

15. MARSHLAND ROAD/NEW BRIGHTON ROAD/NORTH PARADE/SHIRLEY ROAD INSTALLATION OF RIGHT TURN PHASE

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The purpose of this report is to inform the Board of the results of an investigation into the possible installation of an exclusive right turn phase at the Marshland Road/New Brighton Road/North Parade/Shirley Road intersection. This report will also be considered by the Shirley/Papanui Community Board at its 1 September 2004 meeting.

BACKGROUND

The possibility of providing an exclusive right turn phase from Marshland Road into Shirley Road was last assessed in April 2002. With the recent development of The Palms shopping complex and the associated traffic signal installation at the Marshland Road entrance to the complex, a request was made by the Board to reassess the right turn taking into consideration the impacts of the development on traffic flows in the local network.

DISCUSSION

The Council policy on the installation of right turn phases at traffic signals states that the decision to install a right turn phase be based upon the following criteria:

“The history of crashes occurring at the intersection, the efficiency of the intersection as a whole and the efficiency of the roading network.”

The right turn movement from Marshland Road into Shirley Road was assessed against these criteria to determine if the installation of an exclusive phase is justified.

Crash History

In the last five years there have been a total of 27 reported crashes at the intersection - 10 injury and 17 non-injury (see attached diagram). There have been two crashes involving the right turn movement from Marshland Road into Shirley Road; one in which a pedestrian crossing Shirley Road received minor injuries when struck by a right turning vehicle, the other involving a northbound vehicle colliding with a right turning vehicle.

The installation of a right turn phase provides only a small safety benefit unless the movement is fully protected, ie filter turns are not allowed during the full green. Providing a non-filtered right turn phase would significantly increase delays and queue lengths for right turning vehicles.

The installation of a right turn phase is not justified on safety grounds.

Intersection Efficiency

The last major assessment of the operation of the intersection was undertaken in April 2002, prior to the installation of signals at the entrance to The Palms. In October of last year movement counts at the intersection were carried out during peak periods and this information was used to study the intersection operation and the effects of any phasing modifications.

In addition to Council data, further movement counts were supplied by the developers of The Palms, Sabina Ltd, who surveyed the right turn movement on 7 April 2004 between 7.00 am and 6.30 pm. In this period a total of 2,447 vehicles made the right turn from Marshland Road into Shirley Road. In 1997 Council staff undertook a similar count from 8.00 am until 5.45 pm during which 2,054 vehicles made the right turn. The equivalent volume between 8.00 am and 6.00 pm from the 2004 count was 2,189 vehicles, showing there has not been a dramatic rise in the number of vehicles making the right turn. The increase averages out to 1.0% per annum over the 6.5 year period, well below general traffic growth of 2.0% per annum.

Results of the analysis indicate the following:

- In the AM peak period, the installation of a right turn phase will not reduce delays for right turning vehicles. There would actually be a minimal increase, consistent with the observation that most right turning vehicles are able to filter through the opposing flow reasonably efficiently at present. The addition of an extra phase will only increase the total cycle time of the intersection, hence the increase in delay.

- The increase in average intersection delay for the PM peak and business peak periods is 25% and 35% respectively.
- The addition of a right turn phase would lead to a large increase in delays for traffic on North Parade, especially in the PM peak. The predicted length of queue for through vehicles would be double that of the existing.

Video Monitoring

On 12 May 2004 the operation of the right turn movement was monitored using portable video equipment from 8.00 am until 5.45 pm. While some long queues of right turning vehicles (greater than 10 vehicles) were observed, this was only for a short period - 10 minutes between 2.35 pm and 2.45 pm as a result of school traffic, from 4.50 pm to 5.00 pm and 5.25 pm to 5.35 pm during the evening peak. While it would be nice to provide a right turn phase during these periods, it is not feasible to design a roading network based on delays during a 10 minute period. The right turn from Marshland Road into the Shell service station is also a busy movement (particularly during the evening peak) and has some impact on the length of the right turn queue.

Local Network

The traffic signals at the adjacent intersections of Golf Links Road/New Brighton Road and at the entrance to The Palms complex are coordinated with the Marshland Road/Shirley Road/New Brighton Road/North Parade intersection and run a common cycle time dictated by the busiest (or critical) intersection, which in this case is Marshland Road/Shirley Road/New Brighton Road/North Parade. The addition of a right turn phase will increase the cycle time of this whole local network of intersections thereby increasing delays to traffic at these other intersections.

Within the local network there are alternative options available for right turning traffic. Commuting traffic from the north on Marshland Road is able to make use of the exclusive right turn phase at the Briggs Road/Lake Terrace Road/Marshland Road intersection. Traffic from The Palms complex has the option of using the signals at the intersection of Golf Links/New Brighton where the right turn movement is not opposed by through traffic.

Further Information

For additional clarification of the process for assessing right turn phases at traffic signals, a copy of a report prepared in 2002 by Bill Sissons, Signals Engineer, is attached.

CONCLUSION

The possibility of providing a right turn phase from Marshland Road into Shirley Road has been assessed taking into account the recent development of The Palms shopping complex. Based on the current traffic flows and the negative impacts on intersection efficiency as a result of providing an additional phase, at this stage the installation of an exclusive right turn phase is not justified. There is also not sufficient safety benefit in terms of crash reduction to warrant a right turn phase.

Staff

Recommendation: That the Board endorse the Officer's recommendation that the right turn phase not be installed.

Chairperson's

Recommendation: For discussion.