152	30	C			418	95	34	C		
SH1 West	Right	214	219	60	E			96	164	50	D			223	86	38	D		
Intersection Total		2752		46	D	46	D	2739		34	C	34	C	2938		44	D	44	D

SH1 / Dunns Crossing Road / Walkers Road roundabout

		Updated Baseline 17:00 to 18:00						With Rolleston Dr S Rbt 17:00 to 18:00						With Signalised Crossroads 17:00 to 18:00					
Approach	Movement	Flow	Max Delay	Avg Delay	LOS	Approach delay	Approach LOS	Flow	Max Delay	Avg Delay	LOS	Approach delay	Approach LOS	Flow	Max Delay	Avg Delay	LOS	Approach delay	Approach LOS
Walkers Road North	Left	51	167	27	C	68	E	67	100	23	C	33	C	58	114	45	D	47	D
Walkers Road North	Through	246	247	76	F			264	136	35	D			264	126	48	D		
Walkers Road North	Right	57	226	72	F			69	123	36	D			69	122	48	D		
SH1 East	Left	649	54	12	B	16	B	604	21	7	A	10	B	607	68	24	C	32	C
SH1 East	Through	773	90	19	B			750	61	12	B			758	95	37	D		
SH1 East	Right	100	82	22	C			81	47	14	B			100	90	39	D		
Dunns Crossing Road South	Left	89	24	6	A	12	B	103	22	6	A	11	B	88	90	36	D	43	D
Dunns Crossing Road South	Through	149	51	14	B			144	56	14	B			148	162	48	D		
Dunns Crossing Road South	Right	254	77	13	B			146	55	12	B			255	125	42	D		
SH1 West	Left	78	21	6	A	9	A	50	15	5	A	6	A	71	68	28	C	34	C
SH1 West	Through	499	47	8	A			606	29	6	A			497	92	34	C		
SH1 West	Right	220	47	13	B			134	29	9	A			224	93	37	D		
Intersection Total		3165		19	B	19	B	3017		12	B	12	B	3139		36	D	36	D