

**Traffic Advisory Leaflet 7/00**  
**December 2000**



# SCOOT<sup>®</sup> gating

**S**PLIT **C**YCLE and **O**FFSET **O**PTIMISATION **T**ECHNIQUE

## Introduction

This leaflet amplifies advice given in TAL 7/99 on the effects SCOOT<sup>®</sup> can have on gating. This is a technique used to control the inflow of traffic into sensitive areas where it is particularly important to prevent serious congestion. It can also be used to assist in clearing traffic from sensitive areas. One of its most important applications is to relocate queues in conjunction with bus priority measures. Gating is not universally applicable although it is appropriate to help prevent serious exit blocking of junctions, and particularly gyratory systems, where the exit blocking delays cross-traffic. More information on SCOOT<sup>®</sup> is available at [www.scoot-utc.com](http://www.scoot-utc.com).

## Implementation

SCOOT<sup>®</sup> is able to take action at a distance by modifying the traffic signal settings at junctions that may be some way from the problem area. In some situations, for instance where major problems in one locality may cause congestion to spread rapidly to adjoining areas, the use of gating could provide overall benefits to the network as a whole.



The gating logic allows one or more links to be identified as critical, or bottleneck, links. A bottleneck link can affect the green time on the gated links. The gated links are those that have been designated to store queues which would otherwise block the bottleneck link. When the

bottleneck link is too busy (i.e. goes over the target saturation for that link), the green time is reduced on the gated links. The traffic engineer would specify a link as a bottleneck if it were important to avoid large queues on the link and those queues could be relocated to one or more gated links. The gating logic can also be used to open up down stream links enabling the bottleneck link to clear.

## Use

- to aid bus operations and protect bus routes by
- metering the entry of private traffic
- relocating queues to roads with bus lanes, where buses can bypass the queues
- relocating queues off bus routes
- to relocate queues to more acceptable positions e.g. where queues will not block the exit from important junctions, particularly where there is danger of locking up a gyratory system
- to protect sensitive areas e.g. shopping areas with many pedestrians
- to take action at a distance, restraining traffic in advance of the critical area
- to assist in clearing traffic from congested areas
- to assist in the transfer of emissions due to congestion, away from sensitive areas.

## Method

- define the area to be protected, and the allowable congestion or degree of saturation on each link in the area
- define where queues should be relocated to and the minimum green times allowed when gating is relocating queues to those links
- define the saturation levels at which SCOOT<sup>®</sup> gating will operate automatically as required by conditions in the protected area

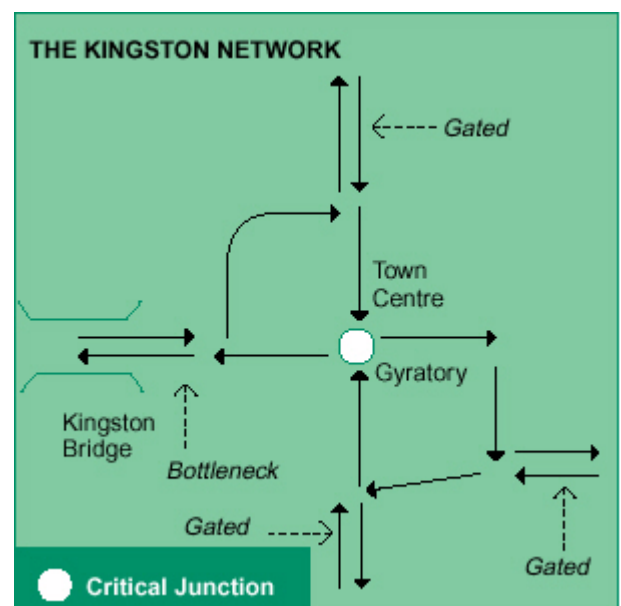
## Network characteristics

Gating is most beneficial to general traffic where:

- a gyratory may grid-lock, particularly if there is a restriction on the exit from the gyratory
- there is a substantial amount of cross-movement traffic

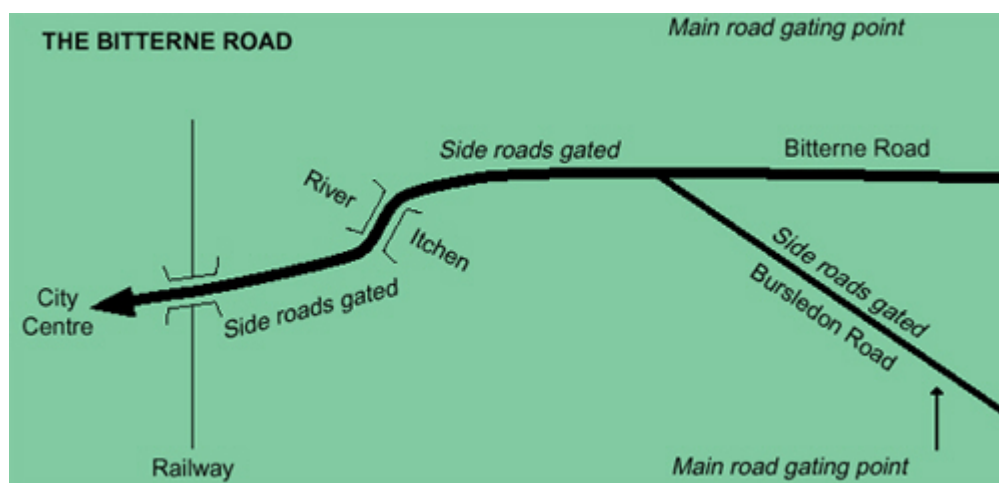
Where a large proportion of traffic wishes to passthrough the bottleneck, e.g. a constriction on a major radial, there is unlikely to be an overall benefit. However, gating may be justified to protect a sensitive area or bus route.

The exit over Kingston Bridge from the town centre can become over saturated in the morning peak. Gating traffic on the entries to the gyratory prevented queuing back into the critical junction and avoided gridlock. Delay was reduced by 20%.



Example 1, Kingston-upon-Thames

## Example 2, Bitterne Road Bus Priority



The Railway Bridge is a bottleneck on this route into Southampton. Gating is used to prevent queues of traffic impeding buses on the main road. There are bus lanes and bus only entry points to avoid the queues of gated traffic. Bus journeys were about 3 1/2 minutes quicker without increasing overall delay to other vehicles.

### References

1. P B Hunt, D I Robertson, R D Bretherton and R I Winton. SCOOT®- a traffic responsive method of co-ordinating signals. TRL Laboratory Report 1014.(1981).
2. R D Bretherton and G T Bowen. Recent enhancements to SCOOT®- SCOOT® Version 2.4.Proceedings 3rd International Conference on Road Traffic Control, IEE, London. (May 1990).
3. K Wood and R T Baker. User guide to the gating method of reducing congestion in traffic networks controlled by SCOOT®.(February 1995).

### Contacts for SCOOT® systems

(web site: [www.scoot-utc.com](http://www.scoot-utc.com))

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### Other advice

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