Our Ref: 4100 290513-noble MWH response

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Dear Alison

PROPOSED PLAN CHANGE 46: RESPONSE TO MATTERS RAISED BY MWH

Further to your recent e-mail, we have reviewed the comments made by MWH in respect of the traffic and transportation information provided as part of proposed Plan Change 46 (MWH memorandum to QLDC, dated 9 May 2013). Our comments are as follows, set out in the same order as in MWH's report.

Item 1.1: Sensitivity Test

MWH requests a sensitivity test of the road capacity, noting the figure used in our analysis of 1,400 vehicles per hour is at the "*top of the range*", according to Section 5.2 of the Austroads Guide to Traffic Management Part 3 ('Traffic Studies and Analysis') and that the geometry of Ballantyne Road is not ideal for achieving this capacity.

We note that Section 5.2 of the Austroads Guide specifically relates to 'interrupted flow' conditions, where the "*traffic flow conditions are subject to the influence of fixed elements such as traffic signals, stop signs or other controls which cause traffic to stop periodically*" (Austroads Guide to Traffic Management Part 3, paragraph 3.1). However the closest locations on Ballantyne Road where traffic is required to stop lie 1.9km to the north and 5.5km to the south of the plan change area. Consequently, traffic approaching the site is under 'uninterrupted flow' conditions, where "*traffic flow conditions are the result of interactions between vehicles in the traffic stream, and between vehicles and the geometric and environmental characteristics of the road; there are no fixed elements external to the traffic stream, such as traffic control signals, that cause interruptions to traffic flow*" (Austroads Guide to Traffic Management Part 3, paragraph 3.1).

Using the appropriate section of the Austroads Guide means that the capacity of a traffic lane is much greater than MWH includes in their memorandum. In passing, it also appears that MWH have confused the figures for the capacity of a traffic lane and the two-way capacity of a road in their assessment.

For completeness, we have followed the process set out in the Highway Capacity Manual (as referenced in the Austroads Guide to Traffic Management Part 3, paragraph 4.2) to assess the levels of service on Ballantyne Road with the already-approved plan changes and the proposed plan change, and taking account of the road geometry. The results are set out below.

Table 1: Levels of Service on Ballantyne Road

Location	Scenario	Traffic Flow (2-way)	Level of Service
Ballantyne Road (North)	Operative plan change areas fully developed, **no** PC46 traffic	1055	D
	Operative plan change areas fully developed **with** PC46 traffic	1215	D
Ballantyne Road (South)	Operative plan change areas fully developed, **no** PC46 traffic	690	C
	Operative plan change areas fully developed **with** PC46 traffic	850	C

It can be seen that levels of service do not change as a result of the traffic which would be generated by development of proposed Plan Change 46.

Item 1.3: Further details regarding the source and values for the traffic generation of the development

In respect of the residential element of the development, we adopted the values used for the assessment of Plan Change 4 (North Three Parks) which were accepted by QLDC.

For the industrial component of the plan change request, the traffic generation rates were those used for the North East Ashburton Industrial Area (Plan Change 2 to the Ashburton District Plan) which were accepted by the Ashburton District Council.

We note that the analysis which we have undertaken does not include for a proportion of those living within the plan change area to also work in the adjacent industrial area. Taking this matter into account would reduce the overall (external) traffic generation of the site. We therefore consider that the analysis presented is robust.

Item 1.3: Sensitivity testing of other distribution analyses

The level of service offered by any priority intersection is wholly determined by the delays experienced by right-turning vehicles. Because of the 'give-way' rules within New Zealand, it is right-turning vehicles emerging from the minor approach that experience the greatest delays and thus determine the consequent overall level of service of the intersection. As a result, any change in the distribution of traffic associated with the site that results in greater exiting volumes turning towards the left (in this case, towards Wanaka) will necessarily result in improved levels of service arising.

Our analysis used a distribution of 67% of traffic travelling towards the north (that is, turning left) and 33% traveling south (the critical movement, turning right). We therefore do not consider that the ratios suggested by MWH (70% / 30% and 80% / 20% respectively) will adversely affect the level of service offered by the site access. Moreover, the proportion of traffic travelling towards the south is commensurate with that used for the assessment of Plan Change 32 (Ballantyne Road Mixed Use Zone), Plan Change 4 (North Three Parks) and Plan Change 16 (Three Parks).

Item 1.4: Intersection levels of service

The evening peak hour scenario that MWH describes, of a greater number of drivers wishing to turn right into the site blocking emerging drivers wishing to turn right, is to a

large extent self-mitigating. This is because at in this period, there are far fewer drivers that would wish to emerge from the site. Nevertheless, we have undertaken the analysis sought by MWH of the performance of the Ballantyne Road / site access intersection in the evening peak hour. To do this we factored up the incoming traffic by 40%, and factored down the outgoing traffic by 24% in accordance with Table 4.3 of our initial transportation assessment.

A comparison of the results is set out below.

Table 2: Performance of Nominal Ballantyne Road / Site Access Intersection

Movement	Morning Peak Hour			Evening Peak Hour		
	Average Delay (secs)	95 Percent Queue (veh)	Level of Service	Average Delay (secs)	95 Percent Queue (veh)	Level of Service
South: Ballantyne Road						
Left	8.6	0	A	8.6	0	A
Through	0.0	0	A	0.0	0	A
North: Ballantyne Road						
Through	6.3	4	A	5.0	6	A
Right	15.0	4	C	13.7	6	B
West: Site Access						
Left	13.5	1	B	11.3	1	B
Right	48.9	1	E	52.0	1	F

It can be seen that the differences between the two peak hours are minimal, with delays changing by at most 3 seconds.

Item 1.4: Determination of the timing of a roundabout

The traffic flows on Ballantyne Road are heavily influenced by the development of sites other than proposed Plan Change 46. As set out in our initial traffic assessment, approved plan changes in the immediate area result in a significant increases in traffic volumes on Ballantyne Road, more than doubling the existing flows. Vehicles associated with Plan Change 46 then contribute only a further 15% to the traffic volumes on the busiest sections of Ballantyne Road.

Our analysis shows that unless there is full development of both Three Parks and the Ballantyne Road Mixed Use Area, levels of service at the Ballantyne Road / site access intersection remain good. Consequently, the matter of timing of any improvement scheme at the intersection depends primarily on the development of those two sites, which cannot be forecast with any certainty.

Moreover, the analysis presented was intended to be robust, allowing for a high proportion of plan change traffic to pass through this intersection coupled with no reduction being made for trips that will be made wholly internally to the plan change area. Nevertheless, even under this circumstance, the highest delays are no more than 52 seconds. We consider that with full development of Three Parks, Ballantyne Road Mixed Use area and other developments in the town, delays of this magnitude (and greater) will not be uncommon.

Item 1.6: Intersection form

We consider that the assessment of the location and suitability of the proposed Ballantyne Road / site access intersection, and issues such as "*maximising sight lines and eliminating roadside hazards*" are issues of detailed design. As such they are appropriately assessed at the time of the subdivision or land use consent application and not as part of the plan change request. In this regard we note that there are various overarching standards adopted by Council which mean there can be certainty that an appropriate design will be achieved at that time.

This approach (of determining the details of intersection designs subsequent to the plan change application) is consistent with other plan changes in the immediate area including Plan Change 16 (Three Parks) and Plan Change 32 (Ballantyne Road Mixed Use Zone).

I trust that this addresses the matters raised by MWH but if you would like any further information or clarification of any issues, then please don't hesitate to contact me.

Regards
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