

Before the Queenstown Lakes District
Council

In the matter of The Resource Management Act 1991

And The Queenstown Lakes District Proposed District Plan Topic 13
Queenstown Mapping – Group 1B (Queenstown Urban
(Frankton and South))

SUMMARY STATEMENT OF EVIDENCE OF ANDY CARR FOR

Hansen Family Partnership (#751)
FII Holdings (#847)
Peter and Margaret Arnott, Fernlea Trust (#399)
The Jandel Trust (#717)
Universal Developments (#177)

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INTRODUCTION

- 1 My full name is Andrew (Andy) David Carr. My qualifications and experience are set out in my Evidence in Chief.
- 2 This Summary of Evidence sets out the key points within my Evidence in Chief. I have also read the rebuttal evidence of Ms Wendy Banks on behalf of Queenstown Lakes District Council, and Mr Tony Sizemore on behalf of the New Zealand Transport Agency, and I have responded to their comments within this statement.
- 3 I have read the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2014. This summary of evidence has been prepared in accordance with it and I agree to comply with it. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

LEVEL OF SERVICE AT THE STATE HIGHWAY 6 / HAWTHORNE DRIVE ROUNDABOUT

- 4 In large part, my Evidence in Chief focussed on the anticipated outcomes of traffic generated by the proposed rezoning on the performance of the State Highway 6 / Hawthorne Drive roundabout. This analysis was based on the assumption of a fourth leg being added to the existing three-leg roundabout, with this leg serving the submitters' land.
- 5 My analysis used a 'design year' of 2025, and the baseline traffic volumes were output from the Council's transportation model, which takes into account changes in land use zoning and associated traffic growth up to that year. I then carried out a series of modelling runs using the computer software program Sidra Intersection to determine the point at which the delays at the roundabout would change to Level of Service E on any approach (that is, a delay of more than 50 seconds on any approach), being the point at which the roundabout could be considered to be 'over capacity'.
- 6 However there is no guidance in any document as to the point at which the level of efficiency at an intersection becomes unacceptable, or whether it should apply to an approach or the intersection as a whole, rather than an individual turning movement. Consequently I adopted a conservative assessment, of identifying the point at which one turning movement on one approach has such a delay.
- 7 Based on this assessment, I concluded that the submitters' land could generate a total of 1,430 vehicle movements (two-way) in the peak hours before the threshold was reached. This equates to a traffic generation of 55 vehicle

movements per hectare (two-way), when dividing the total number of vehicle movements by the size of the submitters' site.

- 8 I identified that there could be additional capacity added to the roundabout if necessary at this point, in order to provide additional capacity. This could include auxiliary turning lanes or an additional circulating lane.
- 9 In her rebuttal Statement, Ms Banks considers that a "higher"¹ Level of Service should be achieved at the roundabout noting that if it was to perform at Level of Service D for a significant time, it would be a poor outcome since there would be "up to 50 seconds of delay per vehicle". She suggests that the roundabout should perform at Level of Service C (her paragraph 4.18) although it is not clear whether she is referring to one turning movement having this delay, one approach, or the roundabout as a whole.
- 10 Irrespective, the scenario presented in my evidence is not one where every vehicle experiences Level of Service E. The traffic generation I have calculated applies only to one turning movement in the weekday evening peak hour. Table 2 of my evidence shows that in the morning peak hour, the delay for vehicles ranges from 3.6 to 16.5 seconds on every approach (this equates to Level of Service A or B). Even in the evening peak hour, the delays are typically below 20 seconds per vehicle.
- 11 I have further reviewed my modelling which is summarised in Table 3 of my Evidence in Chief, and note that in the evening peak hour and with the submitters' site generating 1,430 vehicle movements (two-way), 54% of vehicles passing through the intersection had delays of less than 25 seconds per vehicle. For the roundabout as a whole, the average delay per vehicle is 33 seconds, and Level of Service C is provided.
- 12 To clarify my comment in paragraph 32 of my Evidence in Chief, the modelling which I have carried out makes use of the likely geometry the roundabout based upon the current geometry of the roundabout. My comment was intended to convey that I have not adjusted any factors that could result in the roundabout having greater capacity, such as gap acceptance values. In my view this provides a conservative assessment.

TRIP GENERATION RATES

- 13 Ms Banks considers that my 25% reduction in traffic generation associated with people living and working within the same location (the site) is "probably excessive", but does not set out any alternative proportion.

¹ For clarity, given that the wording is ambiguous, I understand that Ms Banks means Level of Service A, B or C

- 14 In practice, this is a more complex issue than it might at first seem. There will be trips which only take place internal to the site (people living and working in the same area). There will also be trips that are presently made on the highway but which divert into the site (for example, a person living in Shotover Country and travelling to Queenstown might instead find employment in the site). There will also be people that live in the site and work in (say) Queenstown that would otherwise have lived elsewhere, and so their travel would have taken place at other locations on the network.
- 15 There will also be an effect on trip generation rates due to people choosing alternative transport modes. In view of the proximity to public transport and off-road cycle routes, I expect that these will be viable modes of travel.
- 16 The reduction that I applied was intended to be a proxy to take into account these factors, as determining the exact proportions of modal share and changes in travel patterns is extremely difficult and requires complex modelling software. In view of the conservative approach which I have adopted in respect of determining the appropriate threshold for development, I remain of the view that a 25% reduction is appropriate.

ABILITY TO ACCOMMODATE "PEDESTRIANS, CYCLISTS, OTHER INTERSECTIONS OR MID-BLOCK TRAFFIC"

- 17 Ms Banks notes that my analysis does not consider how other modes of transport will be accommodated. This is correct – the scope of my evidence was limited to determining the extent of traffic-related adverse effects arising at the State Highway 6 / Hawthorne Drive roundabout.
- 18 However, in common with other rezonings, I acknowledge that there will need to be masterplanning work undertaken to facilitate travel by non-car modes of transport. That said, provision is already in place at the State Highway 6 / Hawthorne Drive roundabout where NZTA has already provided formal crossing places for pedestrians and cyclists.

USE OF A TEN-YEAR DESIGN PERIOD

- 19 Mr Sizemore sets out that in a high growth environment such as Queenstown, he considers that a 30-year design horizon would be more robust than a 10-year horizon which I used. Over this period, he notes that growth on the highway would be in the order of 31.8% (22,000 vehicles per day to 29,000 vehicles per day).
- 20 Any planning period beyond a decade needs to be approached with caution because there is necessarily an increasingly significant reliance on assumptions

or forecasts that have a higher margin of error. NZTA Research Report 422 'Integrated Transport Assessment Guidelines' notes that:

"In terms of transportation, where a comprehensive transportation study has been undertaken ... then sufficient information or suitable guidance may be available to enable network travel conditions to be predicted 20 or even 30 years ahead"

But that:

"It is a general premise that the furthest year into the future will produce the worst effects, based on increasing traffic growth and cumulative effects. This reflects the experience where network enhancements tend to follow the traffic demands placed on that network, often with a considerable lag."

- 21 I agree with Mr Sizemore's view that as the design year becomes longer, then there is less capacity remaining at (any) intersection. However, in my experience ten years is the horizon most often used by traffic engineers, as it represents a pragmatic balance between a future year and a point at which errors in assumptions begin to skew the outcomes. Further, and as I note above and in my Evidence in Chief, I consider that that I have adopted a conservative approach when assessing the effects in this period.

RESIDENTIAL DEVELOPMENT

- 22 Mr Sizemore sets out concerns with the variable nature of traffic generation at a BMUZ, and Ms Banks considers that a residential zoning is more appropriate. I have therefore undertaken an additional assessment of the performance of the roundabout allowing for residential development. This was carried out on the same basis as my earlier assessment, of using 2025 traffic flows and identifying the point at which any approach changed from Level of Service D to E.
- 23 My analysis shows that this point is reached when the submitters' sites have a total of 1,075 houses, which equates to 41 houses per ha.

CONCLUSION

- 24 Having reviewed Ms Banks' and Mr Sizemore's rebuttal evidence, I remain of the overall views expressed in my Evidence in Chief and continue to support the submission of the Hansen Family Partnership and others for the rezoning of land adjacent to State Highway 6 for BMUZ, subject to provision being made to enable the traffic generation of proposed activities to be assessed when they exceed the threshold level that I have recommended.

Andy Carr 15 August 2017