

**BEFORE THE HEARINGS PANEL FOR THE QUEENSTOWN LAKES
PROPOSED DISTRICT PLAN**

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of the Queenstown Lakes District Proposed District Plan,
Hearing Stream 14 – Wakatipu Basin rezoning

AND

IN THE MATTER Submission 2313, Hogans Gully Farm.

STATEMENT OF EVIDENCE OF JASON BARTLETT FOR

Hogans Gully Farm (2313)

13th June 2018

INTRODUCTION

Qualifications and experience

- 1 My name is Jason Bartlett. I am an experienced traffic and transportation engineer. My academic and professional qualifications are:
 - (a) New Zealand Certificate in Engineering, Civil Option obtained in 1993;
 - (b) Bachelor of Engineering (BE) from the University of Canterbury awarded in 1996;
 - (c) Engineering New Zealand Member (MENGZ), previously IPENZ and I have been a graduate member since 1995; and
 - (d) Chartered Engineer and Member of the Institution of Civil Engineers (CEng MICE), since 2007.
- 2 I have over twenty years experience in road design, network management, traffic and transportation engineering including nine years in the UK. During my time in the UK I became a Chartered Engineer and a Member of the Institution of Civil Engineers.
- 3 Since April 2008 I have been working as a traffic and transportation engineer in Queenstown. The first four of these years was for GHD Limited. I now operate my own traffic engineering consultancy, Bartlett Consulting, which I established in July 2012.

Expert witness code of conduct

- 4 I have been provided with a copy of the Code of Conduct for Expert Witnesses contained in the Environment Court's Consolidated Practice Note dated 1 December 2014. While this matter is not before the Environment Court, I have read and agree to comply with that Code. This evidence is within my area of expertise, except where I state that I am relying upon the specified evidence of another person. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

Involvement in project

- 5 In this matter I have been engaged by the land owners, Hogans Gully Farming Limited, to provide traffic engineering advice relating to the proposed zone change identified in their Submission, 2313.
- 6 I was originally involved in this project in September/October 2015 when I provided transport engineering advice regarding access to the proposed zone this resulted in the Transport Assessment dated October 2015 which formed part of their Submission.
- 7 In preparing this evidence I have reviewed the following documents or reports relevant to my area of expertise:
 - (a) The Traffic and Transport Evidence of Mr David Smith; and
 - (b) QLDC Section 42A Report and Planning Evidence of Mr Marcus Langman, Section 45.
- 8 I have prepared my evidence based on my:
 - (a) Expertise as a traffic and transport engineer;
 - (b) Familiarity with the application site and surrounding area; and
 - (c) Familiarity with the above mentioned documents.

Scope of evidence

- 9 My evidence addresses the following matters:
 - (a) Overview of the traffic related elements of the Submission; and
 - (b) Response to Traffic and Transport Evidence, QLDC s42A Report and Planning Evidence.

SUBMISSION

- 10 The Submissions request the inclusion of a new Hogans Gully Special Zone or an alternative Residential Precinct within the proposed Wakatipu Basin Rural Amenity Zone. The Submission for the proposed Hogans Gully Special Zone would allow for the development of a golf course and associated visitor accommodation and residential land uses.

- 11 The transport assessment provides an outline traffic generation. I note that the overall mix of on-site activities has changed since I completed the transport assessment. However, the anticipated traffic generation of the site is similar and does not change the overall assessment. It is expected that the overall traffic generation, as a result of the proposed zone change, will be less than 1,100 vehicles per day (vpd). An updated transport assessment has been provided, dated April 2018 (refer Appendix A) which has been provided as part of a resource consent application RM180497.

TRANSPORT ENVIRONMENT AND ASSESSMENT

- 12 This section is provided as a summary of the Transport Assessment dated October 2015 as well as any changes to the proposed on-site activities.
- 13 The proposed rezoning would have a number of accesses from Hogans Gully Road, McDonnell Road and Lake Hayes-Arrow Junction Highway (SH6).
- 14 It is proposed that the existing accesses from Hogan Gully Road and SH6 would remain although the proposed zone change will not change the level of activity at these accesses.
- 15 The activities facilitated by the proposed zone change are to be accessed via three accesses from McDonnell Road. This includes:
- (a) Maintenance Access, this is a new access from McDonnell Road which would be used by staff and to support all servicing activities for the golf course and associated on-site facilities.
 - (b) Residential Access, this is an existing residential access from McDonnell Road. This access currently serves a single residential dwelling. It is proposed to upgrade this access to serve 9 residential dwellings as a secondary access.
 - (c) Main Access, this is a new public access to the on-site golf course and associated facilities as well as to the on-site residential and visitor accommodation areas.

- 16 The later transport assessment¹ provides details, with suggested consent conditions, for the establishment of appropriate accesses to the proposed zone change area and activities.
- 17 The recommendations from the transport assessment are that the following engineering works are required:
- (a) A new access intersection is provided at the maintenance access from McDonnell Road. This access intersection should comply with the QLDC requirements for a commercial access.
 - (b) An appropriate access intersection is provided at the upgraded residential access from McDonnell Road. This access intersection should comply with Austroads guidance.
 - (c) A new public access intersection is provided at the main access from McDonnell Road. This access should comply with Austroads guidance.
- 18 I considered that with these local engineering works, which I have defined in the transport assessment², that any local transport effects from the proposed re-zoning (sought in Submission) can be minimised and managed in a manner which is entirely appropriate.

TRAFFIC AND TRANSPORT EVIDENCE – Mr David Smith

- 19 I have reviewed the Traffic and Transport Evidence of Mr David Smith.
- 20 Mr Smith does not directly address the Hogans Gully Farm Submission. However, his general comments and findings do relate to traffic that may be generated by the proposed zone change sought.
- 21 Mr Smith considered the potential traffic generation, collectively, for development to the east of the Shotover River. He considers that these proposed developments would collectively have a cumulative traffic effect on the crossings over the Shotover River and in particular the SH6 Bridge at Lower Shotover. On this basis Mr Smith opposes all submissions that seek to increase residential density beyond that provided for in the notified Wakatipu Basin Chapter and plan maps³.

¹ Bartlett Consulting, Transport Assessment dated April 2018, refer Appendix A.

² Bartlett Consulting, Transport Assessment dated April 2018, refer Appendix A.

³ Evidence of Mr Smith, Paragraph 3.6.

- 22 In arriving at this finding Mr Smith acknowledges that: *'Many of the submissions relate to relatively small increases in activity, [at the bridge] which in isolation would have no noticeable effect on the performance of the transport network. However, there is a risk of cumulative effects if a number of these submissions are approved together'*⁴. Mr Smith's findings, relating to this Submission, is therefore based on the potential of cumulative traffic effects at infrastructure (SH6 Shotover River Bridge) only which is remote from the site.
- 23 Mr Smith acknowledges that based on current levels of development the SH6 Shotover River Bridge will reach capacity at or about the year 2035⁵. Mr Smith further considers the potential of the Special Housing Areas (SHA) along Ladies Mile Highway⁶ suggesting that if these were to develop then the SH6 Shotover River Bridge would reach capacity earlier; in 2023 (with 1000 dwellings) or even 2021 (with 2000 dwellings)⁷.
- 24 It seems that the SH6 Shotover River Bridge is likely to reach capacity in the near future and this appears to be inevitable regardless of any zoning that increases density within the Wakatipu Basin. If this is the case then, I believe, NZTA should be developing a business case to improve this river crossing. I note Mr Smith also makes a similar comment⁸.
- 25 A central element of a business case is the extent to which transport improvements will enable or support development and growth. Mr Smith's evidence opposes all development due to the potential cumulative impact at the bridge. This may lead to a situation where no funding can be made available for this crossing as it does not enable any future development. I believe that proposed rezoning, as requested, would provide clear development aspirations and provide certainty of future traffic growth which would strengthen any NZTA business case for funding an improved river crossing.

⁴ Evidence of Mr Smith, Paragraph 3.5.

⁵ Evidence of Mr Smith, Paragraph 7.11.

⁶ Evidence of Mr Smith, Paragraphs 7.19 to 7.22.

⁷ Evidence of Mr Smith, Paragraph 7.21

⁸ Evidence of Mr Smith, Paragraph 7.21

- 26 However, allowing for development to the east of the Shotover River through zoning provides a clear indication of the future planning environment. This in turn guides the development of future transportation infrastructure. Knowing where development is likely to occur allows for better prediction of future transport demand. This demand can be used to justify the business case for spending on improved transportation infrastructure, such as an improved crossing over the Shotover River.
- 27 Council approach this in a different manner by collecting development contributions. These are used to fund works to mitigate the cumulative effects of developments across the District.
- 28 I consider that opposing zone changes on the grounds of cumulative transport effects is allowing the constraints of existing infrastructure to prevent development.

SECTION 42A REPORT and PLANNING EVIDENCE – Mr Marcus Langman

- 29 I have reviewed the portion of Mr Marcus Langman's Evidence that relates to the Submissions. Mr Langman acknowledges that no detailed comment has been made of the transport assessment at this stage⁹.

CONCLUSION

- 30 The Hogans Gully Golf Submission seek to rezone an area of land proposed under Stage 2 as Wakatipu Basin Rural Amenity Zone. The Submission seeks a new Hogans Gully Special Zone (or Residential Precinct) within the proposed Wakatipu Basin Rural Amenity Zone.
- 31 The zone change area will be primarily accessed from McDonnell Road. I have identified that a number of traffic engineering works which would be required to appropriate accesses to the proposed zone. I believe that with these works undertaken the predicted traffic generation can be appropriately accommodated within the local road network.

⁹ Evidence of Mr Langman, Paragraph 45.2.

- 32 I consider that the cumulative transport effects on infrastructure remote from the site is not an appropriate ground for opposing re-zoning of the type sought by this Submission.

Jason Bartlett

13th June 2017

Appendix A – Revised Transport Assessment

Bartlett Consulting, Transport Assessment, dated April 2018.

This transport assessment has been submitted as supporting documentation under the resource consent application RM180497.

Hogans Gully Farming Limited
Golf Course and Residential Development

Transport Assessment

April 2018

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1 Introduction

1.1 Background

Hogans Gully Farming Limited proposes to develop a site at McDonnell Road south of Arrowtown. The proposed development will include:

- 18-hole championship golf course with an associated driving range and amenities including a clubhouse with golf administration, cart store, gym, café/restaurant and pro-shop, and
- 91 lot residential subdivision to include 96 residential dwellings which may each operate as visitor accommodation.

The public access to the site is from McDonnell Road with secondary accesses to the development also from McDonnell Road.

1.2 Purpose

The purpose of this report is to provide a transport assessment for the proposed on-site development shown in the masterplan.

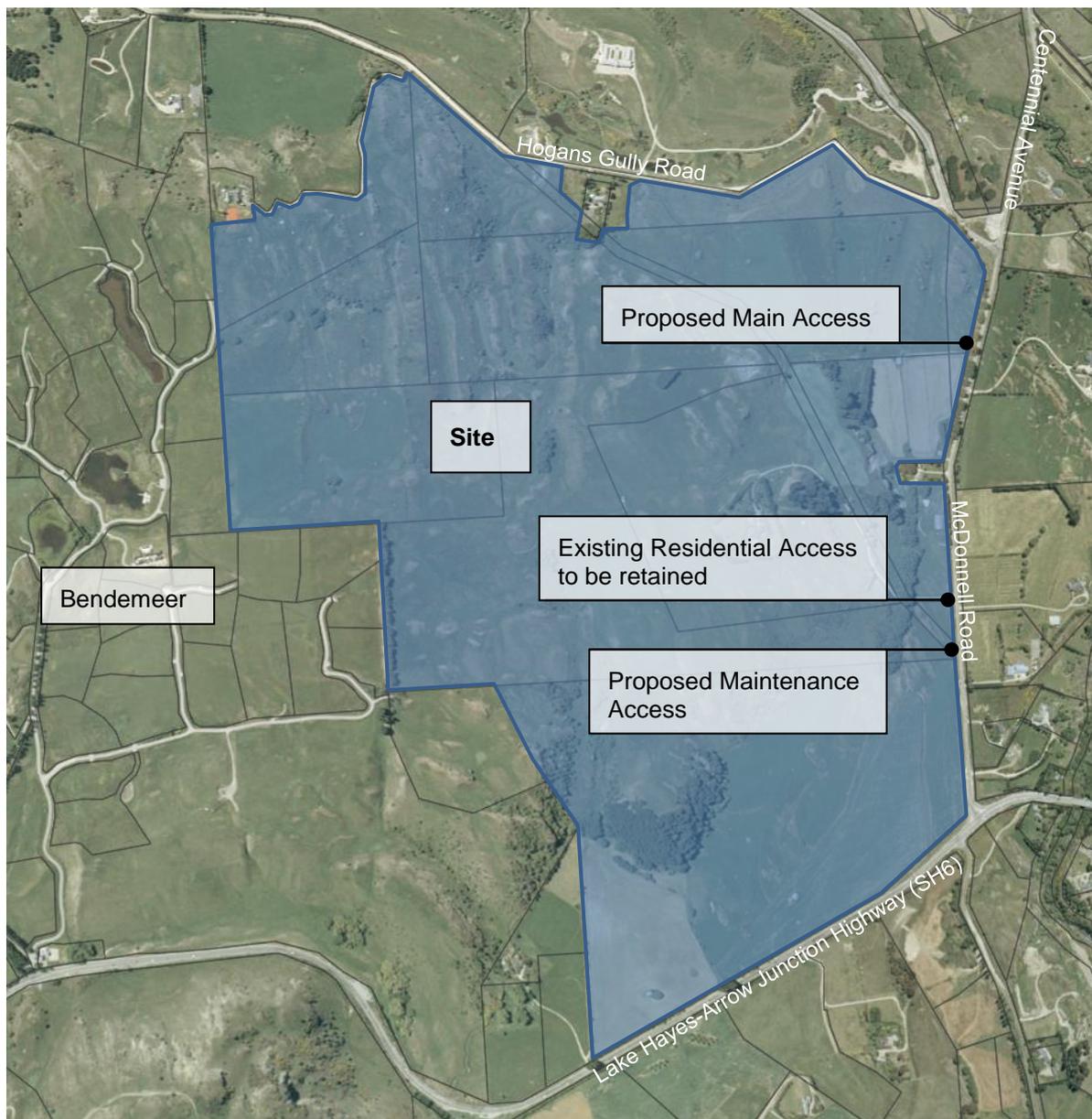
This report provides further details of the site (Section 2), the proposed development's access, on-site road layout and on-site parking (Section 3). An assessment of any transportation effects (Section 4) which is based on a comparison of the development accesses, layout and car parking against the requirements of the Operative Queenstown Lakes District Council (QLDC) District Plan and other national guidance. A summary of this assessment is provided as a conclusion to this report.

2 Site

2.1 Location

The site is located south of Arrowtown and is bordered by Hogans Gully Road to the north, McDonnell Road to the east and Lake Hayes – Arrow Junction Highway (SH6) to the south. The Bendemeer residential subdivision is to the west of the site. The figure below shows the site location and the location of accesses to the proposed development.

Figure 1 – Hogans Gully Farm Site, image from QLDC webmaps.



2.2 Existing Use and Zoning

The site is currently zoned as Rural General in the Operative QLDC District Plan and is currently used for grazing. There is a single residential dwellings on the site. The neighbouring properties are farmland with some rural dwellings. To the west of the site is the Bendemeer Special Zone which has been developed as a rural residential subdivision.

The Proposed QLDC District Plan (notified 23 November 2017) proposes to rezone the site to Wakatipu Basin Rural Amenity Zone.

2.3 Adjacent Transport Network

2.3.1 Road Network

The site has road frontages onto McDonnell Road, Lake Hayes-Arrow Junction Highway (SH6) and Hogans Gully Road. The following provides details of these roads and the surrounding road network.

McDonnell Road

To the east the site is McDonnell Road. The site has one residential access, a farm yard access and two farm (paddock) accesses from McDonnell Road.

The section of McDonnell Road that the site will be accessed from is not listed in the District's Road Hierarchy¹ which assumes that it is a Local Road. However, the Road Hierarchy does list Arrowtown Junction Rd - State Highway 6 to 50kmph sign Arrowtown as an Arterial Road. For the purposes of this assessment McDonnell Road as it passes the site is considered to operate as an Arterial Road fulfilling the function of a transport link between Arrowtown and other parts of the District. McDonnell Road has an 80km/hr speed limit at the site. It is noted that the Proposed QLDC District Plan, Chapter 29 Transport (notified 23/11/2017) lists McDonnell Road (Centennial Avenue to SH6) as an arterial road.

Traffic flow data for McDonnell Road is collated by QLDC, Table 1 provides a summary of the latest traffic count data in the vicinity of the site.

Table 1 – McDonnell Road traffic data, source QLDC traffic counts

Site	2013	2014	2015	2016	2017
McDonnell Road between Centennial Avenue and SH6 ²			2231	3705	
Centennial Avenue between Jopp Street and McDonnell Road ³	1946	2370	2568	2366	2913

This traffic count data is provided as Average Daily Traffic (ADT). The latest count on the section of McDonnell Road that passes the site was done in 2016. QLDC have a regular traffic monitoring site on Centennial Avenue to the north of the intersection with McDonnell Road which provided a good indication of recent traffic flow in the area. This Centennial Avenue data shows an average annual increase of approximately 10.6% since 2013 (to 2017). This suggests that the current (2018) ADT on McDonnell Road near to the site is estimated to less than 5,100vpd (vehicles per day). The assessment above is based on the maximum traffic

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

² The data provided is the maximum for each year recorded.

³ The data provide is an average of a number of counts over the same year.

flows for McDonnell Road, recorded in February 2016, it is therefore likely that the predicted traffic flow is a peak summertime traffic flow.

Based on the latest traffic count data for McDonnell Road (February 2016) the peak traffic flow is in the afternoon period, 15:00. The peak traffic flow is 8.6% of the daily traffic flow. This suggests that the peak 2018 hourly traffic flow for McDonnell Road would be less than 450vph.

Lake Hayes-Arrow Junction Highway (SH6)

At the south-east corner of the site McDonnell Road intersects with SH6. SH6 extends along the southern site boundary. The site has two existing farm (paddock) accesses from SH6, these accesses are not regularly used. SH6 is a Limited Access Road (LAR), the existing accesses are registered crossing places.

As a state highway this road provides a regional route between Southland to the south and Central Otago to the north and is managed by NZTA. Traffic flow data for SH6 is collated by NZTA, Table 2 below provides a summary of the latest traffic count data in the vicinity of the site.

Table 2 – SH6 Traffic Count Data, source NZTA State Highway Traffic Data Booklet 2016⁴

Site	2012	2013	2014	2015	2016
Crown Range, on Arrow Bridge RP 983/0.61 (ID:00600984)	5608	6130	6645	6625	8275
East of Strains Road (Lake Hayes) RP 983/4.66 (ID:00600988)	8492	8747	9102	9733	11472

This traffic count data is provided as Average Annual Daily Traffic (AADT). This data shows a five year average annual growth rate of nearly 10% at the Crown Range site and 8% at the Strains Road site. This suggests that the current (2018) AADT on SH6 at the site is approximately 11,000vpd.

SH6 has a 100km/hr speed limit for the majority of the frontage length reducing to 80km/hr on the immediate approach to the intersection with McDonnell Road.

Hogans Gully Road

To the north a portion of the site bounds Hogans Gully Road. The site has two existing farm (paddock) accesses from Hogans Gully Road.

Hogans Gully Road is not listed in the District's Road Hierarchy⁵ which assumes that it is a Local Road. Along the site boundary Hogans Gully Road is unsealed although an otta seal has been applied at some locations as a dust suppressant. Hogans Gully Road has a speed limit of 80km/hr although due to the road surface it is likely that the operating speeds will be below the posted speed limit.

Traffic flow data for Hogans Gully Road is collated by QLDC, Table 3 provides a summary of the latest traffic count data in the vicinity of the site.

⁴ The NZTA State Highway Traffic Data Booklet 2017 has not yet been released and is anticipated in July 2018.

⁵ Refer Operative QLDC District Plan, Appendix 6 Road Hierarchy.

Table 3 – McDonnell Road traffic data, source QLDC traffic counts

Site	2005	2008	2012
Hogans Gully Road between End of seal and McDonnell Road	195	144	133

This traffic count data is provided as Average Daily Traffic (ADT). This data is not conclusive although it is likely that the current (2018) ADT on Hogans Gully Road near to the site will be less than 300vpd.

2.4 Alternative Transport Networks

2.4.1 Bus Services – Public Transport

There are no public bus routes that pass the proposed site. The nearest bus route is operated by Ritchies. This service runs from Arrowtown to Queenstown via Lake Hayes. There are no plans to extend the bus service to include McDonnell Road.

2.4.2 Walking and Cycling

There are no formal pedestrian or cycle routes that pass the site. McDonnell Road in this location has an 80km/hr speed limit has narrow shoulders, maximum 500mm, this is considered to be too narrow to be considered as separate facilities for pedestrians and cyclists. Pedestrians and cyclists would be expected to share the road with vehicles, which given their likely vehicle speeds would not be comfortable.

It is noted that there is a section of footpath on both McDonnell Road and Centennial Avenue to the north of the site. This provides a pedestrian link between the site and Arrowtown via either McDonnell Road or Centennial Avenue. The Centennial Avenue footpath has a link to the Arrow River Trail via an unnamed legal road to the north.

The Arrow River Trail follows the Arrow River between Arrowtown and Arrow Junction. At Arrow Junction (SH6 intersection with McDonnell Road) the Arrow River Trail follows Arrow Junction Road towards Morven Ferry.

3 Proposed Development

3.1 Overview

The proposed development will include a number of on-site activities. The following provides an outline of the proposed on-site activities and their scale within the development site.

- 91 residential lots with an anticipated 96 residential dwellings which may be used for visitor accommodation. These are distributed over ten areas: R1 to R10 including 86 residential lots with one dwelling per lot, R5 (The Villa's) which include five residential lots with two dwellings per lot, and
- Golf facilities including 18-hole championship golf course, driving range, maintenance facilities, cart store and Clubhouse (including restaurant/café, pro-shop, gym and guest facilities).

The majority of the on-site activities are accessed from a single (main) access from McDonnell Road. A secondary access will be formed from McDonnell Road to serve the maintenance yard which is anticipated to be used by staff.

There are existing residential accesses from McDonnell Road which will be retained as a private residential access to serve to nine residential lots (R1 & R10).

There are a number of farm (paddock) accesses from SH6, McDonnell Road and Hogans Gully Road. These existing farm accesses are expected to remain. As paddock accesses they will not be used to access the proposed on-site development.

3.2 Traffic Generation

3.2.1 Published Traffic Generation Rates

The current New Zealand document that could be used to gain an understanding of likely traffic generation for developments is NZTA Research Report 453 (RR453), Trips and Parking Related to Land Use (2011).

This document provides design peak hour and daily traffic flows for individual activities. The rates are a quick, initial value based on activity. These rates are appropriate when considering specific activities and traffic generation for particular facilities. The following Table 4 provides the average traffic generation rates from RR453.

Table 4 – Average Traffic Generation Rates from RR453⁶

Activity	Peak Hour	Daily
Residential (Outer Suburban)	0.9 /dwelling	8.2 /dwelling
Visitor Accommodation (Motel)	1.4 /unit	3.0 /unit

Based on RR453 it is likely that an appropriate traffic generation rates for the proposed residential development (per dwelling) would be in the order of 1.0vph during the peak hour and 7.5vpd. This is based on approximately 75% of dwellings being used for residential and 25% of dwellings used for visitor accommodation.

⁶ Refer NZTA Research Report 453 (RR453) Trips and Parking Related to Land Use (2011), Appendix C Current New Zealand trip generation and parking demand, Table C.1 New Zealand trip generation and parking demand.

RR453 does not provide a trip generation rates for golf course elements of the proposed development. The traffic generation for the golf course elements, including pro-shop and clubhouse are considered separately.

3.2.2 Golf Facilities – Traffic Generation

The golf facilities includes; 18-hole championship golf course, driving range, maintenance facilities, cart store and Clubhouse (including restaurant/café, pro-shop, gym and guest facilities). This will be open to the public as well as being available for residents and guests.

It is anticipated that the course will cater for visitors to the Wakatipu area who would also visit a number of other golf courses such as Millbrook, Jacks Point, Queenstown (Kelvin Heights), Frankton, The Hills and Arrowtown. These visitors would typically travel as a small tour group using vans or small busses as well as individual travellers in cars.

The golf course (and on-site facilities) could attract a peak of up to 500 customers per day. As an average it is expected that there will be approximately 300 customers per day or approximately 120 vehicles to the site (2.5 guests per vehicle). This would result in a guest traffic flow of approximately 240vpd. It is possible that this could have a peak during the midday period (11:30am to 2:00pm), the peak hourly traffic flow could be up to 60vph.

In addition to the guests there will be traffic associated with maintenance staff, clubhouse/guest services staff and servicing. There will be approximately 20 staff associated with the maintenance of the golf course and a further 20 staff associated with the clubhouse/guest services, a total of 40 on-site staff. 75% of staff will commute to work by car the remaining either sharing a ride with colleagues or choose other transport modes such as cycling or walking. The site is some distance from Arrowtown so alternative transport modes will only be viable to a small number of staff. For simplicity this assessment assumes that all staff will drive. Including an allowance for work related staff trips it is possible that there would be up to 100vpd for staff with a peak period traffic generation of 30vph in the am peak period and potentially 10vph in the midday period.

Servicing would include delivery of supplies, parts/materials and produce as well as specific personnel to service on-site equipment. It is possible that servicing could typically include up to 30vpd, and a likely midday peak traffic flow of 6vph.

The total golf course traffic generation is likely to be typically 370vpd with a midday (daytime) peak traffic flow of 76vph. This traffic includes the clubhouse, gym and commercial elements within the overall golf facilities, it is expected that the within these elements there is sufficient flexibility to cover vehicle trips that would be only a result of the clubhouse’s facilities.

3.2.3 Combined Traffic Generation

The following Table 5 provides a summary of the likely traffic generation as a result of the proposed development.

Table 5 – Assessed Peak Hour and Daily Traffic Flow, based on NZTA RR 453

Activity	Units	Peak Hour	Daily
		vph (vehicles per hour)	vpd (vehicles per day)
Residential/visitor accommodation	96 dwellings see Section 3.2.1	96 vph	720 vpd
Golf facilities	see Section 3.2.2	76 vph	370 vpd
Total			1090 vpd

Within Table 5 above the total peak hour traffic generation is not provided. This is because the different on-site activities will have different peak times. For the purposes of intersection design it is suggested that the peak hour traffic generation is likely to occur during the daytime period (10:00am to 4:30pm). During this time period the likely peak hour traffic flow is estimated to be approximately 100vph which would coincide with the peak traffic flow on the adjacent McDonnell Road. It is possible that proposed on-site activity would attract large groups travelling by bus type vehicles. The access intersection should consider these vehicle types within the overall design.

3.3 Access

3.3.1 Existing Farm Accesses

There are a number of existing farm accesses to paddocks (from Hogans Gully Road, McDonnell Road and SH6) and one to the farm yard from McDonnell Road. It is not anticipated that the proposed activities will have any effect on the operation of these existing accesses. The two existing accesses from SH6 are authorised crossing places within the LAR status of SH6.

These farm accesses will remain although traffic through these accesses will be minimal.

3.3.2 Residential Access – McDonnell Road

There is an existing residential access from McDonnell Road, this serves a single residential dwelling and remain as a private residential access.

It is proposed that the number of residential properties served by the existing McDonnell Road access will increase to nine residential lots (R1 & R10). This access is approximately 420m from the existing intersection of McDonnell Road and SH6. This access will be improved to meet the minimum requirements of the QLDC Land Development and Subdivision Code of Practice. The appropriate standard would be Figure E2⁷ which would include a 6.0m minimum sealed carriageway width which could serve up to twenty residential dwellings. The vehicle crossing to this access would be formed as a basic rural intersection which will require minor widening opposite.

The location of this access has 420m visibility sight distance to the south to the intersection of McDonnell Road with SH6. To the north there is 250m visibility sight distance which is limited by a horizontal curve and vegetation on the opposite side of the road. There is an existing access located 20m to the south serving a single property opposite.

3.3.3 Maintenance Access – McDonnell Road

The proposed development will include a maintenance yard to the south. This will be accessed from McDonnell Road approximately 320m north of the McDonnell Road intersection with SH6. This access would have a traffic flow of approximately 50vpd and would be formed as a private access and will meet the minimum requirements of a commercial access within the Operative QLDC District Plan, the vehicle crossing should be formed a rural road vehicle crossing⁸.

This access will have 320m visibility sight distance to the south to the intersection of McDonnell Road with SH6. To the north visibility sight distance is 340m limited by a horizontal curve and vegetation on the opposite side of the road

⁷ Refer QLDC Land Development and Subdivision Code of Practice, Table 3.2 – Road design Standards

⁸ Refer QLDC Land Development and Subdivision Code of Practice, Appendix F – Vehicle Crossings, Figure 3.

3.3.4 Main Access – McDonnell Road

A new access is to be formed from McDonnell Road which will cater for the majority of on-site activities including residential dwellings, visitor accommodation and the golf facilities. It is anticipated that this access would be used by large vehicles (buses) as well as visitors who are not familiar with the local road network. This access is to be formed approximately 190m south of the McDonnell Road intersection with Centennial Avenue. The proposed access will be approximately 80m from an existing access serving a single property on the opposite side of the road.

Due to the anticipated traffic generation this main access is to be designed in accordance with Austroads Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections (2010). An initial assessment has been undertaken using the warrant for turn treatments⁹ within this guide. This assessment is based on the predicted traffic generation and the existing traffic design flow on McDonnell Road. This shows that an initial intersection would require widening for a Channalised Right-turn Treatment (CHR(S)) and a Basic left-turn Treatment (BAL). This would include a standard right turn bay to be marked on McDonnell Road. There are no cycle or pedestrian provisions on McDonnell Road at the site and therefore the proposed intersection design will not include footpaths or cycle lanes within the design.

The anticipated operating speed of McDonnell Road is 90km being 10% greater than the posted speed limit. The minimum Safe Intersection Sight Distance (SISD) for this operating speed is 214m¹⁰ with a reaction speed of 2 seconds.

The visibility sight distance at the proposed access location has been reviewed, at this location the visibility sight distance to the north is approximately 250m limited by a crest curve on Centennial Avenue. To the south the visibility sight distance is approximately 250m limited by a curve and vegetation on the opposite side of the road.

The access road would be constructed to meet the minimum requirements of the QLDC Land Development and Subdivision Code of Practice. The appropriate standard would be Figure E3¹¹ which would include a 6.0m minimum sealed carriageway width serving up to 150 residential dwelling equivalents, approximately 1000vpd. This road type will require the provision of roadside parking where required as well as footpaths where there is a demand for pedestrian traffic.

3.4 Internal Road Network

The masterplan shows the internal road layout for the proposed internal road network. The proposed network design has been considered in the Infrastructure Assessment Report (Holmes Consulting). The Infrastructure Assessment Report has reviewed the design requirements for the internal road network including initial conceptual design of the individual road alignments. This report considered that the internal road network can be constructed to meet current roading guidelines.

⁹ Refer Austroads Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections (2010), Figure 4.9 Warrants for turn treatments on the major road at Unsignalised intersections, using Design Speed < 100km/hr.

¹⁰ Refer Austroads Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections (2010), Table 3.2 Safe intersection sight distance.

¹¹ Refer QLDC Land Development and Subdivision Code of Practice, Table 3.2 – Road design Standards.

3.5 On-Site Parking

3.5.1 Requirements – QLDC District Plan

The Operative QLDC District Plan¹² provides minimum on-site car parking rates for specific activities. The proposed development consists of residential and visitor accommodation. The car parking rate for each of these proposed activities is provided in Table 6 below.

Table 6 – Minimum On-Site Car Parking Rate for the Rural General Zone

Activity	Size	District Plan Requirements
Visitor Accommodation (unit type construction - includes all units containing a kitchen facility, e.g. motels, cabins)	units	Residents/Visitors - 1 per unit up to 15 units; thereafter 1 per 2 units. Staff/Guest - 1 per 10 units Coach - 1 coach park per 30 units.
Residential (units)	units	2 per unit

To meet the minimum requirements for both possible activities the on-site dwellings should have a minimum of two on-site car park spaces based on the minimum residential requirement. For this to also meet the minimum requirements for visitor accommodation the on-site car parks should be arranged so that at least one is available for residents/visitors whilst second on-site car park should be available for staff and guests, ie. within an area of the site which is always available.

The Operative QLDC District Plan does not provide a parking rate for the primary site activity, golf facilities. There are elements which may be considered such as;

- Restaurant which would be limited to the assessment of the public floor area of the dining areas within the Clubhouse. This does not consider the close link between the dining (including café and bar) facilities in the clubhouse to the overall golf activities, or
- Commercial which could cover either the pro-shop and associated retail facilities, or this could be extended to include the full clubhouse (including restaurant) and gym facilities. Thought this may cover the front of house commercial elements of the golf activities if does not cover the primary feature, the golf course and driving range, or
- Sports fields – it is possible that the proposed golf course and driving ranges could be covered as a sports field. However, it is considered that this activity is modelled on a playing field (rugby, tennis or netball) and not considered appropriate for a 100ha golf course with a significantly reduced playing and spectator density.

For these reasons it is considered that the minimum car park rates from the Operative QLDC District Plan are not appropriate for the primary on-site activity of golf facilities. It is therefore appropriate to base parking on a demand assessment. With respect to the Operative QLDC District Plan the proposed development will be considered to be Restricted Discretionary with discretion restricted to the number of on-site car parks¹³.

The QLDC notified the Transport chapter (Chapter 29) of the Proposed QLDC District Plan on 23 November 2017. The provisions of the proposed district plan are similar and the minimum on-site car parking requirements with respect to this proposed on-site activity are the same.

¹² Refer Operative QLDC District Plan, Section 14.2.4.1 i, Table 1 – Parking Space Requirements.

¹³ Refer Operative QLDC District Plan Sections 14.2.2.3 i & 14.2.4.1 i, Table 1 – Parking Space Requirements.

3.5.2 Parking Demand

The car parking for the residential visitor accommodations elements would be considered within planning and building approvals for any development on individual lots.

The primary on-site activity is the golf related facilities. On an average day it is expected that the golf facilities would cater for 300 guests (members and visitors) as well as staff.

It is assumed that there would be approximately 40 on-site staff distributed across the different facilities (golf maintenance, clubhouse and driving range). It was suggested (refer Section 3.2.2) that the majority of staff would drive due to the distance from nearby residential areas, at a peak it is possible that there would be 40 staff related car parks required to cater for demand. It is likely that these would be distributed throughout the site near to individual's workplaces.

Golf guests would be generally distributed throughout the day to match evenly distributed tee times. It is likely that there would be a peak over the mid-day period as guests stay on-site longer to dine at the clubhouse facilities. In the pm period it is possible that there would be a greater demand for parking associated with the driving range. Based on the similar assumptions it is possible that the peak parking demand associated with a third of the guests would be required at midday, 100 guests on-site, 40 car parks. These are likely to be primarily at the club house with some cars parked at the driving range.

It is likely that a number of the vehicle types during this period would include large vans or small bus type vehicles. As there will be larger vehicles it is recommended that there is ability to park buses within the on-site parking provision. It is expected that there will be an average demand for two bus type vehicles during the peak midday period.

The average car parking demand is assessed as:

- 40 car parks for staff,
- 40 car parks for guests, and
- 2 bus parks for guests.

3.5.1 Provision

The drawings show a total of 115 car parks distributed as:

- Clubhouse, 44 car park spaces,
- Driving range, 43 car park spaces in two parking areas, and
- Maintenance yard, 28 car parks which would be exclusively for staff.

The proposed development overall will have sufficient on-site car parking to cater for the typical demand.

The drawings do not show any specific bus parks to cater for tour groups which may play at the golf course. It is possible that buses could utilise a number of car parks for parking although it may be better to consider a minimum number particularly at the clubhouse facility where demand is likely to be greatest.

4 Transport Effects

It is likely that the proposed development will have off-site effects as a result of additional traffic on the local road network and at the specific accesses from the local road network. And, on-site effects as a result of on-site access, manoeuvring and parking. Each of these possible transport effects are discussed below.

4.1 Off-site Transport Effects

The off-site transport effects will predominantly be a result of additional traffic within the road network from the proposed development. The traffic effects that are likely to be most noticeable are:

- Traffic at the accesses to the proposed development from McDonnell Road, Hogans Gully Road and SH6, and
- Traffic on the nearby local road network and possible at the nearest intersection of McDonnell Road with SH6.

An assessment of these effects, and suggested consent conditions to minimise any adverse impacts are provided below.

4.1.1 Accesses

There are a number of accesses to the proposed development including the existing farm accesses (paddock and yard) which will remain. The proposed development will not increase the amount of traffic at the existing farm accesses. It is considered that at the existing farm accesses there will be no transport impacts on the adjacent road network from the proposed development.

An existing residential access from McDonnell Road serves a single residential dwelling. It is proposed to upgrade this access to serve nine residential lots (R1 & R10). Based on the location and expected traffic flow at this access it is recommended that this access is to be upgraded to an intersection to meet the minimum requirements of Austroads guidance. Given the low traffic flow this intersection would require basic turn treatments (BAR/BAL¹⁴), these basic turn treatments are similar to the minimum requirements of the Operative QLDC District Plan Diagram 3¹⁵. To manage the design of the upgraded residential access from McDonnell Road the following consent condition is suggested.

Prior to any on-site construction that the residential access intersection from McDonnell Road (serving R1 & R10) is to be provided to QLDC for review and approval. The access intersection design should comply with the current Austroads guidance and identify the extent of carriageway construction and any other works required on McDonnell Road.

A new maintenance yard access is to be constructed from McDonnell Road. This access is primarily a private access to the operational side of the on-site golf facilities. The majority of vehicle access will be by staff although it is likely that this will also include regular deliveries of materials and services for the on-going maintenance of the on-site golf facilities. It is likely that these deliveries will be undertaken using truck type vehicles suggesting that there will be

¹⁴ Refer Austroads Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections (2010) – Basic right turn treatment (BAR) and basic left turn treatment (BAL).

¹⁵ Refer Operative QLDC District Plan, Appendix 7 Traffic Design Standards, Diagram 3. Private Access.

a need for the access to allow for frequent use by heavy vehicles such as the 8m medium rigid truck. To manage the design of the maintenance access the following consent condition is suggested.

Prior to any on-site construction that the maintenance yard access from McDonnell Road is to be provided to QLDC for review and approval. The vehicle crossing design should comply with the layout requirements of the Operative QLDC District Plan, Appendix 7, Diagram 3 and the requirements of the QLDC Land Development and Subdivision Code of Practice. The design is to identify the extent of carriageway construction and any other works required on McDonnell Road.

The main access is to be constructed to accommodate the all guest traffic for the on-site golf facilities as well as the majority of residential traffic and some staff traffic. This access intersection will have a significant traffic flow which would include some large vehicles (buses) as well as guests who are not familiar with the local road network.

A review of the proposed access against current Austroads guidance suggested that the intersection would require widening to include a standard right turn bay to be marked on McDonnell Road. To manage the design of this main access the following consent condition is suggested.

Prior to any on-site construction that the main access intersection from McDonnell Road is to be provided to QLDC for review and approval. The access intersection design should comply with the current Austroads guidance and identify the extent of carriageway construction and any other works required on McDonnell Road.

This main access will require addition signs and pavement markings to be installed on McDonnell Road to guide drivers. These will be required manage any traffic effects and to ensure that the intersection works efficiently. To manage the design of signs and pavement markings at the access intersections the following condition of consent is suggested.

Prior to any on-site construction that the proposed road signs and pavement markings at the main access intersection from McDonnell Road is to be provided to QLDC for review and approval. The road signs and pavement markings design at the main access intersection should comply with NZTA's Manual of Traffic Signs and Marking (MOTSAM) and the Traffic Control Devices (TCD) Manual.

It is considered that with these suggested consent conditions that the additional traffic effects as a result of the proposed development accesses to the local road network will be minimised to a point that is acceptable.

4.1.2 Local Road Network

The anticipated traffic flow will have a minimum effect on the local road network. It is likely that the greatest effects would be at the nearby intersection of McDonnell Road and SH6 as a result of additional turning traffic at the priority controlled intersection. The SH6 intersections with McDonnell Road includes both left turn and right turn lanes. There are no documented operational efficiency issues at this intersection. It is expected that only a minor proportion of development traffic would use this intersection, less than 220vpd¹⁶. It is anticipated that this

¹⁶ Based on only 20% of development traffic utilising the SH6 intersection, assumed that 80% of development traffic would be towards Arrowtown.

will have a minimal effect on the operational efficiency of this intersection and is less than 5% of the McDonnell Road traffic flow.

The intersection of SH6 with McDonnell Road has reduced visibility sight distances in each direction, the speed limit at this intersection has been reduced to 80km/hr maintain safety. It is unlikely that the additional traffic at this intersection will directly increase any existing traffic safety concerns.

Additional traffic as a result of the proposed development will have minimal effect on the efficiency and safety of the local road network. It is expected that the resultant transport impacts of the proposed development beyond the site would be minimal and within what is considered to be acceptable.

4.2 On-site Transport Effects

The on-site transport effects can be managed through the design and planning process. The Operative QLDC District Plan and the QLDC Land Development and Subdivision Code of Practice identifies a number of transportation objectives which should be considered during planning and engineering of the on-site development.

4.2.1 Internal Road Network

It is recommended that the internal road network is to be constructed in accordance with QLDC Land Development and Subdivision Code of Practice. The internal road network would be based on the appropriate place context which is considered to be rural live and play. The development drawings provide a structure and context for the provision of internal transport network. Additionally, the Infrastructure Assessment Report (Holmes Consulting) provides an outline assessment based on the initial concept design work undertaken. This report considered that the internal road network can be constructed to meet current roading guidelines.

The new internal access to the maintenance yard and the upgraded residential access (serving R1 & R10) both from McDonnell Road would be formed as a rural lane, refer Figure E2¹⁷. These roads would have a 6.0m minimum sealed carriageway width which would serve up to twenty residential dwellings and accommodate a traffic flow of less than 200vpd.

The main access from McDonnell Road would be constructed as a rural local road, refer Figure E3¹⁸. This road would also include a 6.0m minimum sealed carriageway with additional unsealed shoulders. This road type can serve up to 150 residential dwelling equivalents or an approximate traffic flow of up to 1000vpd.

When reviewing the masterplan road layout it is noted that the main access road will generally run parallel to McDonnell Road from the driving range area to the new intersection. This may mean the headlight glare from one road alignment may affect drivers on the other. It is unsure if the proposed landscaping on-site will prevent this. It is suggested that the design of the internal road network and on-site landscaping is combined to create a barrier that will prevent any direct headlights shining between drivers on the internal road network and the existing McDonnell Road, this includes portions of McDonnell Road either side of the intersection with Centennial Avenue.

¹⁷ Refer QLDC Land Development and Subdivision Code of Practice, Table 3.2 – Road design Standards.

¹⁸ Refer QLDC Land Development and Subdivision Code of Practice, Table 3.2 – Road design Standards.

To manage the detailed design of the internal road network the following consent conditions are suggested.

Prior to any on-site construction:

- *That a design for the internal access roads is provided to QLDC for review and approval. The design of the internal access roads is to be based on the QLDC Land Development and Subdivision Code of Practice and is to be based on the extent of development served and the anticipated traffic.*
- *That the design of the main access road should consider any headlight glare between the on-site road alignment and the existing McDonnell Road, between the driving road and the intersection. The road design is to include landscaping element which prevent any direct headlight glare between on-site road network and the existing McDonnell Road.*

4.2.2 Street Lighting

The proposed development is within a rural environment. It is therefore recommended that the level of street lighting is minimised in order to reduce any effects of light overspill on the surrounding environment. To manage the design of street lighting elements within the internal road network any lighting design should be developed in accordance with the QLDC lighting strategy; Southern Light. The internal road network will be designed to allow pedestrians and cyclists to share the carriageway with vehicles, it is expected that there will be a need for some street lighting to maintain pedestrian and cyclist safety. An appropriate level of level of street lighting in this rural environment may include route guidance for pedestrians and flag lighting at intersections in a similar manner as provided at Jacks Point.

The proposed concept plans do not include any street lighting. It is expected that the need for any street lighting will be considered and designed in accordance with Southern Light, the QLDC lighting strategy. To manage the design of street lighting elements within the internal road network the following condition is proposed.

Prior to any on-site construction that a street lighting design is provided to QLDC for review and approval. The need for and extent of street lighting within the internal road network, shared areas, and any separate pedestrian/cycle paths is to be based on the requirements of the QLDC lighting strategy, Southern Light.

4.3 On-Site Parking

The Operative QLDC District Plan provides minimum on-site car parking rates for specific activities. The proposed development consists of residential, visitor accommodation and golf facilities. The minimum car parking requirements for the visitor accommodation and residential is relatively simple and would be provided as appropriate on each lot when developed. It is possible the on-site houses would be developed as such that they could be used as residential or as visitor accommodation. To allow on-site car parking to be flexible the consent condition is suggested to manage development of individual on-site lots.

That each individual lot created within the residential areas (R1 to R10) should provide a minimum of two on-site car parks per dwelling. At least one on-site car park must be located in an area which is accessible by visitors/staff who may come to the site.

The intention of this consent condition is to allow on-site car parking associated with any dwelling to operate for residential use as well as visitor accommodation use. With this condition of consent the usage of the individual residential lots as residential or visitor accommodation will comply with the Operative QLDC District Plan, for either activity, and will not have any transport effects as a result of parking on the internal road network.

The Operative QLDC District Plan does not provide a minimum on-site parking requirement for golf facilities, the primary on-site activity. There are a number of activities which could be used as a basis for the minimum assessment being:

- Restaurant which would be limited to the assessment of the public floor area of the dining areas within the Clubhouse.
- Commercial which could cover either the pro-shop and associated retail facilities, or this could be extended to include the full clubhouse (including restaurant) and gym facilities.
- Sports fields, it is possible that the golf course and driving ranges could be covered as a sports field.

Although these activity types will cover aspects of the proposed golf facilities it will not consider the whole activity or the extent the relative components within the overall on-site development. It is therefore considered that based on the Operative QLDC District Plan that the proposed on-site golf activities would be a Discretionary (refer Sections 14.2.2.3 i & 14.2.4.1 i). To assess any potential adverse effects of the proposed on-site development with respect to parking a demand assessment has been undertaken for the typical day, 300 guests. This assessment shows that there is a demand for:

- 40 car parks for staff,
- 40 car parks for guests, and
- 2 bus parks for guests.

Overall the on-site provision is in excess of the demand suggesting the all parking associated with the on-site golf facilities will be accommodated. The demand assessment does not consider a peak day, 500 guests. It is likely that this will create a demand for additional parking in the vicinity of the clubhouse associated with dining facilities and the 18 hole golf course. It is therefore recommended that an overflow parking area is provided near to the clubhouse which will be sufficient to cater for a peak parking demand possible in summer weekends or for events at the clubhouse. Allowing for the distribution across the golf course/clubhouse and the driving range it is recommended that an overflow car park for 15 car parks is considered at the clubhouse. This area should be generally flat and formed such that it could be used to accommodate car parking on an occasional basis at peak periods of the year.

It is possible that golf events could be held at the golf course. If events are held it will generate a significantly greater demand for on-site car parking. It is recommended that areas for event parking are considered. These areas should be located close to the main access road and be generally flat and suitable for parking at large events only.

The concept plans for the clubhouse, maintenance yard and driving range all provide sufficient capacity to accommodate the anticipated typical parking demand. As these designs develop the actual car park dimensions would need to be confirmed. This should also include confirmation of bus parking at the club house and driving range area.

To manage possible on-site traffic effects with respect to parking the following consent condition is suggested.

Prior to any on-site construction:

- *That a design for the on-site parking areas is provided to QLDC for review and approval. The design of the on-site parking areas is to include minimum car park dimensions to allow for vehicle manoeuvring (refer minimum dimensions from the Operative QLDC District Plan). The design is to identify how 2 bus type vehicles can be parked within the on-site car parking areas.*
- *That an area of overflow car parking is identified near to the clubhouse which is generally flat and capable of accommodating up to 15 cars on an occasional basis during peak periods of the year.*
- *That an area of event car parking is identified which is generally flat with access from the main internal access road.*

5 Summary

Hogans Gully Farming Limited propose to develop a golf course with associated on-site facilities and a 91 lot residential subdivision at McDonnell Road south of Arrowtown. The proposed development will be bordered by Hogans Gully Road to the north, McDonnell Road to the east and Lake Hayes-Arrow Junction Highway (SH6) to the south.

The site is currently zoned as Rural General, and is currently farmed with a single on-site residential dwelling.

The main access to the proposed development would be from McDonnell Road via a new access. It is recommended that this access is designed in accordance with current Austroads design guidance. An initial assessment identifies that this access intersection should be designed to include sufficient widening on McDonnell Road to include a right turn lane. This design would accommodate future traffic growth on McDonnell Road and the anticipated development traffic. In addition the proposed development will include; a new access from McDonnell Road to service the on-site maintenance yard, and the existing residential access from McDonnell Road will be upgraded to service nine residential lots. Consent Conditions are suggested to manage the development of these new or upgraded accesses which will serve the development.

On-site the proposed development will include an internal road network to service the onsite golf course and associated facilities as well as the 91 lot residential subdivision. Consent conditions are provided to manage the development of this internal road network in line with the current QLDC standards.

Parking is to be provided on-site this will include parking associated with the proposed golf facilities as well as parking to allow the 91 residential lots to be developed as either/both residential dwellings or visitor accommodation. It is considered that the proposed parking associated with the on-site golf facilities will be sufficient for a typical day. However, to manage additional parking on peak days a number of consent conditions are suggested.

To manage the transport effects of the proposed on-site development the following consent conditions (or worded similar) are suggested.

That prior to any on-site construction:

- *That the residential access intersection from McDonnell Road (serving R1 & R10) is to be provided to QLDC for review and approval. The access intersection design should comply with the current Austroads guidance and identify the extent of carriageway construction and any other works required on McDonnell Road.*
- *That the maintenance yard access from McDonnell Road is to be provided to QLDC for review and approval. The vehicle crossing design should comply with the layout requirements of the Operative QLDC District Plan, Appendix 7, Diagram 3 and the requirements of the QLDC Land Development and Subdivision Code of Practice. The design is to identify the extent of carriageway construction and any other works required on McDonnell Road.*
- *That the main access intersection from McDonnell Road is to be provided to QLDC for review and approval. The access intersection design should comply with the current Austroads*

guidance and identify the extent of carriageway construction and any other works required on McDonnell Road.

- *That the proposed road signs and pavement markings at the main access intersection from McDonnell Road is to be provided to QLDC for review and approval. The road signs and pavement markings design at the main access intersection should comply with NZTA's Manual of Traffic Signs and Marking (MOTSAM) and the Traffic Control Devices (TCD) Manual.*
- *That a design for the internal access roads is provided to QLDC for review and approval. The design of the internal access roads is to be based on the QLDC Land Development and Subdivision Code of Practice and is to be based on the extent of development served and the anticipated traffic.*
- *That the design of the main access road should consider any headlight glare between the on-site road alignment and the existing McDonnell Road, between the driving road and the intersection. The road design is to include landscaping element which prevent any direct headlight glare between on-site road network and the existing McDonnell Road.*
- *That a street lighting design is provided to QLDC for review and approval. The need for and extent of street lighting within the internal road network, shared areas, and any separate pedestrian/cycle paths is to be based on the requirements of the QLDC lighting strategy, Southern Light.*
- *That a design for the on-site parking areas is provided to QLDC for review and approval. The design of the on-site parking areas is to include minimum car park dimensions to allow for vehicle manoeuvring (refer minimum dimensions from the Operative QLDC District Plan). The design is to identify how 2 bus type vehicles can be parked within the on-site car parking areas.*
- *That an area of overflow car parking is identified near to the clubhouse which is generally flat and capable of accommodating up to 15 cars on an occasional basis during peak periods of the year.*
- *That an area of event car parking is identified which is generally flat with access from the main internal access road.*

That each individual lot created within the residential areas (R1 to R10) should provide a minimum of two on-site car parks per dwelling. At least one on-site car park must be located in an area which is accessible by visitors/staff who may come to the site.

Overall, with the suggested consent conditions, it is considered that any potential transport effects on the operation and safety of the local road network will be reduced to a point which is appropriate and acceptable.