

Case Study Project: Point Lewis Rotary Metering After Study

Client: Main Roads Western Australia

Overview

The Point Lewis Rotary roundabout meter has been operational since November 2013.

The use of metered signals at roundabouts can be a cost-effective measure to avoid a fully-signalised intersection treatment and is usually applied for low capacity approaches on selected legs during peak demand flow conditions.

Urbsol undertook the initial analysis used to understand the operational characteristics and benefits a roundabout meter would offer at this location that ultimately lead to the introduction of this innovative treatment.

The Study

Main Roads Western Australia re-engaged Urbsol to undertake a post opening verification exercise of the roundabout meter to help understand both the appropriateness of the analysis method used and how the infrastructure was benefiting motorists.

The work involved verifying a number of key attributes against the initial modelling including:

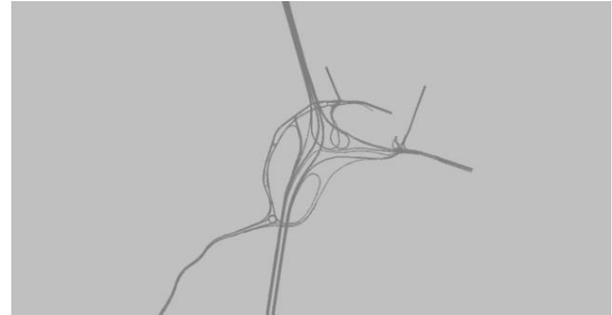
- Queue lengths
- Turning movements

This was followed by an analysis of post opening performance in terms of queue length improvements and levels of service based on delay.

The work also involved undertaking an economic assessment of the time savings being derived by drivers post implementation to help understand and monetise the benefits.



Point Lewis Rotary meter signal in "off-state"



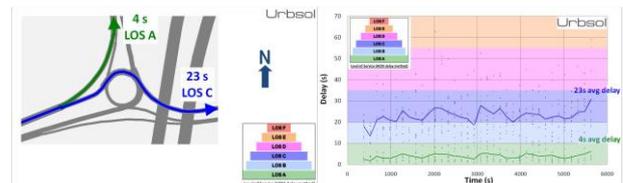
VISSIM modelled network

Simulation

Urbsol used VISSIM microsimulation software in combination with SCATSIM to re-assess the performance of the metering treatment updated with current traffic flows.

The model was used to recalculate both delays and queue lengths based on updated volume information.

Both base case and project option VHTs were then extracted and compared to calculate the direct benefits associated with delay savings.



Example model outputs

VISSIM was chosen as the most suitable tool for this work for a number of reasons:

- SCATSIM interface
- Proper modelling of priority rules and driver behaviour at roundabouts
- Flexibility in applying roundabout metering signal logic using detector loops and common parameters (minimum red and off times)
- Accuracy of delay per vehicle modelling

The analysis demonstrated that the meter was significantly reducing both queue lengths and vehicle delays on critical approaches with AM peak queues down by 33% and PM peak queues reduced by 60%.

Associated with these reductions are significant economic benefits in terms of time savings for motorists.