

Incident Management Modelling Using Microsimulation with Adaptive Signal Control

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Presenter



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Outline



Research Objectives

Background

Methodology

Conclusions

Further Work

Acknowledgements

Research Objectives

- PhD Research: Evaluate how various ITS treatments can detect and respond to traffic incidents
- This Presentation: Determine how adaptive signal control can be used as an incident management tool

Background

- Incident Management
 - Incident detection
 - Motorway/Arterial network
- ITS
 - SCATS
 - VMS



Background

- Microsimulation Modelling
 - Test bed for incidents
- Link to SCATS with FUSE

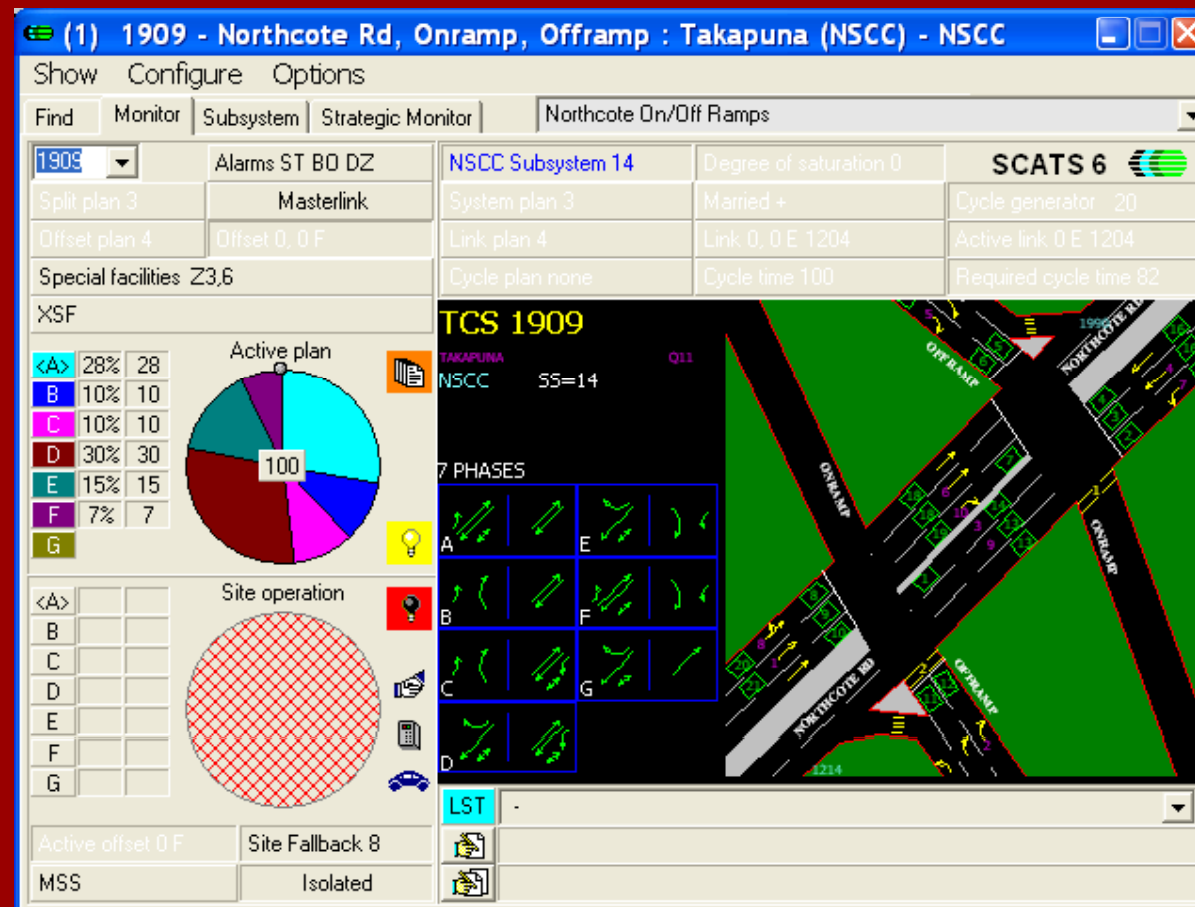
Methodology

- Wairau Model



Methodology

- Link to SCATS with FUSE



(1) 1909 - Northcote Rd, Onramp, Offramp : Takapuna (NSCC) - NSCC

Show Configure Options

Find Monitor Subsystem Strategic Monitor Northcote On/Off Ramps

1909 Alarms ST BO DZ NSCC Subsystem 14 Degree of saturation 0 SCATS 6

Split plan 3 Masterlink System plan 3 Married + Cycle generator 20

Offset plan 4 Offset 0, 0 F Link plan 4 Link 0, 0 E 1204 Active link 0 E 1204

Special facilities Z3,6 Cycle plan none Cycle time 100 Required cycle time 82

XSF

| Active plan | Percentage | Value |
|-------------|------------|-------|
| <A> | 28% | 28 |
| B | 10% | 10 |
| C | 10% | 10 |
| D | 30% | 30 |
| E | 15% | 15 |
| F | 7% | 7 |
| G | | |

Site operation

| Site operation | Value |
|----------------|-------|
| <A> | |
| B | |
| C | |
| D | |
| E | |
| F | |
| G | |

Active offset 0 F Site Fallback 8

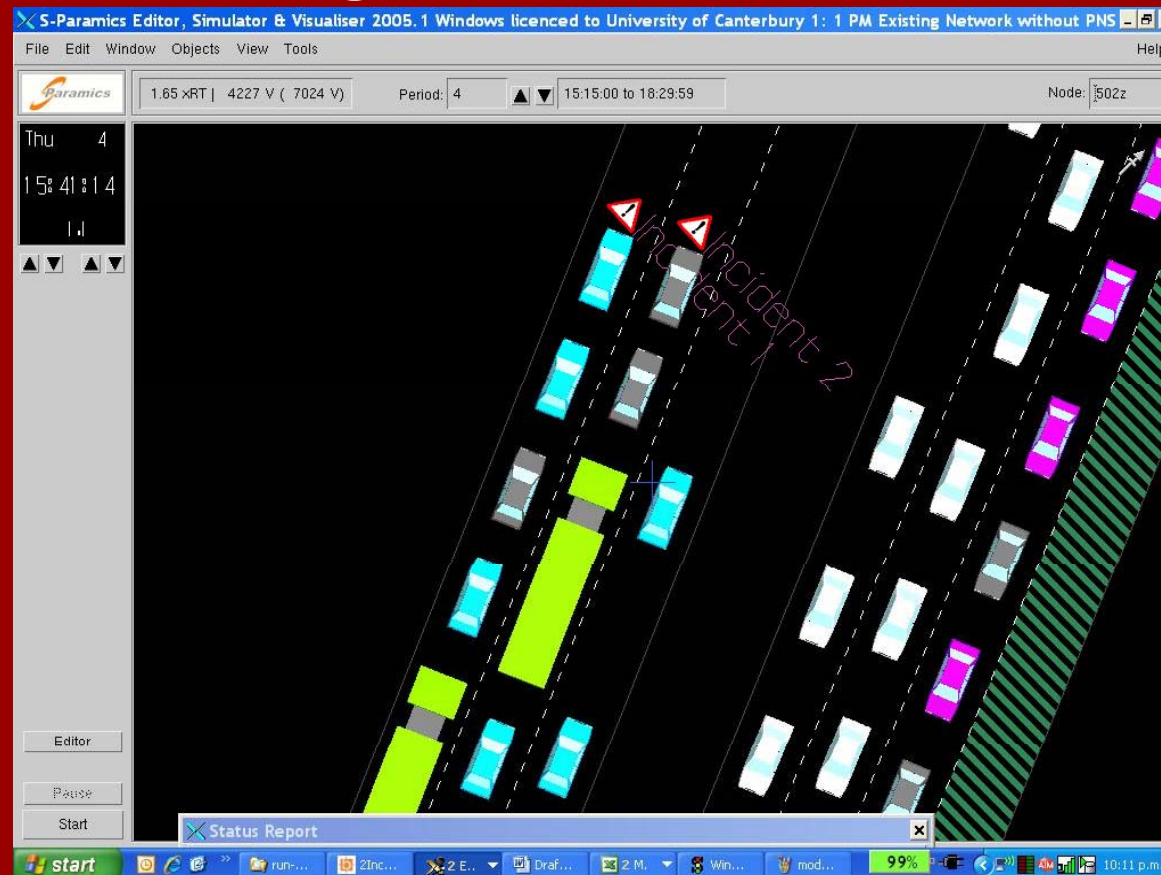
MSS Isolated

7 PHASES

LST

Methodology

- Incident Modelling

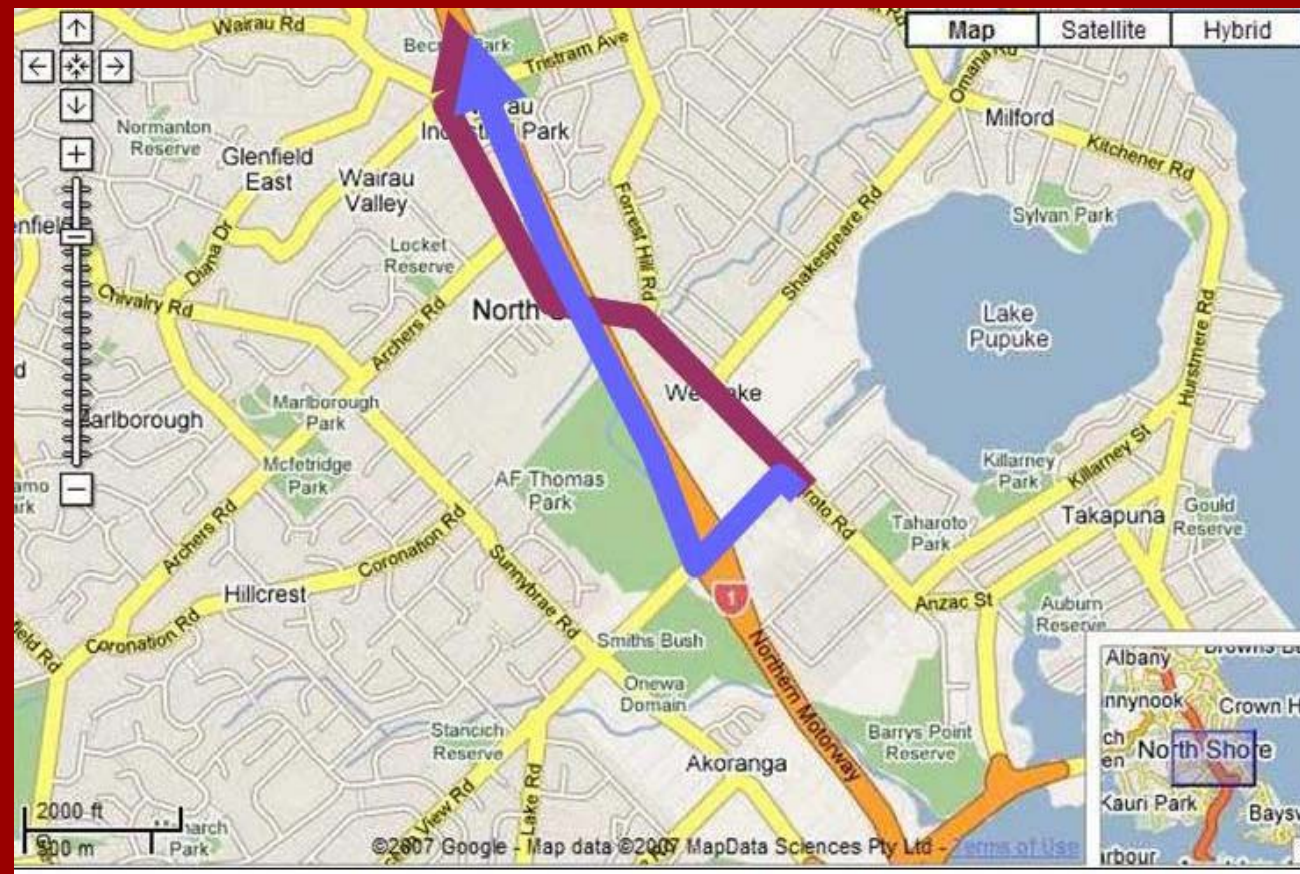


Methodology

- Scenarios
 - Base
 - Incident on Motorway
 - SCATS adapting as usual
 - SCATS with operator intervention

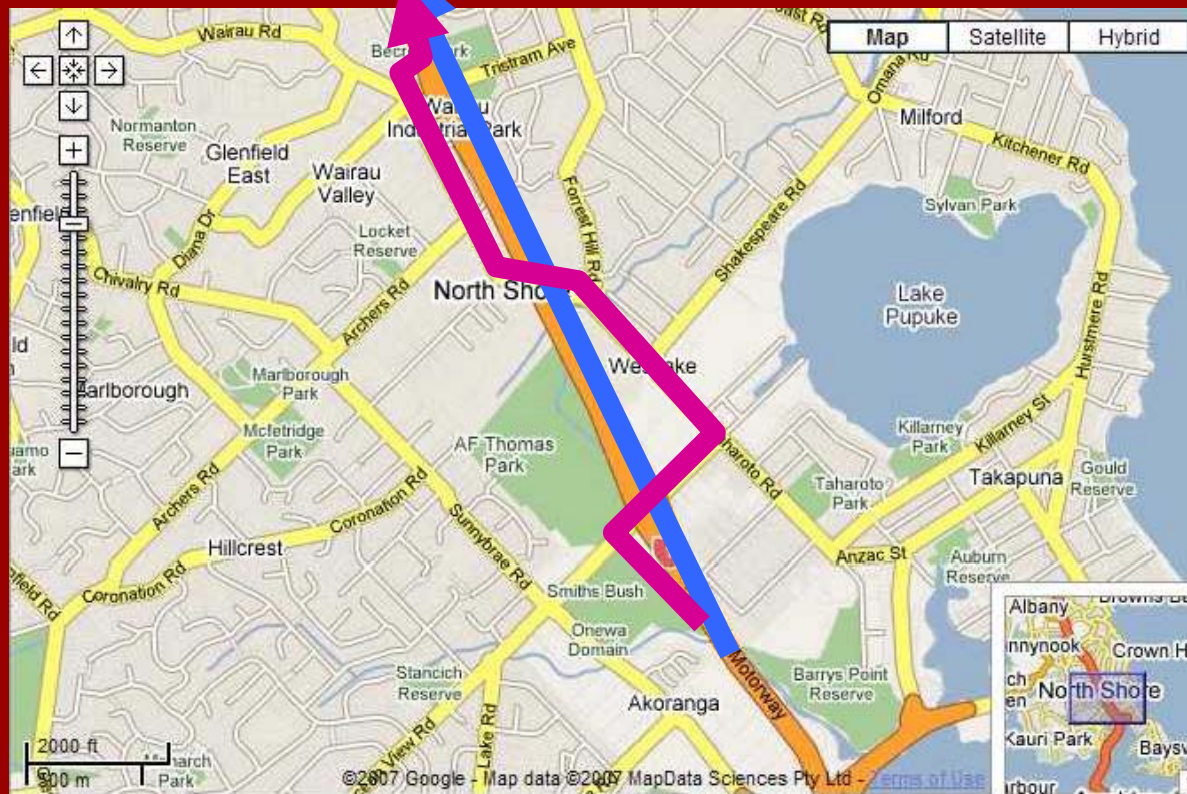
Methodology

- Taharoto diversion



Methodology

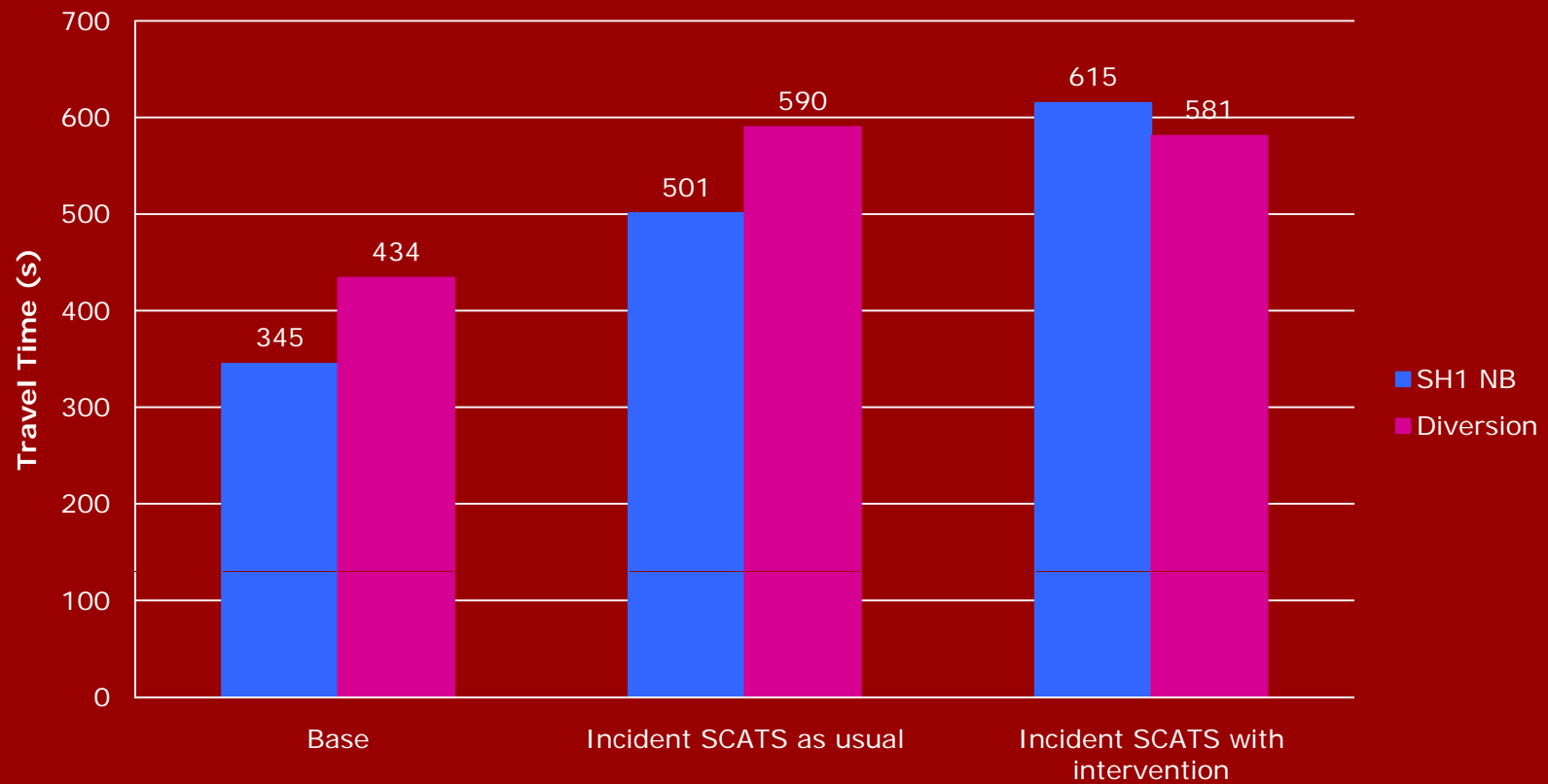
- Northcote diversion



Conclusions

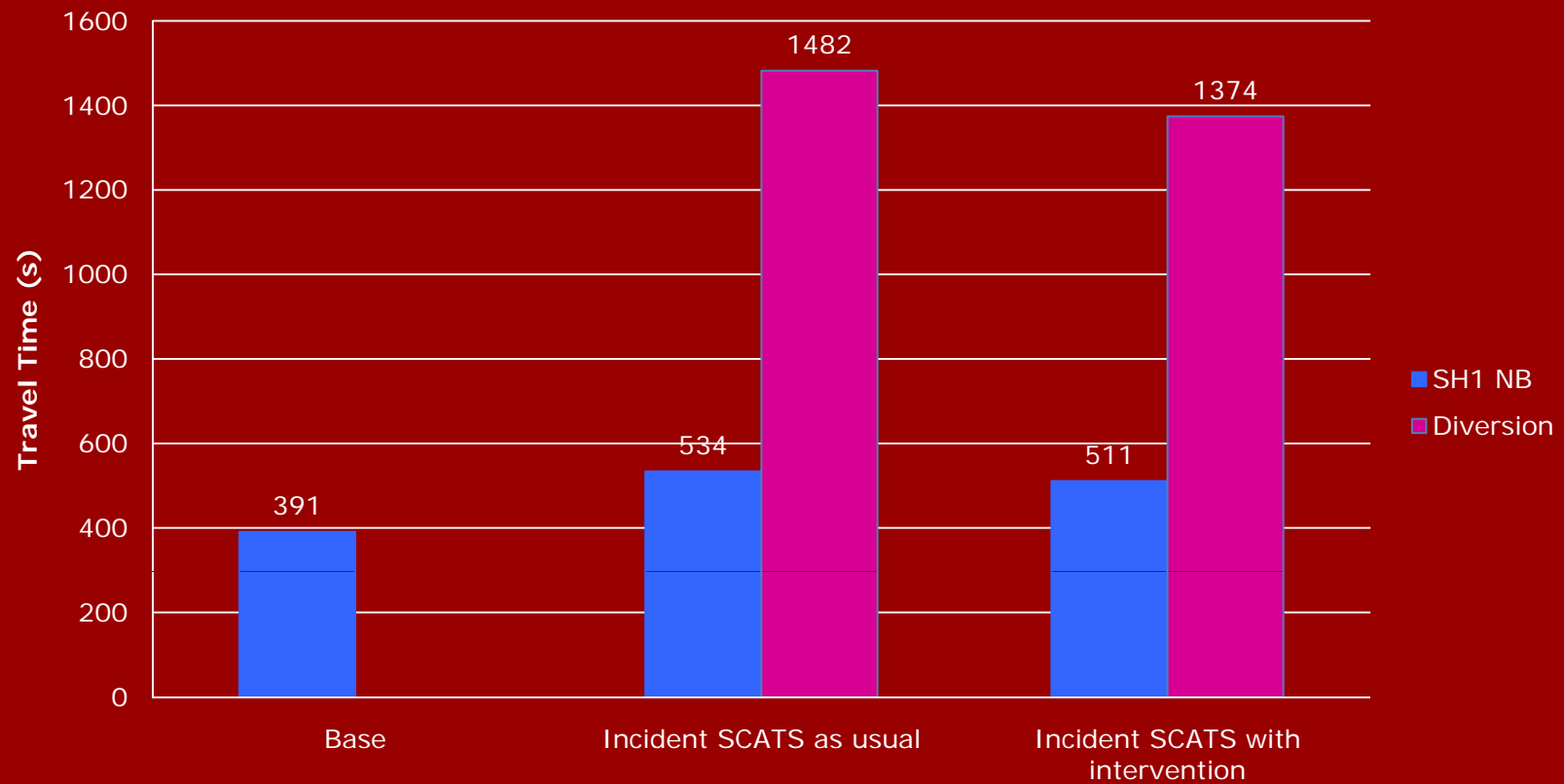


Taharoto Diversion



Conclusions

Northcote Diversion




Conclusions

- SCATS adapting as usual
 - Adapts, but not quickly
 - Priority not given to diversion route
- SCATS operator intervention
 - Small improvement over SCATS as usual

Conclusions

- Diversions routes can be optimised with SCATS
- Spare capacity on arterial network will affect effectiveness of diversion

Further Work

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- Data collection
 - Expand Model
 - Additional Incident Scenarios
 - Additional ITS Treatments
 - Incident Calibration
 - Incident Detection
 - Network reliability performance measures

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Auckland Traffic Management Centre