## Before Central Otago District Council

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| Under | the Resource Management Act 1991 (the Act) |
| In the matter of | the requested change to the Central Otago District Council's Operative District Plan – Plan Change 14 (PC14) |
| and in the matter of | The New Zealand Transport Agency<br>Submitter 65 |

## Statement of Evidence of Matthew Charles Gatenby

Dated

20 May 2020

## 1 Qualifications and Experience

1.1 My full name is Matthew Charles Gatenby. I am a Principal Engineer Transportation in the Dunedin office for WSP New Zealand.

1.2 I hold the qualifications of Master of Civil Engineering (Honours) from the University of Nottingham, UK. I am a member of Engineering New Zealand, and the Transportation sub-group.

1.3 I have over 24 years of transportation planning, traffic engineering and transport modelling experience. I have used my skills across projects in transport planning, development planning, traffic and revenue forecasting, public transport initiatives and road safety schemes. I have led teams on key projects across London and the wider UK, the Middle East, and North and South America.

1.4 My current role at WSP involves maintaining a key technical role on a range of transportation planning projects in New Zealand and Australia, but most of my work concentrates on transportation projects in Queenstown, Dunedin and across Otago.

1.5 In relation to the Plan Change 14, I have been asked by the Transport Agency to provide evidence in relation to transportation matters. My evidence considers the traffic and transportation impacts of Plan Change 14, specifically where it impacts on the functionality, efficiency and safety of the State Highway network.

1.6 While this matter is not before the Environment Court, I have read and am familiar with the Code of Conduct for Expert Witnesses in the current Environment Court Practice Note (2014). I have complied with the Code in the preparation of this evidence, and will follow it when presenting evidence at the hearing.

1.7 Unless I state otherwise, my evidence is within my sphere of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

## 2 Scope of Evidence

2.1 My statement will address the following matters:

a The transport network within the locality of the proposed Plan Change 14 area (Shannon Farm).

b The Transportation Assessment (TA) associated with the Shannon Farm development.

c The operation of the State Highway 6/Ripponvale Road intersections, and the effects that increased residential development as a result of Plan Change 14 could have on this.

d The facilities for walk and cycle trips to and from Cromwell

2.2 I have read the Section 42A Planning Report (of W D Whitney) for CODC, and the Transportation Assessment and subsequent evidence provided by Mr Andy Carr for New Zealand Cherry Corp. My evidence comments on relevant parts of their evidence where appropriate.

## 3 Executive Summary

3.1 SH6 Kawarau Gorge Road is an important transport link, providing the key route between Frankton/Queenstown and most of the rest of the South Island, Therefore, it is of utmost importance that this section of SH6 operates in an efficient and resilient state.

3.2 Plan Change 14 would result in additional development related trips on the road network, the majority of which would be expected to access the State Highway at the SH6/Ripponvale Road (east) and SH6/Ripponvale Road (west)/Pearson Road intersections.

3.3 The evidence of Mr Carr provides a prediction of the likely operational level of this intersection, for two differing trip distribution patterns:

a 60% traffic to/from Queenstown (original Transportation Assessment) – all traffic assigned to join the State Highway at the SH6/Ripponvale Road (east) intersection

b 10% traffic to/from Queenstown (subsequent Request for Further Information) – all Queenstown-bound traffic assigned to join the State Highway at the SH6/Ripponvale Road (west)/Pearson Road intersection

3.4 In both trip distributions, minimal development traffic is assigned via the western section of Ripponvale Road. Consequently, the results of the assessment of the operation of the SH6/Ripponvale Road (west)/Pearson Road intersection is likely to be optimistic – greater volumes of traffic on the right turn out of Ripponvale Road (west) at this location is likely to have a significant detriment on intersection performance for both efficiency and road safety. Therefore, the Transportation

Assessment and subsequent evidence provided by the Mr Carr has not satisfactorily demonstrated that the intersection can accommodate the additional traffic related to the Plan Change.

3.5 In addition, a Safe System assessment has not been provided for either of the State Highway intersections with Ripponvale Road. As such, it has not been demonstrated whether layout improvements are required at these intersections on SH6 to result in an appropriate level of operational safety for all modes, and if so, the scale of such interventions.

3.6 The development is likely to result in a level of demand for walk and cycle trips to and from Cromwell. At present no dedicated footway or cycleway is provided on Ripponvale Road (east section) to accommodate such movements. I consider that the Plan Change should include a Rule to provide a shared footway/cycleway (or similar level of facility) on the north side of Ripponvale Road between the site access and the SH6/Ripponvale Road (east) intersection.

3.7 In addition, the Plan Change should allow an assessment of how to link this facility into the wider Cromwell walk and cycle network, and specifically address the need for a dedicated safe and convenient crossing point across the State Highway.

## 4 Strategic transport network in Cromwell

4.1 The main arterial roads that run through Cromwell are:

a State Highway 6 Kawarau Gorge Road (towards Queenstown)

b State Highway 6 Luggate-Cromwell Road (towards Wanaka)

c State Highway 8B (linking SH6 and SH8)

d State Highway 8 Cromwell-Clyde Road (towards Alexandra)

e State Highway 8 Tarras-Cromwell Road (towards Omarama)

4.2 In terms of the Shannon Farm development, SH6 Kawarau Gorge Road will be affected the most of these strategic roads, with direct access from the development site predominantly via the two existing intersections at SH6/Ripponvale Road (east) and SH6/Ripponvale Road/Pearson Road (west). A third route via the SH6/Ord Road intersection is also available, but it is not expected that significant levels of development traffic would use this route (as the two aforementioned routes are much more convenient).

4.3 SH6 Kawarau Gorge Road is classified as a Regional road by the Transport Agency One Network Road Classification ('**ONRC**'), which indicates that:[1]

> "the road makes a major contribution to the social and economic wellbeing of a region, and connect to significant places, industries, ports or airports. They are also major connectors between regions and in urban areas may have substantial passenger transport movements"

4.4 As such, the SH6 Kawarau Gorge Road caters for a range of vehicle classifications and types:

a Heavy goods vehicle movements, in particular from Port Otago, Lyttelton and freight depots in Cromwell, to Queenstown, Frankton and beyond;

b Tourist trips throughout the area, travelling to and from Queenstown, from Cromwell and beyond;

c Some level of commuter trips to and from the main employment centres of Frankton and Queenstown; and

d Local work-related trips, largely related to the agriculture sector.

4.5 Consequently, SH6 is an important transport link, providing the key route between Frankton/Queenstown and most of the rest of the South Island, Therefore, it is of utmost importance for this section of SH6 to operate in an efficient and resilient state.

4.6 Kawarau Gorge Road itself is generally a single lane road in each direction, although local widening is provided on the approaches to and exits from some intersections.

4.7 In the vicinity of the Shannon Farm development, the following intersections are located on SH6 Kawarau Gorge Road, and are likely to attract development related trips:

a Ripponvale Road (east) – conventional priority controlled T- intersection with channelised (westbound) right turn facility, and auxiliary (eastbound) left turn deceleration lane facility;

[1] [http://www.nzta.govt.nz/assets/Road-Efficiency-Group/docs/functional-classification.pdf]

b Pearson Road/Ripponvale Road (west) – conventional priority controlled T-intersection with channelised right turn facility (both directions) and auxiliary (eastbound) left turn deceleration lane facility into Ripponnvale Road;

c McNulty Road – conventional priority controlled T- intersection with channelised right turn facility; and auxiliary (westbound) left turn deceleration lane facility

d SH8B – priority controlled T- intersection with channelised right turn facility, median separated left turn lane into SH8B, and separate left and right turn lanes on the SH8B approach.

4.8 Posted speed limits through the Kawarau Gorge Road section are 100kph to a point around 300m southwest of the SH6/SH8B intersection. To the northeast of this section, an 80kph speed limit is in force (around 300m west of the SH6/SH8B intersection), which continues along the whole section of SH8B.

4.9 The Transport Agency's Queenstown to Rangitata Corridor Management Plan provides that the section of SH6 Kawarau Gorge Road through the area is characterised by having a Medium-Low (4-star) collective and personal risk rating. The desired customer level of service for Regional roads is Medium (3-star), and so the provision in this section of route is satisfactory in this regard.

## 5 Transportation Assessment

5.1 A Transportation Assessment **("TA")** was originally provided in support of the Plan Change by Carriageway Consulting, dated 23 May 2019, as undertaken by Andy Carr. A subsequent Response to Request for Further Information **("RFI")** was then issued by Carriageway Consulting, dated 23 July 2019, in response to a review of the original TA undertaken by Mr Andrew Metherell of Stantec. Both the TA and RFI documents are included as Appendix J of the Section 42A Report.

5.2 Mr Andrew Metherell subsequently undertook a further review of this TA and RFI, dated 9 August 2019, which is included as Appendix 4 of the Section 42A Report. An additional review was undertaken by Mr Antoni Facey of Avanzar Consulting Limited, dated 21 April 2020, which is included as Appendix 3 of the Section 42A Report.

5.3 The evidence of Mr Carr also directly addresses issues raised in the previous reviews. Annexure A of Mr Carr's evidence is an Assessment of Effects **("AOE")** on SH6 response to the Transport Agency on 23 March 2020, specifically

responding to issues regarding the safety and efficiency effects of Plan Change 14 on SH6.

5.4 Of particular interest to the operation of the State Highway network, are the assumptions relating to existing traffic volumes and trip distribution. In the case of the former, the original TA uses traffic volumes recorded in July 2018. I have investigated the Transport Agency's Traffic Monitoring System (TMS) to obtain data for the nearest permanent count site to Ripponvale Road, which is Site 00600947 (just to the west of the SH6/Ripponvale Road (west)/Pearson Road intersection). Daily counts throughout the year show that July generally experiences traffic volumes on SH6 significant below the average (AADT). Furthermore, given the existing land use on Ripponvale Road, it would be expected that volumes on this local road would also be higher in other months (during the height of Summer and fruit picking times).

5.5 Whilst it is not expected that the TA should consider the absolute worst case in terms of traffic volumes, we would not expect the assessment to be carried during the off-season – and it would be standard practice to factor up the July 2018 count to represent a neutral month.

5.6 However, it is likely that COVID-19 will have an impact on future background traffic volumes in the short-to-medium term, particularly in areas of greater tourist activity. Whilst there is considerable uncertainty in how traffic volumes will recover to pre-COVID-19 levels, and then grow in the years ahead, we can be reasonably confident that there will a lag time before growth rates get back to reach pre-COVID-19 levels. Consequently, on balance, the analysis presented by Mr Carr is likely to be robust in forecasting the level of background traffic on SH6.

5.7 In terms of trip distribution, these assumptions are related to the forecast assignment of trips onto the network, and in particular the balance of trips to/from Queenstown (i.e. to/from the west), and shorter trips to/from Cromwell (via the State Highway and local roads).

5.8 In the original TA, the trip distribution was heavily weighted towards trips to and from Queenstown. The subsequent RFI then presented an alternative distribution, with a lower distribution towards Queenstown, as requested in the review by Mr Andrew Metherell.

5.9 The table below shows the difference between these assumptions, which are used in the analysis presented in the RFI, AOE and Mr Carr's evidence:

| Destination | TA | RFI/AOE | Route |
|---|---|---|---|
| Queenstown | 60% | 10% | TA all via Ripponvale Road (east); RFI/AOE all via Ripponvale Road (west) |
| Cromwell (local) | 40% | 90% | All via Ripponvale Road and SH8B |
| Wanaka, Alexandra | | | |

5.10 The two distributions result in a significant difference between both the allocation of trips to Queenstown and Cromwell, and the routes chosen.

5.11 In both distributions, volumes using Ripponvale Road (west) to travel to and from the Queenstown direction are limited – 0% in the TA distribution and 10% in the alternative RFI distribution. Although the access arrangements for the development at this stage are not clear, it would appear trips to and from Queenstown from the development are likely to split between the two possible routes (Ripponvale Road west or east) – indeed the route via Ripponvale Road (west) is likely to be quicker (as it is around 1.6km shorter). It is considered appropriate that an additional sensitivity analysis is undertaken for a more realistic representation of trips onto the west section of Ripponvale Road – as, particularly in the AM peak period, this would result in more vehicles turning right out of the Ripponvale Road (west) approach at the SH6/Pearson Road intersection. At a priority intersection of this type, this turning manoeuvre conflicts with (and yields to) three other movements – receiving the least priority of all movements at the intersection, and therefore is often the critical movement in terms of intersection performance (both in terms of efficiency and safety).

5.12 All trips to/from Cromwell have been assigned to use SH8B to access the town. It is likely that a reasonable proportion may use McNulty Road to access the southern half of the town. Consideration should also be given to the level of trips which may use this route, given that origin (generated) trips would add to the critical right turn out of Ripponvale Road (east).

5.13 Whilst it is considered that the undertaking of sensitivity tests provides valuable analysis to the potential outcomes under different assumptions (and the consideration of uncertainty), the significant difference presented in the analysis between the TA and subsequent evidence gives concern that the level of uncertainty is difficult to manage. This level of uncertainty, in both trip distribution and trip assignment, represents a significant risk to the planning of road infrastructure and the appropriateness of particular physical improvement works,

particularly for the SH6/Ripponvale Road and SH6/Ripponvale Road/Pearson Road intersections.

5.14 This is considered in more detail in section 6 below.

## 6 Intersection Operation (efficiency and road safety)

6.1 As set out in Section 5 above, there is a significant difference in the trip distribution of development related trips between the original TA and subsequent documents including Annexure A of Mr Carr's evidence. Consequently, this leads to a significantly different assignment of trips onto the network between the two cases, particularly at the two SH6/Ripponvale Road intersections.

*SH6/Ripponvale Road (east)*

6.2 The AOE document sets out analysis of the predicted intersection operation for the two trip distribution cases, and concludes that in terms of efficiency, the intersection can accommodate the additional traffic related to the Plan Change with only a marginal detriment to average vehicle delay.

6.3 The table below sets out the resultant forecast flows at future year 2028[2] in these two scenarios, in both the AM and PM peak hours (in vehicles per hour for each turning movement.

| Approach | Turn | AM Peak Hour | | PM Peak Hour | |
|---|---|---|---|---|---|
| | | TA | RFI/AOE | TA | RFI/AOE |
| SH6 East | Straight | 522 | 522 | 408 | 408 |
| | Right Turn | 25 | 41 | 47 | 99 |
| SH6 West | Straight | 351 | 351 | 532 | 532 |
| | Left Turn | 26 | 7 | 66 | 4 |
| Ripponvale Road | Left Turn | 59 | 123 | 33 | 61 |
| | Right Turn | 78 | 1 | 39 | 5 |
| **Total** | | 1,061 | 1,045 | 1,125 | 1,109 |

As can be seen from the table above:

a There is a significant difference in the forecast turning volumes on the left and right turns out of Ripponvale Road, directly due to the re-assignment in trip destination distribution from towards Queenstown in the original TA, to towards Cromwell (via SH6) in the subsequent additional analysis;

[2] Includes 10-years of 10.3% growth on background traffic levels

b There is a significant difference in the forecast turning volumes on the right turns into Sandflat Road (and to a lesser extent the left turn in), again directly due to the re-assignment in trip destination distribution from origins in Queenstown in the original TA, to Cromwell (via SH6) in the subsequent additional analysis;

c The shaded columns indicate the two scenarios where right turn volumes are most significant – right turn out of Ripponvale Road in the AM peak in the TA distribution, and right turn into Ripponvale Road in the PM peak in the RFI/AOE distribution.

6.4 At a priority intersection of this type, the two turning manoeuvres in c) above, represent the critical movement in terms of intersection performance (both efficiency and safety).

6.5 The analysis provided in Annexure A of Mr Carr's evidence predicts a maximum Level of Service (LOS) of C in both the AM and PM peak hour periods, for both right turn movements, across both trip distribution scenarios.

6.6 LOS is a concept used by traffic engineers and transport planners to objectively classify the extent of congestion on a roadway or at an intersection. LOS A represents largely free flow conditions and LOS F represents oversaturated conditions (i.e. where demand exceeds supply). At a priority controlled intersection, a Level of Service A to D is generally accepted as satisfactory performance.

6.7 The analysis, for both trip distribution scenarios, therefore indicates that the intersection level of operation in terms of efficiency would be satisfactory. It is likely that some trips to and from the proposed development to and from Cromwell will use the route via McNulty Road, and therefore carry out a right turn from Ripponvale Road – increasing the total volume on this turn. However, as noted in the previous section, it is also likely that a significant proportion of Queenstown-bound trips will use Ripponvale Road (west) – and therefore not appear at the SH6/Ripponvale Road (east) intersection. On balance, therefore, I would agree with the conclusion presented in Mr Carr's evidence that the intersection would operate satisfactorily, from an efficiency perspective, with the proposed Plan Change traffic.

6.8 The Transport Agency follows a "Safe System" approach to improving the operation of the road network – specifically to reduce deaths and serious injuries, by moving to the design, implementation and management of a road system that

takes human fallibility and vulnerability into account. This framework proactively identifies the highest road safety risks, and works to reduce or eliminate them over the whole system. This approach reflects the latest Government Policy Statement **("GPS")** of 2018, which required a significant uplift in ambition in improving the safety of the land transport system. In turn, "Safer Journeys" is the Government's strategy to guide improvements in road safety, and introduced the Safe System approach. Guidance on the application of this approach is provided in the Austroads Safe System Assessment Framework (Research Report AP-R509-16).

6.9 Mr Carr's evidence (Annexure A) has provided an analysis of historic crashes between (and including) the two SH6/Ripponvale Road intersections. Whilst this analysis indicates no underlying road safety issues along the section of SH6, the increase of traffic volumes on the two sections of Ripponvale Road associated with the Plan Change means that the operating conditions at the two SH6/Ripponvale Road intersections would change.

6.10 In addition, a Safe System assessment has not been presented in the TA or subsequent documents and evidence – which would indicate whether improvements are needed at the intersection to satisfy road safety concerns, and the scale of such improvements. At this intersection, in particular, the safety of non-motorised road users is important – and I present additional commentary on this element in section 7.

*SH6/Ripponvale Road (west)/Pearson Road*

6.11 The AOE document sets out analysis of the predicted intersection operation for the two trip distribution cases, and concludes that in terms of efficiency, the intersection can accommodate the additional traffic related to the Plan Change with only a marginal detriment to average vehicle delay.

6.12 However, the two trip distribution cases do not represent the worst-case assignment of proposed development traffic at this intersection, which would be for a Queenstown-bound trips to use Ripponvale Road (west) – and therefore a significant increase in volume on the critical right turn movement out of Ripponvale Road at this intersection. The worst case would therefore be the original trip distribution in the TA, but with all Queenstown-bound traffic assigned to Ripponvale Road (west) instead of Ripponvale (east).

6.13 The above scenario has not been modelled, but would result in 77 vehicles/hour being added to the critical right turn move in the AM peak hour, and 34 vehicles/hour being added to the critical right turn move in the PM peak hour.

6.14 The table below sets out the proposed development flows on the relevant turning movements in the two scenarios modelled within Mr Carr's evidence, and the third worst-case alternative, for both the AM and PM peak hours (in vehicles per hour for each turning movement). The shaded rows show the turning volumes for the critical right turn movement

| Approach | Turn | TA | RFI/AOE | Worst-Case |
|---|---|---|---|---|
| **AM Peak Hour** | | | | |
| SH6 East | Straight | +77 | +0 | +0 |
| SH6 West | Straight | +19 | +0 | +0 |
| | Left Turn | +0 | +13 | +19 |
| Ripponvale Road | Right Turn | +0 | +3 | +77 |
| **PM Peak Hour** | | | | |
| SH6 East | Straight | +34 | +0 | +0 |
| SH6 West | Straight | +62 | +0 | +0 |
| | Left Turn | +0 | +6 | +62 |
| Ripponvale Road | Right Turn | +0 | +10 | +34 |

6.15 The shaded rows in the table above show the turning volumes for the critical right turn movement out of Ripponvale Road. As can be seen, the volume in the worst-case scenario for this movement is significantly greater than the other two scenarios which have been modelled.

6.16 In Mr Carr's evidence, the right turn from Ripponvale Road is predicted to operate at LOS D in both the TA and RFI/AOE trip distribution scenarios in the PM peak hour (and LOS C for the AM peak hour in both scenarios). Whilst this is acceptable in efficiency terms, the LOS D predicted for the TA scenario in the PM peak period is at the upper edge of performance (i.e. close to a LOS E). My own analysis of the worst-case scenario (re-assigning Queenstown-bound trips onto the right turn out of Ripponvale Road (west), instead of the westbound through movement along SH6) indicates that the performance of the right turn increases to a LOS F in the PM peak hour, and LOS E in the AM peak period.

6.17 Therefore, this raises concerns that the performance of the intersection would be below that considered acceptable in efficiency terms.

6.18 In addition, this poor level of operation for the right turn movement out of Ripponvale Road (west) is likely to have consequences in terms of a reduction in road safety at the intersection. As presented in Mr Carr's evidence, the calculated crash rate at the SH6/Ripponvale Road (west)/Pearson Road intersection is around double that of the SH6/Ripponvale Road (east) intersection with the Plan Change (either modelled scenario). The assignment of Queenstown-bound development traffic onto Ripponvale Road (west) is likely to degrade the calculated accident rate further. It should also be noted that, as presented in Mr Metherell's peer review (Section 42A, Appendix 4), the sightline on the Ripponvale Road approach to the intersection does not currently meet the Safe Intersection Sight Distance requirement[3].

6.19 Finally, a Safe System assessment has not been provided for this intersection, which would indicate the scale and form of road safety improvements that may be required to minimise the impact of the additional traffic associated with the Plan Change.

6.20 Consequently, at present, I have concerns that the approval of the Plan Change would be significantly detrimental to both the efficiency and road safety performance of the SH6/Ripponvale Road (west)/Pearson Road intersection. Therefore, mitigation for this drop in performance would need to be identified and provided to ensure that the additional traffic movements generated by the Plan Change can be safely and efficiently accommodated within the road network.

*SH6/SH8B*

6.21 The RFI document contains an analysis of the operation of the SH6/SH8B intersection, under the two trip distribution scenarios. As might be expected, under the scenario where trip distribution is biased towards Cromwell, this represents the scenario where the impact on operation of this intersection of the additional Plan Change traffic is greatest.

6.22 In the critical PM peak hour period, this results in the right turn from SH8B operating at a LOS D in the base situation (no Plan Change, 10 years of background growth), but a LOS E with the Plan Change.

6.23 This deterioration in the LOS would generally result in the requirement for an upgrade of the intersection to provide additional capacity. However, the New Zealand Government has recently announced[4] an allocation of $300 million for

[3] Austroads Guide to Road Design Part 4A – Unsignalised and Signalised Intersections, Table 3.2
[4] https://www.nzta.govt.nz/planning-and-investment/nz-upgrade/regional-package/

regional investment opportunities. Funding for the upgrade of the SH6/SH8B intersection has been included in this package, which would replace the existing priority controlled T-intersection with a roundabout. The primary objective of the scheme is to improve road safety, but it is also likely to provide efficiency benefits.

6.24 Therefore, given this improvement is already funded and is proceeding towards implementation, I conclude that this improvement would also mitigate for the additional Plan Change traffic volumes, and no specific additional mitigation would be required at this location in relation to the Plan Change.

*SH6/McNulty Road*

6.25 Although the RFI document contains a breakdown of the base traffic volumes at the SH6/McNulty Road intersection (from the information presented at the Plan Change 13 Hearing), no analysis of the operation of the SH6/McNulty Road intersection has carried out by the applicant.

6.26 In addition, Mr Carr's evidence does not assign any Cromwell-bound traffic to the route via Ripponvale Road (east) and McNulty Road, when there is a significant employment area (the industrial and commercial area) accessed directly off McNulty Road.

6.27 Whilst the likely assignment of Queenstown-bound trips to/from the Plan Change area to use the route via Ripponvale Road (west) would reduce the additional trips passing through the SH6/McNulty Road intersection (from those calculated in Mr Carr's evidence for both trip distribution scenarios presented), assignment of some Cromwell-bound trips to McNulty Road would have the opposite effect of increasing the volumes at the intersection.

6.28 Given the wide range in trip distribution of development traffic on the network, it is difficult to establish the impact on this intersection with any certainty. However, as this intersection is not the first point of contact for development traffic with the State Highway, the absolute increase in total volumes at the intersection are likely to be small under any of the trip distribution scenarios. Consequently, it is likely that the Plan Change will have little impact on the operation of this intersection.

*SH6/Ord Road*

6.29 Ord Road provides an additional route from the Plan Change area to and from SH6. As noted by Mr Facey (Section 42A Report, Appendix 3), it is unlikely that

traffic generated from the Plan Change will use Ord Road as a route, except under circumstances where other routes were temporarily unavailable.

6.30 Consequently, I would agree with the Section 42A report (section 8.3.6) that:

> "no upgrading of the intersection……of Ord Road with State Highway 6 is necessary"

## 7 Active Modes

7.1 Although set within a rural environment, the Plan Change area is close enough to Cromwell for walking and, in particular, cycle trips to be an attractive alternative mode to the private car. Currently, there is no dedicated facility for either walk or cycle trips on Ripponvale Road (east), which would be the obvious route for these trips to and from Cromwell.

7.2 The TA sets out that although the current sealed carriageway is approximately 5.8 metres in width, the legal width is 20.0 metres, and therefore there is no impediment to increasing the width to improve conditions for both the increased volumes of road traffic, and to provide specific facilities for cycle and walking movements.

7.3 Mr Carr's evidence also suggests that any improvements to Ripponvale Road can be considered at the time of subdivision. I agree with Mr Metherell's review (Section 42A Report, Appendix 4, chapter 11) that there may be difficulties in addressing these improvements at this later stage, as they deal with matters beyond the immediate frontage to the site.

7.4 The Plan Change would result in the provision of 160 dwellings within a relatively concentrated residential development, with all active mode trips likely to be on a single route along Ripponvale Road (east) towards Cromwell. Therefore, I would agree with the Section 42A report (section 8.3.6) that:

> "…provision should explicitly be made for cyclists and pedestrians to share a footpath on the east-west limb of Ripponvale Road between the site entrance and the State Highway 6/Ripponvale Road intersection""

7.5 Further to the improvement of walking and cycle facilities on Ripponvale Road (east), there would also need to be consideration of the provision of a safe and efficient pedestrian and cycle crossing of SH6 so as to ultimately provide a continuous link from the Plan Change site through to the principal employment, education and retail attractors in Cromwell.

7.6 Whilst I acknowledge the assertion in Mr Carr's evidence that pedestrian crossing volumes (across the State Highway) related to the development will be low, cycle volumes could potentially be higher, as a 3-4km trip to/from Cromwell is well within a suitable typical commuter or leisure cycle distance.

7.7 As previously noted, a Safe System assessment has not been provided to the Transport Agency for this (or any) intersection affected by the Plan Change – and at this location, the safe crossing of the State Highway for non-car modes would be expected to be a key issue. As a Regional road under the ONRC, it is not expected that an at-grade crossing would be suitable in safety terms, without a significant reduction in the current operating speed of 100kph. This therefore suggests that either the crossing is provided at a Safe System-compliant intersection (where the speed of vehicles is lowered to below 30kph to minimise the risk of serious injury or death to any pedestrian or cycle crossing movements) or via a grade-separated solution.

7.8 Whilst acknowledging the pedestrian and cycle volumes are low, the exposure risk is the same – and the Plan Change introduces pedestrian and cycle movements across the State Highway due to the development's location and relative closeness to the amenities and employment within Cromwell, that otherwise would not be generated.

7.9 Consequently, given that a Safe System assessment has not been carried out for this intersection, I do not agree with both the evidence of Mr Carr and the Section 42A Report that the provision of an underpass (or other improved crossing facility) across the State Highway in the vicinity of the Ripponvale Road (east) intersection is not required.

## 8 Conclusions

8.1 The Shannon Farm development (Plan Change 14) would result in additional trips on the road network. In terms of the State Highway network, the SH6/Ripponvale Road (east) intersection provides the most direct access route to and from the development onto the strategic road network, for routes to all destinations via SH6, SH8B and SH8. However, the SH6/Ripponvale Road(west)/Pearson Road provides a more direct route for trips to and from Queenstown.

8.2 Two trip distribution patterns have been assessed by Mr Carr, of either the majority of trips travelling to/from Queenstown, or the majority of trips travelling to Cromwell. The results show the performance of the SH6/Ripponvale Road (east)

intersection is able to accommodate the additional movements with only marginal detriment to overall intersection performance in efficiency terms.

8.3 However, in both trip distributions, minimal development traffic is assigned via the western section of Ripponvale Road and therefore the results of the assessment of the operation of the SH6/Ripponvale Road (west)/Pearson Road intersection is likely to be optimistic. In addition, development trips to and from Cromwell have all been assumed to route via SH6/SH8B, with no consideration of McNulty Road as a quicker and shorter route for trips bound for the sizeable industrial and commercial area accessed directly off this road. Therefore, the Transportation Assessment and subsequent evidence provided by the Mr Carr has not satisfactorily demonstrated that the intersection can accommodate the additional traffic related to the Plan Change at these two intersections on the State Highway.

8.4 In addition, no Safe System assessment has been provided on either of the above intersections, to establish whether road safety improvements are required at either location to mitigate the impact of the Plan Change.

8.5 The development is likely to result in a level of demand for walk and cycle trips to and from Cromwell. At present no dedicated footway or cycleway is provided on Ripponvale Road (east section) to accommodate such movements. I consider that the Plan Change should include a Rule to provide a shared footway/cycleway (or similar level of facility) on the north side of Ripponvale Road between the site access and the SH6/Ripponvale Road (east) intersection. In addition, the Plan Change should allow an assessment of how to link this facility into the wider Cromwell walk and cycle network, and specifically address the need for a dedicated safe and convenient crossing point across the State Highway.