Arrowtown South

Proposed Private Plan Change

Transportation Assessment Report

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John Edmonds and Associates Ltd
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Dear John / Bridget

Proposed Private Plan Change, Arrowtown South: Transportation Assessment

Further to your recent e-mail and our discussions, we have updated our assessment of the traffic and transportation effects of the proposed Arrowtown South Plan Change to provide for a total of approximately 200 lots.

Our report describes the traffic-related features of the proposed zone, its location within the surrounding transportation network, and the details of existing traffic volumes and characteristics. Likely changes in traffic levels and patterns resulting from the plan change have been determined, and an assessment made of the effects on the adjoining transportation networks.

Overall, we conclude that the traffic-related effects of the proposed Plan Change will not be significant (and in practice may not even be perceptible to drivers) and thus we are able to support the proposal from a traffic and transportation perspective.

I trust the report meets your expectations, but please do not hesitate to contact me if you require further information or clarification of any issues.

Yours faithfully
Traffic Design Group Ltd

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Project Transportation Engineer

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Arrowtown South

Proposed Private Plan Change

Transportation Assessment Report
Quality Assurance Statement

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1. Introduction

A group of landowners at the southern edge of Arrowtown propose to promote a private Plan Change on land towards the south of Arrowtown town centre. The land is presently zoned as Rural General under the Queenstown Lakes District Plan, and the intent of the Plan Change is to introduce a Special Zone which will allow for the development of approximately 200 residential lots.

This Transportation Assessment Report identifies the potential traffic effects of the proposed Plan Change and connections to the roading network, including reference to relevant transportation polices and objectives within local and regional planning documents.

This assessment also considers the implications of travel to and from the proposed development on the adjacent transport network, and demonstrates how any potential adverse effects can be mitigated or minimised. Whilst this Transportation Assessment includes coverage of travel by private motor vehicle, it also recognises the importance of other forms of transport. Consequently consideration has also been given to public transport, walking and cycling.

2. Existing Transport Environment

2.1 Zone Location

The proposed Plan Change area lies to the south of Arrowtown between McDonnell Road and Centennial Avenue. Figure 1 shows the location of the proposed zone towards the south of Arrowtown town centre, and also indicates the roading hierarchy for the district roads in the immediate vicinity as set out in the Queenstown Lakes District Plan.

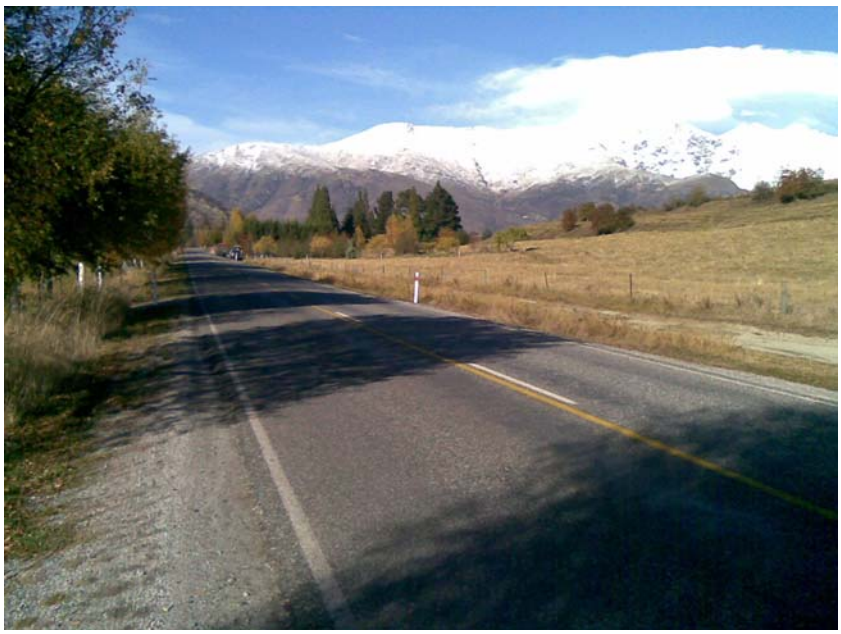
McDonnell Road towards the west of the site is a Local Road under the District Plan roading hierarchy, whereas Centennial Avenue is an Arterial Road north of its 50km/h / 100km/h speed transition, and a Local Road towards the south.

On the Centennial Avenue frontage, the northern boundary of the proposed zone adjoins the Chartres Green residential development, and on the eastern side of Centennial Avenue is the Arrowtown Golf Course. The golf course extends across Centennial Avenue and forms the southern edge to the proposed Plan Change area. On the western side of McDonnell Road, is The Hills Golf Course.

2.2 Roading Network

2.2.1 Centennial Avenue

Centennial Avenue runs in a generally straight north-south alignment along the eastern boundary of the proposed zone. It is a two-lane single carriageway road, which in the immediate vicinity of the proposed zone has edgelines and a centreline and is subject to a 100km/h speed limit. The traffic lanes are in the order of 3.0m wide in this location.



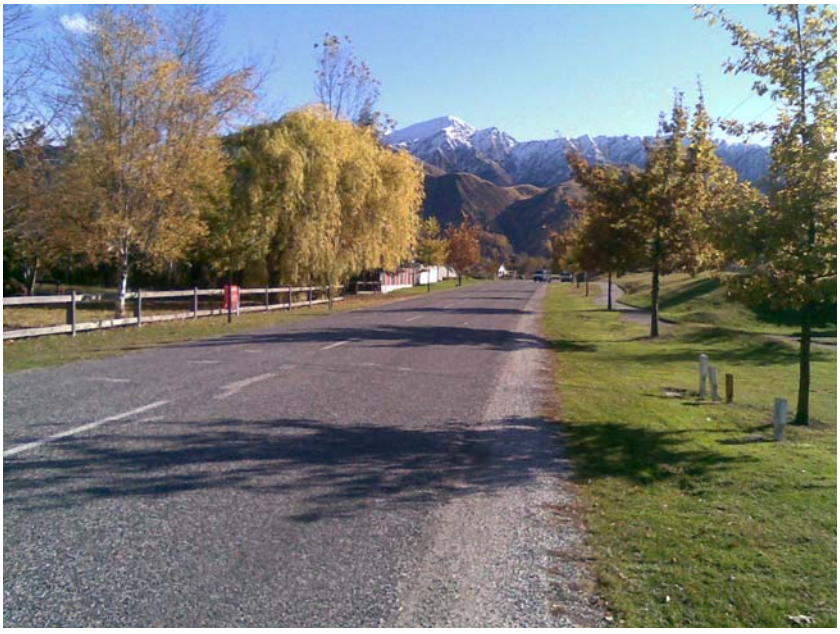
Photograph 1: Centennial Avenue (with proposed zone on right of photograph)

Further towards the north, there is a 'gateway' feature installed on Centennial Avenue around 50m south of the Centennial Avenue / Jopp Street intersection, at which point the speed limit reduces to 50km/h.

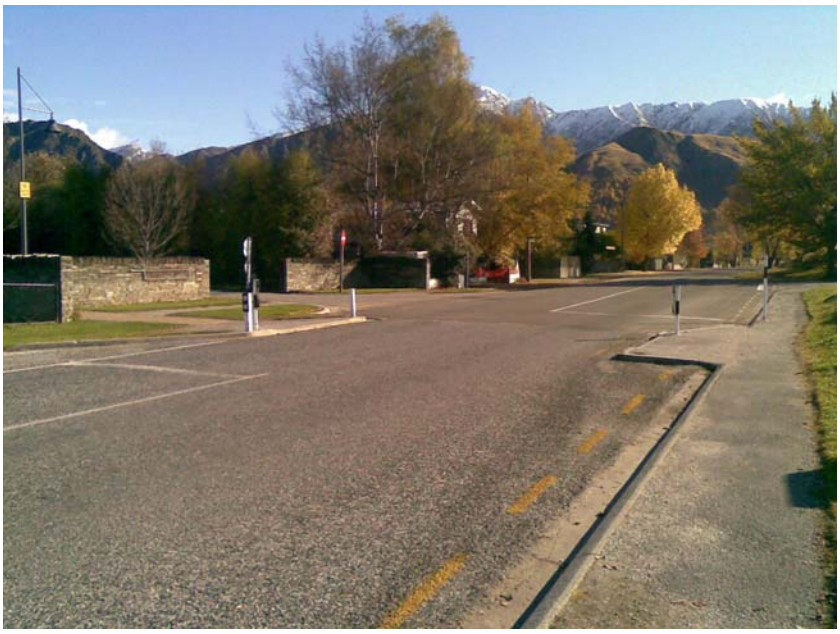
Photograph 2: Centennial Avenue 'gateway' feature (looking north)

Beyond this threshold, the road becomes more urban with frequent direct property accesses and frontages. While the road centreline continues, this part of Centennial Avenue does not have edgelines. The seal width is approximately 6.5m.

Around 0.5km further north again, there is a school where there is an associated kerb build-out which reduces the carriageway width to 7.0m.



Photograph 3: Centennial Avenue, north of Jopp Street



Photograph 4: Kerb build-out at school on Centennial Avenue

Centennial Avenue retains priority towards the centre of Arrowtown.

Further towards the south however, the road becomes more rural with considerably less frontage development. Around 1.2km south of the proposed zone, the road has a more winding and undulating alignment, with an advisory 65km/h speed limit. It intersects with McDonnell Road around 1.7km south of the proposed zone, where McDonnell Road forms the southern and western arms of the priority intersection. However, vehicle travelling north-south retain priority.

Photograph 5: Centennial Avenue, just north of McDonnell Road (looking north)

Photograph 6: Centennial Avenue / McDonnell Road intersection

2.2.2 McDonnell Road

From its intersection with Centennial Avenue, McDonnell Road runs south for around 1,1km before joining State Highway 6 at priority intersection (known as 'Arrow Junction'). The intersection is configured in a manner to provide for a high level of capacity, with carriageway markings delineating separate lanes for vehicles turning left and right from McDonnell Road, a right-turn lane for state highway traffic, and two lanes on McDonnell Road for traffic turning into that road. A raised and planted island separates the northbound and southbound traffic on McDonnell Road. In turn, State Highway 6 links to Cromwell towards the east and Frankton / Queenstown to the west.

Photograph 7: Arrow Junction (State Highway 6 / McDonnell Road intersection)

Towards the north of its intersection with Centennial Avenue, McDonnell Road runs approximately parallel to Centennial Avenue in a north-south direction. The southernmost part of McDonnell Road is rural with few property frontages and an 80km/h speed limit. The main access to The Hills golf course is some 1.8km north of the Centennial Avenue / McDonnell Road intersection, and around 0.4km further north is a 'gateway' feature where the speed limit transitions to 50km/h. McDonnell Road generally has two traffic lanes of 3.5m each, with unsealed shoulders of up to 2.5m on both sides of the carriageway. At the 'gateway', the traffic lanes become 3.0m wide and there is a flush median of 1.1m width.

Photograph 8: McDonnell Road (looking south with proposed zone on left of photograph)

Photograph 9: McDonnell Road (looking south towards 'gateway' feature)

North of the 'gateway' feature, McDonnell Road becomes more urban, with residential property fronting onto the eastern side of the road. In addition to the property accesses, a parking lane of 2.5m width is provided along the eastern side. There is also a series of four round-topped speed humps on this part of the road, each of which has an advisory speed limit of 25km/h.

Photograph 10: Northern section of McDonnell Road (looking south)

At its northern end, McDonnell Road meets Arrowtown-Lake Hayes Road / Berkshire Street and Malaghans Road. This intersection is a priority-controlled, cross-road intersection, with priority given to Arrowtown-Lake Hayes Road / Berkshire Street.

Photograph 11: Arrowtown-Lake Hayes Road (looking south past McDonnell Road on left of photograph)

The northern arm of the intersection, Berkshire Street, provides a primary access route towards Arrowtown town centre.

2.3 Public Transport

The Connectabus service runs to Queenstown, with a route via Arrowtown – Lake Hayes Road to the town centre. Within Arrowtown, the service operates in a loop, via Berkshire Street, Ramshaw Lane, Buckingham Street, Bedford Street, Centennial Avenue, Adamson Drive and Caenarvon Street. Consequently, there is no public transport infrastructure provided on either McDonnell Road or Centennial Avenue south of Adamson Drive. Figure 2 shows the present bus route.

2.4 Footpaths and Cycling

There is no specific provision for cyclists on the roads in the vicinity of the proposed zone, such as cycle lanes or dedicated cycle paths, and neither are no footpaths provided in the immediate vicinity

However, a 1.5m wide pedestrian footpath is provided on the eastern side of Centennial Avenue, north of Jopp Street. This terminates at Jopp Street. There is also an informal walking route along the western side of Centennial Avenue which passes the proposed zone.

Photograph 12: Footpath on Centennial Avenue

Photograph 13: Walking route on eastern side of Centennial Avenue near proposed zone

There is a formed walking route on the western side of the southern part of McDonnell Road, but further north (that is, in the more urbanised area), the footpath is not present. However, it recommences on the eastern side of Berkshire Street, at the Arrowtown – Lake Hayes Road / McDonnell Road intersection.

Photograph 14: Footpath on southern part of McDonnell Road

3. Current Transportation Patterns

3.1 Daily Traffic Volumes

Daily traffic count information has been provided by Queenstown Lakes District Council, and the most recent Annual Daily Traffic (ADT) volumes on roads in the vicinity of the proposed zone are summarised in Table 1 below.

Location		Average Daily Traffic (vpd)	Count year
Centennial Ave	Preston Drive to Thames Street	2985	2007
	Cornwall Street to Elva Dawson Place	2219	2006
	Elva Dawson Place to 100km sign	2174	2006
	100km sign to McDonnell Road	1378 (2193 estimated)	2008
McDonnell Rd	Arrowtown Lake Hayes Rd to end of seal	718	2007
	End of seal to 80km/h sign	859	2005
	Centennial Ave to State Highway 6	2348	2008
Malaghans Road	Arrowtown Lake Hayes Rd to Millbrook	2083	2006

Table 1: Daily Traffic Volumes

The data highlights the role of Centennial Avenue as carrying the more significant volumes of traffic, with flows in the order of 2.5 times greater than on McDonnell Road. This difference is unsurprising when the roading network is considered, in that for vehicles approaching Arrowtown from the south, Centennial Avenue has priority and leads directly to the town centre, whereas McDonnell Road requires a (slightly) increased journey distance of 0.5km. Further, the road humps on McDonnell Road will slow vehicle speeds and hence increase journey times.

Generally any road carries between 10% and 15% of its daily traffic in the peak hours. Centennial Avenue is therefore anticipated to carry around 300 to 330 vehicles per hour in the busiest periods, or one vehicle every 12 seconds. Conversely, McDonnell Road carries one vehicle every 30 seconds at the busiest times on the busiest section.

3.2 Public Transport

The Green Route of the Connectabus service serves Arrowtown, with one service every hour between (approximately) 7am and 7pm. This passes through Remarkables Park, the airport, and Queenstown town centre. Within Queenstown, passengers can interchange to travel to Fernhill and Sunshine Bay. Within Arrowtown, the service operates in a loop, via Berkshire Street, Ramshaw Lane, Buckingham Street, Bedford Street, Centennial Avenue, Adamson Drive and Caenarvon Street.

There are several Intercity bus services which connect Arrowtown with other locations around the South Island. In addition, the Queenstown-Arrowtown Express Coach Service provides a link between Queenstown and Arrowtown. This bus service runs three times a day in each direction. The Double Decker Bus tour also runs a return service from Queenstown to Arrowtown, with a 50 minute layover in Arrowtown during each run. A school bus route is also signposted on Hogans Gully Road.

3.3 Parking

Although no formal surveys have been undertaken, the nature of the land use adjacent to the roading network means that there is minimal on-street parking activity within the rural areas, but a greater instance of parking on roads subject to a 50km/h speed limit. In particular, the parking lane on the northern section of McDonnell Road is well-used, with 17 vehicles observed to be parked in this location at 10am on 7 April 2009.

3.4 Cyclists and Pedestrians

Informal on-site observations indicate that there is a low level of cyclist and pedestrian activity in the vicinity of the proposed zone, but given the extent of development in the immediate area, these observations are not surprising. Consequently, whilst the current level of specific provision for pedestrians and cyclists in the vicinity is limited, it is considered to be appropriate for the existing low levels of these road users in the immediate area.

3.5 Road Safety

The Land Transport New Zealand Crash Analysis System (CAS) has been used to identify all reported crashes generally bounded by Berkshire Street, Caernavon Street, Adamson Drive, Centennial Ave and McDonnell Road, including the full length of Centennial Ave and McDonnell Road as far as Arrow Junction. The search covered all reported crashes, both injury and non-injury, for the most recent five year period between 2004 and 2008 inclusive plus the partial year of 2009.

A total of seventeen injury crashes and seven non-injury crashes were reported within this area. Eleven crashes within the township, whilst the remaining 13 occurred on the roads leading into Arrowtown.

One fatal crash was reported at the Berkshire Street / Durham Street intersection. It involved a single vehicle collision with a tree. The accident happened on the outside corner of a right-hand bend, with fatigue identified as a possible factor in the crash.

Within close proximity to the proposed zone was a non-injury crash on McDonnell Road. The crash occurred on a gravel section of McDonnell Road some 1.5km south of Arrowtown-Lake Hayes Road. The driver of the vehicle swerved to avoid an animal, left the road and entered a ditch on the left side of the road. It should be noted that since this time, McDonnell Road has been fully sealed.

Two minor injury crashes occurred at the SH6 / McDonnell Road intersection and were due to right turning vehicles failing to give way. Three crashes occurred on the midblock of McDonnell Road and were loss-of-control accidents. Frost and ice were reported as contributing factors in two of the crashes, one minor and one serious injury crash. The remaining loss-of-control crash was a non-injury crash were the driver fell asleep.

There were seven reported crashes on a 600m section of Centennial Avenue to the immediate north of the Centennial Avenue / McDonnell Road intersection. Five of the seven crashes were reported as single-vehicle loss-of-control accidents. In all instances the vehicles left the road and collided with a pole, tree, fence or ditch. Two were non-injury, two were minor-injury and one resulted in serious injury. The two remaining crashes were both head-on crashes. One was due to a vehicle cutting a blind corner, the other due to a van overtaking a parked car with insufficient

visibility. While attempting to pass the parked car, the van crossed the road centreline and into the oncoming path of a vehicle.

Near the township of Arrowtown itself, there were five reported crashes where vehicles did not stop or failed to give way at stop signs. There was an additional accident at a driveway where a vehicle failed to give-way when leaving a commercial property. All but one were minor-injury crashes with the remaining crash resulting in serious injury.

There were no cyclist or pedestrian accidents reported during the review period.

4. Future Changes

4.1 The Arrowtown Plan

A Strategic Planning document outlining the future growth and community planning proposals for Arrowtown has been prepared. This Plan resulted from a community planning workshop carried out in February 2003 with the aim of reviewing and updating Arrowtown planning. It should be noted that this document does not have formal statutory status, but is a statement of community desire. Amongst the issues outlined in this Plan was traffic management, and the comments relating to sections of the road network are referenced below:

- McDonnell Road was instated as a heavy traffic route, and described as providing a logical bypass to the town. In time, McDonnell Road will be sealed to provide good access to the industrial area;
- In time, the Malaghan / Lake Hayes / McDonnell intersection may need improvement. However, planting is envisaged and can assist in speed management. There was not full support for a roundabout solution – careful design was recommended to ensure consistency with the "Arrowtown style"
- From Lake Hayes Road adequate signage and encouragement is needed to ensure heavy traffic is routed along Malaghans Road to the industrial area
- Strong entrance planting treatment on Centennial Avenue is proposed to strengthen the town boundary and make traffic aware of the urban nature and intent of slowing down. Speed restrictions are also sought – reduce to 80km on approaches to town.

It is noted that McDonnell Road has since been sealed, however the other comments are yet to be realised and do not have a confirmed time frame.

4.2 Wakatipu Trails Strategy

The Wakatipu Trails Strategy, released in May 2004 was prepared to guide development of an integrated network of walking and cycling trails and cycle-ways in the Wakatipu Basin. Preparation of the strategy was initiated by the Wakatipu Trails Trust is association with Transfund and Queenstown Lakes District Council. The Strategy lists a series of desired outcomes for the next 5 to 8 years, with those relevant to the proposed zone listed below:

- construction of a premier walking and cycling trail linking Queenstown to Arrowtown via Lake Hayes
- improvements to rural roads to accommodate horse riding and road cycling
- new trail signs, publications and information on trails

One of the proposals listed is that an arterial track be developed, linking the existing Lake Hayes Recreational track with Arrowtown. This arterial track is shown as following a similar path to the Arrowtown-Lake Hayes Road, but no specific design details are described in the strategy.

5. Current Levels of Service

5.1 Motorised Vehicles

The AUSTROADS Guide to Traffic Engineering Practice Part 2 ('Roadway Capacity') provides a generalised measure of the capacity and performance of a route. This concept of level of service indicates that for the existing traffic flows, Centennial Avenue and McDonnell Road retain a condition of free flow in which individual drivers are virtually unaffected by the presence of others in the traffic stream, have freedom to select their own desired speeds and generally experience high levels of comfort and convenience.

With regard to intersection capacities, Table 4.1 of the AUSTROADS Guide to Traffic Engineering Practice Part 5 ('Intersections at Grade') sets out traffic volumes below which it is considered unnecessary to undertake a detailed intersection analysis. The combination of traffic volumes at the McDonnell Road / Arrowtown-Lake Hayes Road / Berkshire Street / Malaghans Road intersection falls below these thresholds, and as such, the intersection offers a high level of service.

5.2 Public Transport

The current scheduled public transport service passes around 0.8km to the north of the proposed zone. Given the current extent of development (and hence patronage) at the proposed zone, this is not an unreasonable level of provision.

5.3 Cyclists and Pedestrians

It is considered that the existing provisions for pedestrians and cyclists are appropriate for the likely volumes and desire lines, and extent of development in the area.

5.4 Road Safety

It is not considered that there are any factors evident within the accident records which suggest any underlying road safety issues on the roading network. The pattern of single vehicle accidents occurring on the more rural sections of road, and of failure to give-way accidents occurring in the urban areas is not unusual.

6. Proposed Plan Change Activity

6.1 Existing Land Use

The proposed zone is presently zoned as Rural General under the District Plan, and therefore a very low level of development is presently envisaged.

6.2 Proposed Land Use

The proposed zone would result in an increased residential density, with approximately 200 residential lots to be provided.

A village centre is also envisaged to be provided, with options for land use which include retail, commercial, cafés, visitor accommodation, residential, community uses and childcare facilities.

6.3 Structure Plan

Given that this is a Plan Change, there is no specific layout available of the proposed development. A Structure Plan has however been produced, which is used as the basis of the analysis set out in this report.

6.3.1 Access

Access to the proposed zone is potentially available from both Centennial Avenue and McDonnell Road, and it is proposed to create new priority intersections on both. These will include an access onto each road for the proposed 'through route' within the proposed zone, a secondary point of access towards the north of the through road, and a small cul-de-sac on McDonnell Road. The secondary accesses are unlikely to carry any through traffic since they will be less direct than the primary 'through route'. Given the alignment of both Centennial Avenue and McDonnell Road, it is not expected that any significant issues will arise with the sight distances available to emerging vehicles, although it should be noted that the sight distances required depend upon the speed limit which may reduce in response to the development.

A total of 16 residential properties will front onto McDonnell Road to the immediate north and south of the access to the village area. This design approach has been taken to encourage an 'active edge' to the proposed zone, but also to enable a reduced speed limit to be considered on McDonnell Road.

6.3.2 Internal Road Network

The topography of the area means that a winding road alignment will be required within the site (in order to achieve suitable gradients), and this will serve to reduce vehicle speeds. It is envisaged that there will be a continuous roading link through the proposed zone, and this has been introduced in order to ensure that those living closer towards McDonnell Road can easily travel to/from the schools on Centennial Avenue, as well as facilitating improved access to the facilities within the village. Due to travel patterns within the area and the existing roading network, it is considered that there will be minimal 'through traffic' within the site. If necessary, there are also options available to further dissuade through traffic, such as installing a short section of single-lane carriageway, or utilising different road surfacing materials.

In order to reflect both new urbanism concepts and the historic roading designs within the older parts of Arrowtown, it is expected that the road cross-sections will not adhere to Council's current subdivision guide. While they will be appropriate for the expected numbers and types of vehicles, they will be somewhat narrower both to encourage slow speeds and provide a more pedestrian-orientated environment.

6.3.3 Buses, Cyclists and Pedestrians

Given the expected provision of a through-route, there is an opportunity for the existing bus service to be extended, to pass through the within the proposed zone and hence between Centennial Avenue and McDonnell Road. This will require careful design of the through route to ensure that buses may pass, while still maintaining a narrower carriageway width.

Provision of walking and cycling routes will be achieved in part through the roading environment supporting slower motorised vehicle speeds. This does not preclude a network of walking/cycling trails from being introduced within the proposed zone.

6.4 Speed Limit

At present, both Centennial Avenue and McDonnell Road are subject to a speed limit in excess of 50km/h. However, in accordance with 'best practice' urban design, the development will not 'turn its back' on those roads and this will increase the extent of frontage development. In turn, this means that under the 'Setting of Speed Limits 2003' rule, it is possible to reduce the maximum speed limit on both roads.

While the changing of the speed limit cannot be determined with certainty at this stage, a reduced speed limit serves to reduce the sight distances required at the site accesses. Moreover, there is scope for the transition point of the speed limit to be reinforced through improved 'gateway' features, which will also provide an enhanced entrance to Arrowtown for traffic approaching from the south.

7. Traffic Generation and Distribution

7.1 Existing Traffic Generation

The proposed zone is currently vacant and thus generates minimum numbers of vehicle movements per day.

7.2 Proposed Plan Change

Transfund NZ Research Report 209: "Trips and Parking Related to Land Use" has found daily rates of between 6 and 9 vehicles per day (vpd) (IN+OUT) typically occur in rural residential subdivisions and "reflect the increased trip linking which occurs when the primary employment trip is longer, eg greater than 20 minutes, as with rural lifestyle properties located on the outskirts of an urban area".

Under Council's amendments to NZS4404:2004, it is required that residential traffic loading is assessed on the basis of eight vehicle movements per day. This is towards the upper range of that set out in Transfund NZ Research Report 209, but has been used as the basis of this assessment.

Land Use	Number of Households	AM Peak Hour			PM Peak Hour			Daily		
		In	Out	Total	In	Out	Total	In	Out	Total
Residential	200	60	140	200	133	67	200	800	800	1600

Table 2: Traffic Generation of Proposed Land Use

In respect of the village centre where a range of land uses is possible (such as retail, commercial, cafés, visitor accommodation, residential, community uses and childcare facilities), at this stage the traffic generation has been assessed as for a residential use. This is because in the peak hours, this land use is likely to have the greater traffic generation of the possible alternative land use options. Moreover, in the event that a non-residential use is established, it is considered likely that the external traffic generation of the proposed zone will diminish as residents make use of the facilities without the need to travel into Arrowtown town centre. Thus allowing for a residential land use to be established in the village centre results in a conservatively robust scenario.

The 2006 Census found that car ownership in Arrowtown was higher than the wider Otago region, with car travel being the predominant manner of travelling to work. Consequently, although it is likely that a proportion of the above trips will be made by modes other than private car, no reduction has been made in the data in order to ensure a robust analysis.

7.3 Traffic Distribution and Assignment

It is considered that peak hour travel is likely to be associated with movements to/from Arrowtown itself, Queenstown and Frankton. While there may be some travel associated with destinations towards the east (Cromwell and Alexandra) or the north (Wanaka), these are unlikely to be particularly high percentages.

The following distributions are expected for the proposed zone.

Destination	Route	Percentage
Arrowtown	North via McDonnell Road	10
	North via Centennial Avenue	10
Queenstown	North via McDonnell Road to Malaghans Road	30
	North via Centennial Avenue to Malaghans Road	30
Frankton	North via McDonnell Road, then south via Lake Hayes – Arrowtown Road	5
	South via Centennial Avenue then east on SH6	5
Wanaka	South via McDonnell Road then east on SH6	3
	South via Centennial Avenue then east on SH6	3
Cromwell/Alexandra	South via McDonnell Road then east on SH6	3
	South via Centennial Avenue then east on SH6	3
Total		100

Table 3: Expected Distribution of Traffic

The expected increases on the roading network in the vicinity of the proposed zone are shown on Figures 3 and 4.

8. Impacts of the Proposed Development

8.1 Road and Intersection Capacity

As might be expected, there are increases on McDonnell Road and Centennial Avenue, immediately north of the proposed zone. In the peak hours, the increase equates to around one additional vehicle every 40 to 50 seconds (two-way). However, the greatest increase occurs on Malaghans Road, since this is considered to be the route most likely to be used by those travelling into Queenstown. The additional vehicle loading equates to one extra vehicle every 30 seconds.

In both cases, the extent of the increase is unlikely to be perceived by drivers. However the increase is likely to change the peak hour level of service on Malaghans Road from LOS B to LOS C. This is still a zone of stable flow conditions, but the main difference is that drivers will be restricted to a greater extent in their freedom to select their desired speed and to manoeuvre within the traffic stream.

At the accesses, the peak hour traffic volumes are such that under Table 4.1 of the AUSTROADS Guide to Traffic Engineering Practice Part 5 ('Intersections at Grade') there is no requirement to undertake a detailed intersection analysis. Similarly, the increase in traffic flow at the McDonnell Road / Arrowtown-Lake Hayes Road / Berkshire Street / Malaghans Road intersection remains below these thresholds.

At Arrow Junction, the maximum increase in traffic flows is expected to be in the order of one additional vehicle movement every two minutes (two-way). This level of increase is not considered to be sufficient to result in any perceptible effect at the intersection.

8.2 Public Transport

Although there is presently no bus service in the immediate vicinity of the proposed zone (as it passes 0.8km towards the north), the change in lane use will serve to increase the potential patronage in the area. However, given the size of the development which would be permitted, it is more likely that the existing bus service would be diverted rather than wholly new services introduced.

8.3 Walking and Cycling

Provision of walking and cycling routes will be achieved in part through the narrow roads within the proposed zone resulting in slower motorised vehicle speeds. However, it is expected that a network of walking/cycling trails will be constructed within the proposed zone to facilitate pedestrian and cyclist movements.

8.4 Road Safety

The small increase in traffic volumes, coupled with the existing road safety records in the area, do not indicate that the proposed Plan Change will serve to introduce any significant adverse road safety effects.

9. Planning Policy Framework

9.1 Otago Regional Policy Statement

Chapter 9 of the Otago Regional Policy Statement (RPS) outlines the issues, objectives and policies relating to the built environment which includes transportation links. One policy is directly relevant to transport being:

Policy 9.5.3: To promote and encourage the sustainable management of Otago's transport network through:

(a) Promoting the use of fuel efficient modes of transport; and

(b) Encouraging a reduction in the use of fuels which produce emissions harmful to the environment; and

(c) Promoting a safer transport system; and

(d) Promoting the protection of transport infrastructure from the adverse effects of landuse activities and natural hazards.

Chapter 12 of the RPS outlines policies relating to Energy. The relevant transport policy within this section of the RPS is:

Policy 12.5.3: To improved energy efficiency within Otago through:

(d) Encouraging energy efficient transport modes in Otago

It is considered that the proposed Plan Change is consistent with these policies, in that the proposed zone is proximate to Arrowtown town centre, can be served by public transport and provides for a slow speed traffic environment hence supporting walking and cycling activity. Further, the additional traffic associated with development which would be permitted is not expected to result in adverse road safety implications.

9.2 Otago Regional Land Transport Strategy

The Otago Regional Land Transport Strategy (RLTS) 2005-2015 describes a series of key result areas for achieving the vision of "a sustainable quality of life for current and future generations".

The RLTS takes into account the priorities, needs and aspirations contained in the New Zealand Land Transport Strategy and the Land Transport Management Act as well other national policy documents specifically addressing vehicle emissions, road safety, walking and cycling and climate change.

The RLTS states that it seeks transportation systems that:

- enable the Otago economy to thrive
- offer a safe physical environment for all users
- deliver a healthy, pleasant and low pollution environment
- promote a social environment that is supportive and enables participation by all sectors
- foster community ownership of land transport decision making
- integrate land use and transport needs
- are innovative and responsive to change

The RLTS identifies five core elements that represent a balanced approach to achieving this vision. These areas are:

- Economy: Freight and Tourism
- Transport Choice
- Roads: Efficiency, safety and the environment
- Demand management
- Land Use planning

The RLTS outlines the issues identified as affecting Otago's regional transport and provides policy under each category identified. These categories are:

- Economic wellbeing
- Environmental wellbeing
- Social wellbeing
- Cultural wellbeing

The proposed zone is consistent with the RLTS in the following ways:

- A high standard, pedestrian and cycle environment can be provided within the proposed zone and between the proposed zone and the surrounding transportation network. This enables promotion of the use of these alternative modes.
- Public transport already services Arrowtown and can be extended to run through the proposed zone.
- The proposed zone can be provided with safe and direct access to the existing transport network (including the arterial network), and will not adversely impact on the effectiveness of that network.
- The development will not require additional significant transport infrastructure provision.

9.3 District Plan Issues, Objectives and Policies

Section 14 of the Queenstown Lakes District Plan sets out transport-related issues, policies and objectives. Note that Objectives 4 (Town Centre Accessibility and Car Parking) and 8 (Air Transport) are not relevant in this case.

Objective 1 – Efficiency

Efficient use of the District's existing and future transportation resource and of fossil fuel usage associated with transportation.

Policies:

1.1 To encourage efficiency in the use of motor vehicles.

1.2 To promote the efficient use of all roads by adopting and applying a road hierarchy with associated access standards based on intended function.

1.3 To promote the efficient use of roads by ensuring that the nature of activities alongside roads are compatible with road capacity and function.

1.4 To protect the safety and efficiency of traffic on State Highways and arterial roads, particularly State Highway 6A, by restricting opportunities for additional access points off these roads and by ensuring access to high traffic generating activities is adequately designed and located.

1.5 To promote the efficient use of fuel for transport purposes, by providing for a District wide policy of consolidated urban areas, townships, retail centres and residential environments.

1.6 To promote and provide for the consolidation of new areas of residential development and for higher density development within identified areas.

1.7 Enabling for home occupations within residential areas to reduce travel time and costs between home and work.

1.8 To consider options for encouraging and developing greater use of public transportation facilities and in particular to continue to investigate the options for alternative transport means.

1.9 To require off-road parking and loading for most activities to limit congestion and loss of safety and efficiency of adjacent roads and to promote the maintenance and efficiency of those roads.

1.10 To require access to property to be of a size, location and type to ensure safety and efficiency of road functioning.

The proposed Plan Change represents an extension to the current urban area of Arrowtown, and therefore is a consolidation of the residential area which is envisaged. The proposed Plan Change will increase traffic volumes on the state highway network only marginally, and no new points of access are proposed. Similarly, traffic volumes are such that no significant reduction in safety or effective operation of the roading network is anticipated.

Objective 2 - Safety and Accessibility

Maintenance and improvement of access, ease and safety of pedestrian and vehicle movement throughout the District.

Policies:

2.1 To maintain and improve safety and accessibility by adopting and applying a road hierarchy with associated design, parking and access standards based on the intended function.

2.2 To ensure the intensity and nature of activities along particular roads is compatible with road capacity and function, to ensure both vehicle and pedestrian safety.

2.3 To ensure access and movement throughout the District, and more particularly the urban areas, for people with disabilities is not unreasonably restricted.

2.4 To encourage the development of pedestrian and cycle accessways, within the main townships.

2.5 To maintain and upgrade, where appropriate, the existing roads and provide for new roads and related facilities where these are important for providing access.

2.6 To ensure intersections and accessways are designed and located so:

- *good visibility is provided.*
- *they can accommodate vehicle manoeuvres.*
- *they prevent reverse manoeuvring onto arterial roads; and*
- *are separated so as not to adversely affect the free flow of traffic on arterial roads.*

2.7 To ensure vegetation plantings are sited and/or controlled so as to maintain adequate visibility and clearance at road intersections and property access and to prevent the icing of roads during winter months,except and unless that vegetation is important to the visual amenity of the District or is protected as part of the Heritage Provisions.

It is considered that the access arrangements to the proposed zone are appropriately located (although as noted above, this depends upon the prevailing speed limit), and take account of the roading hierarchy. No significant adverse safety or capacity-related effects are likely to arise, and no perceptible effects are considered likely on vehicles already using the roading network.

Objective 3 - Environmental Effects of Transportation

Minimal adverse effects on the surrounding environment as a result of road construction and road traffic.

Policies:

3.1 To protect the amenities of specified areas, particularly residential and pedestrian orientated town centres from the adverse effects of transportation activities.

3.2 To discourage traffic in areas where it would have adverse environmental effects.

3.3 To support the development of pedestrian and similar links within and between settlements and the surrounding rural areas, in order to improve the amenity of the settlements and their rural environs.

3.4 To ensure new roads and vehicle accessways are designed to visually complement the surrounding area and to mitigate visual impact on the landscape.

3.5 To maintain and enhance the visual appearance and safety of arterial roads which are gateways to the main urban centres.

3.6 To incorporate vegetation within roading improvements, subject to the constraints of road safety and operational requirements, and the maintenance of views from the roads.

3.7 To implement appropriate procedures, in conjunction with the takata whenua and Historic Places Trust, should any waahi tapu or waahi taonga be unearthed during roading construction.

3.8 To set areas aside for staff car parking in Business and Industrial Zones.

The philosophy adopted to the internal roading is considered to assist in mitigating their impact upon the landscape, and it is not expected that the generally low traffic volumes associated with the development will adversely affect the amenity of Arrowtown town centre.

Objective 5 - Parking and Loading - General

Sufficient accessible parking and loading facilities to cater for the anticipated demands of activities while controlling adverse effects.

Policies:

5.1 To set minimum parking requirements for each activity based on parking demand for each land use while not necessarily accommodating peak parking requirements.

5.2 To ensure business uses have provision for suitable areas for loading vehicles on-site.

5.3 To ensure car parking is available, convenient and accessible to users including people with disabilities.

5.4 To require all off-street parking areas to be designed and landscaped in a manner which will mitigate any adverse visual effect on neighbours, including outlook and privacy.

5.5 To require the design of parking areas to ensure the safety of pedestrians as well as vehicles.

5.6 To set areas aside for staff car parking in business and industrial zones.

No changes are proposed to the parking requirements set out in the District Plan, and it is expected that these can be achieved without difficulty.

Objective 6 - Pedestrian and Cycle Transport

Recognise, encourage and provide for the safe movement of cyclists and pedestrians in a pleasant environment within the District.

Policies

6.1 To develop and support the development of pedestrian and cycling links in both urban and rural areas.

6.2 To require the inclusion of safe pedestrian and cycle links where appropriate in new subdivisions and developments.

6.3. To provide convenient and safe cycle parking in public areas.

It is envisaged that the proposed zone will provide for walking and cycling activities, and the roading design will encourage slow vehicles speeds which will support these further.

Objective 7 - Public and Visitor Transport

Recognition of public transport needs of people and provision for meeting those needs.

Policies:

7.1 To plan and encourage an efficient pattern of public transport.

7.2 To investigate opportunities for public transport as an alternative to, or in association with, changes or extensions to the major road network.

7.3 To promote and investigate opportunities for a public transport link between Queenstown and Frankton.

7.4 To support the development and operation of various types of tourist transport.

7.5 To liaise with the Otago Regional Council and public transport operators to ensure the public transport needs of the District are met.

The proposed zone is located such that an extension of the existing public transport service can be achieved, and the structure plan provides a through-route to assist in this.

9.4 District Plan Rules

It is considered that the District Plan Rules set out in Appendix 7 and Council's Development and Subdivision Engineering Standards (Amendments and Modifications to NZS4404:2004) will form an appropriate basis for the proposed Plan Change. However, it is not envisaged that strict adherence to the Rules and Standards will be achieved. This is because in order to achieve the optimum urban design outcome, philosophies and layouts are likely result in non-compliances. This may occur through adopting a narrower carriageway width than normal, or having no footpaths where the road is expected to carry low traffic volumes. It is understood that Council will have the opportunity to consider and comment upon any such deviations prior to any construction work commencing.

9.5 Arrowtown Design Guidelines

The Queenstown Lakes District Council has published the Arrowtown Design Guidelines to encourage appropriate future development within Arrowtown. The primary aim of the guidelines is to *"reinforce and provide more explicit ways to achieve the aims of the Community and Council's District Plan"*. The Design Guidelines is broken down in to four distinct precincts with these being the river, the town centre, old town residential and new town. The proposed Plan Change area is within the New Town area of Arrowtown for which the guidelines state:

"*opportunities should be taken to adapt characteristics that strengthen links to old Arrowtown in any new subdivision or redevelopment of part of an earlier subdivision. This includes using narrow streets with wide grass verges and swales. The use of a more rectangular/grid layout combined with back lanes for parking would enable reduced domination of car parking and garaging to the street. In addition, houses would be able to be designed more easily to relate to the street.*"

It is considered that the proposed Plan Change area can be developed in accordance with these guidelines.

10. Summary and Conclusion

This Transportation Assessment has considered the potential transportation impacts of a proposed private Plan Change in Arrowtown. Overall, the proposed will result in an increased level of activity compared to the present underlying zoning. However, even allowing for a trip generation rate higher than might be expected, the increase is unlikely to be perceived by drivers and at the key intersections (and accesses) any effects are likely to be negligible. While the traffic increase is likely to change the peak hour level of service on Malaghans Road from LOS B to LOS C, the only practical difference will be that drivers will be restricted to a greater extent in their freedom to select their desired speed and to manoeuvre within the traffic stream, However, LOS C is still a zone of stable flow conditions.

The proposed Plan Change has been assessed against the relevant transport planning framework contained in regional and local strategies and policies, and overall, it is considered that the proposal is consistent with the transport-related objectives and policies of those documents.

Accordingly, it is considered that the proposed Plan Change can be supported from a transportation perspective.

Traffic Design Group Ltd
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