7 November 2017

Bright Sky Land Limited

80 Ardmore Street
Wanaka, 9305

Attention: Mark Tutty

Dear Mark,

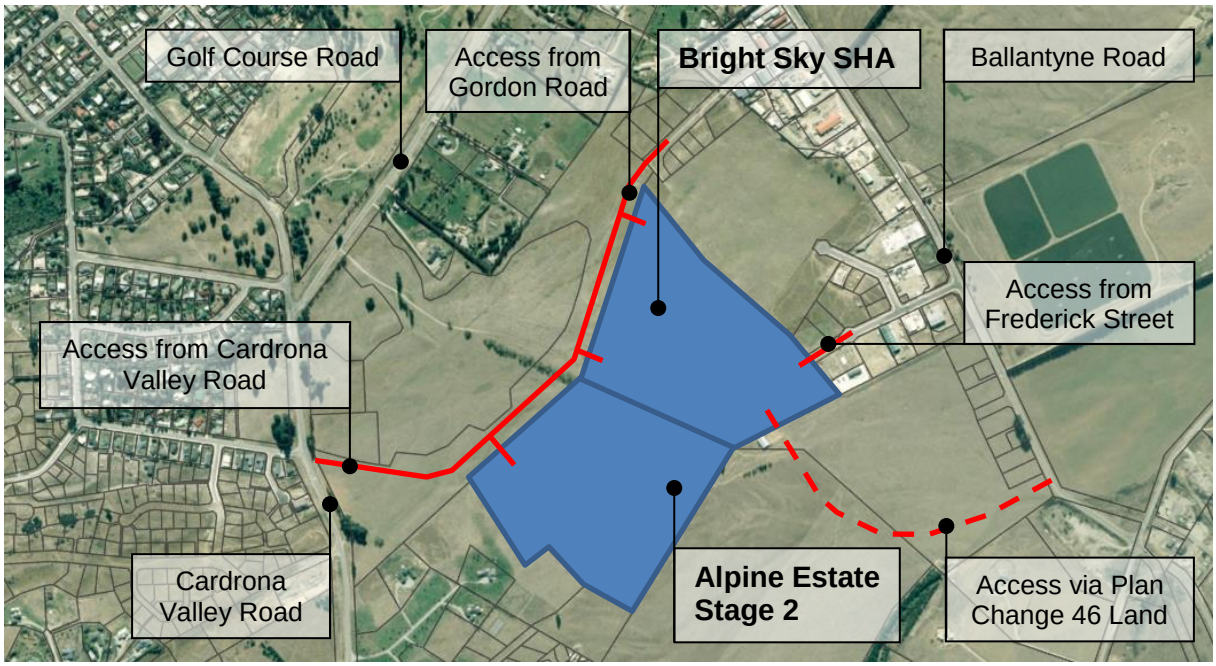
Bright Sky SHA and Alpine Estate Subdivision, Wanaka Access Assessment

The purpose of this letter is to provide an assessment for the proposed Bright Sky and Alpine Estate Subdivision. It is proposed to undertake the Bright Sky subdivision as a Special Housing Area (SHA) which would be accessed from Cardrona Valley Road, Frederick Street and Gordon Road. The Alpine Estate subdivision is subject to a resource consent application, however is contiguous with, and fundamentally connected to, the Bright Sky development. As a result, it is logical to assess both developments simultaneously.

1 Location

The proposed development site is located to the east of Cardrona Valley Road. Figure 1 below shows the site and proposed access from Cardrona Valley Road. This area of land extends to the east with further accesses from Gordon Road and Frederick Street.

Figure 1 – Site and Accesses, source QLDC Webmaps



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Legal access to this land can be provided from Cardrona Valley Road or Ballantyne Road via Frederick Street and/or Gordon Road. It is also proposed that a future access can be established via Plan Change 46 (to the south) which would be developed by others.

2 Land Use and Zoning

The site is generally used for grazing and is zoned as Rural General under the Operative QLDC District Plan. To the southeast the land is zoned low density residential with Industrial B to the west (Plan Change 46), this land has not been developed at this stage. Land directly to the west, between Frederick Street and Gordon Road is zoned Industrial B (Plan Change 36) which is generally undeveloped. Land further to the west, bordering Frederick Street, Gordon Road and Ballantyne Road is also within the Industrial B zone and has been developed as light industrial type activities. To the north (towards Golf Course Road) land is zoned as Rural Residential and has been developed as large lot residential activities.

The land is located with the Wanaka urban growth boundary. This is reflected in provisions of the Proposed QLDC District Plan which identifies the site and surrounding properties as Low Density Residential.

3 Committed Development

It is noted that there are two committed developments that would share the accesses to the local road network, these are:

- Gordon, 23 residential lots to be developed under RM170094. This subdivision includes the formation of an access road and new intersection from Cardrona Valley Road.
- Alpine Estate Stage 1, RM160453. This subdivision includes the formation of 14 residential lots and would be accessed from Cardrona Valley Road via the new access and intersection bring constructed by the Gordon subdivision (above).

It is anticipated that these subdivisions would be developed along with the proposed Alpine Estate Stage 2 subdivision and the Bright Sky SHA.

4 Adjacent Road Network

4.1 Cardrona Valley Road

A new site access will be developed from Cardrona Valley Road which has been developed and designed under the Gordon Subdivision. Traffic flow data for Cardrona Valley Road is collated by QLDC. Table 1 (following) provides a summary of the latest Cardrona Valley Road traffic count data in the vicinity of the site.

Table 1 – Cardrona Valley Road Traffic Count Data, source QLDC RAMM database

Site	2010	2011	2012	2013	2014	2015
Cardrona Valley Road - from chainage 23804 and 24773[1]	2932[2]	2723[3]	3430[4]	4220[5]	4369[6]	4572[7]

This traffic count data is provided as Average Daily Traffic (ADT) for single seven day counts. This suggests that the current, 2017, ADT on Cardrona Valley Road near the site is likely to be 5,250vpd (vehicles per day) with an average annual increase of 9.3%.

For future traffic modelling the peak hour traffic has been reviewed, the peak hour is generally during the day, usually 11:00 to 12:00 the peak hour traffic generation growth from 2010 to 2015 is 7.1%. This suggests a 2017 peak hour traffic flow of 524 vehicle per hour which is approximately 10% of the daily traffic flow. Turning traffic surveys undertaken in October 2016 showed that the am peak traffic flow was 372vph and in the pm the peak traffic flow was 408vph[8]. The am and pm peak periods are less than the mid-day peak period. The turning proportions from these traffic counts will be used for the basis of residential traffic distribution.

4.2 Frederick Street and Gorge Road

There is little reliable traffic count data for Frederick Street, Gordon Road or for Ballantyne Road in the vicinity of these intersections. To gain understanding of the peak hour traffic flows Turning traffic counts have been undertaken at the intersections of Ballantyne Road with Frederick Street and with Gordon Road. These turning counts will be used as a basis for traffic modelling.

5 Proposed Development

The proposed development is:

- Alpine Estate Stage 2, resource consent application which will include 96 medium density residential lots, and
- Bright Sky SHA which will include 267 medium density residential lots.

In total this assessment includes for a total of 363 residential dwellings to be constructed with access from Cardrona Valley Road (Via Gordon Subdivision), Frederick Street and Gordon Road.

Within Bright Sky there is also a proposed early childhood care centre. It is expected that this will be of an appropriate size to cater for approximately 60 children (15 staff).

[1] The site is located approximate chainage 24200 to 24465, chainage 23804 is at Orchard Rd, 24773 is the end of the road at the Golf Course Rd, McDougall St and Faulks Tce Intersection.
[2] Average of 2 counts in March and November.
[3] Average of 2 counts in April and September.
[4] Average of 8 counts in; January, February (x3), March, April (x2) and October.
[5] Average of 2 counts in April and November.
[6] Average of 3 counts in April, August and December.
[7] Single traffic count in November.
[8] Based on 10 minute traffic counts during the am and pm peak periods at the Cardrona Valley Road intersection with Stone Street.

6 Traffic Analysis

It is understood that the test for a SHA is that: *adequate infrastructure to service qualifying developments in the proposed special housing area either exists or is likely to exist, having regard to relevant local planning documents, strategies, and policies, and any other relevant information*. Given the short time period for development under the Housing Accords and Special Housing Areas Act 2013 (HASHAA) it is considered that the starting point for modelling is 'can the existing roading infrastructure support the proposed SHA'.

6.1 Design Year and Traffic Growth

Given the test under the HASHAA it is considered that a modelling year of 2020 is appropriate. This modelling year would coincide with the likely opening year for the SHA.

It is noted that there are a number of undeveloped zoned areas adjacent to Ballantyne Road. However based on resource consents there is little commitment to develop significant areas of these over the next two years it is therefore considered that an appropriate growth rate for between 2017 and the model year of 2020 5% being the traditional traffic growth rate used for roading infrastructure in Queenstown Lakes District. This growth rate would be used for existing traffic on Ballantyne Road and Cardrona Valley Road.

6.2 Traffic Generation

The proposed development will be dominated by residential development, however an early childhood care centre may be established on the Bright Sky Land.

6.2.1 Residential Traffic Generation

The proposed development a total of 363 residential lots within the SHA as well as a further 37 residential lots which committed through RM170094 and RM160453. The traffic models will include residential traffic for a total of 400 residential dwellings.

For a number of suburban residential dwelling is it is considered that, at the access, there would be 0.9vph/dwelling this is during the am peak period.

6.2.2 Early Childhood Care Centre Traffic Generation

Bright Sky will include an early childhood care centre. These types of activity typically cater for the surrounding residential area. This is likely to be amongst approximately 400 residential dwellings across the various proposed and zoned residential areas (including Plan Change 47). It is therefore likely that the traffic generation for this activity at the proposed accesses will be minimal. The proposed early childhood care centre has therefore not been included in the traffic generation for the assessment of accesses from the local road network.

6.2.3 Traffic Distribution

To allow for the distribution of residential traffic the intersection of Cardrona Valley Road with Stone Street was surveyed in October 2016. These traffic surveys showed that the peak residential traffic was observed in the am peak period. The pm peak traffic was 91% of the peak am traffic. These traffic counts have also been used to establish the turning proportions for the residential development at each access.

The residential development spans the area between Cardrona Valley Road and Ballantyne Road with two accesses via Gordon Road, Frederick Street. The traffic distribution over the

three access has been based on travel distance from the Wanaka town centre[9]. Table 2 below provides the traffic distribution over the proposed development accesses.

Table 2 – Residential Traffic Distribution

Development Area	Lots	Peak Trips (vph)	Cardrona Valley Rd	Frederick St	Gordon Rd
Gordon (RM170094)	23	21	85% (19vph)	5% (1 vph)	10% (2vph)
Alpine Estate Stage 1 (RM160453)	14	13	65% (8vpd)	10% (1 vph)	25% (3vph)
Alpine Estate Stage 2	90	86	65% (56vph)	10% (9vph)	25% (22vph)
Bright Sky	267	240	35% (84vph)	25% (60vph)	40% (96vph)
Total			**166vph**	**71vph**	**123vph**

It is noted that there is a potential forth access via residential zoned land to the south (Plan Change 46). At this stage the timing of this access is unknown and has not been relied on for this traffic modelling.

6.3 Traffic Modelling

6.3.1 Cardrona Valley Road/Stone Street

It is proposed to construct the new Cardrona Valley Road access as a staggered intersection with the existing Stone Street intersection. It is anticipated that any effects traffic increase will have an effect on the Stone Street approach at this intersection. The following Table 3 provides a summary of traffic modelling at the existing Stone Street intersection including the new access to be located opposite Stone Street.

Table 3: 2020 Modelling Results, Cardrona Valley Road/Stone Street

Model (2020 model year)	Right Turn from Cardrona Valley Rd		Right Turn to Cardrona Valley Rd	
	LOS	Delay (sec)	LOS	Delay (sec)
Stone St am (no development)	A	6.9	A	9.9
Stone St am with development	A	7.4	B	11.7
New Access am	A	6.4	B	10.1
Stone St pm (no development)	A	7.1	B	10.5
Stone St pm with development	A	7.3	B	12.2
New Access pm	A	6.5	A	9.9

These results show that there is only a minor change in the operation of the Stone Street approach. The difference being a change in the average delay of 1.8 seconds maximum which means that the level of service will increase from A (9.9 second delay) to B (11.7 seconds delay) in the am peak period. The change is level of service is simply based on delay changing from less than 10 seconds to greater than 10 seconds. At all times the maximum queue length is expected to be not greater than one vehicle.

[9] A future Three Parks town centre has not been considered at this stage.

6.3.2 Ballantyne Road/Frederick Street

The proposed development will include a direct link to Frederick Street which will add additional residential traffic to the existing street with predominantly light industrial type traffic. Table 4 below provides a summary of traffic modelling at the existing Frederick Street Intersection.

Table 4: Modelling Results, Ballantyne Road/Frederick Street

Model (2020 model year)	Right Turn from Ballantyne Rd		Right Turn to Ballantyne Rd	
	LOS	Delay (sec)	LOS	Delay (sec)
Frederick St am (no development)	A	6.4	A	7.7
Frederick St am with development	A	6.6	A	8.2
Frederick St pm (no development)	A	6.1	A	7.5
Frederick St pm with development	A	6.2	A	8.1

These results show that there is only minor change in the operation of the Frederick Street intersection as a result of the additional residential traffic. The greatest change is 0.6 seconds delay turning right from Frederick Street in the pm peak period which does not change the overall level of service, delay times will remain less than 10 seconds.

6.3.3 Ballantyne Road/Gordon Road

The proposed development will include a direct link to Gordon Road which will add residential traffic to the existing intersection of Ballantyne Road with Gordon Road. This intersection currently serves predominantly light industrial activities on Gordon Road. Table 5 below provides a summary of traffic modelling at the existing Gordon Road intersection.

Table 5: Modelling Results, Ballantyne Road/Gordon Road

Model (2020 model year)	Right Turn from Ballantyne Rd		Right Turn to Ballantyne Rd	
	LOS	Delay (sec)	LOS	Delay (sec)
Gordon Rd am (no development)	A	6.6	A	8.2
Gordon Rd am with development	A	6.9	A	9.1
Gordon Rd pm (no development)	A	7.7	A	9.6
Gordon Rd pm with development	A	8.1	B	11.0

These results show that there is only a minor change in the operation of the Ballantyne Road intersection with Gordon Road. The difference being a change in the average delay of 1.4 seconds maximum which means that the level of service will increase from A (9.6 second delay) to B (11.0 seconds delay) in the pm peak period. The change is level of service is simply based on delay changing from less than 10 seconds to greater than 10 seconds. At all times the maximum queue length is expected to be not greater than one vehicle.

It is noted that there is an existing right of way which meets Gordon Road immediately adjacent to the intersection with Gordon Road. The traffic using this access in included within the intersection assessments. This access does not meet current planning rules under the Operative QLDC District Plan and therefore there are likely to be some safety effects within the existing road network. Additional residential traffic may increase the exposure to safety impacts, to minimise this it is recommended that the right of way is managed such that it allows

entry only from Gordon Road. It is noted this is an existing safety concern which has been allowed through previous planning decisions. The recommendation is likely to be outside of the control of Council as the Road Controlling Authority.

7 Summary

It is proposed to develop the land to include two subdivisions which would include:

- Alpine Estate Stage 2, a resource consent which will include 96 medium density residential lots, and
- Bright Sky SHA which will include 267 medium density residential lots.

In total the proposed development will include a total of 363 residential lots to be constructed with access from Cardrona Valley Road (Via Gordon Subdivision), Frederick Street and Gordon Road.

An assessment of traffic effects for this proposed development has been undertaken. This includes assessment of traffic generation, traffic distribution and intersection traffic modelling to assess if the existing roading infrastructure can accommodate the proposed development including the Bright Sky SHA.

Traffic modelling has been undertaken for the existing intersections of Cardona Valley Road/Stone Street, Ballantyne Road/Frederick Street and Ballantyne Road/Gordon Road. This traffic assessment is based on the anticipated traffic in the opening year of development, 2020. The traffic modelling undertaken shows that the existing intersections will be able to accommodate the additional traffic as a result of the proposed residential development with only minor change in the operational efficiency. The traffic modelling demonstrates that the existing road infrastructure can accommodate the proposed Bright Sky SHA.

Should you require any further information please contact me.

Yours sincerely,

Jason Bartlett

CEng MICE, G.IPENZ
Traffic Engineer