

**Before the Panel of Hearing Commissioners
For the Queenstown Lakes Proposed District Plan**

In the Matter of the Resource Management Act 1991

And

In the Matter of the Queenstown Lakes Proposed District Plan
(Stage 2 – Hearing Stream 14)

**Statement of Evidence of Anthony
Thomas Penny for Boxer Hill Trust
(Submitter 2385)**

Dated: 13 June 2018

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INTRODUCTION

Qualifications and Experience

1. My name is Anthony Thomas Penny.
2. I am a Fellow of the Institute of Professional Engineers of New Zealand Civil Engineers and I hold a Bachelor Degree in Mathematics and a Bachelor Degree in Civil Engineering from the University of Canterbury.
3. My background of experience includes over 40 years in traffic engineering and transportation planning with the Christchurch City Council, the Department of Transport in the United Kingdom, the MVA Consultancy in Hong Kong and Traffic Design Group (TDG) Limited.
4. I have worked as a traffic engineering specialist on projects throughout New Zealand for over 30 years having been engaged by local authorities and private concerns in many centres to advise on a full range of transportation issues covering safety, management and planning matters.

Code of Conduct

5. While this is not an Environment Court Hearing, I confirm that I have read the Code of Conduct for Expert Witnesses as contained in the Environment Court Practice Note dated 1 December 2014. I agree to comply with this 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.

SCOPE OF EVIDENCE

6. I have been engaged by Boxer Hill Trust (**BHT**) to assess the potential transportation effects and prepare evidence in respect of the proposed inclusion of BHT's approximately 19.7 ha block of land located on the north-east corner of Arrowtown-Lake Hayes Road and Hogans Gully Road (**Site**) within the proposed Wakatipu Basin Lifestyle Precinct (**WBLP**). The location of the Site is shown in my **Figure 1 (attached)**.
7. I prepared the transportation assessment (**Stage 1 Report**) that accompanied BHT's submission on Stage 1 of the Proposed District Plan (**PDP**) (Submission 452). A copy of the Stage 1 Report is **attached**. BHT's

Stage 1 submission sought a Residential Lifestyle zoning for the Site, whereas a WBLP zoning is now proposed. I understand that within the notified WBLP, 6000m² residential lots are generally anticipated, provided a 1ha average lot sized is achieved. I understand that BHT has made a submission on Stage 2 of the PDP which generally supports the proposed WBLP zoning of the Site but seeks a reduction in the minimum lot size to 4000m², while retaining the 1ha average requirement.

8. Under both the notified and BHT's Stage 2 proposals, up to 19 residential units could be established on the Site. This is a doubling of the number of residential units that I assessed for the Site in my Stage 1 Report.
9. I am aware of several development proposals in the surrounding area that will have an effect on traffic volumes on the road network. These include the Arrowtown Lifestyle Retirement Village on a site adjacent to The Hills Golf Course on McDonnell Road as well as the Arrow South and Willowburn developments on the other side of McDonnell Road from the Golf Course. However, I expect that the primary effect of these developments will be an increase in traffic using McDonnell Road and are unlikely to have any noticeable effects on Hogans Gully Road.
10. Noting the above, my evidence will address the following:
 - (a) the transportation considerations arising from the proposed zoning of the land, including in particular the effects of the changes since the Stage 1 Report was prepared and specifically the proposal to accommodate up to 20 residential units on the Site rather than the 10 units sought in the Stage 1 submission¹;
 - (b) the existing traffic environment, including existing activities on and around the Site;
 - (c) the anticipated future transportation environment with the approved/consented developments in the vicinity of the Site, including those mentioned above;

¹ I have rounded these numbers up from 19 and 9 (respectively) for ease of reference, meaning my assessment is slightly more conservative in terms of the development that would be enabled on the Site under a WBLP zoning.

- (d) the potential traffic effects on the surrounding road network arising from the increase in residential activity that would be enabled by the WBLP zoning of the Site;
- (e) any potential issues arising from increased levels of traffic using access points to and from the Site, including potential visibility and safety issues;
- (f) the appropriateness of the internal roading proposed;
- (g) responses to the Council's reports as necessary; and,
- (h) Overall conclusions as to transportation effects arising from residential development on BHT's Site under a WBLP zoning.

DOCUMENTS REVIEWED

11. In preparing this evidence I have reviewed the following documents and reports:
- (a) BHT's Stage 2 submission including the relevant accompanying expert reports;
 - (b) the Council's s42a reports and evidence, specifically the statement prepared by Mr Smith on transport related matters;
 - (c) TDG's Stage 1 Report;
 - (d) the Transportation Chapters of the Operative and Proposed District Plans; and
 - (e) Austroads Guide to Traffic Management Part 3 Traffic Studies and Analysis, August 2009.

EXECUTIVE SUMMARY

12. I have considered the transport issues relevant to the proposed WBLP zoning of BHT's block of land adjacent to the intersection of Hogans Gully Road and Arrowtown-Lake Hayes Road. This will enable the development of

up to 19² lots which I recommend should be accessed from Hogans Gully Road.

13. The driveway on Hogans Gully Road which currently provides access to a single home site on The Hills Golf Course could be upgraded to form the access way to the Site and be formed to a road standard. The new road intersection(s) on Hogans Gully Road would operate safely in my opinion as the visibility along Hogans Gully Road will be more than adequate for an 80 km/h road.
14. It is anticipated that all driveways and car parking will conform with the requirements of the Proposed District Plan.
15. On this basis, I have concluded that the traffic and transportation facilities associated with the development of the Site under a WBLP zoning would operate safely and efficiently.

EXISTING TRAFFIC ENVIRONMENT

16. **Figure 1** shows the location of the BHT Site relative to the major road network in the vicinity. It also indicates the locations of McDonnell Road and Hogans Gully Road from which access to the Site is proposed.
17. Currently there is an access off Hogans Gully Road that passes through BHT's Site to an existing house on The Hills Golf Course. Further details of the existing road environment are described with photographs in the Stage 1 Report.
18. The Stage 1 Report also describes existing travel patterns providing two-way daily traffic volumes on the adjacent road network. I have updated those as the Arrowtown-Lakes Hayes Road now carries approximately 4,000 vehicles per day (vpd) while McDonnell Road carries about 500vpd to the south of the Hills access and 1,000 vpd near the intersection with Arrowtown-Lake Hayes Road. Hogans Gully Road is a very minor unsealed road and currently carries less than 200 vpd. Peak hour volumes tend to be approximately 10% of the daily volumes.
19. The most recent census data indicates that the majority of employees living in the area drive a vehicle to work. Even though there is a bus service along

² Although, for the purposes of this evidence, I have assumed 20 lots.

the Arrowtown-Lake Hayes Road, the number of commuters using public transport is relatively low. Similarly there are very few people cycling or walking to work.

20. The Census data also indicates that only 50% of the occupants of the existing households in the rural area near the Site are employed compared with nearly 75% for the whole Queenstown Lakes District and 62% throughout New Zealand. Furthermore some 30% of those employed in the area work from home compared with a New Zealand average of 10%. This reflects the number of retired people and self-employed people in the area. Some 30% of houses in the area were unoccupied at the time of the census (compared with a NZ average of 10%) indicating that there are also many holiday homes in the area. Accordingly, many residential properties in the area do not generate large volumes of traffic particularly at peak commuter times.
21. The review of road crashes included in the Stage 1 Report identified a relatively good road safety record in the vicinity of the Site. However, there have been a few crashes on Hogans Gully Road relating to its winding nature, unsealed surface and the effects of snow and ice. Significantly there were no crashes recorded at the existing driveway to the Site or to adjacent properties.

FUTURE TRANSPORTATION ENVIRONMENT

22. Chapter 29 of the Proposed District Plan includes a range of policies to promote travel by modes other than private vehicle.
 - (a) Policy 29.2.2.1 requires parking facilities to be managed to contribute “to an increased uptake in public transport, cycling and walking”.
 - (b) Policy 29.2.3.3 requires new roads to be constructed to provide for the needs of all modes of transport.
23. QLDC has been promoting cycling through its development of an extensive cycle network including the links between Arrowtown and Lake Hayes. It has also achieved an increase in the mode share for public transport with the introduction of subsidised bus services in 2017.
24. With the existing traffic volumes on Hogans Gully Road being relatively low, I expect that drivers will continue to experience free flowing traffic conditions

and generally high levels of convenience even when the approved/consented developments on McDonnell Road are completed.

PROPOSED ZONING

25. The Stage 1 Report was based on the proposed zoning of the Site allowing for up to a total of 10 residential units. The Stage 2 proposal provides for to 20 residential units.
26. The other transport facilities related to the Stage 2 proposal include the future upgrading of an existing driveway to a house on The Hills Golf Course from Hogans Gully Road to a road standard so that it can also provide access to the Site. Depending on lot layout, this road could take the form of a “U” with a second intersection further west on Hogans Gully Road. The two intersections with Hogans Gully Road would therefore be on the flat and straight section of Hogans Gully Road, clear of the windy and hilly section. I understand the detailed design of this accessway will be addressed when the Site is subdivided or when building platforms are identified.

Traffic Generation

27. The future traffic generation projection for the Hogans Gully Site under a proposed WBLP zoning has been summarised in Table 1 based on the residential development potential of 20 lots.³

	Units	Daily Movements	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Hogans Gully Road	20	160	4	16	20	13	7	20

Table 1: Traffic Generation

28. The traffic generation predictions are based on:
- (a) 8 vehicle movements per day per unit;
 - (b) 1 vehicle movement per peak hour per unit;
 - (c) 20% in / 80% out directional split for the morning peak hour; and
 - (d) 65% in / 35% out directional split for the evening peak hour.

³ Rounded up from 19 lots for convenience.

29. I have predicted that the traffic on each access road will be split approximately 14:6 with the road nearest Arrowtown-Lake Hayes Road used more. Almost all traffic generated by the Site will travel to/from the direction of Arrowtown-Lake Hayes Road because it provides the most convenient link with most destinations and because of the windy/hilly nature of Hogans Gully Road to the east. Therefore, the proposed residential units would add approximately 20vph (2-way) to the existing peak hour traffic on Hogans Gully Road. I have predicted that the new turning movements at the Arrowtown-Lake Hayes Road will be split approximately 50:50 by direction because of the larger but more distant attraction of Queenstown compared with the smaller but closer attraction of Arrowtown. This means that the traffic volumes on Arrowtown-Lake Hayes Road could increase by 10vph.

Traffic Effects

30. Accordingly, the peak traffic volume on Hogans Gully Road at the intersection with Arrowtown-Lake Hayes Road could increase to about 40vph. The peak traffic volume on Arrowtown-Lake Hayes Road would remain about 400vph because the proposed developments on McDonnell Road are not expected to add traffic to Arrowtown-Lake Hayes Road (or Hogans Gully Road). This combination is well below the Austroads thresholds referred to in the Stage 1 Report which specify when detailed intersection performance analyses is required, meaning that no adverse operational effects are anticipated at the intersection.
31. The effects of the additional traffic on the western section of Hogans Gully Road are insignificant because the combination of traffic volumes at the respective new intersections are even further below the Austroads thresholds. Similarly, the relatively minor additional traffic movements associated with the development on the Hogans Gully Site will not cause any efficiency issues for the driveways or the intersections further along Arrowtown-Lake Hayes Road.
32. I emphasise that using a traffic generation of one vehicle movement per residential unit for the peak hours for the traffic effects assessment represents a very conservative analysis because of the low number of employed people likely to be living in the proposed residential units and the potential for there to be a high number of holiday homes, as indicated by census data for this area.

33. In my opinion, the increase in traffic flows due to development of the Site under a WBLP zoning will not affect the level of service provided to cyclists and pedestrians. The increase anticipated on Arrowtown-Lake Hayes Road is less than about one extra vehicle movement every six minutes which would not be noticeable. In my opinion, the demand for public transport would only increase marginally as a result of this WBLP zoning. However, the additional traffic generated by this zoning of the Site would not adversely affect existing or possible future services.
34. I have also produced evidence for BHT for its approximately 8ha block of land located on McDonnell Road, for which a WBLP zoning is also sought, and for Trojan Helmet Limited (THL) in respect of the proposed Resort zoning of Hills Golf Course land. If the traffic generated by these proposals is taken into account there would still be no adverse effects on the transportation facilities associated with the development of the Site under the proposed WBLP zoning.

Access Arrangements

35. The Operative and Proposed District Plans require that intersections serving residential lots on an 80 km/h road should provide 115m sight distances. The sight distances at both of the potential intersections on Hogans Gully Road would be able to satisfy the sight distance requirement. Accordingly, I consider the proposed access road to the Site will not adversely affect road safety.
36. Arrowtown-Lake Hayes Road also has a speed limit of 80 km/h. The existing intersection of Arrowtown-Lake Hayes Road and Hogans Gully Road has more than 115m sight distance available in each direction to ensure continued safe operation.

Internal Roding

37. The Stage 1 Report addressed the Operative District Plan requirements for internal vehicular access. These standards may change as a result of the new Transportation Chapter notified as part of Stage 2 of the PDP. The proposed access road from the Hogans Gully Road Site will potentially serve 20 residential units and the QLDC standards for a public road carrying in the order of 200vpd requires a road that has a sealed width of 5.5 – 5.7m.

38. For the remainder of the existing driveway to the house on The Golf Course, I consider it is appropriate to retain the unsealed one lane facility, so as to maintain the rural appearance of the driveway.

District Plan Compliance

39. In my opinion, there are no reasons why the proposed development could not comply with the operative or proposed District Plan transport rules relating to parking and access. Accordingly, I consider that no additional transport rules or requirements are necessary for the proposed zone.

RESPONSES TO SECTION 42A REPORT

40. Mr Smith has prepared a statement on transport related matters on behalf of QLDC. He provides no specific comments on the Hogans Gully site proposal but in his conclusion, Mr Smith has stated that he opposes any submissions that will increase residential density.
41. Since the BHT proposal proposes residential development at a density that is consistent with the proposed District Plan zoning, I have interpreted Mr Smith's position as being accepting of the BHT proposal.

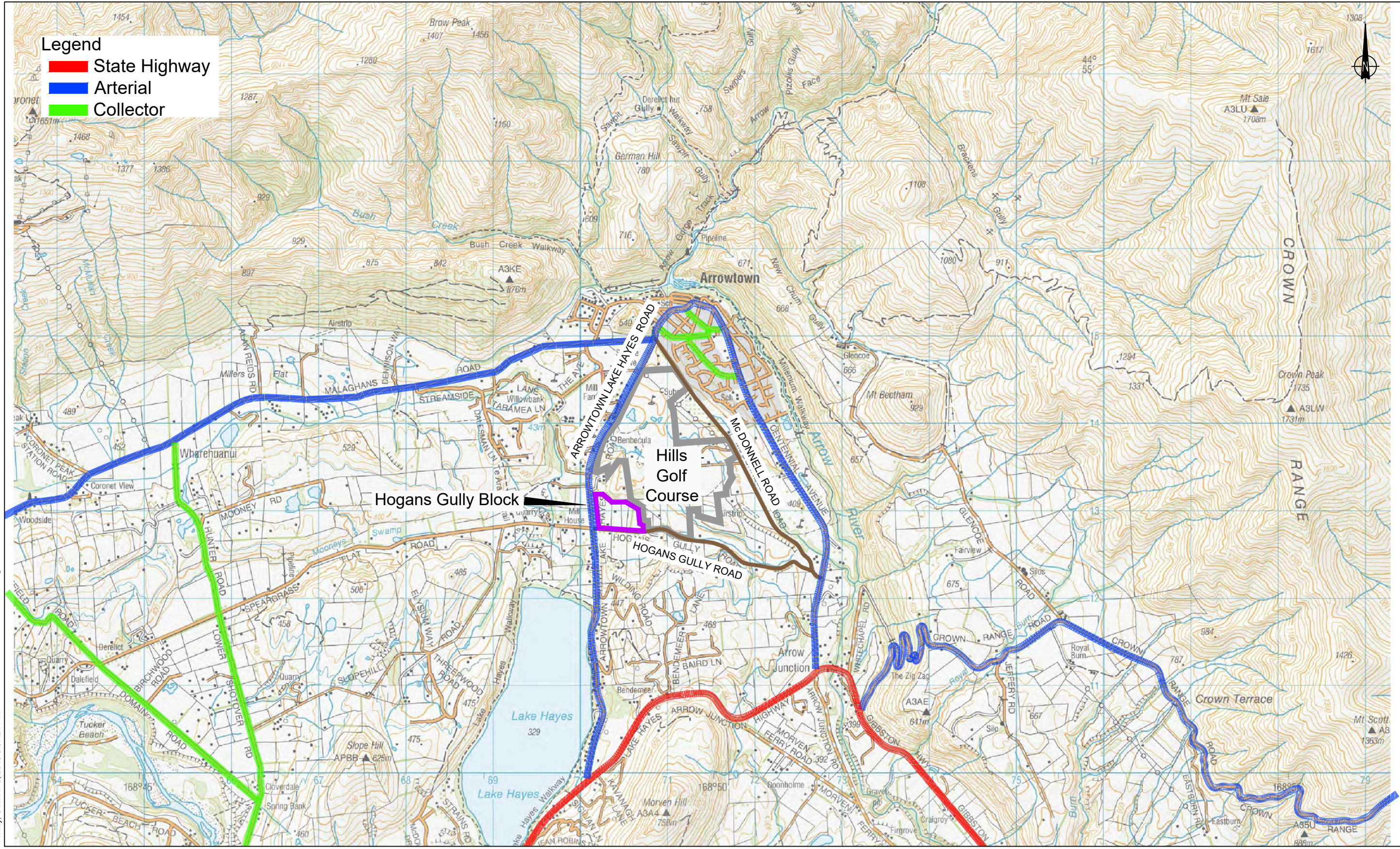
CONCLUSION

42. In my opinion, the various transport and access elements of the Hogans Gully Site proposal that are associated with the proposed WBLP zone can be supported. I consider that even with the increase in development potential from 10 to 20 units (rounded) that is now proposed (from when the Stage 1 Report was prepared), the traffic that would be generated can be accommodated without adversely affecting the level of service and road safety on the surrounding road network and without adversely affecting accessibility for adjacent properties.

Tony Penny

June 2018

ANNEXURES



Friday, October 9, 2015 5:07:24 PM 0 20mm@A3

REV	DATE	DRN	CHK	DESCRIPTION
A	09.10.15	CTM		Base Boffa Miskell : The Hills Resort Zone, QLDC DPR Submission (Sep15)

QLDC Planning Review - Wakatipu Basin Lifestyle Precinct Zone
Site Location



DRAWN:CTM	---	---
DATE: 09.10.15	STATUS: ---	
SCALE: NTS		
DWG NO:13470A2B		



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Hogans Gully Lifestyle Zone

Queenstown Lakes District Plan
Review

Transportation Assessment Report

October 2015

Hogans Gully Lifestyle Zone

Queenstown Lakes District Plan Review

Transportation Assessment Report Quality Assurance Statement

Prepared by:

Cameron Bradley

Transportation Planner



Reviewed by:

Tony Penny


Principal Consultant



Approved for Issue by:

Chris Rossiter

Principal Transportation Engineer



Status: Final report

Date: 21 October 2015

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1. Introduction

Trojan Helmet Limited proposes the creation of a rural lifestyle zone on the edge of The Hills Golf Course near Arrowtown. The proposed zone has an area of 19.7 hectares and would enable development of up to 10 dwellings.

The report provides a description of the existing transport infrastructure in the vicinity of the zone and existing travel patterns. This is followed by a description of the transport components of the proposed development and the expected traffic generation of the development enabled by the rezoning. This forms the basis of the assessment of traffic effects and the assessment against the transport rules of the District Plan.

2. Existing Transport Infrastructure

2.1 Site Location

The proposed zone is bounded by Arrowtown-Lake Hayes Road to the west, Hogans Gully Road to the south and by The Hills golf course to the north and east. The land is currently zoned as Rural General in the Operative Queenstown Lakes District Plan (“District Plan”).

Figure 1 also shows the location of the site in relation to the road hierarchy as defined in the District Plan.

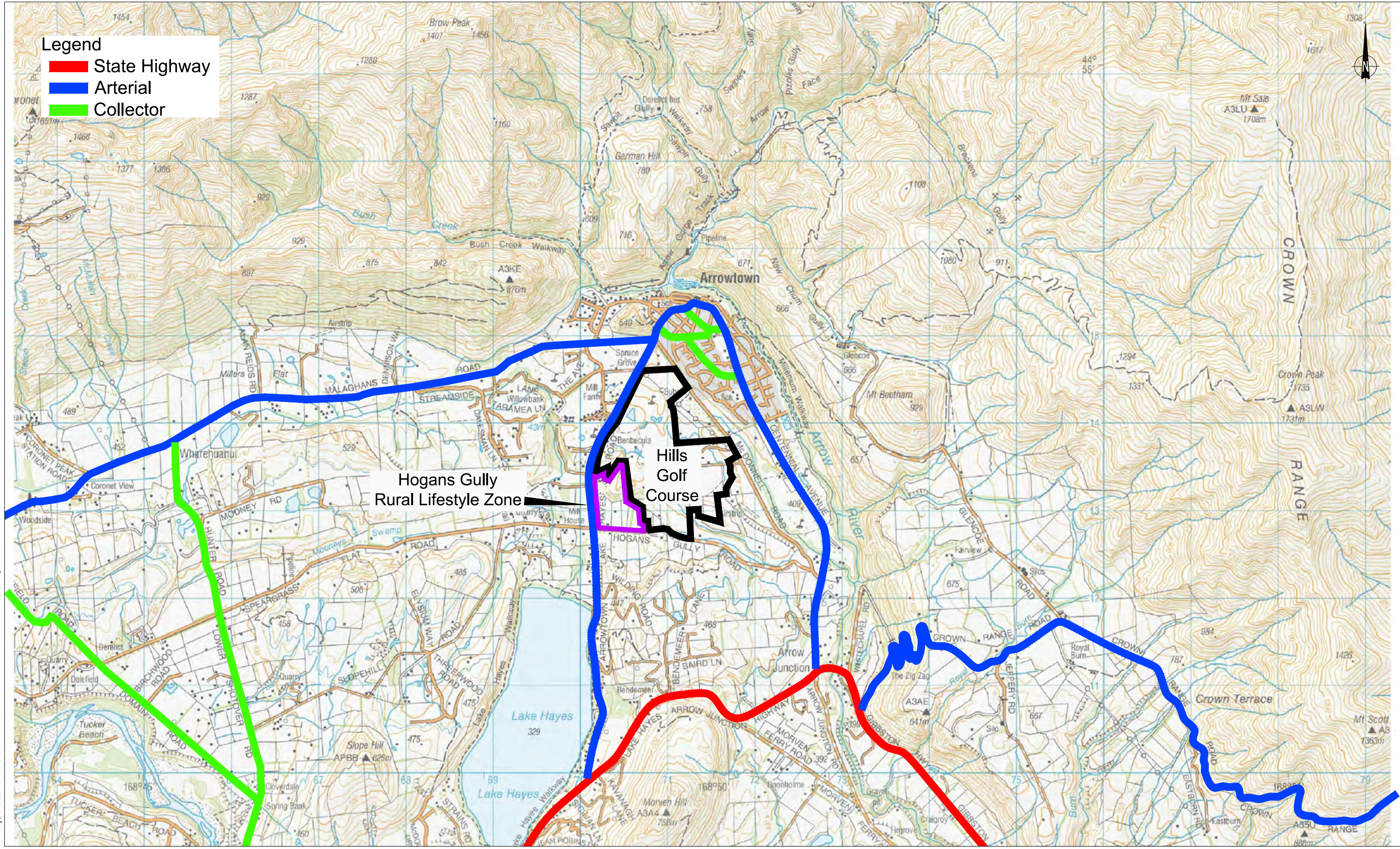
2.2 Rooding Network

On the west side of the site, Arrowtown-Lake Hayes Road is classified as an Arterial Road with a role of being a dominant element in the road network, connecting the major settlements with the District. The District Plan states that arterial roads will be managed to minimise their local access function. McDonnell Road runs in a generally northwest-southeast direction and is defined as a local road in the vicinity of the site. Local roads are described by the District Plan as functioning almost entirely as accessways to properties and are not intended to act as through-routes for vehicle travel. Hogans Gully Road along the southern side of the site is also a local road.

2.3 Rooding Form

In the vicinity of the site, Arrowtown-Lake Hayes Road has a seal width of 8.0m to 8.5m. No footpaths are provided in this location.

The speed limit along the section of Arrowtown-Lake Hayes Road near the site is 70 km/h, except near its intersections with McDonnell Road (to the north) where the speed limit changes to 50km/h.



Friday, 9 October 2015 5:07:24 PM 0 20mm@A3

REV	DATE	DRN	CHK	DESCRIPTION
A	09.10.15	CTM		Base Boffa Miskell : The Hills Resort Zone, QLDC DPR Submission (Sept2015)

Hogans Gully Rural Lifestyle Zone
 Site Location



DRAWN: CTM	---	---
DATE: 09.10.15	STATUS: ---	
SCALE: NTS		
DWG NO: 13470A2A		





Photograph 1: Arrowtown-Lake Hayes Road, Looking North Past Hogans Gully Road

At its northern end, Arrowtown-Lake Hayes Road intersects with McDonnell Road and Malaghans Road. This intersection is in the form of a 'GIVE WAY' priority-controlled, cross-road intersection, with priority given to Arrowtown-Lake Hayes Road.



Photograph 2: Arrowtown-Lake Hayes Road Looking South Past McDonnell Road

McDonnell Road in the vicinity of the site access has a seal width of approximately 7.0m, with unsealed shoulders of between 2.2m and 2.5m on both sides of the carriageway. It has a speed limit of 80 km/h except for 1 km of the northern section within the urban area where the speed limit is 50 km/h. In this section of McDonnell Road speed humps have been installed with an advisory negotiation speed of 25 km/h.



Photograph 3: McDonnell Road, Looking North at Existing Golf Course Entrance



Photograph 4: McDonnell Road, Looking South at Existing Golf Course Entrance

No sealed footpaths are provided on McDonnell Road in the vicinity of site. An unsealed track is provided on the western side of McDonnell Road separated from the sealed carriageway, from the northern end of the site through to the intersection with Hogans Gully Road. In the vicinity of the Hogans Gully Road intersection this walking track switches to the eastern side of McDonnell Road, before extending further south through to the intersection with Centennial Avenue.



Photograph 5: McDonnell Road, Looking North at Existing Golf Course Access with the Unsealed Walking Track on the Western Side



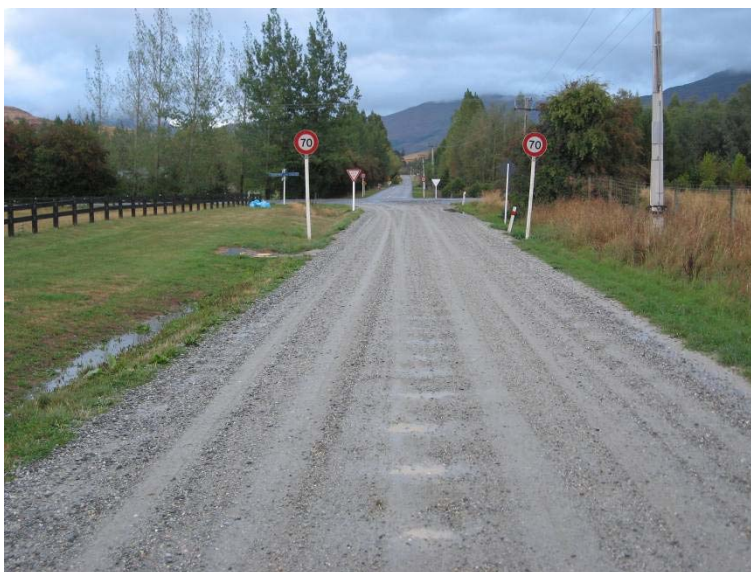
Photograph 6: Hogans Gully Road, Looking East

At the southern boundary of the site, Hogans Gully Road runs in a generally east-west direction. At its western end it intersects with Arrowtown-Lake Hayes Road and Speargrass Flat Road. To the east Hogans Gully road terminates at a T-intersection with McDonnell Road. Both the intersections with Arrowtown-Lake Hayes Road and McDonnell Road are priority controlled, with Hogans Gully Road being restricted in both cases by a “GIVE WAY” control.



Photograph 7: Hogans Gully Road, Looking Towards Intersection with McDonnell Road

Hogans Gully Road has an 80 km/h speed limit. It is unsealed and has a formed width of about 5.2m. In the vicinity of Arrowtown-Lake Hayes Road there are grass verges of 6.2m and 1.7m on the southern and northern side of the road respectively. Further east the road winds over a hilly section and the verges vary in width. Footpaths are not provided on either side of Hogans Gully Road.



Photograph 8: Hogans Gully Road, Looking Towards Intersection with Arrowtown-Lake Hayes Road

It is understood that Queenstown Lakes District Council has no plans for the sealing of Hogans Gully Road.

3. Current and Future Travel Patterns

3.1 Traffic Volumes

Table 1 shows the most recent daily traffic count data for roads in the vicinity of the site collected from records held by the Queenstown Lakes District Council.

Road Section	ADT (vpd)	Count Date
Arrowtown-Lake Hayes Rd, north of Hogans Gully Rd	3,157	November 2010
Arrowtown-Lake Hayes Rd, south of McDonnell Rd	2,978	June 2005
Malaghans Rd, west of Arrowtown-Lake Hayes Rd	1,522	November 2011
McDonnell Rd, east of Arrowtown-Lake Hayes Rd	847	February 2013
McDonnell Rd, east of Arrowtown-Lake Hayes Rd	403	April 2005
McDonnell Rd, north of Hogans Gully Rd	257	February 2004
Hogans Gully Rd, west of McDonnell Rd	133	March 2012
Hogans Gully Rd, east of Arrowtown-Lake Hayes Rd	137	May 2005

Table 1: Daily Traffic Counts

The traffic volumes to the south-west of Arrowtown show the strength of the town’s relationship with Queenstown. The other roads surrounding the site have relatively low traffic counts. However a significant amount of growth can be seen on McDonnell Road traffic in the past 10 years.

3.2 Provision of Public Transport

Connectabus runs the Number 10 route from Arrowtown to Queenstown which operates 13 times a day between 7:35am and 9:35pm. Six of these services run via Arthurs Point, the other seven travel down Arrowtown-Lake Hayes Road and through Frankton down State Highway 6 to Queenstown. Passengers may interchange onto Kelvin Heights, Sunshine Bay, Fernhill, Quail Rise, Wanaka or a number of other places including Remarkables Park and the airport. Connectabus also runs a service to Wanaka twice daily.

There are several smaller operators targeted towards tourists who offer services from Queenstown to Arrowtown and vice versa, often allowing stops along the way. There is also a school bus which operates down Hogans Gully Road.

3.3 Travel to Work

It has been identified from the 2013 census, that there were 2,445 people living in Arrowtown and 699 jobs there. Of these jobs 261 were taken by employees who commute to Arrowtown from a different area, primarily Queenstown and Frankton, while the remaining 438 jobs were taken by residents of Arrowtown. There were 741 people who commute out of Arrowtown for work, again mainly to Queenstown and Frankton. The largest percentage commuting increase from 2006 to 2013 was people commuting to

Arrowtown, which increased by 55% or 93 people. However the number commuting out of Arrowtown also increased by 17%, or 103 people. Further increases in these commuting patterns will lead to increases, primarily in the peak hour, of traffic volumes using Arrowtown-Lake Hayes Road, and particularly the intersection with Malaghans and McDonnell Roads.

Of those who travelled to work on the census day in 2013, the overwhelming majority, (84% or 867 people) drove a vehicle to get there. This number remained relatively consistent with 2006, where 852 people drove. Cycling's share of travel choice has had an increase of 3% between 2006 and 2013 (33 people), but walking remained the second most popular mode of travel to get to work with 84 commuters (8%) choosing this method. There was also an increase of 40% in people who work from home, jumping from 105 in 2006 to 147 in 2013.

3.4 Road Safety

The New Zealand Transport Association Crash Analysis System (CAS) has been used to identify all reported accidents on Arrowtown-Lake Hayes Road, McDonnell Road, and Hogans Gully Road, between and inclusive of their respective intersections. The search covered all reported crashes for the period between 2008 and the present.

A total of 18 crashes were reported within this area, with six crashes resulting in minor injuries. There have been no crashes which resulted in fatal or serious injuries in this area since 2008.

Eleven of these crashes occurred on Arrowtown-Lake Hayes Road, three of these causing minor injuries. Two of these injury crashes were the result of drivers failing to give way at the intersection of McDonnell Road and the other at the intersection of McDonnell Road was caused by following too closely.

Four crashes on Arrowtown-Lake Hayes Road had rain, snow, frost or ice as a factor in the cause, with two of these located 100m and 500m north of Waterfall Park Road. Neither of these crashes involved injuries.

There were four recorded crashes on Hogans Gully Road, all due to loss of control from the unsealed road, frost or ice or speed. The speed related crash resulted in a head on collision, but no injuries. Three crashes were recorded on McDonnell Road, with two of these caused by intoxicated drivers hitting parked vehicles.

Overall seven of the eighteen crashes recorded were affected by environmental factors, made up of narrow, unsealed, frosty or icy roads. Three crashes were attributed down to alcohol and six to driver error at intersections. Three of these occurred at the intersection of Arrowtown-Lake Hayes Road / McDonnell Road and three at the intersection of Arrowtown-Lake Hayes Road / Hogans Gully Road.

No crashes occurred at existing driveways to The Hills property or adjacent properties.

4. Future Changes

4.1 Queenstown Lakes District Council

On 30 June 2015 Queenstown Lakes District Council (QLDC) adopted their 10 year land transport plan (2015-2025). There are no specific changes to the transportation network around Arrowtown planned. However, the report did have a key objective to reduce growth in vehicle use by promoting greater use of other transport modes. This will be achieved by:

- Increasing affordability and convenience of public transport; and
- Making cycling and walking easier and safer.

4.2 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 relevant sections of the road network are referenced below:

- McDonnell Road was installed as a heavy traffic route being described as providing a logical bypass to the town and good access to the industrial area;
- In time, the Malaghans / Arrowtown-Lake Hayes / McDonnell intersection may need improvement. However, a threshold treatment involving planting is envisaged to assist in speed management. There was not full support for a roundabout solution;
- From Arrowtown-Lake Hayes Road adequate signage and encouragement is needed to ensure heavy traffic is routed along Malaghans Road to the industrial area.

It is noted that McDonnell Road has since been sealed and speed humps installed. However no other actions have evolved that have a confirmed timeframe.

4.3 Wakatipu Trails

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 in association with Transfund and Queenstown Lakes District Council. The Strategy identified a series of desired outcomes with those relevant to The Hills site 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.

An extensive range of walking and cycling tracks have now been developed within the Queenstown and Arrowtown area. One of the routes constructed links Arrowtown with the Historic Shotover Bridge. This follows Manse Road from Arrowtown and passes through the Millbrook resort to Lake Hayes and does not cross any part of The Hills golf course land.

5. Levels of Service

5.1 Vehicles

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

5.2 Road Safety

Based upon the information from the Land Transport New Zealand Crash Analysis System (CAS), it does not appear that there are any underlying road safety issues on Arrowtown-Lake Hayes Road. Since McDonnell Road has been sealed, the number of loss of control crashes on this road has reduced. If Hogans Gully Road were to be sealed, this would also yield a reduction in this type of crash. The traffic effects of the proposal are not considered to be sufficient reason for sealing because the expected volume changes on Hogans Gully Road will be minimal.

6. The Proposal

Trojan Helmet Limited proposes that 19.7ha of land bounded by Arrowtown-Lakes Hayes Road, Hogans Gully Road and The Hills golf course is rezoned from Rural General to Rural Lifestyle to enable development of up to ten dwellings.

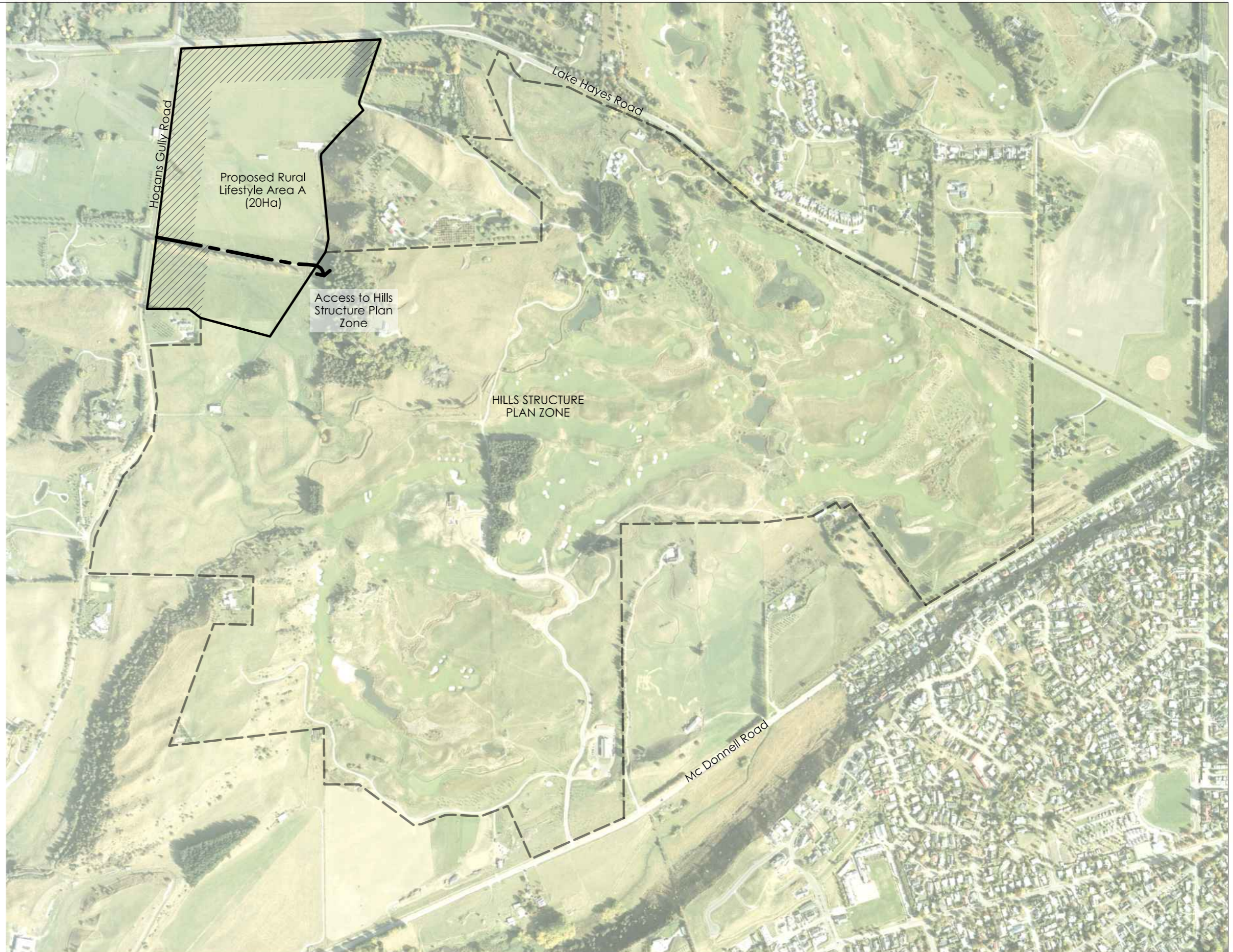
It is understood that access to the rural lifestyle properties will be provided via a 5.5m wide, two lane road connecting to Hogans Gully Road.

KEY:

- Hills Structure Plan Boundary
- Proposed zoning Areas

Overlays:

- /// Landscape Amenity Management Area:
Includes tree planting, sited to preserve views of surrounding landscape and partially screen proposed dwellings



V:\MH_The Hills\10_Master1_Preliminary\MH_10_1_MLP_012B (Rural Lifestyle Area A).dgn



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PLAN STATUS:
DP REVIEW

THE HILLS PROPOSED RURAL LIFESTYLE AREA A

DRAWN / REVIEWED: RT / JC
 APPROVED: DT
 DATE: 14.10.15

DRAWING NO:
 MH_10_1_MLP_012B

7. Traffic Generation and Distribution

7.1 Traffic Generation

The site is currently used for rural purposes and has a very low traffic generation. The proposed rural lifestyle zone would enable development of up to ten dwellings.

The Transfund NZ Research Report 209: "Trips and Parking Related to Land Use" includes daily rates of between 6 and 9 vehicles per day (vpd) (IN+OUT) for rural residential subdivisions. It notes that these rates are lower than for urban residences and "reflect the increased trip linking which occurs when the primary employment trip is longer, e.g. greater than 20 minutes, as with rural lifestyle properties located on the outskirts of an urban area". For the purposes of this assessment, a rate of 8vpd per unit has been adopted. On this basis, ten dwellings could generate about 80 vehicle movements on average per day.

Residential activity typically generates a high proportion of outbound movements during the morning peak period (80%) with a more balanced pattern in the evening, 35% outbound and 65% inbound.

During the typical commuter peak periods, residential activity will generate about one vehicle movement per hour per dwelling on average. On this basis, the proposed rezoning could result in an additional ten vehicle trips being generated.

7.2 Trip Distribution

It is anticipated that access to the properties will be provided from Hogans Gully Road. With Arrowtown-Lakes Hayes Road forming the nearest arterial road, it is expected that the majority of vehicle movements will be from the site access to this road. Since the major employment centres in the area are Frankton and Queenstown, vehicle movements at the intersection will predominantly be to and from the South.

8. Assessment of Rezoning Effects

8.1 Effects on Roding Network

The AUSTRROADS Guide to Traffic Management Part 3 (“Traffic Studies and Analysis”) currently recommends that unsignalised intersections are evaluated using SIDRA intersection analysis software or an equivalent tool. This advice supersedes previous recommendations that detailed analysis of low volume driveways was not normally required because capacity was unlikely to be a critical factor.

The following table shows the traffic volume thresholds previously adopted by Austroads below which detailed analysis was not considered necessary and the expected traffic volumes at the resort zone access points. The peak hour traffic volumes on the frontage roads have been estimated as 10% of the average daily traffic volumes.

Intersection	Major Road Flow (vph)	Minor Road Flow (vph)
AUSTRROADS Guide to Traffic Management	400	250
Two-lane Road	500	200
Peak Hour Capacity Combinations	650	100

Table 2: Intersection Capacity – Uninterrupted Flow Conditions (PM Peak)

The existing peak hour traffic volumes on Arrowtown-Lake Hayes Road are below 400vph and on Hogans Gully Road are less than 20vph. The proposed rezoning could increase the peak hour traffic volume on Hogans Gully Road to about 30vph. This remains well below the thresholds at which a detailed analysis of the Hogans Gully Road / Arrowtown-Lake Hayes Road intersection would be considered necessary. On this basis, the proposed development is not expected to have any adverse effect on the road network at these locations.

8.2 Buses, Cyclists and Pedestrians

The increase of traffic flow due to the proposal is not expected to affect the level of service provided to cyclists and pedestrians. The increase in traffic volume represents about one extra vehicle every five minutes which not be noticeable.

It is anticipated that the demand for public transport services would only increase marginally as a result of this proposal and will not affect the potential provision of possible future services in the area.

8.3 Access Arrangements

It is understood that access to the rural lifestyle properties will be provided via a 5.5m wide, two lane road connecting to Hogans Gully Road. Hogans Gully Road has a straight and level alignment east of Arrowtown-Lake Hayes Road and it is considered that there are no reasons why an intersection could not be formed that meets the best practice design standards.

9. Compliance with Planning Requirements

9.1 District Plan Requirements

The site currently lies within the Rural General Zone in the District Plan. The District Plan sets out a number of rules relating to the transport related elements of any development proposal which are relevant to the proposed rezoning because of the details included in the proposed structure plan. The relevant rules are set out below for the additional visitor accommodation and residential dwelling units associated with the proposed rezoning.

Criterion
<p>Rule 14.2.4.1 (i) (Table 1, Page 14/14) <i>Residential units require 2 spaces per unit, while visitor accommodation units require 1 space per unit (2 spaces per unit Plan Change 8), plus one staff space per 10 units, plus one coach space per 30 units.</i></p>
<p>Rule 14.2.4.1 (iv) <i>All vehicular access shall be in accordance with the standards contained in NZS4404:1981 including updates.</i></p>
<p>Rule 14.2.4.2 (ii) <i>Vehicle crossings providing access to a road in a Rural Zone shall comply with the Appendix 7, Diagram 2 (Private Access) or Diagram 4 (Commercial Access).</i></p>
<p>Rule 14.2.4.2 (iv) <i>The minimum sight distance for an access in an 80km/h zone serving a residential activity is 115m, or 170m for a non-residential activity. The minimum sight distance in a 100km/h zone is 170m for a residential activity or 250m for a non-residential activity.</i></p>
<p>Rule 14.2.4.2 (v) <i>Maximum number of vehicle crossings for a site frontage greater than 100m and onto a local road is three (or two onto an Arterial).</i></p>
<p>Rule 14.2.4.2 (vi) <i>The minimum distance between any vehicle access onto an arterial road and an intersection with a local road shall be 100m (100 km/h speed limit). For a vehicle crossing on a local road the minimum distance from an intersection with an arterial or local road is 25m (80 km/h speed limit).</i></p>

Table 3: Existing Relevant Rules of the District Plan

No additional transport rules are considered necessary because all new roads and vehicle crossing locations are subject to existing rules to ensure that they can operate safely.

10. Summary and Conclusions

Trojan Helmet Limited proposes that 19.7ha of rural general land by The Hills Golf Course is rezoned as rural lifestyle to enable development of up to 10 dwellings. This review of the potential traffic generation of the land and associated effects has concluded that the proposal would not lead to any noticeable traffic effects on the existing road network. Since no changes to the road network are required apart from the construction of the new access to service the dwellings, the proposed rezoning can be supported from a transport perspective.