

UNDER

The Resource Management Act
1991

IN THE MATTER OF

of a Private Plan Change
Request by P G Harris to the
Waimakariri District Plan (Plan
Change 028) at 116, 136 & 148
McHughs Road, Mandeville

STATEMENT OF EVIDENCE OF ANDREW DAVID CARR

10 NOVEMBER 2016

1. INTRODUCTION

Qualifications and Experience

- 1.1 My full name is Andrew (Andy) David Carr.
- 1.2 I am a Chartered Professional Engineer and an International Professional Engineer (New Zealand section of the register). I hold a Masters degree in Transport Engineering and Operations and also a Masters degree in Business Administration.
- 1.3 I am a member of the national committee of the Resource Management Law Association and a past Chair of the Canterbury branch of the organisation. I am also a Member of the Institution of Professional Engineers New Zealand, and an Associate Member of the New Zealand Planning Institute.
- 1.4 I have more than 27 years' experience in traffic engineering, over which time I have been responsible for investigating and evaluating the traffic and transportation impacts of a wide range of land use developments, both in New Zealand and the United Kingdom.
- 1.5 I am presently a director of Carriageway Consulting Ltd, a specialist traffic engineering and transport planning consultancy which I founded in early 2014. My role primarily involves undertaking and reviewing traffic analyses for both resource consent applications and proposed plan changes for a variety of different development types, for both local authorities and private organisations. I am also a Hearings Commissioner and have acted in that role for Greater Wellington Regional Council, Ashburton District Council, Waimakariri District Council and Christchurch City Council.
- 1.6 Prior to forming Carriageway Consulting Ltd I was employed by traffic engineering consultancies where I had senior roles in developing the business, undertaking technical work and supervising project teams primarily within the South Island.
- 1.7 I have carried out a number of commissions which have involved assessing the traffic and transportation effects of residential development and private plan change requests. These include plan

changes to facilitate 2,300 residences (Christchurch City Plan Change 30), 1,600 residences (Queenstown Lakes Plan Change 45), 450 residences (Selwyn District Plan Change 24), 800 residences (Waimakariri District Plan Changes 11 and 12) as well as numerous others.

- 1.8 I have also provided advice to a number of local authorities with regard to incoming plan change requests including plan changes 18, 20 and 22 for Waimakariri District Council, and plan changes 28, 36 and 41 for Selwyn District Council.
- 1.9 As a result of my experience, I consider that I am fully familiar with the particular traffic-related issues associated with plan changes and developments of this nature.
- 1.10 Although this is a Council hearing, I confirm that I have read the Environment Court's Code of Conduct for expert witnesses (December 2014) and I agree to comply with it. My qualifications as an expert are set out above. I confirm that the issues addressed in this statement of evidence are within my area of expertise except where I state I am relying on what I have been told by another person. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

Scope of Evidence

- 1.11 In this matter, I have been asked by the plan change requestor, P G Harris, to review the report of Mr Bill Rice (Appendix 3 to the Planning Officer's report), which comments on the transportation aspects of plan change request 28 ("PC28").
- 1.12 I have also been asked to review the submissions that have been received on the proposal, and identify and respond to those that relate to traffic, parking or access concerns.
- 1.13 I have been involved with PC28 since June 2014, when I was asked to prepare a Transportation Assessment to accompany the plan change request. This report addressed a number of issues, including the capacity of the nearby Tram Road / McHughs Road intersection, but it was produced in September 2014. Since that time, I have produced a

supplementary letter (dated 10 February 2016) which set out some minor amendments to the earlier analysis but did not change the overall conclusions.

- 1.14 However, in the intervening period Plan Change 33 (Mandeville North) (“PC33”) has become operative and due to their respective timing, PC28 does not take PC33 into account. In this regard, the bulk of Mr Rice’s comments relate to the updating of the information of the earlier Transportation Assessment.
- 1.15 I have visited the site on several occasions over the past two years, including most recently in November 2016. However I have driven past the site numerous times either as part of visiting another site, or when in the area for other purposes.

2. RICE PARAGRAPHS 18 TO 26: EFFECTS OF NEARBY PLAN CHANGES AND PARAGRAPH 46: UPDATED ASSESSMENT OF THE TRAM ROAD / MCHUGHS ROAD INTERSECTION

Summary of Issue

- 2.1 Mr Rice discusses the plan changes in the immediate area that have been approved, specifically plan changes 6 (51 residences), 10 (142 residences) and 22 (90 residences). He agrees that the Transportation Assessment accurately summarises the assessments carried out for the plan changes.
- 2.2 He then sets out that in my review (for the Council) of the Transportation Assessment submitted to support PC22, I considered that it was likely that McHughs Road would be used more heavily than had been assessed by the PC22 requestor. The outcome of this would be that a higher amount of traffic would pass through the Tram Road / McHughs Road intersection.
- 2.3 Mr Rice’s comment is correct – in my report for the Council I noted that *“the North Eyre Road route between the site and Christchurch is some 10% longer than the McHughs Road route and will also take longer because it also involves vehicles yielding the right of way to others.”* This is the reason why I considered that the route might not be attractive.

However I also then noted that even if more traffic was to use McHughs Road, *“the analysis of the Tram Road / McHughs Road intersection does not indicate any extensive queuing nor significant delays.”*

- 2.4 Mr Rice then goes further, noting that he considers that more traffic associated with PC6 also might pass through the Tram Road / McHughs Road intersection. For clarity I was not involved in this plan change in any capacity.
- 2.5 Unfortunately in neither case has Mr Rice set out his views on how much traffic he believes should be reallocated in this manner, nor what he believes to be the appropriate methodology for doing so.

Assessment Methodology for the Evening Peak Hour

- 2.6 One particular difficulty which arises when attempting to address the matter which Mr Rice has raised is that of finding a suitably robust methodology. Both plan changes have been approved for some time, and both have a degree of development now constructed, and so it would be possible to check the actual distribution against what was anticipated. However this would require significant traffic surveys, which would be extremely costly, and in practice there is no certainty that the distribution seen on one particular day was representative and so the survey would need to be carried out on more than one occasion.
- 2.7 Another possible approach would be to re-work the earlier analysis with a view to devising a new traffic distribution. However this would still be subject to uncertainty.
- 2.8 Fortunately however, in this case, I consider that it is possible to rely upon the analysis included within the recently-approved PC33. By way of background, at the time that PC33 was being considered (May 2015) both PC6 and PC22 had been approved for some time (August 2010 and July 2014 respectively) and were thus a well-established part of the receiving environment. In my view it is reasonable to expect that any concerns that the Council had about the traffic distribution of PC6 and PC22 and the expected growth of traffic on McHughs Road would be taken into account when evaluating PC33.

- 2.9 I therefore consider that the most robust approach in this case is to use the traffic analysis provided for PC33 as a 'starting point' and undertake additional analyses based on this. While this means that the analysis included within my earlier Transportation Assessment is now wholly superseded, I believe that there can be confidence that PC33 represents the most recent evaluation of the traffic patterns in the area, especially as PC33 was a Council-led plan change.

Evening Peak Hour Assessment

- 2.10 The Transportation Assessment (produced by Abley Transportation Consultants for the Council) set out the following traffic flows which would be expected with the prevailing volumes plus the development facilitated by PC33:

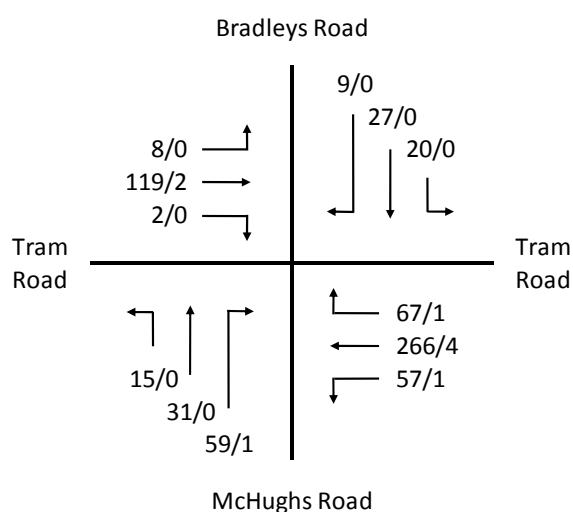


Figure 1: Abley Traffic Flows for PC33 – Base Traffic Flows Plus PC33 Traffic, Evening Peak Hour Only

- 2.11 This gave rise to the following levels of queuing and delay at the intersection:

Road and Movement		Evening Peak Hour		
		Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
McHughes Road	L	10.5	0.1	B
	T	15.9	1.0	C
	R	18.7	1.0	C
Tram Road (east)	L	7.9	0.0	A
	T	0.0	0.0	A

	R	8.9	0.2	A
Bradleys Road	L	9.5	0.1	A
	T	15.4	0.3	C
	R	17.2	0.3	C
Tram Road (west)	L	7.9	0.0	A
	T	0.0	0.0	A
	R	9.5	0.0	A

Table 1: Abley Intersection Modelling of PC33 – Base Traffic Flows Plus PC33 Traffic, Evening Peak Hour Only

- 2.12 In order to take account of the potential traffic growth in the area due to development within approved plan change areas, Abley also carried out a sensitivity test of doubling *all* of the traffic volumes at the intersection. This gave the following outcomes:

Road and Movement		Evening Peak Hour		
		Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
McHughs Road	L	13.0	0.2	B
	T	342.3	32.3	F
	R	356.1	32.3	F
Tram Road (east)	L	7.9	0.0	A
	T	0.0	0.0	A
	R	9.6	0.5	A
Bradleys Road	L	10.2	0.2	B
	T	42.8	2.0	E
	R	48.2	2.0	E
Tram Road (west)	L	7.9	0.0	A
	T	0.0	0.0	A
	R	11.5	0.0	B

Table 2: Abley Intersection Modelling of PC33 – Base Traffic Flows Plus PC33 Traffic (All Doubled), Evening Peak Hour Only

- 2.13 The analysis shows average queues of nearly 6 minutes on McHughs Road. Notwithstanding this, the report concluded that there were no reasons why the plan change could not be approved. In practice, although it is not specifically stated in the Abley report, I consider that this conclusion is correct because such delays could not arise at the intersection without the Council undertaking some sort of improvement scheme prior to that time.

2.14 However, in evaluating this sensitivity test, I have identified that in one particular respect the Abley report adopts a conservatism that in my view is not justified. While I agree with their approach of factoring the traffic flows on Bradleys Road and McHughs Road to take account of undeveloped plan change areas, Abley also doubled the through-traffic flows on Tram Road. It is difficult to see how such growth could be achieved since to my knowledge there are no major plan change areas towards the east which could result in such an outcome. Rather, I consider that it would be more appropriate to apply ambient traffic growth to the through-traffic on Tram Road. This is presently 3% per annum, meaning that the through traffic should be increased by 30% in the analyses (3% for each of ten years) rather than the 100% increase as Abley used.

2.15 Running the model under this scenario shows the following results:

Road and Movement		Evening Peak Hour		
		Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
McHughs Road	L	11.4	0.2	B
	T	36.9	4.8	E
	R	44.2	4.8	E
Tram Road (east)	L	7.9	0.0	A
	T	0.0	0.0	A
	R	9.1	0.5	A
Bradleys Road	L	9.7	0.2	A
	T	23.8	1.2	C
	R	26.6	1.2	D
Tram Road (west)	L	7.9	0.0	A
	T	0.0	0.0	A
	R	10.3	0.0	A

Table 3: Revised Intersection Modelling of PC33 – Through-Traffic Flows Factored by 30% Plus Other Traffic Doubled, Evening Peak Hour Only

2.16 With regard to PC28, the analysis of the traffic generation set out in the Transportation Assessment has been accepted by Mr Rice (Rice paragraph 37). I have therefore used the same figures for this updated assessment, albeit reduced to recognise that the yield of the site has reduced from 38 to 22 residences.

- 2.17 The distribution of trips was based upon the distributions used for PC6 and PC22, about which Mr Rice has concerns, where 20% of traffic was expected to use routes towards the south of Tram Road. For my reassessment, I have reduced this to just 10% with 5% of traffic using Bradley Road, 5% using Tram Road (west) and 80% using Tram Road (east). I have also taken into account that only 22 lots are proposed.

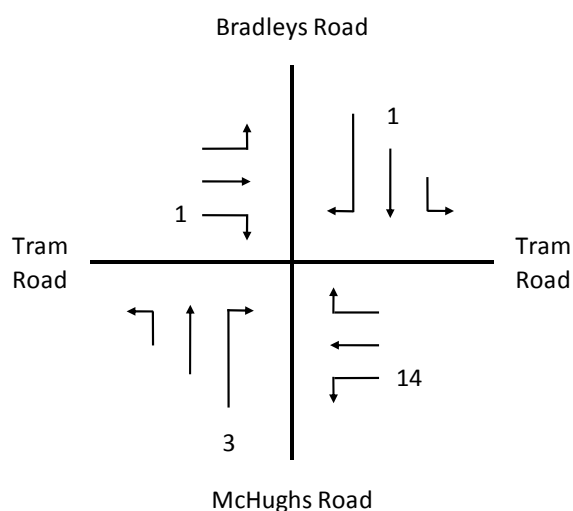


Figure 2: Expected Increase in Traffic Flows due to PC28, Evening Peak Hour

- 2.18 I have then added these traffic flows to those used by Abley for PC33 and re-run the traffic models. In this regard, Abley Transportation Consultants kindly provided the computer models which they had used for PC33, and this therefore ensures complete consistency between the two sets of analyses. The results are summarised below.

Road and Movement		Evening Peak Hour		
		Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
McHughes Road	L	10.6	0.1	B
	T	16.3	1.1	C
	R	19.1	1.1	C
Tram Road (east)	L	7.9	0.0	A
	T	0.0	0.0	A
	R	8.9	0.2	A
Bradleys Road	L	9.5	0.1	A
	T	15.7	0.4	C
	R	17.3	0.4	C
	L	7.9	0.0	A

Tram Road (west)	T	0.0	0.0	A
	R	9.6	0.0	A

Table 4: Abley Intersection Modelling of PC33 – Base Traffic Flows Plus PC33 Traffic, Evening Peak Hour Only PLUS PC28

Road and Movement		Evening Peak Hour		
		Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
McHughs Road	L	11.5	0.2	B
	T	39.9	5.2	E
	R	47.5	5.2	E
Tram Road (east)	L	7.9	0.0	A
	T	0.0	0.0	A
	R	9.1	0.5	A
Bradleys Road	L	9.7	0.2	A
	T	24.6	1.2	C
	R	26.9	1.2	D
Tram Road (west)	L	7.9	0.0	A
	T	0.0	0.0	A
	R	10.4	0.0	B

Table 5: Revised Intersection Modelling of PC33 – Through-Traffic Flows Factored by 30% Plus Other Traffic all Doubled, Evening Peak Hour Only PLUS PC28

- 2.19 The results show that with the PC28 traffic added to the updated PC33 modelling, the changes to the delays and queues are modest. Comparing Tables 1 and 4 (which use the base traffic flows for PC33), the effect of PC28 is an increase of no more than 0.1 vehicles queuing and an increase in delay of 0.5 seconds per vehicle. In my view, these changes will not be perceptible.
- 2.20 Tables 3 and 5 (the factored traffic flows for PC33) show that the increase due to PC28 traffic is slightly more, at a maximum of 3 seconds per vehicle and 0.5 additional vehicles queuing. Again, I do not consider that these delays will be perceptible. I also note that this increase is almost identical to that which I described in the PC28 Transportation Assessment (where paragraph 7.1.2 reported an increase in delay of at most 3 seconds per vehicle and 0.3 additional vehicles queuing)

Morning Peak Hour Methodology

- 2.21 As will be apparent, the assessment above focuses on the evening peak hour. This is because PC33 only analysed the traffic effects during this period. The Transportation Assessment for PC33 did not set out the reasons why the morning peak was not considered, but in my view it is likely to be due to the particular activities expected (retail, a medical centre and a restaurant) have very little, if any, traffic generation during the morning peak hour.
- 2.22 For the morning peak hour then, the effects of PC33 are negligible and rather, the only effect arises from the potential redistribution of traffic from PC6 and PC22 identified by Mr Rice. As I noted previously however, determining the extent of existing versus unimplemented development within the plan change areas is very difficult, as is assessing what alternative traffic distribution should be used.
- 2.23 I note though that the approach taken by PC33 was considered to be appropriate by the Council – that is, the factoring of the observed traffic volumes to take into account the other plan changes. Consequently I have adopted an identical approach to assessing the morning peak hour scenario for PC28:
- a. The observed 2014 traffic flows have been modelled;
 - b. The PC28 traffic flows have been added to this and the intersection modelled again;
 - c. The observed 2014 traffic flows have been factored, with the through traffic increased by 30% and the other traffic volumes doubled; and
 - d. The PC28 traffic flows have been added to this and the intersection modelled again.

Morning Peak Hour Assessment

- 2.24 The observed 2014 volumes are set out in Figure 8 of the PC28 Transportation Assessment.
- 2.25 I have adopted the same distribution of traffic for PC28 as I described above, that is, 10% of vehicles travelling on routes towards the south, 5% using Bradley Road, 5% using Tram Road (west) and 80% using Tram Road (east). This means more traffic passes through the Tram

Road / McHughs Road intersection with less traffic travelling south (as per Mr Rice comments). This shows the following:

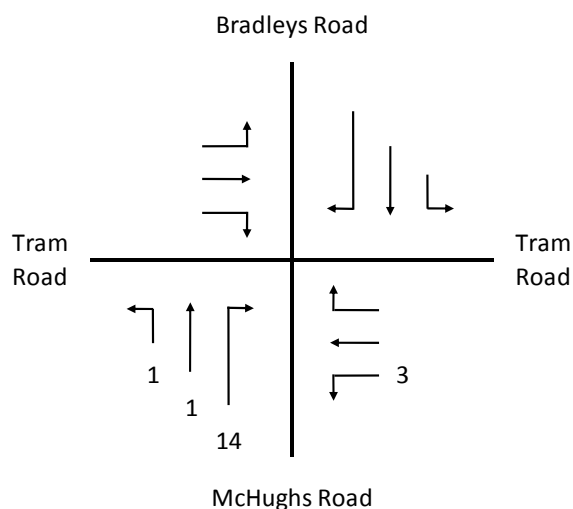


Figure 3: Expected Increase in Traffic Flows due to PC28, Morning Peak Hour

2.26 The traffic model outputs are summarised below:

Road and Movement		Morning Peak Hour		
		Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
McHughs Road	L	9.6	0.1	A
	T	15.0	0.9	B
	R	17.4	0.9	C
Tram Road (east)	L	8.6	0.0	A
	T	0.0	0.0	A
	R	9.6	0.1	A
Bradleys Road	L	10.5	0.4	B
	T	15.7	0.4	C
	R	16.2	0.4	C
Tram Road (west)	L	8.0	0.0	A
	T	0.0	0.0	A
	R	8.6	0.0	A

Table 6: Intersection Modelling Using Abley Model – Base Traffic Flows, Morning Peak Hour Only

Road and Movement		Morning Peak Hour		
		Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
McHughs Road	L	9.6	0.1	A
	T	15.5	1.1	C

	R	18.0	1.1	C
Tram Road (east)	L	8.6	0.0	A
	T	0.0	0.0	A
	R	9.6	0.1	A
Bradleys Road	L	10.5	0.4	B
	T	15.8	0.4	C
	R	16.2	0.4	C
Tram Road (west)	L	8.0	0.0	A
	T	0.0	0.0	A
	R	8.6	0.0	A

Table 7: Intersection Modelling Using Abley Model – Base Traffic Flows, Morning Peak Hour Only PLUS PC28

Road and Movement		Morning Peak Hour		
		Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
McHughs Road	L	9.8	0.2	A
	T	32.1	4.7	D
	R	40.9	4.7	E
Tram Road (east)	L	8.6	0.0	A
	T	0.0	0.0	A
	R	10.2	0.3	B
Bradleys Road	L	11.3	1.0	B
	T	21.9	1.2	C
	R	23.9	1.2	C
Tram Road (west)	L	8.0	0.0	A
	T	0.0	0.0	A
	R	8.8	0.1	A

Table 8: Intersection Modelling Using Abley Model – Through-Traffic Flows Factored by 30% Plus Other Traffic all Doubled, Morning Peak Hour Only

Road and Movement		Morning Peak Hour		
		Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
McHughs Road	L	9.8	0.2	A
	T	37.2	5.9	E
	R	46.2	5.9	E
Tram Road (east)	L	8.6	0.0	A
	T	0.0	0.0	A
	R	10.2	0.3	B
Bradleys Road	L	11.3	1.0	B
	T	22.1	1.2	C

	R	24.0	1.2	C
Tram Road (west)	L	8.0	0.0	A
	T	0.0	0.0	A
	R	8.8	0.1	A

Table 9: Intersection Modelling Using Abley Model – Through-Traffic Flows Factored by 30% Plus Other Traffic all Doubled, Morning Peak Hour Only PLUS PC28

- 2.27 The results again show that the changes due to PC28 traffic are modest. Comparing Tables 6 and 7 (which use the base traffic flows), the effect of PC28 is an increase of no more than 0.2 vehicles queuing and an increase in delay of 0.6 seconds per vehicle. In my view, these changes will not be perceptible.
- 2.28 Tables 8 and 9 (the factored traffic flows) show that the increase due to PC28 traffic is slightly more, at a maximum of 5 seconds per vehicle and 1.2 additional vehicles queuing. Again, I do not consider that these delays will be perceptible and again, the increase is very similar to that which I described in the PC28 Transportation Assessment (where paragraph 7.1.2 reported an increase in delay of at most 7 seconds per vehicle and 1.5 additional vehicles queuing).

Summary

- 2.29 I consider that when allowing for PC33 traffic in the evening peak hour, the effects of PC28 are very small and that the changes in queues and delays will not be perceptible.
- 2.30 I have applied the methodology used for PC33 to the morning peak hour (as PC33 did not specifically consider that time period). Again, the changes in queues and delays are small and will not be perceptible.
- 2.31 In both cases, the calculated changes in queues and delays are very similar to those that were set out in the PC28 Transportation Assessment.

3. **RICE PARAGRAPH 35: UPDATED ROAD SAFETY RECORD**

Summary of Issue

- 3.1 Mr Rice highlights that due to the Transportation Assessment being produced a little while ago, it does not consider any traffic accidents that have occurred after it was produced (late 2014). I agree with his views that it is prudent to update this.

Updated Accident Record

- 3.2 I have used the NZTA Crash Analysis System to identify the location and nature of the accidents recorded after late 2014 within the same area considered in the Transportation Assessment (that is, McHughs Road, between and including the intersections with Mandeville Park Road and Tram Road).
- 3.3 The analysis showed that a further 2 accidents had been recorded, both of which occurred at the Tram Road / McHughs Road intersection and both involved a driver pulling out of McHughs Road in front of a vehicle travelling west on Tram Road.
- 3.4 One of these accidents resulted in serious injuries, and the accident report notes that the driver who pulled out of McHughs Road was intoxicated. The other accident did not result in any injuries, and there are no factors recorded other than a failure to give way.
- 3.5 In the Transportation Assessment, I used the accident prediction equations in the NZTA Economic Evaluation manual to calculate the anticipated number of accidents at this location, based on the performance of 'typical' high speed crossroad intersections. For the volumes of traffic involved, this showed that over a five-year period, three injury accidents could be expected. In fact, the NZTA database shows that four accidents have occurred. Noting that one accident involved an intoxicated driver, I remain of the view that the safety performance of the intersection is no different to what would be expected and there is no evidence of any safety-related deficiencies in the intersection geometry.

4. **RICE PARAGRAPHS 48 TO 50: PEDESTRIAN AND CYCLING LINKAGES**

Summary of Issue

- 4.1 Mr Rice sets out that the development facilitated by PC33 will be attractive place for residents of PC28 to walk to, and accordingly he considers that provision should be made at the end of the internal cul-de-sac to provide connectivity to the PC33 area. He considers that this will provide a reduction of up to 400m in the walking/cycling distance for residents within the PC28 area travelling to the PC33 facilities.

Assessment of the Issue

- 4.2 I agree conceptually with ensuring that any subdivision has good pedestrian and cyclist connectivity. However this has to be balanced against the likely demand for the route, since providing such a walkway where there is minimal demand is not an effective use of the land resource. I am also aware that CPTED issues can arise with a long and narrow route, but this is beyond my expertise.
- 4.3 Taking into account the particular shape of the PC28 area, I consider that a walking/cycling route to PC33 via a potential route along the site southern boundary would be around 200m to 300m shorter than using the internal cul-de-sac, McHughs Road and Mandeville Road. Thus the journey would be 400m to 500m long rather than 700m long. Both of these are towards the upper end of the range of walking journey distances.
- 4.4 However, taking into account the site yield of no more than 22 lots, I consider that this would apply to only around 11 lots and residents living in the remaining lots would not find the route particularly beneficial. For example, a resident living in the vicinity of Roscrea Place would find the McHughs Road route to be the shortest, and a resident living close to Mandeville Road would also have little use for the walkway/cycleway.
- 4.5 Accordingly then, although there would be some residents that would potentially use the route, overall I do not consider that it would create a significant benefit.

5. **RICE PARAGRAPHS 62 TO 65: EXEMPTION FROM RULE 30.6.1.26**

Summary of Issue

- 5.1 Mr Rice sets out that a complete exemption from Rule 30.6.1.26 (*“Minimum Separation Distances Between New Vehicle Crossings and Intersections”*) may lead to adverse outcomes, as it enables the vehicle crossing to be located potentially immediately adjacent to an intersection. He also considers that matters such as sight distances and location of other accesses need to be taken into account, and thus that the exemption should not be allowed.

Assessment

- 5.2 In one respect, I agree with Mr Rice’s concern that the rule as currently proposed could enable an access to be located immediately adjacent to an intersection. I can confirm that this is not the intended outcome. I note though that at present, a non-compliance with this rule means that the activity becomes fully discretionary (under Section 30.9 of the District Plan), whereas Mr Rice does not seem to suggest that anything other than traffic-related matters need to be taken into account. At the very least then, this suggests to me that non-compliance with this rule should be a Discretionary Activity (Restricted).
- 5.3 Mr Rice’s concern about sight distances being taken into account is addressed through Rule 30.6.1.24 of the District Plan, and no exemption is sought for this. The location of other accesses is also addressed (Rule 30.6.1.19 of the District Plan) and again, no exemption is sought for this.
- 5.4 In my experience, it is common to have a rule within a District Plan relating to the separation of accesses and intersections. The purpose is to avoid creating road safety issues where a driver following another vehicle becomes confused about where that vehicle will turn. For example, a driver may be turning into a driveway prior to an intersection. If the following driver thinks that they are turning at the intersection then they will not be expecting the first vehicle to slow down as quickly and may run into the rear. This risk is clearly mitigated as the accessway becomes further from the intersection, but it is also mitigated by the accessway being on the opposite side to the intersection. Put another

way, if a driver indicates left and the minor approach to an intersection is on the right, then a following driver cannot reasonably assume that the first driver is turning at the intersection.

- 5.5 In this regard, I do not share Mr Rice's concerns about the potential separation of a vehicle crossing and an intersection under all circumstances, but only for those cases where the access is on the same side. However in my view, the current wording of the rule means that it not only applies to intersections that are on the same side as an access, but also on the opposite side.
- 5.6 I therefore remain of the view that an exemption from the rule for this site is appropriate, because otherwise any development around (say) Roscrea Place would become fully discretionary even though there would be negligible traffic effects from having a private driveway on the opposite side of the road.
- 5.7 I accept however that it would be possible to locate an access directly adjacent to the proposed new road (as Mr Rice identifies in his paragraph 64). To my mind though, the minimum lots sizes required to be provided within the PC28 area make it extremely unlikely that a driveway must *necessarily* be located in a position where there is minimal separation from the nearest intersection. Rather, it would be the choice of the landowner to do this and I agree with Mr Rice that this could potentially give rise to adverse road safety effects.
- 5.8 Accordingly, I continue to support the exemption but I consider that there should be a caveat, that the exemption applies "*subject to the vehicle crossing being sited adjacent to the lot boundary which is furthest from the intersection*".
- 5.9 In the alternative, I consider that the application of Rule 30.6.1.26 should be Discretionary Activity (Restricted) rather than a fully Discretionary Activity.

6. **SUBMISSIONS**

- 6.1 Mr Rice addresses the submissions received on the plan change request within his report. I have read his assessment of these, and I am largely

in agreement, but have provided further information on each of them below.

Submitter Concern: Traffic Congestion on Tram Road and the Northern Motorway

- 6.2 It is commonly accepted by traffic engineers that traffic volumes vary by around 5% on a day-to-day basis due to factors such as people travelling at different time or changing transport modes due to the weather. With 3,000 vehicles per hour on the Waimakariri Bridge and 1,000 vehicles per hour on Tram Road, the traffic volume will vary by 50 to 150 vehicles per hour 'naturally'. The traffic generation of PC28 is much less than this and will therefore not be distinguishable in the overall traffic stream.

Submitter Concern: Lack of Detail in the Outline Development Plan

- 6.3 The analysis has now been updated to reflect the yield of the plan change area and to take into account PC33, and continues to show that the effects on road efficiency and safety arising from PC28 will be negligible.

Submitter Concern: Vehicle Access from Mandeville Road


- 6.4 I concur that the design and layout of any vehicle crossings for PC28 should be cognisant of any confirmed access points for PC33, but in my view compliance with the District Plan rules will achieve this. In the event that a rule is breached, then the Council will have the opportunity to consider the likely effects as part of assessing the resource consent application.

7. CONCLUSION

- 7.1 Having reviewed the traffic effects of PC28, I remain of the view that it will not give rise to any adverse efficiency or road safety effects, especially at the nearby Tram Road / McHughs Road intersection.
- 7.2 For the reasons set out above, I do not consider that a specific pedestrian/cyclist route is required within the site to the PC33 area. However I recommend an amendment to the proposed exemption from

Rule 30.6.1.26 to ensure that vehicle crossings are not located immediately adjacent to the minor approach to intersections on the same side of road.

- 7.3 Overall, and subject to the preceding comments, I remain able to support the plan change request from a traffic and transportation perspective and I consider that there are no traffic and transportation reasons why PC28 could not be recommended for approval.



Andy Carr

Date: 10 November 2016

BEFORE THE WAIMAKARIRI DISTRICT COUNCIL

IN THE MATTER

of the Resource Management Act
1991

AND

IN THE MATTER

of a Private Plan Change Request
by P G Harris to the Waimakariri
District Plan (Plan Change 028) at
116, 136 & 148 McHughs Road,
Mandeville

STATEMENT OF EVIDENCE OF PAUL MCMILLAN THOMPSON

Dated 10 November 2016

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1 QUALIFICATIONS AND EXPERIENCE

1. My full name is Paul McMillan Thompson.
2. I hold a Bachelor of Science in Applied Geology (Hons) and a Master of Arts in Town and Country Planning. I am an Associate Member of the New Zealand Planning Institute.
3. I have 15 years professional experience as a planner. I am employed as a Senior Resource Management Planner at Eliot Sinclair Partners Ltd ("Eliot Sinclair"), providing planning and resource management advice on a range of residential and commercial proposals. I have been working for Eliot Sinclair as a planning consultant since 2007. Prior to this I worked as a Senior Planner for two local authorities in the United Kingdom.
4. My evidence is presented on behalf of P G Harris ('the applicant'). I prepared the Plan Change Request application (PC28) with the assistance of others with expertise in specialist fields.
5. Although not a matter before the Court I confirm that I have read the Code of Conduct for Expert Witnesses set out in the Environment Court Practice Notes 2014 and confirm that I have complied with the code in the preparation of my evidence.
6. My evidence is within my area of expertise, except where I state that I am relying on information provided by another party.
7. I have not knowingly omitted facts or information that might alter or detract from the opinions I express.

2 SCOPE OF EVIDENCE

8. My evidence addresses the resource management planning issues associated with PC28. The conclusions I have made have been informed by the evidence of the applicant's other experts, Mr McLeod (infrastructure) and Mr Carr (transport).
9. I have read the submissions made on PC28 and the Officer Report prepared by Mr Bacon on behalf of the Waimakariri District Council ('the Council'). I do not intend to revisit in any detail subject matter that has already been covered in evidence for the applicant, or where there is general agreement between the various experts and officers. It is on this basis I have limited my evidence to consideration of the following:
 - i. The proposal

- ii. Officer report
 - iii. Statutory Planning Context
 - iv. Consideration of Effects
 - v. Part 2 of the Resource Management Act (the 'Act')
 - vi. Conclusion
10. Having regard to the assessments undertaken, as well as the current statutory planning documents in force, I have concluded that PC28 is the most appropriate way of achieving the purpose of the Act.

3 THE PROPOSAL

11. Plan Change 28 relates to land at 116, 136 & 148 McHughs Road, Mandeville. In broad terms PC28 seeks to:
- a. Retain the existing Rural zoning of a 4.5 hectare area largely comprising a former gravel pit at 148 McHughs Road (Lot 3 DP 476847)
 - b. Rezone an area of 11.7 hectares known as 116 & 136 McHughs Road (Lots 1 & 2 DP 476847) from Rural to Residential 4A Zone
 - c. Amend and add new Rules to the Waimakariri District Plan (WDP) to allow rural residential development of 116 & 136 McHughs Road
 - d. Introduce an Outline Development Plan (ODP) to guide future development
12. The purpose of the ODP is to ensure that future development of the land itself takes place in a co-ordinated and integrated manner with respect to key infrastructure and existing features. In addition the ODP ensures that where appropriate the development will integrate with adjacent land. The key elements of the ODP are:
- i. The ODP is limited to the land to be rezoned from Rural to Residential 4A Zone only and does not include land associated with the former gravel pit
 - ii. Provision of road access from McHughs Road
 - iii. Provision of pedestrian and cycle access extending from the south western corner part way along the southern boundary to connect with the proposed road and existing linkages on adjoining land

- iv. Existing features on the site to be retained include a tree shelterbelt along the western boundary and an existing water race along part of the southern boundary
- 13. Following public notification and in response to a submission made by the Council¹, the applicant made a Further Submission² in support of amending the type of fencing permitted for rural-residential development.
- 14. The rules proposed by PC28 also include new Rule 32.1.1.20 which identifies the maximum number of residential allotments to be provided from the ODP area. The maximum number of residential allotments capable of being provided after accounting for land required for other purposes, such as roads, Rights of Way (RoW) and reserves will actually be twenty one (21) and not twenty two (22). While a change to Rule 32.1.1.20 is technically not necessary as the rule refers to the maximum number of residential allotments I consider it appropriate for the rule to refer to 21 allotments in the interests of community expectations and also in response to Submission 87.2 which sought to establish the maximum residential allotment yield.
- 15. An update to the notified version of changes proposed to the WDP is contained in **Annexure A** of my evidence. This shows tracked changes to the notified version in response to the Further Submission; the changes I propose in my evidence; and, other administrative³ and consequential amendments⁴. For clarity the updated schedule of amendments does not include the changes proposed in the Officers Report for the reasons I will now discuss.

4 OFFICER REPORT

- 16. In short Mr Bacon considers that PC28 has merit and should be approved, albeit subject to two modifications relating to vehicle crossings and an additional non-vehicular (pedestrian/cycleway/equestrian) connection.
- 17. The applicant has put forward evidence by Mr McLeod and Mr Carr which has responded to the modifications proposed by the Council Officers. In my evidence I will also comment on the proposed modifications.
- 18. At this point I should note that there are various matters in Mr Bacon's report that I agree with, including the site description, assessment of the relevant

¹ Submissions 85.1, 85.2 & 85.3

² Further Submission F88.0, F85.2, F88.0

³ Note that the notified version of proposed rule 32.1.1.20 incorrectly refers to a proposed Residential 4A Deferred Zone

⁴ Namely updated numbering of Rules

higher order documents and the identification of the key environmental effects that require consideration.

19. Where Mr Bacon and I depart is in our assessments of green space in relation to the appropriateness of an additional non-vehicular connection. I also disagree with the summary made of a submission⁵ received on PC28. In addition, I disagree that an exemption to the location of vehicle crossings should be removed from PC28 on the strength of Mr Carr's evidence.
20. I also note the Council support in full the Further Submission⁶ made by the applicant on proposed Rule 31.1.1.50 relating to fencing. The wording proposed in the Officer Report is not entirely the same as that proposed in the Further Submission and this is shown as a tracked change to the rule in **Annexure A** to my evidence. The change proposed in the Further Submission is considered necessary to clarify the relationship between the second and third parts of clause a. to the rule to indicate that all parts of clause a. are to be complied with at all times.

5 STATUTORY PLANNING CONTEXT

21. PC28 has been made pursuant to Clause 21 of the First Schedule of the Act. While the First Schedule sets out the procedural matters for dealing with changes to policy statements and plans, Part 5 of the Act sets out the considerations to be made in assessing the substance of the change.
22. Section 74 of the Act identifies those matters which must be considered, these being:
 - a. the Council's functions under Section 31
 - b. the provisions of Part 2 of the Act; and
 - c. the duty imposed by Section 32
23. Section 75 also requires a district plan to give effect to an operative regional policy statement and not to be inconsistent with any regional plan. In addition, regard must be had to any proposed regional policy statement, and any other management plans or strategies prepared under other legislation.
24. Chapter 9 of the Section 32 Assessment accompanying PC28 provides a robust assessment against the Canterbury Regional Policy Statement (RPS), the WDP and other relevant plans and strategies. No changes or updates are considered

⁵ Submission 87.1

⁶ Further Submission F88.0 & F85.2

necessary to these assessments since no substantive changes have taken place to the statutory framework.

25. I do not wish to repeat these assessments, particularly given that PC28 does not seek to alter any of the objectives of the WDP. Further I do not consider there is any question as to whether PC28 achieves consistency with the RPS, or indeed other higher order planning documents. However, I briefly discuss these matters for completeness and to place PC28 in its context.

Recovery Strategy for Greater Christchurch

26. The Recovery Strategy is the overarching, long term approach to guiding the reconstruction, rebuilding and recovery of Greater Christchurch. Of the six components of recovery identified in the Strategy, those goals supporting the recovery of the built environment, and the integration of infrastructure, housing and transport networks, are most relevant to PC28. These goals are provided greater impetus by the LURP. For the reasons outlined below, I consider PC28 is aligned with the Recovery Strategy.

Land Use Recovery Plan

27. The LURP provides direction for residential development to support recovery and rebuilding across Greater Christchurch helping to achieve the vision of the Recovery Strategy. Actions 3 and 44 are directly relevant.
28. Action 3 inserted a number of amendments into the Waimakariri District Plan including Objective 14.5.1 and Policy 14.5.1.1 that direct new rural residential development to areas identified in the Council's Rural Residential Plan.
29. Action 44 inserted new objectives, policies and methods into the Canterbury Regional Policy Statement via new Chapter 6 – *Recovery and Rebuilding of Greater Christchurch*. The provisions of Chapter 6 are outlined below.

Canterbury Regional Policy Statement

30. The RPS is the strategic resource management plan to promote sustainable management in Canterbury. Of particular relevance to PC28 is Chapter 6 which provides a framework to enable and support earthquake recovery and rebuilding, including restoration and enhancement. Recovery in Greater Christchurch is also supported by provisions in Chapter 5 – *Land use and infrastructure*.
31. Objective 6.2.2 seeks to manage urban form and settlement pattern by providing sufficient land for rebuilding and recovery with an urban form that achieves consolidation and intensification of urban areas, and avoids unplanned expansion of urban areas, by managing rural residential development outside of

existing urban areas and priority areas. This is implemented through Policy 6.3.9 - *Rural residential development* which requires new rural residential development to be provided only in accordance with an adopted Rural Residential Development Strategy subject to a range of criteria being met including the avoidance of significant natural hazard areas. The principal reasons and explanation note that it is important to manage the extent of rural residential activity due to the pressure it places on infrastructure, its impact on transport efficiency, and the maintenance of rural character and rural land use for production.

32. Chapter 11 – *Natural Hazards* is relevant to PC28 in terms of the potential for flooding. It contains objectives and policies that allow development to still occur in inundation areas where certain criteria are met to ensure the risk of natural hazards to people, property and infrastructure is avoided or, where avoidance is not possible, mitigation measures minimises risk.
33. Briefly, with respect to the RPS it is my opinion that:
 - a. As PC28 is identified in the Council's Rural Residential Development Plan⁷ the location of the site is in itself appropriate for development
 - b. As the former gravel pit is a high (flood) hazard area it is not suitable for inclusion in the ODP⁸ but is suitable to support the existing rural activity
 - c. The balance of PC28 is suitable for inclusion in an ODP and can be developed for rural residential purposes in a way that adequately mitigates flood risk to surrounding land and future residential dwellings and is able to be adequately serviced.
34. PC28 enables development of the ODP area in a manner anticipated by the urban growth strategy promulgated by the Recovery Strategy, the LURP and the RPS. I consider PC28 to be consistent with these higher order documents, an outcome required to be achieved by the Greater Christchurch Regeneration Act 2016.
35. Turning to the other matters requiring consideration under Section 74 of the Act, I believe there is no doubt that PC28 relates to activities which fall within the scope of Council's functions listed in Section 31 of the Act.
36. In addressing these provisions, the relevant threshold is whether or not a plan change is the most appropriate way to achieve the purpose of the Act. PC28 does not alter the existing objectives and policies of the WDP. It is my understanding that the purpose of the Act is generally taken to be subsumed

⁷ Waimakariri District Council, Rural Residential Development Plan, dated June 2010

⁸ RPS Policy 6.3.3 (11), Policy 11.3.1 & RPS Policy 6.3.9 (5)(a)(h) & (6)

within operative objectives and policies. Accordingly, the focus of the s.32 assessment is on the second test as to whether the rules and methods proposed by PC28 are a more efficient and effective method for achieving the objectives and policies of the WDP than the existing provisions of the Plan, with this assessment informed by an evaluation of the potential effects of the rezoning, which I turn to next.

6 CONSIDERATION OF EFFECTS

37. The assessment of environmental effects and s.32 analysis within the PC28 documentation provides a robust and thorough assessment. In my opinion the central issues raised in submissions and by Council Officers that require consideration relate to:

- i. Future use of the gravel pit
- ii. Mandeville character and amenity
- iii. Green space
- iv. Transport
- v. Stormwater & Flooding
- vi. Water and Wastewater Servicing

38. These correspond to the issues identified and discussed by Mr Bacon.

Future use of the gravel pit

39. A purpose of PC28 is to allow the land associated with the former gravel pit to remain in forestry. This is consistent with RPS Policy 11.3.1 which recognises that forestry can be appropriate in high hazard areas.

40. A submission⁹ has raised concerns with the continued ability of the gravel pit to contain floodwater and the effects of any reduction in its capacity. I note the former gravel pit does not form part of any public or private stormwater or flood attenuation network. PC28 also does not change the existing District Plan provisions that relate to it. However Mr Bacon has commented on the potential for increased expectation that the gravel pit could be filled to either provide additional lot access to the PC28 ODP area or to further utilise the land itself¹⁰.

41. Mr Bacon has referred to Rule 23.1.1.8¹¹ which requires resource consent to be obtained for earthworks, which includes the placement or replacement of soil or

⁹ Submission 87.6

¹⁰ s.42A report 13.1.1

¹¹ Rule 23.1.1.7 referred to by Mr Bacon has been re-numbered to Rule 23.1.1.8 in the current version of

other material and the extraction of minerals, greater than 1,000m² per hectare which is assessed as a restricted discretionary activity. The Council's discretion includes, amongst others, the ability to consider the short and long term effects on flood potential beyond the earthworks¹².

42. I also note that Rule 23.1.2.9 allows for the construction of forestry roads and landing sites within a plantation forest to be exempt from complying with Rule 23.1.1.8 subject to those works taking place in accordance with best practice guidelines¹³ and adverse effects on water quality and quantity of any water body; and land stability and erosion, are avoided or remedied.
43. As such I agree with Mr Bacon that adequate controls already exist in the District Plan to assess earthworks within the former gravel pit should they be proposed in the future.
44. A Submission¹⁴ has been made that the status of the forestry block should be protected. I agree with Mr Bacon that this would impose an inappropriate cost on the applicant preventing the use of the land for any other suitable activity and is not considered to efficiently give effect to the objectives of the Rural Zone in the District Plan.

Mandeville character and amenity

45. The submission by Mr Keats¹ has raised concerns in connection with the impact on amenities and services. PC28 is within the growth management boundary identified for Mandeville in the District Plan¹⁵ which was introduced to address disjointed growth and associated adverse effects on the amenity, character, form and function of Mandeville. I agree with Mr Bacon that while PC28 will change the outlook and amenity for some sites this is anticipated by the District Plan and will result in development consistent with the existing residential character.

Green Space

46. I note Council Officers support the green space linkages identified on the ODP as these will help integrate and connect PC28 with adjacent residential area and the Mandeville Domain, the principal recreational destination in the settlement.
47. Mr Bacon has proposed an additional green space linkage ('additional link/change') on the ODP between the proposed Local Road and the Mandeville

Chapter 23 to the District Plan.

¹² Waimakariri District Plan Standard 23.3.2 ix.

¹³ Best Practice Guidelines for Road and Landing Construction (2000)' as published by Forest Industries Training New Zealand

¹⁴ Submission 87.3

¹⁵ Waimakariri District Plan Objective 18.1.3 & Policy 18.1.3.1 Introduced by Council initiated Plan Change 32

Road boundary. His preference is that the additional linkage would be located along the southern boundary of the ODP area. Mr Bacon considers there is scope to make this modification within Submission 87.1 as the relief sought by that submission is for a more detailed ODP to provide clarity. Mr Bacon considers the thrust of Submission 87.1 is that the ODP be amended, where deemed necessary, to identify specific features that form the framework of any future subdivision consent.

Scope

48. In considering this matter I have looked at the original submission made by Mr Bennett and Ms Thompson and note that the wording of Submission 87.1 is quite specific. Submission 87.1 considers that the Outline Development Plan is “vague” and “inadequate” and specifically considers it to be “*deficient in the following respects*”. The specific ‘respect’ considered by Submission 87.1 is that “*it [the ODP] does not identify the area of land proposed to be rezoned*”.
49. While I do not hold any legal qualifications my understanding of the issue of scope to make modifications to a proposal relates to clause 6 of the First Schedule of the Act. Clause 6 states “[w]hen a proposal is publicly notified under clause 5 of this schedule, the Council and any person may, ... make a submission to the hearings panel **on the proposal**” [my emphasis]. I understand the leading case law relating to clause 6 is from the High Court in *Palmerston North City Council v Motor Machinists Ltd [2013] NZHC 1290*. This endorsed a ‘two-limb approach’, which provides that a submission can only be fairly said to be ‘on’ a plan change if it meets both limbs, being:
 - a. *Whether the submission addresses the change to the pre-existing status quo advanced by the proposed plan; and*
 - b. *Whether there is a real risk that people affected by the plan change (if modified in response to the submission) would be denied an effective opportunity to participate in the plan change process.*
50. My understanding is the two limbs operate together and that Justice Kos’ judgement is that ‘on’ should not be treated as meaning ‘in connection with’. The principles that underlie this are those of fairness and due process which are embodied in the RMA by its emphasis on public participation in decision making.
51. In considering these matters I agree that Submission 87.1 meets the first limb.

52. In relation to the second limb relating to the change proposed by Mr Bacon, I note the High Court considered that factors that assist in the determination this are:¹⁶

Second Limb: Whether there is a real risk that persons directly or potentially directly affected by the additional changes proposed in the submission have been denied an effective response to those additional changes in the plan change process

- a. Whether the change is merely consequential or incidental?*

And

- b. Whether those directly affected are adequately informed of what is proposed and therefore have had the chance to participate in the process on the basis of that change.*

53. In relation to the first factor (a), I consider the additional change is more than merely consequential or incidental. The length of the additional connection is 532 metres in comparison to the 358 metres of green space proposed by the ODP, an increase of 149%. Mr Bacon has proposed the additional connection would have a width of 10 metres¹⁷ which would involve an area of 5,320m². In comparison to the area of 3,221m² of green space anticipated by the ODP¹⁸, this amounts to an increase of 165%. I do not consider changes of this magnitude to be incidental.
54. In relation to the second factor (b), I note that the additional change would place a new non-vehicular connection adjacent to the northern boundaries of five rural residential allotments¹⁹. Planting exists in places along this boundary however this may not be able to be relied upon to provide screening and in other places there is open agricultural style fencing. I consider there is potential for adverse effects on privacy to the residents of these properties from patrons using the additional connection. I am also mindful that the water race within part of the green space linkage on the ODP crosses into some these properties²⁰ and closely follows the shared boundary as can be seen by the plan contained **Annexure B** to my evidence. Users of the additional connection

¹⁶ Palmerston North City Council v Motor Machinists Ltd [2013] NZHC 1290. Paragraphs 76 to 83

¹⁷ Section 42A report. Paragraph 15.3

¹⁸ Based on a reserve width of 9 m consistent with the width of the adjoining reserve from Truro Close. The ODP does not specify the width of the reserve as it is more appropriate to determine width at subdivision once the position of boundaries is known. Note the width of the other adjoining reserve from Mandeville Park Drive is 4 metres.

¹⁹ No's 2, 10, 32, 38 & 50 Truro Close

²⁰ No's 32, 38 & 50 Truro Close

would naturally be drawn towards the water race which is currently located in the more private rear areas of these properties.

55. I have serious reservations that the additional change would deny those directly affected to adequately participate in this Plan Change process. I consider the additional change does not meet both factors identified by the High Court needed to be within the scope of the decision sought by submitters and I am concerned that persons who have not made a submission given the specific matter to which Submission 87.1 refers, would have made a submission if they were aware of the Council's proposed additional change. Accordingly, I consider the additional connection/link is out of scope.

56. If however the Commissioner is of the view the proposed change is within scope, the merits of the proposed change require assessment.

57. Merit

58. I note that Mr Bacon has not undertaken a further evaluation of the merits of the proposed change pursuant to s.32AA²¹. Section 32AA requires that all changes to a proposal since the original evaluation must be well justified to demonstrate the change will be appropriate, efficient and effective. I have undertaken a further evaluation under s.32AA which I will now discuss.

59. My evaluation has found the proposed change would lead to the reduction of one rural-residential allotment being able to be provided by PC28. In connection with this I do not have any major reservations in relation to the effect on surrounding rurally zoned land in terms of the potential for increased pressure for rural subdivision. However given the relatively narrow dimension of the ODP area and the need for Right of Way access to the majority of the future allotments, the balance area would become somewhat constrained. A 10 metre wide reserve along the southern boundary of PC28 would result in smaller allotment sizes to the south of the former gravel pit and I have reservations that smaller allotment sizes next to the additional link will increase the risk of uncertain outcomes²², particularly in terms of the amenity of future residents of PC28 next to the additional connection as well as the existing rural residential allotments that would adjoin it.

60. My reservations relate to the reduced flexibility for the location of future dwellings on smaller allotment sizes. While staggering of dwellings is not provided for through any rule in the District Plan, larger residential allotments

²¹ The proposed change is discussed in Section 12.5 of the s.42A report. Paragraphs 14.3 and 15.2 of the s.42A report refer to a s.32AA evaluation having been made in relation to the matters discussed in Section 14 and 13 only.

²² Section 32(2)(c)

naturally encourage staggering of dwellings whereas smaller allotments tend to lead to an alignment of dwellings in rows more typical of a traditional town environment. This is likely to be restricted further by the tendency to want to maximise solar gain such that future dwellings are likely to be located towards the southern portion of PC28 to minimise potential shade cast by the area of forestry.

61. The evidence of Mr McLeod has highlighted an uncertain outcome of restricting the ability for dwellings to be staggered in relation to secondary stormwater flow paths. I note that Mr Kalley for the Council has similarly advised that post development site levels and the placement of building platforms will need to ensure existing flow paths are not affected by development²³.
62. A further uncertain outcome is the effect the additional link would have on the amenity of future residents from reduced separation distances and reduced levels of privacy. It is uncertain whether this would encourage the type of screening (such as solid planted boundary treatments) that would compromise the sympathetic boundary treatments the Council's proposed fencing controls are seeking to promote, such as openness and user visibility. I am also mindful that the proposed non-vehicular link would be some 530 metres long and screening that casts shade over it could have adverse effects on the perception of safety and patronage.
63. These uncertainties increase the risk of acting and the ability to continue to meet Objectives 8.2.1, 12.1.1, and 15.1.1 in relation to the mitigation of flood hazards, the maintenance of amenity values and providing quality urban environments as well as Objective 18.1.3(d) which seeks to maintain and enhance the characteristics of Residential 4A and 4B zones within Mandeville.
64. The evidence of Mr Carr has also compared the additional connection with the existing connections in terms of distance, suitability and safety. Mr Carr has found that the existing linkages to the future Mandeville Business land via the Truro Close cul-de-sac and the McHughs Road are safe low speed traffic environments suitable for vehicle and non-vehicle traffic. While the existing links have a marginally longer distance²⁴ compared to the additional link, Mr Carr is of the view this is not significant.
65. I note however that Mr Rice is of the view that the additional connection would significantly reduce connectivity to a key destination in the area and that the

²³ Section 42A Report. Appendix 1. Paragraph 16.

²⁴ The existing linkages compare to be approximately 920 metres (via McHughs Road) or 1,000 metres (via Truro Close) in relation to a distance of 700 metres by the proposed link.

additional connection would enhance compliance with RPS policies 5.3.8(1)(a)²⁵ and 6.3.2(3)²⁶ and CRLTS Policy 8.3.2(g)²⁷ which in broad terms seek to ensure land use and transport planning are integrated and emphasis is given to more sustainable forms of transport through increased connectivity. In considering the relevant policy framework I note that RPS Policy 5.3.8 does not apply in Greater Christchurch²⁸ and there are other policy matters that require consideration to which I will now turn.

66. RPS Objective 6.2.4 seeks to ensure the planning of transport infrastructure maximises integration with new settlement patterns to minimise energy use, provide for the social and economic wellbeing of the community and people's health and safety. This objective is implemented through a number of policies of which Policy 6.3.2 and Policy 6.3.9 are considered most relevant. Policy 6.3.9 relates specifically to rural residential development and seeks to ensure the location and design of rural residential development adjacent to or in close proximity to an existing rural residential area is integrated into or consolidated with the existing settlement. Policy 6.3.2 relates to development form and urban design and seeks to ensure rural residential development gives effect to the principles of good urban design to the extent appropriate to the context. Mr Rice has referred to the urban design principle of connectivity in this policy. In consideration of the potential uncertain outcomes from the additional link discussed earlier²⁹ I also consider other urban design principles identified in this policy are of relevance in particular integration, safety, choice and diversity. In considering these principles I note the policy applies these '*... to the extent appropriate to the context*' and that the objectives and policies of the District Plan assist in this regard.
67. WDP Objective 15.1.1 seeks to achieve quality urban environments (which includes all settlements) that maintain and enhance the form and function, the rural setting, character and amenity values of urban areas. The character and amenity values of the different Residential Zones is recognised by Objective 17.1.1 and Policy 17.1.1.2 in promoting a range of living environments with distinctive characteristics. The supporting explanatory text to Policy 17.1.1.2 includes Table 17.1 which identifies the characteristics of the Residential 4A/B areas as including '*dwelling density is lowest for Residential Zones*', '*dwelling in generous settings*', '*limited number of lots located in a rural environment*',

²⁵ Section 42A. Appendix 3. Paragraph 71

²⁶ Section 42A. Appendix 3. Paragraph 72

²⁷ Section 42A. Appendix 3. Paragraph 73

²⁸ RPS Policy 5.3.8 applies to the 'wider region' which does not include Greater Christchurch. Objectives and policies notated as 'entire region' apply to Greater Christchurch.

²⁹ Paragraph 63

'few vehicle movements within the zone' and 'limited kerb, channelling and street lighting'.

68. In consideration of these matters I am of the opinion that the character and amenity values in a rural residential environment are that pedestrian and cycle distances will be greater than other residential zones. While the connections on the ODP and existing linkages will be some 220m - 300m longer than the additional connection, these distances are appropriate in the context of very low dwelling densities in generous settings. I also consider PC28 to be consistent with community expectations noting that the transport assessment undertaken for Council the initiated PC33 did not identify the need for any pedestrian/cycleway links in the surrounding area, other than across Tram Road, in order to support business activities within that location of the settlement.
69. I also note that the Waimakariri District Walking and Cycling Strategy³⁰ identifies as a key goal the safe and convenient movement of walkers, cyclists and horse riders within and around the District's rural areas, smaller settlements and Residential 4 Zones. The objective of this key goal is to encourage developers to install paths within/across new subdivisions to provide safer off-road walking/cycling/horse-riding³¹. The objective of this goal is thus improved traffic safety and the separation of cyclists and pedestrians from vehicle traffic is a priority along main traffic routes. The evidence of Mr Carr is that the existing linkages are safe and therefore the additional linkage is not a priority identified by the Council's Walking and Cycling Strategy.
70. Mr Bacon considers the additional link would give effect to Objective 18.1.3(e) which seeks to promote the use of alternative transport modes for transit within Mandeville³². This Objective is implemented through Policy 18.1.3.1. PC28 is consistent with Policy 18.1.3.1 as the land is located within the Mandeville Growth Boundary and therefore already gives effect to Objective 18.1.3³³.
71. In accordance with Section 32(2)(a)(i) & (ii), there are not likely to be any additional economic or employment opportunities resulting from the additional link.

³⁰ Waimakariri District Council. Walking and Cycling Strategy and Implementation Plan (May 2011, updated 2015).

³¹ Section 5.2 Goals, Objectives and Key Agencies Promoting Walking and Cycling.

³² Section 42A Report. Paragraph 12.5.3

³³ This is consistent with the Plan Change 22 decision dated April 2014. Refer to paragraphs 7.37 – 7.38 of that decision. Note the numbering of Objective 18.1.2 and Policy 18.1.2.1 has since been re-numbering to Objective 18.1.3 and Policy 18.1.3.1 respectively.

72. I also note that the additional change proposed by Mr Bacon goes beyond the advice of Mr Read, the Council's Green Space and Community Facilities Planner. Mr Read has suggested that some form of pedestrian/cycle access from the north-eastern end of PC28 to Mandeville Road would be beneficial to primarily serve the future residents of PC28. Mr Read suggests a designated local purpose access reserve might not be necessary and the use of a right of way servicing internal lots could achieve a similar outcome.
73. In general terms the ODP already provides for the level of connectivity recommended by Mr Read. While the ODP does not show the location of future right of ways, a Right of Way will be needed to provide access to Mandeville Road for those allotments unable to be accessed via the proposed Local Road. Although the right of way would not serve all future allotments in PC28 (most likely it would serve six allotments) it would facilitate access for some future residents of PC28 consistent with the outcome Mr Read has recommended.
74. Mr Bacon mentions that the additional link would remove the ninety degree reserve corner shown on the ODP although I note Mr Read considers appropriate design can resolve any user safety concerns of this.
75. In conclusion the Section 32AA further evaluation I have undertaken, having regard to effectiveness and efficiency; and taking into account the benefits and costs, and the risk of acting if there is uncertain or insufficient information; has found that PC28 is the most appropriate to achieve the objectives of the RPS and the WDP than the additional change.
76. I have also considered alternative locations for a similar link to be provided. In addition to the reasons identified by Mr Bacon³⁴ I have found the existing ODP to be the most appropriate to achieve the objectives of the Waimakariri District Plan particularly with regards to traffic safety of discouraging mixed pedestrian and vehicle traffic use within Rights of Ways, and reasons similar to those already discussed. I have also considered lesser widths or an additional link however I do not consider this would be appropriate given the distance in comparison to existing connections that provide for safer pedestrian and cycle movements, particularly outside of daylight hours.
77. Finally, in relation to Submission 87.1, which as discussed earlier considers more detail should be provided on the ODP. While I recognise that the ODP does not contain many features it does show all the features needed to guide future in a co-ordinated and integrated development consistent with the requirements of RPS Policy 6.3.3. I note that the clarity being sought by the

³⁴ Section 42A report. Paragraph 12.5.4

submission may be more a response to the administrative mistake³⁵ within the notified version of the amendments sought to the District Plan.

Transport

78. Mr Carr has addressed the transport matters of relevance to PC28. I note Mr Carr and the Council's transport experts are in broad agreement as to the merits of the proposed rezoning, and further analysis by Mr Carr has, I believe, satisfactorily addressed Mr Rice's general concerns that all potential traffic generation had not been included in the original assessment, and that development that will occur once the rezoning has taken place can be accommodated on the surrounding road network without adverse effects.
79. With regards to the proposed rule exemption³⁶ for new vehicle crossings from road intersections I note this exemption is no different to the exemptions approved in relation to PC06, PC22 and PC33. While I am not aware the application of the exemption has created any issues at these sites³⁷ I note Mr Rice's concern that theoretically vehicle crossings could be located in close proximity to road intersections as to be unsafe. In practice a new vehicle crossing represents a considerable investment by a landowner and is not something undertaken lightly. In addition the cost of removing the proposed exemption is that a future landowner unable to locate a new crossing further than 60 metres from an intersection to apply for resource consent assessed as a full discretionary activity³⁸. While it is likely that only one future allotment within PC28 will have road frontage entirely within 60 metres of an intersection and therefore will not be able to avoid the need to obtain resource consent, on the strength of Mr Carr's evidence it is considered that the proposed exemption is most appropriate.
80. With regards to whether additional connectivity is appropriate this matter has been discussed earlier. Based on the evidence of Mr Carr I consider the roading and reserve layout shown on the ODP will provide an outcome for vehicle, pedestrian and cycle linkages that is consistent with the relevant objectives and policies of the WDP. I consider the ODP will provide a well-designed integrated development with appropriate opportunities for pedestrian and cycling access connecting through adjacent land to the Mandeville Domain Sports Ground and the Mandeville Business 4 Zone land.

³⁵ Refer to Proposed new rule 32.1.1.20

³⁶ Proposed Rule 30.6.2.14

³⁷ Noting that PC33 has yet to be developed

³⁸ WDP Rule 30.9.1 in relation non-compliance with Rule 30.6.1.26

Stormwater and Flooding

81. I note that Mr McLeod and the Council Officers agree the ODP area is predominantly a 'low' hazard area in the 200 year (0.5% AEP) flood event. PC28 proposes rules to ensure the finished floor levels of dwellings achieve a minimum design level above the 200 year event and that this is identified at the time of subdivision to inform the subsequent building stage. These rules are consistent with the approach developed through PC22 and I agree with Mr Bacon that they remain appropriate for the management of flooding.
82. I also note that Mr McLeod and the Council Officers agree that there are no significant impediments to providing stormwater services to the site. Detailed designs for stormwater soakage will be part of future subdivision or land use proposals and any resource consent from Environment Canterbury that may be required. I agree that such matters of detail are not key considerations for the proposed rezoning and are best addressed at these later stages, at which point the relevant Council will have the benefit of detailed engineering design on which to base their assessment and determination.

Water and Wastewater Servicing

83. There is agreement between Mr McLeod and Council Officers in respect of the ability of the ODP area to be serviced for wastewater and the supply of water by extending the Council's existing reticulation.
84. With regard to the submission by the New Zealand Fire Service³⁹ this has been addressed in the report by Ms LaValley and Mr McLeod is in agreement that the ability to assess methods to provide an appropriate firefighting water supply can be adequately addressed at the time of subdivision. This is consistent with the way this issue has been addressed for other land that has been rezoned within Mandeville.
85. With regard to the submission by Mr Walmsley⁴⁰ that the proposal will have a negative effect on groundwater, I note the evidence of Ms LaValley that adequate water is able to be provided to service the development and the installation of bores and effects on groundwater is within the Canterbury Regional Council's jurisdiction.

³⁹ Submission 83.1

⁴⁰ Submission 86.1

7 PART 2 OF THE ACT

86. Mr Bacon and I concur in our evaluations and conclusion under Part 2 of the Act.
87. Any assessment of Section 5 requires an overall evaluation to be provided. PC28 is considered to enable people and communities to provide for their social, economic and cultural wellbeing by providing for residential choice within Mandeville. This ensures that the use and development of an existing resource in a manner does not result in adverse effects on the existing environment.
88. PC28 does not give rise to any Section 6 "*Matters of National Importance*" issues.
89. Section 7 lists "*other matters*" which the Council must 'have regard to'. In my opinion, the relevant matters to have regard to in respect to PC28 are:
- (b) Efficient use and development of natural and physical resources;*
 - (c) The maintenance and enhancement of amenity values*
 - (f) Maintenance and enhancement of the quality of the environment.*
90. In terms of s.7(b) I consider the adoption of the existing Residential 4A Zone framework will ensure the most efficient use and development of the ODP area, recognising the location of the site within the Growth Management Boundaries for Mandeville identified by higher order documents.
91. PC28 gives rise to a consideration of amenity and character values. On the strength of the conclusions reached by the applicant's experts it is my opinion that the amenity values, quality and character of the area will be maintained and enhanced.
92. With respect to the remaining sections of Part 2 I agree with Mr Bacon's evaluation under Section 8.
93. Putting all of these matters together, my conclusion is that PC28 meets the requirements of Part 2 of the Act.

8 CONCLUSION

94. The most relevant statutory and non statutory planning documents identify the location of the land as appropriate for rural residential development. There is agreement with Council Officers that PC28 represents an appropriate response to the urban growth principles of the Recovery Strategy, LURP, RPS and WDP.

95. There is much common ground on PC28 shared with the Council Officers. Remaining differences in opinion are limited to the extent to which PC28 should provide for connectivity to the surrounding area and the safety of some future access crossings.
96. As the relevant objectives and policies of the WDP are operative they can be taken to achieve the purpose of the Act. Evidence for the applicant has found that PC28 better achieves the objectives and policies of the WDP than the modifications suggested by the Council Officers.
97. I consider there are no matters raised in any of the submissions that have not been appropriately addressed through this Plan Change process.
98. The benefits arising from PC28 outweigh the costs and include the efficient utilisation of the land resource while providing for a high quality residential environment with minimal environmental effects beyond the zone, and in my opinion the purpose of the Act will be better achieved through the approval of PC28 as notified with the addition of the amendments contained in **Annexure A** to my evidence.

Paul McMillan Thompson

10 November 2016

Annexure A:

Schedule of Updated Amendments proposed to the Waimakariri District Plan

Key:

Normal text is commentary

Italicised is proposed text to be inserted into the District Plan

~~Strikethrough~~ is deleted text from the notified Schedule. In relation to rule numbering this is to accord with the Council's public notice dated 1 June 2016. In relation to Rule 31.1.1.50 it is deleted text from the wording in the s.42A report.

Underlined is new text from the notified Schedule (including Further Submission)

Chapter 27: Natural Hazards

Insert new rule 27.1.1.32 [land-use rule ensuring new dwellings address 1 in 200 year flood risk, non-compliance with proposed rule to be assessed as restricted discretionary activity] as follows:

Within the Mandeville Road/ McHughs Road, Mandeville Outline Development Plan area shown on District Plan Map 179, any dwellinghouse shall have a finished floor level of 300mm above the 0.5% Annual Exceedance Probability flood event.

Chapter 30: Utilities and Traffic

Insert new rule ~~30.6.2.11~~ 30.6.2.14 [land-use rule allowing new vehicle crossings on McHughs Road closer than 60m from new road intersection] as follows;

Within the Residential 4A Zone (Mandeville Road/McHughs Road, Mandeville North) shown on District Plan Map 179, vehicle crossings onto McHughs Road are exempt from complying with Rule ~~30.6.1.25~~ 30.6.1.26 subject to the vehicle crossing being sited against the lot boundary which is furthest from the intersection

Insert new rule ~~30.6.2.12~~ 30.6.2.15 [land-use rule recognising for the avoidance of doubt that the new road intersection on the ODP can be closer than 550m from existing intersections, otherwise technically could be a ~~non-complying~~ discretionary activity pursuant to ~~32.1.1.27~~ 32.1.1.28 and 32.3.1] as follows;

The local road shown on the Residential 4A Zone (Mandeville Road/McHughs Road, Mandeville North) shown on District Plan Map 179 is exempt from complying with Rule ~~30.6.1.31~~ 30.6.1.32.

Chapter 31: Health, Safety and Wellbeing

Insert new rule [Further Submission] 31.1.1.49 31.1.1.50 [land-use rule controlling fencing. Non-compliance proposed as a full discretionary activity] as follows;

~~Within the Mandeville Road/McHughs Road, Mandeville Outline Development Plan area shown on District Plan Map 179, all fencing of the pedestrian and cycleway access links shall be rural style post and wire or post and rail fencing with a maximum height of 1.2m.~~

Within the Mandeville Road – McHughs Road Residential 4A Zone shown on District Plan Map 179, any fence greater than 1.2 metres in height or less than 50% visually permeable shall be:

- a. Located a minimum of 15 metres from any road boundary, a minimum of 10 metres from any internal site boundary, ~~or~~ and a minimum of 20 metres from any Rural Zone; and*
- b. Limited to a length of not more than 20 metres along any one side.*

Amend rule [Further Submission] 31.4.1

Except as provided for by Rules 31.1.2, 31.2, 31.3, 31.5 and 31.6 any land use which does not comply with one or more of Rules 31.1.1.10 to 31.1.1.17, 31.1.1.20 to ~~31.1.1.63~~ 31.1.1.64 is a discretionary activity; ~~or to like effect.~~

Chapter 32: Subdivision

Insert new rule 32.1.1.20 [subdivision rule controlling max density. Non-compliance proposed to be a non-complying activity] as follows;

~~Within the Residential 4A Zone and Residential 4A Deferred Zone (McHughs Road and Mandeville Road/McHughs Road, Mandeville North) shown on District Plan Map 179 the maximum number of residential allotments shall be 22~~ 21.

Insert new rule 32.1.1.89 [subdivision rule ensuring management of flood risk available from time of subdivision in-conjunction with new rule 27.1.1.32. Non-compliance proposed as a non-complying activity] as follows:

Within the Mandeville Road/McHughs Road, Mandeville Outline Development Plan area shown on District Plan Map 179 any application for subdivision consent shall identify the minimum finished floor level required to achieve 300mm above a 0.5% Annual Exceedance Probability flood event for each new residential allotment.

Add the following new clause to Rule 32.1.1.27 [subdivision rule ensuring conformity with the ODP. Non-compliance proposed to be a non-complying activity] Outline Development Plans;

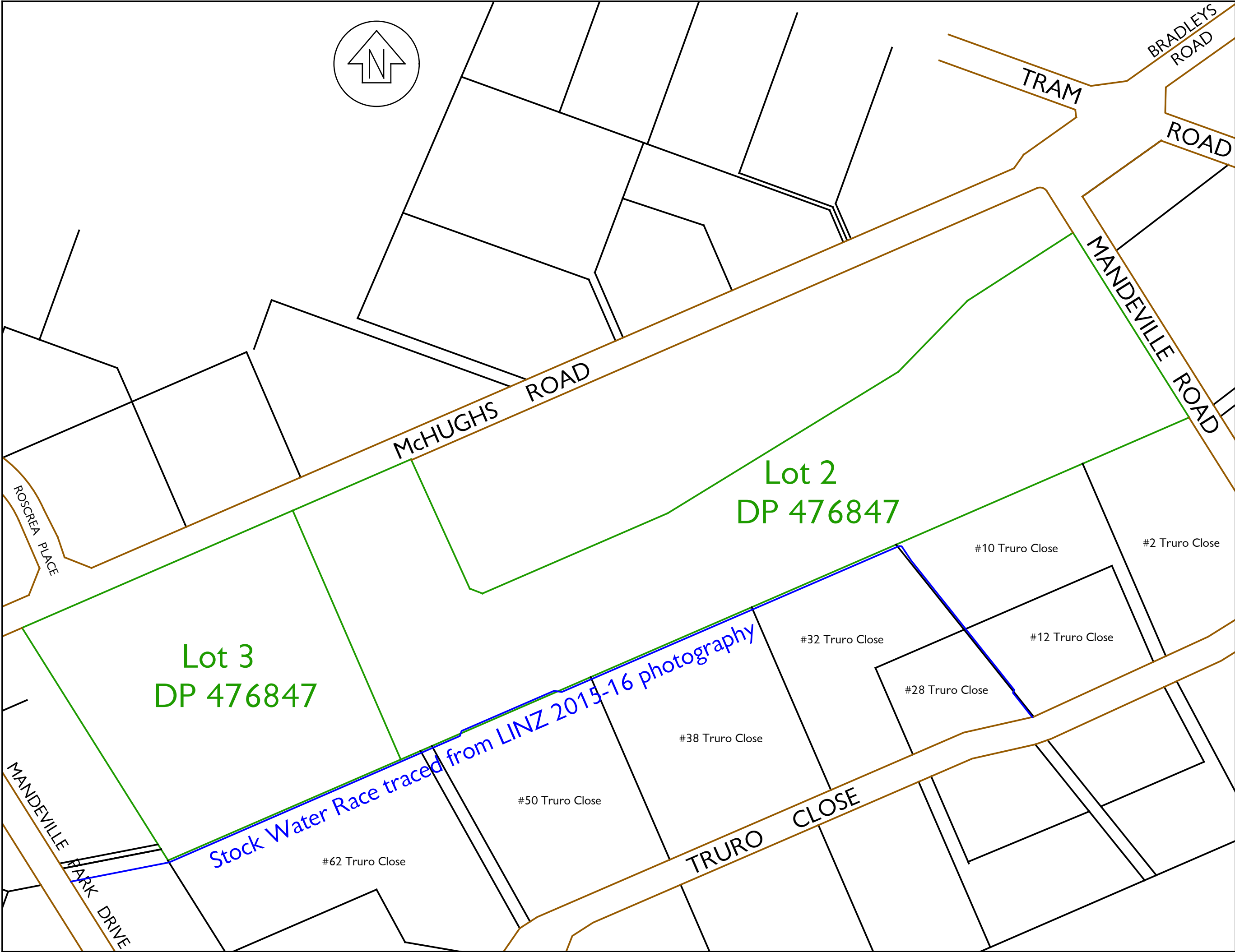
ai. *The Residential 4A Zone (Mandeville Road/McHughs Road, Mandeville North) identified on District Plan Map 179.*

Amend District Plan Maps 56, 57, 92 and 93 of the operative District Plan to zone the land Residential 4A as detailed on the following plans.

Add any other consequential amendments.

Annexure B:

Plan showing the location of the water race



no.	amendment				initial	date	designed manager	Bob Greening Mark Allan	surveyed	origin of levels datum CDD January 2014		Projection NZGD 2000 Circuit Mt Pleasant 2000	Scale: 1:2500 (A3) Date: 8/11/2016	Drawing Set 348678 M4 PLOT 348678 M4 161108.PDF	Sheet 1 of 1

Plan of
Water Race along Southern Boundary
at 116 and 136 McHughs Road, Mandeville
for P G Harris

Eliot Sinclair

surveyors | engineers | planners

BEFORE THE WAIMAKARIRI DISTRICT COUNCIL

IN THE MATTER

of the Resource Management Act
1991

AND

IN THE MATTER

of a Private Plan Change Request
by P G Harris to the Waimakariri
District Plan (Plan Change 028) at
116, 136 & 148 McHughs Road,
Mandeville

STATEMENT OF EVIDENCE OF TIMOTHY DOUGLAS MCLEOD

Dated 10 November 2016

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1 QUALIFICATIONS AND EXPERIENCE

1. My full name is Timothy Douglas McLeod.
2. I hold a Bachelor of Engineering Degree in Natural Resources Engineering. I am a member of the Institute of Professional Engineers New Zealand (MIPENZ) and a Chartered Professional Engineer (CPEng).
3. I have 20 years professional experience as a consulting engineer working in the fields of civil and natural resources engineering. I am employed as Principal Civil Engineer at Eliot Sinclair & Partners Ltd ("Eliot Sinclair"), providing professional advice on a range of land use, subdivision development and infrastructure projects. Prior to working for Eliot Sinclair as a consulting engineer I worked as a Senior Civil Engineer on infrastructure, land development and mining projects based in the United Kingdom.
4. My evidence is presented on behalf of P G Harris ('the applicant').
5. Although not a matter before the Court I confirm that I have read the Code of Conduct for Expert Witnesses set out in the Environment Court Practice Notes 2014 and confirm that I have complied with the code in the preparation of my evidence.
6. My evidence is within my area of expertise, except where I state that I am relying on information provided by another party.
7. I have not knowingly omitted facts or information that might alter or detract from the opinions I express.

2 SCOPE OF EVIDENCE

8. I have been asked to present evidence relating to the provision of infrastructure to service future rural residential development of the ODP area of the Plan Change Request (PC28).
9. I am familiar with the subject site and the Infrastructure Assessment Report that was submitted as part of PC28. I have read the submissions made on PC28 and the s.42A Officer Report prepared by Mr Bacon on behalf of the Waimakariri District Council ('the Council'), including the supporting evidence prepared by Ms LaValley and Mr Simpson.
10. My evidence focuses on the servicing and flood risk issues associated with the proposal, including a brief description of the site and proposed methods for servicing future rural-residential development. More detail regarding these matters is included in the plan change documentation.

11. At this point I would like to mention there is a high level of consensus between myself and the Council Officers in relation to servicing and as such my evidence is to record that I agree with the overall positions of the Council officers of Ms LaValley and Mr Simpson.

3 THE SITE

12. The site is described in detail in the plan change application and Officers Report. The key points relating to servicing are:
- The PC28 ODP area is relatively flat with a gentle fall towards the east.
 - A former gravel pit is located in the north eastern corner excavated to a depth of between 3 – 4 metres below ground level.
 - The soil profile comprises shallow topsoil (approx. 200mm) over silty gravels (approx. 400mm) with underlying sandy gravels.
 - Groundwater is typically 5 - 11 metres below ground level (except the former gravel pit)
 - A shallow water race (approx. 400mm depth) flows along part of the southern boundary varying between 1.5 – 3 metres in width.

4 WATER SERVICING

13. A potable drinking water supply to service future residential development of the subject site is available from the Mandeville water scheme which can be connected to from the adjoining McHughs Road.
14. The submission by the New Zealand Fire Service¹ refers to firefighting water supply. I agree with Ms LaValley that adequate fighting protection can be provided through the provision of 20,000 litre water storage tanks by individual property owners in connection with the existing hydrants located in the surrounding area which provide additional tanker filling points for the Rural Fire Service.

5 WASTEWATER SERVICING

15. Wastewater reticulation is also available within the adjoining McHughs Road to the Mandeville Septic Tank Effluent Pumping (STEP) system which forms part of the Eastern Districts Sewer Scheme (EDSS). Ms LaValley has reaffirmed that

¹ Submission 83.1

there is sufficient capacity within these systems to accommodate additional demand from the subject site.

6 STORMWATER SERVICING

16. Stormwater from impermeable surfaces from development of the subject site will be able to be discharged to ground via various engineered soakage methods to manage flows in normal conditions².
17. For larger storm events and or at times of high groundwater, stormwater will be directed towards secondary flowpaths. This is standard engineering design practice that are addressed at the subdivision or building consent stage.
18. Mr Simpson has raised that resource consent may be needed from Environment Canterbury for the discharge of stormwater from future Right of Ways. **Annexure A** to my evidence contains the relevant rules (Rules 5.96 & 5.97) of the Canterbury Land & Water Plan for the discharge of stormwater to groundwater. I understand that although these rules have recently been amended by Plan Change 4 to the Canterbury Land & Water Plan and this decision is subject to a number of appeals, the appeals do not relate to stormwater discharges and therefore Rules 5.96 & 5.97 can for all intents and purposes be treated as being operative.
19. It is likely that resource consent will be needed from Environment Canterbury for the discharge of stormwater from future Right of Ways given that the permitted activity status limits the system that collects and discharges stormwater to no more than five sites (allotments). It is also likely that resource consent will be needed from Environment Canterbury for stormwater discharge during construction phases.
20. The requirement for resource consent for these matters have become standard and are best addressed at the time of subdivision given the need for detailed engineering design on which to base their assessment and determination. The subject site does not raise any particular design difficulties that would lead me to consider that resource consent would not be able to be obtained to prevent the development from proceeding. I agree with Mr Simpson that there are no major stormwater issues to prevent development of the subject site from proceeding.

² Stormwater events up to the 50 year (2% Annual Exceedance Probability) 24 hour storm and groundwater at normal levels, typically 5 – 11m below ground level.

7 FLOODING

21. I am aware that the Council's flood hazard modelling shows that the Outline Development Plan (ODP) area of PC32 is predominantly identified as a low flood hazard area in a 200 year flood event (0.5% AEP). I agree with Mr Simpson that the rules³ proposed by PC28 requiring finished floor levels to be a minimum of 300mm above the 0.5% AEP is appropriate to address the flood risk.
22. In relation to flood flows, post development earthworks (which is likely to include the constriction of Rights of Way and road construction) are not considered to be of a scale that would form a significant barrier or conduit to flood flows. As such I would expect flood flows, which will generally enter the site across McHughs Road, to continue to be generally disperse in nature as they pass across the site.
23. The assessment undertaken found that while an increase in the flood level may result from development, the magnitude of this increase is unlikely to have a measurable impact. Furthermore the assessment included a number of conservative assumptions that in practice will lead to a lower increase than the modelling has suggested.
24. One such assumption was that future dwellings will be constructed in a row perpendicular to the direction of flood flow, rather than staggered which would have the effect of reducing potential restrictions on the flood flowpaths.
25. I note that Mr Bacon has proposed an amendment to the ODP to include a new non-vehicular reserve link along the south part of PC32 with a width of 10 metres. Given the need to also provide suitable vehicular access to the future residential allotments I understand this may constrain flexibility within the balance of the ODP area with potential to discouraging the staggering of future dwellings. While the potential effects on flood flowpaths of this has been assessed to be acceptable, I note Mr Simpsons comments that post development site levels and building platforms are to be located to ensure existing flowpaths are not affected by development and will need to be considered carefully as part of the subdivision consent. In view of the caution noted that Mr Simpson I consider that any changes to the ODP that has the potential to further restrict flood flowpaths to be imprudent.
26. With regard to the submission⁴ made in connection with the flood storage capacity of the former gravel pit and the effects of any filling, I understand that

³ Proposed rules 27.1.1.32 & 32.1.1.20

⁴ Submission 87.6

the land associated with the former pit is not proposed to be rezoned and that the current provisions in the District Plan to control the effects of any filling are unchanged by PC28.

27. I also note that the former gravel pit does not form part of any stormwater or floodwater system. However, during large flood events the pit naturally fills with floodwater flowing into it from land across McHugh's Road unless it has already been flooded by high groundwater.

8 CONCLUSION

28. I consider there are no reasons from an infrastructure servicing and flood risk perspective not to support PC28. For the reasons given in my evidence I would however caution against the additional non-vehicular link proposed by Mr Bacon from the perspective of risk and flood management.

Tim McLeod

10 November 2016

Annexure A:

Canterbury Land and Water Regional Plan Rules 5.96 & 5.97

[Note: including changes introduced by Plan Change 4]

5.96 The discharge of stormwater, other than into or from a reticulated stormwater system, onto or into land where contaminants may enter groundwater is a permitted activity, provided the following conditions are met:

1. The discharge is not from, into or onto contamination or potentially contaminated land; and
2. The discharge:
 - a) does not cause stormwater from up to and including a 24 hour duration 10% Annual Exceedance Probability rainfall event to enter any other property; and
 - b) does not result in the ponding of stormwater on the ground for more than 48 hours, unless the pond is part of the stormwater treatment system; and
 - c) is located at least 1 m above the seasonal high water table that can be reasonably inferred for the site at the time the discharge system is constructed; and
 - d) is only from land used for residential, educational or rural activities; and
 - e) does not occur where there is an available reticulated stormwater system, except where incidental to a discharge to that system; and
 - f) is not from a system that collects and discharges stormwater from more than five sites.

5.97 The discharge of stormwater, other than from a reticulated stormwatersystem, into a river, lake, wetland or artificial watercourse or onto or into land in circumstances where a contaminant may enter water that does not meet one or more of the conditions of Rule 5.95, 5.95A or Rule 5.96; and the discharge of stormwater or construction phase stormwater into a reticulated stormwater system that does not meet the condition of Rule 5.93A; is a discretionary activity except that within the boundaries of Christchurch City it is a non-complying activity