

IN THE MATTER

of the Resource Management
Act 1991

AND

IN THE MATTER

of Private Plan Change 36
(Conifer Grove) to the Selwyn
District Plan

STATEMENT OF EVIDENCE OF ANDREW DAVID CARR

1. INTRODUCTION

Qualifications and Experience

- 1.1 My full name is Andrew (Andy) David Carr.
- 1.2 I am a Chartered Professional Engineer, an International Professional Engineer (New Zealand section of the register) and an Associate Member of the New Zealand Planning Institute. I hold a Masters degree in Transport Engineering and Operations and also a Masters degree in Business Administration.
- 1.3 I have 25 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. I am currently a member of the national committee of the Resource Management Law Association and the immediate past Chair of the Canterbury branch of the organisation.
- 1.4 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 have also acted as a hearings commissioner for Greater Wellington Regional Council, Ashburton District Council, Waimakariri District Council and Christchurch City Council.
- 1.5 Prior to forming Carriageway Consulting Ltd I was employed by Abley Transportation Consultants Ltd as an Associate Principal, and before that, I was a Senior Associate with the firm of Traffic Design Group Ltd where I was the Branch Manager of the Christchurch office.
- 1.6 I have extensive experience in assessing the traffic and transportation effects of proposed plan changes to facilitate new development. Within Christchurch, this includes providing advice for plan changes 22 (Styx Centre) and 30 (Prestons Road Limited), and within the Waimakariri

District, plan changes 11 and 12 (Ruby Views), 14 and 15 (Silverstream Estates Ltd) and 17 (Ohoka), as well as proposed plan change 23 (Swannanoa Road, Fernside). Within Selwyn District my experience includes assessing the effects of plan changes 24 (Silverstream Estates, Darfield) and 25 (Porters Ski Area). I also have expertise in carrying out independent peer reviews of plan changes, including assessing plan changes 18 (Oxford Road, Rangiora), 20 (Smith Street, Kaiapoi) and 22 (McHughs Road, Mandeville) for Waimakariri District Council.

- 1.7 Although this is a Council hearing, I have read the Environment Court's Code of Conduct for expert witnesses (November 2011) 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.

Conflicts of Interest

- 1.8 The Integrated Transport Assessment (ITA) provided in support of the plan change request was produced by Abley Transportation Consultants Ltd ("*Abley*"). It is dated March 2013, and at this time I was an employee of the firm. However I confirm that I played no role in producing the report, and did not provide any inputs even on an informal basis. I left the firm in February 2014. I can therefore confirm that I am free of any conflicts of interest and able to provide a wholly independent review of the report and its analyses and conclusions.

Scope of Evidence

- 1.9 In this matter, I have been asked by Selwyn District Council to assess the transportation-related effects of Private Plan Change 36 (Conifer Groves) to the Selwyn District Plan. For clarity, I was not involved in the plan change or in any discussions between the plan change proponents and the Council, prior to being asked to prepare this Statement of Evidence.

1.10 I have reviewed and evaluated the documentation accompanying the plan change request which includes an ITA prepared by Abley Transportation Consultants, and the first part of my evidence sets out my assessment of their analyses and conclusions. I have also read and considered each of the submissions received on the plan change request, and evaluated whether I am able to support the matters raised, and this is set out in the second part of my evidence. Finally, I conclude my evidence with a brief summary of my recommendations.

1.11 In preparing my evidence I have:

- (a) Visited the site and surrounding road network during August 2014;
- (b) Reviewed the plan change request as lodged, including the ITA included as Appendix 6 to that document;
- (c) Read all submissions received on the plan change request; and
- (d) Where relevant, referred to other information that I have sourced which is pertinent to consideration of the transport-related aspects of the plan change request.

2. REVIEW OF INTEGRATED TRANSPORT ASSESSMENT

2.1 For ease of reference, my comments on the Abley ITA are listed under the same headings and in the same order as set out in that document.

Existing Transport Networks

2.2 Having visited the site, I concur with the description of the transport networks in the vicinity of the plan change area. It would have been helpful if a plan had been provided showing the road names (those on Figure 2.2 of the ITA are too small to be legible), but I have cross-referenced the descriptions against other plans where necessary to ensure that the description of the road network is accurate.

2.3 I note a minor error in the last sentence of paragraph 3.1, which should refer to Birchs Road rather than Hampton Road, although this is not material to any analysis or conclusions of the report.

Existing Transport Demands and Network Performance

- 2.4 The ITA sets out the traffic flows around the plan change area as sourced from the records of the District Council. These are reported as Annual Average Daily Traffic (AADT), and it is noted that this is how the Council stores traffic count information. It is my experience that often this is how such data is retained, and hourly or daily variations are commonly not available.
- 2.5 To calculate the likely peak hour traffic flows, the ITA applies a factor of 10% to the AADT (daily) traffic volumes. I agree that in many cases the peak hour flows on a road are at, or around, 10% of the daily flows. However in some cases, the proportion may be greater at up to 15%. No justification is given for applying a percentage towards the lower end of the range, and thus it is possible in my view that the peak hour traffic volumes may be underestimated.
- 2.6 In order to obtain further traffic flow information, the ITA sets out that an additional survey was carried out at the Springs Road / Birchs Road intersection in early January 2013. In my experience, this is an extremely unusual time to carry out a traffic survey. Surveys are invariably carried out at times when the traffic flows on a road are expected to reflect the typical volumes, which precludes times of school holidays, public holidays, when a special event is being held, in periods of heavy snow and the like. In this case, the survey was carried out in the first working week after the New Year, when not only would there be no school traffic but anyone taking a summer break of more than two weeks would also not be travelling to work. In my view, the traffic flows observed in the surveys are therefore likely to be much lower than those that usually occur.
- 2.7 To an extent, Abley recognises this issue and briefly references a sensitivity test that was carried out to account for students travelling to/from Lincoln University. For this test, an additional 40% was added to through traffic on Springs Road. No mention is made of travel to school or to work, and no correction factor appears to have been applied for these.

- 2.8 That said, I note that the results of the (unfactored) traffic survey showed very good levels of service are provided at the intersection, and even when the additional 40% factor was applied, levels of service remain good. Consequently I consider that even if the peak hour factor was increased from 10% to 15%, and a higher factor was used to allow for student, school and work-related travel, it is extremely unlikely that levels of service would deteriorate significantly. I therefore agree with the conclusion that there is currently significant capacity at the Springs Road / Birchs Road intersection.
- 2.9 For the remaining intersections in the area, the ITA refers to the Austroads Guide to Traffic Management Part 3, and in particular a table that sets out thresholds below which it is considered unnecessary (by the guide) to undertake detailed intersection analyses due to the flows being so light that the intersection effectively operates under 'free flow' conditions. Abley highlights that the existing volumes fall below these thresholds and thus detailed assessments are not required. I agree with this methodology and outcomes.
- 2.10 The review of the road safety records shows that the bulk of crashes in the vicinity of the plan change area have occurred towards the north, with only three crashes occurring on the frontage roads. Overall, the ITA concludes that the number and pattern of accidents does not indicate any existing road safety issues in the area, and I concur.

Proposed Plan Change

- 2.11 The description of the Outline Development Plan (ODP) for the plan change area shows a Right of Way (ROW) linking onto Hamptons Road approximately mid-way between Trices Road and Birchs Road, at an angle of around 45 degrees. The ITA notes that those properties that have frontage onto the adjacent roads will have direct access onto those roads, but that those lots which do not (six in total) will gain access via the ROW.
- 2.12 The District Plan does not set out any requirement for the angle at which a ROW should meet a road carriageway, but in my experience, an angle of 45 degrees is unusual because it presents potential road

safety issues. This is because any driver emerging from the ROW needs to look over their left shoulder and through the rear passenger window, which firstly is not a common movement but secondly is not always possible if there is a solid bulkhead behind them. Accordingly, in practice I would expect that the carriageway within the ROW will be curved on the immediate approach to Hamptons Road such that it meets the carriageway at an angle that is close to perpendicular.

- 2.13 The formation and detailed design of the ROW intersection is a matter that will need to be dealt with when a land use or subdivision application is made. For the purposes of this plan change however, I am confident that there are design solutions which mean that the access intersection will operate safely and effectively, at the location proposed in the ODP.
- 2.14 The ODP also shows a link from the head of the cul-de-sac through to Birchs Road which is noted as being a "*cycle/pedestrian shared path*". I consider that such a link would be valuable, because it enables those living within the plan change area to directly gain access to the existing shared walking/cycling route on Birchs Road. I therefore support the inclusion of this link within the ODP.

Anticipated Travel Patterns

- 2.15 The traffic generated by the three properties currently within the plan change area has been assumed to be zero within the ITA in order to provide a robust assessment. I agree that this will slightly overestimate the traffic generation of the plan change area, although I note that the net effect (3 vehicle movements in the busiest hours) will be minimal.
- 2.16 An assessment is included of the likely traffic generation associated with the plan change area, adopting a rate of 8 vehicle movements per day per dwelling. I agree with the Abley assertion that this is a conservative estimate, and in my experience for rural residential dwellings such as proposed, a lower traffic generation rate of 6 vehicle movements per day per dwelling could be anticipated. The rate of 1 vehicle movement per dwelling in the peak hours is also slightly conservative in my view.

- 2.17 As a result of both of these assumptions, I consider that the calculated traffic generation of 16 vehicle movements in the peak hours and 128 vehicle movements over the course of a day is likely to be higher than will arise in practice.
- 2.18 The vehicles have been assigned onto the road network allowing for 90% to travel to/from Christchurch with the remaining 10% having a destination to the south or west of the plan change area. It has then been assumed that all of the Christchurch traffic will pass through (and turn at) the Springs Road / Birchs Road intersection.
- 2.19 I agree that this is a conservative scenario. In practice, it is possible that more traffic will travel towards the south and that vehicles may use alternative routes to travel to/from Christchurch. However changing these assumptions will only serve to diminish the effects of turning vehicles at the Springs Road / Birchs Road intersection. In other words, I am of the view that if the Springs Road / Birchs Road intersection operates satisfactorily under the assumed traffic loadings set out in the ITA, then any changes to the vehicle distribution can only diminish the effects further.

Appraisal of Transport Effects

- 2.20 The ITA describes that even with the addition of the traffic associated with development of the plan change area, the resultant traffic flows at most of the intersections in the immediate area are still below the thresholds at which detailed analyses are required according to the Austroads Guide to Traffic Management Part 3, and I support this conclusion.
- 2.21 A detailed assessment is however included of the levels of service at the Springs Road / Birchs Road intersection with the additional traffic. This shows that very good levels of service can be expected.
- 2.22 While I consider that the analysis itself is correct, I noted previously that the traffic survey carried out at this intersection is likely to have recorded volumes that are lower than typically occur due to the timing of the survey necessarily excluding certain trips to/from work, to/from

school, and student travel to/from Lincoln University. It is therefore not surprising that good levels of service are forecast.

- 2.23 In my view, it would have been very helpful to include a similar sensitivity test to that which was carried out for the traffic flows without any vehicles associated with the plan change. However, I consider that it is possible to compare the various tests that are included within the ITA to approximate the likely outcomes with higher volumes at the Springs Road / Birchs Road intersection. Based on the reported change between the observed and the 'plus 40%' intersection performance without the plan change, I consider that with plan change traffic added then at worst Level of Service C would arise at the intersection (and potentially it would be Level of Service B). Either of these represent an acceptable outcome.
- 2.24 In the introduction to the ITA, Abley sets out that the report has been prepared using the guidance set out in the NZTA 'Integrated Transport Assessment Guidelines'. Section 5.5.3 of these guidelines set out that for plan changes, a 'future year' assessment of the traffic conditions likely to arise ten years after notification of the plan change should be undertaken. However the ITA does not address a future year assessment, and in this regard, does not therefore adhere to the guidelines.
- 2.25 Based upon a conservatively high background traffic growth of 3% per annum, in ten years' time the prevailing traffic flows will be 30% greater than shown in the Abley report. In my experience, such an increase is likely to mean that Level of Service C, and at the absolute worst potentially Level of Service D, would arise at the Springs Road / Birchs Road intersection. However both of these represent an acceptable level of service.
- 2.26 I also note that for all scenarios, the proportion of the plan change traffic comprises at most 6% of the existing volumes. Consequently the performance of the intersection can only ever be influenced to a small extent by the traffic associated with the plan change area, and by far the greatest factor affecting the levels of service will be the prevailing background volumes.

- 2.27 With regard to road safety, Abley highlights that the access intersection will comply with best practice and that excellent visibility can be achieved for turning vehicles, and as there are no evident existing accident issues on the road network, it is unlikely that any road safety issues would arise from traffic travelling to/from the plan change area. I agree.
- 2.28 The ITA makes little mention of potential walking, cycling and public transport usage associated with the plan change area although it is noted that the shared path to Birchs Road will connect reduce cycle and walking distances and make these modes of travel more attractive. I agree with this. I also note that the wide verges on the road around the site could be used for walking trips. However, the plan change area is more than 1.5km from Prebbleton town centre, whereas surveys of walking show that the typical distance travelled by a pedestrian is rarely more than 1km. This highlights a particular characteristic of rural residential development, namely that by definition it almost invariably occurs on the fringes of townships and thus the distances involved are often not conducive for walking as a viable mode of transport to reach key destinations.
- 2.29 As a result, and due to the low number of walking trips that would be generated by development of the plan change area, I do not consider that there is a requirement for any additional infrastructure to be provided for pedestrians arising out of this plan change request.
- 2.30 Cycling trips are generally longer than walking trips, at 3km and thus the town centre is within a viable travel distance. Again though, the number of trips is likely to be low due to the limited number of allotments that would be created by the plan change and insufficient in my view to justify any particular provision of infrastructure.
- 2.31 With regard to public transport use, I note that the ITA identifies two bus stops, including one stop at the Birchs Road / Hamptons Road intersection just to the southeast of the plan change area. Although this is for buses travelling in a northbound direction only, in my view it would provide at least some degree of connectivity to Prebbleton town centre towards the north.

Compliance with Policy Framework

- 2.32 The plan change request sets out an assessment of the site against the Regional Policy Statement (RPS), including the transportation-related matters set out in that document, together with the changes proposed to be introduced through Proposed Change 1 (PC1) to the RPS. However since production of the ITA, the RPS has been revised and PC1 has been superseded by the Land Use Recovery Plan (LURP).
- 2.33 I understand that the plan change area has been identified in the Rural Residential Strategy 2014 developed under the Local Government Act and in response to the requirements set out in Policy 6.3.9 to the RPS introduced via the LURP as being appropriate for the type of development proposed. I consider that as part of that process, the degree to which the site achieves the outcomes sought by the now-current RPS, including the transportation-related outcomes, will have been taken into account. Accordingly, in this particular instance, I do not consider that the omission of a specific consideration of the plan change area against the current RPS is material.
- 2.34 The ITA also addresses how the proposed plan change accords with the Regional Land Transport Strategy, the Regional Passenger Transport Plan and the Selwyn District Plan. I agree with the assessments carried out, although I note that the Regional Passenger Transport Plan has been updated since the ITA was produced.
- 2.35 No changes to the transport-related District Plan rules are proposed as a result of this plan change within the ITA. The plan change request itself however highlights that a new rule is proposed such that “*where any conflict occurs with Rule E13.2 then the vehicle accessway in Appendix X (of the plan change) shall take precedence*”. I anticipate that the ‘vehicle accessway in Appendix X’ refers to the proposed ROW although this does not appear to be defined. Rule E13.2 of the District Plan addresses all vehicle accessway and crossing standards.
- 2.36 I consider that the wording of this proposed rule requires some attention. Rule E13.2 has several parts, including considering the

separation of private driveways from intersections, provision of sight distances at accessways, the limit of one accessway per residential lot, and the width of driveways. Exempting the ROW from all of this rule therefore removes much of the Council's ability to control matters that are critical to the safe functioning of the road network. It would for example, enable the ROW to be constructed without providing suitable sight distances.

2.37 It is also unclear how the Council is to address situations where accessways are proposed to the individual lots shown on the ODP, and introduces uncertainty as to whether these are also exempted from Rule E13.2.

2.38 Having considered Rule E13.2, I consider that the proposed ODP can give rise to a subdivision layout that can meet all parts of the rule. I am therefore uncertain what the proposed rule is expected to achieve. It would be helpful for the plan change proponents to provide more detail on the specific parts of Rule E13.2 for which exemptions are sought, and for these to be supported by an assessment of the likely outcomes from a transportation engineer.

Conclusions

2.39 The ITA concludes that the roading network would operate safely and efficiently with full development of the plan change area, and that the plan change request is in accordance with overarching strategic planning documents.

2.40 To a large extent I agree with the conclusion regarding the efficiency of the roading network, but it is clear that the ITA was written with an expectation that the plan change would comply with the District Plan rules (as set out in paragraph 9.3 of the ITA). This would appear to be in contrast to the proposed exemption from Rule E13.2, and confirms my understanding that some clarification around this would be helpful.

2.41 At this stage, the broad nature of the exemption sought from Rule E13.2 means that in my view, there is the potential for adverse safety effects to arise. There is no mention in the ITA of any such exemption, and therefore the effects on safety have not been considered.

SUBMISSIONS

- 2.42 I have read all six of the submissions received on the plan change. However none refer to transportation matters.

3. CONCLUSION

- 3.1 Based on my review of the information provided, I consider that the plan change request will have only negligible effects on the efficiency of the adjacent roading networks. I also consider that the plan change request is in accordance with overarching statutory documents.
- 3.2 In the absence of the proposed exemption from Rule E13.2, I am of the view that the proposed plan change will have negligible effects on the safety of the adjacent transport networks. However the wording of the rule exemption as sought means that various controls would be removed from the vehicle accessways, which could then give rise to adverse safety-related effects. I therefore recommend that either additional information is provided regarding the outcomes of the exemption, or that the particular aspects of the rule for which an exemption is sought are more clearly defined, or that the exemption is not pursued.
- 3.3 Overall, subject a satisfactory resolution of the matter of the exemption to Rule E13.2, I do not consider that there are any traffic and transportation issues which would preclude Private Plan Change 36 (Conifer Grove) from being recommended for approval.

Andy Carr

September 2014