RIDGEBURN

ARROWTOWN JUNCTION

Transportation Assessment
District Roads and Internal Site Layout

CARRIAGEWAY
CONSULTING
traffic engineering | transport planning

Table of Contents

Main Report			Page
1	**Introduction**		**1**
2	**Site Overview**		**2**
	2.1	Location	2
	2.2	Road Hierarchy	3
3	**Current Transportation Networks**		**4**
	3.1	Road Network	4
	3.2	Non-Car Modes of Travel	7
	3.3	Future Changes	7
4	**Current Transportation Patterns**		**8**
	3.1	Traffic Flows	8
	4.2	Non-Car Modes of Travel	8
	4.3	Road Safety	9
5	**Proposal**		**10**
6	**Traffic Generation and Distribution**		**12**
	6.1	Traffic Generation	12
	6.2	Traffic Distribution	13
7	**Effects on the Transportation Networks**		**15**
	7.1	Roading Network Capacity	15
	7.2	Non-Car Modes of Travel	16
	7.3	Road Safety	20
	7.4	Refuse Collection	21
8	**District Plan and Land Use & Subdivision Code of Practice**		**22**
	8.1	Introduction	22
	8.2	District Plan Chapter 29: Activities	22
	8.3	District Plan Chapter 29: Parking and Loading	24
	8.4	District Plan Chapter 29: Access	31
	8.5	Compliance with Land Development and Subdivision Code of Practice	33
	8.6	Summary of District Plan and Code of Practice Compliance	39
9	**Conclusions**		**42**

Photographs

1	Typical Alignment of Northern Section of Morven Ferry Road Looking South	4
2	Morven Ferry Road / Arrow Junction Road Intersection, Looking West from Arrow Junction Road	5
3/4	Sightlines to Left and Right at the Morven Ferry Road / Arrow Junction Road Intersection	5
5	Typical Alignment of Morven Ferry Road South of Arrow Junction Road	6
6	Typical Alignment of Arrow Junction Road	6
7	Arrow Bridges Cycle Trail at Northern End of Arrow Junction Road	7
8	Loading Activity Taking Place Out-of-Hours at the Five Mile Shopping Complex, Frankton	30

Figures

1	General Location of Development Site	2
2	Aerial Photograph of Development Site and Environs	2
3	Aerial Photograph of Roading in the Vicinity of the Site	3
4	Current Bus Routes in the Vicinity of the Site (Extract from ORC Map)	9
5	Proposed Development Masterplan (Extract from RMM Drawing)	10
6	Traffic Generation of Development, Morning Peak Hour Traffic Flows	14
7	Traffic Generation of Development, Evening Peak Hour Traffic Flows	14
8	Off-Road Routes (in Grey) at Northern End of Site (Extract from RMM Drawing, Annotated)	17
9	Possible Bus Route Diversion or Option for a ‘Loop’	18
10	Proposed Park-and-Ride Area (Extract from RMM Drawing)	19
11	Loop Road within the Site (Extract from RMM Drawing, Annotated)	20
12	Potential Provision of Campervan Spaces (Extract from McKenzie and Co Drawing, Annotated)	25
13	Park-and-Ride and Commercial Car Parks	26
14	Example of Lots within 25m of an Intersection (Shaded)	32

Tables

1	Adjusted Trip Generation of the Proposed Development	12
2	Anticipated Peak Hour Levels of Service at the Morven Ferry Road / Site Access Intersection at Full Development	15
3	Anticipated Peak Hour Levels of Service at the Northern Roundabout on Road A1	16

CCL file reference	15145 ridgeburn internal layout draft 2
Status	Draft 2
Issued	18 March 2026

1. Introduction

1.1. This Transportation Assessment has been prepared to support a Substantive Application made by Ridgeburn Limited under the Fast Track Approval Acts 2024 in accordance with the requirements of Section 42. The proposal is a Referred Project and this report has been prepared to support an application to develop land at 122 Morven Ferry Road for a residential and mixed use development.

1.2. Section 43 of the Fast Track Approval Act sets out the information to be included in a substantive application, which includes an assessment of adverse effects of the project on the environment. This report has been prepared to assess the transportation effects of the project on the external state highway network (with a second report addressing matters pertaining to the internal site layout and effects on the district road of Morven Ferry Road).

1.3. The report assesses the internal layout of the site, including the proposed transportation networks and the district roads of Morven Ferry Road and Arrow Junction Road. A second, separate report ('Transportation Assessment: Effects on External Transport Networks') addresses matters pertaining to the transportation effects of the project on the external transportation networks, including the state highway network and associated intersections.

1.4. This Transportation Assessment sets out a detailed analysis of the transportation issues associated with the proposed development on the state highway network including changes in travel patterns that are likely to arise. Where potential adverse effects are identified, ways in which these can be addressed are set out.

1.5. 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.

1.6. This report has been prepared by Mr Andy Carr, in accordance with the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note (2023). Mr Carr's qualifications and experience are summarised in Appendix A.

2. Site Overview

2.1. Location

2.1.1. The development site is some 212 hectares in size, and is located at 122 Morven Ferry Road, broadly located between Arrowtown and the Kawarau River. The site is proposed to have access only onto Morven Ferry Road, which in turn connects to State Highway 6. The site is zoned as a mix of Wakatipu Basin Rural Amenity Zone and Rural Zone in the proposed Queenstown Lakes District Plan (**District Plan**) and is presently used for rural and rural residential purposes.

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.

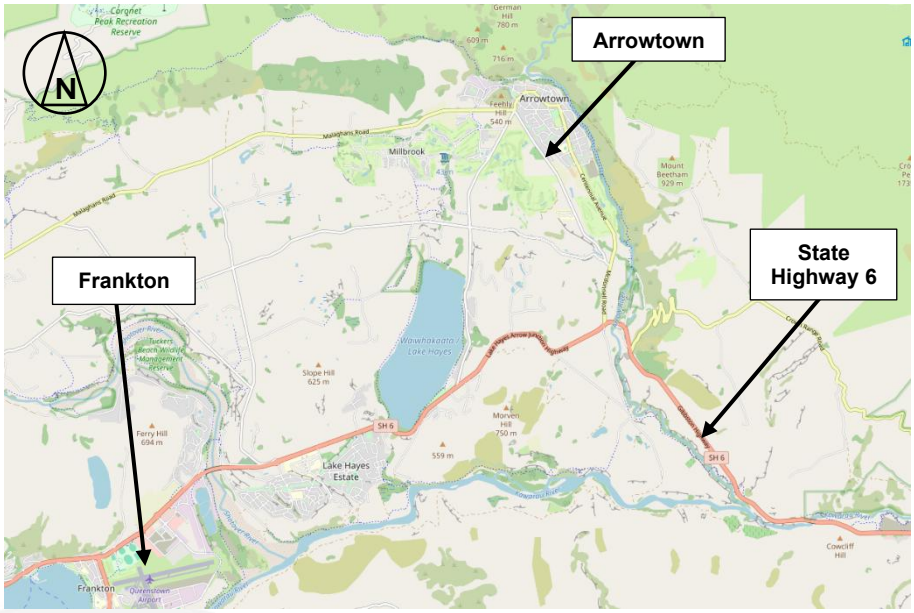

Figure 1: General Location of Development Site

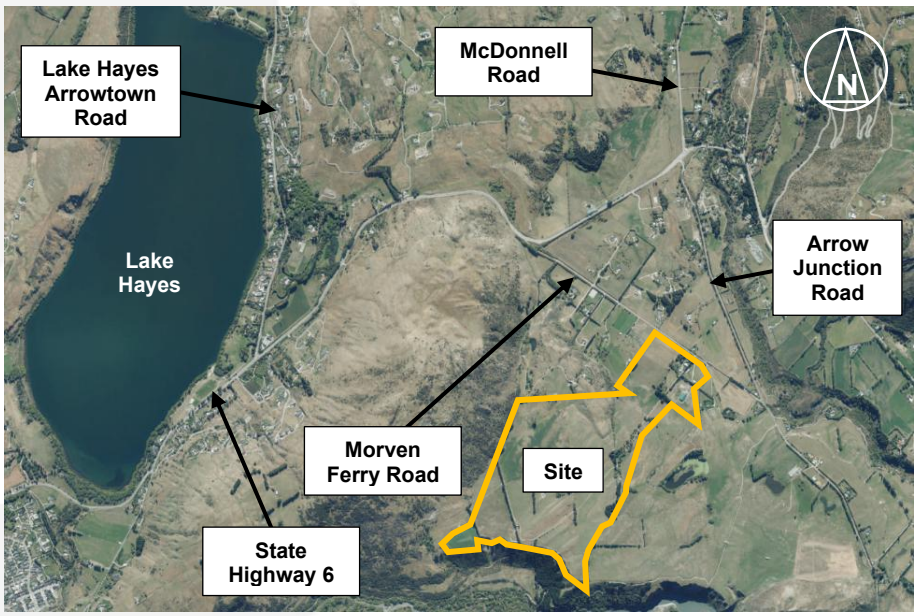

Figure 2: Aerial Photograph of Development Site and Environs

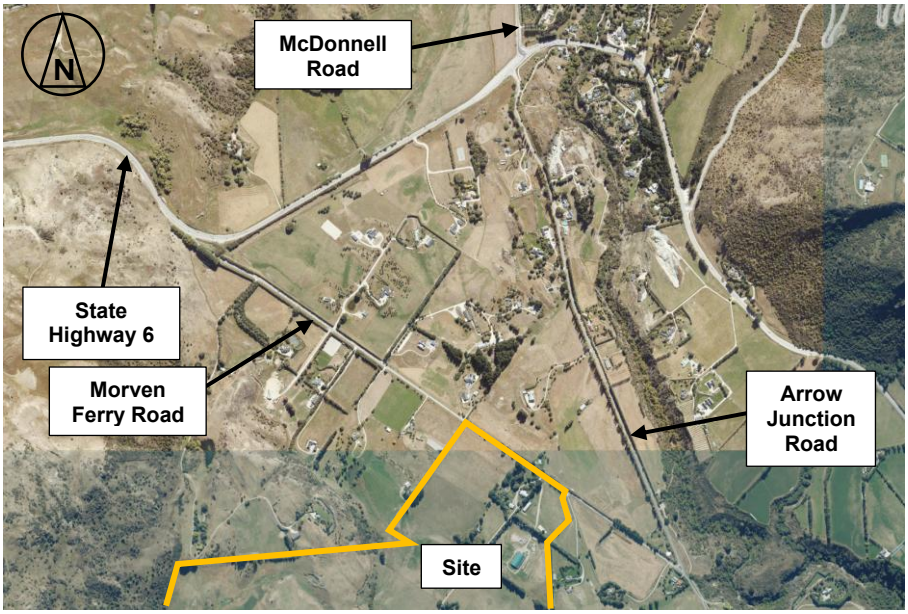

Figure 3: Aerial Photograph of Roading In the Vicinity of the Site

2.2. Road Hierarchy

2.2.1. State Highway 6 and is defined as a State Highway under the District Plan roading hierarchy. Highways are managed to minimise their local access function.

2.2.2. McDonnell Road to the east of the site is a Collector Road, which provides for both through traffic and property access.

2.2.3. Morven Ferry Road and Arrow Junction Road are both Local Roads, indicating that they provide largely for property access.

2.2.4. The Twin Rivers cycle trail runs along the northern side of the Kawarau River and hence through the southernmost part of the site, terminating just south of the Morven Ferry Road / Arrow Junction Road intersection. There is a second cycle trail, the Arrow Bridges Cycle Trail, which runs along Arrow Junction Road (to the north of the site) and connects to Morven Ferry Road east of the site. This passes within 400m of the site.

3. Current Transportation Networks

3.1. Roading Network

3.1.1. The external transportation networks with particular reference to the state highways, are discussed in a separate report[1].

3.1.2. The site is accessed via Morven Ferry Road. This road presently has two traffic lanes (one in each direction) and towards its northern end, the seal is around 6m wide. Further south, and past the site, the seal narrows to 5m in places but in view of this providing the key access to the site, it is proposed that this will be upgraded (as discussed subsequently in this report). The road does not have a centreline, edgelines or edge marker posts.

3.1.3. The road alignment is generally flat and straight, and the posted speed limit on the road is 80km/h. Although this may also be changed (reduced) if the development proceeds, changes to the speed limit are outside the resource consenting process). The legal width of the road is 20m over its full length.

Photograph 1: Typical Alignment of Northern Section of Morven Ferry Road Looking South

3.1.4. Approximately 400m southeast of the site, Arrow Junction Road joins Morven Ferry Road at a priority ('stop') controlled intersection. The sign has appropriate signage and markings although the latter partially missing due to resurfacing. Due to the respective alignments of Arrow Junction Road and Morven Ferry Road, the immediate approach of Arrow Junction Road curves sharply such that the road connects to Morven Ferry Road at 90-degrees. However this results in a tight curve for turning traffic (approximately 12m radius, measured on the road centrelines).

[1] Effects on External Transport Networks

Photograph 2: Morven Ferry Road / Arrow Junction Road Intersection, Looking West from Arrow Junction Road

3.1.5. Sightlines at the intersection are excellent due to the alignment of Morven Ferry Road.

Photographs 3 and 4: Sightlines to Left and Right at the Morven Ferry Road / Arrow Junction Road Intersection

3.1.6. Further south, the formed carriageway of Morven Ferry Road decreases to a wide single traffic lane, and immediately south of Arrow Junction Road, the road is signed as 'no exit'. The road serves a number of rural and rural residential properties, but ceases approximately 1.4km from Arrow Junction Road.

Photograph 5: Typical Alignment of Morven Ferry Road South of Arrow Junction Road

3.1.7. Arrow Junction Road has a gently curving alignment, and runs for a distance of approximately 1.6km between Morven Ferry Road at its southern end to State Highway 6 at its northern end. The seal width is approximately 6m, and the road does not have a centreline, edgeline markings or edge marker posts. Sightlines along the road are generally good, but there are vegetation and earthworks which create localised restrictions at curves.

Photograph 6: Typical Alignment of Arrow Junction Road

3.1.8. The road is subject to an 80km/h speed limit but the alignment means that these speeds are not achieved. Data retrieved from the TomTom 'Move' system indicates that the average speed on Arrow Junction Road is 58km/h, with an 85th percentile speed of 67km/h. This compares to 65km/h and 79km/h respectively on Morven Ferry Road to the north of the site (and 57km/h and 76km/h respectively on Morven Ferry Road to the south of the site).

3.1.9. Information regarding the intersections of Morven Ferry Road and Arrow Junction Road with State Highway 6 are included in a separate report[2].

3.2. Non-Car Modes of Travel

3.2.1. As this is presently a rural environment, the roads typically do not have footpaths immediately adjacent, with non-car road users either using the wide verges or sharing the movement lanes. However given that many destinations are not within a viable walking distance, it is likely that any pedestrian trips are for recreational purposes.

3.2.2. Part of the Arrow Bridges Cycle Trail runs along Arrow Junction Road. Towards the north, the trail runs alongside the Arrow River, before crossing beneath the state highway around 180m east of the State Highway 6 / McDonnell Road intersection. The trail then runs parallel to the highway (but separated from it) to Arrow Junction Road, and then runs along the eastern side of the road, again separated from the carriageway.

Photograph 7: Arrow Bridges Cycle Trail at Northern End of Arrow Junction Road

3.2.3. Approximately 180m south of the state highway, the off-road provision for the cycle trail ceases and cyclists share the carriageway with motorised vehicles for the next 1.2km, before the trail moves off-road again for the remainder of its length (the trail to the south of the Morven Ferry Road / Arrow Junction Road intersection can be seen on the left-hand-side of Photograph 5 above).

3.3. Future Changes

3.3.1. At the time of preparation of this report, there are no known proposals to change the roading environment in the immediate area of the site that are set out in any overarching strategies or guides.

[2] Effects on External Transport Networks

4. Current Transportation Patterns

4.1. Traffic Flows

4.1.1. As part of this commission, traffic surveys were carried out at various intersections in the area (described more fully in a separate report[3]). These indicated that in the weekday morning and evening peak hours, current traffic flows were as follows:

- Morven Ferry Road:
  - Morning peak hour: 24 vehicles southbound and 18 vehicles northbound;
  - Evening peak hour: 22 vehicles southbound and 27 vehicles northbound;
- Arrow Junction Road
  - Morning peak hour: 5 vehicles southbound and 14 vehicles northbound;
  - Evening peak hour: 12 vehicles southbound and 14 vehicles northbound.

4.1.2. These indicate very low traffic flows, commensurate with the limited development in the area.

4.1.3. The surveys were undertaken over a 12-hour period, and this showed similarly light traffic flows:

- Morven Ferry Road:
  - 189 vehicles southbound and 216 vehicles northbound;
- Arrow Junction Road
  - 177 vehicles southbound and 173 vehicles northbound;

4.1.4. Two-way traffic flows recorded in the MobileRoad database indicate 269 vehicles on Arrow Junction Road (compared to 350 vehicles recorded) and 325 vehicles on Morven Ferry Road (compared to 402 vehicles recorded). While the volumes differ from the survey, it confirms that traffic flows are light, and also that Morven Ferry Road is more heavily trafficked than Arrow Junction Road.

4.2. Non-Car Modes of Travel

4.2.1. Although no formal surveys have been carried out, as the area is predominantly rural, it can reasonably be expected that it will be relatively infrequently used by pedestrians. The surveys undertaken showed no cyclists using Morven Ferry Road over a 12-hour period and only 5 cyclists on Arrow Junction Road. It should be noted though that volumes are likely to be higher at weekends due to increased recreational use.

4.2.2. The rural residential nature of the land uses in the vicinity of the site at present means that there are no scheduled bus services in the immediate area. The closest route operates between Arrowtown and the Lake Hayes Estate and Shotover Country subdivisions (and the Frankton Bus Hub) using a route via Arrowtown – Lake Hayes Road.

[3] Effects on External Transport Networks

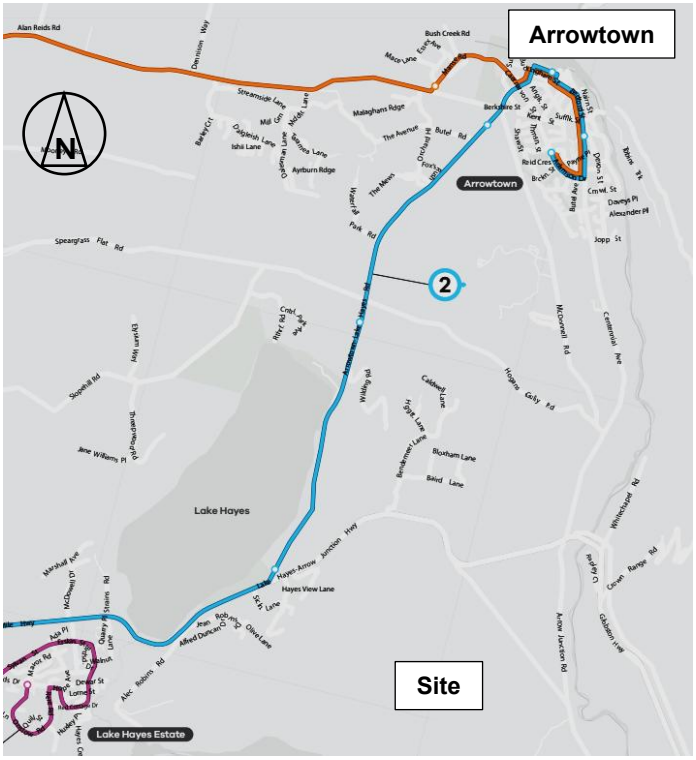

Figure 4: Current Bus Routes in the Vicinity of the Site (Extract from ORC Map)

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 development site. All reported crashes between 2016 and 2025, plus the partial record for 2026 were identified for the full length of Morven Ferry Road and Arrow Junction Road plus the intersections with the highway). A ten-year period has been assessed for Morven Ferry Road and Arrow Junction Road due to the low traffic flows on the roads (and five years on the highway).

4.3.2. This assessment identified 5 reported crashes:

- 2 crashes were recorded on Arrow Junction Road:
  - One crash occurred when a northbound driver became distracted by checking their phone, and left the road. The crash did not result in any injuries;
  - One crash occurred when a northbound driver lost control on black ice and left the road. The crash did not result in any injuries;
- No crashes were recorded at the State Highway 6 / Arrow Junction Road intersection;
- No crashes were recorded on Morven Ferry Road
- 1 crash was recorded at the State Highway 6 / Morven Ferry Road intersection:
  - This occurred when a vehicle exited Morven Ferry Road and failed to see a westbound vehicle on the highway, and the vehicles collided. The crash did not result in any injuries; and
- No crashes were recorded at the Morven Ferry Road / Arrow Junction Road intersection

4.3.3. The low crash rate is not untypical for rural roads of this nature. The locations and/or contributing factors for the crashes are generally all different and it is considered that therefore there is no evidence of an existing adverse road safety record.

5. Proposal

5.1. The proposal is for a residential and mixed use development, which comprises:

- 1,210 residential properties;
- 7 commercial buildings, providing 8,250sqm GFA of retail, workspaces and community services; and
- Workers accommodation/ visitor accommodation of 8,950sqm GFA.

5.2. The most recent information provided shows that the non-residential activities comprise:

- Daycare: licensed for 100 children;
- Supermarket: 3,650sqm GFA;
- Other retail: 450sqm GFA;
- Offices: 2,650sqm GFA
- Worker/visitor Accommodation: 220 studio rooms and associated dining/wellness facilities
- Gym/Community Hall: 450sqm GFA
- Bar/Pizzeria: 150sqm indoor seating area plus 150sqm outdoor seating area

5.3. The masterplan for the development is shown below (and is discussed in more detail subsequently).

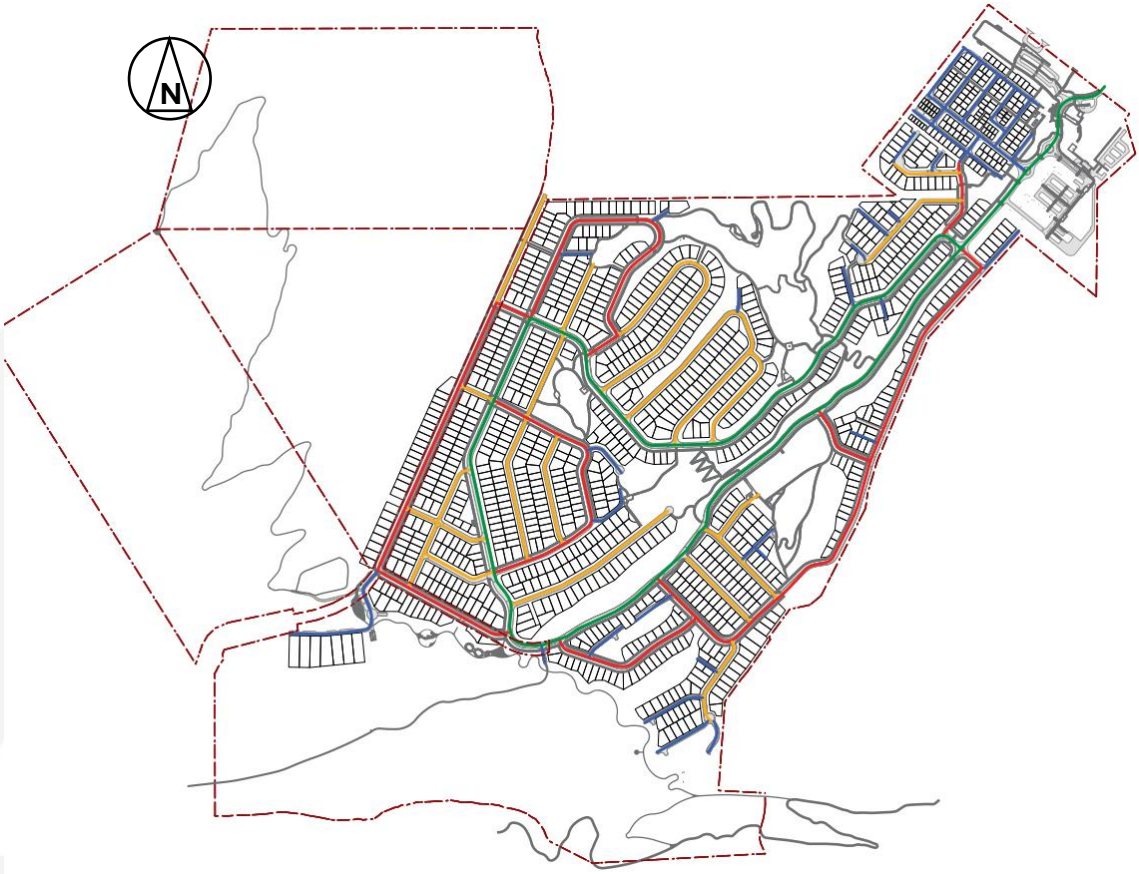

Figure 5: Proposed Development Masterplan (Extract from RMM Drawing)

5.4. Overall, the bulk of the residential development is located towards the southwest of the site, with the non-residential activities located towards the northeast.

5.5. Only one point of vehicular access is proposed to the site, which is via Morven Ferry Road. This means that the vast majority of vehicles will use Morven Ferry Road between the site access and State Highway 6, and therefore enter and exit the state highway network through the State Highway 6 / Morven Ferry Road intersection. This intersection is to be upgraded to a roundabout, with Morven Ferry Road also being upgraded.

5.6. The masterplan scheme also includes a park-and-ride area located at its northern end and fronting onto Morven Ferry Road. This is initially proposed for approximately 70 parking spaces, but with an area located to the immediate west that provides for future expansion. Although this extended area has not been designed, it can potentially mean that the park-and-ride site is able to accommodate around 150 cars in total (depending on the final layout).

5.7. Within the site itself, Road A1 provides a loop road. Connecting to Morven Ferry Road at the north, Road A1 extends with a broadly northeast/southwest alignment to the southern extent of the residential area, before then running northwards and east to join back onto itself approximately 400m from Morven Ferry Road. This road is therefore expected to carry the bulk of the traffic flows. Other roads within the site generally provide for direct property access only and therefore little through traffic. The nature of the roads is discussed subsequently in this report.

5.8. It is understood that none of the roads will be vested. However it is also understood that since members of the public will be present, some form of legal instrument will be put in place to enable them to lawfully use the roads. Based on previous commissions, public transport does not operate on private roads and so some form of legal instrument will also be necessary to enable the park-and-ride service to operate, and/or for buses to use Road A1 (as discussed further below).

6. Traffic Generation and Distribution

6.1. Traffic Generation

6.1.1. The traffic generation is discussed in detail in a separate report[4] but in summary, the trip generation of the site is expected to be as follows:

Activity	Size	Morning Peak Hour			Evening Peak Hour		
		Rate	In	Out	Rate	In	Out
Residential	1,210 Units	0.72	218 22 on bus 22 already on highway 174 new	653 65 on bus 65 already on highway 522 new	0.76	598 60 on bus 60 already on highway 478 new	322 32 on bus 32 already on highway 258 new
Daycare	100 children	-	-	-	-	-	-
Total retail[5]	4,100sqm GFA	3.25	66 26 pass-by 20 internal 3 linked 17 new	66 26 pass-by 20 internal 3 linked 17 new	13	266 106 pass-by 80 internal 13 linked 67 new	266 106 pass-by 80 internal 13 linked 67 new
Offices	2,650sqm GFA	2.5	60 6 internal 54 new	7	2.5	7	60 6 internal 54 new
Worker accom	220 rooms	0.5	11	99	0.5	99	11
Gym / hall	450sqm GFA	-	-	-	-	-	-
Bar / pizzeria	150sqm + 150sqm	-	-	-	-	-	-
Total	**-**	-	355 22 already on highway 26 pass-by 26 internal 3 linked 256 new	825 65 already on highway 26 pass-by 20 internal 3 linked 645 new	-	970 60 already on highway 106 pass-by 80 internal 13 linked 651 new	659 32 already on highway 106 pass-by 86 internal 13 linked 390 new

Table 1: Adjusted Trip Generation of the Proposed Development

6.1.2. Within the site itself, the overall layout means that traffic generated by the non-residential activities will be retained within the northern parts of the site with the roads towards the south of this area carrying residential traffic. Consequently the highest traffic flows (up to 1,629 vehicles (two-way) in the peak hours) will be carried by the northernmost section of Road A1. However access to the commercial areas lie around 150m south of Morven Ferry Road, and consequently south of this intersection, traffic flows reduce to a maximum of around 900 vehicles (two-way) in the peak hours.

[4] Assessment of Effect on External Transport Networks

[5] The retail activities have been added together for the calculation to minimise any rounding errors

6.2. Traffic Distribution

6.2.1. With regard to the distribution of these vehicles, movements to and from the west will be made via Morven Ferry Road, which is the shortest and fastest route. With regard to movements to and from the east and northeast, Arrow Junction Road also provides a potential route. This has been considered in detail.

6.2.2. The route via Arrow Junction Road to the site access is 2,080m in length, compared to 2,320m via Morven Ferry Road, meaning that the route is 240m shorter. However the route is also slower by 7km/h as discussed above when the mean speed is considered (and 12km/h when the 85th percentile speed is considered).

6.2.3. Drivers typically select the shortest travel time when choosing their route. If the speed differential between the two route is applied then the route via Morven Ferry Road is marginally faster. However part of this journey is also made on the state highway, which presently has an average speed of 81km/h and an 85th percentile speed of 90km/h. This will further reduce journey times.

6.2.4. Allowing for a penalty of 10 seconds to slow and turn at each intersection, and then accelerate back up to speed again:

- Site access to State Highway 6 / Arrow Junction Road intersection using Morven Ferry Road:
  - Turn through site access: 10 seconds;
  - Morven Ferry Road: 1,250m at 65km/h, 69 seconds;
  - Turn through intersection onto the highway: 10 seconds;
  - State Highway 6: 1,080m at 81km/h, 48 seconds;
  - Total journey time: 137 seconds;
- Site access to State Highway 6 / Arrow Junction Road intersection using Arrow Junction Road:
  - Turn through site access: 10 seconds;
  - Morven Ferry Road: 480m at 57km/h, 30 seconds;
  - Turn through intersection onto Arrow Junction Road: 10 seconds;
  - Arrow Junction Road: 1,570m at 58km/h, 97 seconds;
  - Turn through intersection onto State Highway 6: 10 seconds;
  - Total journey time: 157 seconds.

6.2.5. The route via Arrow Junction Road takes 15% more time than the route via Morven Ferry Road, plus for traffic leaving the site involves a right-turn movement out of a priority intersection (which is the movement at any priority intersection that experiences the greatest delays). This compares to joining the highway at the proposed roundabout, which is an easier exit movement. On this basis, it is considered that Morven Ferry Road will be the route used by the vast majority (and potentially all) traffic associated with Ridgeburn.

6.2.6. The traffic generation of the site at full development is set out below.

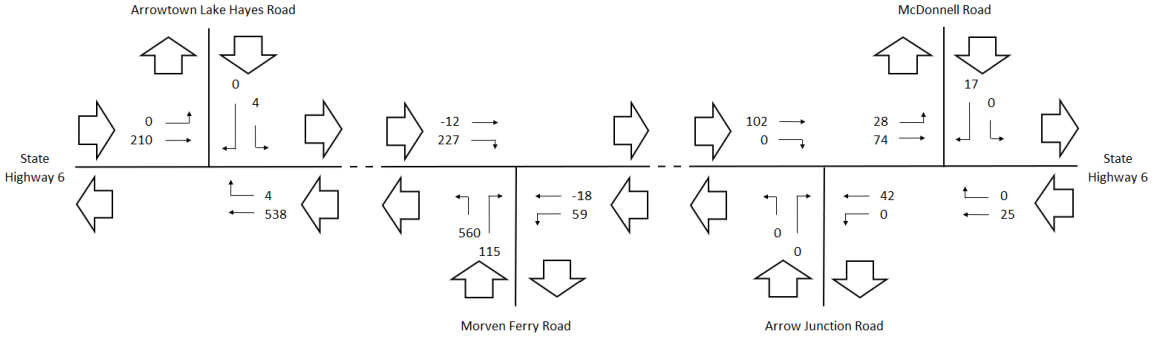

Figure 6: Traffic Generation of Development, Morning Peak Hour Traffic Flows

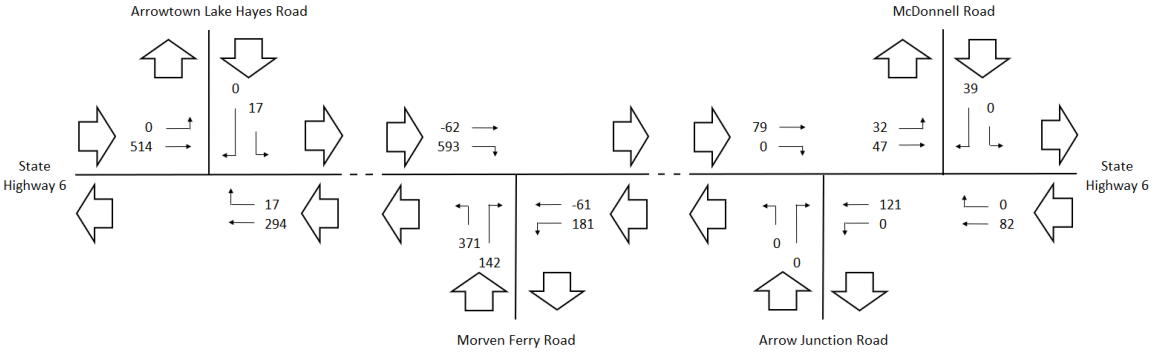

Figure 7: Traffic Generation of Development, Evening Peak Hour Traffic Flows

7. Effects on the Transportation Networks

7.1. Roading Network Capacity

7.1.1. The assessment indicates that traffic volumes on Morven Ferry Road will increase significantly, and will therefore justify the upgrading of that road. The legal width of the road is 20m which is sufficient for the reconstruction of the road to meet the Council's Land Use and Subdivision Code of Practice (by way of example, much of State Highway 6 in the area also lies within a 20m legal width).

7.1.2. With regard to the access into the side, the bias of traffic volumes relates to the movement between the site and Morven Ferry Road (north). Typical intersection design is that the movements with the greatest volumes have priority, which would suggest that Morven Ferry Road should be diverted into the site. However this would potentially involve road stopping / road closures, and so for the purposes of analysis, the layout modelled for the site access into Morven Ferry Road is a priority intersection, with the site access being the minor approach.

7.1.3. As set out above, at a priority intersection the right-turn movement out of the minor approach generally experiences the greatest delays. To ensure that this is identified, for the purposes of assessment an allowance has been made for 2% of the generated traffic to turn to and from the south. For the reasons set out above this is likely to be conservatively high.

7.1.4. The site access has been modelled as a priority intersection with a right-turn bay, and a short section of flaring on the immediate approach so that two vehicles can queue side-by-side at the limit line. The layout has then been modelled using the computer software package Sidra Intersection and the results are summarised below.

Road and Movement		Morning Peak Hour			Evening Peak Hour		
		Avg Delay (secs)	95 %ile Queue (veh)	Level of Service	Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
Morven Ferry Road (S)	L	6.8	0.0	A	6.8	0.0	A
Morven Ferry Road (N)	R	6.9	0.9	A	7.2	3.3	A
Site Access	L	3.5	2.6	A	3.5	1.8	A
	R	5.7	0.2	A	13.1	0.3	B

Table 2: Anticipated Peak Hour Levels of Service at the Morven Ferry Road / Site Access Intersection at Full Development

7.1.5. It can be seen that the intersection will operate with a high degree of efficiency and low queues and delays, and provides ample capacity. This is largely due to the low existing traffic flows on Morven Ferry Road which mean that traffic turning to and from the site is generally unopposed.

7.1.6. The internal intersection which will experience the highest traffic volume is the northern roundabout that provides access to the commercial area. For a robust assessment, it has been assumed that all non-residential traffic uses this location to turn to and from the commercial areas (in practice there is an alternative route available further south which will lead to some vehicles entering and exiting elsewhere).

7.1.7. There is no detailed design for the roundabout at present but based on the drawings of McKenzie and Co, the roundabout is anticipated to have an outer diameter of 30m. This being

the case, a notional design has been assessed based on this, an inner island of 16m (as per the Austroads Guide to Road Design Part 4B ('Roundabouts') and a single approach lane on each leg. This has been modelled using the computer software package Sidra Intersection and the results are summarised below.

Approach	Morning Peak Hour			Evening Peak Hour		
	Avg Delay (secs)	95 %ile Queue (veh)	Level of Service	Avg Delay (secs)	95 %ile Queue (veh)	Level of Service
Road A1 (south)	6.8	7.8	A	5.8	3.1	A
Access to Commercial	8.3	1.4	A	13.6	5.8	B
Road A1 (north)	3.7	1.9	A	4.1	9.7	A

Table 3: Anticipated Peak Hour Levels of Service at the Northern Roundabout on Road A1

7.1.8. It can be seen that the roundabout operates with low queues and delays and provides ample capacity for the expected traffic flows in the peak hours.

7.1.9. All other intersections within the site experience lower traffic flows than the two intersections assessed above. Given that these two intersections have good levels of service and low queues and delays, it can therefore be reliably concluded that all other intersections within the site provide levels of service that are better than these. Accordingly, no formal assessment has been undertaken of other intersections.

7.2. Non-Car Modes of Travel

7.2.1. The yield of the site means that it is possible that there will be an increase in walking and cycling activity in the area. However since there are few locations within a viable travel distance using these modes and Morven Ferry Road, it is expected that most of these trips will be made for recreational purposes. This being the case, such movements can be expected to occur on Morven Ferry Road to the east of the site, and potentially on Arrow Junction Road for movements to/from Arrowtown (the distance between the main site access to Arrowtown town centre is approximately 8km using the cycle trail). As noted above though, the proposed development is unlikely to generate a large increase in traffic on those roads and therefore is unlikely to result in a reduced level of service being provided for the trail.

7.2.2. Within the site itself, there is a network of walking and cycling trails which permeate the site. In addition to footpaths by the sides of roads (and the slow-speed, low traffic, environment which means that cyclists can share the movement lanes with motorised traffic), there are off-road trails which provide an elevated degree of connectivity. These are shown more fully on the RMM drawings but in brief the routes are typically provided throughout the greenspaces so that pedestrians and cyclists can take 'short-cuts' through these areas in order to minimise their journey time.

7.2.3. Although many of these have a function of supporting recreational movements, the commercial area is well-connected to the balance of the site by off-road routes, which means that residents wishing to travel to this area are not obligated to travel by car but have a high-quality non-car route provided. By way of example, residents within the northernmost residential areas can move directly to the commercial area using off-road routes and within minimal need to cross roads.

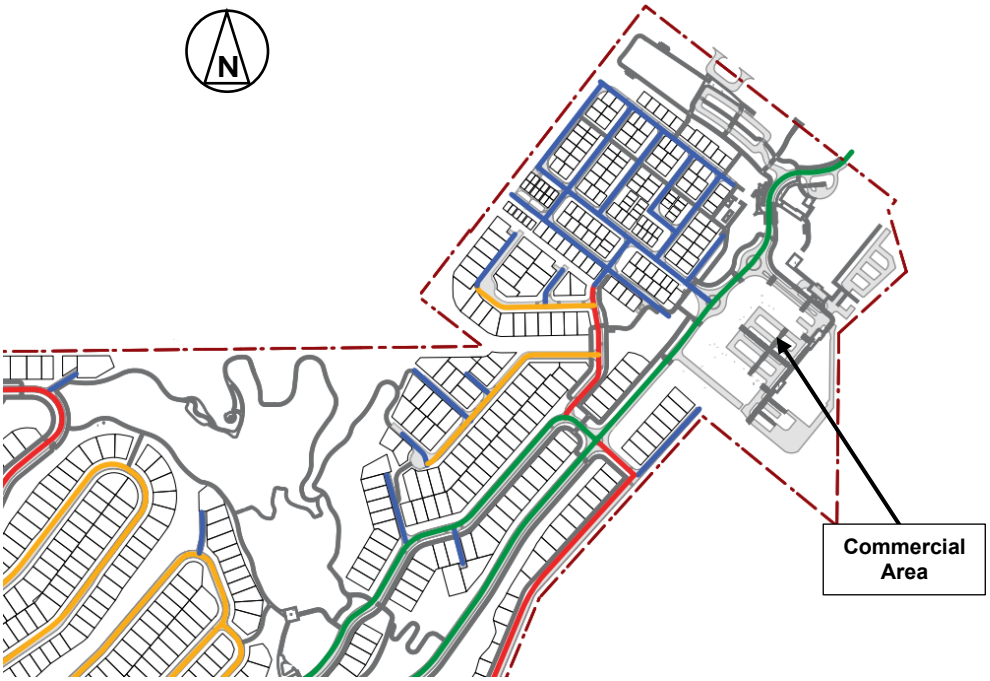

Figure 8: Off-Road Routes (in Grey) at Northern End of Site (Extract from RMM Drawing, Annotated)

7.2.4. Where pedestrians and cyclists are required to cross roads, appropriate provision will be made by way of a kerb cut-down (where pedestrians descend to the level of the carriageway in order to cross the road) and tactile paving, with suitable sight distances provided. A further option is available where it is necessary to manage vehicles speeds as pedestrian crossings can be combined with flat-topped road humps, where the pedestrian remains at the same level and motorised vehicles travel up and over the hump. This design option has two benefits, firstly because when a pedestrian is waiting to cross at a hump, drivers typically stop and give-way to the pedestrian (notwithstanding that the driver retains priority), and secondly, with regard to speed management. The latter not only provides a safer roading environment generally, but the lower speeds make it easier for pedestrians to cross the road in locations that do not have humps. The particular nature of the pedestrian crossings will be developed through the detailed design process.

7.2.5. Towards the south of the site, provision is made for a formal connection to the Twin Rivers Cycle Trail. The connected cycling routes within the site means that a cyclist will be able to move between the Arrow Bridges and Twin Rivers Cycle Trails using off-road routes or routes that utilise roads with only low traffic flows.

7.2.6. There are presently no scheduled bus services that operates along Morven Ferry Road due to the rural residential nature of the activity as discussed above, with the closest route operating between Arrowtown and the Lake Hayes Estate and Shotover Country subdivisions (and the Frankton Bus Hub) using a route via Arrowtown – Lake Hayes Road.

7.2.7. The matter of routing of buses is a complex issue, taking into account factors such as farebox recovery ratios, routing reliability, patronage, and the like. However as an initial assessment, at full development Ridgeburn will have 1,210 residences which is only 25% fewer than Arrowtown. As Arrowtown is able to sustain two bus services, this suggests that Ridgeburn may also be able to sustain a service. Ridgeburn also includes commercial activities and if these are not available in Arrowtown, this indicates that there may be passengers travelling between Arrowtown and Ridgeburn who could also make use of a bus service.

7.2.8. With that in mind, it is possible that a local 'loop' service between the two locations could be viable, or alternatively Service 2 could be diverted as shown below:

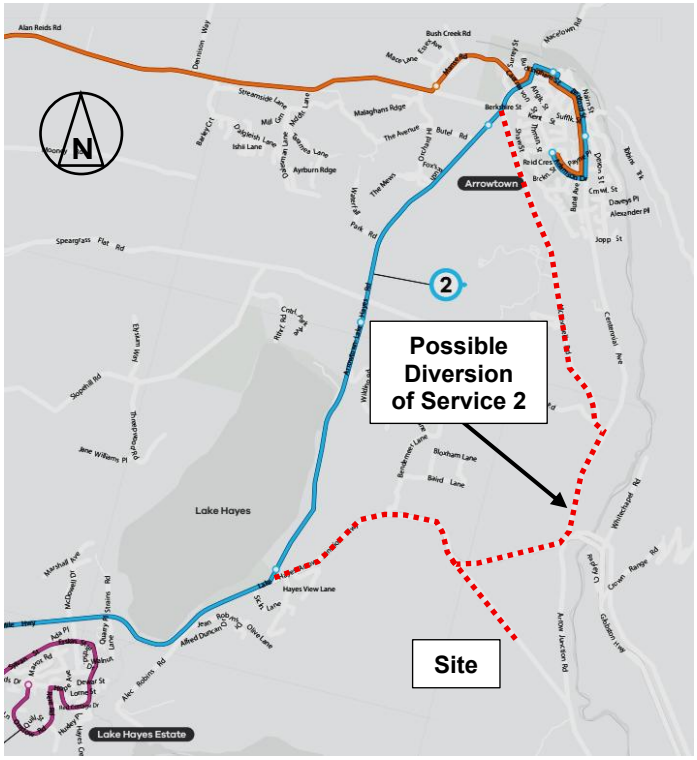

Figure 9: Possible Bus Route Diversion or Option for a 'Loop'

7.2.9. The current route of Service 2, measured between the Malaghans Road / Arrowtown – Lakes Hayes Road and State Highway 6 / Arrowtown – Lakes Hayes Road intersections is 5.3km long, with a possible route via McDonnell Road and into the site (measured between the same two intersections) being 4.7km longer. This increased length and running costs would need to be offset against the increased potential for passengers who are residents of Ridgeburn, and the potential for trips between Arrowtown and the commercial area of Ridgeburn.

7.2.10. With regard to the potential for new passengers, a further opportunity is provided at Ridgeburn through the proposed establishment of a park-and-ride area. The various road controlling authorities in the Whakatipu Basin have previously prepared business cases to support park-and-ride services, and one aspect of this has considered the capture of trips that are presently made from Cromwell into Queenstown. These trips are made on State Highway 6 and therefore travel past the site. Diverting from the highway and to the site via Morven Ferry Road this would take around a minute, and therefore impose little additional journey time.

7.2.11. A further factor is that car parking in Queenstown is becoming more expensive (and less readily available), which makes car travel less attractive and also encourage bus use. Consequently a scheme and/or associated diversion of the bus route has the potential to attract patronage from residents of Ridgeburn, those using the commercial facilities and also including those travelling to/from work further afield.

7.2.12. The scheme plans show a park-and-ride scheme at the northern end of the site, comprising of a bus layby with a large adjacent car park. Buses will enter from Morven Ferry Road, turning within a dedicated area and then exit back onto Morven Ferry Road and towards State Highway 6.

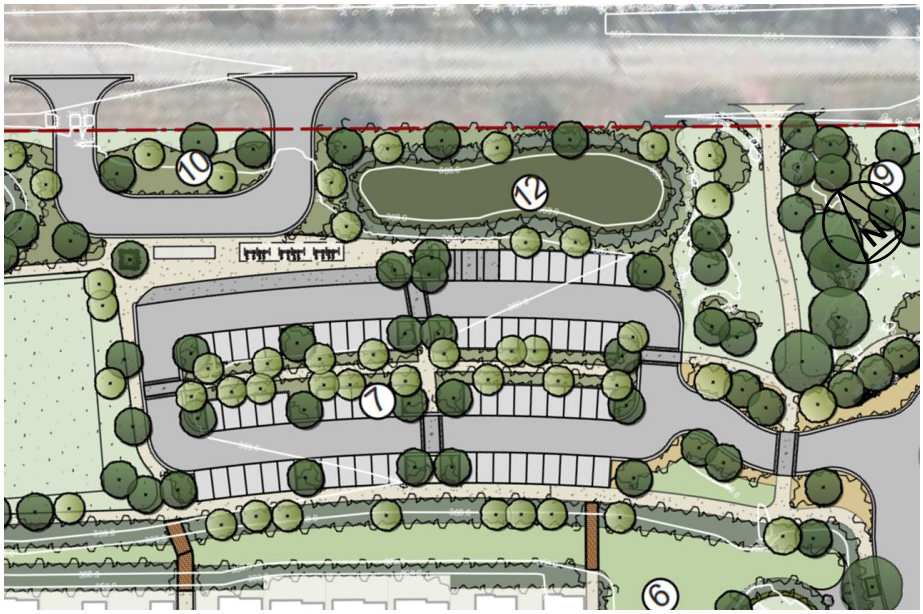

Figure 10: Proposed Park-and-Ride Area (Extract from RMM Drawing)

7.2.13. The car park will serve three functions:

- It will accommodate any residents of Ridgeburn who wish to drive to the bus connection;
- It will serve as a park-and-ride site for car trips made from further afield, such as Cromwell and potentially also people driving from Cardrona or Wanaka; and
- The layout includes for a drop-off and pick-up laybys, meaning that it can be used as a 'kiss and drop' whereby one person is dropped off for the bus while the car driver continues to a different destination.

7.2.14. However, much of Ridgeburn is well within a viable walking and cycling distance to the northern site boundary. The site masterplan therefore includes for high-quality, off road walking and cycling routes that lead to the park-and-ride, so that residents are able to travel from their home using segregated routes (or in some cases, using lightly-trafficked roads) where they have a high level of amenity. Accordingly, the bus layby / park-and-ride layout also includes cycle parking, with area to expand this if demand for such parking increases.

7.2.15. Finally, in common with other park-and-ride sites, shelter will be provided for those waiting for a bus. The layout will be future-proofed to enable further development as appropriate for enhancing amenity (for example, providing locations for vending machines).

7.2.16. The initial proposal is to provide an area focussed on the needs of the residents of Ridgeburn. Initially, the public transport characteristics of Ridgeburn are likely to be similar to those of Arrowtown, where the 2023 census showed that 2.1% of travel to work and 1.4% of travel to school was made by bus. Thus for the expected number of residences in Ridgeburn, parking demand may initially be in the order of 25-30 spaces. However if transport choices are available to residents at the outset, there is the potential for an elevated level of usage. As such, the initial provision of around 70 spaces is not unreasonable to encourage use of this area and also to accommodate pass-by traffic.

7.2.17. Park-and-ride sites are commonly less heavily-used at weekends and in the evenings. As such, at these times the car park is likely to also be utilised by food+beverage and recreational users as appropriate, who will generate parking demand at different times to the park-and-ride.

7.2.18. The park-and-ride site has an area located immediately to the west, which is available for the potential expansion of car parking if the facility proves to be popular.

7.2.19. Another option which may be implemented is for a bus service and circulate within the site. To allow for this, the masterplan for the site has been devised to include a 'loop' road that circulates towards the outer edges of the site but enables a bus that has entered to travel through the site without the need to double-back on itself.

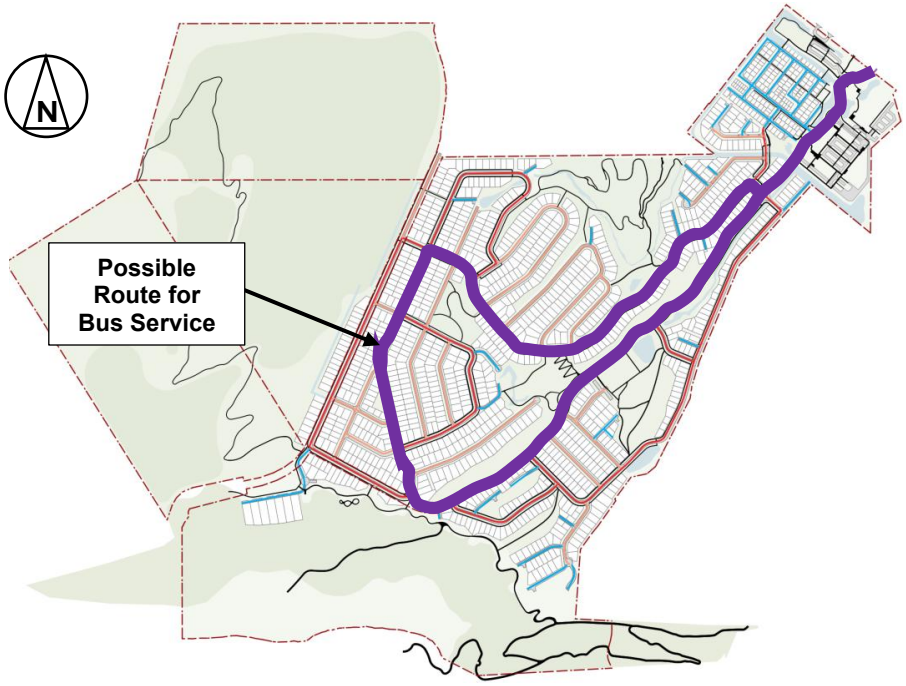

Figure 11: Loop Road within the Site (Extract from RMM Drawing, Annotated)

7.2.20. The detail of this road design is addressed through the drawings produced by McKenzie and Co but in short it has been designed to allow for the passage of a bus. It is anticipated that locations for bus stops will be identified through the detailed design process to ensure that residents are within a viable walking distance of a stop. For reference however, approximately 95% of the site lies within a 200m crow-fly distance to this road, meaning that the majority of residents will live within a three-minute walk of this road.

7.3. Road Safety

7.3.1. The roading and intersection alignments have been prepared by McKenzie and Co, and are discussed in more detail below. Overall however, the roads have been designed to reflect the expected traffic volumes while keeping gradients suitable for all road users. In practice, it is expected that through the detailed design process and prior to construction they will be subject to Safe System Audits in order to identify any risks to users that can be resolved through design revisions.

7.3.2. McKenzie and Co have previously evaluated intersection sightlines based on an expected operating speed of 50km/h. In common with other residents subdivisions in the district it can be expected that a 40km/h speed limit will be posted. Accordingly, a degree of conservatism has been included within the sightline assessment.

7.3.3. The expected traffic volumes will be modest on most roads even at full development of the site and in the peak hours, and suitable provision is made for non-car modes of transport, including

shared walking and cycling routes. On this basis no adverse road safety effects are anticipated from development of the site.

7.4. Refuse Collection

7.4.1. The matter of refuse collection has been considered in the layout by McKenzie and Co, with layouts designed around the tracking curves of typical 8.8m long refuse vehicles. Discussions with McKenzie and Co have confirmed that localised widening has been provided at intersections and on curved sections of road such that cars are able to pass refuse collection vehicles.

7.4.2. The commercial uses within the site will have private collections and again, the roading drawings have been based around tracking curves for vehicles likely to be present in these areas, including semi-trailers for deliveries.

7.4.3. As the roads will not be vested, all refuse collections will be made by private contractors rather than Council collection services. This affords greater flexibility in the size of vehicles.

8. District Plan and Land Development & Subdivision Code of Practice

8.1. Introduction

8.1.1. The District Plan sets out a number of transportation-related Rules with which any development is expected to comply. Although the proposal is progressing through the Fast-Track legislation, the District Plan sets out the community's expectations for new development and therefore an assessment of the proposed development against the relevant transport Rules has been undertaken. The outcomes are summarised below.

8.1.2. Queenstown Lakes District Council also has a 'Land Development and Subdivision Code of Practice' (**Code of Practice**) which sets out engineering issues and requirements associated with subdivision and development. This draws heavily from the overarching Standard NZS4404:2010 ('*Land Development and Subdivision Infrastructure*'). The transport-related matters of the Code of Practice have also been assessed and outcomes summarised below. It is noted that although the roads will remain private, compliance with the Code of Practice means that the responsibility of the road controlling authority to provide a safe and appropriate roading environment is achieved.

8.2. District Plan Chapter 29: Activities

8.2.1. Rule 29.4.11: High Traffic Generating Activities

8.2.1.1. The size of the development means that it is classified as a High Traffic Generator. This Transportation Assessment has been prepared to respond to this Rule, and the Matters of Discretion are set out below.

Matter a. an Integrated Transport Assessment has been provided with the application and is sufficiently detailed to provide a full understanding of the projected trip generation by all modes of transport, the accessibility of a proposal by all modes of transport, the transport effects of the proposal, and the proposed methods of avoiding or mitigating the transport effects.

8.2.1.2. The traffic generation of the proposal is set out above. The roading network within the site has been assessed and as noted elsewhere in this report, the vehicles generated by the proposal can be accommodated without adverse effects on efficiency. The transport networks within the site have been designed to a high standard and there are no reasons to anticipate that the generated vehicles will give rise to any safety issues.

Matter b. the trip generation and transport effects of the proposed landuse or subdivision will be the same or similar in character, intensity and scale to those assessed in an approved Integrated Transport Assessment for any existing resource consent approved for the site.

8.2.1.3. There is no existing resource consent at the site for which an Integrated Transportation Assessment has previously been prepared.

Matter c. the proposed landuse or subdivision is in accordance with district plan provisions that were informed by a detailed Integrated Transport Assessment and will result in associated trip generation and transport effects that are the same or similar in character, intensity and scale to those identified in the previous assessment.

8.2.1.4. No Integrated Transportation Assessment has been prepared for the underlying land zoning where the transportation-related effects are similar in nature.

Matter d. any improvements to the transport network either within the site or in the vicinity of the site are proposed, including additions or improvements to the active and public transport network and infrastructure and the road.

8.2.1.5. As noted above, the transport-related effects of the proposed development are not expected to give rise to adverse impacts on safety or efficiency within the site (matters related to external effects are addressed in a separate report[6]). The site provides a high level of connectivity for active modes of travel both within the site and also by way of connections to adjacent routes.

8.2.1.6. There is no public transport service in the area at present. However as noted above it is possible for an existing service to divert to the site to serve a park-and-ride facility, and the main loop road within the site has been designed to allow for the movement of a bus if a service was to be provided in future that penetrated into the site.

Matter e. the site and/ or its frontage have been designed to accommodate any planned public transport infrastructure proposed by Council.

8.2.1.7. There are no planned public transport infrastructure measures in the vicinity, and no public transport services in the immediate area. However the site provides for connectivity to potential future bus routes.

Matter f. public and active transport infrastructure is proposed to be provided or upgraded or, where planning for such infrastructure is not sufficiently advanced, space is provided for such infrastructure to be installed in the future.

8.2.1.8. The proposal includes extensive measures for active travel, with footpaths on all internal roads and a network of off-road shared walking/cycling paths. A park-and-ride site is proposed, and the main loop road within the site has been designed to allow for the movement of a bus if a service was to be provided in future.

Matter g. public transport stops are provided in locations and at spacings that provide safe and efficient access to users.

8.2.1.9. The site layout proposes bus stops on Morven Ferry Road associated with the proposed park-and-ride area. No bus stops within the site are presently proposed as these depend on the route taken by any future bus service, which is not yet determined. However the legal widths are sufficient to accommodate the future additional of bus stops. The provision of off-road walking routes within the site means that walking times and distances between residents' houses and future bus stops is minimised.

[6] Assessment of Effect on External Transportation Networks

Matter h. a Travel Plan is proposed to be provided containing travel demand management techniques.

8.2.1.10. No formal Travel Plan is proposed and the nature of the development and the resultant multiple ownerships of lots means that there are practical difficulties in devising a generalised Travel Plan that will be suitable for implementation across the whole site. However the site provides good internal walking and cycling connections to commercial areas, and then presence of these within the site minimises the need for residents to have to leave the site to access these facilities.

8.2.1.11. The site also provides for connectivity to external cycle trails, and the proposed park-and-ride facility also supports travel choice, including by those that are already passing the site.

Matter i. the amount of accessory parking proposed will contribute toward travel demand management.

8.2.1.12. The parking within the site has been designed to balance parking demand and supply as much as possible, and to allow for activities to share parking where peak demand does not arise at the same time (such as at the park-and-rid car park).

Matter j. a Development Agreement has been agreed to, as provided for by the Local Government Act.

8.2.1.13. No agreement has been entered into.

Matter k. electric vehicle charging points/ parking spaces are proposed to be provided.

8.2.1.14. No charging points are proposed as part of this application. However, the layout means that these could be installed in the future in both the residential parking and commercial areas.

8.3. District Plan Chapter 29: Parking and Loading

8.3.1. Rule 29.5.1: Location and Availability of Parking Spaces

8.3.1.1. The vast majority of spaces will be unobstructed and can be accessed independently at all times. There is a small number of spaces that are likely to be temporarily obstructed when refuse is being collected, but any obstruction is unlikely in practice (as it requires a refuse vehicle to be present at the same time as car is being manoeuvred) and if it does occur, then it will be for a very short time only. This outcome is not uncommon for residential areas.

8.3.1.2. No space is located within an access or other area used for other purposes and all car parking spaces are located on the development site itself.

8.3.1.3. Under this Rule, coach parking is required at a rate of 1 coach space per 50 units (anticipating that the units do not contain cooking facilities). With 220 units this equates to four coach parking spaces, and these are shown towards the southeast of the commercial area, near to the service yard.

8.3.1.4. The supermarket has a floor area of more than 500sqm and is therefore classified as ‘Large Format Retail’ and requires seven spaces to be provided for a medium rigid truck (reflecting that campervans may be present). Such spaces are anticipated to be 9m long and 3.5m wide. It would be possible to convert a row of nine 2.7m wide spaces to seven spaces of 3.47m width as shown below to achieve this. This would result in a net loss of 11 parking spaces.

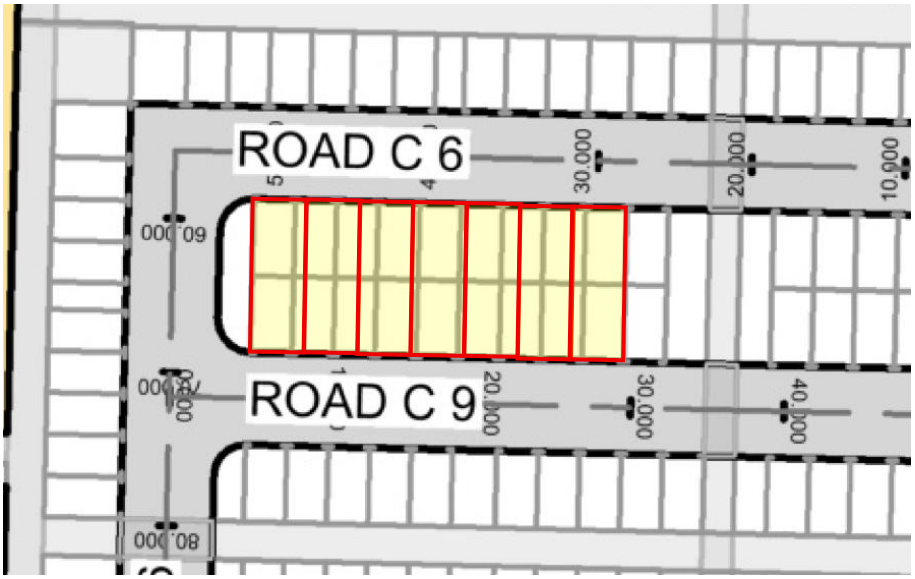

Figure 12: Potential Provision of Campervan Spaces (Extract from McKenzie and Co Drawing, Annotated)

8.3.1.5. The location of the site is such that the supermarket will not be conspicuous to pass-by on the highway as it is some distance away (compared to, say, the supermarkets at Five Mile and Remarkables Park, which are easily seen from the adjacent roads). Since most campervan drivers will be unfamiliar with the area, it is therefore plausible that campervans will not be frequent visitors to the site. As such, it is not considered that formally allocating spaces for campervans represents an efficient use of the car parking in this particular instance. Rather, it is considered to be an operational issue, and that in the event that campervans are giving rise to concerns or hazards, the parking spaces can be easily re-marked.

8.3.1.6. Rule 29.5.2: Size of Required Parking Spaces and Layout

8.3.1.7. This particular Rule relates to car parking provided for non-residential use and residential parking spaces are discussed subsequently.

8.3.1.8. Car parks are provided within the park-and-ride and commercial areas as shown below.

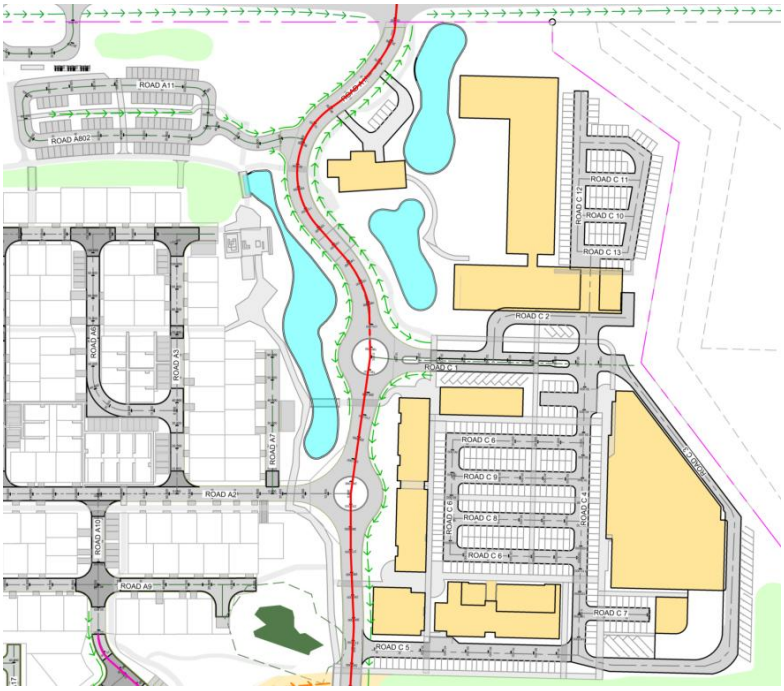

Figure 13: Park-and-Ride and Commercial Car Parks

8.3.1.9. The 90-degree parking spaces within these areas are 5.0m long, 2.7m wide and have an aisle of 6.0m. These meet the District Plan provisions for Class 2 users that are unfamiliar with the car parking layout). As such they are also suitable for Class 1 users (those that are familiar with the layout).

8.3.1.10. Within the commercial car parks, there is a small number of spaces that are angled at 60-degrees, which are provided for employees. These are 2.7m wide, 5.4m long and have an adjacent aisle of 6.5m width. There are also spaces at 45 degrees which are 2.7m wide, 5.5m long and have an adjacent aisle of 3.5m. These meet the District Plan provisions for all classes of user.

8.3.1.11. The dimensions of the mobility spaces are discussed below.

8.3.2. Rule 29.5.3: Gradient of Parking Spaces and Parking Areas

8.3.2.1. The site is relatively flat and so the parking spaces will have a maximum gradient of at most 1 in 20 (5%) and flatter than this in many locations.

8.3.3. Rule 29.5.4: Mobility Parking Spaces

8.3.3.1. Mobility spaces are not required for residential users, but there is a requirement associated with those parts of the development that are open to general users, such as the park-and-ride and commercial areas.

8.3.3.2. The overarching requirement for mobility spaces derives from the Building Act, which in turn sets out that an acceptable solution is to provide the number of spaces required under Standard NZS4121:2001 ('*Design for Access and Mobility: Buildings and Associated Facilities*').

8.3.3.3. The main car parking area serving the commercial activity provides 235 car parking spaces. Under the Standard this therefore requires 6 spaces for the mobility impaired and the layout shows that 10 spaces are provided. These are 5.0m long, 3.6m wide and have an aisle of

6m (3 spaces) to more than 8m (7 spaces), depending on the location of the space. The District Plan requires an aisle of 8m width meaning that three of the mobility spaces do not comply. However they meet the overarching Standard AS/NZS2890.1:2004 ('Parking Facilities Part 1: Off-Street Car Parks') which sets out that mobility spaces can have the same aisle as adjacent, standard spaces.

8.3.3.4. The car park for the worker accommodation / visitor accommodation provides 100 parking spaces and therefore three spaces are required for the mobility impaired. However none are shown. The car park for the bar/pizzeria (five spaces) also has no mobility spaces, and one is required.

8.3.3.5. The layout plans show that there are areas where the wider mobility spaces can easily be added, and it is also possible to further optimise the usage of the area through allowing the spaces to share the additional width (as shown on Figure 7 of Standard NZS4121:2001).

8.3.3.6. Notwithstanding that the approach for mobility spaces is set out in an overarching Standard (which is referred to in the relevant legislation), the approach set out in the District Plan is to relate the provision of mobility spaces to floor areas. However where multiple activities share the same area, only the highest provision applies. For the proposed activities, the following apply:

- Workers accommodation / visitor accommodation: 3 mobility spaces
- Daycare: 1 space;
- Supermarket and other retail: 3 spaces;
- Offices: 2 spaces
- Gym / community hall: 2 spaces (1 for patrons and 1 for staff); and
- Bar / pizzeria: 3 spaces (2 for customers and 1 for staff)

8.3.3.7. It can be seen that:

- The main car parking area requires only 3 spaces to meet the District Plan, which is less than the Standard requires;
- The provision for the Workers accommodation / visitor accommodation aligns with the Standard; and
- The provision for the bar / pizzeria is more than the Standard requires.

8.3.3.8. On this basis, it is considered that providing mobility spaces to meet the Standard provides a more robust outcome. Accordingly it is recommended that the layout provides three mobility spaces at the worker accommodation / visitor accommodation and one mobility space at the bar / pizzeria. That said, since the layout include areas where these can easily be included, it is considered that this is a matter for consideration at the Engineering Approvals stage. Conditions of consent are proposed for the number of mobility spaces.

8.3.3.9. Residential activity does not require mobility spaces to be provided.

8.3.4. Rule 29.5.5: Drop Off / Pick Up (Set-Down) Areas

8.3.4.1. Under this Rule, additional drop-off / pick-up spaces are required for day care, educational and health care facilities, in addition to car parking. These spaces can be allowed for within the main car park.

8.3.5. Rule 29.5.6: Reverse Manoeuvring

8.3.5.1. It is expected that the roads within the site will generally be Local Roads under the District Plan definitions (even though they are private, the definition still applies) and so reversing onto them is generally not permitted. With regard to the commercial uses within the site, the parking spaces are generally arranged within areas that provide for through routes meaning that reversing onto the frontage roads is not required. Although there are parking spaces served directly from the accessways into the car parks to the immediate north and south of the commercial area, these are 'aisles' rather than 'roads' and so reversing onto them is an anticipated outcome.

8.3.5.2. Reversing onto the Local Roads within the residential elements of the development is permitted and is common in most residential subdivisions. Even in the event that Road A1 is considered as a Collector Road, reversing onto it is permitted.

8.3.5.3. Trucks servicing the commercial area are able to circulate clockwise through a service lane, and a service yard is provided at the southeast of this area. Consequntly there is no requirement for trucks to have to reverse only any frontage road.

8.3.6. Rule 29.5.7: Residential Parking Space Design

8.3.6.1. Many of the residential parking spaces are provided within garages. These are shown on the drawings as having internal dimensions of at least 5.5m depth and 3.1m width, as anticipated under the District Plan.

8.3.6.2. Double garages are shown as 5.7m wide. This notionally comprises of two 2.4m wide spaces plus 0.3m clearance to walls and to the adjacent vehicle, and is therefore of the appropriate size.

8.3.6.3. In some cases, additional parking spaces are shown on the 'apron' between the garage door and the legal road boundary. These spaces vary and in some cases are a minimum of 5m in length. Although this theoretically allows for a car (4.9m length) to be parked, this does not enable any clearance to the garage door. The District Plan requires any such parking spaces to be 5.5m for this reason and this is not achieved in all locations. Given that the adjacent road does not have a carriageway or footpath immediately adjacent, any minor overhanging is unlikely to impeded passing road users.

8.3.6.4. In other locations however, the 'closed' end of the parking space is abutted by a landscaped area. This area can be overhung by the front of the car and thereby meaning that the sealed length is effectively longer than 5m.

8.3.6.5. Unit layouts show that in some instances car parking spaces have landscaping alongside. The spaces have been widened by 0.3m as required as the landscaping may be of a sufficient height to obstruct doors from being opened. However it is also straightforward for landscaping to be kept at a low level, which means that doors can be opened over the top.

8.3.6.6. The dimensions of the residential parking spaces that are located in communal areas are 5.0m long, 2.7m wide, and have the aisle formed by the adjacent road, which is 6m or greater. These dimensions generally meet, and in many cases exceed, the District Plan requirements for Class 1 and Class 2 users.

8.3.7. Rule 29.5.8: Queuing

8.3.7.1. Under this Rule, queuing space is required at a vehicle access between the legal road boundary and the nearest position where conflict with a vehicle moving to or from a parking space may arise. Where a car park has more than one entry, this may be apportioned in accordance with the expected use of each access point (that is, an estimate is required for how many spaces each access will serve, and then the required queuing space is calculated from this).

8.3.7.2. As noted above, all roads in the subdivision will remain private and so the queuing space is measured at the northern end of Road A1. For the size of development, 30m is required and considerably more than this is provided.

8.3.7.3. From a practical perspective, if Road A1 is considered as the main thoroughfare within the site, it would be reasonable that queuing space is provided at the key vehicle crossings onto it. More than 30m is provided for the park-and-ride car park, and at the northernmost access to the commercial area, both of which are appropriate lengths. At the southern end of the commercial area, the queuing space provided is very limited, whereas for the number of spaces served, a distance of 18m would be appropriate. To support the efficiency of Road A1 then, the four westernmost spaces at this access (Road C5) should be removed to provide the appropriate queuing space. A condition of consent is proposed for this.

8.3.8. Rule 29.5.9: Loading Spaces

8.3.8.1. Loading facilities are only required under the District Plan for specific land use zones, whereas the site is not zoned in this way. Thus under the District Plan, this Rule is (technically) not triggered. However the proposal includes commercial uses and so the matter has been considered.

8.3.8.2. There is a large loading area located towards the southeast of the site into which heavy vehicles can manoeuvre in order to undertake loading. In this regard, the supermarket is likely to require the greatest number of service vehicles and the loading area is situated immediately adjacent.

8.3.8.3. Other commercial users will have a lesser demand for loading due to their size and/or nature. It is anticipated that loading will be able to take place from the car park at times when the activities are closed to the public.

Photograph 8: Loading Activity Taking Place Out-of-Hours at the Five Mile Shopping Complex, Frankton

8.3.8.4. No loading facilities are required at the residential activities.

8.3.9. Rule 29.5.10: Surface of Parking Spaces, Parking Areas and Loading Spaces

8.3.9.1. The parking spaces will be formed, sealed and marked as required.

8.3.10. Rule 29.5.11: Lighting of Parking Areas

8.3.10.1. Parking areas that serve non-residential activities are required to be illuminated. There are no reasons why this cannot be achieved.

8.3.11. Rule 29.5.12: Bicycle Parking and the Provision of Lockers and Showers

8.3.11.1. Cycle parking facilities are not required at residential activity or visitor accommodation.

8.3.11.2. The District Plan requires:

- For the childcare centre, 2 cycle parking spaces for caregivers / children plus 1 space per 10 employees. It is therefore considered that 4 cycle parking spaces will be required.
- For the retail activity, 1 space per 300sqm for customers plus 1 space per 200sqm for staff. It is therefore considered that 14 cycle parking spaces will be required for customers plus 21 spaces for staff.
- For the offices, 2 spaces for the first 500sqm plus 1 space per 750sqm thereafter for visitors plus 1 space per 150sqm for staff. It is therefore considered that 3 cycle parking spaces will be required for visitors plus 18 spaces for staff.
- Gym / community hall: None required as too small.
- Bar / pizzeria: None required as too small.

8.3.11.3. The drawings do not presently show cycle parking, but there appear to be ample locations within the site where it can be provided, such as in the unallocated areas of the main car park. A condition of consent is proposed in respect pf the provision of cycle parking.

8.4. District Plan Chapter 29: Access

8.4.1. Rule 29.5.13: Access and Road Design

8.4.1.1. The road cross-sections and designs are discussed subsequently as they are also referenced through the Council's Land Development and Subdivision Code of Practice.

8.4.2. Rule 29.5.14: Width and Design of Vehicle Crossings – Urban Zones

8.4.2.1. Residential vehicle crossings are required to be no more than 6m wide with commercial crossings being no more than 9m wide. These are generally achieved.

8.4.2.2. The vehicle crossings enter the adjacent lots at a 90-degree angle, and they can be constructed to meet Diagrams 6 or 7 of the District Plan. A number are not shown as meeting Diagrams 6 or 7 at present (such as the roadways serving the park-and-ride and commercial activities), but rather they are formed as 'intersections' in order to reflect the higher traffic volumes.

8.4.3. Rule 29.5.15: Width and Design of Vehicle Crossings – Rural Zones

8.4.3.1. The vehicle crossings have been assessed as urban.

8.4.4. Rule 29.5.16: Maximum Gradient for Vehicle Access

8.4.4.1. The site is relatively flat and so the access gradients will be considerably flatter than the maximum of 1 in 6.

8.4.5. Rule 29.5.17: Minimum Sight Distances from Vehicle Access on all Roads other than State Highways

8.4.5.1. The expected sight distance at a vehicle crossing is related to the posted speed limit. However the lowest posted speed limit of the Rule is 50km/h whereas it is expected that as per other residential areas in the district, the posted speed limit within Ridgeburn will be 40km/h.

8.4.5.2. However, sight distances are related to vehicle speeds and it is therefore possible to plot the distance required against the speed limit. Having done this, the relationship between the sightline required and the posted speed limit is:

$$\text{Sight distance} = (0.0168 * \text{speed limit}^2) + (0.0518 * \text{speed limit}) + 0.2617$$

8.4.5.3. This equates to an R-squared value of 0.9995, showing an extremely good fit with the data.

8.4.5.4. On this basis, with a posted speed limit of 40km/h, a sight distance of 30m is appropriate for residential development. For non-residential development, a sight distance of 57m is appropriate.

8.4.5.5. The plans provided show that these sight distances are generally achieved in all locations. For some residential lots, sightlines are limited due to the presence of intersections and curves in the road. However these features also mean that vehicles will need to slow down to negotiate the road geometry. As such, reduced sight distances can be supported.

8.4.5.6. Sight distances are measured at a distance of 3.5m from the nearest formed edge of the frontage road. However in this case there are also vehicle crossings onto roads where there

is a separation of less than 3.5m between the nearest movement lane and the lot frontage. This then means that the sightline passes across the lot, and in some cases, across the adjacent lots also. In order to ensure that appropriate sightlines are provided and maintained, one approach is for a consent notice to be placed on those lots to ensure that no permanent obstruction of more than 1m in height is located within the area needed for the sightline(s).

8.4.6. Rule 29.5.18: Minimum Sight Distances from Vehicle Access onto State Highways

8.4.6.1. This Rule is not relevant in this case..

8.4.7. Rule 29.5.19: Maximum Number of Vehicle Crossings

8.4.7.1. The drawings show that one vehicle crossing per residential lot is proposed. The commercial areas have two vehicle crossings but this is an anticipated outcome given the extent of the frontage onto the adjacent road.

8.4.8. Rule 29.5.20: Minimum Distance Between Vehicle Crossings onto State Highways

8.4.8.1. This Rule is not relevant in this case.

8.4.9. Rule 29.5.21: Minimum Distances of Vehicle Crossings from Intersections

8.4.9.1. As the roads are considered to be Local Roads and subject to a speed limit of 40km/h, any vehicle crossing should be at least 25m from any intersection.

8.4.9.2. The vast majority of lots are located further from intersections that 25m, including the commercial vehicle crossings. However the layout includes a number of residential lots which are within this distance, as shown in the example below.

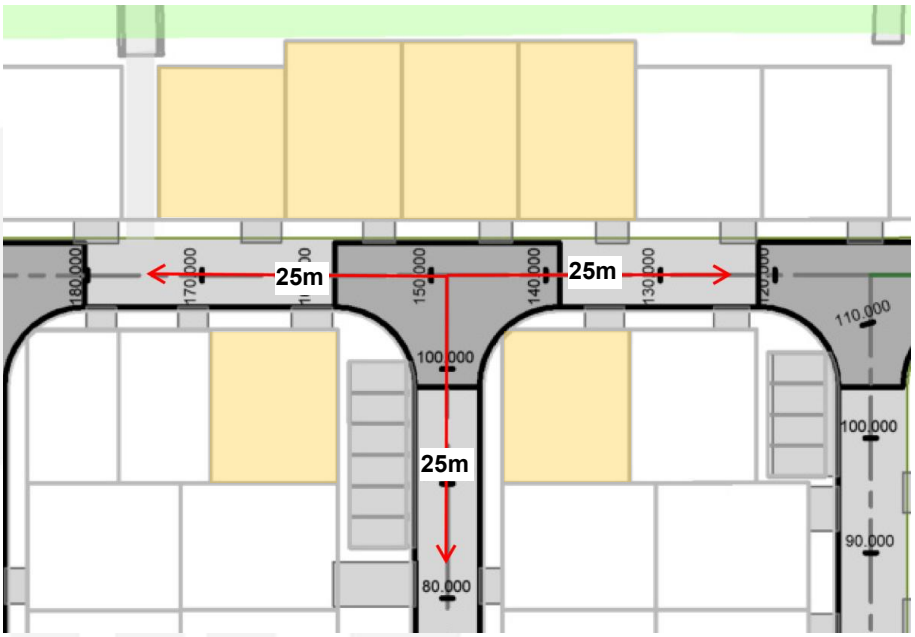

Figure 14: Example of Lots within 25m of an Intersection (Shaded)

8.4.9.3. Where the separation distance is not achieved, the District Plan sets out general matters to be considered of "*the safety and efficiency of the transport network, including the pedestrian and cycling environment*." There is little independent guidance regarding the manner in which to assess the appropriate separation of accesses and intersections but the operative District

Plan is somewhat more informative in respect of the matters that could influence safety and efficiency, as set out overleaf:

- *"14.3.2(v)(b): The extent to which the safety and efficiency of the adjoining road would be compromised by an access point located closer to an intersection … than is permitted by the Plan.*
- *14.3.2(v)(c): The extent to which conflicts between vehicles could be created by … confusion between vehicles turning at the crossing or the intersection; inadequate rate of driver assimilation of data, thereby adversely affecting the safety of the road.*
- *14.3.2(v)(e): Whether the speed and volume of vehicles on the road could increase the adverse effects of the access on the safety of road users.*
- *14.3.2(v)(f): Whether the geometry of the road could mitigate the adverse effects of the access."*

8.4.9.4. With regard to each of these assessment matters it is relevant to note that:

- The vast majority of road users will be residents of Ridgeburn or their visitors, who will be very familiar with the roading layout and expecting to encounter vehicles that are turning to and from properties (Assessment 14.3.2(v)(c));
- In many cases, the vehicle crossings are on the opposite side of the road to the minor approach of the intersection. Drivers will therefore not be confused about which vehicles are turning at the vehicle crossing and which are turning at the intersection (Assessment 14.3.2(v)(c));
- The roads will be lightly trafficked because they serve only a limited number of lots, meaning that there is only limited potential for one vehicle to encounter another (Assessment Matter 14.3.2(v)(e)); and
- The expected posted speed limit means that the roads have operating speeds of 40km/h, and drivers will be travelling more slowly than this if turning at intersections to negotiate the geometry. Slower speeds create additional time for drivers to react in response to a potential conflict situation (Assessment Matters 14.3.2(v)(c), (e) and (f)).

8.4.9.5. Taking these matters into account, it is considered that the prevailing roading environment means that the vehicle crossing locations can be supported.

8.4.10. Rule 29.5.22: Minimum Distances of Vehicle Crossings from Intersections onto State Highways

8.4.10.1. This Rule is not relevant in this case..

8.4.11. Rule 29.5.24: Service Stations

8.4.11.1. This Rule is not relevant in this case..

8.5. Compliance with Land Development and Subdivision Code of Practice

8.5.1. The following assessment relates to the design of the internal transportation networks.

8.5.2. Paragraph 3.2.5: Network Connectivity

8.5.2.1. The proposed layout has only one vehicular connection to the external road network, which is presently a Local Road. Within the site however, there is an excellent level of connectivity provided, with roads which provide direct and convenient routes, and a comprehensive network of off-road walking and cycling pathways which result in travel choice for residents.

The layout is considered to minimise travel distances, create routes for non-car road users, and the park-and-ride provisions improves access to public transport.

8.5.3. Paragraph 3.3.1: Design Requirements

8.5.3.1. The proposal includes a suite of 12 potential road types, devised in order to reflect the expected number of lots being served and the expected operating environment. The roads do not have an 'urban' formation with kerb+channel but rather adopt an approach which provides for shoulders and swales. In respect of the shoulder, the layouts indicate that 'gobi block' is to be used, which is understood to be for the purposes of supporting the edge of the seal and also to allow for the occasional overrunning of vehicles.

8.5.3.2. The primary road through the site provides an 8.4m carriageway with parking in recessed bays on either side. A shared 2.5m wide walking and cycling route is provided on one side (no pedestrian provision is provided on the other side of the road).

8.5.3.3. In respect of the other roads, broadly, the carriageway widths range from 5.6m to 7.0m, with recessed parking provided. At least one footpath is provided on lots that service more than 60 lots, but where the roads serve fewer than 60 lots, the approach taken has been for pedestrians to share the roadway and for traffic speeds to be kept at no more than 30km/h.

8.5.3.4. As set out above, the lengths of some of these roads mean that traffic calming measures are likely to be required to achieve these operating speeds. However in respect of pedestrians and vehicles sharing the same roadspace, the limitation on the number of lots means that there is only a low likelihood that pedestrians and cars will be present at the same time. As noted above, a trip rate of 0.72 to 0.76 vehicle movements per residential unit has been adopted, which means that in the peak hours, these roads will carry 43 to 46 vehicles (two-way). This equates to an average of one vehicle movement every 80 to 90 seconds in the peak hour, during which time a pedestrian would be able to walk 100 to 110m. Taking into account the lengths of the roads, and that pedestrians would not need to walk the full length of the roads (due to the network of off-road routes), it is likely that a pedestrian would encounter only a handful of vehicles, at most, during their journey.

8.5.3.5. The arrangement is based on roads within the historic parts of nearby Arrowtown, where roads such as Suffolk Street, Cardigan Street and Kent Street have similar cross-sections.

8.5.4. Paragraph 3.3.2.2: Sight Distance

8.5.4.1. Within this environment it can be expected that drivers will be alert and expecting to encounter other manoeuvring vehicles. Accordingly, allowing for a posted speed limit of 40km/h, then an Approach Sight Distance (**ASD**) of 34m is appropriate plus a Safe Intersection Sight Distance (**SISD**) of 67m.

8.5.4.2. Sight distances have been assessed by McKenzie and Co. It is noted that their assessment allows for an operating speed of 50km/h and therefore they include for additional tolerances compared to the anticipated speed environment.

8.5.5. Paragraph 3.3.2.5: Design and Check Vehicles

8.5.5.1. Under this Rule:

- A medium rigid (8.8m) truck has to be able to turn at each intersection within the site itself without crossing the centreline; and

- A tour coach (12.6m) has to be able to turn at each intersection within the site itself but may cross the centreline.

8.5.5.2. This provision creates a number of design issues:

- These larger vehicles are 2.5m wide and the Code of Practice sets out that a clearance of 0.5m should be added to each side of the vehicle. In effect, the vehicle is therefore 3.5m wide. However the expected width for movement lanes for roads carrying less than 2,000 vehicles per day is 2.75m to 2.85m. In other words, the application of the design vehicle means that movement lanes now have to be constructed to be wider than Table 3.3 of the Code of Practice expects.
- In addition to requiring a greater movement lane width, accommodating the movement of these vehicles also results in a much larger intersections (physically). This is because when a truck (or in fact any vehicle) turns at an intersection, the rear wheels of the vehicle inscribe a different radius to the front wheels. This has the outcome of increasing the effective width of the turning vehicle. The Code of Practice stipulates a minimum turning radius of 10m for a medium right truck and thus the kerb radius at intersections must be at least 10m. This is despite the Code of Practice setting out "*all road intersections in 'live and play' areas below arterial class should have a kerb radius at intersections of 4m to 6m*."
- The Code of Practice notes that the requirement to accommodate the design vehicle "shall" supersede the ability to use tighter radii at intersections. 'Shall' has a specific meaning (paragraph 1.2.1.2 of the Code of Practice) and is mandatory – that is, there is no ability to deviate from the Code of Practice in this regard. Conversely, the Code of Practice also says that roads "shall" be designed to Table 3.3 of the Code of Practice, which as set out above cannot be achieved where the requirements to accommodate design vehicles are applied. Both provisions cannot be achieved, meaning the Code of Practice is internally inconsistent.

8.5.5.3. Attempting to design for the larger vehicle also creates adverse outcomes:

- Vehicle speeds will increase because the roading will be designed with much larger carriageways and radii than needed for the vast majority of motorised vehicles (private cars). As shown on Figure 3.2 of the Code of Practice, operating speeds would immediately increase by at least 5km/h and it would therefore be much harder to achieve the operating speeds expected within Table 3.3.
- In order to reduce speeds to the operating speeds expected in the Code of Practice, increased traffic calming measures will be needed throughout. However road narrowings / kerb build-outs could not be used because of the requirement for trucks to remain to the left of the centreline. Thus speed humps would need to be introduced extensively. Conversely, without traffic calming, higher speeds will lead to adverse road safety outcomes for residents.
- Pedestrian severance will increase. A pedestrian crossing a road will have the length of their crossing movement increased by at least 20% if roads were designed to the Code of Practice. That is, a pedestrian crossing at an intersection could find themselves having to cross 13m of roadway rather than 6m. This increased exposure presents a road safety risk, even with traffic calming measures in place to limit vehicle speeds.

8.5.5.4. Within the site there will be no through traffic, rather, traffic will have an origin or destination within the site. Consequently over the bulk of the residential areas of the site, heavy vehicles will not be frequent visitors but rather they will be present due to:

- Refuse and recycling collection (two bin collections per week);
- The delivery or collection of large household items (or vehicles for repair); and
- Removals truck.

8.5.5.5. Of these, only the refuse and recycling collection trucks will be regularly present – allowing for collection on both sides of the road, this would be four truck movements per week. The remaining types of larger vehicles would far more infrequent than this.

8.5.5.6. On this basis, the potential for a car driver to encounter a heavy vehicle at any intersection is extremely small. Further, if a driver was to encounter a heavy vehicle, their familiarity with the area means that the turning movement of the heavy vehicle would not be unexpected.

8.5.5.7. District Plan Policy 29.2.3.1 is to "*Establish design standards for roads and accesses, including those in Table 3.2 of the QLDC Land Development and Subdivision Code of Practice (2018), and require adherence to those standards unless it can be demonstrated that the effects of the proposed design on: a. the active and public transport networks and the efficiency and safety of the roading network are no more than minor; and b. amenity values, urban design, landscape values are appropriately mitigated*."

8.5.5.8. It is considered that this Policy is better achieved for this site though having a roading environment with narrower roads and tighter intersection radii because:

- The wider roads and larger intersections required to achieve the anticipated movements of an 8.8m truck defined in the Code of Practice leads to increased severance for pedestrians due to greater road crossing lengths;
- The efficiency of the road network is not detrimentally affected because the movement of heavy vehicles is so infrequent and volumes of other motorised traffic will also be low;
- Public transport is (currently) unlikely to be present within the site, meaning that it is not adversely affected by the road / intersection design; and
- The proposed arrangement continues to meet the overarching (national) legislation, which allows heavy vehicles to cross the centreline of a road where it is safe to do so[7].

8.5.5.9. Consequently it is considered that there will be no material adverse effects on the efficiency and safety of the roading network for all road users in the event that larger vehicles occasionally cross the centreline.

8.5.5.10. Discussions with McKenzie and Co have confirmed that localised widening has been provided on curved sections of road so that a refuse truck and a car are able to pass each other without one having to take evasive action or reverse to avoid a collision.

8.5.5.11. In respect of the intersections and vehicle crossings however, the overall approach of the layout design has been anticipate that these will operate on a 'courtesy' basis:

- If a truck is exiting the minor approach of an intersection it may need to cross the centreline of the frontage road. This will require it wait until it is safe to do so, but the slow speed environment and low volumes mean that there will be amply opportunities for this movement. In this case, a car driver may need to wait for the truck to undertake the movement before turning into the minor approach / vehicle crossing; and

[7] Clause 2.3(3) of the Land Transport (Road User) Rule 2004

- If a truck is entering the minor approach of an intersection, it may need to cross the centreline of the minor approach. If a car is waiting to exit the minor approach, then the truck will need to wait for the car to move before commencing their turn.

8.5.5.12. It is considered that this 'courtesy' approach reflects that the vast majority of road users will be residents who will be highly familiar with the transportation networks, that traffic flows will be low (as the roads provide for property access and there is no through traffic within the site), operating speeds will be slow and that larger vehicles will be highly infrequent. It is also considered that it represents the more pragmatic layout as attempting to accommodate larger trucks would lead to higher speeds, increased pedestrian severance and contribute to an adverse road safety outcome as discussed above.

8.5.5.13. It is acknowledged that there will be elevated volumes of heavy vehicles associated with service vehicle deliveries to the commercial area. However this part of the roading network has been designed with larger vehicles in mind.

8.5.6. Paragraph 3.3.5: Target Operating Speed

8.5.6.1. It is anticipated that the posted speed limit on the roads will be 40km/h. A vehicle turning through an intersection will do so at a speed of around 25km/h, meaning that it will then take around 75m to accelerate to 40km/h[8]. However drivers will then need to slow down again (and prepare to potentially stop) at the next intersection.

8.5.6.2. Speeds are also influenced by the geometry of the road (with curves slowing traffic) and forward sight distances (as per Figure 3.2 of the Code of Practice. The latter shows that where a driver on a carriageway of 6m is presented with a forward sight distance of 120m or less, their speed will not exceed 40km/h. As such, any road within the subdivision which is 195m long or shorter will have an operating speed no greater than 40km/h (that is, 75m to accelerate to 40km/h and then a limited forward sight distance that will reduce vehicle speeds).

8.5.6.3. Many of the roads within the site are of a shorter distance than this, and therefore the operating speed will be lower than 40km/h. It is noted though that the McKenzie and Co drawings indicate that operating speeds of 30km/h are desired on these roads. This is likely to require some degree of traffic calming on those roads, if the lower 30km/h speed is to be achieved.

8.5.6.4. There are at least 21 roads within the development that are longer than 200m and have a straight alignment. These roads will also likely have operating speeds in excess of 40km/h, and the drawings show that operating speeds of 30km/h are desired on these roads. To achieve these will require traffic calming measures to be introduced on those roads.

8.5.6.5. On this basis then, the layout as presently provided would indicate higher operating speeds than desired on a number of roads. However in order to reduce speeds, traffic calming measures can be implemented. These can be provided within the road reserve and therefore can be assessed further at Engineering Approvals stage.

[8] Applying the Austroads acceleration rate of an increase in speed of 1 km/h for every 5m of travel

8.5.7. Paragraph 3.3.6: Passing, Parking and Loading

8.5.7.1. The legal road widths are sufficient for parking bays/lanes to be provided, and the cross-sections of the roads show that recessed parking bays are expected on most roads.

8.5.8. Paragraph 3.3.7: Intersection and Alignment Design

8.5.8.1. The roads connect with each other at 90-degrees (+/- 10 degrees) as permitted. This paragraph also refers to the radii at intersections, and this matter is discussed above. In short it is not considered that providing larger intersections with associated faster vehicle speeds is an appropriate approach within a residential area.

8.5.8.2. Corner splays are not provided at most intersections. The Code of Practice notes that this is a permissible outcome provided that approvals are given by the road controlling authority. In this case though, as noted above, the roads will remain private.

8.5.8.3. There is no minimum requirement for separation between intersections, as there are no intersections between Collector Roads and/or Arterial Roads. It is good practice to separate intersections by the equivalent of five seconds of travel time, as the Austroads Guide notes that this is the time required by a driver to assimilate the environment on the road ahead. At a speed of 40km/h, this equates to 55m and 40m at 30km/h. Most intersections are separated by more than 55m, but there are a small number where the separation is in the order of 40m. These generally align with those roads where the operating speed is expected to be lower than 40km/h, and so a reduced separation can be supported.

8.5.9. Paragraph 3.3.8: No-Exit Roads

8.5.9.1. The site includes several cul-de-sacs (such as Roads 11, 21, 22 and 46). Under this paragraph of the Code of Practice, through-roads are preferred but in this case the topography of the site means that no connections could be formed to other roads, and so the cul-de-sacs can be supported.

8.5.9.2. The plans show that some cul-de-sacs have full turning heads provided (such as Road 11), others have a T-turning area (such as Roads 22 and 25) but others have no turning area (such as Roads A15, 21 and 42). The overarching Standard NZS4404:2010 anticipates that turning areas are to be provided, with full turning circles and Y, T and L shaped areas also being permissible where the circular area is unsuitable. However there is no scenario where a ‘road’ is expected to have no turning facility.

8.5.9.3. It is noted that those roads without turning facilities serve only a small number of lots (the roadways without turning facilities that serve the greatest number of lots are Roads 21 and 42, and JOAL C2 which each serve seven lots). Given this, subject to the roads being designed to appear as private driveways and signposted for residents only, it is unlikely that turning facilities will be required in practice.

8.5.10. Paragraph 3.3.9: Bus Stops

8.5.10.1. The layout does not preclude bus stops from being provided within the site at some future time, and as noted above it is expected that these will be located on Road A1 as this means that the bulk of residents are within a three minute walking time of the bus route.

8.5.10.2. In the short-term however, the scheme provides for bus stops within the park-and-ride area towards the north of the site.

8.5.11. Paragraph 3.3.11: Footpaths, Accessways, Cycle Paths, and Berms

8.5.11.1. As noted above, the roads that are more heavily trafficked have a footpath on at last one side but those roadways that serve only a small number of lots have a layout where pedestrians share the movement lanes with motorised vehicles. This does not meet the Code of Practice (or overarching Standard) but given the low operating speeds and low traffic volumes, it is considered that the proposed cross-sections will function appropriately in respect of providing for walking and cycling movements

8.5.11.2. Not all of the cul-de-sacs provide for walking and cycling connectivity at the ends. However this is a function of the topography, and the overall site layout does not result in extensive additional journey distances for most pedestrians and cyclists.

8.5.12. Paragraph 3.3.12: Traffic Signs, Marking, and Road Furniture

8.5.12.1. These provisions can be achieved, and it is expected that this will occur through Engineering Approvals.

8.5.13. Paragraph 3.3.13: Trees and Landscaping

8.5.13.1. These provisions can be achieved, and it is expected that this will occur through Engineering Approvals.

8.5.14. Paragraph 3.3.14: Road Lighting

8.5.14.1. These provisions can be achieved, and it is expected that this will occur through Engineering Approvals.

8.5.15. Paragraph 3.3.16: Private ways, private roads, and other private accesses

8.5.15.1. All roads within the site will be private, but the context of this particular aspect of the Code of Practice is that private roads are subject to the same, or very similar, design requirements as roads that are vested. Accordingly, the relevant matters have been addressed above.

8.6. Summary of District Plan and Code of Practice Compliance

8.6.1. On the basis of this analysis, the following non-compliances have been identified with the District Plan:

- Rule 29.5.1: Location and Availability of Parking Spaces
  - The layout does not provide for campervan parking, but these vehicles are less likely to be present at the site than in other locations, and in the event that campervans are giving rise to concerns or hazards, the parking spaces can be easily re-marked.
- Rule 29.5.4: Mobility Parking Spaces
  - Mobility spaces are not shown at the worker accommodation / visitor accommodation or the bar/pizzeria, and should be provided (a condition of consent is proposed for this).
  - The aisle widths for three mobility spaces in the main commercial car park do not meet the District Plan provision but meet the overarching Standard AS/NZS2890.1:2004 (‘Parking Facilities Part 1: Off-Street Car Parks’)

- Rule 29.5.7: Residential Parking Space Design
    - In some locations, the 'apron' between the garage door and the legal road boundary is shorter than required to accommodate a car. Given that the adjacent road does not have a carriageway or footpath immediately adjacent, any minor overhanging is unlikely to impeded passing road users.
- Rule 29.5.12: Bicycle Parking and the Provision of Lockers and Showers
    - Cycle parking facilities are not shown but can easily be provided within the areas available (a condition of consent is proposed for this).
- Rule 29.5.13: Access and Road Design
    - The road cross-sections and designs are discussed subsequently but the proposal does not meet the Council's Land Development and Subdivision Code of Practice.
- Rule 29.5.17: Minimum Sight Distances from Vehicle Access on all Roads other than State Highways
    - For some residential lots, sightlines are limited due to the presence of intersections and curves in the road and thus the sightline appropriate for the posted speed limit is not achieved. However these features also mean that vehicles will need to slow down to negotiate the road geometry such that a reduced sight distances can be supported.
    - In some instances, sightline pass across the lot itself and/or across the adjacent lots also. To ensure that appropriate sightlines are provided and maintained, a mechanism can be put in place that prevents a permanent obstruction of more than 1m in height from being located within the area needed for the sightline(s).
- Rule 29.5.21: Minimum Distances of Vehicle Crossings from Intersections
    - The layout includes a number of residential lots which are within 25m of intersections. However mitigation is provided through the vast majority of road users being very familiar with the roading network, and that the roads will be lightly trafficked and have low operating speeds.

8.6.2. From a practical perspective, if Road A1 is considered as the main thoroughfare within the site, it would be reasonable that queuing space to achieve Rule 29.5.8 of the District Plan is provided at the key vehicle crossings onto it, and a condition of consent is proposed in this regard at Road C5.

8.6.3. The proposed layout does not achieve the expected provisions of the Code of Practice in respect of the following matters:

- Paragraph 3.3.1: Design Requirements
    - The proposal includes a suite of 12 potential road types but these do not meet the standard road types of the Code of Practice, particularly with regard to the expectation that on the lightly-trafficked roads, pedestrians share the movement lanes with motorised vehicles.
- Paragraph 3.3.2.5: Design and Check Vehicles
    - The roading does not provide for the design and check vehicles, but to make such provision, the roads and intersections could need to be considerably larger in size which then creates a higher speed environment with increased pedestrian severance and an associated greater road safety risk. As the site will have no through traffic, drivers will be residents and be familiar with the roading, and larger vehicles will be infrequent, it is not considered that trucks occasionally crossing the centreline of roads will give rise to material effects on safety or efficiency.

- Paragraph 3.3.5: Target Operating Speed
    - In order for pedestrians to be able to share the road with motorised vehicles, slow speeds will be required but the proposed alignments indicate that on some roads, higher speeds may arise. However in order to reduce speeds, traffic calming measures can be implemented.
- Paragraph 3.3.8: No-Exit Roads
    - A number of roads do not have turning areas provided. However as these roads serve only a small number of lots, subject to the roads being designed to appear as private driveways and signposted for residents only, it is unlikely that turning facilities will be required in practice. A condition of consent is proposed for this.
- Paragraph 3.3.11: Footpaths, Accessways, Cycle Paths, and Berms
    - The provision of footpaths does not meet the Code of Practice but given the low operating speeds and low traffic volumes, it is considered that the proposed cross-sections will function appropriately.
    - Not all of the cul-de-sacs provide for walking and cycling connectivity at the ends but this is a function of the topography, and the overall site layout does not result in extensive additional journey distances for most pedestrians and cyclists.
- Paragraph 3.3.16: Private ways, private roads, and other private accesses
    - This particular part of the Code of Practice is premised on private roads being subject to the same, or very similar, design requirements as roads that are vested. Accordingly, the relevant non-compliances have been addressed above.

9. Conclusions

9.1. This report has identified, evaluated and assessed the various transport and access elements of a proposed residential and mixed use development at Morven Ferry Road with regard to the internal layout design (matters associated with external effects are addressed within a separate report).

9.2. Taking into account the expected traffic generation of the site, it is considered that the internal transportation networks will operate with an appropriate level of efficiency and safety. The most heavily trafficked intersections have been assessed and they will provide an excellent level of service. There are no reasons why intersections could not be constructed to meet current guides and standards.

9.3. The site provides a comprehensive internal network of walking and cycling routes to support movement within the site by non-car modes, and also to encourage the use of non-car modes to destinations further afield though providing connections to existing routes.

9.4. Although there are presently no scheduled bus services that operate on Morven Ferry Road, the site supports travel choice through providing a park-and-ride facility which allows for the diversion of an existing bus service that presently operates along a nearby route.

9.5. As is common for any large development, the layout has a number of non-compliances with the provisions of the District Plan and the Council's Land Development and Subdivision Code of Practice. Each of the non-compliances has been carefully considered and addressed, and it is concluded that none will give rise to adverse effects that are more than minor. It is considered that the greatest departure from the Code of Practice (and the overarching Standard) relates to the road designs that are proposed and in particular, that on lightly-traffic roads pedestrians will share the movement lanes with motorised vehicles. This approach is based on the roading cross-sections of nearby Arrowtown.

Carriageway Consulting Limited
March 2026

Appendix A

Qualifications and Experience of Report Author

CARRIAGEWAY
CONSULTING
traffic engineering | transport planning

Qualifications and Experience

Report Author: Andy Carr

Professional Qualifications

1988	Bachelor of Science with Honours (Computing Science), University of Newcastle upon Tyne
1989	Master of Science (Transport Engineering and Operations), University of Newcastle upon Tyne
1998	Master of Business Administration (Distinction): University of Newcastle upon Tyne
2006 - present	Chartered Professional Engineer (Practice field: Transportation engineering)
2006 - present	International Professional Engineer (NZ)
2006 - present	APEC Engineer
2006 - present	Chartered Member, Engineering New Zealand

Employment Profile

2014 - present	Director and Owner, Carriageway Consulting Limited – involved in numerous transportation engineering projects from transportation assessments for new developments and plan changes, to roading design, road safety audits, and independent peer reviews for local authorities and government departments. Preparation and presentation of expert evidence to Council Hearings and the Environment Court.
2012 - 2014	Associate Principal, Abley Limited - leading a range of transportation assessments for land-use projects throughout the country, and provision of expert evidence.
2005 - 2012	Senior Transport Planner and progressing to Senior Associate / Office Manager, Traffic Design Group - responsible for sourcing, managing and overall technical direction of the transportation assessments for land use development projects throughout the South Island.
2004 - 2005	Senior Transport Planner, Beca - assisting in a variety of roading projects with particular responsibility for writing the first New Zealand Pedestrian Planning Guide.
1990 - 2004	Traffic engineer in various private sector roles in the UK, ranging from Graduate (1990-1992) to Principal (2000-2004) with a range of roles, initially assisting with a variety of projects assessing land use changes, road safety and strategic transportation studies, and ultimately managing a local team with technical oversight of all work carried out, client liaison and sourcing commissions.

Additional Information

Member, Resource Management Law Association

Member, Engineering New Zealand Transportation Group

Associate Member, New Zealand Planning Institute

CARRIAGEWAY
CONSULTING

traffic engineering | transport planning

A. PO Box 29623, Riccarton, Christchurch, 8440 **P.** 03 377 7010 **E.** office@carriageway.co.nz