

7 July 2026

Arrowsouth Properties Limited

C/- Southern Planning

By email

Attention: Scott Freeman

Dear Scott,

Arrowtown South, Proposed Zone Change Integrated Transport Assessment

The purpose of this Integrated Transport Assessment is to assess any potential transport impacts as a result of proposed zone change at Arrowtown South.

This Integrated Transport Assessment has been updated to incorporate a response to the transport elements of the request for further information (RFI) dated 9 April 2026. A detailed response to the RFI is provided as Appendix A.

To confirm, this assessment focuses on a possible residential extension scenario of 1 residential unit per 450m² based on the allowable residential density from the Suburban Residential Zone (SRZ) under the Proposed District Plan (PDP).

1 Background

The Applicant, Arrowsouth Properties Limited, propose to change the zoning of Lots 1-20 and Lots 101-104 DP52579 and Lot 38 DP 20153 (the Site) to enable the development of residential units on Lots 102-103 DP 535793.

The Site is within the Arrowtown South Special Zone under the QLDC Operative District Plan (ODP). The structure plan identifies Lots 102-103 DP 535793 as Private Open Space (POS) which restricts subdivision and the ability to erect any buildings within the Site.

It is proposed to rezone the Site as Suburban Residential Zone (SRZ) from the PDP.

2 Existing Transport Environment

2.1 Road Network

The Site can be accessed from either McDonnell Road, or Brodie Avenue which are both part of the QLDC local road network.

2.1.1 McDonnell Road

Under the ODP, McDonnell Road is classified as a local road within the road hierarchy.¹ McDonnell Road performs a collector road function within the District's road network with a mixed function of providing access to properties as well providing a transport link between Arrowtown/Malaghans Road and Arrow Junction (SH6 and Centennial Avenue). The QLDC

¹ Refer Operative QLDC District Plan, Appendix 6 Road Hierarchy.

Proposed District Plan (PDP)² reclassifies McDonnell Road (Arrowtown-Lake Hayes Road to Centennial Avenue) as a collector road.

The current (2026) traffic flow estimate for McDonnell Road is less than 2,000³ vehicles per day (vpd). Traffic counts at the Brodie Avenue intersection suggests that the current peak period traffic, adjacent to the Site, is 146 vehicle per hour (vph) during the am peak and 135vph during the pm peak period⁴. To the north of the Site, McDonnell Road serves a number of residential lots (dwellings) and intersects with Arrowtown-Lake Hayes Road, the peak traffic flow on McDonnell Road at this intersection is 124vph in the am peak period and 206vph in the pm peak period⁵. A large portion of this traffic flow appears to be drivers travelling between Arrow Junction (SH6) via McDonnell Road and Malaghans Road to Queenstown as an alternative to driving through Lower Shotover and Frankton.

To the north of the Site, McDonnell Road has a posted speed limit of 40km/hr as this passes through the residential area. The speed limit to the south of the Site increases to 80km/hr as the road passes through a peri-rural environment with built up areas such as the Arrowtown Lifestyle Village.

2.1.2 Brodie Avenue

Brodie Avenue is a local road in the District's road network and serves the existing residential area at the Arrow South Special Zone which includes approximately 20 residential lots which are accessed directly from Brodie Avenue or via Patton Place. Brodie Avenue is a two lane road with a carriageway width of approximately 5.8m with indented parking and a 1.5m footpath on one side only.

The current (2026) traffic flow estimate for Brodie Avenue is less than 200⁶ vehicles per day (vpd) based on the number of residential lots served. Traffic counts at the intersection with McDonnell Road, during the peak periods, shows a traffic flow of 7vph during the am peak period and 17vph during the pm peak period⁷.

Brodie Avenue has a 40km/hr speed limit which is posted on McDonnell Road. Based on the extent of roadside activity, associated on street parking and length of the road it is likely that the operating speed of Brodie Avenue will be less than 30km/hr.

2.1.3 Road Network Capacity

Road network capacity is generally a function of the major intersections within the road network. To determine the existing network capacity it is possible to assess the capacity and efficiency using the intersection of McDonnell Road with Arrowtown-Lake Hayes Road. This intersection is a cross intersection with many conflicting vehicle movements and includes the approaches from Berkshire Street and Malaghans Road. This intersection form is a good indicator of the overall network capacity and operational efficiency.

² Refer Proposed QLDC District Plan, Chapter 29 Transport, Section 29.14 Schedule 1 – Road Classification.

³ Based on Mobile Road (www.mobileroad.org) traffic estimate of 1,547vpd with 12% heavy vehicles dated 29/07/2025.

⁴ Based on traffic counts by Bartlett Consulting at the Brodie Avenue/McDonnell Road intersection 26/6/2025.

⁵ Based on traffic counts by Bartlett Consulting at the McDonnell Road/Arrowtown-Lake Hayes Road intersection 25/6/2025.

⁶ Based on Mobile Road (www.mobileroad.org) traffic estimate of 100vpd with 6% heavy vehicles dated 26/07/2023.

⁷ Based on traffic counts by Bartlett Consulting at the Brodie Avenue/McDonnell Road intersection 26/6/2025.

The 2025 traffic flows at the intersection of McDonnell Road with Arrowtown-Lake Hayes Road have been surveyed⁸ and modelled using SIDRA modelling software.

To get an understanding of the future network demand, expected future traffic flows have also been sourced from the QLDC traffic model. The QLDC traffic model is based on the current planning environment and includes growth enabled under the QLDC District Plan and the current zoning. The model years of interest are 2027 being a possible opening year and 2039 being an appropriate design year. The adopted design year is a modelled traffic year greater than 10 years from the likely start of possible development enabled by any changes to the planning environment.

Comparison of the traffic flows between the 2025 survey and data from the QLDC model shows significant growth between the 2025 survey data to 2027 model data (between 20% and 25%) with minimal further growth (approximately 1%) to 2039. The following Tables 1 & 2 provide a comparison based on the anticipated traffic growth based on queuing for right turning traffic.

Table 1 – Intersection Performance for right turners, am peak period

Approach	Arrowtown-Lake Hayes Rd	McDonnell Rd	Berkshire St	Malaghans Rd
2025 Survey	LOS A	LOS A 95% Que – 0.2veh Delay – 9.2 sec Overall LOS A	LOS A	LOS B 95% Que – 0.3veh Delay – 13.4 sec Overall LOS B
Overall intersection efficiency 11% of capacity				
Permitted 2039 Includes 21% growth.	LOS A	LOS B 95% Que – 0.2veh Delay – 11.2 sec Overall LOS A	LOS A	LOS C 95% Que – 0.5veh Delay – 16.0 sec Overall LOS B
Overall intersection efficiency 14% of capacity				

Table 2 – Intersection Performance for right turners, pm peak period

Approach	Arrowtown-Lake Hayes Rd	McDonnell Rd	Berkshire St	Malaghans Rd
2025 Survey	LOS A	LOS A 95% Que – 0.2veh Delay – 8.9 sec Overall LOS A	LOS A	LOS B 95% Que – 1.0veh Delay – 10.8 sec Overall LOS B
Overall intersection efficiency 24% of capacity				
Permitted 2039 Includes 26% growth.	LOS A	LOS B 95% Que – 0.2veh Delay – 11.3 sec Overall LOS A	LOS A	LOS C 95% Que – 1.8veh Delay – 17.5 sec Overall LOS B
Overall intersection efficiency 37% of capacity				

This modelling suggests that, based on the permitted development under the current planning environment, that there will be some change in delay and queuing at the intersection of McDonnell Road with Arrowtown-Lake Hayes Road. The greatest change being on the

⁸ Based on traffic counts by Bartlett Consulting at the McDonnell Road/Arrowtown-Lake Hayes Road intersection 25/6/2025.

Malaghans Road approach where queuing will increase from generally a single vehicle queue to a queue length of not more 2 vehicles (1.8 vehicles). This suggests that over the next 14 years (2025 to 2039) there will be some increase in queuing at this intersection as a result of the current planning environment.

Overall, this suggests that the existing road network has sufficient capacity to accommodate change anticipated by the current planning environment, the worst case being in the pm peak period. During this period the current planning environment will result in the network efficiency reducing, in 2039 traffic demand is expected to be 37% of network capacity based on the nearest intersection.

2.2 Pedestrian and Cycle Network (Active Travel Network)

Brodie Avenue and McDonnell Road both have single footpaths (one side only) which provides pedestrian access to the north towards Arrowtown town centre.

An alternative off-road pedestrian (and cycle) trail is provided within the Site and provides a route up the escarpment to Advance Terrace. This is provided as an unsealed off-road pedestrian route to the southern part of Arrowtown including to Arrowtown Primary School (800m, 10 minutes walk).⁹ The route to Advance Terrace includes a steeper section with stairs meaning that any cyclists will be required to walk their cycles (using an adjacent ramp). This off-road trail, with steeper sections and stairs, meets the requirements of a grade 4 trail¹⁰ which will be difficult for pedestrians with mobility impairments and cyclists will be required to walk their cycle in places. The existing trail navigates the steep escarpment and passes through the narrow legal corridor to Advance Terrace following the only available route.

The 40km/hr speed limit on Brodie Avenue and McDonnell Road means that cyclists may share these streets with other vehicles. These streets have roadside footpaths providing both pedestrian and cycle access to the proposed plan change area.

To the south, McDonnell Road has a higher 80km/hr speed limit with an adjacent (unsealed) pedestrian/cycle trail. This trail provides access to Arrowtown Lifestyle Village and to the Queenstown Trail network (Arrow River Bridges Trail) via Centennial Avenue.

The Site is well connected to local active travel networks providing footpath and trail access to nearby local activities, the lifestyle village (1.2km, 15 minutes walk) to the south or to Arrowtown town centre approximately 2km to the north (approximately 25 minutes walk).¹¹

2.3 Public Transport Network

The nearest bus stops are located on Arrowtown-Lake Hayes Road, this is near to the intersection with McDonnell Road (Malaghans Road stop) and approximately 1.2km (15 minutes walk)¹² to the north of the Site. Access to this bus stop is provided by roadside footpaths adjacent to Brodie Avenue and McDonnell Road. These bus stops are on the Frankton to Arrowtown bus service (Route 2). This service operates an hourly service between 06:30am to 10:30pm daily with half hour services during the peak periods (06:30am

⁹ Walking times are based on NZTA Walking Catchments which allows for an average walking speed of 4.8km/hr.

¹⁰ Refer QLDC Land Development and Subdivision Code of Practice, (Appendix J) Trail Design Standards & Specifications – 2025

¹¹ Walking times are based on NZTA Walking Catchments which allows for an average walking speed of 4.8km/hr.

¹² Walking times are based on NZTA Walking Catchments which allows for an average walking speed of 4.8km/hr.

to 09:30am and 03:30pm to 07:30pm). Users of this bus service can change at Frankton for Queenstown and other destinations in the Wakatipu area.

Alternative bus stops are at Adamson Drive, approximately 1.4km (20 minutes walk) from the Site which are accessed via the (steeper) off-road trail via Advance Terrace. These bus stops are on the Frankton to Arrowtown bus service (Route 2), an alternative service, Jacks Point to Arrowtown (Route 4) also uses this stop. The Jacks Point to Arrowtown bus service travels via Arthurs Point and Queenstown. This stop is further from the Site although provides an alternative public transport service linking to other destinations within the Queenstown public transport network.

The Site has multiple public transport service options from bus stops within 20 minutes walk of the Site. The nearest bus stop is within 15 minutes walk from the Site providing access to the Arrowtown to Frankton bus service. The nearest bus stop is within the maximum walking catchment area to a public transport stop.¹³

2.4 Proposed Network Improvements

There are a number of proposed transport improvements which may improve network capacity and transport services to the Site, these include:

- SH6 bus lanes, these are part of the planning provisions for the Te Pūhahi Ladies Mile Zone which will improve public transport journey times between Arrowtown and Frankton (Route 2) and improve bus reliability. These improvements are planned although these will be based on development and there is no committed funding for these works at this time.
- Replacement of the Shotover River crossing at Arthurs Point which will increase the capacity along the route between Arrowtown and Queenstown via Arthurs Point (Malaghans Road). This project is identified in the QLDC Long Term Plan with funding to progress in years 9-10 of the 2021-2031 ten year plan, expected 2031.

These projects will improve travel between Arrowtown and Queenstown for vehicles including public transport. Depending on development within the Wakatipu area, there may also be improved public transport between Arrowtown and Frankton.

Within the ORC Queenstown Public Transport Business Case it is proposal to improve the public transport services between Frankton and Arrowtown which will include use of larger busses and buses every 15 minute during the daytime by the design year (2039).¹⁴ The public transport service will improve in line with predicted population growth in Arrowtown and the greater Wakatipu region.

3 Proposed Rezoning

The proposed zone change would enable areas of the Arrowtown South Special Zone Private Open Space Activity Areas to be developed as residential housing. For the purposes of traffic generation, a likely residential density of 44 residential dwellings (units) have been assumed which allows 450m² per residential unit. I understand that this density comes from the PDP SRZ minimum vacant lot size of 450m² (net) and includes an allowance for roads for access from the existing road network, this may be either from Brodie Avenue and/or from McDonnell Road.

¹³ Refer NZ Transport Agency (NZTA) Waka Kotahi, Public Transport Framework, Integrated planning and design.

¹⁴ Refer Otago Regional Council (ORC), Queenstown Public Transport Business Case.

3.1 Development Traffic

3.1.1 Traffic Generation

The proposed zoning has been considered, and modelled, as 44 residential units.

To consider a robust assessment the peak traffic generation may be considered using traffic generation rates from Waka Kotahi (NZTA) Research Report 453 (RR453) Trips and parking related to land use. This document provides a design traffic generation rate for an outer suburban dwelling of 10.9 vpd/dwelling or a peak period traffic generation rate of 1.2vph/dwelling.¹⁵ A residential dwelling will generally have a peak traffic flow in the am peak period (7am to 9am), during the pm peak period the peak traffic flow is usually slightly reduced, say 80%. The possible traffic generation is shown in Table 3 below.

Table 3 – Traffic Generation for Requested Rezoning

	Daily	am peak	pm peak
Likely, 44 dwellings	480vpd	53vph	42vph

3.1.2 Traffic Distribution

The rezoning traffic may be distributed within the existing road network based on traffic counts undertaken at the intersections of:

- Brodie Avenue with McDonnell Road, and
- McDonnell Road with Arrowtown-Lake Hayes Road.

Using these traffic counts as a guide it is possible to predict a potential traffic distribution from the proposed rezoning and assess potential change in traffic within the local road network and at the cross intersection of McDonnell Road with Arrowtown-Lake Hayes Road. The possible change in traffic can be modelled to assesses potential traffic effects.

3.2 Development Access

This is a matter for assessment at subdivision consent stage. For the purposes of this assessment the following possible vehicle access options have been considered:

- To form a new access intersection (road) directly from McDonnell Road to serve all, or part, of the residential extension, and/or
- The extension of Brodie Avenue to serve all, or part, of the residential extension.

This provides for a number of possible options including Brodie Avenue being modified to a loop road passing through the residential extension with a second intersection with McDonnell Road.

The residential extension will be accessed via the existing pedestrian (and cycle) infrastructure being the existing footpath network on Brodie Avenue, McDonnell Road and the pedestrian and cycle trail to Advance Terrace. This pedestrian and cycle network will be extended to serve the proposed residential extension area within the Site.

¹⁵ Refer Waka Kotahi (NZTA) Research Report 453 (RR453) Trips and parking related to land use, Table 7.4 Summary of design trip rates and parking demand in NZ in 2010.

4 Transport Effects

4.1 Road Network

4.1.1 Vehicle Access, McDonnell Road Intersection

It is possible to form a new access intersection from McDonnell Road to serve all, or part of, the proposed rezoning. Any new vehicle access intersection will be accessed at the Resource Consent and Engineering Approvals stage. It is expected that any access intersection would be designed in accordance with current Austroads design guidance and the QLDC Land Development and Subdivision Code of Practice. It is noted that there is no structure plan to determine a future subdivision or road layout at this time. The following is to consider if a new access intersection from McDonnell Road is possible.

The predominant design elements for any new intersection from McDonnell Road would be:

- Operating speed of McDonnell Road, and
- Required intersection sight distance.

The operating speed of McDonnell Road is a symptom of the speed limit. Adjacent to the Site McDonnell Road has an 80km/hr speed limit, the speed limit reduced to 40km/hr to the north, towards the existing Brodie Avenue intersection.

It is possible that the operating speed of McDonnell Road, adjacent to the Site, will be:

- Northbound, less than 85km/hr drivers will be negotiating an obvious curve to the south of the Site and will be deaccelerating as they approach the 40km/hr speed limit, or
- Southbound less than 75km/hr as driver will be acceleration as they exist the 40km/hr speed limit,

The determining factor being the northbound operating speed exiting the obvious curve which requires a minimum safe intersection sight distance (SISD)¹⁶ of approximately 200m. To achieve this minimum sight distance any new access intersection must be no more than 200m to the south of the existing Brodie Avenue intersection. Should the speed limit (and operating speed) on McDonnell Road reduce, it will be possible to move any new access intersection further to the south which will not have any adverse transport effects on the efficiency or safety of the existing road network. Overall, I consider it is possible to form an appropriate and acceptable access intersection to serve the proposed rezoning and residential extension from McDonnell Road.

4.1.2 Vehicle Access, Brodie Avenue

The existing intersection of Brodie Avenue with McDonnell Road serves approximately 20 residential lots including properties accessed via Patton Place. It is possible to serve all, or part, of the proposed residential extension by extending Brodie Avenue. Brodie Avenue will then serve less than 100 residential dwellings total.¹⁷

The existing Brodie Avenue intersection with McDonnell Road is formed as a simple T-intersection with appropriate sight distance and intersection features for a low volume urban residential intersection which could acceptably serve up to 200 residential dwellings.

¹⁶ Refer Austroads Guide to Road Design, Part 4A: Unsignalised and Signalised Intersections, Section 3.2.2 Safe Intersection Sight Distance (SISD).

¹⁷ Based on Brodie Avenue being similar to a Figure E12 road type which can serve up to 200 residential dwelling units, refer QLDC Land Development and Subdivision Code of Practice, Table 3-3: Road design standards.

Overall, I consider it would be possible and acceptable to serve all, or part, of the requested rezoning by extending Brodie Avenue. This will not result in any adverse traffic effects on efficiency or safety of Brodie Avenue or at the intersection with McDonnell Road.

4.1.3 Network Efficiency

The greatest indicator of efficiency effects within the existing transport network will be any changes to delay (queuing) and efficiency at the nearby intersection of McDonnell Road with Arrowtown-Lake Hayes Road. This is a cross intersection where right turners from McDonnell Road, and Malaghans Road, are required to give way to other intersection users. Traffic effects at this intersection can be modelled using SIDRA modelling software. This modelling has considered the 2039 design year with the proposed residential extension (44 residential dwellings) added. The following Tables 4 & 5 (following) provide a comparison at the anticipated design year (2039) traffic based on queuing for right turning traffic and overall intersection efficiency.

Table 4 – Intersection Performance for right turners, am peak period

Approach	Arrowtown-Lake Hayes Rd	McDonnell Rd	Berkshire St	Malaghans Rd
Permitted 2039	LOS A	LOS B 95% Que – 0.2veh Delay – 11.2 sec Overall LOS A	LOS A	LOS C 95% Que – 0.5veh Delay – 16.0 sec Overall LOS B
Overall intersection efficiency 14%				
Proposed 2039 44 residential units.	LOS A	LOS B 95% Que – 0.3veh Delay – 11.3 sec Overall LOS A	LOS A	LOS C 95% Que – 0.5veh Delay – 16.3 sec Overall LOS B
Overall intersection efficiency 14%				

Table 5 – Intersection Performance for right turners, pm peak period

Approach	Arrowtown-Lake Hayes Rd	McDonnell Rd	Berkshire St	Malaghans Rd
Permitted 2039	LOS A	LOS B 95% Que – 0.2veh Delay – 11.3 sec Overall LOS A	LOS A	LOS C 95% Que – 1.8veh Delay – 17.5 sec Overall LOS B
Overall intersection efficiency 37%				
Proposed 2039 44 residential units.	LOS A	LOS B 95% Que – 0.3veh Delay – 11.5 sec Overall LOS A	LOS A	LOS C 95% Que – 2.0veh Delay – 18.4 sec Overall LOS B
Overall intersection efficiency 41%				

This modelling suggests that the proposed residential extension will have some effect on the overall efficiency at the intersection of McDonnell Road with Arrowtown-Lake Hayes Road. This change is acceptable from a network perspective being minimal, less than 5% overall change in network efficiency. The proposed rezoning does not change the overall level of service. The McDonnell Road approach will have minimal change, queue length will remain at not more than 1 vehicle and delay will increase slightly by 0.1 seconds in the am peak and 0.2 seconds in the pm peak. Overall, this change, in 2039, will not be noticeable.

The greatest effect will be on the Malaghans Road approach. The overall level of service will not change although delay will increase slightly by 0.3 second in the am peak period and 0.9 second in the pm peak period. Queuing will also increase in the pm period to 2 vehicles (1.8 vehicles to 2.0 vehicles). Overall, this change will be minimal and is unlikely to be noticeable to drivers on the Malaghans Road approach. This intersection will operate with a maximum demand being 41% of its total capacity, this suggests that there is sufficient capacity to accommodate the proposed residential extension within the surrounding local road network.

This modelling suggests that the requested rezoning will have minimal effect on the overall transport network. The overall change, as a result of the proposed residential extension, is minor and will not be noticeable.

4.2 Alternative Transport Networks

4.2.1 Pedestrian and Cycle Access

Both Brodie Avenue and McDonnell Road have a 40km/hr speed limit and it is acceptable for cyclists to share the carriageway with vehicle.

The Site is well connected to the local area with footpaths on Brodie Avenue and McDonnell Road. It is possible to extend this footpath network within any future road network to serve the proposed zone change. The existing pedestrian network can be extended to provide an appropriate and acceptable pedestrian connection to the surrounding local environment.

There are also alternative off-road pedestrian (and cycle) trails including links on McDonnell Road providing access to the Queenstown Trails network. An alternative off-road trail provides a link between the Site and Brodie Avenue to Advance Terrace, this is a grade 4 trail with stairs which will be difficult for pedestrians with mobility impairment and cyclists will be required to walk their bike.

4.2.2 Public Transport

The nearest bus stops are within 15 minutes walk of the Site, these are accessed using footpaths on Brodie Avenue and McDonnell Road. These bus stops are on the Arrowtown to Frankton bus service (Route 2) which allows users to change at Frankton for other destinations within the Queenstown bus network.

There are other alternative bus stops within 20 minutes walk of the Site accessed via the off-road trail network and Advance Terrace. These bus stops allow access to both the Arrowtown to Frankton bus service as well as the Arrowtown to Jacks Point bus service.

Bus services to/from Arrowtown will improve over time as a result of transport improvements within the greater network including improvements to the bus services and frequency.

5 Summary

Arrowsouth Properties Limited propose to change the zoning of the Site to enable development of residential units. It is possible that this rezoning could result in a likely 44 residential units at the Site.

Pedestrian (and cycle) access to the Site is provided from Brodie Avenue and McDonnell Road. These roads include roadside footpaths providing access to the local environment including access to public transport services within 15 minutes walk of the Site via McDonnell Road.

The Site may be accessed from either Brodie Avenue and/or McDonnell Road. It is feasible to extend Brodie Avenue and/or providing a new access intersection from McDonnell Road, either will be appropriate and can be undertaken to meet current design guidance. Ultimately, the design of any future onsite road network and any new access or access intersection from

McDonnell Road would be considered as part of a future resource consent and engineering approvals process.

The effects of additional vehicles within the roading network have been assessed. Generally, the additional traffic will not change the overall level of service although there will be minimal effects for some drivers during the pm peak period. This is limited to minor changes in queuing and delay at the nearest intersection of McDonnell Road with Arrowtown-Lake Hayes Road which will not be noticeable.

Overall, based on the modelling undertaken as part of this assessment, it is considered that the proposed rezoning will have negligible adverse effects on the overall transport network which will not be noticeable.

Should you require any further information please contact me.

Yours sincerely,

A handwritten signature in blue ink, appearing to be "JB", with a large, stylized flourish extending to the right.

Jason Bartlett
CEng MICE, MEngNZ
Traffic Engineer

Appendix A Response to QLDC Request for Further Information (9 April 2026)

The following provides a detailed response to the transport elements of the QLDC RFI.

a. Confirm the available sight distance to the south out of the access;

There are no specific road network plans at this stage and therefore I have considered the following possible scenario with respect to access to demonstrate what is possible. The basis of this being that no individual residential lot will have a direct vehicle access from McDonnell Road.

Within the ITA I have considered, either:

- All (or some) of the residential extension area will be served via a new intersection from McDonnell Road, refer ITA 4.1.1. The location of any new access intersection from McDonnell Road will be limited by operating speed and sight distance. To achieve minimum sight distances to the south any new access intersection from McDonnell Road is to be no more than 200m to the south of the existing Brodie Avenue intersection.
- Alternatively, all (or some) of the residential extension area can be served via an extension of the existing Brodie Avenue, refer ITA 4.1.2. The existing Brodie Avenue and its intersection with McDonnell Road has sufficient capacity to accommodate the additional traffic and meets minimum sight distance requirements to the south. No changes are required to the existing Brodie Avenue intersection.

This confirms (refer ITA) that the proposed residential extension may be served by either:

- Forming a new access intersection from McDonnell Road,
- Extending the existing Brodie Avenue,
- Brodie Avenue being modified to be a loop road with a second access intersection with McDonnell Road (refer above).

It is possible to access the proposed residential extension, through a number of possible scenarios which will achieve minimum sight distance requirements to the south based on the current driving environment on McDonnell Road.

I note that any access arrangement from McDonnell Road would be part of a future resource consent application and associated engineering approvals.

b. Identify whether any shoulder widening or right turn bay would be required at this access;

No changes are necessary should the existing Brodie Avenue intersection be utilised for access to all, or part, of the residential extension area.

A future intersection from McDonnell Road within the (rural) 80km/hr speed limit is likely to require shoulder widening on both sides of the road to accommodate a basic left turn treatment and basic right turn treatment (refer Austroads design guidance). These elements will require earthworks to realign (vertically) the existing walking and cycling trail opposite the Site. I expect that these can be accommodated within the existing 20m legal road reserve for McDonnell Road.

The intersection will not warrant additional marked traffic lanes (right turn bay or left turn slip lane) within the McDonnell Road Carriageway.

c. Advise if it anticipated that the 40km/h speed limit will be extended to encompass the proposed intersection (should the Plan Change be approved);

This ITA has not considered any changes to the existing speed limits, it is entirely based on the current speed environment on McDonnell Road. No changes to the existing speed limits are required for the Plan Change.

It is possible to extend the existing 40km/hr speed limit to the south. However, this would be reliant on decisions of the Road Controlling Authority (QLDC) which is outside of the plan change process and therefore cannot, and has not, been relied on.

If the 40km/hr speed limit is extended to the south this will have an influence on the operating speed of McDonnell Road and possible vehicle access and access intersections which can be considered at future resource consent application and associated engineering approvals.

d. Confirm whether the road frontage to McDonnell Road will be urbanised on the same side of the road as the site? This would include extension of the footpath to the site access.

The Site will result in some urbanisation of McDonnell Road, there will be visual urban development (houses) along the roadside which is likely to influence the driving environment. It is expected that the footpath would be extended for pedestrian access to all residential dwellings with frontages onto McDonnell Road and to provide a pedestrian link to any new intersection.

No individual residential lot will have a direct vehicle access from McDonnell Road. It is expected that vehicle access would be limited to a single (road) intersection from McDonnell Road. The ITA is based on the current driving environment on McDonnell Road and does not rely on the urbanisation of McDonnell Road.