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 Hearing Stream 13 – Queenstown Mapping
AND	
IN THE MATTER	Submission 361, Grant Hylton Hensman, Sharyn Hensman & Bruce Herbert Robertson, Scope Resources Ltd, Granty Hylton Hensman & Noel Thomas van Wichen, Trojan Holdings Ltd

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SUMMARY OF EVIDENCE OF JASON BARTLETT

Dated this 12th day of September 2017

MACALISTER TODD PHILLIPS
Barristers, Solicitors, Notaries
3rd Floor, 11-17 Church Street
Queenstown 9300
P O Box 653, DX ZP95001, Queenstown 9348
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Solicitor Acting: Jayne Elizabeth Macdonald

INTRODUCTION

1. My name is Jason Bartlett.

2. My Evidence in Chief dated 9 June 2017 outlines my experience and qualifications relevant to this evidence in respect of the Queenstown Mapping Hearings of the Proposed District Plan.

3. Since preparation of my Evidence in Chief I have also reviewed the rebuttal evidence of Mr Denis Mander (7 July) for QLDC

4. I note that Mr Mander is concerned that the proposed rezone cannot be served by the adjacent State Highway network. Mr Mander does in his rebuttal evidence acknowledge that NZTA (through its powers under the Government Roading Powers Act 1989) has control over all accesses (existing and proposed) between the applicant's land and the State Highway. Accordingly Mr Mander does not oppose the rezoning on traffic and transportation grounds. Mr Mander is however opposed to the proposed rezoning based on his underlying concern that the roading access off SH6 is not sufficient to meet projected traffic levels.

5. I understand that this is based on any access onto the State Highway being managed through approval of the NZTA. I note that I have also undertaken further modelling work in consultation with NZTA in order to develop an appropriate access from SH6 with an acceptable operational efficiency and level of service.

FURTHER INFORMATION

6. Since preparing my evidence in chief I met with Tony Sizemore (Transport Planning Manager, Dunedin) to discuss the approach to achieve an acceptable access to the adjacent State Highway Network. The work undertaken following this meeting is set out below:

   (a) Develop planning restrictions to encourage a greater proportion of yard based activities. Traffic wise yard based activities have a significantly reduced traffic generation.

   (b) Revise the traffic generation based on the proposed planning restrictions. In this regard I have completed a development traffic generation model based on 60% of the equivalent traffic generation based on Glenda Drive.

   (c) Develop a trigger mechanism to require the second SH6 intersection. This is set at 25% of development. This trigger is set at a low level to allow for a review of traffic generation and modelling based on the actual on-site development.

7. The proposed planning restrictions for the Coneburn industrial zone are discussed by Ms Hutton in her evidence today.

8. With respect to traffic modelling, I have assumed that the proposed rezoning will have two accesses from SH6. These accesses will be developed as T-intersections and the modelling of these is based on a 2030 design year traffic from the 2016 Queenstown Traffic Model.

9. The modelling undertaken shows that the proposed access intersections will work efficiently with maximum queuing of 5 vehicles right turning from the development approach in the pm peak period. The maximum delay for this manoeuvre is 43 seconds which is a level of service E. All other manoeuvres will have minimal delay (less than 10 seconds) and a level of service A. The modelling report prepared for NZTA is provided as Attachment A

SUMMARY

10. I believe that the combination of planning conditions for the proposed Coneburn Industrial Zone including the trigger mechanism discussed with NZTA are appropriate to manage access from SH6. The modelling undertaken shows that the two proposed access intersections with SH6 will operate efficiently and will have an acceptable level of service.

Jason Bartlett
12 September 2017

Attachment A – Access Modelling Report

Access Modelling report undertaken following consultation with NZTA.

12 September 2017

Scope Resources Limited

C/- Clark Fortune McDonald & Associates
PO Box 553
Queenstown, 9348

Attention: Nick Geddes

Dear Nick,

Proposed Coneburn Industrial Zone Access Modelling, Kingston Road (SH6)

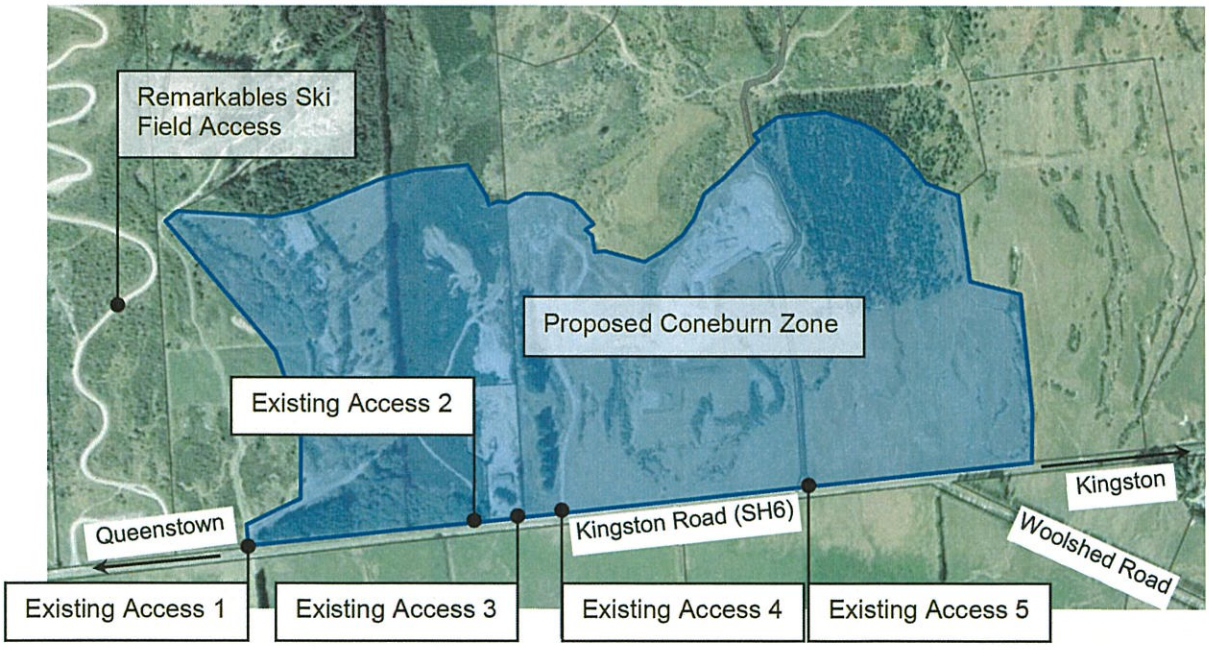
The purpose of this letter is to provide modelling results for the proposed accesses to the Coneburn Industrial Zone.

This letter should be considered as an addendum to the earlier Bartlett Consulting Transport Assessment provided in October 2015 and provides updated traffic information and expands on the Initial Traffic Modelling report dated 22 March 2017. This report includes access traffic modelling in parallel with proposed planning conditions.

1 Location

The proposed zone change is at the base of the Remarkables and would be accessed directly from Kinston Road (SH6). Figure 1 below shows the proposed site and existing site accesses.

Figure 1 – Proposed Coneburn Zone, image from QLDC Webmaps.



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2 Background

The proposed Coneburn Industrial Zone change will facilitate industrial, business, commercial and yard based activities. The initial access modelling report (dated 22 March 2017) was discussed at a meeting with Tony Sizemore (NZTA) on 6 April 2017 and 15 August 2017. At these meetings a number of modelling aspects were confirmed, being:

- That the Woolshed Road (or Woolshed Bay Road) will be associated with construction traffic for Henley Downs (or Hanley Farm) only and is temporary in nature. Any development of Henley Downs (or Hanley Farm) that will have a permanent effect on the Woolshed Road intersection with SH6 will require approval from NZTA[1].
- That the design year for development modelling is 2030. This is based on a 10 year design life from the earliest likely opening date for the proposed development. The SH6 traffic in 2030 is based on straight line growth between the future modelled years of 2025 and 2045 from the 2016 Queenstown Traffic Model (QLDC/NZTA) provided by Abley Transport Consultants.
- That traffic distribution would have a bias towards Queenstown with a higher proportion of traffic (90%) travelling to/from Queenstown, a bias (60%) of traffic would use the proposed access nearest Queenstown (Existing Access 4). The remaining 40% of development traffic would use a proposed access nearest Jacks Point (Existing Access 5).

The development traffic generation is based on Glenda Drive, Frankton (Industrial A Zone). This has been modified in response to comparison of proposed planning conditions for the proposed Coneburn Industrial Zone. The proposed planning conditions are to create a zone which encourages yard based industry which are lower traffic generating activities.

3 Planning Conditions

The planning conditions proposed for the Coneburn Industrial Zone are similar to Operative QLDC District Plan Industrial B Zone. Glenda Drive in Frankton is predominantly within the Industrial A Zone and is therefore considered to be a local example of the type of development which may be enabled by the proposed Zone change.

The proposed planning conditions for Coneburn Industrial Zone will differ to encourage a greater proportion of yard based industry. Table 1, below, provides a comparison between the current planning provisions for Glenda Drive (Industrial A Zone) and the proposed provisions for Coneburn.

Table 1: Planning Controls – Comparison with Glenda Drive (Industrial B)

	Glenda Drive **Industrial A Zone**	**Coneburn** **Coneburn Industrial Zone (proposed)**
Building coverage	75%	Area 1 – 30% with discretionary to 40% Area 2 – 35% with discretionary to 60%[2]
Retail	non-complying	Prohibited
Office	Permitted	Prohibited
Restaurant / Café	Permitted	Restricted to 50m^2 per site
Residential	Permitted	Prohibited

[1] Refer correspondence from Clark Fortune McDonald & Associates regarding traffic using Woolshed Road, Appendix B.
[2] Refer proposed Rule 18.5.4 which includes traffic considerations.

The proposed Coneburn Industrial Zone will also include a trigger point to manage the development of access intersections from SH6. This includes modelling of intersection performance at 25% of development in order to plan for a second access intersection. This trigger is to be included in the Subdivision section (Section 27) of the QLDC District Plan.

4 Proposed Development

4.1 Traffic Generation

The proposed development is described in the Transport Assessment as rezoning 27.25ha to Industrial B type zoning which would allow for industrial, business, and yard based activities.

Through discussion with NZTA it is accepted that the base traffic generation would be based on Glenda Drive as a local Industrial type zone. Glenda Drive is a 24ha development with a traffic generation of between 6,000vpd and 10,000vpd[3]. As an equivalent sized development (27.25ha) this would have an average peak hour traffic generation of approximately 800vph[4] in the am peak period.

The planning provisions suggested for Coneburn Industrial Zone are to encourage a greater proportion of yard based industry. Yard based industries are usually significantly lower traffic generating than other activities, especially when the higher traffic generating activities (retail and office) are prohibited and the allowable built area is reduced. Based on the proposed planning provisions the Coneburn traffic generation is expected to be 60% of the (pro-rata) Glenda Drive traffic generation.

The peak hourly traffic generation therefore used for intersection modelling is 470vph. A trigger point at 25% of development provides a point to monitor and correct traffic generation assumptions for the Zone based on actual traffic flow at the access(es) from SH6.

4.2 Traffic Distribution

The traffic distribution for the proposed rezoned area has been partially based on the inverse of the adjacent residential development; Jacks Point, Henley Downs and Homestead Bay.

The assumptions for the am peak period are:

- 100% of peak development traffic flow,
- 90% of traffic to/from Queenstown, and
- 20% of traffic exits the proposed development.

The assumptions for the pm peak period are:

- 80% of peak development traffic flow,
- 90% of traffic to/from Queenstown, and
- 80% of traffic exits the proposed development.

The development traffic distributions for am and pm periods are provided in Appendix A.

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[3] Based on QLDC traffic Counts for Glenda Drive, 5,082vpd Oct '14, 5,888vpd Feb '08 and 9,634vpd Nov '06.

[4] Hourly traffic flow based on the 496vph (10% approx.) peak traffic flow at Glenda Drive from the Oct '14 count at 08:00 (am).

5 Traffic Modelling

The purpose of this traffic modelling is to assess the potential effects on SH6 (Kingston Road) and to investigate the extent of queuing on the development approaches.

The greatest effect on the operation of SH6 will be a result of the expected right turn queues from SH6 to the proposed development accesses at Existing Access 4 & 5. The proposed design of these access intersections will include a right turn lane as per the design provided in Appendix B. Intersection Modelling results for the two proposed access intersections in the 2030 design year are provided in Tables 2 - 5 below. The full SIDRA output is provided in Appendix C.

The new access at Existing Access 4 will accommodate 60% of traffic for the Coneburn Industrial Zone, the following Tables 2 & 3 provide the traffic modelling outcomes for this access.

Table 2: Modelling Results – Existing Access 4 (Nearest Queenstown) am Peak Period

Approach	Movement	Flow (vph)	Approach Delay (sec)	LoS	Movement delay (sec)	Movement Queue (veh/m)	LoS
SH6 South	Thru	404	0.4		0.0	0.0/0.0	A
	Right	24			7.2	0.1/0.7	A
Development Access	Left	6	20.1	C	7.7	0.0/0.2	A
	Right	54			21.6	0.8/6.2	C
SH6 North	Left	214	2.0		5.7	0.0/0.0	A
	Thru	402			0.0	0.0/0.0	A
Intersection	All	1104	2.4				

This shows a level of service of C for the Development Access and degree of saturation for the intersection of 0.227 suggesting that demand is still significantly below intersection capacity.

Table 3: Modelling Results – Existing Access 4 (Nearest Queenstown) pm Peak Period

Approach	Movement	Flow (vph)	Approach Delay (sec)	LoS	Movement delay (sec)	Movement Queue (veh/m)	LoS
SH6 South	Thru	457	0.1		0.0	0.0/0.0	A
	Right	5			7.6	0.0/0.2	A
Development Access	Left	19	39.8	E	8.4	0.1/0.7	A
	Right	171			43.2	4.9/37.1	E
SH6 North	Left	43	0.5		5.7	0.0/0.0	A
	Thru	477			0.0	0.0/0.0	A
Intersection	All	1172	6.7				

In the pm peak period this access right turn will have a level of service E with a maximum queue length of 5 vehicle. During this time period the intersection will have a degree of saturation of 0.779 suggesting that the intersection will be approaching peak operating capacity of 0.85.

The new access at Existing Access 5 (nearest to Jacks Point) will accommodate only 40% of the traffic for the proposed Coneburn Industrial Zone. Tables 4 & 5 provide the modelling outcomes for this intersection.

Table 4: Modelling Results – Existing Access 5 (Nearest Jacks Point) am Peak Period

Approach	Movement	Flow (vph)	Approach Delay (sec)	LoS	Movement delay (sec)	Movement Queue (veh/m)	LoS
SH6 South	Thru	393	0.3		0.0	0.0/0.0	A
	Right	16			6.6	0.1/0.4	A
Development Access	Left	4	14.3	B	6.8	0.0/0.1	A
	Right	36			15.2	0.4/2.9	C
SH6 North	Left	142	2.0		5.7	0.0/0.0	A
	Thru	265			0.0	0.0/0.0	A
Intersection	All	856	1.8				

This intersection only shows minor delays at the right turn from the access with delays generally of approximately than 15 seconds, level of service C. The maximum queue length at this access will be 1 vehicle.

Table 5: Modelling Results – Existing Access 5 (Nearest Jacks Point) pm Peak Period

Approach	Movement	Flow (vph)	Approach Delay (sec)	LoS	Movement delay (sec)	Movement Queue (veh/m)	LoS
SH6 South	Thru	347	0.1		0.0	0.0/0.0	A
	Right	3			7.5	0.0/0.1	A
Development Access	Left	13	20.8	C	8.2	0.1/0.4	A
	Right	114			22.1	1.8/13.7	C
SH6 North	Left	28	0.4		5.7	0.0/0.0	A
	Thru	467			0.0	0.0/0.0	A
Intersection	All	973	2.9	B	-	-	-

In the pm peak period Access 5 will have a level of service of C for the right turn from the Coneburn Industrial Zone with a maximum queue of 2 vehicle.

6 Traffic Effects

6.1.1 Existing Access 4

The proposed development access at Existing Access 4 will be separated from more than 400m from other existing (being retained) or proposed accesses/intersections. For design this intersection has been based on the Austroads design (refer Existing Access 5, Appendix B). The design would include a rural Channelised Right Turn Treatment – Short Type, CHR(S) to cater for a maximum SH6 right turn bay length to accommodate one vehicle (8m[5]). When considering this with the deceleration length (say 155m[6]), this intersection will have an influence over approximately 165m of SH6, to the south towards Existing Access 5.

The proposed intersection at Existing Access 4 will also have an influence to the north, towards the existing (retained) residential access. This will be based on the deceleration length to the left turn from SH6 being 155m.

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[5] Based on stacking length of 8m per vehicle, refer Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections, Figure 7.7: Channelised Right Turn (CHR) on two-lane rural road.

[6] Based on deceleration length from 100km/hr approach speed and slowing to 0km/hr at the back of queue with a comfortable deceleration rate, refer Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections, Figure5.2: Deceleration distances required for cars on a level grade.

The pm peak period will have the greatest queuing on the proposed Coneburn Industrial approach. The maximum queue length will be 5m, approximately 40m. To accommodate queuing the Coneburn approach the design should include 40m minimum length of two-lane (left and right turning lanes).

6.1.2 Existing Access 5

Existing Access 5 is a consented access to properties at the base of the Remarkables. It is only formed for a very short length at the SH6 intersection. The new access at this location will only serve up to 40% for the proposed Coneburn Industrial Zone as most vehicle are expected to use the alternative access closer to Queenstown (Existing Access 4). The access design at this location is provided in Appendix B. This assessment shows that the right turn queue length from SH6 will typically be less than one car length (say 8.m[7]) when considering this with the deceleration length (say 155m[8]), suggesting that this intersection will have an influence over approximately 165m of SH6, to the south towards Jacks Point and Woolshed Road. The distance between the Existing Access 5 to the existing Woolshed Road T-intersection is approximately 250m, which is sufficient such that the operation of the proposed new access at Existing Access 5 will not affect the operation of the existing Woolshed Road intersection.

The proposed intersection at Existing Access 5 will also have an influence to the north, towards the location of Existing Access 4. This will be based on the deceleration length to the left turn from SH6 being 155m.

The pm peak period will have the greatest queuing on the proposed Coneburn Industrial approach. The maximum queue length will be less than be two vehicles, maximum 16m. To accommodate queuing on the Coneburn approach the design should include 16m minimum length of two-lane (left and right turning lanes).

7 Summary

It is proposed to rezone 27.25ha at the base of the Remarkables to Coneburn Industrial Zone. This zone is similar in nature to Industrial B type zoning. The planning controls proposed for Coneburn Industrial Zone will restrict the type of development possible and will encourage yard based activities. To reflect these planning restrictions the traffic generation of the Coneburn Industrial Zone is considered to be significantly less than the existing Glenda Drive area.

The proposed planning restrictions also include a trigger condition to allow for monitoring of traffic generation and reassessment of access modelling at 25% of development. This trigger allow for both NZTA and the Developers to better match the proposed development to the traffic conditions on the adjacent state highway network.

It is proposed to develop two accesses to the proposed Zone. Modelling of these accesses has considered two T-intersections, these accesses will be separated by more than 400m. The southern intersection (Existing Access 5) will be separated from the existing Woolshed Road intersection by approximately 250m.

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[7] Based on stacking length of 8m per vehicle, refer Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections, Figure 7.7: Channelised Right Turn (CHR) on two-lane rural road.

[8] Based on deceleration length from 100km/hr approach speed and slowing to 0km/hr at the back of queue with a comfortable deceleration rate, refer Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections, Figure5.2: Deceleration distances required for cars on a level grade.

The modelling undertaken suggests that the proposed access intersections will have minimal queuing on the SH6 and queuing at the southern access intersection will not affect the operation of the nearby Woolshed Road intersection.

This modelling shows acceptable queuing on the side road (development) approaches to SH6. This side road queuing can be accommodated in proposed access intersection designs which should include:

- The new access intersection at Existing Access 4 to include 40m of two-lane approach for separate left and right turning lanes, and
- The new access intersection at Existing Access 5 should include 16m of two-lane approach for separate left and right turning lanes.

With the proposed planning conditions it is possible to construct appropriate intersections which would serve the proposed Coneburn Industrial Zone from SH6. Based on the traffic modelling undertaken in the design year (2030) T-intersections designed in accordance with Austroads design guides would be appropriate.

Should you require any further information please contact me.

Yours sincerely,

Jason Bartlett

CEng MICE, G.IPENZ
Traffic Engineer

Appendix A Development Traffic Distribution

Development Traffic Generation

- am peak period generation, and
- pm peak period generation.

Development Traffic Distribution

- 2030 am peak period,
- 2030 pm peak period, and

Development Traffic Generation - am peak period

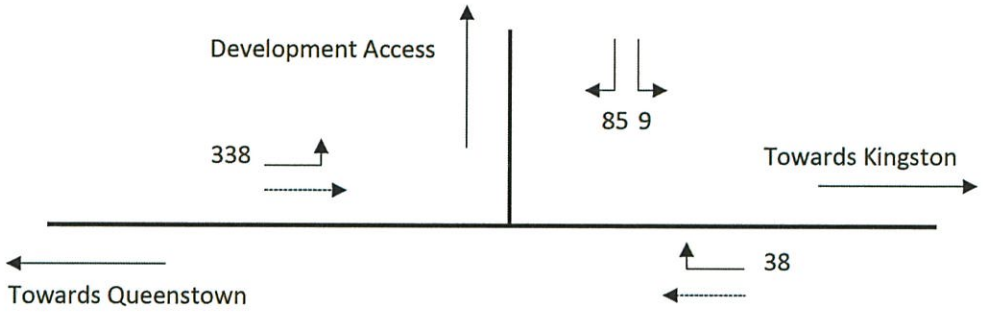
Based on the following Assumptions

- 100% of peak period traffic
- 90% towards Queenstown
- 20% exiting development

Development am Traffic Generation - Comparison with Glenda Drive, Frankton Industrial Area

Based on the following Assumptions

- Traffic flows for Glenda Drive, access to 24ha of industrial development
- Hourly traffic based on 10% of average ADT, from QLDC traffic count data



Development Traffic Generation - pm peak period

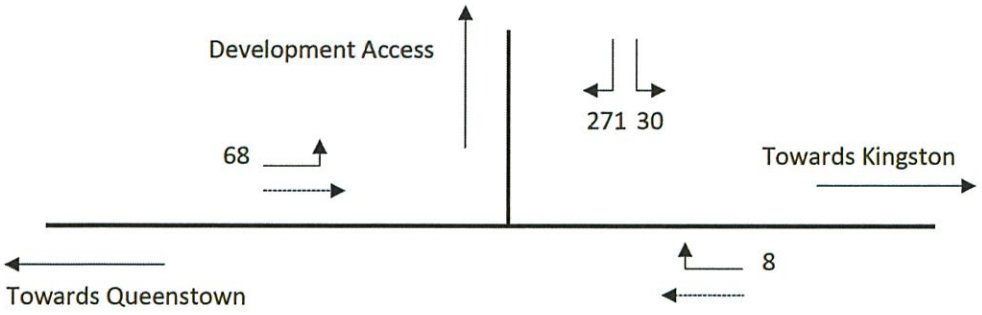
Based on the following Assumptions

- 80% of peak period traffic
- 90% towards Queenstown
- 80% exiting development

Development pm Traffic Generation - Comparison with Glenda Drive, Frankton Industrial Area

Based on the following Assumptions

- Traffic flows for Glenda Drive, access to 24ha of industrial development
- Hourly traffic based on 10% of average ADT, from QLDC traffic count data



Traffic Distribution - am peak period

Based on the following Assumptions

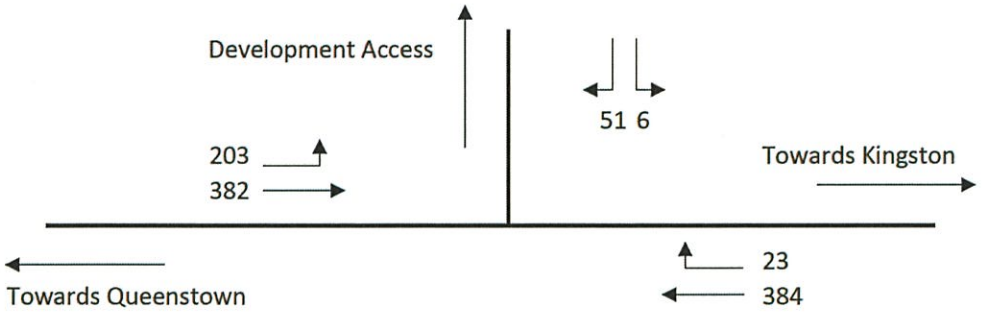
- 60% of traffic using Access 4 (existing Scope)
- 40% of traffic using Access 5 (consented)

Design Year 2030 am Traffic Distribution for Access 4

Traffic Generation - Comparison with Glenda Drive, Frankton Industrial Area

Based on the following Assumptions

- T intersection layout with right turn bay and left turn lane
- based on interpolated traffic flows from NZTA/QLDC Queenstown Model

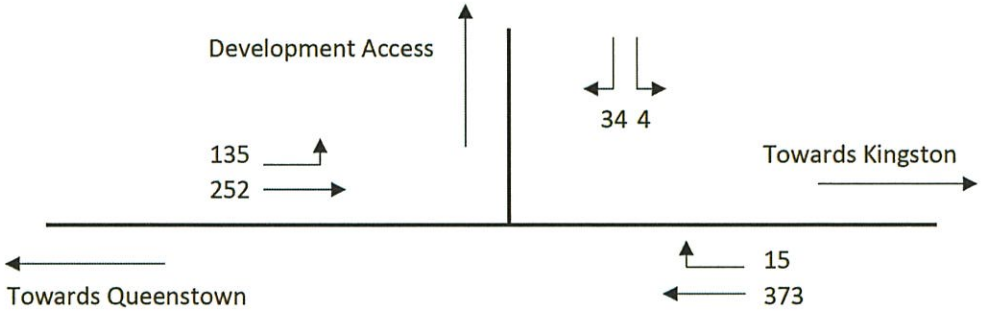


Design Year 2030 am Traffic Distribution for Access 5

Traffic Generation - Comparison with Glenda Drive, Frankton Industrial Area

Based on the following Assumptions

- T intersection layout with right turn bay and left turn lane
- based on interpolated traffic flows from NZTA/QLDC Queenstown Model



Traffic Distribution - pm peak period

Based on the following Assumptions

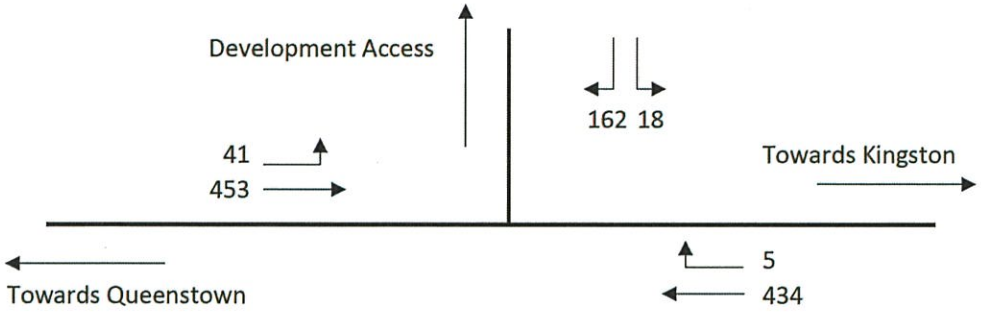
- 60% of traffic using Access 4 (existing Scope)
- 40% of traffic using Access 5 (consented)

Design Year 2030 pm Traffic Distribution for Access 4

Traffic Generation - Comparison with Glenda Drive, Frankton Industrial Area

Based on the following Assumptions

- T intersection layout with right turn bay and left turn lane
- based on interpolated traffic flows from NZTA/QLDC Queenstown Model

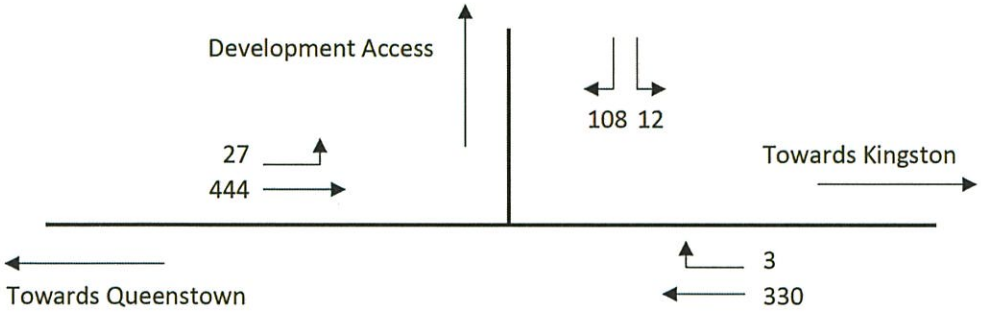


Design Year 2030 pm Traffic Distribution for Access 5

Traffic Generation - Comparison with Glenda Drive, Frankton Industrial Area

Based on the following Assumptions

- T intersection layout with right turn bay and left turn lane
- based on interpolated traffic flows from NZTA/QLDC Queenstown Model

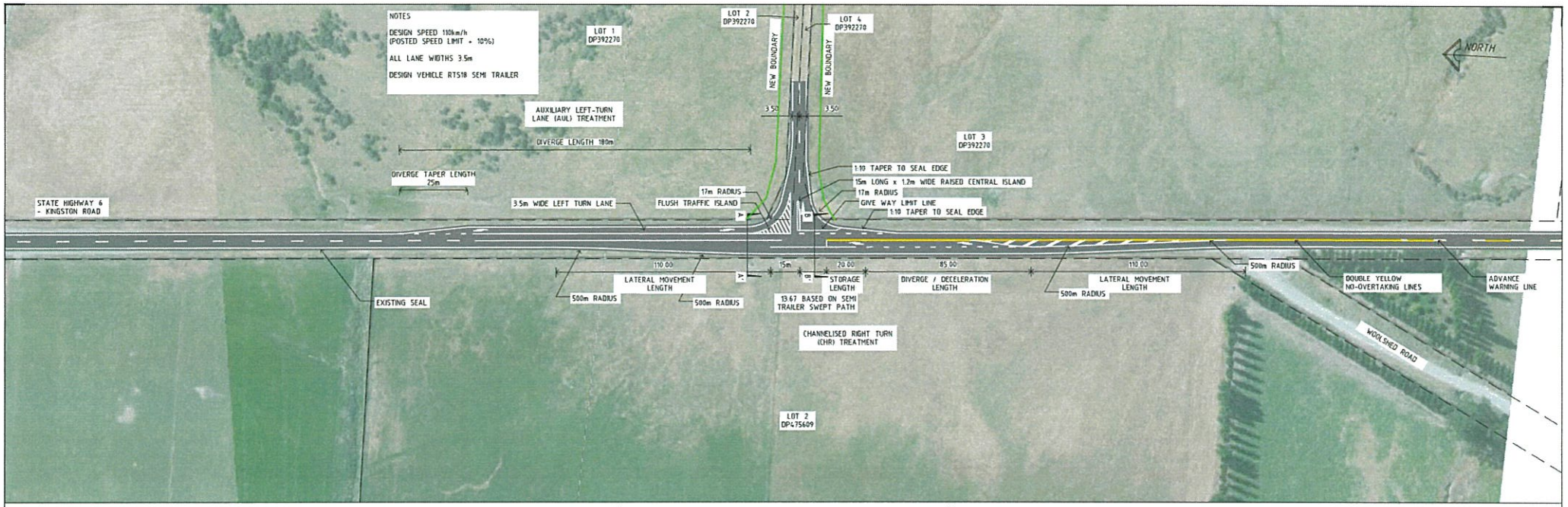


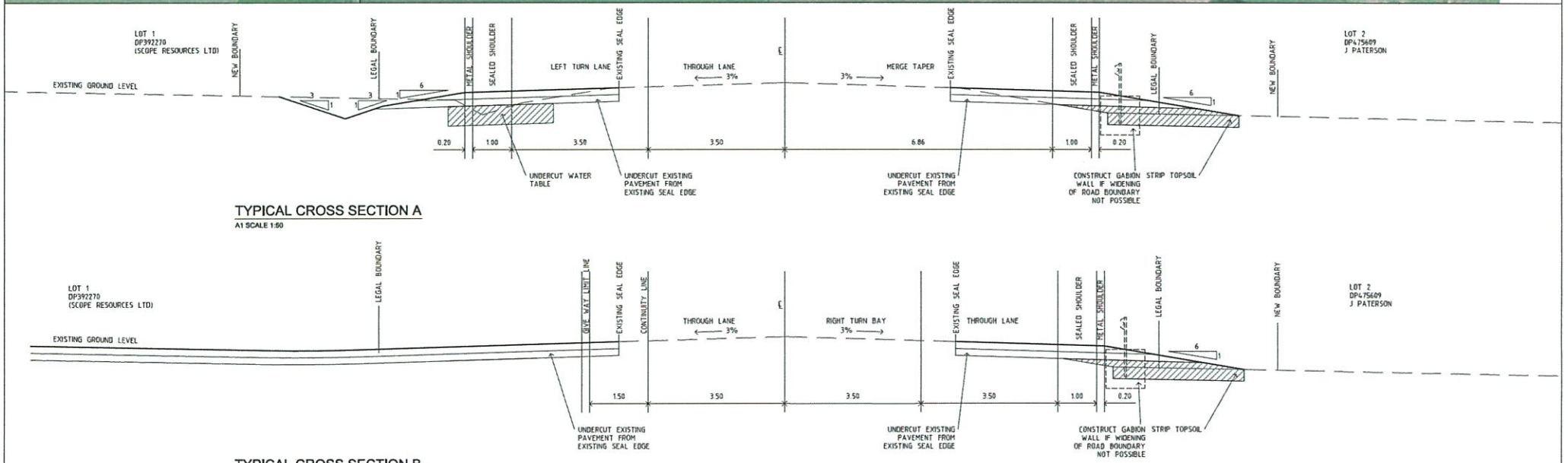
Appendix B Access Intersection Design

The following is a design for the proposed development access at Existing Access 5.

- Clark Fortune McDonald & Associates Drawing, Proposed Access, Layout Plan and Typical Cross Section, Job 11014, Drawing E001, Sheet 001, Rev -, Dated 05/16.

The design of the proposed development access at Existing Access 4 will be a similar layout.





TYPICAL CROSS SECTION A
A1 SCALE 1:50

TYPICAL CROSS SECTION B
A1 SCALE 1:50

DRAFT ONLY 07.06.2016

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Rev.	Date	Revision Details	By
-	-	-	-

SCOPE RESOURCES LTD
PROPOSED ACCESS
LAYOUT PLAN AND TYPICAL CROSS SECTION

Client: SCOPE RESOURCES LTD	Surveyed	Signed	Date	Job No. 11014	Drawing No. E001 SHEET 001	
Notes: All dimensions shown are in metres unless shown otherwise. Any person using Clark Fortune McDonald drawings and other data accepts the risk of: • Using the drawings and other data in electronic form without requesting and checking them for accuracy against the original hard copy versions.	Drawn TS	Signed	Date 05.16	Scale 1:1,000 @ A1 1:2,000 @ A3		
• Copywrite on this drawing is reserved.	Designed CH	Signed	Date 05.16	Datum & Level MSL	Rev. -	

Appendix C Modelling Results (SIDRA)

The following are outputs from SIDRA modelling:

- 2030 Access 4 am,
- 2030 Access 4 pm,
- 2030 Access 5 am, and
- 2030 Access 5 pm.

MOVEMENT SUMMARY

▽ Site: 101 [SH6/Access 4 2030 am]

Access 4
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: SH6 Kingston											
5	T1	404	7.0	0.214	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
6	R2	24	10.0	0.022	7.2	LOS A	0.1	0.7	0.46	0.61	51.7
Approach		428	7.2	0.214	0.4	NA	0.1	0.7	0.03	0.03	59.4
North: Access 4											
7	L2	6	10.0	0.008	7.7	LOS A	0.0	0.2	0.43	0.61	51.7
9	R2	54	10.0	0.227	21.6	LOS C	0.8	6.2	0.81	0.94	43.2
Approach		60	10.0	0.227	20.1	LOS C	0.8	6.2	0.77	0.90	44.0
West: SH6 Queenstown											
10	L2	214	10.0	0.122	5.7	LOS A	0.0	0.0	0.00	0.52	54.6
11	T1	402	7.0	0.213	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		616	8.0	0.213	2.0	NA	0.0	0.0	0.00	0.18	58.0
All Vehicles		1104	7.8	0.227	2.4	NA	0.8	6.2	0.05	0.16	57.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [SH6/Access 4 2030 pm]

Access 4
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: SH6 Kingston											
5	T1	457	7.0	0.242	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
6	R2	5	10.0	0.005	7.6	LOS A	0.0	0.2	0.50	0.59	51.6
Approach		462	7.0	0.242	0.1	NA	0.0	0.2	0.01	0.01	59.8
North: Access 4											
7	L2	19	10.0	0.026	8.4	LOS A	0.1	0.7	0.48	0.68	51.2
9	R2	171	10.0	0.779	43.2	LOS E	4.9	37.1	0.94	1.30	34.4
Approach		189	10.0	0.779	39.8	LOS E	4.9	37.1	0.90	1.23	35.6
West: SH6 Queenstown											
10	L2	43	10.0	0.025	5.7	LOS A	0.0	0.0	0.00	0.52	54.6
11	T1	477	7.0	0.253	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		520	7.2	0.253	0.5	NA	0.0	0.0	0.00	0.04	59.5
All Vehicles		1172	7.6	0.779	6.7	NA	4.9	37.1	0.15	0.22	53.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [SH6/Access 5 2030 am]

Access 5
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: SH6 Kingston											
5	T1	393	7.0	0.208	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
6	R2	16	10.0	0.012	6.6	LOS A	0.1	0.4	0.36	0.56	51.9
Approach		408	7.1	0.208	0.3	NA	0.1	0.4	0.01	0.02	59.6
North: Access 5											
7	L2	4	10.0	0.004	6.8	LOS A	0.0	0.1	0.34	0.56	52.1
9	R2	36	10.0	0.108	15.2	LOS C	0.4	2.9	0.71	0.87	46.7
Approach		40	10.0	0.108	14.3	LOS B	0.4	2.9	0.67	0.84	47.2
West: SH6 Queenstown											
10	L2	142	10.0	0.081	5.7	LOS A	0.0	0.0	0.00	0.52	54.6
11	T1	265	7.0	0.141	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		407	8.0	0.141	2.0	NA	0.0	0.0	0.00	0.18	58.0
All Vehicles		856	7.7	0.208	1.8	NA	0.4	2.9	0.04	0.14	58.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 101 [SH6/Access 5 2030 pm]

Access 5
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: SH6 Kingston											
5	T1	347	7.0	0.184	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
6	R2	3	10.0	0.003	7.5	LOS A	0.0	0.1	0.49	0.58	51.6
Approach		351	7.0	0.184	0.1	NA	0.0	0.1	0.00	0.01	59.9
North: Access 5											
7	L2	13	10.0	0.017	8.2	LOS A	0.1	0.4	0.47	0.66	51.3
9	R2	114	10.0	0.411	22.1	LOS C	1.8	13.7	0.82	1.00	42.9
Approach		126	10.0	0.411	20.8	LOS C	1.8	13.7	0.79	0.97	43.6
West: SH6 Queenstown											
10	L2	28	10.0	0.016	5.7	LOS A	0.0	0.0	0.00	0.52	54.6
11	T1	467	7.0	0.248	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		496	7.2	0.248	0.4	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		973	7.5	0.411	2.9	NA	1.8	13.7	0.10	0.14	57.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.