Before the Queenstown Lakes District Council

In the matter of	The Resource Management Act 1991
And	A requested change to the Mount Cardrona Station Special Zone of the Queenstown Lakes District Council's Operative District Plan – **Plan Change 52**

Memorandum of Counsel Responding to Seventh Minute and Directions of Hearing Commissioners

Mt Cardrona Station Limited (Requestor)

Dated 1 September 2017

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RESPONSE TO FURTHER INFORMATION REQUEST

1 This Memorandum of Counsel (**Memorandum**) responds to information requested by the Commission in paragraph 3 of its Minute dated 10 August 2017.

2 The Requestor has obtained this further information from Traffic Design Group Limited (**TDG**). TDG's letter dated 25 August 2017 is attached as **Appendix A** to this Memorandum providing a response to all requested information.

3 Mr Brown has reviewed the recommended zone provisions provided in TDG's letter at paragraph 6, which are intended to address the following requested information:

> *Proposed provisions the Requestor suggests should be provided in the PC52 Structure Plan to address the flexibility of:*
>
> *i. the Cardrona Valley Road intersection location and design, including increased separation (with a minimum separation distance of 25m) from Tuohy's Gully Road intersection and provision of such information at design stage;*
>
> *ii. the intersection of the Link Road with the Cardrona Skifield Access Road and provision of such information at design stage.*

4 In light of TDG's recommendation and the information requested from the Commission, Mr Brown has recommended the following amendments to PC52 (new text underlined):

> **12.22.4.2 Zone Standards**
>
> (i) **All subdivision, use and development** shall be undertaken in general accordance with ~~the Mount Cardrona Station Special Zone~~ Structure Plans A – D except that:
>
> a) the intersection of Cardrona Valley Road and the Access Road, and the intersection of the Cardrona Ski Field Access Road and the Ski Field Link Road, may be moved up to 25 metres in any direction in order to enable safe and efficient functioning of those intersections.
> b) The roading design shall show a minimum separation distance of 25m between the Access Road / Cardrona Valley Road intersection and the Tuohy's Gully Road / Cardrona Valley Road intersection.

15.2.7.1 Controlled Subdivision Activities – Subdivision Design

...

Within the Mount Cardrona Station Special Zone, the Council reserves control over the following matters:

- Whether the subdivision design is in general accordance with Structure Plan A - Mount Cardrona Station Structure Plan, except that;

  a) The intersection of Cardrona Valley Road and the Access Road, and the intersection of the Cardrona Ski Field Access Road and the Ski Field Link Road, may be moved up to 25 metres in any direction in order to enable safe and efficient functioning of those intersections.

  b) The roading design shall show a minimum separation distance of 25m between the Access Road / Cardrona Valley Road intersection and the Tuohy's Gully Road / Cardrona Valley Road intersection.

.....

5 The above suggested amendments will be included in the final right of reply version of PC52, to be produced by the Requestor following receipt of any further comments from the Council, Submitters, or the Commission.

Dated this 1st day of September 2017

Warwick Goldsmith/Rosie Hill

Counsel for Mt Cardrona Station Limited

Appendix A – TDG Letter

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Mt Cardrona Station
c/o Brown and Company Planning Group
PO Box 1467
Queenstown

TDG Ref: 14202
25 August 2017

Attention Mr Jeff Brown

Issued via email: **jeff@brownandcompany.co.nz**

Dear Jeff

Mount Cardrona Station Plan Change

Following the council hearing for the Mount Cardona Station Plan Change, the hearing commissioners issued a request for further information on transport related matters. This is provided below.

1. Cardrona Valley Road / Tuohy's Gully Road

Traffic movements on Cardrona Valley Road during the mid to late afternoon period are dominated by ski-field related traffic in the winter.

Turn count movements were recorded at the Cardrona ski field access road during the main afternoon departure period on 14 August and at the Tuohy's Gully Road intersection on 21 August. The surveyor has noted that traffic volumes on the 14 August were higher than on 21 August.

Almost all vehicle movements in the afternoon were outbound at the Cardrona ski-field round with 50-55% of vehicles turning left towards Wanaka. The average delay for turning movements, both left and right, was less than 20 seconds.

Time	Left	Right
4:30 – 4:45pm	61	51
4:45 – 5:00pm	46	44
Total	**107**	**95**

Table 1: Cardrona Valley Road / Cardrona Ski-field Access Road (4:30 – 5:00pm, 14 August 2017)

Time	Left	Right
4:00 – 4:15pm	0	6
4:15 – 4:30pm	0	4
4:30 – 4:45pm	0	3
4:45 – 5:00pm	3	3
Total	**3**	**16**

Table 2: Cardrona Valley Road / Tuohy's Gully Road (4:00 – 5:00pm)

Traffic volumes on Tuohy' s Gully Road during the peak afternoon departure period on 21 August 2017 were less than 20vph with about 80% of vehicles turning right towards Wanaka. Informal observations from the earlier survey on 14 August, which represented a busier day for the ski fields, were that traffic volumes were higher but still less than 40vph, or one vehicle per minute.

2. Origin-Destination

The Mount Cardrona Station site is located on the scenic route between Wanaka and Queenstown. Since the proposed development of the plan change site will be targeted at the tourist market and both Wanaka and Queenstown represent popular tourist destinations, it is considered likely that the travel demands in both directions will be similar at a daily level. The difference in travel times to each destination means that there is likely to be wide variations in the pattern of movements at the main access across the day. For example, the proximity of Wanaka could contribute to a relatively constant flow of traffic in both directions. However, there is likely to be more traffic heading towards Queenstown during the morning than coming from Queenstown with this pattern reversing in the afternoon.

The pattern of movements at the Cardona Valley Road intersection is likely to vary widely across the year. During the winter, it is likely that the majority of visitors staying in the MCS development would be there with a primary purpose of skiing. This means that a high proportion of the daily traffic generation would be towards the Cardrona ski field rather than Cardrona Valley Road. On this basis, there could be lower turning movements in the winter compared with the summer when more movements would be to or from Wanaka and Queenstown.

3. Vehicle Speeds

A vehicle speed survey was completed on Cardona Valley Road close to the Tuohy's Valley Road intersection on 14 August from 3:45 to 4:30pm. This coincided with a high departure rate from the Cardrona ski field.

Measure	Northbound	Southbound
Mean Speed	73km/h	65km/h
Maximum Speed	103km/h	88km/h
85% Speed	84km/h	74km/h

Table 3: Speed Statistics

There is a 65km/h advisory speed sign for the two curves on Cardrona Valley Road immediately to the south of the Cardrona ski field access road. The lower speed of the southbound vehicles compared with the northbound vehicles is likely to reflect the fact that

these vehicles had just traversed the two curves where northbound vehicles would still be decelerating at the entry to the curves.

4. Intersection Safety Assessment

The Austroads Guide to Road Design Part 4[1] provides guidelines for the general form of an intersection. These include a requirement that road users are not surprised by an intersection and the form of intersection is consistent with other nearby intersections. The Cardrona ski field access has priority controls with a right turn bay and left turn deceleration lane on Cardrona Valley Road. By comparison, the Tuohy's Valley Road intersection is uncontrolled and has localised shoulder widening only. With the anticipated volume of movements that will arise from the MCS development, an intersection with a right turn bay would be anticipated. This also creates an opportunity to form a right turn bay for the Tuohy's Gully Road intersection.

The Austroads Guide to Traffic Management Part 6[2] (GTM6) provides guidance on the design of rural intersections. The option of forming a cross-roads intersection has been discounted because these typically have higher crash rates than staggered T-intersections. The GTM6 notes that the choice of left-right or right left stagger needs to take into account site conditions, existing road alignments as well as traffic volumes. It also prefers a left-right stagger over a right-left stagger because there is some evidence that the increased separation of conflict points reduces the potential for crashes and removes the need for the minor road through movement to cross the major road in a single manoeuvre.

The option of a left-right stagger was considered for the MCS development but rejected because it would not be possible to form a new intersection in a location that provided suitable separation between the intersections and also provided adequate sight distance. Further, the topography on the western side of Cardrona Valley Road rises steeply from the road and it would be impractical to form a new road without extensive earthworks.

It has been noted that Tuohy's Gully Road is not aligned with the legal road boundaries and so the option of re-aligning the existing Tuohy's Gully Road east of Cardona Valley Road was also considered. However, this option has been rejected because this lies outside the control of MCS and locating the road on the legal road alignment would create other safety issues in relation to sight distances for that intersection.

Overall, the preferred configuration for the new intersection is a right-left stagger because a left-right staggered intersection cannot be formed and construction of a roundabout would be out of context in this location. The GTM6 notes that the stagger distance for a right-left stagger is particularly important and should be:

- Small enough to enable an efficient crossing manoeuvre in a single movement; and,
- Large enough to eliminate the possibility of high speed crossing movements from the minor roads.

The recommended design details for a right left-staggered T-intersection are set out in the Austroads Guide to Road Design Part 4A[3] (GRD4A). It notes that the intersection should be designed to ensure that:

- The stagger distance between the minor legs is large enough to discourage drivers from 'taking a short-cut on the wrong side of the traffic islands (e.g. at least 15 m to 30 m depending on the site characteristics);

[1] 2nd Edition, June 2017
[2] 3rd edition, July 2017
[3] 3rd Edition, June 2017

- The island treatments in the minor roads are long enough to also discourage wrong way movements; and,
- Sufficient width is provided on the major road within the intersection to enable through vehicles to pass slowly to the left of vehicles waiting to turn right (e.g. 12 m), a similar principle to the BAR treatment.

While a concept design has not been prepared, the existing road reserve width is sufficient to allow Cardrona Valley Road to be widened to provide right turn bays for the MCS development and Tuohy's Gully Road and provide wide shoulders to allow left turning vehicles to decelerate clear of through traffic. It is suggested that subject to detailed design of the new MCS spine road, a stagger distance of 20-30m would be consistent with the GRD4A design requirements. Although this has been achieved with the proposed structure plan, it is recommended that some flexibility with the final location is permitted to allow for any changes in location as a result of the detailed design process.

5. Ski-field Access Road Connection

The detailed design for the proposed connection to the ski-field access road has not been completed and will require liaison with the ski field operator to ensure that the location of any new intersection is consistent with any long term plans for parking in that area.

The extent of sealed road surface within the MCS site has not been established. In the short term, it is anticipated that the upper section of the road would be unsealed and any change from sealed to unsealed road surface would occur on a straighter section of road which would minimise the potential for loss of control type crashes due to loose gravel.

Although the structure plan allows for car parking beside the ski-field access road, it is understood that this is intended to allow for future integration with ski-field car parking at the lower end of the ski-field access road. The pattern of vehicle movements in this area will ultimately be dependent upon what shuttle services are operated by the ski-field.

The volume of vehicle movements at the intersection will also depend upon what shuttle services are operated between the MCS development and ski field. In the morning, it is expected that the majority of movements would be left out towards the ski field while in the afternoon, the majority of movements would be right in. The existing ski field access road is very wide in the vicinity of the proposed intersection and would be sufficient to allow through traffic to safely pass any vehicles that have slowed to turn right into the MCS development.

Although the MCS spine road will provide an alternative access route to Cardrona Valley Road, this will be less direct and slower than the ski-field access road and therefore unlikely to be used as a rat-run route. However, it is anticipated that there will be some usage of the road by visitors to the ski-field who choose to stop at facilities within the MCS zone. This will have a small effect on vehicle movements at the Cardrona Valley Road intersection.

6. PC52 Structure Plan

The currently proposed revision to the MCS structure plan sets out fixed positions for the internal roads. Since the engineering design for the roads has not been completed and this could result in a need to change the alignments, it is proposed that the structure plan allow for some flexibility in the alignment of the road and also location of the intersection. It is suggested that the road alignment on the structure plan is shown as indicative and subject to a rule of the following form[4]:

[4] Based on a similar rule for the Three Parks Zone

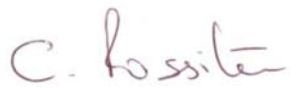
All activities and development (including buildings) shall be in general accordance with the MCS Structure Plan, except that:

(i) *All subzone boundaries and key connection points shown on the MCS Structure may be moved up to 25 metres in any direction in order to enable more practical construction, improved layouts or to allow for minor inaccuracies in the plan drafting.*

(ii) *All roads and footpaths shown as 'indicative' on the MCS Structure Plan may be moved or varied provided they remain in accordance with the MCS Structure Plan and achieve the relevant objectives and policies.*

We trust that this report provides the information that was requested but would be happy to provide further clarification if necessary.

Yours sincerely
Traffic Design Group Ltd



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