Appendix K

Integrated Transport Assessment - Internal

MT IRON
JUNCTION

Residential Development
Wānaka Luggate Highway

Assessment of Internal Transportation Networks

CARRIAGEWAY
CONSULTING
traffic engineering | transport planning

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CCL file reference	15080 mt iron internal layout final
Status	Final
Issued	18 February 2026

1. Introduction

1.1. This Transportation Assessment has been prepared in relation to the substantive application lodged by Mt Iron Junction Limited under the Fast Track Approval Acts 2024 in accordance with the requirements of Section 42. The proposal is a listed project in Schedule 2.

1.2. This report has been prepared to support an application to develop land at 237 Wānaka Luggate Highway for a high density residential development. 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.

1.3. The report assesses the internal layout of the site, including the proposed transportation networks and the district roads of Junction Road and Mountain Road. A second, separate report ('Assessment of Effect on External Transportation Networks') addresses matters pertaining to the transportation effects of the project on the external transportation networks, including the state highway network and the district road of Riverbank Road.

1.4. This report is cognisant of the guidance specified in the New Zealand Transport Agency (**NZTA**) '*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.

1.5. 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 located on the northwestern quadrant of the State Highway 6 / State Highway 84 intersection, around 2.7km east of Wānaka town centre. The site is zoned Rural in the proposed Queenstown Lakes District Plan (**District Plan**). The site also includes a partially completed existing development authorised by resource consent in 2021, discussed further below.

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.

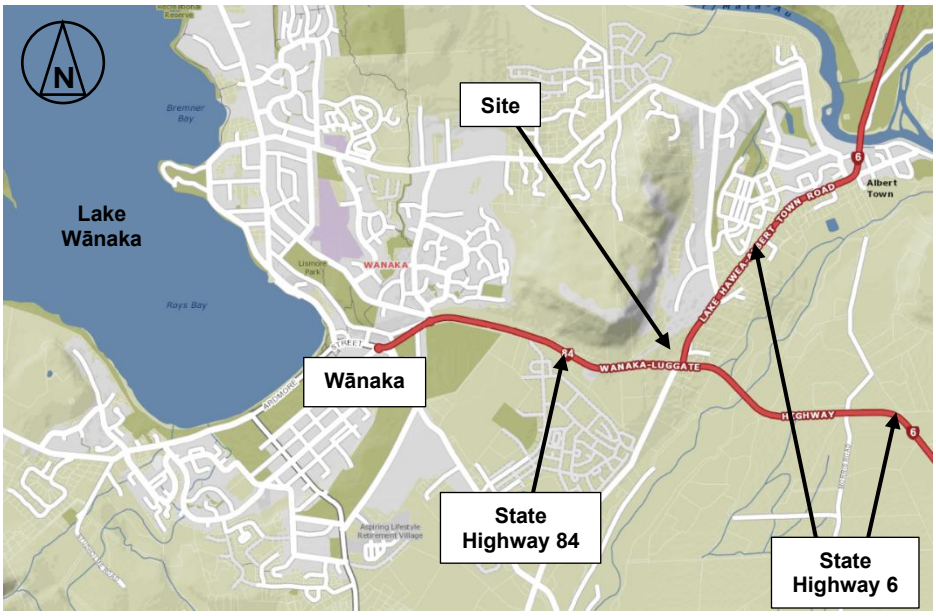


Figure 1: General Location of Development Site

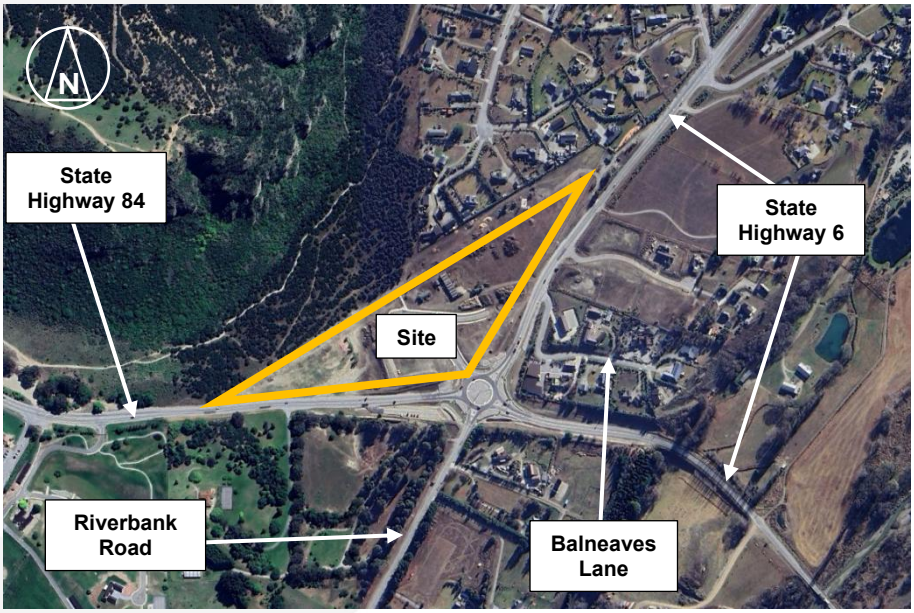


Figure 2: Aerial Photograph of Development Site and Environs

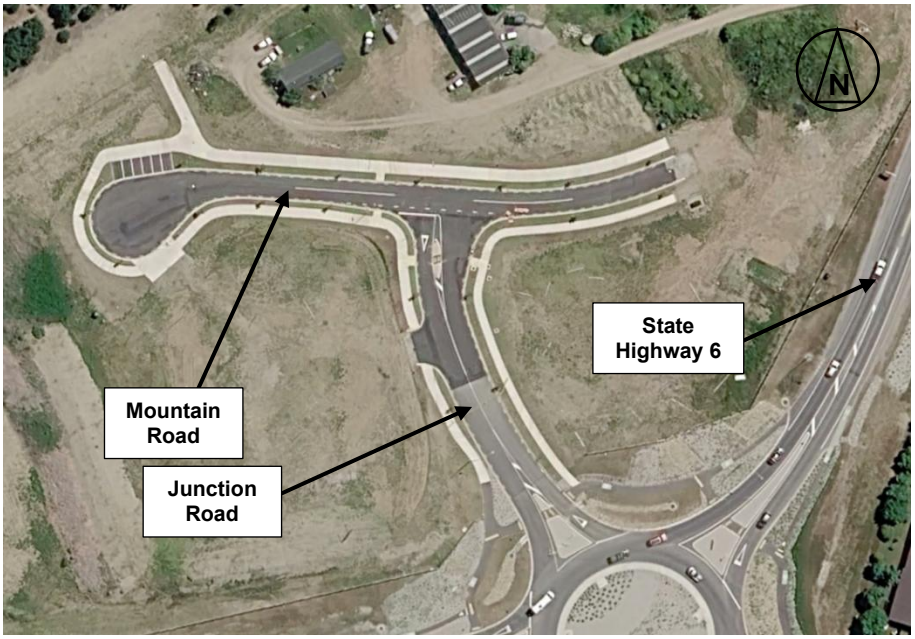


Figure 3: Aerial Photograph of Roading within Site

2.2. Road Hierarchy

2.2.1. Junction Road and Mountain Road are not listed in the District Plan roading hierarchy, meaning that they are Local Roads and intended to provide for direct property access.

2.2.2. For completeness, the District Plan classifies State Highways 6 and 84 as State Highways, and although there is no formal definition of their purpose, it can reasonably be expected that they accommodate higher traffic volumes and connect settlements and key destinations both regionally and inter-regionally. Riverbank Road is a Collector Road, which is expected to accommodate both through traffic and also to provide for direct property access. However these roads are not considered further within this report, as the focus is on the internal transportation networks.

2.3. Consent History

2.3.1. With assessment and preparation commencing in 2017, a proposal for the site was advanced which at the time included:

- A service station with ancillary retail units and a laundromat;
- Worker accommodation buildings, with ten units providing a total of 60 bedrooms;
- A childcare centre for 90 children;
- Visitor accommodation, with 39 units plus a manager's residence;
- Commercial and retail development, with a total floor area of 2,218sqm GFA;
- Mini golf facility; and
- 17 residential terraced housing units, with a mix of 2 and 3 bedrooms.

2.3.2. As a result of non-traffic related concerns, the development of the site was ultimately downsized with consent (RM181471) being granted by the Environment Court in 2021 for:

- A service station with associated signage, retail store, car wash and laundromat;
- Worker accommodation buildings, with nine units providing a total of 54 bedrooms; and
- 13 residential terraced housing units, with a mix of 2 and 3 bedrooms.

2.3.3. Condition 5 of the consent required an upgraded State Highway 6 / State Highway 84 / Riverbank Road intersection (that is, an upgrade to a roundabout from the then-existing priority intersections) to be operational prior to the consented development being occupied by tenants or the public.

2.3.4. Development in accordance with the 2021 consent is underway including the construction of roading infrastructure (Junction Road and Mountain Road), although both roads are presently closed off by barriers at the current time. The buildings approved by the 2021 consent have not yet been constructed.

3. Current Transportation Networks

3.1. Roading Network

3.1.1. The external transportation networks are discussed in a separate report[1].

3.1.2. The site is served via Junction Road, which forms one leg of a five-leg roundabout which lies directly to the southeast of the site. State Highway 6 forms the eastern and northern legs, with State Highway 84 forming the western leg and Riverbank Road being to the south. Junction Road is approximately 90m in length, and provides one lane in each direction with a total carriageway width of 10.7m (kerbface to kerbface). It has parking restrictions on both sides, and there is a large driveway provided on its western side to serve the consented service station.

Photograph 1: Junction Road Looking North (Service Station Vehicle Crossing on Left)

3.1.3. At its southern end, Junction Road links to the State Highway 6 / State Highway 84 / Riverbank Road roundabout. One approach lane is provided on Junction Road.

[1] Assessment of Effect on External Transportation Networks

Photograph 2: Junction Road Looking South Towards Roundabout

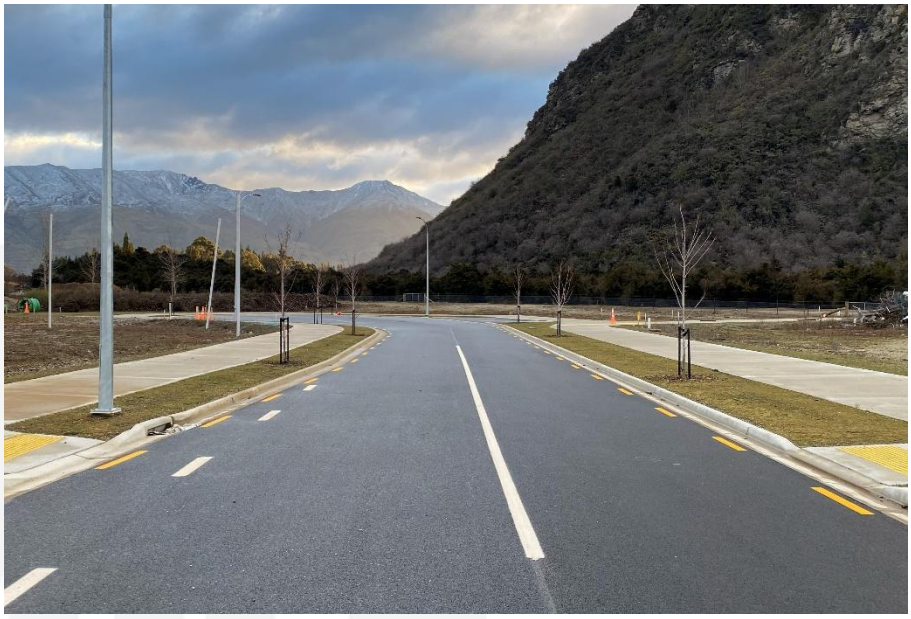
3.1.4. At its northern end, Junction Road connects to Mountain Road at a priority ('give-way') intersection. There is a splitter island provided within the throat of the intersection, and sightlines in both direction for turning traffic are excellent.

Photograph 3: Junction Road / Mountain Road Intersection Looking South

3.1.5. Mountain Road extends east for 60m from this intersection, and currently terminates without any formal turning head. There are parking restrictions marked along both sides of this section of the road.

Photograph 4: Mountain Road Looking East

3.1.6. Mountain Road extends for approximately 90m to the west of Junction Road, and terminates at a formal turning head which has a 20m diameter. There is a row of six 90-degree parking spaces located on the northern side of the turning head, and a large vehicle crossing is located on the southern side which serves the service station.



Photograph 5: Mountain Road Looking West

Photograph 6: Composite Photograph of Western End of Mountain Road (Looking East)

3.1.7. Junction Road and Mountain Road are both presently closed to vehicles.

3.2. Non-Car Modes of Travel

3.2.1. As this is presently a rural environment, the roads and highways typically do not have footpaths immediately adjacent, although there are shared walking and cycling paths around the State Highway 6 / State Highway 84 / Riverbank Road roundabout, and around the southern side of Mt Iron which connects to Three Parks (the Mount Iron Track). These are described in detail in the report addressing the external effects of the proposed development.

3.2.2. Within the site, the provision for pedestrian and cyclists is excellent. There is a 2m wide footpath provided along the southern side Mountain Road (east), which runs along the eastern side of Junction Road to connect to the routes around the State Highway 6 / State Highway 84 / Riverbank Road roundabout (as shown on Photographs 2 and 4 above).

3.2.3. Along the northern side of the full length of Mountain Road is a 3m wide shared walking and cycling path. This widens to 3.5m width where the path passes the 90-degree spaces, and is then 2.5m width around the western and southern sides of the turning head, the southern side of Mountain Road and the western side of Junction Road (Photographs 4, 5 and 6 above). This is not currently signed as a shared route but under the Austroads Guide to Road Design Part 6A (‘Paths for Walking and Cycling’), a width of 2.5m is sufficient for a ‘local access’ shared walking and cycling path (Table 5.3 of the Austroads Guide) and a 2.5m width can also be accepted for a ’regional path’ provides that cyclists volumes and speeds are low.

3.2.4. Just east of the 90-degree parking spaces, there is a spur off the shared route which leads towards the Mount Iron Track (which in turn connects to Three Parks).

Photograph 7: Spur off Shared Path, Heading Towards Mt Iron Track (at Foot of Mt Iron in Distance)

3.2.5. There are also formal crossing points of Mountain Road just west of Junction Road, and via the splitter island at the northern of Junction Road.

Photograph 8: Crossing Point on Mountain Road

3.2.6. The various crossing places all have tactile paving in place, including across the service station vehicle crossing on Junction Road (on the left of Photograph 1 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. However if the proposal is consented, it is anticipated that the 2.5m wide footpath on the western side of Junction Road will be converted to a shared walking and cycling route in order to provide a continuous route within the site, as discussed further below.

4. Proposal

4.1. The proposed development is for 250 residential units in a variety of forms (terraced housing, townhouses and apartments).

4.2. All units have allocated car parking spaces, either provided within garages or on hard-stand areas within the lots themselves, or in communal parking areas. On-street parking is also provided to accommodate additional residents' vehicles and also for residents' visitors.

4.3. A small amount of non-residential development is also proposed, which includes a childcare centre for 65 children, a café (154sqm GFA) and a small retail unit (275sqm GFA). The non-residential elements of the proposal are to assist the site in being self-sufficient for residents' core needs, meaning that, for example, a resident would not be required to leave the site for a small amount of shopping but could instead walk or cycle to the on-site retail tenancy.

4.4. Non-car linkages are provided between the site and the surrounding walking and cycling networks. The focus of these is generally towards the west, since this is the direction of the Three Parks development, which has large retail and community activities to which residents of the site can be expected to walk and cycle. The Mt Iron Reserve, Wānaka Town Centre and Lake Wanaka are also located towards the west of the site.

4.5. Vehicular access is achieved solely via the fifth leg of the State Highway 6 / State Highway 84 / Riverbank Road roundabout, which connects to a small internal roading network. The internal roading has largely already been formed as part of the existing resource consent on the site.

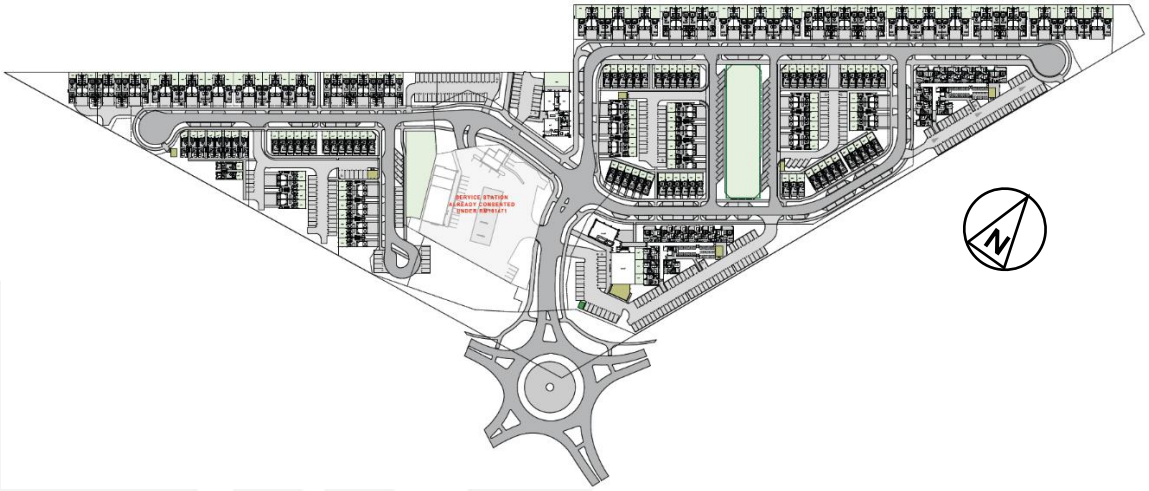


Figure 4: Proposed Site Layout (Extract from Figure & Ground Drawing)

4.6. The internal layout includes for a small roading network. Mountain Road is proposed to be extended to the east and the west, with Junction Road being extended north before turning east. Three new roads are also proposed (Road 1 running south off Mountain Road West, and Roads 2 and 3 running north-south between Mountain Road East and the extended Junction Road). It is proposed that these roads are vested.

4.7. There is also a series of rights-of-way / lanes within the site that provide solely for property access. These are not proposed to be vested.

4.8. It is also proposed to signpost the existing 2.5m footpath on the western side of Junction Road as a shared walking and cycling path.

5. Traffic Generation and Distribution

5.1. The traffic generation and distribution are discussed in detail in a separate report[2]. In summary however, the development of the site overall is expected to be as follows:

Activity	Morning Peak Hour			Evening Peak Hour		
	In	Out	Total	In	Out	Total
Residential	45 new	180 new	225 new	146 new	79 new	225 new
Childcare centre	15 internal 13 passby 13 new	15 internal 13 passby 13 new	30 internal 26 passby 26 new	11 internal 10 passby 10 new	11 internal 10 passby 10 new	22 internal 20 passby 20 new
Retail	2 internal 1 passby 1 new	2 internal 1 passby 1 new	4 internal 2 passby 2 new	10 internal 5 passby 5 new	10 internal 5 passby 5 new	20 internal 10 passby 10 new
Total	17 internal 14 passby 59 new **Total: 90**	17 internal 14 passby 194 new **Total: 225**	34 internal 28 passby 253 new **Total: 316**	21 internal 15 passby 161 new **Total: 197**	21 internal 15 passby 94 new **Total: 130**	42 internal 30 passby 255 new **Total: 327**

Table 1: Weekday Peak Hour Traffic Generation of the Proposed Development

5.2. The majority of these vehicles will pass through the Junction Road / Mountain Road intersection, including the many of the internal trips being made to the childcare centre and retail units. That said, it can also be expected that many of those trips are made on foot or by cycle rather than by car due to the short distances involved, and this is has not been allowed for in the calculations (due to inherent uncertainties as to how many trips will be made by non-car modes).

[2] Assessment of Effect on External Transportation Networks

6. Effects on the Transportation Networks

6.1. Roading Network Capacity

6.1.1. A previous iteration of the Austroads Guide to Traffic Management Part 3 ('*Traffic Studies and Analysis*') set out thresholds regarding the need for detailed traffic analyses at intersections, and the traffic flows at which detailed analyses of unsignalised intersections are unnecessary. An extract from this is replicated below.

Major Road Type	Traffic Volumes (Vehicles Per Hour)	
	Major Road	Minor Road
Two lane road	400	250
	500	200
	600	100

Table 2: Extract from Table 6.1 of Austroads Guide to Traffic Management Part 3 (Intersection Volumes below which Capacity Analysis is Unnecessary)

6.1.2. This particular provision of the Austroads Guide was removed from subsequent revisions to the publication, but it remains the case that where opposing traffic flows are low, drivers are typically unaffected by the presence of other vehicles (because they are very unlikely to encounter other vehicles). As such, their ability to manoeuvre within the traffic stream is generally unrestricted.

6.1.3. The proposal will generate in the order of 320 vehicles (two-way) in the peak hours, equivalent to just 5 or 6 vehicle movements every minute. This is well within the capacity of a priority intersection, and well below the thresholds above, and so no formal analysis has been carried out at the Junction Road / Mountain Road intersection. Rather, it can be expected that the intersection operates under 'free-flow' conditions, where the ability of a driver to manoeuvre is not influenced by the presence of other vehicles.

6.1.4. The site is relatively flat and therefore the internal roads are not have steep gradients. While the detail of the road designs is set out subsequently in this report, a key aspect of the layout is that on-street parking is provided via indented parking bays, with the site providing a network of off-street car parks for residents and visitors. This enables the roads to be marked with No Stopping At Any Time (**NSAAT**) markings (broken yellow lines) and thereby avoids any adverse efficiency issues associated with car parking within the movement lanes.

6.1.5. External effects on the transportation networks are addressed in a separate report[3].

6.2. Non-Car Modes of Travel

6.2.1. 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.

6.2.2. With regard to pedestrian movements, the proposed roads have paths on both sides on the busier roads. The proposed footpaths connect to the existing footpaths already constructed on Junction Road and Mountain Road, and consequently they provide a continuous walking network throughout the site, as well as connecting to Mount Iron Track to the northwest. As

[3] Assessment of Effect on External Transportation Networks

set out in a separate report[4] the connection to the Mount Iron Track enables both pedestrians and cyclists to travel between the site and the Three Parks commercial area using dedicated routes, and needing to undertake only one at-grade crossing of a road (Sir Tim Wallis Drive, which is a district road and subject to a 40km/h speed limit).

6.2.3. In a number of places, formal road crossing locations have been shown. These are provided in two ways, one being a kerb cut-down so that pedestrians descend to the level of the carriageway in order to cross the road, and the other by way of flat-topped road humps, where the pedestrian remains at the same level and motorised vehicles travel up and over the hump.

6.2.4. The latter has two benefits. Firstly, research shows that 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 this provides a better level of service to pedestrians. Secondly, because a vehicle must slow significantly to cross a hump, it results in lower operating speeds on the road. This 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.

6.2.5. The traffic volumes and speeds within the site are such that pedestrians are provided with a very good level of service when crossing the road. The roading plans also show tactile paving is to be provided to assist the visually impaired.

6.2.6. While cyclists are able to share the road with motorised traffic, the site also provides a comprehensive network of off-road routes for cyclists, which are formalised as shared walking and cycling routes. As set out above, there is already a small network of shared paths around the State Highway 6 / State Highway 84 / Riverbank Road roundabout. The existing footpath on the western side of Junction Road will be converted to a shared route, and this will then connect into the route to the Mount Iron Track, and to a new route towards the east which provides cycling connectivity towards State Highway 6. The latter has been located on the southern side of the road in order to eliminate the need for crossing driveways where vehicle may be reversing.

6.2.7. The connected cycling routes within the site means that a cyclist will be able to move between the roundabout and the Mount Iron Track and travel east-west using the Mount Iron Track and the east of the site, without needing to share the road with traffic or encounter vehicles reversing across the shared path.

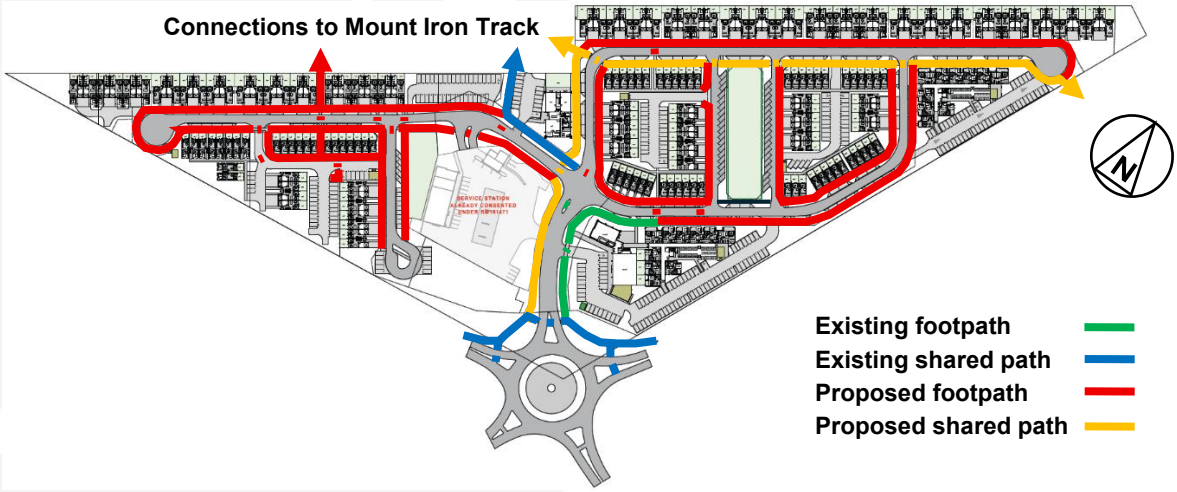


Figure 5: Proposed Non-Car Routes within the Site (Extract from Figure & Ground Drawing, Annotated)

[4] Assessment of Effect on External Transportation Networks

6.2.8. There are presently no scheduled bus services that operate in Wānaka, and the small size of the development will not give rise to the need for a scheduled service in Wānaka (noting that the township already has over 7,000 dwellings and no scheduled service has yet been implemented).

6.2.9. In the event that a service was to be operated in future, it is likely that this will connect the main destinations in the area such as Hāwea, Albert Town, Three Parks and Wānaka. That being the case, the service is likely to run directly past the site on State Highway 6 and 84. The size of development (250 houses) is unlikely to justify a service that enters the site, and if it did, this would result in 'dead running' where the service doubles back on itself without the ability to pick up any new passengers, since the roading network is a cul-de-sac.

6.2.10. However, if such a service was to operate on the highway, it would be possible for bus stops to be constructed on either State Highway 6 or 84, and in this case the proposed layout already provides high quality walking and cycling links to the bus stop(s) by way of the existing road crossing opportunities and shared routes. In essence, the provision made would enable both pedestrians and cyclists to travel between their residential units and the future bus stops on off-road routes and with specific road crossing facilities provided. This will therefore make it as easy as possible for residents to use the bus.

6.3. Road Safety

6.3.1. As set out above, Junction Road and Mountain Road are not presently open to traffic and so there is no crash history available. However both roads were constructed less than two years ago, and therefore will meet current guides and standards (and if not, any deviations will have been specifically considered and assessed). The expected traffic volume will be low 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.

6.4. Parking Provision

6.4.1. The site provides parking in a variety of different ways:

- Parking within garages of the proposed units;
- Parking on aprons outside the garages of the proposed units;
- Parking provided in communal areas reserved for residents only;
- Parking provided in communal areas available for general use; and
- Kerbside parking for general use.

6.4.2. The breakdown of units and car parking spaces is set out below:

- Units with one car parking each, within a communal car park:
  - 1-bed units: 20 no;
  - 2-bed units: 134 no;
- Units with two car parking spaces (one garage and one on apron):
  - 2-bed units: 26 no;
  - 3-bed units: 70 no;
- Unallocated spaces in car parks and kerbside:
  - 186 spaces

6.4.3. As part of the commission, a specific query was raised with Statistics New Zealand who subsequently provided a breakdown of the number of vehicles a household had access to related to the number of bedrooms in the house as collected in the 2023 census. This showed the following for the Wānaka urban area:

No of Beds	No of Vehicles per Household						
	0	1	2	3	4	5	Average
1	10.47%	51.16%	30.23%	5.81%	2.33%	0.00%	1.38 veh
2	3.49%	44.10%	40.17%	8.73%	2.62%	0.87%	1.66 veh
3	1.41%	26.85%	49.10%	16.62%	4.73%	1.41%	2.01 veh

Table 3: Car Parking Demand Based on Number of Bedrooms (Source: Statistics New Zealand)

6.4.4. Applying these percentages to the units within the development:

No of Beds	No of veh in household	%age of units with that number of veh	No of units with 'X' vehicles	Total number of vehicles	Number of unallocated vehicles
20 1-bed units, one allocated space per unit	0	10.5%	2.1	-	-
	1	51.2%	10.2	10.2	0.0
	2	30.2%	6.0	12.1	6.0
	3	5.8%	1.2	3.5	2.3
	4	2.3%	0.5	1.8	1.4
	5	0.0%	0.0	0.0	-
		Subtotal	***20***	***27.6***	***9.7***
134 2-bed units, one allocated space per unit	0	3.5%	4.6	-	-
	1	44.1%	59.1	59.1	-
	2	40.2%	53.9	107.7	53.9
	3	8.7%	11.7	35.0	23.3
	4	2.6%	3.5	13.9	10.5
	5	0.9%	1.2	6.0	4.8
		Subtotal	***134***	***221.7***	***92.5***
26 2-bed units, two allocated spaces per unit	0	3.5%	0.8	-	-
	1	44.1%	11.5	11.5	-
	2	40.2%	10.5	20.9	-
	3	8.7%	2.3	6.8	2.2
	4	2.6%	0.7	2.7	1.4
	5	0.9%	0.2	1.2	0.7
		Subtotal	***26***	***43.1***	***4.3***
70 3-bed units, two allocated spaces per unit	0	1.4%	0.9	-	-
	1	26.9%	18.8	18.8	-
	2	49.1%	34.4	68.7	-
	3	16.6%	11.6	34.9	11.6

	4	4.7%	3.3	13.2	6.6
	5	1.4%	1.0	4.9	2.9
		Subtotal	***70***	***140.5***	***21.1***
Total	**-**	**-**	**2506**	**432.9**	**127.6**

Table 4: Car Parking Demand[5]

6.4.5. Overall, it can be seen that the expected car ownership in the development is greater than the number of parking spaces that are dedicated to each specific unit. While each unit has at least one dedicated space, in many cases, car ownership of the unit will be greater than this. This is addressed within the layout by providing parking spaces located throughout the development which are available for general usage. This approach means that the extent of reserved parking for each unit (and consequently, parking that is not available to other people if it is unused) is kept low, while the site as a whole will meet the expected parking demand. In other words, residents who choose to own multiple vehicles can park at least one within their site, but the remainder will need to be parked in common areas.

6.4.6. Anticipating that 128 of the 186 generally-available spaces are utilised by residents' vehicles (as calculated in Table 4), a total of 58 spaces remain unallocated within the site. These are anticipated to be used by visitors to the site, and equate to a ratio of 0.23 spaces per unit (approximately 1 visitor parking space per 4 units). For clarity, this does not include for visitors who park on unused aprons outside the garages of the person they are visiting.

6.4.7. The most recent information available regarding this matter is set out in NSW 'Guide to Transport Impact Assessment' which sets out that a ratio of 1 space per 5 units should be adopted for visitor parking, other than for one-bedroom units where a rate of 1 space per 7 units is appropriate. Applying these ratios to the proposed development, the proposal provides 58 spaces for visitors, whereas demand is expected to be in the order of 49 spaces.

6.4.8. In practice, some drivers will park poorly which could result in a proportion of spaces being inaccessible and drivers will typically wish to park fairly close to their unit (or the unit they are visiting). The slight overprovision is the equivalent of approximately 5% of spaces in the overall amount of common parking provided.

6.4.9. On this basis then, it is considered that based on the development having vehicle ownership patterns that are the same as the remainder of Wānaka, the site will be self-sufficient for car parking. The approach of minimising the extent of exclusive parking reserved for specific units means that the efficiency of the on-site parking resource is maximised. The site does not however make a substantial over-provision of car parking, and it can therefore be expected that a high proportion of residents will use their garage for parking their vehicle rather than for storage, hobbies or other (non-vehicular) purpose.

6.4.10. Additional parking spaces are shown for the proposed shop, childcare centre and café on the site.

6.4.11. The childcare centre will be licensed for 65 children, and on the basis of standard parking rates from NZTA Research Report 453, 13 car parking spaces will be required. Car Park 3 is provided for the childcare centre and this has 15 spaces.

6.4.12. As noted above, the primary purpose of the shop and café is to support the residents of the site and so it is not expected that they will be major attractors of external trips. If the bulk of

[5] For completeness, there are minor rounding errors in the table

customers/patrons are drawn from the site, then it also follows that a high proportion will also be able to walk or cycle between their homes and the non-residential activities.

6.4.13. The parking generation of the café is difficult to forecast as it is highly variable, meaning that there are no standard rates that can be easily applied. The most recent source of information, the NSW 'Guide to Transport Impact Assessment' indicates that a rate of 15 spaces per 100sqm should be applied, which indicates a parking demand for 23 spaces. However this rate is higher than others and it is also based on GFA rather than PFA (public floor area), even though most parking arises from customers who do not have access to the whole building. For example, although the parking ratios have been removed from District Plans (as required under the National Policy Statement on Urban Development), applying these rates suggests that only around 12-15 spaces would have been required.

6.4.14. Applying a typical parking rate of 4 spaces per 100sqm GFA to the retail activity means that 11 spaces will be required.

6.4.15. Overall then, if the retail and café both generated peak parking demand at the same time, there would be a demand for 23-26 spaces and the layout shows the provision of 23 spaces. However peak parking demands will only arise at the same time for short periods and this will be limited to weekends (for example, although the café may be busy at weekday mornings, this is not a time when the retail will be busy).

6.4.16. When the differing patterns of parking are taken into account, coupled with the site drawing from internal users who have the ability to walk and cycle, plus the ability to use on-street parking in the area, it is considered that the provision of 23 spaces will meet the practical parking demand for the retail and café elements of the proposal.

6.5. Refuse Collection

6.5.1. The matter of refuse collection has been considered in the layout, and it is proposed that collection will be carried out in two ways:

- Kerbside collection using Council refuse/recycling collection services; and
- Collection from communal refuse/recycling areas using a private service provider.

6.5.2. The layout plans show that Lots 1 to 62 (along the northwestern boundary of the site) have storage for three wheelie bins, which will be moved to the kerbside for collection (as occurs at the majority of residential properties in the district). This will involve the Council vehicle travelling along Junction Road and Mountain Road West, but both of these roads have 20m turning heads at the end such that the collection vehicle can turn without the need for reversing. Sufficient kerb length has been provided for the wheelie bins to be placed between the driveways serving these lots.

6.5.3. At the other residential units, refuse and recycling collection will be from designated communal areas, with residents placing their refuse/recycling into large bins stored within these areas. There are six areas for this:

- East of the turning head at Mountain Road West;
- The eastern end of Lane 4;
- North west of Car Park 5;
- South of Car Park 6;
- Within Car Park 7; and
- Within Car Park 8.

6.5.4. The roads and roadways serving these locations have been designed to accommodate a larger vehicle, and to ensure that refuse trucks are not required to unbdertake any reverse movements within the adjacent vested roads. In practice, reversing is only required in one location, being the northeast of Car Park 5, where a truck will need to undertake a three-point-turn within the car park. Car Park 7 does not have a turning area and it is expected that a refuse truck will enter through Car Park 4, and then pass through the gate into Car Park 7 for collection.

6.5.5. A truck that has stopped to collect refuse will temporarily obstruct a small number of spaces:

- Spaces 380-384 in Lane 4 (5 spaces);
- Spaces 550-574 in Car Park 6 (25 spaces);
- Spaces 1-4 in Car Park 7 (4 spaces); and
- Spaces 24-27 in Car Park 8 (four spaces).

6.5.6. Refuse collection is infrequent, takes only a few minutes, and it is unlikely that a driver will wish to move their vehicle at the time that it is occurring. As such, it is very unlikely that the proposed arrangement will lead to adverse outcomes or be highly inconvenient. The greater potential for a delay arises in Car Park 6, where 25 spaces would be obstructed. This is due to the bins being located at the only exit from the car park such that a stopped refuse truck obstructs all egress. However these spaces are all reserved for residents, who can be expected to be familiar with the the arrangement.

6.5.7. The retail and café also have a dedicated refuse area, to the southeast of the buildings and adjacent to the loading space where a refuse vehicle will stop. Upon exit, the vehicle will pass through the gate and via Car Park 7 to exit onto Mountain Road East (as discussed further below in respect of loading bays).

6.5.8. It is considered that the proposed layout represents a comprehensive solution for the site.

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

7.1. Introduction

7.1.1. 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.

7.1.2. Queenstown Lakes District Council also has a 'Land Development and Subdivision Code of Practice' which sets out engineering issues and requirements associated with subdivision and development. The transport-related matters in this have also been assessed and outcomes summarised below.

7.2. District Plan Chapter 29: Activities

7.2.1. Rule 29.4.11: High Traffic Generating Activities

7.2.1.1. 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.

7.2.1.2. 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, and volumes within the site are modest.

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;

7.2.1.3. There is an existing resource consent at the site for which an Integrated Transportation Assessment has previously been prepared, but the proposed development is larger than the consented development.

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;

7.2.1.4. 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

7.2.1.5. 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 also by way of connections to adjacent routes including the Three Parks commercial and mixed-use development

7.2.1.6. There is no public transport service within Wānaka at present. However the internal non-car routes within the site facilitate connections to both State Highway 6 and 84, which are likely to form part of any potential future scheduled bus service in the area.

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

7.2.1.7. There are no planned public transport infrastructure measures in the vicinity, and no public transport services in Wānaka. However the site provides for connectivity to potential future bus routes using the adjacent state highways.

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

7.2.1.8. The proposal includes extensive measures for active travel, with footpaths on all internal roads and a shared walking/cycling path running between the State Highway 6 / State Highway 84 / Riverbank Road roundabout, the Mount Iron Track to the northwest and the eastern extremity of the site.

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

7.2.1.9. There are no public transport services in Wānaka. It is unlikely that a service would enter the site but the site provides high quality walking and cycling routes that provide connectivity to potential future bus routes.

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

7.2.1.10. 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. However the site is well connected to the walking and cycling network, with a shared route running through the site and along the southern side of Mt Iron, making it as easy as possible for residents to travel by non-car modes.

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

7.2.1.11. The underlying provisions for car parking are discussed elsewhere in the report, but in short, the parking within the site has been designed to balance parking demand and supply as

[6] Assessment of Effect on External Transportation Networks

much as possible, and to allow for activities to share parking where peak demand does not arise at the same time.

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

7.2.1.12. No agreement has been entered into.

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

7.2.1.13. 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.

7.3. District Plan Chapter 29: Parking and Loading

7.3.1. Rule 29.5.1: Location and Availability of Parking Spaces

7.3.1.1. The layout shows that that the vast majority of spaces will be unobstructed and can be accessed independently at all times. There is a small number of spaces that will temporarily be obstructed when refuse is being collected, but as discussed previously in this report, any obstruction is unlikely (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.

7.3.1.2. 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.

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

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

7.3.1.5. On street parking is provided as follows:

- Mountain Road West, Spaces 1 to 12 (parallel orientation):
  - 6.1m depth, 2.5m width;
- Road 1, Spaces 1-5 (parallel orientation):
  - 5.0m depth, 2.7m width, 6m aisle;
- Road 1, Spaces 6-14 (varying angles):
  - 5.0m depth, 2.6m to 3.0m width, 7.6m aisle;
- Road 1, Spaces 15-25 (90-degrees):
  - 5.0m depth, 2.7m width, 8m aisle;
- Road 2, Spaces 1 to 18 (45-degrees):
  - 5.0m depth, 2.5m width, 4.3m aisle;
- Road 3, Spaces 1 to 18 (45-degrees):
  - 5.0m depth, 2.5m width, 4.3m aisle;
- Junction Road, Spaces 1 to 24 (parallel orientation):
  - 6.1m depth, 2.5m width;
- Mountain Road East, Spaces 1 to 24 (parallel orientation):
  - 6.1m depth, 2.5m width.

7.3.1.6. These dimensions meet, and in some cases exceed, the District Plan requirements for Class 2 users (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).

7.3.1.7. Off-street parking is provided as follows:

- Car Park 2, Spaces 1 to 35 (90-degrees):
  - 5.0m depth, 2.6m width, 7m aisle;
- Car Park 3, Spaces 1 to 15, childcare centre (90-degrees):
  - 5.0m depth, 2.5m width, 8m aisle;
- Car Park 4, Spaces 1 to 16, retail and café (90-degrees):
  - 5.0m depth, 2.5m to 2.7m width, 8m aisle;
- Car Park 4, Spaces 17 to 22, retail and café (90-degrees):
  - 4.4m depth plus 0.6m overhang, 2.7m width, 6.4m aisle (assuming a service vehicle is present, more than 8m aisle otherwise)
- Car Park 7B, Spaces 1 to 18:
  - 5.0m depth, 2.64m width, 6.6m aisle;
- Car Park 8B, Spaces 1 to 7:
  - 5.0m depth, 2.64m width, 6.6m aisle.

7.3.1.8. These dimensions generally meet, and in some cases exceed, the District Plan requirements for Class 2 users and so are also suitable for Class 1 uses. However the dimensions of the spaces in Car Parks 7B and 8B are intermediate values between those of the District Plan and are therefore not addressed within that document.

7.3.1.9. To be able to enter a parking space, drivers need sufficient area in which to manoeuvre and this is provided by a combination of the width of the space and the aisle width. This is an inverse relationship in that as aisle width decreases, the width of the space must increase to compensate. Interpolation of the values in the District Plan for the width of the space and the aisle can therefore be carried out to ensure that the appropriate manoeuvring area is available. This calculation is shown below:

- For a space width of 2.6m, an aisle of 7.0m width is required (as per the District Plan)
- For a space width of 2.7m, an aisle of 6.0m width is required (as per the District Plan)
- Therefore for every 0.01m reduction in the width of the space, the aisle must increase by 0.1m
- Therefore where the space is 2.64m wide, the appropriate width for the aisle is 6.6m

7.3.1.10. As such, the combination of space width and aisle width at Car Parks 7B and 8B provides sufficient manoeuvring area for Class 2 users (and thus for Class 1 users also).

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

7.3.1.12. Overall then, there is a non-compliance with the dimensions at Car Parks 7B and 8B, but this can be supported. The remaining spaces meet the District Plan provisions.

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

7.3.2.1. 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.

7.3.3. Rule 29.5.4: Mobility Parking Spaces

7.3.3.1. 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 childcare centre, retail and café.

7.3.3.2. 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*').

7.3.3.3. The childcare centre provides 15 spaces (Car Park 3) and thus under the Standard, one mobility space is required and one is provided. In passing, the District Plan requires two such spaces but such a level of provision is in excess of the overarching Standard. The space is 3.6m wide, 5.0m long and has an aisle of more than 8m, meeting the District Plan and also the Standard.

7.3.3.4. Car Park 4 (provided for the retail and café) has 23 spaces and thus under the Standard, one mobility space is required and one is provided. Again, this is lower than the anticipated number of the District Plan, where two mobility spaces are required. The space is 3.5m wide, 5.0m long and has an aisle of more than 8m, meeting the Standard.

7.3.3.5. Notwithstanding that the number of mobility spaces does not meet the District Plan provisions, it is considered that the provision made is appropriate because the provision aligns with the overarching Standard and thus achieves the outcomes of the Buildings Act.

7.3.3.6. Despite residential activity not requiring mobility spaces, several spaces have been provided within the site:

- Car Park 2 provides 1 mobility space of 5m depth and 3.6m width. The aisle width varies but due to the location of the space at the end of the row, it is accessible.
- One un-numbered mobility space is shown in Car Park 5. These is 5.0m deep, more than 3.6m wide and has a varying aisle width. As the space is at the end of the row and proximate to a formal turning area, it is accessible.
- Two un-numbered mobility spaces are shown in Car Park 6. These are 5.0m deep, more than 3.6m wide and have an aisle of 6.6m, meeting the Standard.
- Two un-numbered mobility spaces are shown in Car Park 8A. These are 5.0m deep, more than 3.6m wide and have an aisle of 6.6m, meeting the Standard.

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

7.3.4.1. Under this Rule, additional drop-off / pick-up spaces are required for day care, educational and health care facilities, in addition to car parking.

7.3.4.2. There is no requirement to provide for parking spaces at the childcare facility and thus the spaces shown could notionally all be allocated to drop-off/pick-up spaces. With 65 children present, 13 spaces are required and the layout shows 15 spaces are proposed.

7.3.5. Rule 29.5.6: Reverse Manoeuvring

7.3.5.1. It is expected that the vested roads will be Local Roads and so reversing onto them is not permitted where ten or more parking spaces are served by a single accessway, or five or more residential units share a single accessway, or the activity is on a rear site.

7.3.5.2. In this case, reversing onto the vested roads will occur from each of the proposed residential units, but this is a permitted outcome. The larger car parking areas that are accessible to the public either have turning areas proposed to allow drivers to turn and exit the site in a forwards direction, or where reverse movements are expected, the roadway is not proposed to be vested.

7.3.5.3. More specifically, for the off-street car parks:

- Car Park 1 (Spaces 355-367):
  - The spaces are served by a private roadway, and a turning area is provided at the southwestern corner;
- Car Park 2 (Spaces 1 to 35):
  - One-way entry/exit, so drivers do not need to turn around if a space is unavailable;
- Car Park 3 (Spaces 1 to 15):
  - Provided for the childcare, and a specific area is located in the northeast of the car park to allow for vehicles to turn;
- Car Park 4 (Spaces 1 to 22):
  - Provided for the retail and café, and a specific area is located in the southeast of the car park to allow for vehicles to turn;
- Car Park 5 (Spaces 450 to 474):
  - The spaces are served by a private roadway, and a turning area is provided at the southwestern corner;
- Car Park 6 (Spaces 550 to 574):
  - One-way entry/exit, so drivers do not need to turn around if a space is unavailable;
- Car Park 7A (Spaces 1 to 36):
  - The spaces are served by a private roadway, and a turning area is provided at the northwestern corner;
- Car Park 7B (Spaces 1 to 18):
  - The spaces are served by a private roadway, and a turning area is provided at the northwestern corner of Car Park 7A;
- Car Park 8A (Spaces 1 to 36):
  - One-way entry/exit, so drivers do not need to turn around if a space is unavailable;
- Car Park 8B (Spaces 1 to 7):
  - One-way entry/exit, so drivers do not need to turn around if a space is unavailable;
- RoW 5 (Spaces 350-354):
  - The spaces are served by a private roadway, and a turning area is provided at the southwestern corner;
- Lane 4 (Spaces 380-384):
  - The spaces are served by a private roadway and two-way movement is permitted, so drivers do not need to turn around if a space is unavailable.

7.3.5.4. The on-street parking spaces are provided in a way whereby reversing from them is an expected part of the design, with reversing from 25 spaces onto Road 1 and reversing from 18 spaces expected on both Roads 2 and 3. However Road 1 is a cul-de-sac, where the vast majority of vehicles using the road will be seeking a parking space. Encountering other vehicles reversing from parking spaces will therefore not be an unexpected outcome for a driver. As Road 1 is a cul-de-sac, this also means that vehicle speeds will be low and will therefore mean that approaching drivers have additional time to see and react to a vehicle that is reversing ahead of them.

7.3.5.5. Although Roads 2 and 3 are not cul-de-sacs and provide for through traffic, their location means that in practice the majority of drivers will be using the roads for parking rather than as part of a longer journey. The limited aisle width of 4.3m (including invert) means that traffic speeds will be low, and as parking is provided almost continuously along one side of the

road, encountering other vehicles reversing from parking spaces will not be an unexpected outcome for a driver.

7.3.6. Rule 29.5.7: Residential Parking Space Design

7.3.6.1. 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.

7.3.6.2. In some cases, additional parking spaces are shown on the 'apron' between the garage door and the legal road boundary. These spaces are all 5.5m in length, which enables a vehicle to be parked with a suitable gap between the garage door and without protruding into the legal road.

7.3.6.3. The dimensions of the residential parking spaces that are located in communal areas are set out below.

- RoW 5 (Spaces 350-354):
  - 5.0m depth, 2.6m width, 6.35m aisle;
- Lane 4 (Spaces 380-384):
  - 5.0m depth, 2.7m width, 6.7m aisle;
- Car Park 1 (Spaces 355-367):
  - 5.0m depth, 2.5m width, 7m aisle;
- Car Park 5 (Spaces 450 to 474):
  - 5.0m depth, 2.55m width, 6.4m aisle;
- Car Park 6 (Spaces 550 to 564)
  - 5.0m depth, 2.55m width, 6.4m aisle;
- Car Park 7A (Spaces 1 to 36):
  - 5.0m depth, 2.5m width, 6.6m aisle;
- Car Park 8A (Spaces 1 to 36):
  - 5.0m depth, 2.6m width, 6.6m aisle.

7.3.6.4. These dimensions generally meet, and in some cases exceed, the District Plan requirements for Class 1 users. However the dimensions of the spaces in Car Parks 5 and 6 are intermediate values between those of the District Plan and are therefore not addressed in that document.

7.3.6.5. As set out above though, taking into account the relationship between the width of the space and the aisle width, the dimensions fall mid-way between two standard dimensions:

- For a space width of 2.5m, an aisle of 6.2m width is required (as per the District Plan)
- For a space width of 2.6m, an aisle of 6.6m width is required (as per the District Plan)
- Therefore for every 0.01m reduction in the width of the space, the aisle must increase by 0.04m
- Therefore where the space is 2.55m wide, the appropriate width for the aisle is 6.4m.

7.3.6.6. As such, the combination of space width and aisle width at Car Parks 5 and 6 provides sufficient manoeuvring area for Class 1 users.

7.3.7. Rule 29.5.8: Queuing

7.3.7.1. 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).

7.3.7.2. Each of the vehicle crossings has been assessed and the results are set out below. However at the outset it is noted that queuing space only applies where more than two parking spaces are provided on a site, and as such, it is not required for the residential lots (as they provide a maximum of two on-site spaces).

- Car Park 1 (25 spaces), RoW 5 (5 spaces) and Lane 4 (5 spaces):
  - 44 spaces require a queuing space of 12m;
  - A queuing space of 6m is provided;
- Car Park 2 (35 spaces):
  - 44 spaces require a queuing space of 12m;
  - A queuing space of 12 is provided;
- Car Park 3 (15 spaces):
  - 44 spaces require a queuing space of 6m;
  - A queuing space of 6m is provided;
- Car Park 4 (23 spaces):
  - 44 spaces require a queuing space of 12m;
  - A queuing space of 9m is provided;
  - However there is a separation of a more than 3m between the road boundary and the footpath, such that if vehicle were waiting to enter the car park, no passing traffic or other road users would be obstructed;
- Car Park 5 (24 spaces):
  - 24 spaces require a queuing space of 12m;
  - A queuing space of 30m is provided;
- Car Park 6 (23 spaces):
  - 23 spaces require a queuing space of 12m;
  - A queuing space of 15m is provided;
- Car Park 7 (54 spaces):
  - 44 spaces require a queuing space of 18m;
  - A queuing space of 15m is provided, plus a further 1m is provided between the road boundary and the footpath;
- Car Park 8 (44 spaces):
  - 44 spaces require a queuing space of 12m;
  - A queuing space of 11m is provided, indicating a 1m shortfall;
  - However there is a separation of a more than 1m between the road boundary and the footpath, such that if vehicle were waiting to enter the car park, no passing traffic or other road users would be obstructed.

7.3.7.3. It can be seen that the appropriate queuing space is provided in Car Parks 2, 3, 5 and 6. In Car Parks 4 and 8 there is a slight shortfall in queuing space but this is minor and will not result in any road users being obstructed.

7.3.7.4. In Car Parks 1 and 7, the queuing space shortfall is larger and therefore these locations have been considered in more detail.

7.3.7.5. At Car Park 1, 12m of queuing space is required for the number of parking spaces but only 6m, is provided. However all of these spaces are for the use of residents, and as such traffic flows will be tidal with cars departing in the morning and arriving in the evening. Thus when the peak volumes of traffic are entering the car park (the weekday evening) and could

potentially be obstructed, in practice it is unlikely that vehicles will be exiting any of the parking spaces that would give rise to such obstruction.

7.3.7.6. A similar scenario arises at Car Park 7, where the 44 car parking spaces have a 15m queuing space. Of the parking spaces, 36 are allocated to residents' vehicles which, as set out above, will have tidal movements to and from the car park and thus a reduced potential to meet another vehicle that is manoeuvring.

7.3.7.7. On this basis, the queuing space non-compliances can be supported.

7.3.7.8. Queuing space is not a relevant consideration for parking around intersections, where the ability to park is controlled through legislation.

7.3.8. Rule 29.5.9: Loading Spaces

7.3.8.1. 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 not triggered. However the proposal includes a café and retail, and so the matter has been considered.

7.3.8.2. A loading space is shown within Car Park 4 (which serves the retail and café) and this is 10m long and 3m wide. A service vehicle will enter via the main car park access onto Junction Road, and then drive forwards into the loading bay. Upon completing the loading, the vehicle will then drive forwards into Car Park 7, drive through the car park and then exit onto Mountain Road East. The gate will be locked at all times other than when opened to allow a service vehicle to pass, so that it does not become a de facto point of access to Car Park 7

7.3.8.3. This arrangement ensures that delivery vehicles will only enter and exit the vested roads in a forwards direction.

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

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

7.3.10. Rule 29.5.11: Lighting of Parking Areas

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

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

7.3.11.1. Cycle parking facilities are not required at residential activity.

7.3.11.2. For the childcare centre, the District Plan requires 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 (especially noting that the childcare centre is immediately adjacent to the shared walking/cycling route and cycling can therefore be expected.

7.3.11.3. An area for cycle parking is shown adjacent to the main building entry. This is 2.7m wide and 2.0m deep and therefore ample for four cycle parking spaces.

7.3.11.4. The café requires two cycle parking spaces for customers, with the retail requiring no cycle parking. An area for cycle parking is shown to the immediate north of Car Park 4, which is

3.7m wide and 2.0m deep and therefore easily able to accommodate two cycle parking spaces.

7.4. District Plan Chapter 29: Access

7.4.1. Rule 29.5.13: Access and Road Design

7.4.1.1. 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.

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

7.4.2.1. Although the zone is rural, the activity itself is commensurate with an urban environment and so the vehicle crossings have been assessed as urban.

7.4.2.2. Residential vehicle crossings are required to be no more than 6m wide with commercial crossings being no more than 9m wide. Many of the lots have a shared driveway with the units adjacent, and this then leads to vehicle crossings that are in the order of 7.0m to 7.5m in width and thus wider than permitted. However the arrangement provides an overall benefit for any passing road users in that it reduces the number of potential conflict points, and it also reduces exposure to traffic turning to and from the units, since each lot could have, say, a complying 4m vehicle crossing (so two lots would have a total of 8m crossing width compared to the proposed 7.0m to 7.5m).

7.4.2.3. Overall though, the residential vehicle crossings will be lightly trafficked (as a residential unit will only generate 8 vehicle movements per day) and so there is only a low potential that a pedestrian would encounter a vehicle.

7.4.2.4. The lengths of the commercial vehicle crossings fall below the maximum 9m, with the exception of the exit from the service station. This is 12m wide and the width is needed to allow for the movement of long vehicles. The width was approved through the existing resource consent on the site, RM181471.

7.4.2.5. 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, but this is due to those vehicle crossings needing to accommodate larger vehicles (such as the vehicle crossing at Car Park 7, which is required to allow for services vehicles associated with the retail and café). These vehicle crossings can be refined and finalised through Engineering Approvals).

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

7.4.3.1. As noted above, the vehicle crossings have been assessed as urban.

7.4.4. Rule 29.5.16: Maximum Gradient for Vehicle Access

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

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

7.4.5.1. The National Speed Limit Register sets out that the current extent of Junction Road and Mountain Road have a speed limit of 40km/h. However the speed limit values set out within

this Rule only extend to 50km/h. Extrapolating the values of the Rule shows that a sight distance of 30m is appropriate for residential activities, and 57m for non-residential activities.

7.4.5.2. These distances are generally achieved and in many cases, vehicles will not be travelling at 40km/h due to the road geometry. For example, there is a curve in RoW 5 which will limit operating speeds to 20-25km/h, and at lower speeds, reduced sight distances can be supported. A small number of locations have been identified where the expected 30m and 57m are not achieved:

- RoW 5:
  - The sightline to the east is limited to 18m. However the curve in the RoW will limit seeds to 25km/h and thus a sightline of 12m is appropriate for the prevailing speed environment.
- Lot 58:
  - Due to the turning head, the lot is within 2m of the edge of the carriageway, which means that the sightline to the west is limited to 13m by Lot 57. However in this location speeds will be very low due to the lot being at the end of the cul-de-sac. The sight distance is appropriate for a vehicle speed of 26km/h, and is therefore considered to be ample in practice.
- Lots 416 and 417:
  - These lots lie within 3.5m of the edge of the carriageway and hence the sightline to the south for Lot 416 passes across Lot 417 and the sightline to the north for Lot 417 passes across Lot 416. This can be addressed by prohibiting any permanent obstruction from being located within the first 0.5m of each lot of more than 1m in height.
- Lots 430 to 436:
  - These lots lie within 3.5m of the edge of the carriageway and hence the sightline to the north and south at one lot pass across the adjacent lots. This can be addressed by prohibiting any permanent obstruction from being located within the first 1.75m of each lot of more than 1m in height.
- Exit from Car Park 4:
  - The sight distance to the north is limited to 46m but this is because of the Junction Road / Mountain Road intersection. However vehicle will have had to slow to pass through the intersection, and this will mean the operating speed of the road is lower. The sight distance is appropriate for a vehicle speed of 35km/h, and is therefore considered to be ample in practice.
- Exit from Car Park 8:
  - The sight distance in each direction is limited to around 20m but this is because the vehicle crossing is at the end of a cul-de-sac, and in this location speeds will be low. The sight distance is appropriate for a vehicle speed of 20km/h, and is therefore considered to be ample in practice.

7.4.5.3. Consequently the sightlines provided at the vehicle crossings are appropriate, although it is recommended that restrictions are place on Lots 416, 417 and 430 to 436 to prevent any permanent obstruction from being located within the visibility splays.

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

7.4.6.1. None of the proposed lots have frontage onto the state highway.

7.4.7. Rule 29.5.19: Maximum Number of Vehicle Crossings

7.4.7.1. Only one vehicle crossing per lot is proposed.

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

7.4.8.1. None of the proposed lots have vehicle access onto the state highway.

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

7.4.9.1. As the roads are Local Roads and subject to a speed limit of 40km/h, any vehicle crossing should be at least 25m from any intersection. As set out above, the extensions of Junction Road and Mountain Road, plus Roads 1, 2 and 3 are proposed to be vested and will therefore form 'intersections'. The following lots have vehicle crossings that are within 25m of intersections:

- Mountain Road West / Road 1:
  - Lot 21: 16m separation;
  - Lot 22: 12m separation;
  - Lot 23: 0m separation;
  - Lot 24: 0m separation;
  - Entry to Car Park 2: 9m separation;
- Junction Road / Mountain Road (southwest):
  - Lot 417m: 19m separation;
- Mountain Road East / Road 2 (south):
  - Entry to Car Park 7: 2m separation;
- Mountain Road East / Road 2 (north):
  - Lot 31: 22m separation;
  - Lot 32: 18m separation;
  - Lot 33: 6m separation;
  - Lot 34: 2m separation;
  - Lot 35: 9m separation;
  - Lot 36: 13m separation;
- Mountain Road East / Road 3 (south):
  - No non-complying lots;
- Mountain Road East / Road 3 (north):
  - Lot 35: 24m separation;
  - Lot 36: 20m separation;
  - Lot 37: 8m separation;
  - Lot 38: 4m separation;
  - Lot 39: 4m separation;
  - Lot 40: 8m separation;
  - Lot 41: 23m separation;
- Junction Road / Mountain Road (northeast):
  - Lot 45: 18m separation;
  - Lot 46: 14m separation;
  - Lot 47: 0m separation;
  - Lot 48: 0m separation;
  - Lot 49: 12m separation;
  - Lot 50: 16m separation.

7.4.9.2. 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."*

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

- The vast majority of road users will be residents of Mt Iron Junction 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 each case, 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 design of the roads (or the expected posted speed limit) means that they have operating speeds of 40km/h. 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)).

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

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

7.4.10.1. Any vehicle crossing is required to be more than 30m from an intersection onto a state highway. The vehicle crossing serving the café and retail activities is located more than 30m from the State Highway 6 / State Highway 84 / Riverbank Road roundabout.

7.4.11. Rule 29.5.24: Service Stations

7.4.11.1. The proposed activity is not a service station (the service station is already consented and is not part of this application).

7.5. Compliance with Land Development and Subdivision Code of Practice

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

7.5.2. Paragraph 3.2.5: Network Connectivity

7.5.2.1. The proposed layout creates good and direct linkages to the external area. The nature of the site precludes roading connections other than towards the southeast, but the layout makes provision for non-car connectivity towards the northeast and northwest, to support and facilitate walking/cycling routes. Within the site connected and continuous routes are

provided for residents to move to and through the site without the need for travel by a motorised vehicle.

7.5.2.2. The roading hierarchy has not yet been determined, but the maximum walking distance from any lot to a Collector Road (or above), being the state highway network, is 375m (from Lot 1 in the northwestern corner). This is well within the expected 400m distance for a suburban area, and is a 'worst case' scenario as the bulk of the proposed lots are within a 250m walking distance.

7.5.3. Paragraph 3.3.1: Design Requirements

7.5.3.1. As the proposal specifies the locations of lots, it is possible to determine the types of road that are considered to be appropriate for the expected traffic flows. In some cases, the lots do not provide car parking and so in those cases, the number of parking spaces served has been used as the proxy for the units served. However as the Code of Practice sets out lower and upper bounds for the types of road, it is not necessary to be precise as to the number of lots or spaces that are served, merely to show that the number falls between the relevant thresholds:

- RoW 1:
  - 6 lots, therefore Road Type E9 is appropriate (1 to 6 lots);
  - Road Type E9 is provided;
- Mountain Road West:
  - 66 units, therefore Road Type E12 is appropriate (21 to 200 units);
  - Road Type E12 is provided;
- RoW 5:
  - 5 lots, therefore Road Type E9 is appropriate (1 to 6 lots);
  - Road Type E9 is provided;
- Lane 4:
  - 35 spaces, therefore Road Type E12 is appropriate (21 to 200 units);
  - Road Type E12 is provided;
- Road 1:
  - 60 spaces, therefore Road Type E12 is appropriate (21 to 200 units);
  - Road Type E12 is provided;
- Road 2:
  - 18 spaces but also provides a though route and connects to Car Park 5 (25 spaces), therefore Road Type E12 is appropriate (21 to 200 units);
  - The road provides for one-way traffic flow which is not contemplated in the Code of Practice;
- Road 3:
  - 18 spaces but also provides a though route, therefore Road Type E12 is appropriate (21 to 200 units);
  - The road provides for one-way traffic flow which is not contemplated in the Code of Practice;
- Junction Road Extension:
  - 56 units and also provides access to Car Parks 6 (21 spaces) and 8 (43 spaces), therefore Road Type E12 is appropriate (21 to 200 units);
  - The road largely achieves this, but provides for a shared walking and cycling route which is not contemplated in the Code of Practice;
- RoW 2:
  - 4 lots, therefore Road Type E9 is appropriate (1 to 6 lots);
  - Road Type E9 is provided;

- Mountain Road East:
  - 13 units, and also provides access to Car Parks 7 (54 spaces) and 8 (43 spaces), therefore Road Type E12 is appropriate (21 to 200 units);
  - Road Type E12 is provided.

7.5.3.2. It can be seen that the road types anticipated under the Code of Practice are generally achieved.

7.5.3.3. Junction Road Extension provides a shared 3.0m wide walking and cycling path on one side, and this is not addressed in the Code of Practice. However this is provided to support a comprehensive network of off-road shared use paths within the site, and is therefore supportable.

7.5.3.4. Roads 2 and 3 provide for one-way traffic flow, and one-way operation is not contemplated in the Code of Practice. However these roads will be lightly trafficked and the Code of Practice requires a traffic lane width of around 2.85m, which is exceeded on these roads (4.0m is provided plus 0.3m to the kerb). This width has been provided in order to allow for emergency service access.

7.5.3.5. Roads 1, 2 and 3 provide for angled car parking, and this is not contemplated in the Code of Practice (in passing, the parallel spaces on Mountain Road and Junction Road Extension are an anticipated design outcome in the Code of Practice). At a high level, there is no reason why angled parking should not function efficiently and safely, and there are numerous locations where it is already provided (such as on Ardmore Street, Brownston Street and Helwick Street in Wānaka, and numerous town centre roads within Queenstown). In this case the roads are lightly-trafficked, will operate with low speeds, and the vast majority of drivers will be residents who are familiar with the layout. Consequently it is considered that Roads 1, 2 and 3 are an appropriate design for this particular location.

7.5.4. Paragraph 3.3.2.2: Sight Distance

7.5.4.1. 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. These are achieved in all locations, other than as discussed below:

- Junction Road / Mountain Road (southwest intersection):
  - To the east of a southbound driver on Junction Road Extension, the SISD is 45m. However there is a hump on Mountain Road East which will slow traffic speeds. An SISD of 45m is appropriate for an approaching vehicle speed of 29km/h and the hump is likely to slow traffic to a greater extent than this.
- Mountain Road East / Road 3 (south):
  - To the east of a southbound driver on Road 3, the SISD is 37m and this is suitable for an approaching speed of 25m. However there is a hump on Mountain Road East which will slow traffic speeds. An SISD of 37m is appropriate for an approaching vehicle speed of 25km/h and the hump is likely to slow traffic to this extent. Consequently, when the operating speeds of vehicles are taken into account, it is considered that the sight distances available at the proposed intersections are appropriate.

7.5.5. Paragraph 3.3.2.5: Design and Check Vehicles

7.5.5.1. 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.

7.5.5.2. 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.

7.5.5.3. 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.

7.5.5.4. Within the site there will be no through traffic, rather, traffic will have an origin or destination within the site. Consequently 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.

7.5.5.5. 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.

7.5.5.6. 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.

7.5.5.7. 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*."

7.5.5.8. 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 highly 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].

7.5.5.9. 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.

7.5.5.10. 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.

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

7.5.5.11. 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 will 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
- If a truck is entering the minor approach of an intersection, it will 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.

7.5.5.12. 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.

7.5.5.13. It is acknowledged that there will be elevated volumes of heavy vehicles associated with exit from the service station (entry is from the already-formed section of Junction Road), although it is noted that the resource consent prohibits both the use of a high-flow diesel pump and the service station being advertised as a truck stop, which will limit truck volumes. However, it is possible that on exiting the service station, drivers may be unaware of how to travel back to the state highway, and either turn west along Mountain Road West or travel further east on Mountain Road East.

7.5.5.14. The internal roads have been designed to accommodate a refuse truck and thus in this scenario, trucks of a similar size to a refuse truck will be able to turn at the turning heads provided. However vehicles that are larger than this would not be able to manoeuvre and turn as easily.

7.5.5.15. Although a scenario of large trucks exiting the service station in the wrong direction is unlikely, it is considered that signage showing the route back to the state highway should be erected facing drivers exiting the service station and also at the Junction Road / Mountain Road intersection.

7.5.5.16. The tracking provided within the scheme drawings shows how the movement of cars and trucks is accommodated within the site.

7.5.6. Paragraph 3.3.5: Target Operating Speed

7.5.6.1. The current posted speed limit on Junction Road and Mountain Road is 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. 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.

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

7.5.6.2. The assessment of operating speeds is set out below

- RoW 1 (expected design speed of 10km/h):
  - Maximum forward sight distance of 30m, and so under Figure 3.2 the maximum speed is 20km/h but reducing as the driver travels further west;
- Mountain Road West (expected design speed of 40km/h):
  - Maximum forward sight distance of 200m, therefore maximum speed of more than 40km/h theoretically possible under Figure 3.2;
  - However road humps at ch20 and ch120 will slow speeds to 25km/h in these locations and it is unlikely that speeds of 40km/h will arise between the humps;
  - At ch120 a driver can only see 80m ahead and under Figure 3.2 this will limit speeds to no more than 35km/h;
- RoW 5 (expected design speed of 10km/h):
  - Maximum forward sight distance of 25m, and so under Figure 3.2 the maximum speed is 15km/h but reducing as the driver travels further south;
- Lane 4 (expected design speed of 40km/h):
  - Maximum forward sight distance of 75m, and so under Figure 3.2 the maximum speed is 30km/h;
  - However the curve towards the west reduces speeds to around 25km/h;
- Road 1 (expected design speed of 40km/h):
  - Maximum forward sight distance of 80m, and so under Figure 3.2 the maximum speed is 30km/h and reducing as the driver travels further south;
- Road 2 (expected design speed of 40km/h):
  - Maximum forward sight distance of 90m, and so under Figure 3.2 the maximum speed is 30km/h and reducing as the driver travels further north;
- Road 3 (expected design speed of 40km/h):
  - Maximum forward sight distance of 90m, and so under Figure 3.2 the maximum speed is 30km/h and reducing as the driver travels further south;
- Junction Road Extension (expected design speed of 40km/h):
  - On western section there is a distance of 80m between Mountain Road and a curve. This will limit speeds to 30km/h;
  - There is a road hump at ch110 that will limit speeds to 25km/h;
  - Further east, a driver could accelerate from the road hump to 40km/h by ch185. At this point, their visibility of the road ahead is around 165m, and under Figure 3.2 they would start slowing for the end of the road at around ch210;
  - The driver could therefore accelerate to 44km/h over this 45m section of road. However this coincides with the potential to encounter vehicles exiting Road 2, plus vehicles entering and exiting the parking spaces on Junction Road Extension will also limit speeds;
- RoW 2 (expected design speed of 10km/h):
  - Maximum forward sight distance of 25m, and so under Figure 3.2 the maximum speed is 15km/h but reducing as the driver travels further east;
- Mountain Road East (expected design speed of 40km/h):
  - The majority of drivers will turn at the Junction Road / Mountain Road intersection, but will then be slowed by a road hump at ch100 at 25km/h;
  - They may then accelerate again, but will encounter another hump at ch170 (as discussed above);
  - There is a slight curve in the road at ch190 and another at ch250, and these will both reduce vehicle speeds. The latter curve in particular can be expected to limit speeds to around 35km/h;
  - Once a driver has passed through the curve, they have a forward sight distance of around 70m, which under Figure 3.2 will limit their speed to 30km/h

7.5.6.3. On this basis then, the operating speeds on the roads are appropriate for the road type under the Code of Practice, and in many cases, the speeds will be lower than the maximums permitted (in part due to the proposed traffic calming). On the shorter rights-of-way, while the assessment suggests that speeds could be slightly greater than expected, in practice drivers are likely to be travelling more slowly than indicated because they will have reduced their speed to manoeuvre to or from a parking space.

7.5.7. Paragraph 3.3.6: Passing, Parking and Loading

7.5.7.1. The legal road widths are sufficient for parking bays/lanes to be provided as required.

7.5.7.2. The matter of on-street parking for residents and visitors has been discussed in detail above.

7.5.8. Paragraph 3.3.7: Intersection and Alignment Design

7.5.8.1. 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.

7.5.8.2. Corner splays are provided at intersections. There is no minimum requirement for separation between intersections, as there are no intersections between Collector Roads and/or Arterial Roads.

7.5.9. Paragraph 3.3.8: No-Exit Roads

7.5.9.1. The site includes three cul-de-sacs (Mountain Road West, Junction Road Extension and Road 1.). Under this paragraph, through-roads are preferred but in practice the shape of the site means that no connections could be formed to other roads, and so the cul-de-sacs can be supported.

7.5.9.2. The plans show that turning heads of at least 20m diameter are provided at the ends of the cul-de-sacs. This is appropriate for turning head in a residential area under Standard NZS4404:2010 and the Council's standard drawing.

7.5.10. Paragraph 3.3.9: Bus Stops

7.5.10.1. The layout does not preclude a bus stop from being provided at some future time, but as set out above, at present there are no public transport services in Wānaka. In practice, a service using State Highway 6 and 84 is the most likely outcome for a future service, and the site provides a good network of non-car linkages to enable residents to walk (or cycle) between their unit and the highways.

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

7.5.11.1. Matters relating to dimensions are set out above, but in essence, compliance with relevant guides and standards is achieved.

7.5.11.2. There is a walking and cycling route provided through the site to support connectivity a discussed in detail above.

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

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

7.5.13. Paragraph 3.3.13: Trees and Landscaping

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

7.5.14. Paragraph 3.3.14: Road Lighting

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

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

7.5.15.1. The plans indicate that private ways will be provided (RoWs 1, 2 and 5, and Lane 4). The cross-sections of these meet the requirements of the Code of Practice as set out above.

7.5.15.2. Lane 4 provides a 'through route' and therefore does not need to provide a turning facility. A turning head is provided at RoWs 1, 2 and 5, although it is very unlikely that inquisitive drivers will travel along either of them because they are short and will appear to be private driveways.

7.6. Summary of District Plan and Code of Practice Compliance

7.6.1. 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
  - A small number of spaces will temporarily be obstructed when refuse is being collected, any obstruction is unlikely (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.
- Rule 29.5.2: Size of Required Parking Spaces and Layout
  - The dimensions of the spaces in Car Parks 7B and 8B are intermediate values between those of the District Plan and are therefore not addressed in that document, but the combination of space width and aisle width provides sufficient manoeuvring area for Class 2 users (and thus for Class 1 users also).
- Rule 29.5.4: Mobility Parking Spaces
  - The number of mobility spaces is less than required under the District Plan, but meets the provisions of Standard NZS4121:2001 ('*Design for Access and Mobility: Buildings and Associated Facilities*') and thus achieves the outcomes of the Buildings Act.
- Rule 29.5.7: Residential Parking Space Design
  - The dimensions of the spaces in Car Parks 5 and 6 are intermediate values between those of the District Plan and are therefore not addressed in that document, but the combination of space width and aisle width provides sufficient manoeuvring area for Class 1 users.
- Rule 29.5.8: Queuing
  - Car Parks 4 and 8 have a slight shortfall in queuing space but this is minor and will not result in any road users being obstructed.

- In Car Parks 1 and 7, the queuing space shortfall is larger but taking into account that these car parks serve a high proportion of residential users, traffic flows will be tidal with cars departing in the morning and arriving in the evening. Thus when the peak volumes of traffic are entering the car park (the weekday evening) and could potentially be obstructed, in practice it is unlikely that vehicles will be exiting any of the parking spaces that would give rise to such obstruction.

- Rule 29.5.13: Access and Road Design
  - Non-compliances regarding the Council's Land Development and Subdivision Code of Practice are set out subsequently.
- Rule 29.5.14: Width and Design of Vehicle Crossings – Urban Zones
  - Many of the residential lots have a shared driveway and this then leads to vehicle crossings that are in the order of 7.0m to 7.5m in width and thus wider than permitted. However the low traffic volumes mean that this does not give rise to adverse effects in practice, and the overall crossing width is less than would be permitted if each lot had its own access (rather than shared).
  - A number of vehicle crossings are not shown a meeting Diagrams 6 or 7 of the District Plan at present, but this is due to those crossings accommodating heavy vehicles. The matter of the detailed design of these vehicle crossings can be addressed through Engineering Approvals.
- Rule 29.5.17: Minimum Sight Distances from Vehicle Access on all Roads other than State Highways
  - There is a small number of vehicle crossings where the sight distance is lower than expected for the posted speed limit, but many of these are in locations where drivers would be travelling more slowly than the posted limit (such as in proximity to curves) and so a shorter sight distance can be supported.
  - Lots 416 and 417 have sightlines that pass over one another, and to ensure these are protected there should be a prohibition on any permanent obstruction of more than 1m in height being located within the first 0.5m of each lot.
  - Lots 430 to 436 have sightlines that pass over one another, and to ensure these are protected there should be a prohibition on any permanent obstruction of more than 1m in height being located within the first 1.75m of each lot.
- Rule 29.5.21: Minimum Distances of Vehicle Crossings from Intersections
  - There are 23 lots that are located closer to intersections that anticipated under the District Plan. However most road users will be highly familiar with the layout, the roads will be lightly-trafficked and with a low operating speed, and the vehicle crossings are on the opposite side of the road to the minor approach of the intersection (meaning that drivers will not be confused about which vehicles are turning at the vehicle crossing and which are turning at the intersection).

7.6.2. 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
  - Junction Road Extension provides a shared 3.0m wide walking and cycling path on one side, and this is not addressed in the Code of Practice. However this is provided to support a comprehensive network of off-road shared use paths within the site.
  - Roads 2 and 3 provide for one-way traffic flow, which is not contemplated in the Code of Practice, but both these roads will be lightly trafficked and the lane width provided is appropriate.

    - Roads 1, 2 and 3 provide for angled car parking, and this is not contemplated in the Code of Practice. The roads are lightly-trafficked, will operate with low speeds, and the vast majority of drivers will be residents who are familiar with the layout.
- Paragraph 3.3.2.2: Sight Distance
    - There are two locations where SISD is not provided. At both locations (the Junction Road / Mountain Road (southwest) and Mountain Road East / Road 3 (south) intersections), there are humps which slow approaching traffic such that the SISD is appropriate for the vehicle speeds.
- 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.

7.6.3. It is not considered that these non-compliances will give rise to adverse effects that are more than minor, subject to the following mitigation:

- Prevention of any permanent obstruction of more than 1m in height from being located within the first 0.5m of Lots 416 and 417; and
- Prevention of any permanent obstruction of more than 1m in height from being located within the first 1.75m of Lots 430 to 436.

8. Conclusions

8.1. This report has identified, evaluated and assessed the various transport and access elements of a proposed residential development at 237 Wānaka Luggate Highway with regard to the internal layout design (matters associated with external effects are addressed within a separate report, 'Assessment of Effect on External Transportation Networks').

8.2. Taking into account the expected traffic generation of the site, it is considered that the internal transportation networks will operate with a high level of efficiency and safety. Sufficient car parking has been provided in specific locations to meet expected demand, but without creating a large over-provision of parking, and the use of off-street car parks and independent on-street parking means that the internal roads can be marked with parking restrictions in the movement lanes to support efficient flow.

8.3. 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. This not only includes footpaths along roads, but also a shared path running east-west and north-south through the site, providing a continuous walking and cycling network within the site which also connects to Mount Iron Track to the northwest and support a non-car, off-road connection to the Three Parks commercial area.

8.4. Although there are presently no scheduled bus services that operate in Wānaka, in the event that any future service run past the site on State Highway 6 and 84, suitable walking and cycling connections are provided within the site such that bus passengers can easily travel between their residential units and the future bus stops with suitable road crossing facilities provided.

8.5. 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, subject to permanent obstructions of more than 1m in height not being located within the first 0.5m of Lots 416 and 417, or within the first 1.75m of Lots 430 to 436, so that suitable sight distances are provided in these locations.

Carriageway Consulting Limited
February 2026

Appendix A

Qualifications and Experience of Report Author

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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

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