Summary
SCATS (Sydney Co-ordinated Adaptive Traffic System) can be used to manage the sudden change in traffic demand resulting from incidents on the transport network. SCATS is an adaptive traffic signal control system that uses real-time traffic information (vehicle detectors) to adjust phase splits, cycle times and offsets to optimise a signalised traffic network, resulting in reduced delays to motorists. SCATS can also be used to detect and respond to traffic incidents.

Congestion
There are two types of congestion:
- Recurring Congestion: Occurs on an average day, generally due to peak period traffic demand
- Non-recurring Congestion: Unusual or unexpected congestion due to incidents, weather, road works, events, etc.

Incident Management
SCATS as an Incident Management Tool
SCATS has various tools for detecting and responding to incidents.

Unusual Congestion Monitor
The unusual congestion monitor can be configured to detect when flow over detectors is not as expected.

SCATS Access Interface
- Split plans – determine phase times, phase sequence and special features such as gaps off
- Cycle plans – determine cycle length, maximum and minimum cycle times
- Link plans – determine offsets used for coordination with adjacent intersections

Variation Routines
SCATS has many built-in variation routines that can be used to modify the signal operation at an intersection if certain conditions are met.
- Test detectors for congestion
- Test strategic approach for congestion

Action Lists
Action lists are another feature of SCATS that can be used to make specific changes to an intersection operation. For example, changes can be made to the cycle time, split plan, or intersection settings can be linked. Action lists can be implemented by time of day through the SCATS Scheduler, or can be called through variation routines. A series of actions could be created to provide priority for a diversion route.

Case Study
Microsimulation offers a test bed for evaluating the impacts of incidents on a transportation network as well as testing and evaluating various incident management strategies.

Three different scenarios were modelled:
- Base scenario with no incident
- Incident on the motorway with traffic diverting to the arterial route. SCATS was left to adapt as per normal (incident with original SCATS).
- Incident on the motorway with traffic diverting to the arterial route. Changes were made to SCATS at all time-signalised intersections along the diversion route to give priority along the diversion route (incident with modified SCATS).

SCATS manual SCATS changes made included:
- Changes to split plans to provide more green time along the diversion route
- Increased cycle times
- Linked intersections along the diversion route in the direction of the diversion route

Conclusions
Incident management strategies can help mitigate the congestion caused by incidents. Adaptive signal control, such as SCATS, can be used as an effective incident management strategy. Although normal SCATS operation can adapt in real time to the change in demand resulting from incidents, additional features of SCATS can be used to provide a targeted approach to increasing capacity on a traffic network.