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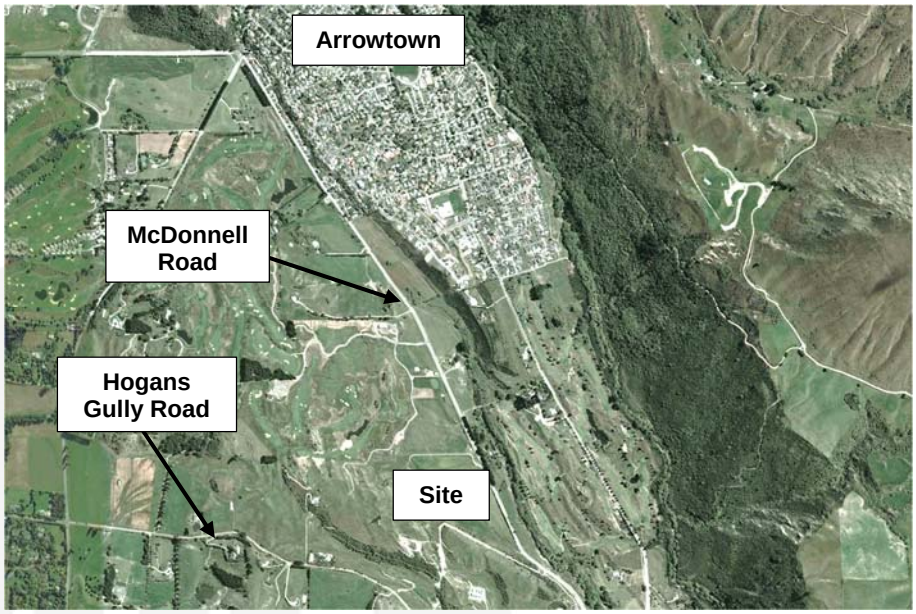
Dear Shane

Anderson Monk Retirement Village, Arrowtown: Overview of Traffic Effects

Further to our recent discussions and subsequent e-mails, we have carried out a preliminary and high-level assessment of the likely traffic and transportation effects of the proposed retirement village at McDonnell Road, Arrowtown.

Background

Based on the information received, the development site is located towards the northwest of the McDonnell Road / Hogans Gully Road intersection, approximately 2.1km south of Arrowtown town centre.



Photograph 1: Aerial Photograph of Site

We understand that up to 120 independent villas are proposed, as well as up to 55 apartments and 100 beds within an aged care facility offering rest home, hospital and dementia care. There will also be ancillary amenities provided, including dining facilities, lounges, a library, swimming pool, gym, bowling green and gardens / landscaped areas.

Access to the site will be via one vehicle crossing onto McDonnell Road, located approximately 1km northwest of the McDonnell Road / Hogans Gully Road intersection.

McDonnell Road is a Local Road under the Queenstown Lakes District Plan. In the vicinity of the site it is subject to an 80km/h speed limit and provides two traffic lanes (one in each direction) of 3.5m width each. There is a shared walkway/cycleway which runs along the western (site) side of the road, which is metalled.

Further north, McDonnell Road becomes more urbanised and the speed limit reduces to 50km/h. There is residential property along the eastern side of the road together with a parking lane of 2.5m width, and numerous private driveways. There are also four speed humps on this part of the road, each of which has an advisory speed limit of 25km/h.

At its northern end, McDonnell Road meets Arrowtown-Lake Hayes Road, Berkshire Street and Malaghans Road at a priority-controlled, crossroad intersection. Priority is given to the Arrowtown-Lake Hayes Road / Berkshire Street route and therefore traffic on McDonnell Road must give-way.

Council records show that McDonnell Road carries approximately 950 vehicles per day (two-way). Applying standard ratios, this indicates that the road carries around 120 to 140 vehicles (two-way) in the peak hours. The Austroads Guide to Traffic Management Part 3 ('Traffic Studies and Analysis') sets out a way by which the level of service on a road can be calculated, and using this methodology, McDonnell Road presently provides Level of Service A. This is the best level of service, and is described by the guide as "*a condition of free flow in which individual drivers are virtually unaffected by the presence of others in the traffic stream…and the general level of comfort and convenience provided is excellent*."

Anticipated Traffic Generation

By their nature, retirement villages have a lower traffic generation than other types of residential property, and travel in the peak hours is also lower. This is because the traffic generation of standard residential properties is in large part determined by the need to travel for employment and education (that is, travel to work and the 'school run') and these journeys generally need to be made in the early morning and late afternoon. Residents in retirement villages do not need to undertake employment and education travel, and typically also have greater discretion to make trips for other purposes at different times of the day.

Based on the traffic generation characteristics of other retirement villages that have been accepted elsewhere in the South Island, we anticipate that the independent villas and apartments will each generate 2 vehicle movements per day (allowing for both residents and guests). With up to 120 independent villas and 55 apartments being proposed, this equates to 350 vehicle movements per day (two-way).

We also expect that each care bed will generate 1.5 vehicle movements a day (which allows for visitors, staff and service vehicles) and with up to 100 beds proposed, this will result in 150 vehicle movements per day (two-way).

The ancillary facilities will not generate any traffic movements on McDonnell Road, because they will be available only to residents who are already within the site.

In total then, the site will generate 500 vehicle movements per day. Allowing for 20% of these to be generated in the peak hours, the proposed development would generate 100 vehicle movements (two-way) at the busiest times.

Type of Unit	Maximum Number	Trip Rate Per Day	Trips Per Day	Peak Hour Trips
Villas	120 units	2 (residents and visitors)	120 in + 120 out	48 (two-way)
Apartments	55 units	2 (residents and visitors)	55 in + 55 out	22 (two-way)
Care beds	100 beds	1.5 (residents, visitors and service vehicles)	75 in + 75 out	30 (two-way)
Total	**-**	**-**	**240 in + 240 out**	**100 (two-way)**

Table 1: Traffic Generation of Proposed Development

Anticipated Traffic Effects

A detailed analysis of the likely traffic effects and access layout at the retirement village is beyond the scope of this report and will need to be carried out as part of the resource consent application. However, we have recalculated the level of service on McDonnell Road using the anticipated daily and peak hour flows, plus the traffic associated with the retirement village. Our analysis shows that Level of Service B would be provided. This is described in the Austroads Guide to Traffic Management Part 3 ('Traffic Studies and Analysis') as "*in the zone of stable flow where drivers still have reasonable freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience is a little less than with Level of Service A".* As such, a very good level of service will still be provided on the road within the development in place.

The peak hour traffic equates to one additional vehicle movement every 36 seconds, and in our view it is unlikely that this will be perceptible. At other times of the day, the traffic generation will be lower than this, and thus any change in the traffic stream will continue to be unnoticeable.

For comparative purposes, we have looked at the current peak hour traffic flows on Berkshire Street as the main entrance into Arrowtown. Surveys carried out in 2014 showed that north of Wiltshire Street, Berkshire Street carries around 275 vehicles in the peak hours, equivalent to one vehicle movement every 13 seconds. In practice, the traffic generated by the retirement village will be dispersed on the network (that is, some will travel to Queenstown, others to destinations to the east, and some to Arrowtown) but if an absolute worst case is adopted of ***all*** traffic using Berkshire Street, the rate of flow would change to one vehicle movement every 9.6 seconds. We consider that this difference is unlikely to be noticeable.

Finally, we have reviewed the likely change in performance at the Berkshire Street / Wiltshire Street roundabout (taking into account the recently-consented refuelling facility). Again allowing for the absolute worst case of all retirement village traffic using Berkshire Street, our analysis shows that the queues at the roundabout in the peak hours would increase by less than one vehicle, and delays would change by under half a second. This difference is unlikely to be noticeable.

With regard to road safety matters, there is no evidence of any existing road safety issues in the immediate area. We therefore do not anticipate that the increased traffic volumes will result in any difficulties arising.

Conclusions

We reiterate that a more detailed analysis will be required to accompany the resource consent application, taking account of the confirmed number of units and beds, and the detailed site layout. On the basis of our analysis to date, we consider that the level of service on the roading network will change slightly as a result of the development but will remain very good. Moreover, even

assuming the worst case of all peak hour retirement village traffic travelling into Arrowtown, the differences in queues and delays at intersections within the town will be negligible.

Please do not hesitate to contact me if you require anything further, or clarification of any matters discussed above.

Kind regards
Carriageway Consulting Limited

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