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Ref: o869

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Dear Christine

**Proposed Subdivision – Rochdale Road, Riversdale, Masterton District**  
**S92 Response**

Following on from your instructions, I have completed my assessment of the proposed subdivision in Riversdale in Masterton District. You have specifically sought an assessment of the network and traffic implications on the adjacent road network from the development of 21 additional lots that will use Rochdale Road.

**1. Background**

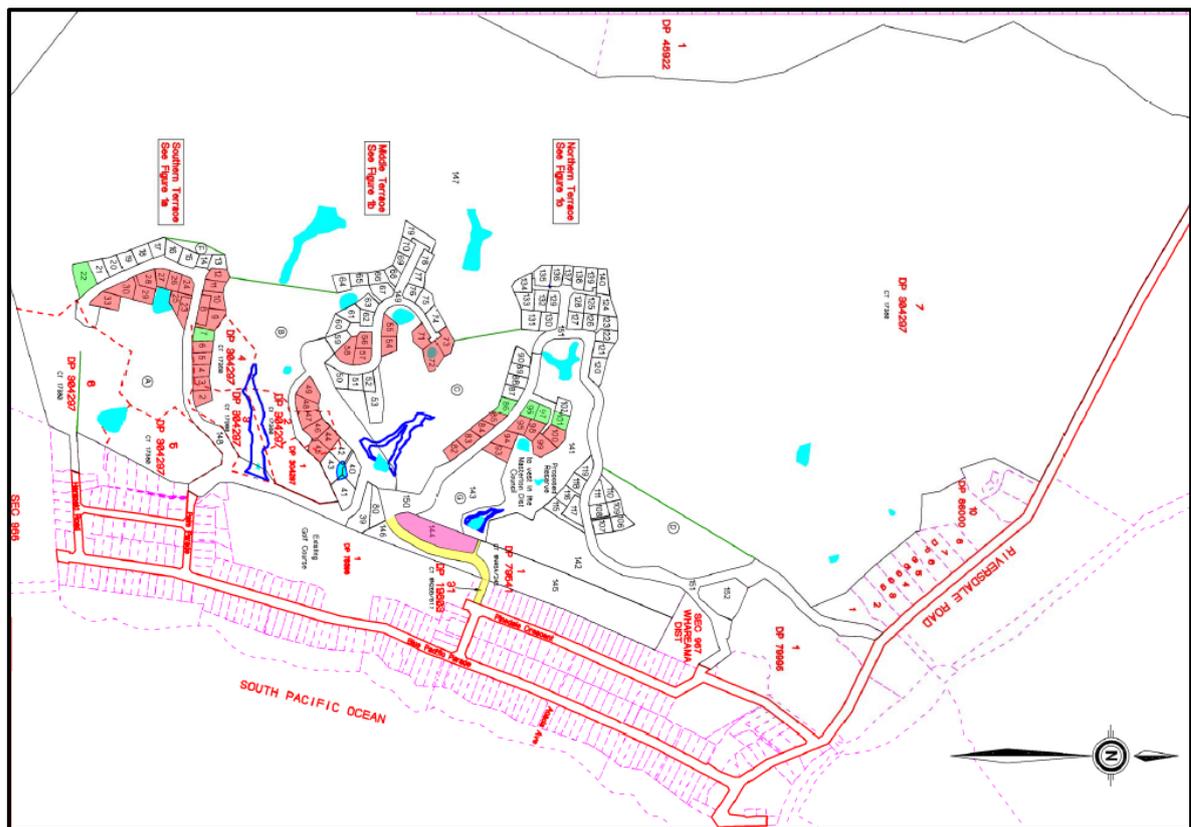
In 2003 a subdivision to create new lots on the area known as Riversdale Terraces was approved. The approved consent enabled the creation of 136 new lots on the western side of the Riversdale settlement. The new lots would be accessed from new roads built within the development site with connections to Pinedale Crescent and Palm Parade. The development consisted of three cul de sacs with a similar number of lots accessed from each new road.

Traffic Design Group prepared the traffic assessment for the 2003 approved consent. The traffic generation used for the calculation of the additional trips arising from the new lots was calculated around three to four per dwelling per day. Surveys carried out by Traffic Concepts Limited for rural residential show rates ranging from four to six trips

per day per dwelling. These surveys were in areas that are less remote than Riversdale Beach. Therefore, the use of four trips per dwelling per day would be a reasonable assumption.

The new roading network to serve the lots included sealed roads with gravel shoulders. The road widths varied with a minimum of six metres of sealed carriageway.

**Figure 1** shows the approved subdivision plan.



**Figure 1: Approved Subdivision Plan (Source: Tomlinson & Carruthers Surveyors – Plan 03/100-1 R5)**

As shown, there are 136 new lots with three main new roads into the different clusters.

The Traffic Design Group report concluded the following:

- The traffic flows remain less than 500 vehicles per day on all local streets.
- The traffic flows along Riversdale Road remain less than 1,000 vehicles per day.
- The traffic volumes remain small and easily handled and absorbed within the already established road network.
- There would be no noticeable change in the levels of amenity or convenience enjoyed by existing road users.
- The subdivision is designed to comply with appropriate subdivision standards.

- The road in the area will continue to operate safely and efficiently.

Since the subdivision was approved around 127 lots have been consented with some of these lots having new homes on them. This is nine lots less than what has been approved across the development site.

## 2. Site Description and Location

The proposed subdivision is located on Rochdale Road which is the southern terrace of the 2003 development.

**Figure 2** shows the location of the subdivision site.



**Figure 2: Site Location (Source: Masterton Maps)**

The proposed subdivision is located on Rochdale Road which currently has around 29 lots located mostly on top of the terrace. A number of lots are still vacant.

Rochdale Road is around six metres wide with gravel shoulders along both sides of the road. There is a footpath that runs along the northern side of the road with water tables along both sides of the formation.

The road has a steady climb up from Palm Parade until around Number 2 Rochdale Road where the road flattens off.

There is a formed turning head at the end of the cul de sac.

### 3. Crash History

A detailed search of the NZTA crash database was carried out for the five-year period from 2016 to 2020 and for the part-year of 2021. The crash search area included all crashes within the Riversdale Settlement.

There has been one reported serious injury crash at the intersection of Blue Pacific Parade and within 50 metres of the development site.

A driver heading south on Blue Pacific Parade turned right into Harapaki Road too fast and lost traction of their vehicle. The passenger sitting on the back of the ute fell off and hit their head on the road. The driver stopped down the road and provided care for the passenger.

There are no safety deficiencies with the adjacent road network with a good level of safety near the site.

### 4. Proposed Subdivision

The proposed subdivision consists of creating 21 new lots with access from Rochdale Road.

Figure 3 shows the proposed subdivision.



Figure 3: Proposed Subdivision (Source: Adamson Shaw – Plan 1022 SC – 20 RC)

As shown, there are six new lots halfway up the rise on Rochdale Road. One new lot is on the northern side of Rochdale Road as you head up the rise. One new lot is at the top on the northern side accessed off an existing right of way. The remaining 15 lots are located off the end of the existing formation. Most of the new lots will be accessed from three new right of ways.

The new right of ways and accesses will be constructed to the Council standards.

## **5. Assessment of Effects**

This section of the report considers the proposed development, analyses the transportation matters, and provides an assessment on the impacts. The main areas that require careful consideration relate to the increased traffic generation from the new lots.

### **5.1. General**

It should be noted that the lots will be designed to comply with access points, the location and their formation meeting all Council standards. Accordingly, any effects from the formation of these lots are anticipated by the Plan. The only area where assessment is needed relates to the ability of the adjacent and surrounding road network to accommodate the increased traffic volumes.

### **5.2. Capacity**

The main matter to consider relating to the proposed subdivision is the ability of the adjacent road network to accommodate the additional traffic flows arising from the new lots to be created.

One of the considerations is that the most affected road is Rochdale Road. The flows on the wider road network will spread across Pinedale Crescent and Blue Pacific Parade. All the roads that the increased traffic flows will use are constructed to the same standard or better than Rochdale Road. Accordingly, the assessment below focuses on Rochdale Road.

The matters relating to road capacity are complex. There are a number of factors that affect road capacity which include roadway conditions, geometric layout, traffic conditions and vehicle composition. These factors are further complicated by the expectations of users of the road and the target Level of Service (LoS) for which the road is expected to operate. There are other elements to assess and deal with road capacity as set out in Austroads Guide to Traffic Engineering Practice.

Before heading into any further discussion of the capacity matters, it is important to note that Rochdale Road and other roads in the area operate with a relatively high level of safety which is mainly due to the road design. The vehicle speeds are estimated to

be around the posted speed or slightly less. The road width (of at least six metres) and general alignment providing good sight lines enables users to safely travel along the road.

There are six different LoS ranging from A through to F. LoS A is a condition of free-flowing stable traffic stream with LoS F being unstable with long delays and queues. Typically, arterial roads have a target LoS service being no worse than LoS D. The existing LoS for Rochdale Road and other roads in the Riversdale Settlement are estimated to be around LoS A, with traffic moving relatively freely along the road with no need to stop. The target operating LoS for these roads is expected to be around LoS C. This would suggest more traffic can use the road.

Accordingly, the operating capacity of Rochdale Road in terms of real numbers will be difficult to estimate due to the different LoS and the expectations of the users of the road. The assessment below looks at the capacity of Rochdale Road, based on its formation.

The practical operating capacity of any road is around 2,400 vehicles per hour per lane. However, this is under ideal situations (motorway for example) for short sections of road. The realistic operating capacity of a road has been measured as high as 2,200 vehicle per lane, per hour with 1,800 vehicles per lane, per hour as the accepted operating design capacity.

The formula for calculating operating capacity uses the 1,800 vehicle per lane, per hour and applies adjustment factors for the key elements noted above such as road layout. Road capacity is reduced when there are reduced or no shoulders, reduced lane widths, vehicle composition, type and terrain.

However, the peak operational capacity of a two lane, two-way road (one lane in each direction) is more practically around 2,800 vehicles per hour (total for both directions). This operational flow is for road with traffic lanes with a width of 3.7 metres and shoulders of 2.0 metres (parking lane).

By using Austroads we can calculate the road capacity for Rochdale Road. This is done with the formula (Austroads Guide to Traffic Engineering – Part 2 Page 8) is provided below:

$$SF_i = 2,800(v/c)_i f_d f_w f_{hv}$$

The various parts of the equation are adjustment factors that are provided in the Austroads guide noted above. The key component of the calculation relates to the use  $i$  which is the LoS.

Maintaining the existing LoS of A (as what seems to be expected by existing residents) the total Service Flow Rate ( $SF_i$ ) for a rolling road, with a directional distribution of 80/20

and traffic lane widths of 3000mm with no shoulders, the calculated road capacity of Rochdale Road is around 1,300 vehicles per hour for both directions. This is equivalent to around 13,000 vehicles per day.

The current/approved traffic flows along Rochdale Road are estimated to be around 110 vehicles per day. This is well below the 13,000 vehicles per day operating capacity at LoS A.

It should be noted that while the calculated operating road capacity is around 13,000 vehicles per day, any change in amenity for residents is much lower than this due to the low level of development in this area. Traffic flows of less than 500 vehicles per day are considered to be reasonable and less discernible to the existing users.

### **5.3. Traffic Generation**

The traffic generation from the additional 21 lots on Rochdale Road and the existing flows will form the new traffic volumes on the road.

The calculation of trip generation for the developments are usually based on research undertaken by NZTA and is set out in Research Report 453 (RR453). While this document has been updated recently to reflect changes in travel choice that has occurred for a number of reasons, it is still useful as a conservative assessment tool for calculating the trip generation that could occur at the upper limits. The document RR453 provides figures of 10.7 per dwelling per day or around 1.3 trips per home in the peak hour.

More recent traffic count data for rural and residential development shows that trip rates have reduced from this high figure of 10.7 per day. Even some of the more recent information from NZTA research shows trip rates between six and eight movements per household.

Surveys of rural residential developments in Nelson, Marlborough and Wellington show trip generation rates from the existing homes falling within a range of four to six trips per household. The same traffic count data also showed peak flows of around 0.5 trips per dwelling per hour. As noted above the traffic generation from dwellings in the Riversdale Settlement was assessed at around four movements per home per day. This is similar to other survey work noting the more isolated location of Riversdale.

Accordingly, the traffic data aligns very well and shows that using a trip generation rate of around four trips per dwelling per day for this isolated rural community is appropriate and based on evidence rather than using higher traditional trip generation rates.

The development consists of an additional 21 new lots with access to Rochdale Road. This will increase the traffic flows on Rochdale Road to around 200 trips per day. This is

based on four trips per dwelling which equates to around 20 trips in the peak periods or one vehicle every three minutes.

These are relatively low flows which can be accommodated easily within the surrounding road network, which is operating well below capacity of 1,300 vehicles per hour at LoS A.

This anticipated traffic flow of 200 movements per day, that would come from the completion of all the lots of Rochdale Road, is well below the lower amenity traffic flows of 500 vehicles per day.

Any effects of the increased traffic using Rochdale Road from the proposed 21 lots is less than minor and well below the operating capacity of the road.

#### **5.4. Conclusion**

The proposed subdivision seeks to provide an additional 21 lots that will have access from Rochdale Road. There are 28 approved lots with access from Rochdale Road.

Using a trip generation rate of four movements per dwelling per day the new flows from the completed development would be less than 200 vehicles per day. The calculated operating capacity of Rochdale Road is 13,000 vehicles per day. The increase in traffic flows can easily be accommodated on Rochdale Road and the surrounding road network.

The levels of safety on the adjacent road network will remain at the same levels that are already experienced by existing road users.

Any traffic related effects of the proposed subdivision are considered to be less than minor.

We are happy to provide any further clarification if required.

Regards



Gary Clark

Director

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