

**SIO No 12 Limited**

# **Proposed Plan Change Resort Complex, Corbridge, Wānaka**

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## **Transportation Assessment**

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**CARRIAGEWAY**  
**CONSULTING**

traffic engineering | transport planning



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## 1. Introduction

- 1.1. Sio No 12 Limited proposes to seek a private plan change to the proposed Queenstown Lakes District Plan (**District Plan**) for a site just east of Wānaka (**the site**). If approved the site will facilitate a resort complex that includes golf courses, visitor accommodation, worker accommodation, residential units and other ancillary uses.
- 1.2. This Transportation Assessment sets out a detailed analysis of the transportation issues associated with the proposal including changes in travel patterns that are likely to arise from development of the site. Where potential adverse effects are identified, ways in which these can be addressed are set out.
- 1.3. This report is cognisant of the guidance specified in the New Zealand Transport Agency's '*Integrated Transport Assessment Guidelines*' and although travel by private motor vehicle is addressed within this report, in accordance with best practice the importance of other transport modes is also recognised. Consequently, travel by walking, cycling and public transport is also considered.

## 2. Site Overview

### 2.1. Location

- 2.1.1. The site is located approximately 7km east of Wānaka and to the north of State Highway 6. The site has frontage only onto the highway. It is presently zoned as Rural in the PODP.
- 2.1.2. The location of the site in the context of the local area is shown in Figure 1 and in more detail in Figure 2.

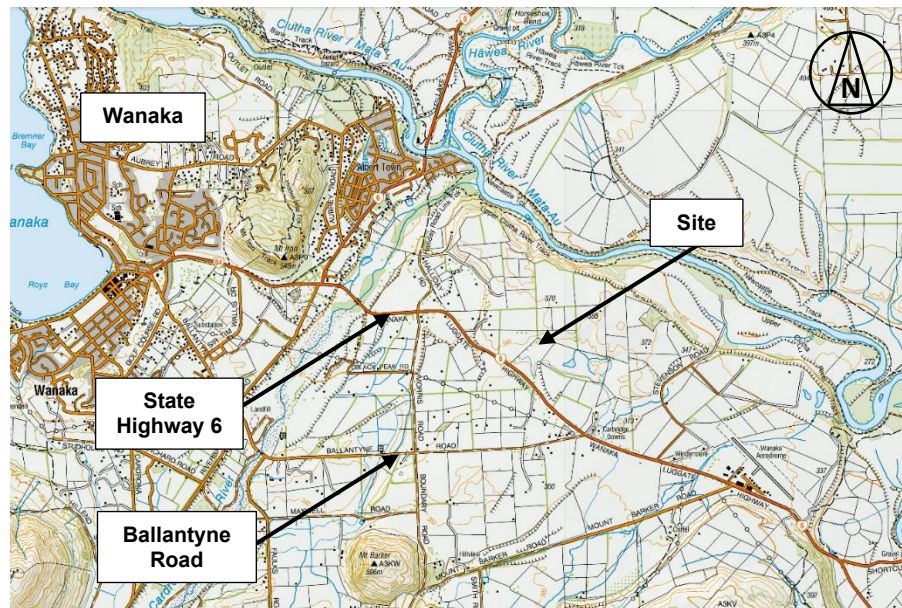


Figure 1: General Location of Site

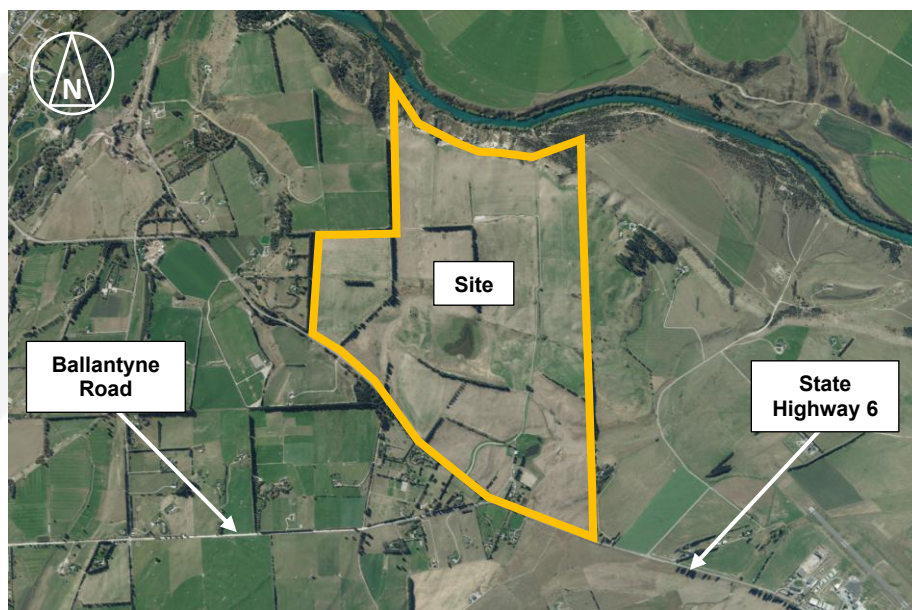


Figure 2: Aerial Photograph of Site and Environs



## **2.2.    *Roading Classification***

- 2.2.1.    The PODP classifies State Highway 6 as a state highway, and it is classified as 'Arterial' under the State Highway One Network Road Classification. On this basis, it is reasonable to conclude that the primary role of the road is to carry through traffic, with direct property access being limited. In the vicinity of the site, State Highway 6 is a Limited Access Road.
- 2.2.2.    Ballantyne Road is the closest district (Council) road. Although the section of Ballantyne Road towards the west (west of Faulks Road) is classified as a Collector Road, the easternmost 4km which is closest to the site, is closest is classified as a Local Road, meaning it provides for local journeys and property access.

### 3. Current Transportation Networks

#### 3.1. *Roading Network*

- 3.1.1. Adjacent to the site, Wānaka-Luggate Highway (State Highway 6) has one traffic lane in each direction of 3.6m width. The vertical alignment is generally flat, although there is a slight crest curve to the east of the site and a 'no overtaking' centreline. The alignment is curvilinear but the curve radii are large and do not materially affect vehicle speeds and there are no advisory speed limits at each. The speed limit on this part of the highway is 100km/h, and given the alignment of the highway, operating speeds will be of this magnitude.



**Photograph 1: Example of Cross-Section of State Highway 6 Near to Site (Site on Left)**

- 3.1.2. The legal width of the highway is 40m and the formed traffic lanes lie towards the centre or the southern boundary of this. This results in a wide grassed verge of more than 10m width on the northern side of the traffic lanes, and there is also a sealed shoulder of around 0.5m in width. On the southern side of the highway is a sealed 1m shoulder plus gravelled shoulder of around 0.5m width.
- 3.1.3. Of note though, the seal of the highway has been widened in the vicinity of the proposed site access. This widened shoulder is 4.3m wide, and it is understood that this was completed to provide for a right-turn lane (which has not yet been progressed), which is associated with an existing accessway into the site.



**Photograph 2: Existing Access into Site**



**Photograph 3: Aerial Photograph of Existing Access into Site Showing Widening**

- 3.1.4. The existing access is formed to a high standard with kerbs and sealing into the site. Sightlines at the access are excellent in both directions. The access will operate with priority control and is currently marked with a 'give-way' limit line and triangle, but no signage.



**Photographs 4 and 5: Sightlines at State Highway 6 / Site Access Intersection**

- 3.1.5. The shoulder widening on the southern side of the highway extends as far as its intersection with Ballantyne Road, located 230m towards the southeast.
- 3.1.6. The State Highway 6 / Ballantyne Road intersection is priority ('give-way') controlled and with no auxiliary turning lanes provided.



**Photograph 6: State Highway 6 / Ballantyne Road Intersection Looking West**

- 3.1.7. As shown above, there is a private access on the opposite side of the highway to Ballantyne Road. This also serves the site, but it is not proposed that this will be used for any traffic associated with the proposal.
- 3.1.8. Towards the west, State Highway 6 connects to Wānaka and to the east, it provides a link to Queenstown (and Queenstown airport) and via the wider highway network, to Cromwell, Alexandra and the West Coast.

### **3.2. *Non-Car Infrastructure***

- 3.2.1. There is no infrastructure for pedestrians, cyclists or public transport users on this part of State Highway 6 or on Ballantyne Road. There is no scheduled public transport service presently operating in Wānaka and therefore no infrastructure provided for buses in the vicinity of the site.

### **3.3. *Future Changes***

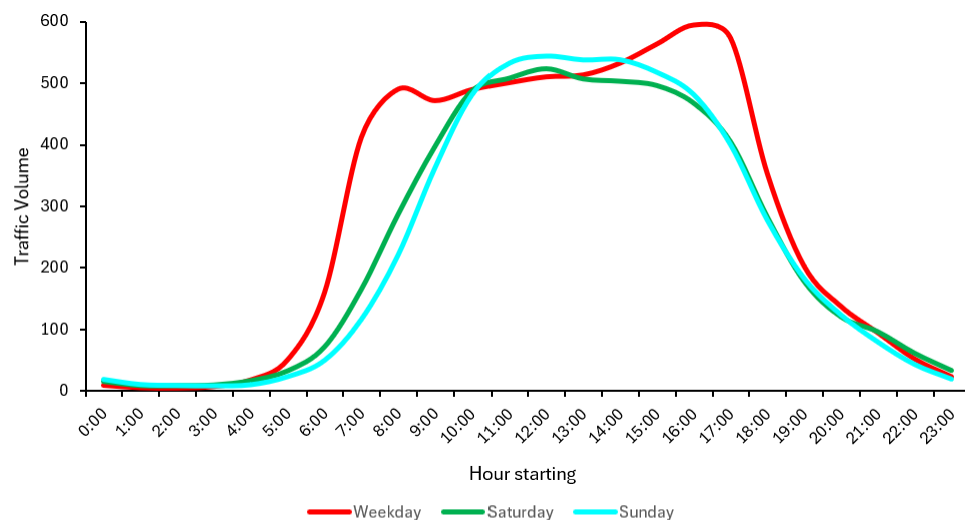
- 3.3.1. There are no known changes to the adjacent transport networks at the time of writing.

## 4. Current Transportation Patterns

### 4.1. Traffic Flows

4.1.1. The New Zealand Transport Agency has a number of traffic counting stations on the state highway network, and the closest counting station to the site lies around 2.4km away (counter 00600895). This site counts continuous and records traffic flows every hour. In 2025 the Annual Average Daily Traffic flow recorded was 6,444 vehicles per day (two-way), although the highway is highly seasonal with an average daily volume of 7,552 vehicles (two-way) in January and February compared to an average daily volume of 5,582 vehicles (two-way) in July and August.

4.1.2. The data also shows variation between weekends and weekdays as shown below:



**Figure 3: Hourly Traffic Volumes by Weekday and Weekend**

4.1.3. It can be seen that during weekdays, State Highway 6 has a morning and evening peak hour, indicative of the highway being used for 'commuter' type travel. At weekends, the busiest period occurs around midday, which is typical for a recreational route. Traffic volumes at weekends are generally high when compared to the morning and early afternoon periods of weekdays.

4.1.4. The directions of the peak hour traffic volumes were as follows:

- Weekday morning peak hour (8am to 9am): 220 vehicles away from Wānaka and 271 vehicles into Wānaka;
- Weekday evening peak hour (4pm to 5pm): 275 vehicles away from Wānaka and 320 vehicles into Wānaka
- Saturday peak hour (12pm to 1pm): 246 vehicles away from Wānaka and 277 vehicles into Wānaka; and
- Sunday peak hour (12pm to 1pm): 289 vehicles away from Wānaka and 254 vehicles into Wānaka.

4.1.5. This pattern is unusual in that in the weekday peak hours, most traffic travels in a westbound direction (towards Wānaka).



- 4.1.6. Traffic growth over the past five years has equated to 4.9%, expressed as a percentage of the 2025 traffic flow.
- 4.1.7. Until a few years ago, Ballantyne Road was unsealed and thus carried relatively low traffic flows (450 vehicles per day in 2021). However since it was sealed over its full length, traffic flows have increased and according to the MobileRoad website, Ballantyne Road adjacent to the state highway presently carries around 1,050 vehicles per day. The daily volume suggests peak hour volumes will be in the order of 100 vehicles (two-way).
- 4.1.8. The Austroads Guide to Traffic Management Part 3 ('Traffic Studies and Analysis') sets out a process by which the level of service of a road can be calculated. This showed that under these traffic flows, Wānaka -Luggate Highway provides Level of Service D in the peak hours. This is within the zone of stable flow.

## **4.2. Non-Car Modes of Travel**

- 4.2.1. Given that the area is predominantly rural, it can reasonably be expected that it will be relatively lightly used by pedestrians and cyclists. There are also few destinations within a viable walking and cycling distance (1km and 3km respectively). It is considered that the absence of infrastructure for these road users is therefore not unreasonable.
- 4.2.2. There are no scheduled bus services that presently operate in the Wānaka area. Although several longer-distance services pass nearby on the highway, there are no bus stops provided within walking distance.

## **4.3. Road Safety**

- 4.3.1. The NZTA Crash Analysis System has been used to establish the location and nature of the recorded traffic crashes in the vicinity of the site. All reported crashes between 2021 to 2025 plus the partial record for 2026 were identified on State Highway 6 for 350m to the west of the site access and 350m to the east of Ballantyne Road.
- 4.3.2. Over the past five years, two crashes have been reported within this area:
  - One crash occurred near the State Highway 6 / Ballantyne Road intersection when a southbound driver looked away from the road to reach for an item in the car and veered off the highway. The crash resulted in minor injuries; and
  - One crash occurred when a truck that had previously stopped on the widened shoulder near the site pulled out directly in front of a northbound campervan, colliding with it and resulting in both vehicles leaving the road. The crash resulted in serious injuries.
- 4.3.3. The low number of crashes and different contributing factors indicate that there are no particular safety-related deficiencies on this part of the roading network.



## 5. Proposal

5.1. The requested plan change will allow for a resort-style development to be established on the site. The expected extent of development that will be facilitated is set out below:

- Stage 1
  - Maximum 35 residential lots;
  - Worker accommodation and maintenance facilities (160 rooms); and
  - Associated infrastructure.
- Stage 2
  - Maximum 55 residential lots;
  - 9 hole golf course;
  - One (potentially two) 18 hole golf courses;
  - Driving range, no maximum number of tees;
  - Pro shop;
  - Café, bar etc, limited to a maximum building coverage of 4,200sqm GFA;
  - Clubhouse (up to 40% coverage of Activity Area C);
  - 'At least' 50 hotel guest rooms (a maximum of 290 visitor accommodation units is permitted in total);
  - 'At least' 30 visitor accommodation villas
- Stage 3
  - Maximum 70 residential units ;
  - Second 18-hole golf course (if not constructed in Stage 1);
  - 'At least' 100 hotel rooms (a maximum of 290 visitor accommodation units is permitted in total);
  - 'At least' 30 visitor accommodation villas.

5.2. Notwithstanding that the plan change provisions do not set out maximum sizes in some cases, in practice there is a natural limit to how large a facility can be. For instance, while 4,200sqm GFA of café and bar is permitted, this is much larger than would arise in reality. Consequently for the purposes of assessing the traffic effects, we have allowed for the following, as advised by the Applicant:

- Stage 2
  - Driving range (25-tees);
  - Café, bar etc (80 seats);
  - Clubhouse (160 seats restaurant and bar);
  - 120 hotel guest rooms;
  - 30 visitor accommodation villas
- Stage 3
  - Maximum 70 residential units ;
  - Second 18-hole golf course (if not constructed in Stage 1);
  - 110 hotel rooms (a maximum of 290 visitor accommodation units is permitted in total);
  - 30 visitor accommodation villas

5.3. As set out subsequently however, the specific staging is of less relevance in this particular case because one of the plan change provisions is for an assessment of traffic effects as and when development is brought forwards.



- 5.4. In respect of access to the site, it is proposed that this will be focussed on the existing and constructed site access presently in place. However as noted below, this will be upgraded as the site development progresses.
- 5.5. As set out above, there is also an access to the site opposite Ballantyne Road. This will not be used for regular traffic movements associated with proposal.
- 5.6. The access roadway leads from the state highway and into the site. Because the proposal is for a plan change, no detailed cross-sections have been produced for these thus far. However in keeping with other resort-type developments it is expected that these will remain in private ownership rather than being vested.



## 6. Traffic Generation and Distribution

### 6.1. Traffic Generation

- 6.1.1. The different activities proposed within the site have been disaggregated for the purposes of assessing traffic generation.
- 6.1.2. At the outset, it is noted that as a resort-style complex, the traffic generation will differ from stand-alone golf courses, visitor accommodation or residential development. In essence, people will visit the resort due to the nature of the activity provided, and this will reduce the overall traffic generation. Put another way, the bulk of travel will be associated with those who are playing golf, or who wish to live or stay in an area with easy access to golf courses. This then makes it less likely that those people would seek to travel to other destinations. Relevant factors are discussed in more detail under each activity below.

#### *Golf Course*

- 6.1.3. Two 18-hole courses are proposed, plus a 9-hole course and driving ranges. The NSW Guide to Transport Impact Assessment sets out that the traffic generation of golf courses varies by day of the week, with more use during days at weekends than on weekdays. It also notes that the peak traffic generation at weekdays typically does not align with the peak periods on the adjacent roading network.
- 6.1.4. The data collected supporting that report shows a very wide variation in trip generation but an average rate of 3.3 vehicle movements per hole in the weekday morning peak hour and 3.9 vehicle movements per hole in the weekday morning peak hour (for a public course). These increase to 4.0 vehicle movements per hole during the Saturday peak hour and 3.4 vehicle movements per hole in the weekday morning peak hour.
- 6.1.5. Interestingly though, one site was surveyed at a resort-style complex and this was noted to have considerably lower external traffic generation. This survey consistently showed a rate of 0.6 external vehicle movements per hole in each of the weekday peak hours, rising to 1.2 external vehicle movements per hole in each of the weekend peak hours. This lower rate is intuitive because many of the people playing the golf course will already be staying in the complex. Given that the proposal is for a resort, the latter data has been used.
- 6.1.6. The daily traffic flows similarly vary, but for a resort-style complex, these equate to:
- Weekday: 3 trips per hole;
  - Saturday: 4 trips per hole; and
  - Sunday: 2.7 trips per hole
- 6.1.7. For driving ranges, the ITA Trip Generation Handbook indicates a weekday morning peak hour trip generation of 0.4 trips per tee with 1.25 trips per tee in the evening peak hour. There is no specific rate for weekends but it is reasonable that it would be similar to that of the weekday evening peak hour due to driving practice being a leisure activity.
- 6.1.8. Daily rates of 13.7 trips per tee are set out in this guide, but no specific day of the week is shown. However it is most likely that this will reflect weekend use rather than weekday use (since it is a leisure activity), and accordingly a pro-rata for this based on the use of the golf course has been allowed for.

- 6.1.9. It is likely that many of the users of the driving range will be those that are staying on the site but the site will be open to the public and so a degree of external travel can be expected. Unlike golf courses however, there is no specific data showing the differences between a driving range that forms part of a golf resort and those that are stand-alone. At this stage then, no reduction has been made to allow for increased use by those already within the site.

| Activity      | Size     | Weekday Morning |     | Weekday Evening |     | Saturday |     | Sunday |     |
|---------------|----------|-----------------|-----|-----------------|-----|----------|-----|--------|-----|
|               |          | In              | Out | In              | Out | In       | Out | In     | Out |
| Golf Course   | 18 holes | 11              | 0   | 6               | 6   | 11       | 11  | 11     | 11  |
|               | 9 holes  | 5               | 0   | 3               | 3   | 6        | 6   | 6      | 6   |
| Driving range | 25 tees  | 10              | 0   | 16              | 16  | 16       | 16  | 16     | 16  |

**Table 1: Golf Course Peak Hour Traffic Generation**

| Activity      | Size     | Weekday |     | Saturday |     | Sunday |     |
|---------------|----------|---------|-----|----------|-----|--------|-----|
|               |          | In      | Out | In       | Out | In     | Out |
| Golf Course   | 18 holes | 27      | 27  | 36       | 36  | 24     | 24  |
|               | 9 holes  | 14      | 14  | 18       | 18  | 12     | 12  |
| Driving range | 25 tees  | 86      | 86  | 171      | 171 | 171    | 171 |

**Table 2: Golf Course Daily Traffic Generation**

#### *Visitor Accommodation*

- 6.1.10. It can be expected that guests will choose to stay in this location due to the nature of the resort, and therefore the extent of travel into and out of the site will be lower than at (say) a town centre location. Irrespective, the trip generation of visitor accommodation units is relatively low during the peak times on the adjacent transportation networks because guests have no need to travel for work or education purposes.
- 6.1.11. The 15<sup>th</sup> percentile peak rate from the NZTA Research Report 453 ('Trips and Parking Relating to Land Use') has therefore been used of 0.3 vehicle movements per occupied unit in the weekday peak hours. At weekends, the trip rate is likely to be lower but the same rate has been used for robustness.
- 6.1.12. Trip rates are based on occupied units, and at any given time it is likely that a proportion of units will be vacant. Data up to 2025 showed a peak occupancy rate of 73% in Wānaka<sup>1</sup> and for the purposes of this assessment, this has been rounded to 80%.
- 6.1.13. For the purposes of assessing the daily traffic for such units, a rate of 3 vehicle movements per units has been adopted for each day of the week. As noted above, the extent of visitor accommodation is limited to 290 units.

<sup>1</sup> <https://marketing.queenstownnz.nz/acton/fs/blocks/showLandingPage/a/44251/p/p-013e/tt/page/fm/0>

| Activity              | Size | Weekday Morning |     | Weekday Evening |     | Saturday |     | Sunday |     |
|-----------------------|------|-----------------|-----|-----------------|-----|----------|-----|--------|-----|
|                       |      | In              | Out | In              | Out | In       | Out | In     | Out |
| Visitor accommodation | 290  | 6               | 63  | 45              | 24  | 35       | 35  | 35     | 35  |

**Table 3: Visitor Accommodation Peak Hour Traffic Generation**

| Activity              | Size | Weekday |     | Saturday |     | Sunday |     |
|-----------------------|------|---------|-----|----------|-----|--------|-----|
|                       |      | In      | Out | In       | Out | In     | Out |
| Visitor accommodation | 290  | 348     | 348 | 348      | 348 | 348    | 348 |

**Table 4: Visitor Accommodation Daily Traffic Generation**

### *Residential Units*

- 6.1.14. A total of 160 residential sections is proposed. The same factors are present for residential development as for the visitor accommodation, in that many residents will choose to live at the site due to their intent/desire to play golf which in turn means that they will be less likely to leave the site since the site provides this activity internally.
- 6.1.15. The location and nature of the site mean that although it is possible that there will be permanent residents who regularly have to travel externally for work or education, the more likely characteristics is that many residents will either work from home or have discretion to travel at non-peak times.
- 6.1.16. Finally, a proportion of units will not be occupied at any given time as they will be second homes.
- 6.1.17. The typical peak hour trip rate for residential activity is in the order of 1 vehicle movement per unit. In this case, taking into account the factors above, a reduction of 50% has been allowed for. This has also been reflected in the daily trip generation rate, which has been reduced from 8 vehicle movements per day (for a typical residence) to 4 vehicle movements per day per unit.
- 6.1.18. As set out above, the trip rates for golf courses are higher at weekends than on weekdays. It therefore follows that those living within the site will be less likely leave the site at weekend, since they will instead be participating in golf activities in the site. Accordingly, a further 50% reduction has been made in the peak hour traffic generation at weekends to allow for this.
- 6.1.19. Notwithstanding that golf courses are well-used at weekends, and that this will reduce external traffic generation for residential activities, there is also an offsetting effect of residents travelling externally for retail or leisure which would tend to increase travel. Such trips would be made over the course of the day rather than in the peak hours, and so the weekday daily rate has only been reduced by 25% (rather than 50%) to allow for this), with a resultant rate of 3 vehicle movements per day per unit

| Activity    | Size      | Weekday Morning |     | Weekday Evening |     | Saturday |     | Sunday |     |
|-------------|-----------|-----------------|-----|-----------------|-----|----------|-----|--------|-----|
|             |           | In              | Out | In              | Out | In       | Out | In     | Out |
| Residential | 160 units | 8               | 72  | 52              | 28  | 20       | 20  | 20     | 20  |

**Table 5: Residential Units Peak Hour Traffic Generation**

| Activity    | Size      | Weekday |     | Saturday |     | Sunday |     |
|-------------|-----------|---------|-----|----------|-----|--------|-----|
|             |           | In      | Out | In       | Out | In     | Out |
| Residential | 160 units | 320     | 320 | 240      | 240 | 240    | 240 |

**Table 6: Residential Units Daily Traffic Generation**

### *Restaurant / Café*

6.1.20. The clubhouse and restaurant are expected to have 160 seats. A standard 50<sup>th</sup> percentile peak hour trip generation rate for restaurants is 0.6 vehicle movements per seat but due to the likelihood that many diners will already be in the site (either staying in the visitor accommodation or having played golf) the 15<sup>th</sup> percentile rate has been used of 0.2 vehicle movements per seat in the peak hour and 1.3 vehicle movements per seat per day.

6.1.21. The ITS Trip Generation Manual sets out that the weekday morning peak hour is around 10% of the evening peak hour.

6.1.22. The proposed café/bar is expected to have 80 seats. It is understood that this will likely attract the bulk of visitors from off-site and therefore the 50<sup>th</sup> percentile rates (for restaurants) have been used.

| Activity   | Size      | Weekday Morning |     | Weekday Evening |     | Saturday |     | Sunday |     |
|------------|-----------|-----------------|-----|-----------------|-----|----------|-----|--------|-----|
|            |           | In              | Out | In              | Out | In       | Out | In     | Out |
| Restaurant | 160 seats | 2               | 2   | 16              | 16  | 16       | 16  | 16     | 16  |
| Café       | 80 seats  | 2               | 2   | 24              | 24  | 24       | 24  | 24     | 24  |

**Table 7: Restaurant / Café Peak Hour Traffic Generation**

| Activity   | Size      | Weekday |     | Saturday |     | Sunday |     |
|------------|-----------|---------|-----|----------|-----|--------|-----|
|            |           | In      | Out | In       | Out | In     | Out |
| Restaurant | 160 seats | 104     | 104 | 104      | 104 | 104    | 104 |
| Café       | 80 seats  | 148     | 148 | 148      | 148 | 148    | 148 |

**Table 8: Restaurant / Café Daily Traffic Generation**

### *Pro-Shop, Worker Accommodation, Golfer Café*

6.1.23. These activities are expected to generate little external traffic. The majority of customers of the pro-shop will already be in the site for some other purpose, and the café for golfers is only available to golfers playing the courses.

6.1.24. The worker accommodation is solely to be used by those that are working at the resort and will not be available for use by third parties. As such, it is not likely that these units will generate traffic volumes in the peak hours associated with travel to employment. It is possible that there may be some traffic generation during the day because workers might need to travel externally



as part of their work (for instance, to collect materials). However these day-time movements will already be included in the daily traffic flows for each activity set out above.

6.1.25. At weekends and at weekday evenings, it is possible that workers may leave the site for recreational reasons, or to visit commercial or retail activities. In practice, in many cases workers travel as a group in a mini-van as car ownership for workers is generally low. With 160 rooms, a notional allowance has been made for eight trips (four return trips) during the weekday evening, and 16 trips (eight return trips) during the days at the weekend.

| Activity     | Size      | Weekday |     | Saturday |     | Sunday |     |
|--------------|-----------|---------|-----|----------|-----|--------|-----|
|              |           | In      | Out | In       | Out | In     | Out |
| Worker accom | 160 rooms | 4       | 4   | 8        | 8   | 8      | 8   |

**Table 9: Worker Accommodation Daily Traffic Generation**

### Summary

6.1.26. The nature of the site means that visitors to one activity will likely make use of others. For instance, a person playing the golf course may be staying on the site and making use of the restaurants. Thus one external trip may be made but the person visits several different activities as part of the one trip. The extent to which this occurs will likely vary, and so for a robust assessment, no further reduction has been made to the traffic generation calculated above.

6.1.27. Based on the values above, the basic peak hour traffic generation of the site is summarised below for each of the expected stages of the site development:

| Stage / Activity   | Size      | Weekday Morning |     | Weekday Evening |     | Saturday |     | Sunday |     |
|--------------------|-----------|-----------------|-----|-----------------|-----|----------|-----|--------|-----|
|                    |           | In              | Out | In              | Out | In       | Out | In     | Out |
| Stage 1            |           |                 |     |                 |     |          |     |        |     |
| Residences         | Max 35    | 2               | 16  | 11              | 4   | 4        | 4   | 4      | 4   |
| Worker accom       | 160 rms   | -               | -   | -               | -   | -        | -   | -      | -   |
| Subtotal           | -         | 2               | 16  | 11              | 4   | 4        | 4   | 4      | 4   |
| Stage 2            |           |                 |     |                 |     |          |     |        |     |
| Residences         | Max 55    | 3               | 25  | 18              | 6   | 7        | 7   | 7      | 7   |
| Golf course        | 9 holes   | 5               | 0   | 3               | 3   | 6        | 6   | 6      | 6   |
| Golf course        | 18 holes  | 11              | 0   | 5               | 5   | 11       | 11  | 11     | 11  |
| Second golf course | 18 holes  | 11              | 0   | 5               | 5   | 11       | 11  | 11     | 11  |
| Driving range      | 25 tees   | 10              | 0   | 16              | 16  | 16       | 16  | 16     | 16  |
| Pro shop           | -         | -               | -   | -               | -   | -        | -   | -      | -   |
| Café/restaurant    | 80 seats  | 2               | 2   | 24              | 24  | 24       | 24  | 24     | 24  |
| Clubhouse          | 160 seats | 2               | 2   | 16              | 16  | 16       | 16  | 16     | 16  |
| Visitor accom      | Min 80    | 2               | 17  | 12              | 7   | 10       | 10  | 10     | 10  |
| Subtotal           | -         | 46              | 46  | 99              | 82  | 101      | 101 | 101    | 101 |
| Stage 3            |           |                 |     |                 |     |          |     |        |     |
| Residences         | Max 70    | 4               | 32  | 23              | 8   | 9        | 9   | 9      | 9   |
| Second golf course | 18 holes  | 11              | 0   | 5               | 5   | 11       | 11  | 11     | 11  |

|                      |         |           |            |            |            |            |            |            |            |
|----------------------|---------|-----------|------------|------------|------------|------------|------------|------------|------------|
| Visitor accom        | Min 130 | 3         | 28         | 20         | 11         | 16         | 16         | 16         | 16         |
| <i>Subtotal</i>      | -       | 18        | 60         | 48         | 24         | 36         | 36         | 36         | 36         |
| <b>Overall Total</b> | -       | <b>66</b> | <b>122</b> | <b>158</b> | <b>110</b> | <b>141</b> | <b>141</b> | <b>141</b> | <b>141</b> |

**Table 10: Total Peak Hour Traffic Generation**

6.1.28. The daily traffic volumes expected are as follows:

| Stage / Activity   | Size      | Weekday |     | Saturday |     | Sunday |     |
|--------------------|-----------|---------|-----|----------|-----|--------|-----|
|                    |           | In      | Out | In       | Out | In     | Out |
| Stage 1            |           |         |     |          |     |        |     |
| Residences         | Max 35    | 70      | 70  | 53       | 53  | 53     | 53  |
| Worker accom       | 160 rms   | 4       | 4   | 8        | 8   | 8      | 8   |
| Subtotal           | -         | 74      | 74  | 61       | 61  | 61     | 61  |
| Stage 2            |           |         |     |          |     |        |     |
| Residences         | Max 55    | 110     | 110 | 83       | 83  | 83     | 83  |
| Golf course        | 9 holes   | 14      | 14  | 18       | 18  | 12     | 12  |
| Golf course        | 18 holes  | 27      | 27  | 36       | 36  | 24     | 24  |
| Second golf course | 18 holes  | 27      | 27  | 36       | 36  | 24     | 24  |
| Driving range      | 25 tees   | 86      | 86  | 171      | 171 | 171    | 171 |
| Pro shop           | -         | -       | -   | -        | -   | -      | -   |
| Café/restaurant    | 80 seats  | 148     | 148 | 148      | 148 | 148    | 148 |
| Clubhouse          | 160 seats | 48      | 48  | 48       | 48  | 48     | 48  |
| Visitor accom      | Min 80    | 96      | 96  | 96       | 96  | 96     | 96  |
| Subtotal           | -         | 556     | 556 | 636      | 636 | 606    | 606 |
| Stage 3            |           |         |     |          |     |        |     |
| Residences         | Max 70    | 140     | 140 | 105      | 105 | 105    | 105 |
| Second golf course | 18 holes  | 27      | 27  | 36       | 36  | 24     | 24  |
| Visitor accom      | Min 130   | 156     | 156 | 156      | 156 | 156    | 156 |
| Subtotal           | -         | 323     | 323 | 323      | 323 | 323    | 323 |
| Overall Total      | -         | 926     | 926 | 984      | 984 | 966    | 966 |

**Table 11: Total Daily Traffic Generation**

6.1.29. It should be noted that the second 18-hole golf course may be created in the second or third stage and so is shown twice above (but is only counted once in the totals). The number of visitor accommodation units is a minimum whereas the number of residential units is a maximum.

## 6.2. Trip Distribution

6.2.1. With regard to the distribution of these vehicles, as noted above it can be expected that residents and guests will select this location because of the activities that are offered. Thus movements to and from external attractors will be relatively limited. In practice it is reasonable that guests will arrive and depart via the roading network to the east, as this is the direction of Queenstown, the airport, and the wider state highway network for those travelling by car. Conversely, shorter-distance trips are likely to be made in the direction of Wānaka, towards



the west. Those using the golf courses as members of the public would be likely to travel from the directions of greatest population, that is, towards the west and Wānaka.

- 6.2.2. The site access is presently formed as a priority intersection, and at any priority intersection the greatest delays and queues arise from the right-turn movement out of the minor leg. Thus a bias towards trips towards the west will provide the more robust outcomes. Accordingly, for a robust analysis, two thirds of vehicle movements have been assigned to the west.



## 7. Effects on the Transportation Networks

### 7.1. *Roading Capacity*

7.1.1. Allowing for ambient traffic growth of 4.9% per annum, in a design year of ten years' time, the peak hour 'through' traffic volumes on the highway (that is, without any turning traffic associated with development of the plan change area) and can be expected to be as follows:

- Weekday morning peak hour (8am to 9am): 328 vehicles away from Wānaka and 404 vehicles into Wānaka;
- Weekday evening peak hour (4pm to 5pm): 410 vehicles away from Wānaka and 477 vehicles into Wānaka
- Saturday peak hour (12pm to 1pm): 367 vehicles away from Wānaka and 413 vehicles into Wānaka; and
- Sunday peak hour (12pm to 1pm): 431 vehicles away from Wānaka and 378 vehicles into Wānaka.

7.1.2. At the outset, an assessment has been carried out of the need for auxiliary turning lanes at the site access. The warrants for these are set out in the Austroads Guide to Traffic Management Part 6 ('Intersections, Interchanges and Crossings Management'). Taking into account the operating speed of the highway and the traffic flows:

- Weekday morning peak hour (8am to 9am):
  - Right-turn bay required if 8 vehicles turn into the site; and
  - Left-turn lane required if 42 vehicles turn into the site;
- Weekday evening peak hour (4pm to 5pm):
  - Right-turn bay required if 5 vehicles turn into the site; and
  - Left-turn lane required if 25 vehicles turn into the site;
- Saturday peak hour (12pm to 1pm):
  - Right-turn bay required if 6 vehicles turn into the site; and
  - Left-turn lane required if 35 vehicles turn into the site;
- Sunday peak hour (12pm to 1pm)
  - Right-turn bay required if 5 vehicles turn into the site; and
  - Left-turn lane required if 21 vehicles turn into the site.

7.1.3. It can be seen from Table 10 above that in the evening peak hour, under Stage 1, 11 vehicles in total are expected to turn right into the site. On this basis, it is highly likely that a right-turn bay would therefore be justified. The volumes are sufficiently low that a left-turn lane would not be justified for Stage 1, but would be needed at Stage 2 onwards.

7.1.4. The performance of the site access has been assessed for proposed three stages of the development described above using the software package Sidra Intersection, and the results are summarised below:

| Road and Movement      |   | Weekday Morning Peak Hour |                     |                  | Weekday Evening Peak Hour |                     |                  |
|------------------------|---|---------------------------|---------------------|------------------|---------------------------|---------------------|------------------|
|                        |   | Avg Delay (secs)          | 95 %ile Queue (veh) | Level of Service | Avg Delay (secs)          | 95 %ile Queue (veh) | Level of Service |
| State Highway 6 (east) | R | 9.0                       | 0.0                 | A                | 9.5                       | 0.0                 | A                |
| Site access            | L | 3.1                       | 0.0                 | A                | 3.5                       | 0.0                 | A                |
|                        | R | 9.5                       | 0.1                 | A                | 12.6                      | 0.0                 | B                |
| State Highway 6 (west) | L | 8.1                       | 0.0                 | A                | 8.1                       | 0.0                 | A                |

**Table 12: Weekday Peak Hour Levels of Service at the State Highway 6 / Site Access Intersection in Design Year with Stage 1 Traffic Only (and Right-Turn Bay)**

| Road and Movement      |   | Saturday Peak Hour |                     |                  | Sunday Peak Hour |                     |                  |
|------------------------|---|--------------------|---------------------|------------------|------------------|---------------------|------------------|
|                        |   | Avg Delay (secs)   | 95 %ile Queue (veh) | Level of Service | Avg Delay (secs) | 95 %ile Queue (veh) | Level of Service |
| State Highway 6 (east) | R | 9.2                | 0.0                 | A                | 9.5              | 0.0                 | A                |
| Site access            | L | 3.3                | 0.0                 | A                | 3.8              | 0.0                 | A                |
|                        | R | 10.2               | 0.0                 | B                | 10.8             | 0.0                 | B                |
| State Highway 6 (west) | L | 8.1                | 0.0                 | A                | 8.1              | 0.0                 | A                |

**Table 13: Weekend Peak Hour Levels of Service at the State Highway 6 / Site Access Intersection in Design Year with Stage 1 Traffic Only (and Right-Turn Bay)**

| Road and Movement      |   | Weekday Morning Peak Hour |                     |                  | Weekday Evening Peak Hour |                     |                  |
|------------------------|---|---------------------------|---------------------|------------------|---------------------------|---------------------|------------------|
|                        |   | Avg Delay (secs)          | 95 %ile Queue (veh) | Level of Service | Avg Delay (secs)          | 95 %ile Queue (veh) | Level of Service |
| State Highway 6 (east) | R | 9.2                       | 0.0                 | A                | 10.0                      | 0.2                 | A                |
| Site access            | L | 3.2                       | 0.1                 | A                | 3.6                       | 0.1                 | A                |
|                        | R | 10.5                      | 0.4                 | B                | 16.2                      | 0.8                 | C                |
| State Highway 6 (west) | L | 8.1                       | 0.0                 | A                | 8.1                       | 0.0                 | A                |

**Table 14: Weekday Peak Hour Levels of Service at the State Highway 6 / Site Access Intersection in Design Year with Stage 1+2 Traffic (and Right-Turn Bay / Left-Turn Lane)**

| Road and Movement      |   | Saturday Peak Hour |                     |                  | Sunday Peak Hour |                     |                  |
|------------------------|---|--------------------|---------------------|------------------|------------------|---------------------|------------------|
|                        |   | Avg Delay (secs)   | 95 %ile Queue (veh) | Level of Service | Avg Delay (secs) | 95 %ile Queue (veh) | Level of Service |
| State Highway 6 (east) | R | 9.7                | 0.1                 | A                | 10.1             | 0.1                 | B                |
| Site access            | L | 3.4                | 0.1                 | A                | 3.8              | 0.1                 | A                |
|                        | R | 13.0               | 0.8                 | B                | 14.2             | 0.9                 | B                |
| State Highway 6 (west) | L | 8.1                | 0.0                 | A                | 8.1              | 0.0                 | A                |

**Table 15: Weekend Peak Hour Levels of Service at the State Highway 6 / Site Access Intersection in Design Year with Stage 1+2 Traffic (and Right-Turn Bay / Left-Turn Lane)**

| Road and Movement      |   | Weekday Morning Peak Hour |                     |                  | Weekday Evening Peak Hour |                     |                  |
|------------------------|---|---------------------------|---------------------|------------------|---------------------------|---------------------|------------------|
|                        |   | Avg Delay (secs)          | 95 %ile Queue (veh) | Level of Service | Avg Delay (secs)          | 95 %ile Queue (veh) | Level of Service |
| State Highway 6 (east) | R | 9.3                       | 0.1                 | A                | 10.2                      | 0.2                 | B                |
| Site access            | L | 3.2                       | 0.1                 | A                | 3.7                       | 0.1                 | A                |
|                        | R | 11.5                      | 0.8                 | B                | 18.4                      | 1.1                 | C                |
| State Highway 6 (west) | L | 8.1                       | 0.0                 | A                | 8.1                       | 0.0                 | A                |

**Table 16: Weekday Peak Hour Levels of Service at the State Highway 6 / Site Access Intersection in Design Year with Stage 1+2+3 Traffic (and Right-Turn Bay / Left-Turn Lane)**

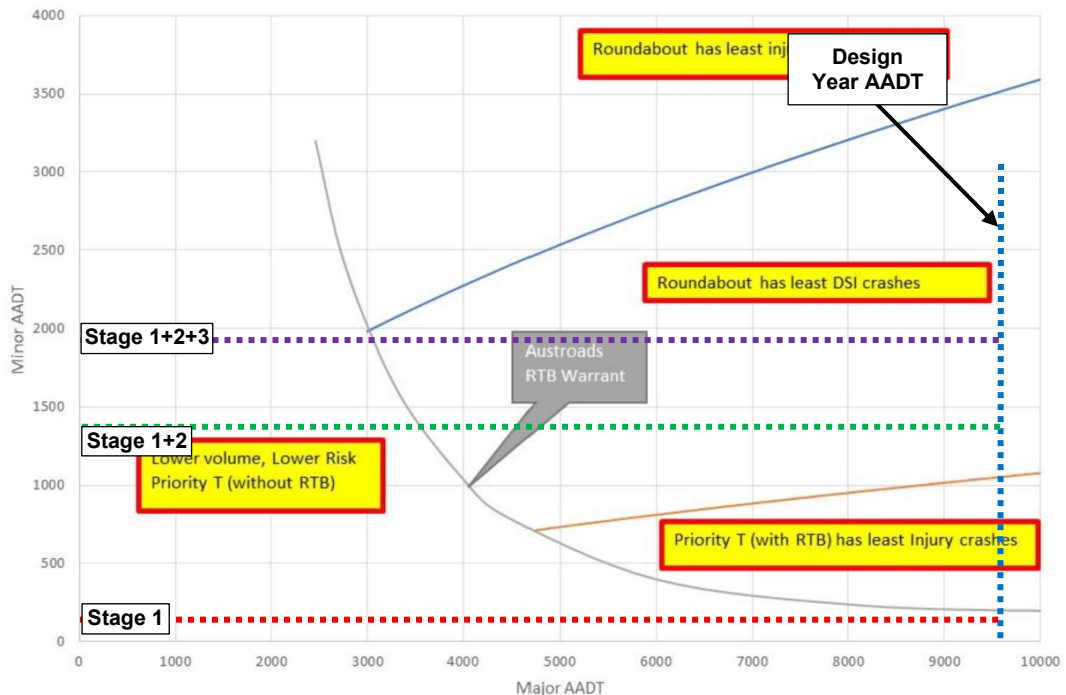
| Road and Movement      |   | Saturday Peak Hour |                     |                  | Sunday Peak Hour |                     |                  |
|------------------------|---|--------------------|---------------------|------------------|------------------|---------------------|------------------|
|                        |   | Avg Delay (secs)   | 95 %ile Queue (veh) | Level of Service | Avg Delay (secs) | 95 %ile Queue (veh) | Level of Service |
| State Highway 6 (east) | R | 9.8                | 0.2                 | A                | 10.3             | 0.2                 | B                |
| Site access            | L | 3.4                | 0.2                 | A                | 3.8              | 0.2                 | A                |
|                        | R | 14.8               | 1.2                 | B                | 16.3             | 1.3                 | C                |
| State Highway 6 (west) | L | 8.1                | 0.0                 | A                | 8.1              | 0.0                 | A                |

**Table 17: Weekend Peak Hour Levels of Service at the State Highway 6 / Site Access Intersection in Design Year with Stage 1+2+3 Traffic (and Right-Turn Bay / Left-Turn Lane)**

- 7.1.5. As would be expected, queues and delays increase as the stages are developed and turning traffic volumes rise. However even in the Design Year and with all generated traffic, queues and delays are low and levels of service are excellent.
- 7.1.6. On this basis then, even under robust traffic generation figures, a priority intersection is easily able to accommodate the expected traffic flows with a high degree of efficiency (although auxiliary turning lanes are warranted to accommodate the traffic flows).

## 7.2. Intersection Type

- 7.2.1. Notwithstanding the efficiency of the site access, late in 2025 NZTA introduced a revision to the Planning Policy Manual which identified which types of intersection were required under which circumstances. This relates the general type of intersection to the daily traffic flows that it accommodates.
- 7.2.2. The graph, and the traffic flows expected under various scenarios, is shown below. This is based on the prevailing Annual Average Daily Traffic of 6,444 vehicles per day (two-way) plus 49% growth, to a total of 9,601 vehicles per day, and allowing for five weekdays plus the weekend traffic for each of the three stages as shown in Table 10:
- Stage 1: 141 vehicles per day;
  - Stage 2: 1,290 vehicles per day (anticipating this is when the second course is created); and
  - Stage 3: 1,862 vehicles per day.



**Figure 4: Figure 8-2 from the NZTA Planning Policy Manual for Rural Intersections (Annotated)**

- 7.2.3. Based on this, it can be seen that the Stage 1 development falls into the zone where a priority intersection is appropriate. However Stages 1+2, and 1+2+3, fall into the area where a roundabout is noted as having the least number of serious injuries and death.
- 7.2.4. The traffic generation of the site has been based on robust rates and the assessment above is based on a 10-year Design Year. Accordingly, it is considered that in practice, the traffic generation of Stages 1+2 of the development is likely to be lower than shown above and so this stage might be able to progress via a priority intersection (with auxiliary turning lanes). However at Stage 3, it is considered that a roundabout is likely to be justified based on NZTA's most recent assessment criteria.
- 7.2.5. By way of background, the consent conditions for the Silverlight Studios project at this same site also identified that a roundabout was required at a particular threshold.
- 7.2.6. The legal width of the highway at the site access is some 40m, which is able to accommodate the majority, and potentially all, of a roundabout depending on its design<sup>2</sup>. If however the roundabout is too large to fit within the legal highway, there is scope to utilise land within the site itself.
- 7.2.7. It is highlighted that it is not the capacity of the priority intersection which is the limiting factor in this case, but rather, the issue arises due to the recent NZTA approach to quantifying road safety matters that indicates a different form of intersection may be justified.
- 7.2.8. On the basis of the wide highway reserve and extent of the site frontage, it is not considered that the future need to upgrade the access intersection represents an impediment to the plan

<sup>2</sup> By way of example, the recently-constructed State Highway 6 / 8B roundabout in Cromwell provides one circulating traffic lane and has a 50m external diameter on highways that are subject to an 80km/h speed limit. However the recently-constructed roundabout on State Highway 6 at Marlborough Airport has a one circulating lane but only a 40m external diameter (and an 80km/h speed limit on the highway).

change, but rather, that provision should be made for this within the plan change provisions. This is discussed further below, when matters associated with the District Plan are considered.

- 7.2.9. Overall then, it is considered that the traffic generated by full development of the site as facilitated by the proposed plan change can be accommodated on the highway network, subject to likely improvements of the site access intersection onto the highway.

### **7.3. Non-Car Modes of Travel**

- 7.3.1. The development of the site is unlikely to result in increased levels of walking and cycling in the immediate area (external to the site). It is typically accepted that people will walk a maximum of 1km to reach a particular destination, and will cycle a maximum distance of 3km. In this regard, there are few destinations within these travel distances.
- 7.3.2. As such, it is not considered that additional infrastructure is required to be provided on the external roading networks for walking and cycling.
- 7.3.3. The nature of the development is such that a scheduled public transport service is not justified (and there are presently no services in Wānaka). As occurs at some other resorts (for example, Millbrook in Arrowtown) it is possible that a minibus service will be operated to and from the site. This does not form part of the application but if it was to run then it would reduce the traffic flows expected at the access and thereby reduce queues and delays from those shown above. This may, in turn, also affect the form of the access intersection due to the reduced volumes.
- 7.3.4. The access intersection will need to be designed to allow for refuse trucks to enter and exit. Consequently, the design will also necessarily allow for minibuses, which are shorter.

### **7.4. Road Safety**

- 7.4.1. There is no evidence of any adverse effects presently occurring which relate to a deficiency in the transportation networks. Accordingly, based on a review of the road safety records, the proposal is unlikely to result in adverse road safety effects arising as a result of the increase in traffic flows on the road network.
- 7.4.2. The nature of a plan change is such that no specific intersection or infrastructure designs are available. In respect of the intersection on State Highway 6, as previously noted the legal width of the highway at the existing site access is 40m which is ample for auxiliary turning lanes to be put in place. Should a roundabout be progressed at the site access, it is likely that the existing highway reserve will be able to accommodate most and potentially all of the design, and if additional land is required, this can be gained through using a small part of the site. On this basis, it can be concluded that there are no impediments to achieving a complying design for any necessary intersection improvements.

## 8. District Plan Matters

- 8.1. The District Plan sets out a number of transportation-related requirements with which any development is expected to comply. However in this case, the site is extremely large and so it is not expected that there will be any difficulties in complying with the Transport provisions of the Plan. Accordingly, in this particular case, no assessment of the proposed development against the District Plan has been undertaken.
- 8.2. However as set out above, it is considered that a transport-related provision should be included with the plan change addressing to the site access.
- 8.3. At this stage, there are a number of factors which mean that there is a degree of uncertainty in this regard:
- Traffic growth on the highway may differ and be higher or lower than allowed for;
  - As the trip rates used are considered to be robust, the traffic volumes entering and exiting the site may be lower than assessed.
  - Noting that the extent of visitor accommodation is expressed as a minimum number, if a greater number of units is consented then the traffic volumes entering and exiting the site may be greater than assessed;
  - The thresholds in the new PPM may be adjusted;
  - The speed limit on the highway may change (noting that the graph presented in Figure 4 above is based on the potential for a death or serious injury, a lower speed limit will lower this risk and thus the thresholds for a roundabout would increase).
- 8.3.1. All of these factors mean that in practice, the point of intersection on the graph shown on Figure 4 may differ. This then makes it impossible in practice to specify a particular figure at which a roundabout is the appropriate design solution. Accordingly, provision has been made within the plan change for assessment of the site access, but in a manner that provides for flexibility.
- 8.3.2. The proposal is therefore to recognise the expected traffic volume on the highway in ten years' time of an Annual Average Daily Traffic flow of 9,601 vehicles per day which, as shown on Figure 4, would mean a roundabout is justified when 1,050 vehicles per day are generated by the site. Consequently (broadly) a Rule is proposed that means where the total traffic generation of the site is expected to be less than 1,050 vehicles per average day, the activity/activities are a Permitted Activity. However where the total traffic generation of the site is expected to be more than 1,050 vehicles per average day, the activity is Restricted Discretionary and an assessment is required of the effects of the traffic with regard to the safe and efficient operation of the site access onto State Highway 6. This is proposed to be accomplished through the inclusion of a new High Traffic Generating Activity Rule specific to the zone.
- 8.3.3. As noted above, State Highway 6 is a Limited Access Road, which in broad terms means that NZTA controls the location of any site access and the number of vehicles expected to pass through it. Accordingly, a modification has been made to the existing Rule 29.6.2 to recognise that limited notification of any application and written approvals may be required.
- 8.3.4. It is considered that this flexibility in approach will allow a more accurate assessment of the traffic generation of the site at the time that the various stages of development are brought forwards, and reassessment of the site access in order to ensure that the highway continues to function safely and efficiently.

## 9. Conclusions

- 9.1. This report has identified, evaluated and assessed the various transport and access elements of a proposed golf resort complex on land east of Wānaka.
- 9.2. The traffic generation of the site has been calculated using a robust approach. In particular, the nature of a resort-type complex means that many guests will stay within the resort rather than travel to visit other activities. Similarly, many visitors to the resort will make use of several activities within the site as part of the one trip. As the extent of this can vary, a conservative approach has been taken to such trip-chaining. However even under this scenario, the site access onto State Highway 6 shows good levels of service and low queues and delays, even at full development of the site. That said, it is likely that an auxiliary right-turn bay will be required to accommodate the traffic generated by Stage 1 of the proposal.
- 9.3. While a priority intersection has sufficient capacity to easily accommodate the traffic flows, the most recent NZTA assessment method suggests that a roundabout will be required at full development of the site to address potential adverse road safety issues due to the volume of vehicles expected. In order to address this, it is proposed that once development is expected to generate above a particular threshold of traffic volume, further assessment of the site access should be undertaken to confirm the appropriate form of intersection. It is considered that this approach is better able to ensure that the site access intersection meets road safety and efficiency expectations at the time that land use activities are brought forwards.
- 9.4. The provisions also allow for notified when applications are lodged that exceed this threshold, since State Highway 6 is a Limited Access Road, and NZTA therefore has an interest in the form of the intersection and the traffic volumes that it will carry that is greater than for highways that are not Limited Access Roads.
- 9.5. There are no reasons why complying priority intersection and roundabout designs could not be constructed in view of the 40m wide highway corridor and the site having frontage onto the northern side. The latter means that in the event that any additional land is needed to create a complying intersection layout, this can be provided from within the site itself.
- 9.6. The development of the site is unlikely to create any increase in walking and cycling in the immediate (external) area as there are few destinations within a viable travel distance for these modes of transport. No improvements are proposed to the walking and cycling networks.
- 9.7. The road safety record does not indicate that any adverse safety-related outcomes would arise from the full development facilitated by the plan change.
- 9.8. Overall, and subject to the preceding comments, the proposal can be supported from a traffic and transportation perspective and it is considered that there are no traffic and transportation reasons why the plan change could not be recommended for approval.

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