



**Tekapo Landco Limited**  
Tekapo Camping Ground  
Plan Change

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**Integrated Transportation  
Assessment Report**

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January 2015

# Tekapo Landco Limited

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Plan Change

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## Integrated Transportation Assessment Report

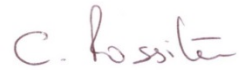
Quality Assurance Statement

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## Executive Summary

Tekapo Landco Limited proposes to submit a request to rezone the land surrounding the Tekapo Camping Ground from Special Travellers Accommodation Zone (STAZ) to Residential. The Camping Ground which currently forms a sub-zone of the STAZ would be rezoned STAZ.

Lakeside Drive provides access to the STAZ which is largely undeveloped. The only existing development includes the camping ground and the Tekapo Springs recreational activities. Traffic count information collected by Council in May 2014 (predominantly during the school term) recorded an average daily traffic volume of about 590 vehicles per day (vpd) on Lakeside Drive. During the peak season (summer holiday) the expected daily traffic volume on Lakeside Drive is likely to be about 985vpd.

An assessment of the development potential of the Lakeside Drive catchment permitted under the existing zoning and rules suggests that about 238 additional visitor accommodation units could be developed within the STAZ and 61 residential units in Residential 2 land owned by the applicant. There is also the potential to develop 70 residential lots within Council owned Residential 2 land. Under this permitted development scenario, the peak season traffic volumes on Lakeside Drive could increase to 2,860vpd from 985vpd based on worst case traffic generation rates for the expected mixture of permanent residential and holiday home accommodation expected for the Residential zones.

The existing seal width on Lakeside Drive is only 5m and it is suffering a considerable amount of edge break even at the existing levels of traffic. Mackenzie District Council (MDC) has indicated that widening of the road is being considered and it would be required to enable the currently permitted level of development to occur.

The proposed plan change will enable development of about 182 dwellings with a range of densities across the Residential zones within the applicant's land. This level of development will only increase peak season traffic volumes on Lakeside Drive by about 75vpd compared with the permitted development scenario. It is considered that this volume of traffic could be accommodated safely on Lakeside Drive if the road has been widened.

For both the permitted and proposed development scenarios, it would be necessary also to implement improvements to the SH8 / Lakeside Drive intersection. The primary aim of the improvements is to provide a right turn bay on SH8 at the intersection to maintain road safety. A secondary aim would be to emphasise the change of road environment to northbound drivers on SH8 by the extension of the flush median from the town centre to the town threshold. A preliminary investigation indicates that these aims can largely be achieved by a change of paint markings within the existing seal width but additional sealing of the existing shoulders would be desirable to provide a better width for cyclists.

Overall, it has been concluded that the proposed plan change can be supported from a transportation perspective subject to appropriate improvements being made to Lakeside Drive and to the SH8 / Lakeside Drive intersection.

## 1. Introduction

Tekapo Landco Limited (TLL) proposes to submit a request for rezoning the land surrounding the Tekapo Camping Ground from Special Travellers Accommodation Zone (STAZ) to a mix of Residential 1 and Residential 2. Part of the Land surrounding/adjoining the camp ground is already zoned Residential 2 and the Plan Change seeks to extend this residentially zoned area. The site location is located at the southern end of Lake Tekapo about 1km west of the town centre as shown in Figure 1.

This report initially describes the location of the site in relation to the surrounding transportation networks and the existing patterns of travel in the vicinity of the site. It then describes the transportation components of the proposal, the expected traffic generation and provides an assessment of the expected traffic effects. This is followed by an assessment of the proposal against the transportation related objectives and policies of the Mackenzie District Plan.

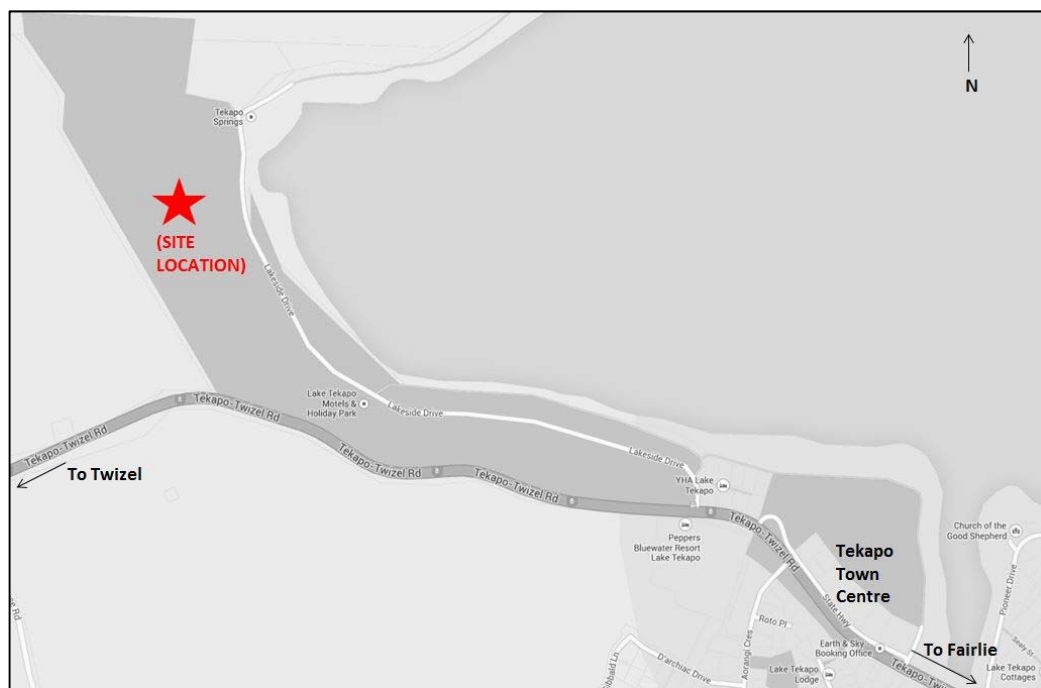


Figure 1: Site Location

## 2. Existing Transport Environment

### 2.1 Site Surroundings

The area that the plan change covers is zoned STAZ, which contains a camping ground sub zone as shown in Figure 2. The plan change area is bounded to the south by State Highway 8 (SH8), to the west and north by rural land, to the east by the Recreation P zone that fronts Lake Tekapo and the south-east by an existing Residential 2 zone which contains some camping ground facilities.

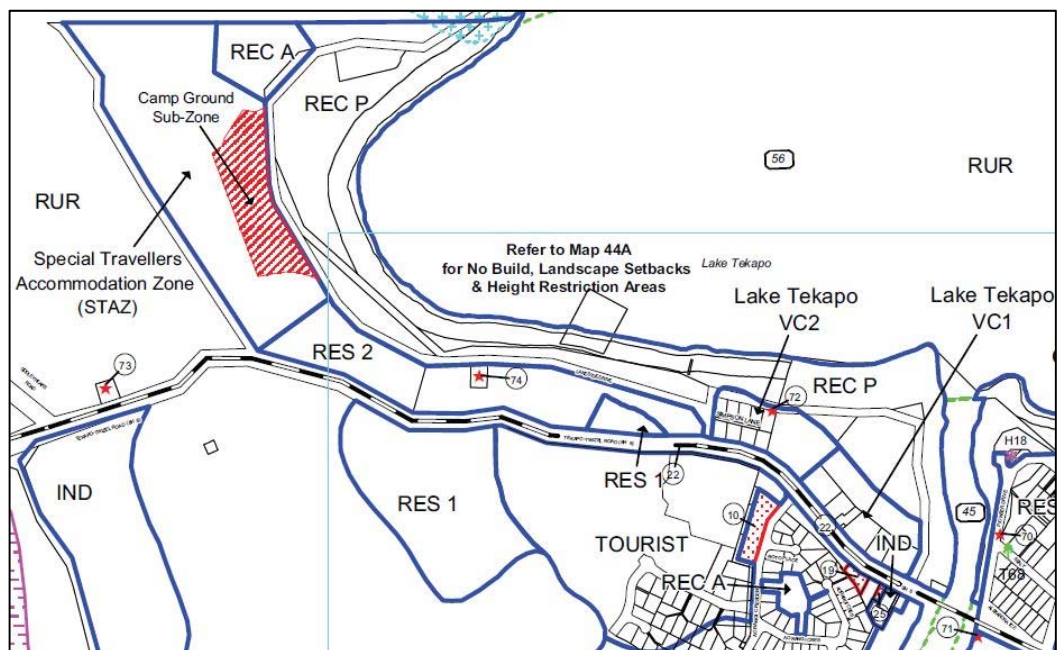


Figure 2: Mackenzie District Plan – Planning Map

### 2.2 Site Description

The STAZ is generally undeveloped apart from the camping ground. The Tekapo Camping Ground covers the sub-zone and also extends into the STAZ and the adjacent Residential 2 zone along Lakeside Drive. The camping ground provides 203 accommodation units. The accommodation units are made up of a mix of camping sites, cabins, motel rooms and baches. The following is a list of the camping ground accommodation units/rooms and the relative current zone location:

- 64 powered sites (sub-zone);
- 74 tent sites (sub-zone);
- 9 standard cabins (sub-zone);
- 18 regular stayer sites (sub-zone/STAZ);
- 20 backpacker rooms (STAZ);
- 8 ensuite cabins (sub-zone);
- 8 motel rooms (residential 2); and

- 2 kiwi baches (residential 2).

There are 14 people employed at the camping ground; eight cleaners, four receptionists and two managers. The managers live on site.

Access to the camping grounds and surrounding land is via Lakeside Drive from SH8. Lakeside Drive also provides access to the Tekapo Springs recreational facilities.

## 2.3 Road Network

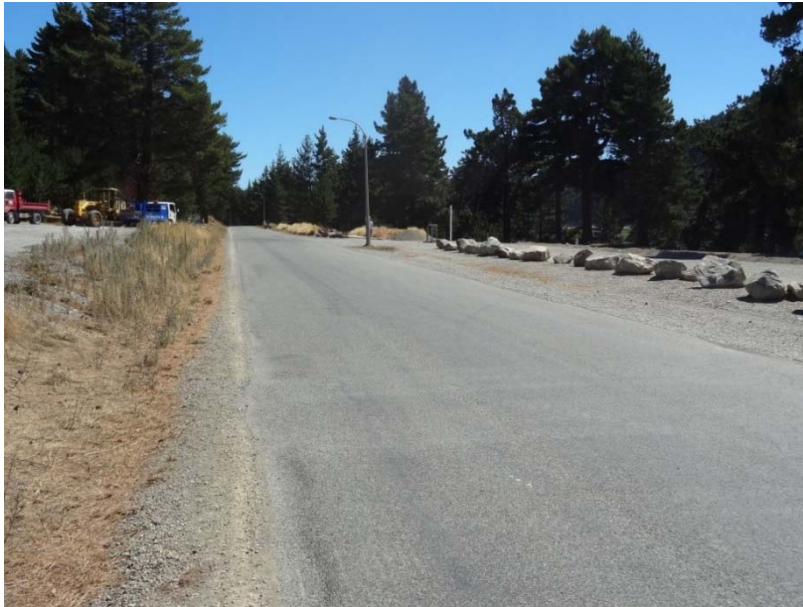
SH8 forms the only strategic road within the vicinity of Lake Tekapo. It has generally been constructed as a two lane rural highway but has been widened through the town centre to provide a flush central median. The central median begins about 60m east of Lakeside Drive and ends at the bridge over the lake outlet.

There is a town threshold treatment on SH8 about 170m west of Lakeside Drive (see photographs) where the speed limit changes from 100km/h to 60km/h which extends through the town centre.



**Photograph 1: Town Threshold Treatment on SH8**

Lakeside Drive is classified as a local road within the Mackenzie District Plan and generally has a sign posted speed limit of 50km/h. The road has been constructed with a 5m wide seal and has no centre line or edge markings as illustrated in Photograph 2 except on its final approach to SH8.



**Photograph 2: Lakeside Drive – View West**

There is damage (“edgebreak”) to the shoulders on both sides of Lakeside Drive which suggests that the existing width is not sufficient to accommodate two-way vehicle movements. It is likely that this can be attributed to the high volume of wide vehicles such as campervans using the road, as illustrated in Photograph 3.



**Photograph 3: Lakeside Drive – Shoulder Damage**

The SH8 / Lakeside Drive intersection is controlled by Stop signs on Lakeside Drive as shown in Photograph 4. Photographs 5 and 6 indicate the sight distance to the east and west respectively. Both exceed 125m which is appropriate for a road with a 60km/h speed limit.





***Photograph 4: Lakeside Drive Approach to SH8***



***Photograph 5: Sight Line to the West of SH8 / Lakeside Drive Intersection***

The wide shoulders on SH8 provide sufficient space for left turning vehicles to decelerate outside of the traffic lane and for through traffic to pass a right turning vehicle.



*Photograph 6: SH8 / Lakeside Drive Intersection – View East*

## 2.4 Pedestrian and Cycle Network

A concrete path has recently been constructed for pedestrians on the lake side of Lakeside Drive as illustrated in Photograph 7. The path is part of the walkway route that starts near the Tekapo River and follows a route close to the lake shore and continues to the campground and Tekapo Springs.

No cycle infrastructure is available near the site. However, the low traffic volumes along Lakeside Drive and nearby recreational facilities make cycling on-street an acceptable option.



*Photograph 7: Lakeside Drive Walkway*

### 3. Tekapo Lakefront and Village Concept Development Plan

The Mackenzie District Council has subdivided and plans to develop 3.65 hectares of council-owned land on the lake side of Tekapo's existing village centre. The subdivision includes areas for public recreation and commercial development. The Council will also facilitate the development of a new lakefront pedestrian walkway linking the Tekapo Springs hot pool complex with the Church of the Good Shepherd on the eastern side of the lake outlet via the new footbridge.

As part of the Traffic Impact Assessment undertaken for the village centre development plan, it has been suggested by the consultants to MDC that a connection from Lakeside Drive be provided to the future village centre as a service vehicle access road possibly along Simpsons Lane. This is considered to be a sensible addition that could also be used as a link for general traffic which would avoid traffic going between the town centre and Lakeside Drive having to access on and off the state highway. It is understood however that further investigation and consultation by MDC staff would be necessary in order to progress this option further.

## 4. Existing Travel Patterns

### 4.1 SH8 Traffic Volumes

#### 4.1.1 Daily Traffic Volumes

The nearest count site on SH8 is located at the Lake Tekapo control gates bridge. The 2013 average daily traffic volume obtained from NZTA was about 3,300 vehicles per day (vpd). Over the most recent 10 year period (2004 to 2013), the average daily traffic volumes on SH8 have been growing by 1.3% per annum. However, it is worth noting that there are significant variations in the average daily traffic volumes from year to year with a low of about 2,600vpd in 2009 and a high of about 3,030vpd in 2013.

The latest NZTA traffic volume data recorded on SH8 at the Lake Tekapo control gates for a week long period in April 2013 indicates the following:

- An average daily weekday (Monday to Thursday) traffic volume of 2,853vpd. Friday has a higher volume of 3,621vpd;
- A Saturday traffic volume of 3,039vpd and Sunday traffic volume of 3,146vpd.

#### 4.1.2 Hourly Traffic Patterns

- Figure 3 shows hourly traffic volume counts on SH8. The main features of this traffic pattern include an average weekday (Monday to Thursday) peak traffic flow could occur any time between 12pm to 5pm with an average peak traffic volume of 230-250vph;
- On Saturday, a traffic volume of 304vph occurred between 2pm to 3pm;
- Friday and Sunday have pronounced evening peak periods. On Friday, the traffic volumes peaked at 335vph between 4pm to 5pm, while on Sunday the peak traffic volumes of 332vph occurred between 3pm to 4pm;
- The traffic volumes in each direction are generally balanced. In the morning, marginally more traffic is travelling westbound than eastbound with this balance reversing during the afternoon;
- These peak hour volumes indicate a peak hour factor (to daily volume) of about 9%.

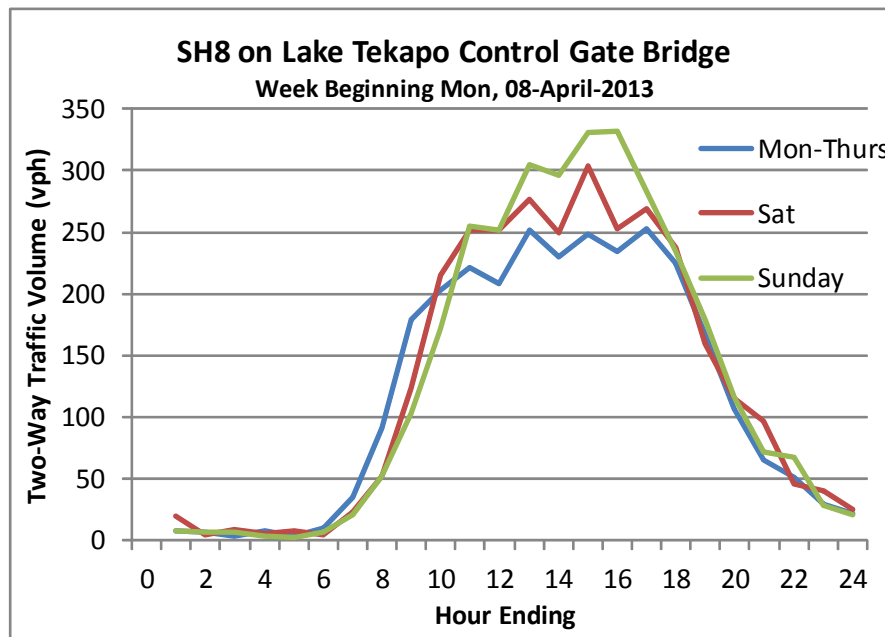


Figure 3: SH8 on Lake Tekapo Control Gate – Hourly Traffic Volumes

## 4.2 Lakeside Drive

Lakeside Drive provides access to the camping grounds, Tekapo Springs, the lakeside and also properties along Simpsons Lane. Each of these activities contributes to the total traffic movements on Lakeside Drive.

Traffic count information for Lakeside Drive has been collected by Mackenzie District Council for the period Saturday 03 May to Wednesday 14 May 2014. The survey period included two days from the end of the Easter school holiday period, Saturday 03 May and Sunday 04 May 2014. The remaining surveyed days are considered to represent typical traffic volumes which occur during school terms. One complete week (Monday 04 2014 to Sunday 11 2014) of the “typical” traffic volumes have been used for this assessment. The average daily traffic volume (Monday to Sunday) over that period was 590vpd. The peak in hourly traffic volumes occurred between 5pm and 6pm, with 10.5% of the total daily volume occurring during this hour.

Figure 4 indicates the hourly traffic volumes on Lakeside Drive. The weekday peak hour of 60 vehicle movement (two-way) occurs between 5 and 6pm. The weekend peak hour of 100 vehicle movements (two-way) occurs between 4 and 5pm on the Saturday.

The comparison of traffic counted on Sunday 03 May 2014 (last day of the Easter Holiday) and Sunday 11 May 2014 (school term) gives an insight into the difference between daily traffic volumes occurring during holiday and non-holiday periods. The total traffic counted on Sunday 03 May was 820vpd, whereas on Sunday 11 May the total traffic counted was 640vpd. Based on this insight to the difference between holiday and non-holiday daily traffic volumes, it is expected that traffic volumes on Lakeside Drive will be some 30% higher during the holiday periods.

Later traffic generation analysis indicates that the peak holiday demand may reach 985 vpd.

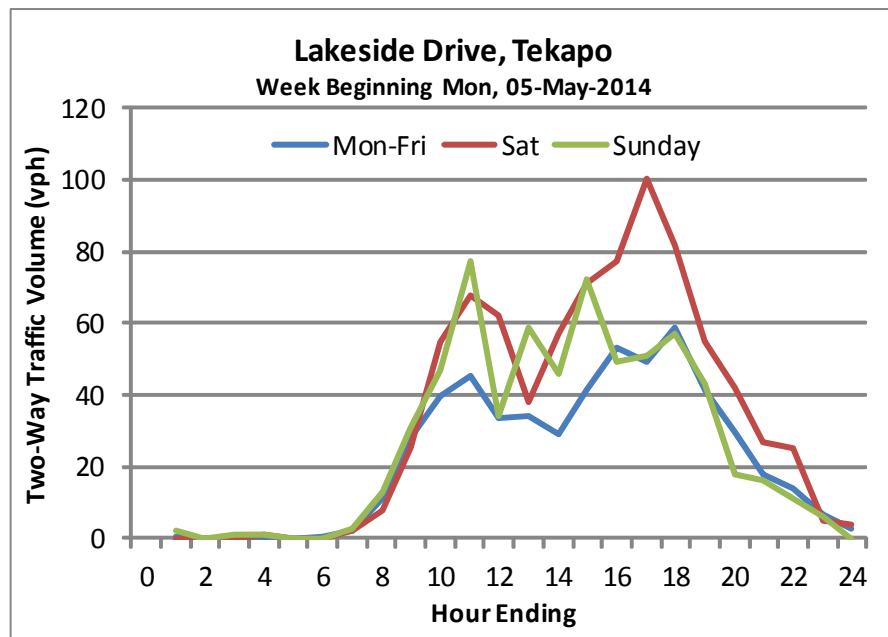


Figure 4: Lakeside Drive Traffic Volumes

### 4.3 Road Safety

The New Zealand Transport Agency's Crash Analysis System (CAS) has been used to assess the crash history of roads surrounding the camping ground. The area of assessment included Lakeside Drive and State Highway 8 (SH8) from Godley Peaks Road to the Lake Tekapo control gates bridge. The search period covered the full five year period from 2008 to 2012 and all available data for 2013.

There were eight crashes in total during the review period. Two of the eight reported crashes occurred at intersections while the remaining six crashes were midblock crashes. No fatal crashes were reported but there was one serious injury crash, two minor-injury crashes and five non-injury crashes.

One non-injury crash occurred at the intersection of Lakeside Drive and SH8. The crash involved an overseas driver turning right from SH8 into Lakeside Drive. The driver did not wait for an oncoming vehicle to pass and turned into vehicles path.

The other intersection crash (non-injury) occurred at the intersection of SH8 and the access into the Godley Hotel located west of the Lake Tekapo control dam. The crash involved a rear end collision when a westbound motorist failed to stop in time as the vehicle in front slowed down to turn right into the access. The overseas driver of the vehicle turning right into the access failed to use the dedicated right turn lane and instead undertook the manoeuvre from the westbound through lane.

There were four midblock crashes (one serious injury crash, one minor injury crash and two non-injury crashes) reported on SH8. All of these crashes involved drivers who lost control of their vehicle and went on to have a collision on the wrong side of the road or ran off the carriageway. The crash factors include fatigue, alcohol intoxication and an overseas driver who failed to adjust to NZ road rules.

Another two midblock crashes (one minor injury and one non-injury) were reported on Lakeside Drive about 35m west of Simpson Lane. Both crashes involved a motorist travelling eastbound on Lakeside Drive late at night. Both drivers lost control of the vehicle on a road bend. These crashes were attributed to excess speed and alcohol intoxication or driver inattention.

Overall, the number of injury crashes is very low and reflects the generally rural nature of the area. Fatigue and overseas drivers failing to adjust to NZ road rules were contributing factors to three crashes on SH8.

The lack of street lighting, road markings, signs or reflectors on Lakeside Drive may have contributed to the two crashes on the approach to SH8 by causing the drivers to misjudge the bend. The likelihood of future crashes in this location could be reduced by painting edge lines and installing reflectors or chevron boards.

## 5. Proposal

Tekapo Landco Limited is proposing a private plan change to the Mackenzie District Plan to rezone land within the STAZ at Lake Tekapo for permanent residential development. Figure 5 shows the zoning proposed under the proposed private plan change. This figure indicates the location of the STAZ, Residential 1 and 2 zones. A recreation zone will be located between the future Residential 1 zone and Tekapo Springs. This zone may allow public access for recreation to land which would be difficult to develop.

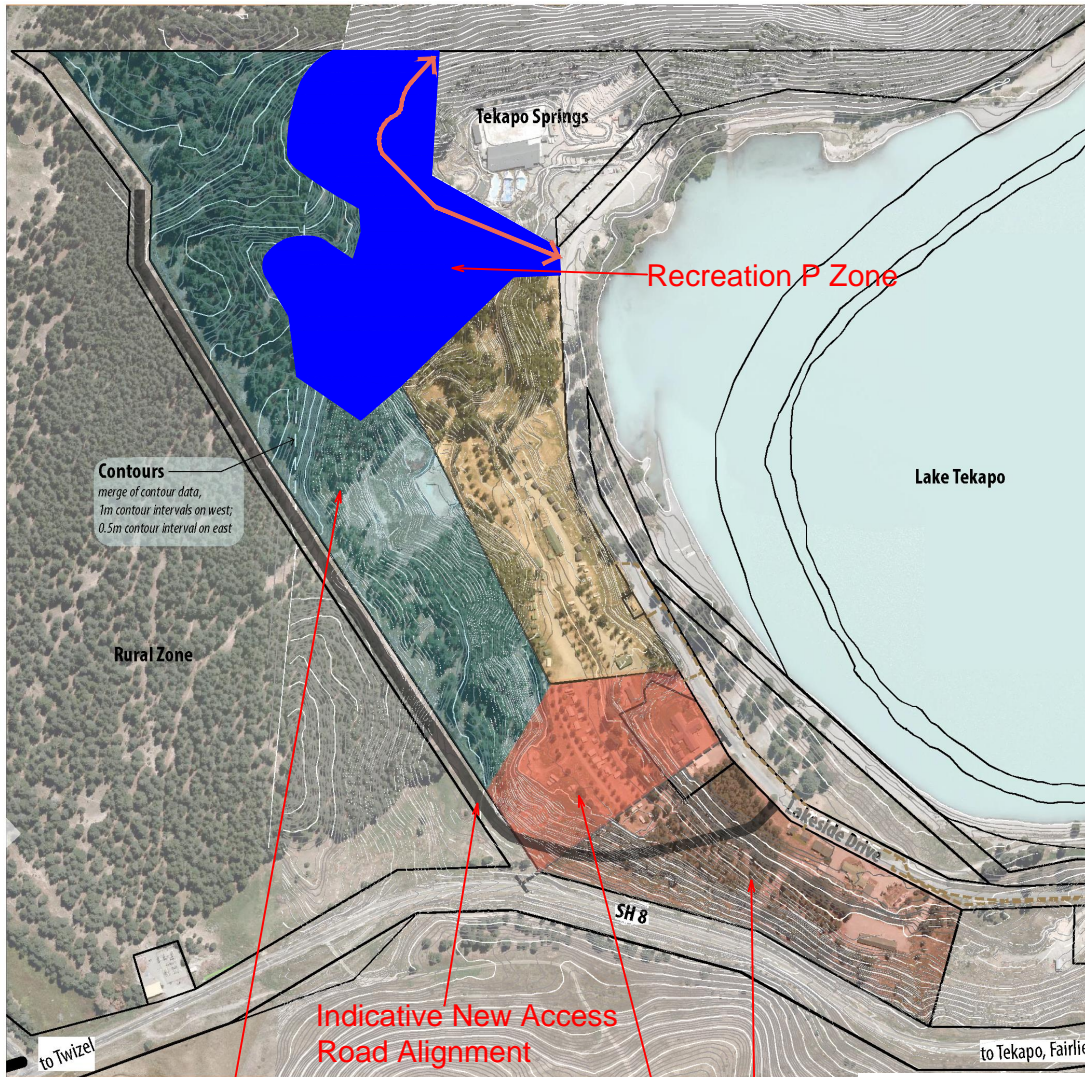
For traffic generation purposes, Figure 5 references the proposed Residential 2 zone within Tekapo Landco Limited's site as two areas. Area B1 is located within the existing STAZ, while Area B2 is already zoned Residential 2.

The proposed rezoning will enable the development of approximately 92 dwellings in the full extent of Residential 2 land owned by the applicant at an average of 350m<sup>2</sup> per section in addition to the retained camping ground related facilities in that area and approximately 90 dwellings in the Residential 1 land at an average of 550m<sup>2</sup> per section.

While not part of this proposal, it is considered that the Council-owned Residential 2 land to the east could be developed to provide about 70 dwellings.

An access road will connect Lakeside Drive with the paper road that is located along the western boundary of Area A as indicatively shown in Figure 5. It is expected that other subdivision roads would then branch off this access road. Initial access considerations included constructing a new intersection at the location where the paper road meets with SH8. This option has not been pursued as it is considered likely that the NZTA would have reservations about permitting a new intersection onto the State Highway on a bend in a 100 km/h area. A rule has been proposed that will specifically prohibit access to SH8 from the paper road.





**Contours**  
merge of contour data,  
1m contour intervals on west;  
0.5m contour interval on east

## PROPOSED KEY

- Residential 1 Zone
- Residential 2 Zone
- Special Travellers Accommodation Zone
- Recreation P Zone

## EXISTING

- Residential 2 Zone
- Pedestrian access (existing easement)

Wednesday, 7 January 2015 0

# PROPOSED ZONING TEKAPO PROPOSED PLAN CHANGE



# 5

SCALE: 1:7000 @ A4

## 6. Traffic Generation and Distribution

### 6.1 Existing Traffic Generation

Information provided by the camping ground management suggests the average peak daily traffic generation is expected to be 3.5 vehicle movements per day per site / unit. The camping ground has a total of 203 “units”, of which 155 are located within the sub-zone and 48 units are located within areas of the STAZ and Residential 2 zone (indicated as Areas B1 and B2 respectively in Figure 5). On this basis, the camping ground sub-zone of 155 units will generate 545 vehicle movements per day (vpd) during the peak holiday periods. The combined traffic generation of the camping ground’s 48 units spread over Area B1 and B2 is 170vpd.

Tekapo Springs have provided information about visitor numbers. The average number of daily visitors is about 270 people. The visitor numbers represent a year-round average and not the average peak daily visitor numbers. For the purpose of this report the average daily visitor numbers have been used for all subsequent existing traffic generation calculations. If all visitors travelled by motor vehicle with an average occupancy of two people, the average daily traffic generation of the pools would be about 270vpd. During a peak holiday period, the combined traffic generation of the camping ground and Tekapo Springs is about 985vpd. This figure does not include any traffic generation associated with Simpsons Lane or general sightseers utilising the foreshore area.

The traffic survey conducted by the Council indicates an average daily traffic volume of 590vpd during the school term and 820vpd on the last Sunday of the Easter school holiday. The average daily traffic volume counted on Lakeside Drive during the school term (590 vpd) is much lower than the expected average daily traffic generation during a peak holiday period (985 vpd). However the peak indicated by the school holiday Sunday daily traffic count (820 vpd) tends to support the peak traffic generation figure.

Analysis of the Lakeside Drive traffic survey indicates that 10.5% of the daily traffic volume occurs during the peak hour. This represents a peak hour traffic generation at holiday periods of about 100 vehicle movements per hour (vph).

Land Use Activity	Traffic Generation Rate (vpd/unit)	Number of Units	Daily Traffic Generation (vpd)
Tekapo Springs	-	-	270
Camping Ground Sub-Zone	3.5	155	545
STAZ (Excluding the Sub-Zone and Area B1.)	3.5	0	0
Area B1 (camping ground units)	3.5	38	135
Area B2 (camping ground units)	3.5	10	35
Residential 2 (Council)	-	0	0
Total		203	985

**Table 1: Existing Daily Traffic Generation – (Peak Holiday Period)**

## 6.2 Permitted Traffic Generation

The permitted traffic generation assumes that existing traffic generation within the camping ground sub-zone and Tekapo Springs remains unaltered. Whereas the traffic generation within the STAZ (including Area B1) and Area B2 has been assessed on the basis of what is permitted to be developed under the respective existing zonings. An allowance has been made to retain the existing camping ground units in Area B1 and Area B2.

Under the proposed plan change, part of the STAZ would be rezoned as Residential 1 (Area A), part as Residential 2 (Area B1) and a new Recreation Zone would be created with the residual land. The permitted traffic generation of the STAZ zone shown in Table 2 does not include the Sub-Zone or Area B1. The proposed Recreation Zone area has not been omitted from the permitted traffic generation of the STAZ but, due to the topographical constraints that would lead to that land being difficult to develop, a reduced level of development has been adopted. As a result of this, the likely visitor accommodation units that could be developed in the STAZ are about 229 (plot size of 400m<sup>2</sup>). The average daily traffic generation rate for STAZ units during the peak holiday period is expected to be 3.5vpd per unit. On this basis, the permitted development traffic generation for the STAZ is forecast at about 800 vpd.

The development of the remaining land in Area B1 as permitted under the STAZ could raise the visitor accommodation units in Area B1 from 38 to 47. Applying the 3.5vpd per unit to the 9 increase in accommodation units results in Area B1 generating an additional 30 vpd in the permitted scenario.

The undeveloped land in Area B2 is treated solely as a development permitted under Residential 2. The topographical development constraints and its close proximity to SH8 are likely to limit the number of proposed residential units that could be accommodated within Area B2 to about 61 units. The average daily traffic generation of the residential units is expected to be about 8vpd per unit; as such the zone could generate 485vpd.

The Council-owned Residential 2 land is currently undeveloped but it is considered that about 70 dwellings could be developed on this land. Application of residential daily traffic generation rate of 8vpd results in daily traffic generation of 560vpd. As the zone does not change between the permitted and proposed development scenario, the same development potential has been applied to both scenarios.

The total "permitted" daily traffic generation is forecast to be 2,860vpd based on a total of 572 dwellings.

It is estimated that the peak hour would account for 10 percent of the permitted daily traffic generation. Accordingly the total permitted peak hour traffic volume is forecast to be about 285vph.

The daily traffic generation rate that has been adopted for the residential zones is considered to be a worst case scenario. A family living in an outer suburban zone will typically make a total of 8 vehicle movements during the day. The likelihood is that a mixture of permanent residential and holiday home accommodation would be developed in the zones proposed for Tekapo and that the holiday homes will never all be inhabited at the same time. Accordingly the development mix would have a lower daily traffic generation rate than outer suburban dwellings.

Land Use Activity	Traffic Generation Rate (vpd/unit)	Number of Units	Daily Traffic Generation (vpd)
Tekapo Springs	-	-	270
Camping Ground Sub-Zone	3.5	155	545
STAZ (Excluding the Sub-Zone and Area B1)	3.5	229	800
Area B1 (used by the camping ground)	3.5	38	135
Area B1 (STAZ developable land)	3.5	9	30
Area B2 (used by the camping ground)	3.5	10	35
Area B2 (Residential 2 developable land)	8.0	61	485
Residential 2 (Council)	8.0	70	560
Total		572	2,860

**Table 2: Daily Traffic Generation – Permitted Development Scenario**

### 6.3 Expected Traffic Generation

The proposed residential zones enable different densities of development than the STAZ and as per the Residential 2 Zone in the permitted scenario traffic generation; a mixture of permanent residential and holiday home accommodation would be anticipated. The daily traffic generation rate of 8vpd is used, but as previously described it is considered to present a worst case traffic generation scenario.

The proposed zoning layout for the site, taking into account topography and zone provisions, indicates that a practical development scenario would result in about 182 dwellings being developed on land in the applicants ownership; 92 dwellings on the Residential 2 land (Area B) in the applicants ownership and about 90 dwellings on the Residential 1 land (Area A).

For Area A which is part of the existing STAZ (excluding Area B1, Sub-Zone and the Recreation Zone) the proposed development of 90 dwellings is forecast to generate 720vpd.

Within Area B1, the existing 38 camping ground visitor accommodation units are expected to reduce to 20 and the 10 visitor accommodation units in Area B2 are expected to reduce to 8. This increases the number of residential units that could be constructed in Area B1 from 9 to about 30 while 62 residential units could be constructed in Area B2. Accordingly the traffic generation of Area B2 remains relatively unaltered from the permitted traffic generation scenario, 495vpd, an increase of 10vpd. The total traffic generation of the currently undeveloped land within Area B1 is forecast to be 245vpd, an increase of 215vpd from the permitted generation scenario. Due to the reduction in visitor accommodation units in Area B1 the related forecast traffic generation reduces from 135vpd to 70vpd, a reduction of 65 vehicle movements.

The camping ground which is an existing sub-zone of the STAZ is proposed to be rezoned as STAZ. In the proposed scenario the area of the camping ground could increase slightly, but it is expected to continue generating 545vpd.

In addition to the expected traffic generation with the proposed plan change, the traffic generation of Tekapo Springs (270vpd) and the Council owned Residential 2 land (560vpd) are again included.

The expected daily traffic generation inclusive of the proposed plan change is 2,935vpd which relates to a total of 435 dwellings. In comparison to the currently permitted daily traffic generation of 2,860vpd, the proposed plan change results in an increase of only 75vpd or about 2.6%. Again this increase is considered a worst case as there will be 137 fewer dwellings with the plan change but the increased number of permanent dwellings or holiday homes (131 to 252) has been assessed at a relatively high traffic generation rate.

The peak hour factor (10 percent) indicates an expected peak hour traffic generation of about 300vph with the plan change. This represents a potential increase of about 15vph to the permitted peak hour traffic generation.

The following table summarises the respective traffic generation potential for the various sectors of the plan change area under the proposed (Plan Change) scenario.

Land Use Activity	Traffic Generation Rate (vpd/unit)	Approximate Number of Units	Daily Traffic Generation (vpd)
Tekapo Springs	-	-	270
STAZ (formally Camping Ground Sub-Zone)	3.5	155	545
Area A (formally STAZ)	8.0	90	720
Area B1 (used by the camping ground)	3.5	20	70
Area B1 (Residential 2 developable land)	8.0	30	245
Area B2 (used by the camping ground)	3.5	8	30
Area B2 (Residential 2 developable land)	8.0	62	495
Residential 2 (Council)	8.0	70	560
Total		435	2,935

**Table 3: Daily Traffic Generation – Expected Development Scenario**

## 6.4 Traffic Distribution

The existing pattern of turning movements at the SH8 / Lakeside Drive intersection is expected to be have a greater weighting to the right in and left out turning movements. This pattern is not expected to change as a result of the plan change, as the land will still be developed for residential type activity.

The expected traffic movements would be characteristic of visitors travelling to the campground or the hot springs and then traveling back towards the village centre for sight-seeing or shopping trips or returning to their accommodation. For the purpose of calculating the traffic distribution for this report it has been assumed that 60 percent of the potential traffic generation is associated with travel to and from the east (village centre) and the remaining 40 percent of the traffic generation is associated with travel to and from the west (Twizel).

## 7. Transportation Effects

### 7.1 Road Network

Traffic on Lakeside Drive is primarily generated from the camping ground and Tekapo Springs. Some traffic will be generated from the residential units on Simpson Lane and other recreational activities along the lake shore; however these are expected to be minimal and as such have not been considered in the transportation effects.

The existing traffic generation has been assessed based on the expected average daily traffic volumes for the peak holiday period. During this period the existing average traffic generation on Lakeside Drive is 985vpd. The permitted development of the land use zones along Lakeside Drive is forecast to generate 2,860vpd. The traffic generation of the proposed plan change in addition to existing traffic generators that do not form part of or are not altered by the proposed plan change are expected to generate 2,935vpd. The difference between the permitted development scenario and the proposed development scenario is 75vpd.

The peak hour traffic volumes are expected to amount to 10% of the daily traffic generation. The existing peak hour traffic volume on Lakeside Drive during the peak holiday period is expected to be about 100vph (two-way). The permitted development scenario could generate about 285vph. The proposed development scenario is expected to generate about 300vph, only 15 vehicles per hour more than the permitted.

The existing carriageway width of Lakeside Drive given the types of vehicles and range of users is not sufficient to allow two-way vehicle movement without vehicles using the shoulder. This has caused damage to the shoulders on both sides of the road. Widening of the seal width to a minimum of 5.7m would be required to address this issue and we understand that MDC is considering this presently. To meet the District Plan road design standards<sup>1</sup>, the seal width would need to be increased to a minimum of 6.2m (rural road type). This is wider than recommended within the New Zealand Subdivision Standards (NZS4404:2010) which specify a width of 5.7m for local roads with a daily traffic volume of about 2,000vpd.

Under the permitted development scenario and the proposed plan change, traffic volumes on Lakeside Drive are expected to be greater than 2,000vpd and a higher standard of road would be appropriate. As previously noted, due to the residential influence in the permitted and proposed development scenarios the daily traffic generation rate used is 8 vehicle movements per day. This rate is likely to provide a conservatively high estimate of the daily traffic volume. On the basis that the traffic generation scenarios are conservative, the minimum seal width from the District Plan road standards of 6.2m is considered more than appropriate for both the permitted and proposed development scenarios.

With the increased volume of traffic using Lakeside Drive in both the permitted and proposed development scenarios, the warrant for providing a right turn lane at the SH8 intersection would be met. Figure 6 shows proposed intersection improvements to provide a right turn lane on SH8. The basis of the improvements is an extension of the flush median

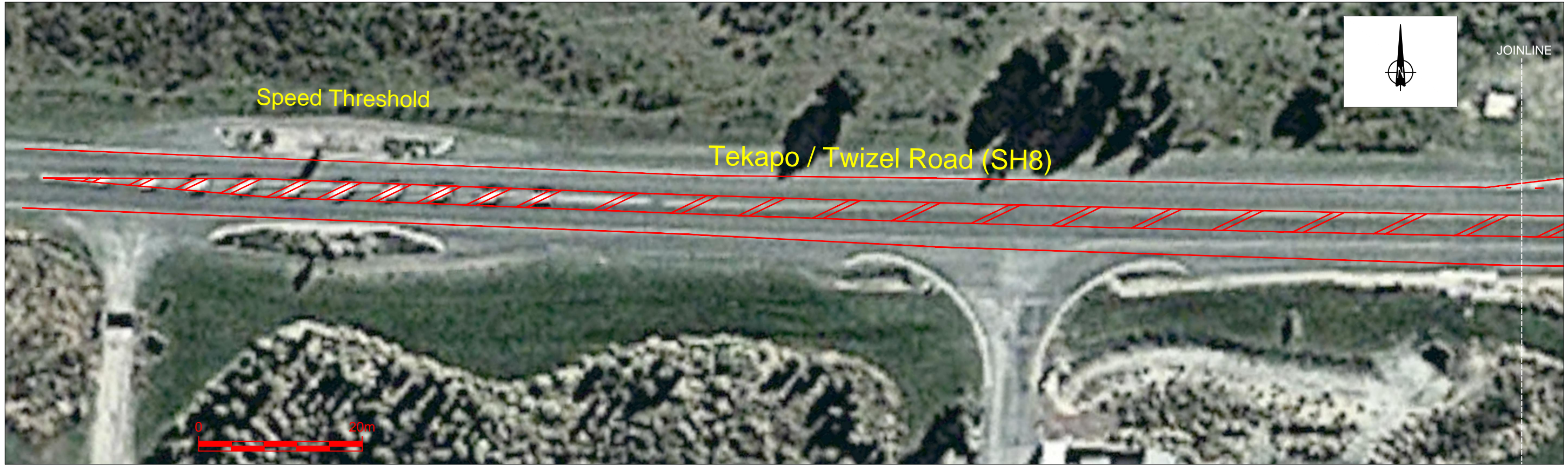
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<sup>1</sup> Section 13 Subdivision and Development Rules, part 7b

from the village centre access to the town threshold. This provides space for a 2.5m wide right turn bay to be created.

On the basis of the turning movement distribution estimate from Section 6.4 and a 3% per annum growth in background through traffic on SH8, it has been calculated that the Lakeside Drive / SH8 intersection would operate at a good level of service under the existing, permitted and proposed scenarios, even without the proposed improvements.

An additional improvement could be achieved by providing a link road from Lakeside Drive into Tekapo village, possibly along Simpsons Lane. The area surrounding Simpsons Lane has been referred to in the Councils expanded development plan option for the Village Centre and a link of this type would have some significant advantages to the NZTA and the Council as it would limit the number of movements on SH8 and in particular reduce the number of vehicles turning right out of the village to then turn right into Lakeside Drive. This link while beneficial to the NZTA and Mackenzie District Council is not however an essential consequence of the proposed plan change.



Wednesday, 7 January 2015 0 20mm

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Tekapo Plan Change

Proposed Lakeside Drive / SH8 Intersection Improvements

DRAWN: CTM/VM  
 DATE: 7/1/2015  
 SCALE: 1:500@A3  
 DWG NO:12481\_C2A





## 7.2 Parking

There are no reasons that future development within the Plan Change site could not comply with the parking rules of the District Plan. The relevant rules are:

- Minimum Parking Space Requirement. Residential units require two spaces per unit. Visitor accommodation (other than motels) requires one space per visitors accommodated plus one space per 2 staff;
- Size of Parking Spaces;
- Surface and Drainage of the Parking Area.

## 7.3 Pedestrians and Cyclists

The existing narrow carriageway on Lakeside Drive promotes low vehicle speeds because cyclists and motor vehicles share the same space. A new walkway has been constructed between the road and lake which reduces pedestrian / vehicle conflicts and could also be used by cyclists.

Additional pedestrian links will be constructed to link new development with the existing trail network. It is considered therefore, that the plan change area will have good facilities for both pedestrians and cyclists.

## 7.4 Road Safety

The proposed widening of Lakeside Drive is necessary to prevent further damage to the road. The road widening would also help to avoid loss-of-control type crashes as there will be sufficient space for two-way movement on the road without using the shoulders, and it would be more forgiving for drivers at bends.

Improvements to the SH8 / Lakeside Drive intersection would provide sufficient space for vehicles turning right into Lakeside Drive to stop clear of through traffic. It is also expected that the extension of the flush median to the town threshold treatment would clearly signal a change in speed environment and promote slower vehicle speeds on the approach to the Village Centre. This will help to maintain the relatively good road safety record in the area.

## 8. Mackenzie District Plan

### 8.1 Objectives and Policies

No changes to the transportation related objectives and policies are proposed as part of the Plan Change.

An assessment of the proposal against the transport objectives is provided below.

#### 8.1.1 Objective 1: Parking Loading and Access

*Vehicle parking, loading and access which does not detract from the efficiency, safety and amenity of the various activity areas, particularly the state highway network within the District.*

The indicative road network shown in Figure 5 shows that a safe and efficient road network can be developed within the Plan Change area. The future road network will be based on the existing paper road, Lakeside Drive and SH8 / Lakeside Drive intersection. Improvements to the SH8 intersection and Lakeside Drive would ensure this objective is met while the residential parking demands are expected to be achievable. No direct access to SH8 will be permitted from the existing paper road on the southern boundary of the site.

#### 8.1.2 Objective 2: Road Maintenance Costs

*Equitable sharing of road maintenance costs.*

The reason for this objective is to share road maintenance costs based on the benefits accrued.

The proposed plan change will increase traffic volumes on Lakeside Drive by about 75vpd compared with the permitted levels of development. Without road widening the maintenance cost would escalate if the permitted or expected development were to proceed. It is however expected that development contributions would contribute towards the upgrading of this road which would reduce maintenance costs.

The road network within the proposed plan change area is able to be designed to promote low vehicle speeds and to provide measures for managing water, snow or ice in adverse weather conditions so that any potential for damage to the road is minimised.

### 8.2 Rules

No changes to the transportation related rules are proposed as part of the Plan Change. However, a rule is proposed to prevent direct access to SH8.

While a development strategy for the proposed plan change area has been prepared to enable a realistic estimate of traffic generation, it does not include sufficient detail to allow a compliance check of the layout against the rules of the District Plan. It is not considered appropriate or necessary to address such details as part of the Plan Change request because the development concept may change and accordingly specific compliance

assessments will be undertaken when subdivision and/or resource consent applications are submitted.

## 9. Summary and Conclusions

Lakeside Drive provides access to the existing Special Travellers Accommodation Zone in Tekapo. The zone along with the adjoining Residential 2 land is largely undeveloped. Existing development in the area includes the camping ground and the Tekapo Springs recreational activities only.

Traffic count information collected by Council in May 2014 recorded an average daily traffic volume of only about 590vpd. A limited number of days (Saturday and Sunday) from the end of the Easter holiday were also surveyed. The traffic volume recorded on the Sunday was 820vpd. The difference in the two daily traffic volumes indicates the traffic volume variation on Lakeside Drive during a holiday and non-holiday period.

The evaluation of existing traffic generation during a peak holiday period indicates that the daily traffic volume on Lakeside Drive could increase to 985vpd.

An assessment of the permitted development potential of the STAZ and surrounding zones suggests that the traffic volumes on Lakeside Drive could increase to 2,860vpd. With this volume of traffic, the existing levels of edge break damage to Lakeside Drive will likely worsen unless the road is widened. MDC have indicated that widening of the road is being considered.

The proposed plan change will enable development of approximately 182 dwellings with a range of densities across the land owned by the applicant in the Residential 1 and Residential 2 zones. This level of development along with the traffic generation of existing development and other areas that are not part of the plan change is expected to generate 2,935vpd with full development. Accordingly, the proposed plan change is only expected to generate an additional 75vpd above the permitted level of development. It is considered that if the road was widened to accommodate the permitted level of development then the effect of the potential traffic volume increase of the plan change would be minimal as it could be accommodated safely and without high maintenance costs for Lakeside Drive.

The traffic volumes predicted for the permitted and proposed scenarios are considered to be a worst case scenario because the traffic generation rate used to calculate the traffic movements for the residential components of the development is eight vehicle movements per day. The rate is characteristic of outer suburban living and it is likely that it is greater than the number of vehicle movements per day expected from a mixture of permanent residential and holiday home accommodation.

It is concluded that improvements to the SH8 / Lakeside Drive intersection should be undertaken to support either the permitted or the proposed development scenarios. Analysis of the potential future development indicates that the improvements are not required for intersection capacity reasons. The primary aim of the improvements would be to maintain road safety by providing a right turn bay on SH8 at the intersection. A secondary aim would be to emphasise the change of road environment to drivers travelling from the south by the extension of the flush median from the village centre to the town threshold. A preliminary investigation indicates that it can largely be achieved by a change of paint markings within the existing seal width but additional seal across the shoulders would be desirable to provide better conditions for cyclists.

Overall, it has been concluded that the proposed plan change can be supported from a transportation perspective subject to improvements to Lakeside Drive and to the SH8 / Lakeside Drive intersection.

TDG Ltd