BEFORE COMMISSIONERS APPOINTED BY QUEENSTOWN LAKES DISTRICT COUNCIL

IN THE MATTER of Resource Management Act 1991

AND

IN THE MATTER of submissions by Jeremy Bell Investments Limited

OS 782 and FS 1030

EVIDENCE OF ANDREW DAVID CARR

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LAWYERS
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Introduction

1. My full name is Andrew (Andy) David Carr.

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.

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.

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.

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.

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.

7. I have carried out numerous commissions which have involved assessing the traffic and transportation effects of industrial and commercial developments and plan change requests. This has included single-site developments (for clients such as Fonterra, Oceana Gold, and various warehousing companies), to plan changes to facilitate large-

scale industrial areas such as Ashburton District Plan Change 2 which rezoned 124ha of land for business/industrial purposes.

8. I have carried out transportation-related commissions for a variety of new developments in the Wanaka area for more than 12 years.

9. As a result of my experience, I consider that I am fully familiar with the particular traffic-related issues associated with the development of activities of the nature proposed.

10. Although this is a Council Hearing, I have read the Code of Conduct for Expert Witnesses in the Environment Court Consolidated Practice Note 2014. This 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.

Scope of Evidence

11. I have been asked by counsel for Jeremy Bell Investments Limited to evaluate and assess the transportation aspects of its submission for the rezoning of land adjacent to State Highway 6, in proximity to Wanaka Airport ("the site", "the zone"). In brief, the purpose of the rezoning is to create a new zone ('Wanaka Airport Mixed Use Zone') on 14.54ha of land on the western side of State Highway 6. The zone is to provide for airport-related activities.

12. My evidence addresses the following matters:

    a. A description of the prevailing and confirmed future transportation networks in the area;

    b. The traffic likely to be generated by the revised provisions for the zone;

    c. An assessment of options for accessing the zone to avoid adverse effects arising on the highway, and with reference to airport access; and

    d. Matters pertaining to the internal transportation networks.

13. My evidence is primarily focussed on the (geographic) area relevant to the submission, but as cumulative effects can be important for traffic

matters, where relevant I have also considered the traffic issues arising further afield.

Executive Summary

14. The roading network in the immediate vicinity of the proposed zone presently operates with good levels of service in respect of safety and efficiency.

15. I have adopted a conservative approach to evaluating the potential traffic generation of the site, taking into account the likely maximum extent of development and only allowing for activities to establish that have higher traffic generation rates. In this regard, the zone provisions limit the extent of the most significant traffic generators (visitor accommodation, retail and food and beverage) to being very small scale.

16. My assessment of the two most critical intersections, State Highway 6 / Mt Barker Road and State Highway 6 / Airport Way, under the traffic flows expected at full site development and allowing for ambient growth on the highway shows that both will operate satisfactorily.

17. Level of Service D or better is provided for each turning movement, other than for the right turn movement out of Mt Barker Road in the morning peak hour, where Level of Service E arises. I consider that this is unlikely to arise in practice because it is probable that at least some low traffic generators will establish within the zone, and if just 20 fewer vehicles carried out this turning movement, then Level of Service D would arise.

18. The prevailing road safety record does not indicate any issues or difficulties that would be exacerbated by the proposal.

19. In view of the increased traffic flows, auxiliary turning lanes are required for vehicles turning right into Mt Barker Road, and for vehicles turning left into both Mt Barker Road and Airport Way. These lanes will also provide a safety benefit for the roading network. The legal road reserve of State Highway 6 is 40m wide in this location, which provides ample area for the construction of these lanes to meet current best practice.

20. There is an unformed legal road at the eastern boundary of the site, which could be developed to provide a second access point, subject to

meeting appropriate design parameters. I do not consider that such an access is required for the zone to be served with an appropriate level of service, but rather, it could create efficiencies by reducing travel distances for tenants.

21. In view of the size of the zone, in my view there are no reasons why the transportation-related requirements of the District Plan and the Council's Subdivision Code could not be met in full.

22. I have read the report of Ms Wendy Banks, consultant transportation engineer to the Council, but do not share her concerns with regard to the rezoning. In my view, and subject to improvements at the State Highway 6 / Mt Barker Road and State Highway 6 / Airport Way intersections, vehicles will be able to move between the site and the airport safely. Dust and additional maintenance issues on Mt Barker Road are unlikely to arise on Mt Barker Road since it is already sealed adjacent to the proposed zone.

23. Accordingly, I consider that the traffic generated by development within the proposed rezoned area can be accommodated on the roading network without adverse efficiency or safety effects arising (subject to intersection improvements as discussed above). I am therefore able to support the submission of Jeremy Bell Investments Limited for the rezoning of land adjacent to State Highway 6 for airport-related activities.

Prevailing Transportation Environment

24. The proposed zone lies to the immediate west of State Highway 6 and south of Mt Barker Road. State Highway 6 is an Arterial Road under the current Queenstown Lakes District Plan roading hierarchy and forms a primary route to and from Wanaka, which lies approximately 9km to the northwest. Mt Barker Road is a Local Road under the hierarchy, indicating a role in primarily providing property access.

25. In this location, State Highway 6 provides two traffic lanes (one in each direction) of 3.5m width each, and has a flat and largely straight alignment although towards the southeast it curves slightly. It is subject to a speed limit of 100km/h. There are wide (approximately 2-3m) sealed shoulders on either side of the traffic lanes, and grassed verges.

26. Mt Barker Road is also subject to a 100km/h speed limit, and also has a relatively flat and straight alignment. The carriageway width is in the order of 8m with the traffic lanes separated by a marked centreline, but no marked shoulders. There are grassed verges on either side of the carriageway.

27. Mt Barker Road meets State Highway 6 at a priority ('give-way') intersection. The intersection does not have any auxiliary turning lanes, but the wide verge on the eastern side of the highway can be used by one vehicle passing another that is stationary and waiting to turn right. Due to the straight and flat alignment of State Highway 6, sight distances for turning drivers are excellent.

28. The access to the airport (Airport Way) lies 200m to the east of the State Highway 6 / Mt Barker Road intersection. This is also formed as a priority intersection without any auxiliary turning lanes.

29. Some 880m east of the State Highway 6 / Mt Barker Road intersection, the highway curves slightly southwards, and there are a small number of private driveways which join the highway from the north and south. However there is also an unformed legal road which lies on the southern side of the road, directly adjacent to the eastern boundary of the proposed zone.

30. The most recent information from NZTA is that the highway carries 3,900 vehicles per day (two-way), and has peak weekday traffic flows of 340 to 420 vehicles (two-way) in the morning and evening peak hours respectively. Over the past five years, traffic has been growing at a rate of 1.5% per annum.

31. Mt Barker Road carries in the order of 200 vehicles per day (two-way), which equates to around 30 vehicles (two-way) in the peak hours. There is no traffic volume information on Airport Way.

32. The Austroads Guide to Traffic Management Part 3 'Traffic Studies and Analysis' sets out a methodology whereby the level of service provided by a road can be found. Using this, and taking account of the peak hour flows, State Highway 6 currently provides Level of Service B. This is noted in the Austroads Guide as a "zone of stable flow where drivers still

have reasonable freedom to select their desired speed and to manoeuvre within the traffic stream".

33. Under the same methodology, Mt Barker Road provides Level of Service A, noted as "a condition of free flow in which individual drivers are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to manoeuvre within the traffic stream is extremely high, and the general level of comfort and convenience provided is excellent".

34. Overall then, I conclude that there are currently no efficiency issues on the roading network and it is operating well within its maximum capacity even at the busiest times.

35. I have used the NZTA Crash Analysis System to identify all reported accidents in the vicinity of the site between 2012 and 2017. The area assessed encompassed State Highway 6 from 200m west of Mt Barker Road to 200m east of the unformed legal road (1km east of Mt Barker Road). In this area and over this timeframe, four accidents have been recorded, all of which were on State Highway 6.

36. One accident 200m west of Mt Barker Road, when a driver struck a patch of ice, skidded, and left the road. It did not result in any injuries. One accident occurred at the State Highway 6 / Mt Barker Road intersection, when a vehicle was slowing to turn right into the minor road. Another eastbound vehicle attempted to overtake this vehicle, and the two collided. It resulted in serious injuries.

37. One accident occurred 100m east of the State Highway 6 / Mt Barker Road intersection, when a parked vehicle, which had been left unattended without the handbrake applied, rolled onto the highway and was struck by a passing vehicle. It did not result in any injuries.

38. Finally, one accident occurred at the curve in the highway alignment some 880m east of Mt Barker Road. A driver was following others in a westbound platoon of vehicles, but failed to negotiate the curve and lost control, leaving the road. It resulted in minor injuries.

39. On the basis of the reported accidents, I do not consider that there are any inherent safety deficiencies on the roading network in the vicinity of the site.

Proposed Development, Traffic Generation and Distribution

40. The proposal is for a rezoning of the area, and from a transportation perspective a rezoning does not generate any traffic per se. Consequently I have sought to identify the type and volumes of traffic which could occur as of right if the rezoning was to be approved.

41. From the information provided to me by Mr Brown, I understand that the type of development which will be permitted are those activities relating to the airport, that is:

    a. administrative offices;

    b. freight facilities / warehousing;

    c. industrial and commercial activities;

    d. rental vehicles;

    e. valet activities;

    f. public transport facilities;

    g. maintenance and service facilities;

    h. catering facilities;

    i. quarantine and incineration facilities;

    j. medical facilities;

    k. visitor accommodation;

    l. tourist activities; and

    m. ancillary retail activity, cafes and other food and beverage facilities.

42. At this stage it is not possible to be prescriptive as to the activities which might establish on the site. However, many of the potential activities set out above have a very low traffic generation, and will not generate

significant volumes of traffic at the busiest times on the road network of the weekday morning and evening peak hours. For example, the vast majority of tourists travel at weekends and in the weekday off-peak periods (after 9am and before 5pm), meaning activities for these have only a small effect on peak hour flows.

43. In my experience, the activities that will generate the greater traffic flows at the peak times will be the administrative offices, industrial / commercial activities, visitor accommodation, and ancillary retail activity, cafes and other food and beverage facilities. In my analyses I have allowed for all development within the site to be of these types.

44. However it is important in my view to note that the two activities with the highest traffic generation rates will both be limited in scale - visitor accommodation will be limited to one site with a maximum of 30 units, and retail / café / food and beverage will be limited to being ancillary activities. The limited scale of these will provide mitigation against this site becoming a particularly high traffic generator overall.

45. Mr Brown also advises that in his view, in practice the extent of development will be in the order of 55,250sqm GFA, when allowance is made for the maximum site coverage, internal roading, car parking, vehicle crossings and maneouvring areas. I have adopted this maximum value within my assessments.

46. I consider that my use of the higher traffic generating activities and the likely maximum extent of development mean that my analyses will be robust.

47. Typical trip generation rates for the activities that will generate the most traffic are:

    a. Offices / general commercial services: 2.0 vehicle movements per 100sqm GFA in the peak hours, 10.0 vehicle movements per 100sqm GFA per day.

    b. Warehousing / storage / industrial: 1.0 vehicle movement per 100sqm GFA in the peak hours, 7.5 vehicle movements per 100sqm GFA per day;

c. Visitor accommodation: 1.0 vehicle movement per room in the peak hours, 4.0 vehicle movements per room per day;

d. Ancillary retail: 2.8 vehicle movements per 100sqm GFA in the peak hours, 23.7 vehicle movements per 100sqm GFA per day; and

e. Ancillary café / food and beverage: 24 vehicle movements per 100sqm GFA in the peak hours, 180 vehicle movements per 100sqm GFA per day.

48. However, because the café / food and beverage will be ancillary to the site, the traffic generation shown above will not represent the traffic generated on the external road network since many customers will already be within the site itself. Accordingly, I have reduced this rate by 50% when assessing the effects on the external network.

49. Similarly, the requirement for the café / food and beverage to be ancillary to the airport also means that the size of the tenancy will be limited. That is, for a significant amount of food and beverage to be economically viable, it must attract customers unrelated to the airport, in which case it would not be 'ancillary' and not permitted.

50. For my analysis I have allowed for:

a. One 200sqm GFA café / food and beverage activity;

b. One visitor accommodation complex of 30 units;

c. 5% of the remaining floor area being associated with ancillary retail;

d. The remainder of the floor area being split between offices / general commercial services and warehousing / storage / industrial activities.

51. Using the traffic generation rates above, this yields a peak hour traffic generation of 920 vehicles (two-way) with a daily traffic flow of 5,730 vehicles (two-way).

52. In view of the nature of the activities, I anticipate that travel will be associated with:

a. Employees travelling to and from work;

b. Freight movements from destinations some distance away, brought to the airport prior to being flown elsewhere;

c. Freight movements to destinations some distance away, flown into the airport and then transported by road; and

d. Movements to and from the airport itself.

53. The activities on the site will determine the relative proportions of these. For example, if warehousing is predominant then this will involve less employee travel (as the activity does not employ many people) but potentially will have higher movements to/from the airport and destinations further afield. Conversely, a higher amount of commercial services will result in more employee travel since such activities employ a higher number of people.

54. At this stage I have allowed for:

a. 20% of traffic to travel to/from the west (associated with employees travelling to/from Wanaka);

b. 40% of traffic to travel to/from the airport;

c. 20% of travel to/from the east for freight movements; and

d. 20% of travel to/from the west for freight movements.

55. In view of the primary function of the highway to carry through traffic, I do not consider that it is appropriate for any lots within the site to gain direct access onto it. Rather, in my view the most appropriate access arrangements would be to make use of Mt Barker Road, and potentially the unformed legal road towards the east. For my assessment I have adopted a scenario of all traffic using Mt Barker Road as this gives a conservatively robust analysis.

56. This means that the following amounts of traffic will be generated in the peak hours:

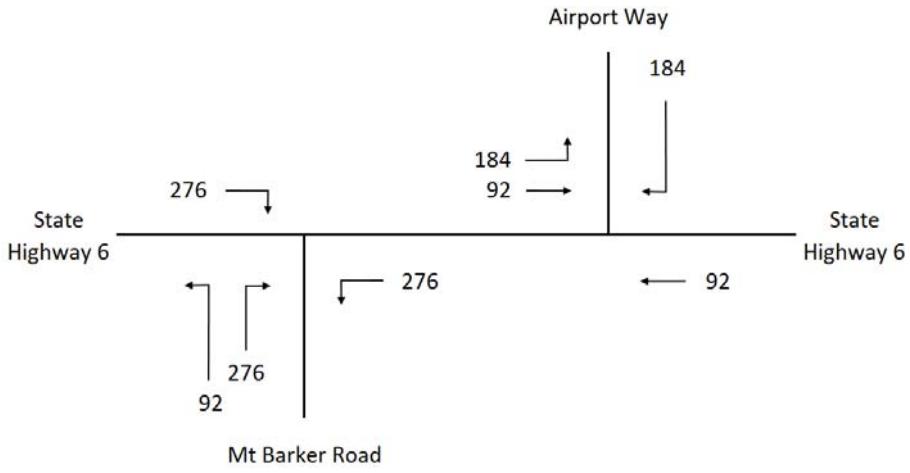

Figure 1: Morning Peak Hour Traffic Generation

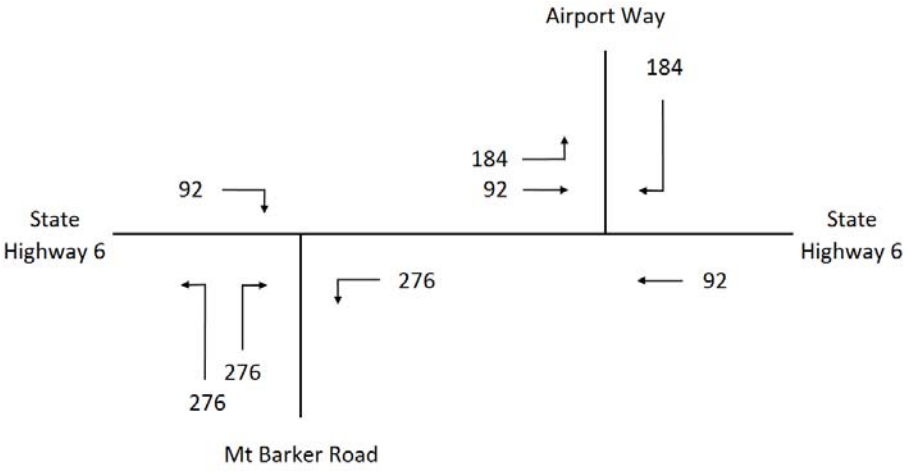

Figure 2: Evening Peak Hour Traffic Generation

Traffic Effects

57. Given these traffic flows, there are a number of factors that are immediately evident. In the first instance, it suggests that there will be a movement of 184 vehicles right out of Mt Barker Road which then turn left into the airport, and a movement of 184 vehicles right out of Airport Way which turn left into Mt Barker Road. In my view it is critical that these movements are accommodated safely.

58. One inherent mitigating factor is that there is a 200m separation between the two accesses. This means that a driver can complete one turning movement (the right turn out) before starting to make the next movement (the left turn in). As such, the rear of any vehicle will not be overhanging a traffic lane while the driver positions the vehicle for the next turn.

59. The traffic flows also mean that auxiliary turning lanes are justified. Using the methodology set out in the Austroads Guide to Road Design Part 4A 'Signalised and Unsignalised Intersections', an auxiliary lane is required for vehicles turning right into Mt Barker Road, and auxiliary lanes are required for vehicles turning left into both Mt Barker Road and Airport Way.

60. The presence of the left-turn lanes means that the extent to which vehicles will need to travel within the traffic lanes of State Highway 6 is very limited. In essence, a driver emerging from Mt Barker Road can almost immediately move into the left-turn auxiliary lane for Airport Way and out of the through traffic lane (and vice versa for vehicles emerging from Airport Way).

61. Finally, when making the second turning movement (the left turn in), the turning vehicle has priority over other turning movements. The vehicle will therefore not need to wait within the auxiliary lane where it could potentially create an obstruction.

62. In view of this, I consider that subject to detailed design, the overarching layout and positions of the two access intersections (at Mt Barker Road and Airport Way) will function safely. I also note that in this location, the legal road reserve of State Highway 6 is 40m wide, which provides ample area for the construction of these lanes to meet current best practice.

63. I have also assessed the performance of the two accesses using the computer software package Sidra Intersection. For this assessment, I have made allowance for traffic growth on the highway to grow by 15% (representing 10 years of ambient traffic growth at 1.5% per annum), and have also assumed that the auxiliary turning lanes are in place. The results are summarised below.

Road and Movement		Morning Peak Hour			Evening Peak Hour		
		Avg Delay (secs)	95 %ile Queue (veh)	Level of Service	Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
Mt Barker Road	L	6.0	0	A	9.8	1	A
	R	44.4	10	E	22.2	5	C
SH6 (east)	L	8.2	0	A	8.2	0	A
SH6 (west)	R	11.4	2	B	10.7	1	B

Table 1: State Highway 6 / Mt Barker Road Intersection with Proposed Rezoned Area Fully Developed

Road and Movement		Morning Peak Hour			Evening Peak Hour		
		Avg Delay (secs)	95 %ile Queue (veh)	Level of Service	Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
SH6 (east)	R	8.0	1	A	8.0	1	A
Mt Barker Road	L	12.2	4	B	11.7	4	B
	R	20.9	4	C	20.3	4	C
SH6 (west)	L	4.7	0	A	4.7	0	A

Table 2: State Highway 6 / Airport Way Intersection with Proposed Rezoned Area Fully Developed

64. The assessment shows that even at full development of the site, and with ambient traffic growth on the highway, both intersections would operate satisfactorily. The greatest level of service is E, which occurs for the right-turn movement out of Mt Barker Road in the morning peak hour, and this is higher than might typically be expected for an intersection in the peak hours. However, as set out previously, my approach has been conservative in that I have allowed for only higher traffic generators to establish. This is appropriate from a traffic engineering perspective, but it is unlikely to occur in practice since a more probable outcome is that at least some low traffic generators will be present. This means that the traffic volumes which I have calculated are likely to be higher than will arise in practice. If just 20 fewer vehicles carried out this right-turn movement in the morning peak hour (that is, if 256 vehicles turned rather than 276 vehicles), then Level of Service D would arise.

65. With regard to road safety, the prevailing record does not indicate any issues or difficulties that would be exacerbated by the proposal. In fact, one of the reported accidents (which involved a vehicle turning right into Mt Barker Road which was struck by another vehicle that was overtaking) would be addressed by the provision of a right-turn lane at this intersection, as would be implemented if the rezoning was to be approved.

66. Accordingly, I consider that the traffic generated by development within the proposed rezoned area can be accommodated on the roading network without adverse efficiency or safety effects arising (subject to intersection improvements as discussed above).

Potential for an Eastern Site Access

67. As I noted previously, there is an unformed legal road at the eastern boundary of the site, and in due course I consider that this could be developed further to provide a second access for the site. As shown by the analysis above, such an access is not required to be in place for the site to be served with an appropriate level of service, but rather, an eastern access might create efficiencies by reducing travel distances for tenants.

68. The unformed road is on the inside of a curve, meaning that it is likely that sight distances for turning vehicles will be a design constraint. If appropriate provisions could be made (such as ensuring the sight triangles are kept free of obstructions), there would be no impediment to full turning movements being provided. In practice though, I consider that this may provide difficult without the agreement of neighbouring landowners.

69. That said, I consider that sightlines for vehicles turning right or left into the site can be achieved largely (and likely entirely) within the road reserve, and consequently an intersection with these movements permitted (and the left-turn out and right-turn out movements prohibited) could be constructed to meet NZTA requirements.

Internal Layout

70. In view of the size of the zone, I do not foresee that there will be any difficulties in meeting the transportation-related requirements of the District Plan in full. The land is relatively flat meaning that road and access gradients will be favourable, and there is sufficient width for an internal road to be constructed that meets the Council's Subdivision Code.

71. With regard to any vehicle access onto Mt Barker Road, there is a requirement in the NZTA Planning Policy Manual for this to be located no closer than 60m from the highway. This can easily be achieved.

72. The section of Mt Barker Road between the site access and the highway will need to be upgraded (widened and likely strengthened) to accommodate the increased traffic flows. Since the legal road reserve in this location is 40m wide, and the topography is relatively flat, I do not consider that there will be any difficulties in doing this.

Response to Officer Report

73. I have read the report of Ms Wendy Banks, consultant transportation engineer to the Council, in respect of the submission. She raises two concerns with the proposed rezoning.

74. The first matter raised is that the issue of vehicles crossing the state highway has not been considered in the submission. I have addressed this in some detail in my evidence, and on the basis of my analysis, I consider that the movement of vehicles can be accommodated safely and efficiently.

75. The second matter raised relates to the potential for dust and additional maintenance issues to arise on Mt Barker Road, since it is "presently unsealed". This appears to be an error because Mt Barker Road is sealed adjacent to the proposed zone and the seal extends approximately 2.5km to the west of the SH6 intersection. In my view, the proposed rezoning is unlikely to significantly increase traffic flows to the west of the site because of the nature of the activities establishing on the site. However I acknowledge that some upgrading of Mt Barker Road

will be required between the site access and the highway, such as widening and strengthening.

Summary

76. Having reviewed the submission made by Jeremy Bell Investments Limited, I am able to support the rezoning of land on the western side of State Highway 6 for airport-related activities, subject to improvements being made to the State Highway 6 / Mt Barker Road and State Highway 6 / Airport Way intersections through the provision of auxiliary turning lanes.

77. With these improvements in place, I consider that even at full development of the site, the roading network will operate safely and efficiently.

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Andy Carr

Date: 4 April 2017