

# Case Study Project: Point Lewis Rotary Metering

Client: Main Roads Western Australia

## Overview

Roundabouts represent self-regulating traffic control devices – capacity and performance in these instances is a function of prevailing traffic demands. Their efficient operation is thus dependent on largely balanced demands to ensure equitable rationing of capacity among all users.

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.

The Point Lewis Rotary in Perth Western Australia represented a traffic congestion hotspot during critical peak periods and was a candidate site for treatment under the \$47.6 million anti-congestion package announced by the Transport Minister.

## The Study

Main Roads Western Australia engaged Urbsol to investigate likely operating characteristics of the site to assess its suitability for a metering treatment.

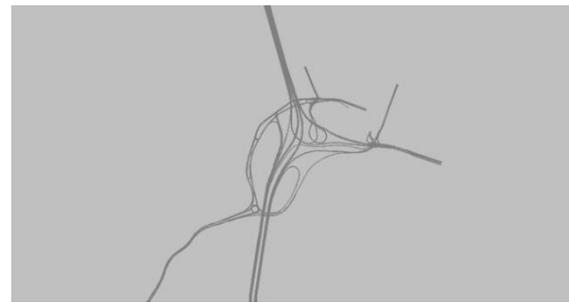
Part time signals on roundabouts can offer many distinct advantages over other treatments under the right conditions including:

- o Retention of normal roundabout operating conditions during off-peak periods
- o Cost effective interim treatment in comparison to permanent traffic signal installation

Simulation based analysis was therefore required to better understand the implications of metering this location and for comparison with more traditional treatments such as permanent traffic signals.



Installed Point Lewis Rotary meter signal in "off-state"



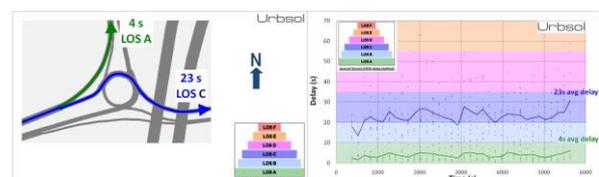
VISSIM modelled network

## Simulation

Urbsol used VISSIM microsimulation software in combination with SCATSIM to assess the appropriateness and effectiveness of metering for this location.

The model proved essential in analysing a number of metering scenarios for the rotary and successfully applied the SCATSIM interface for realistic modelling of traffic signal operation.

Detailed traffic video turning surveys were conducted to determine traffic demands for the models. 5 minute interval queue lengths (average, max) were also observed for the entire model period and used to validate model performance against field observation.



Example model outputs

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

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

The analysis demonstrated that a metered treatment at this location would greatly improve traffic operations and reduce driver delays while retaining off-peak benefits associated with normal roundabout priority.

This work led to the implementation of the system and determined time settings for operation (maximum red/blank, loop occupancy and gaps).