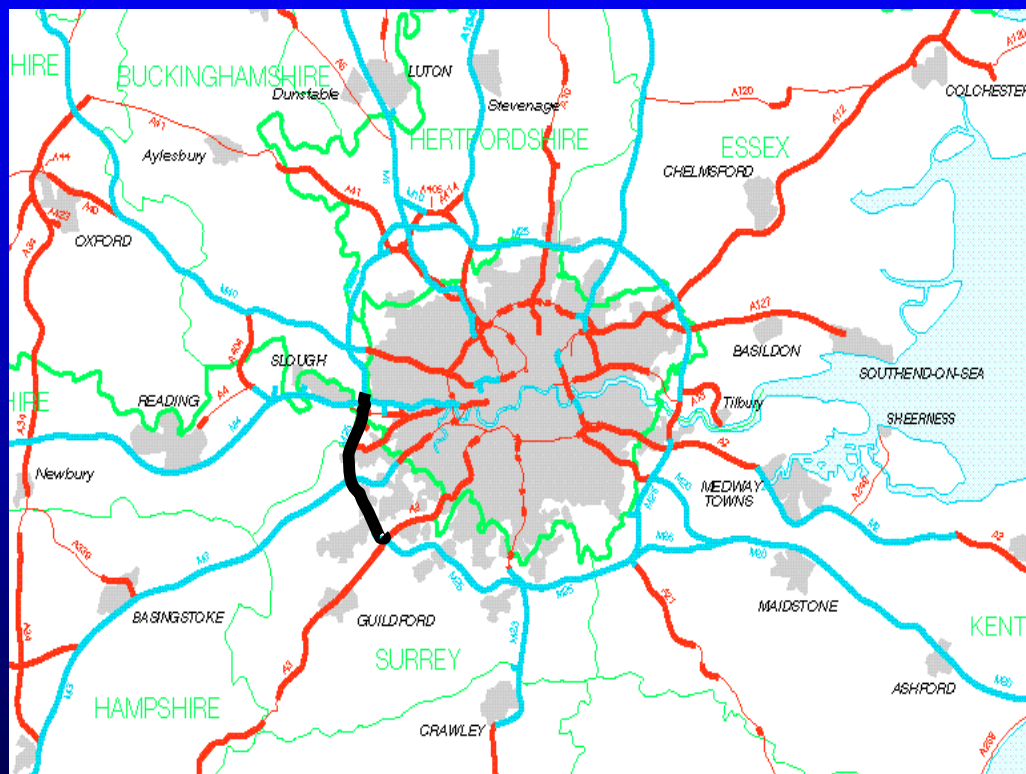


CONTROLLED MOTORWAYS

**JOHN POYNTON
R & D CO-ORDINATOR
HIGHWAYS AGENCY, UK**

Controlled Motorways



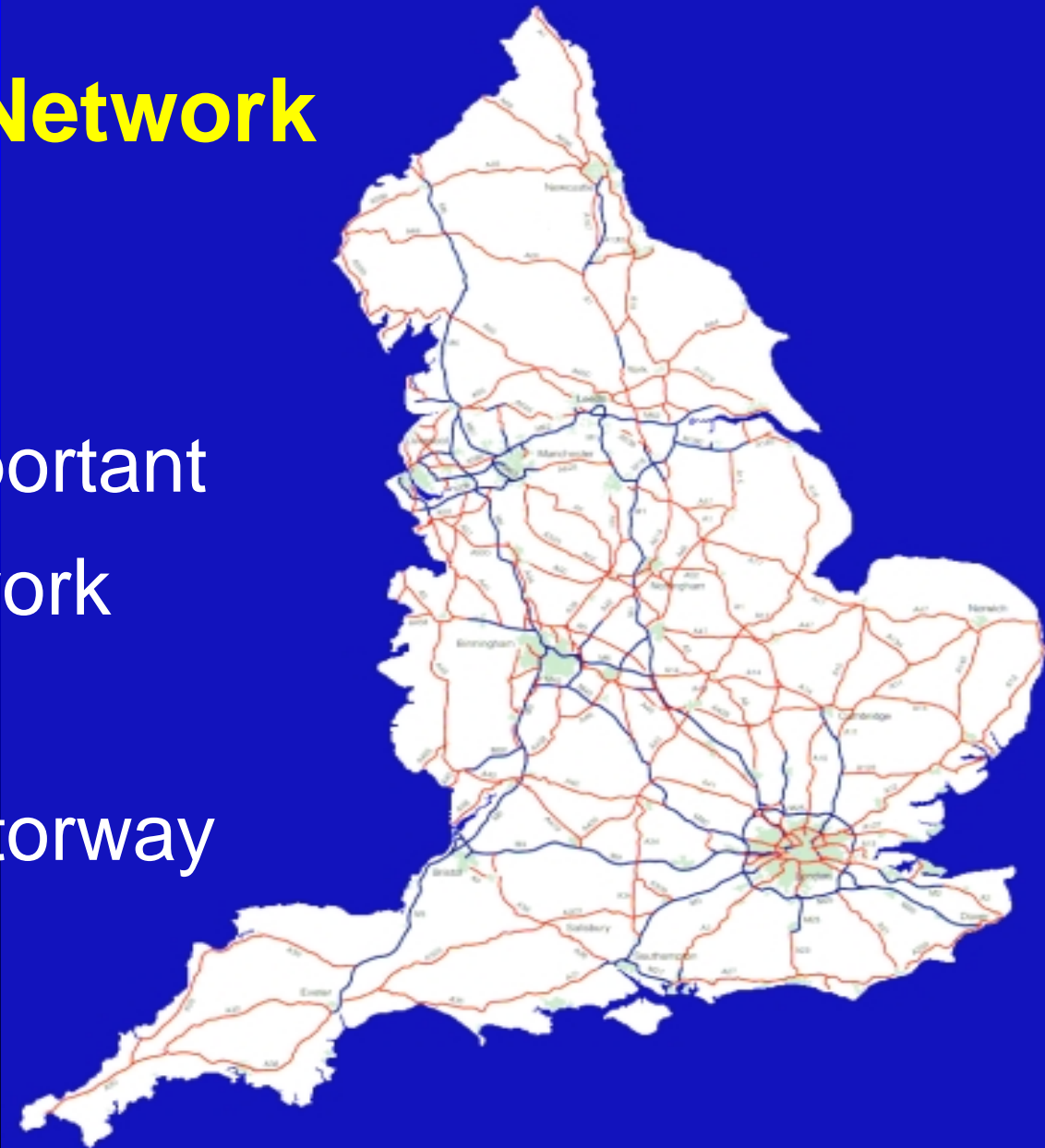
- M25, London Orbital
- Jct. 10 -15
- launched Aug, 1995
- variable mandatory speed limits
- smooth traffic flows

This Presentation

- background
- objectives
- infrastructure
- results
- future

Trunk Road Network

- national routes
- strategically important
- 4% of total network
- 10,500 km total
- 2,750 km of motorway



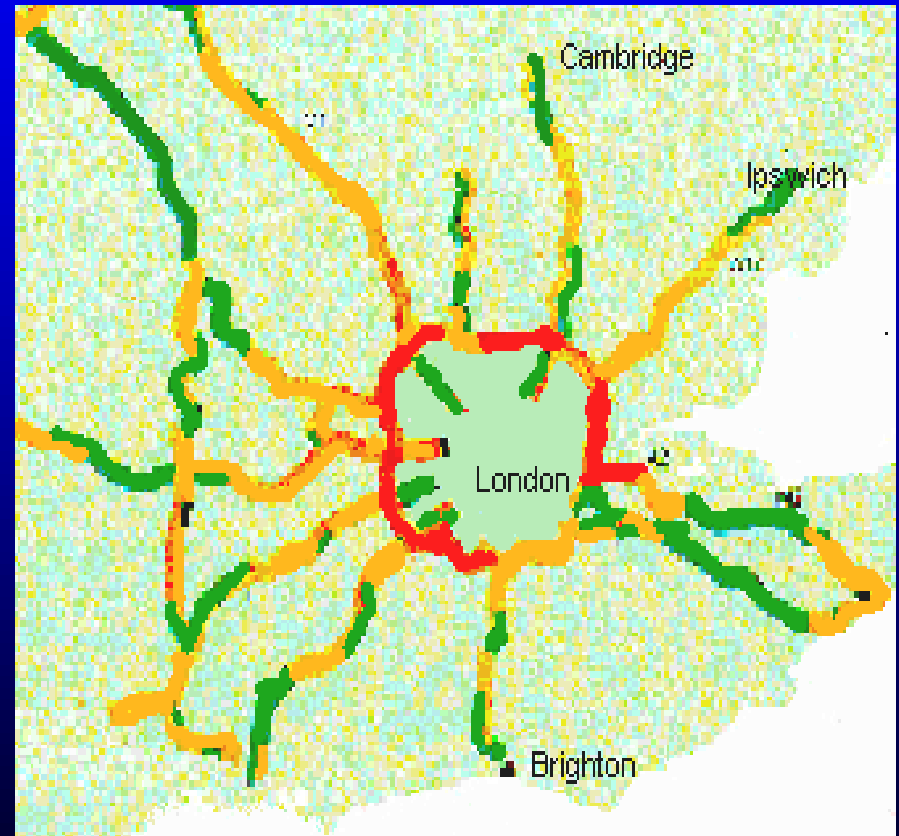
UK Motorways

- limited access
- dual carriageway
- central reserves
- grade separated junctions
- 112 kph speed limit
- emergency hard shoulder & telephones



Traffic Conditions

- 30% of traffic
- 50% of HGV
- +50% growth / 20 years
- <10 accidents/100mv km



Network Operator

Manages the maintenance, development and **use of** the trunk road network in England as part of an integrated transport system

Controlled Motorways Objectives

Improve:

- driver behaviour
 - speed control
 - lane discipline
 - lane utilisation
- safety
- driver comfort
- journey time reliability
- emissions

M25 Pilot Scheme



- 22km of dual 4 lane m/w
- 200,000+ veh/day
- signal gantries & loops
- communication system
- 2 police control offices

M25 Pilot Scheme

- Features of a 'Controlled Motorway'
 - mandatory motorway signals
 - automatic speed limit enforcement
 - automatic control system - MIDAS

Motorway **I**ncident **D**etection and
Automatic **S**ignalling system



Controlled Motorway Indicators (CMI)

- each lane and entry slip
- 32 - 112 kph, fog, , , Ø
- fibre optic technology
- enforcement “failsafe”

Enforcement System (1 of 2)

- radar speed measurement
- automatic camera
- CMI interface
- rear of gantries
- extensive testing
- fixed signing



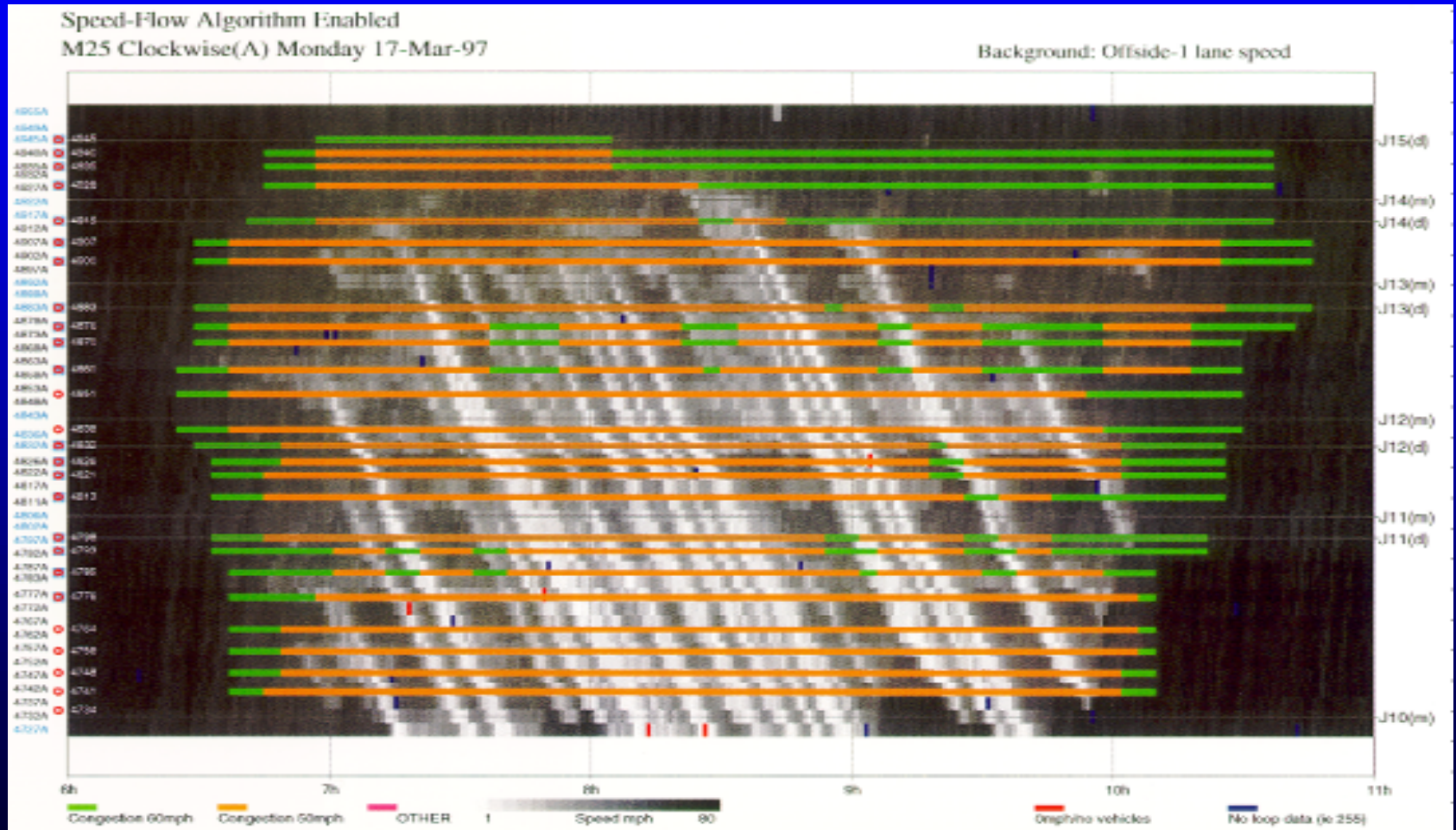
Enforcement System (2 of 2)

- Camera Detected Offences Unit
- police control (civilian staff)
- 15 staff 5 staff
- reduction in offences processed
- fine & penalty points

Motorway Incident Detection & Automatic Signalling System (MIDAS)

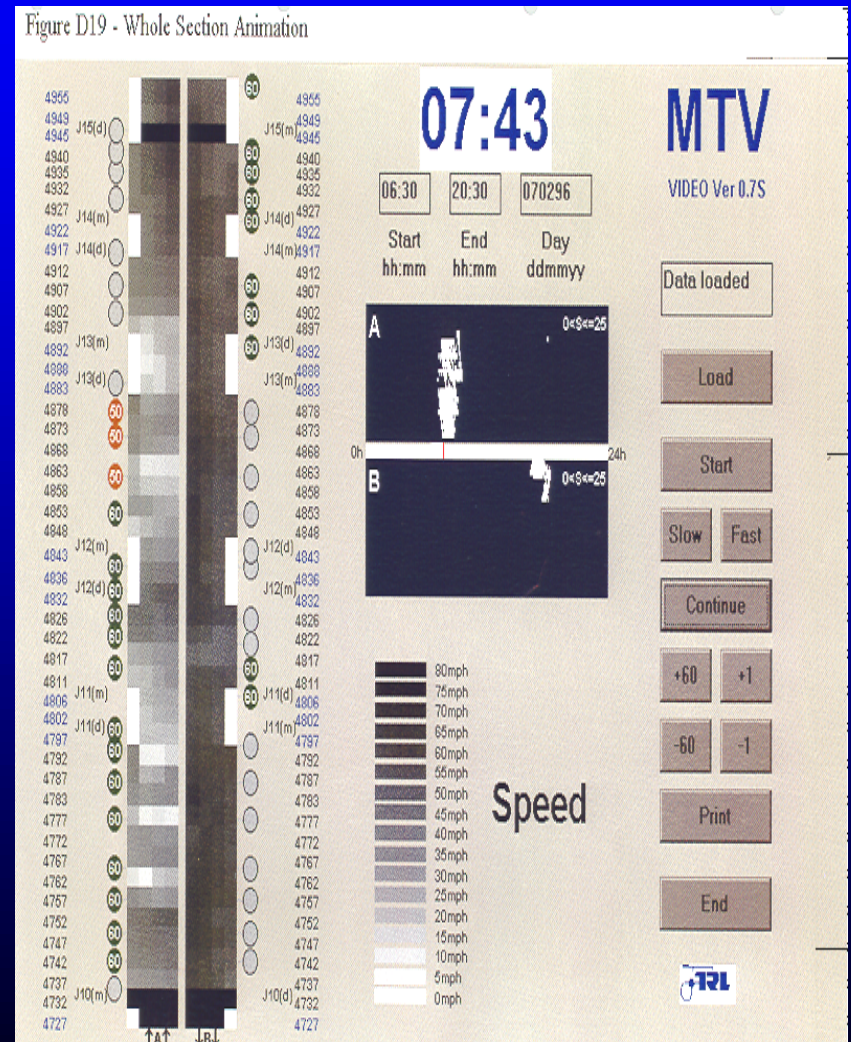
- monitors flow (& speed)
 - predicts flow breakdown
 - reduces speed limit
- monitors speed (& flow)
 - matches speed limit to traffic conditions
- HIOCC queue protection

Traffic Monitoring (1 of 3)



Traffic Monitoring (2 of 3)

- speed limits obeyed
- more even headways
- more even lane use
- less lane changing
- more comfortable



Traffic Monitoring (3 of 3)

- minor improvements in
 - throughputs / capacity
 - journey times
 - safety
 - emission (noise & pollutants)
- often not measurably significant

System Monitoring (1 of 2)

- full technical assessment of :
 - performance vs specification
 - possible improvements
 - possible reduction of costs

System Monitoring (2 of 2)

- very satisfactory results
- improvements
 - e.g. digital camera
 - LED signals
- cost savings
 - e.g. cantilever gantries

The Future (1 of 2)

- Further development through
 - greater use of text on EMS
 - improved incident detection
 - integration with other tactical control systems



The Future (2 of 2)

- extension of pilot to Jct. 16
- business case
- roll out programme
- hypothecation of revenue

Conclusions

- technology proven
- pro-active, real time, traffic management
- good indications of benefits
- case for extension?