

## SH1 Revocation Modelling: Peer Review

### Terms of reference

#### Purpose and scope:

The purpose and scope of the modelling study is understood to be: *to model, compare and report on the traffic effects of four identified options to convert SH1 in Paraparaumu to a local road, in the design year 2031.*

#### Method:

Wider assignment (SATURN) modelling for three scenarios, 2015, 2021 and 2031 and for the AM and PM (2-hour) time periods. Cordon modelling (SATURN) for these time scenarios. More detailed micro-simulation (VISSIM) modelling for the same time periods of identified options in 2031.

### Material reviewed

#### Written material:

- SH1 Revocation Mackays to Peka Peka, Paraparaumu Town Centre Traffic Modelling Presentation, 06-10-2016.
- SH1 Revocation Mackays to Peka Peka, Paraparaumu Town Centre Traffic Modelling Report, 04-10-2016.
- SH1 Revocation Mackays to Peka Peka, Detailed Traffic Modelling Presentation, 31-08-2016.

#### SATURN models:

- Model files (UFS) for 2015, 2021 and 2031 (AM and PM periods)

#### VISSIM models:

- Model files (INPX) for Option 1 2021 and 2031 (AM and PM periods):

### SATURN modelling

#### Findings:

The modelling assumes revocation treatment of SH1 by 2021 (speed management, lane capacity limitations and new signalised controls).

The results show that by 2031, partly due to the availability of KRRR, traffic volumes, on the existing SH1, Rimu Road and Kāpiti Road, between Rimu to Arawhata will, in overall terms, and especially on the critical links of most interest to this study, be substantially reduced, compared with 2021.

#### Interpretation:

The model forecast demands are broadly in keeping with the assumed link and intersection capacities for 2031 in terms of ratio of flow to capacity SATURN model results.

## **VISSIM modelling**

### Findings:

The more detailed modelling maintains the assumptions used in the cordoned SATURN models, refined by representing adjusted layouts for several intersections, including SH1/Kāpiti Road, SH1 /Ihakara Street and Arawhata Road / Kāpiti Road. Demands are fixed and no dynamic assignment was used in the VISSIM modelling.

Option 1 was reviewed (as this is the most critical in capacity terms) and operates satisfactorily in 2031 with the exception of the morning queue length eastbound Kāpiti Road approach to SH1. However, for the majority of the morning peak period queue lengths are generally acceptable. These queues do not appear to be directly related to the revocation works, and are more likely due to the operation of traffic signal control associated with anticipated changes in train frequency.

### Interpretation:

As Option 1 is the most restrictive in SH1 capacity terms, it is inferred the operation of this model that in terms of capacity, queues and travel times, the effects of the proposed revocation works, for all options identified will be acceptable in 2031.

## **Documentation**

### Findings:

The report and presentations were used to derive the following;

- (a) Purpose, scope and method of the study and
- (b) Assess the impact of the options in terms of capacity, queues and travel times.

### Interpretation:

Overall traffic demands are substantially lower in 2031 compared with 2015. On SH1 traffic demands reduce by 50% and on Rimu Road by 22%

Level of service is achieved at LOS C or better, for all options on all approaches at the three key locations analysed, during the AM and PM periods, with the following exceptions:

- The Ihakara Street approach to SH1 is LOS D in the AM and PM periods, due to the increase in traffic from KRRR implementation.
- The Kāpiti Road eastbound approach to SH1 in the AM peak is LOS E for Option 4. The same approach performs at LOS E for Option 1.
- All options perform at LOS E for the westbound Kāpiti Road approach to SH1 in the evening peak.

The overall LOS for each intersection is not quoted in the report but it can be inferred from the approach results that the LOS performance will be satisfactory at all three locations.

Queue lengths are acceptable in 2031 apart from the eastbound Kāpiti Road approach to SH1. However, this is not related to the revocation works and only occurs in the AM peak. Separate measures need to be considered to assess options to reduce queue lengths at this location.

Travel times in 2031 (compared to 2021) on Kāpiti Road increase (compared with 2021) by between 1 and 2 minutes on Kāpiti Road, under all options. This increase is only partly connected with the

revocation works as the most affected journey is between the Airport Roundabout on the western section of Kāpiti Road, and along Kāpiti Road as far as Ruapehu Street, to the east of SH1.

## **Conclusions**

### Overview:

The traffic effects of the four SH1 revocation options are similar and are forecast to result in acceptable traffic conditions in 2031.

The review agrees with the finding of the revocation study report that the choice between the options is not dependent on variations in traffic effects.

### Fitness for purpose:

The main 2031 SATURN modelling and 2031 VISSIM modelling reviewed for the AM and PM periods and found to be fit for purpose.