

# Steve Kearns - Technology Delivery Group

## Transport for London

Intelligent Transport Systems for Urban  
Areas- Brussels

MAYOR OF LONDON

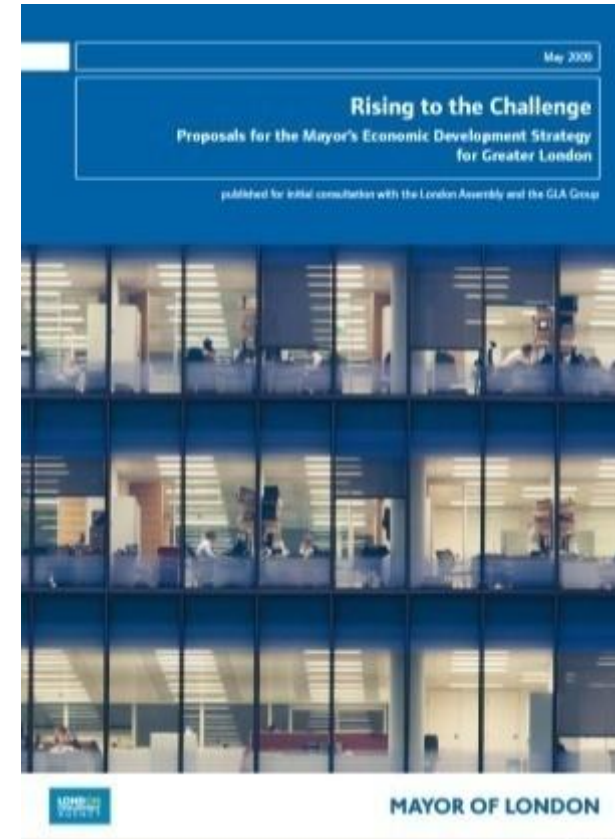
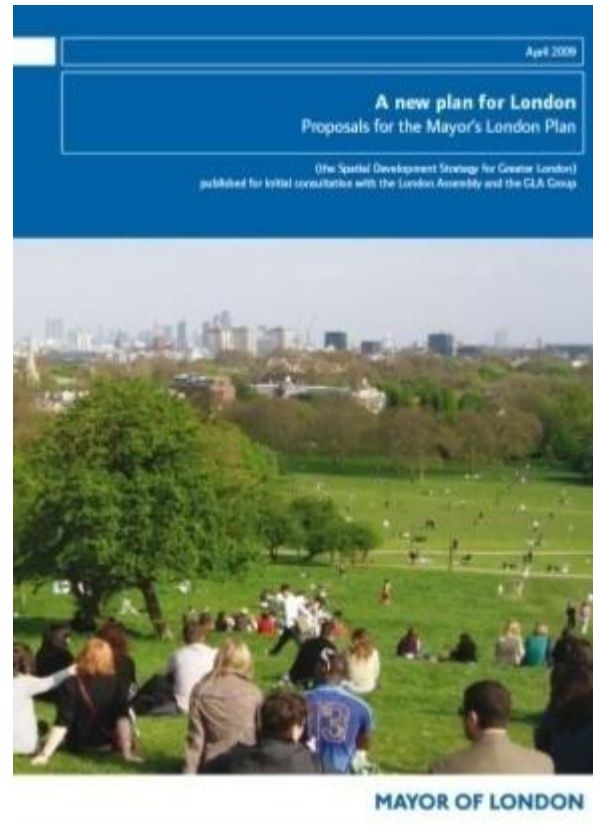
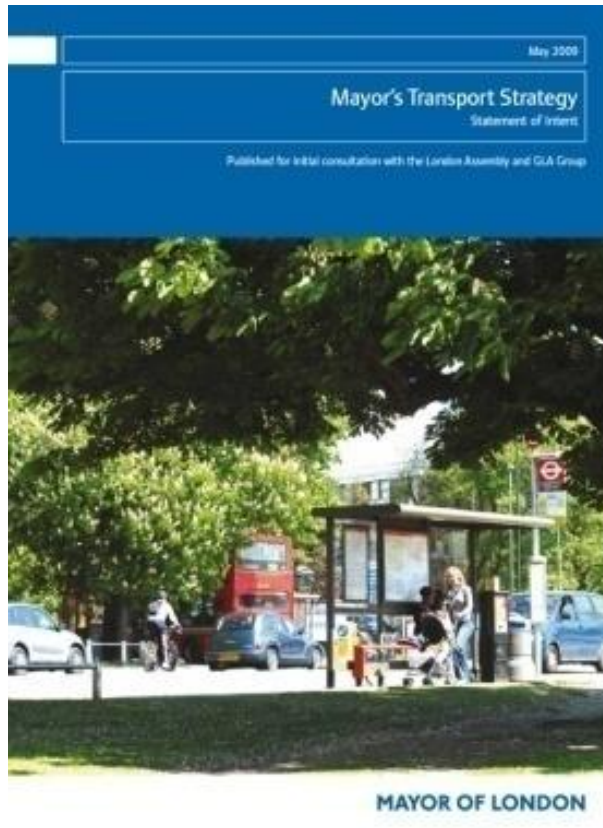
Transport for London



# Contents

- London Context – Mayor's Transport Strategy
- Congestion Charging in London
- London – Managing Road Network

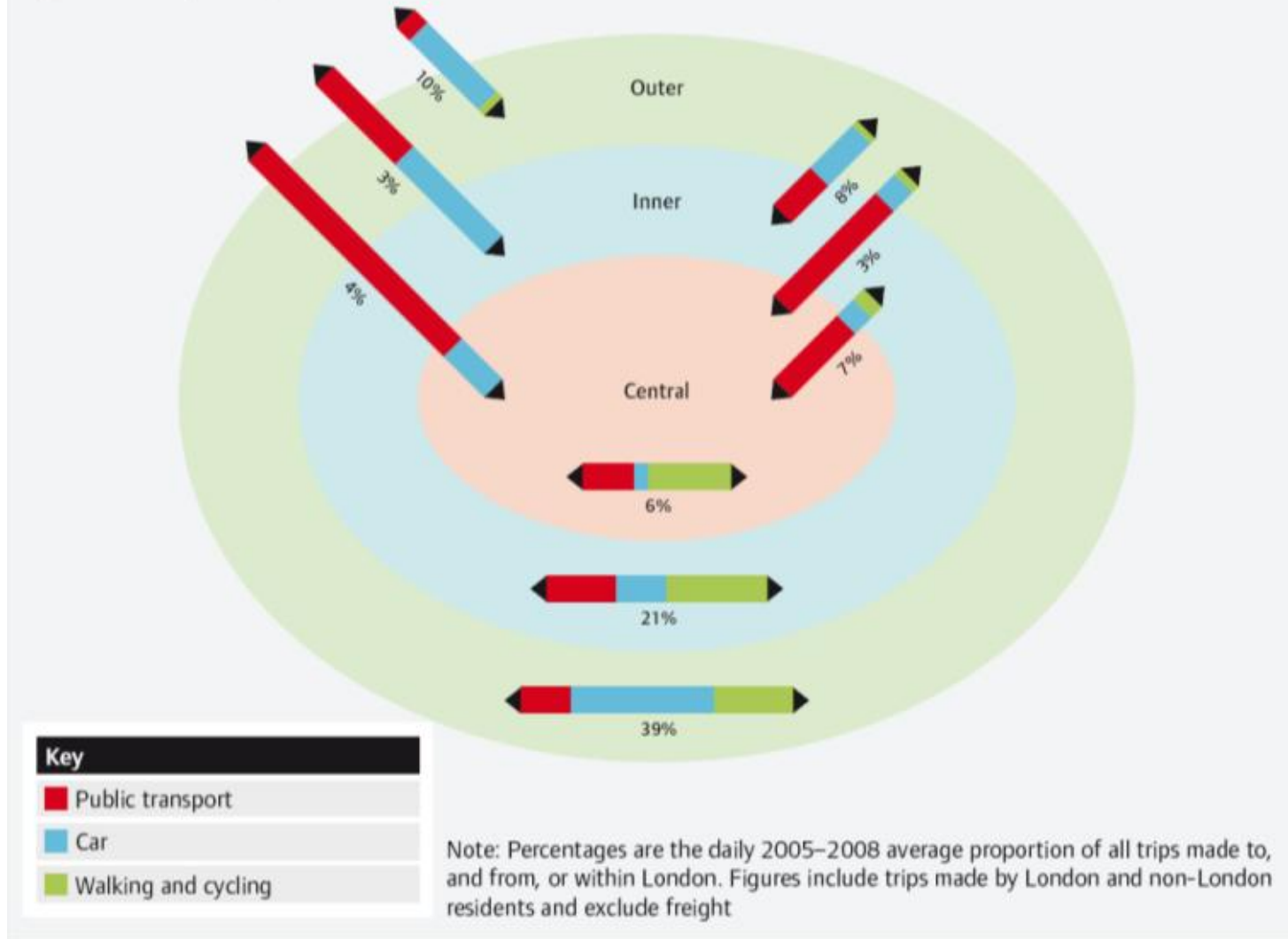






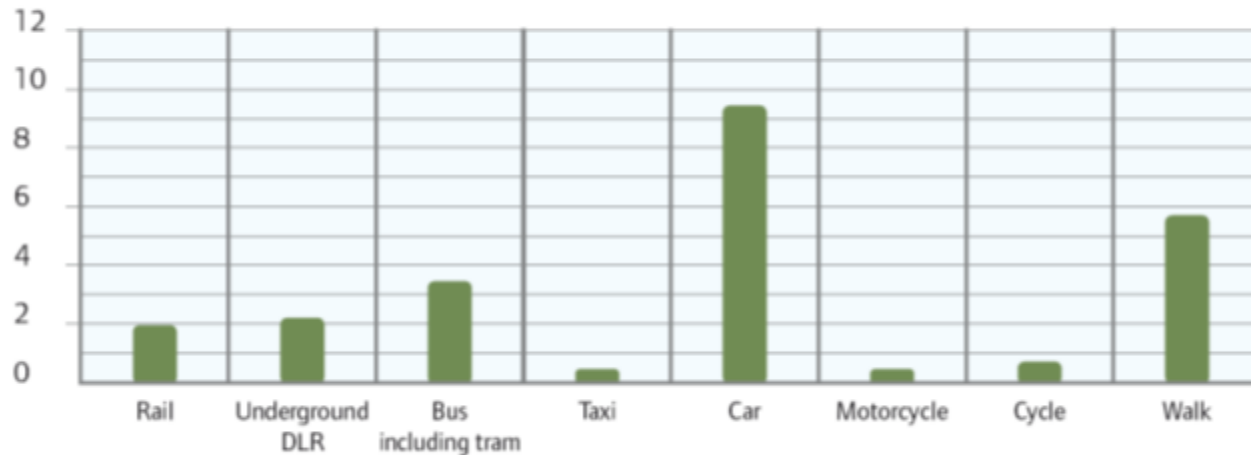
# Current travel patterns in London

**Figure 11:** Spatial pattern of travel across London, with mode shares



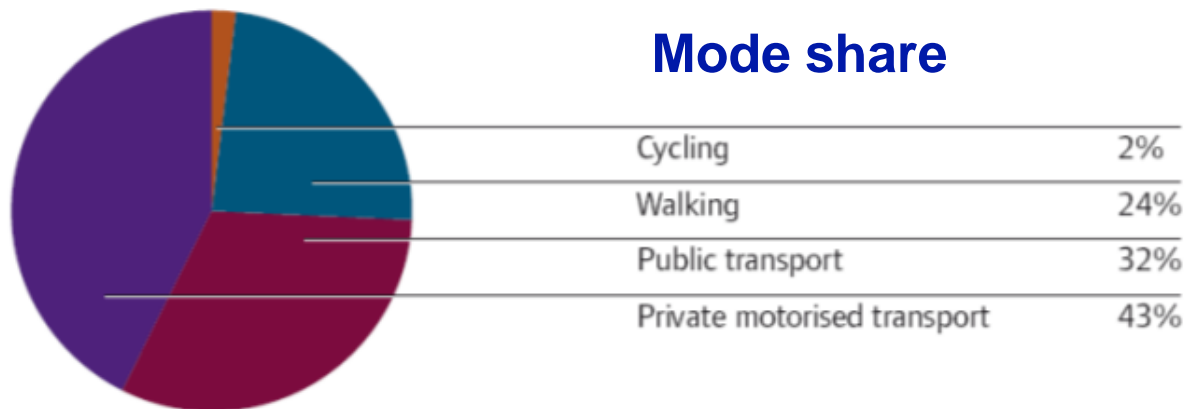
# Current travel demand in London

**Figure 12:** Daily average number of trips (millions) in Greater London, 2007



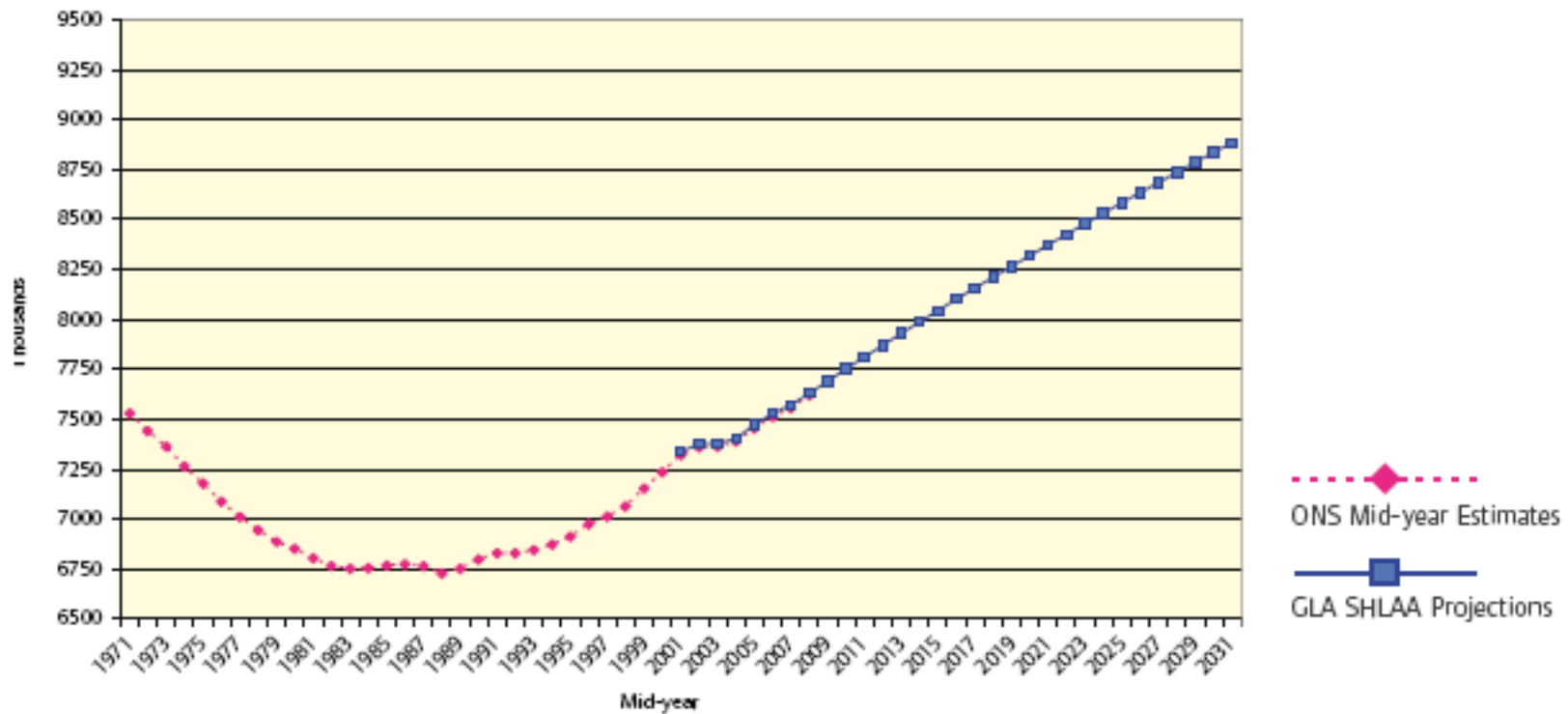
Note: Estimates of the daily average number of trips in Greater London (including trips to, or from, London)

## Mode share



# London Plan population forecasts

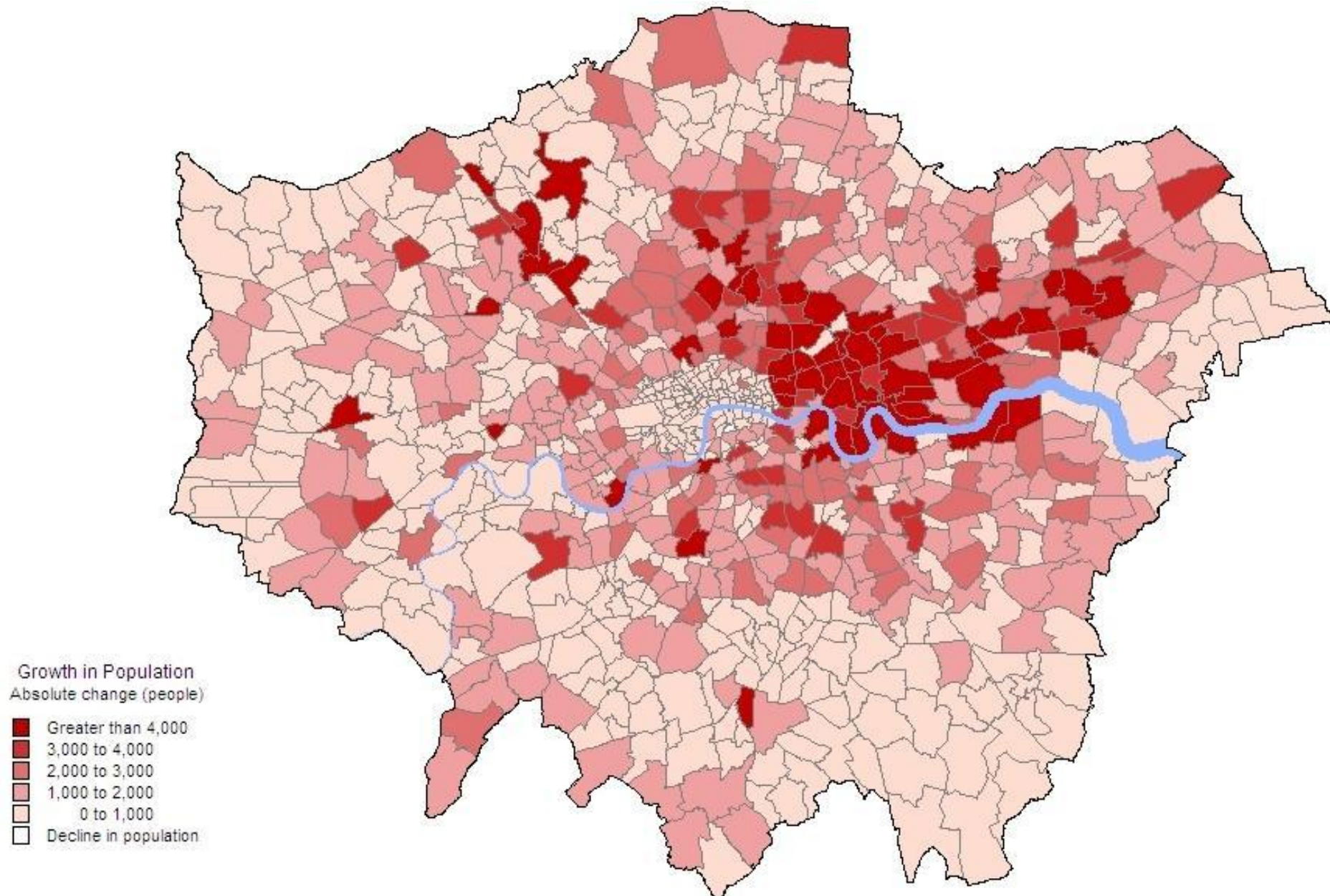
London's population 1971–2031



Source: GLA DMAG



# Distribution of population growth by 2031





# 3 key aspects to MTS policies



Better  
coordination and  
integration of  
planning



Providing further  
transport capacity

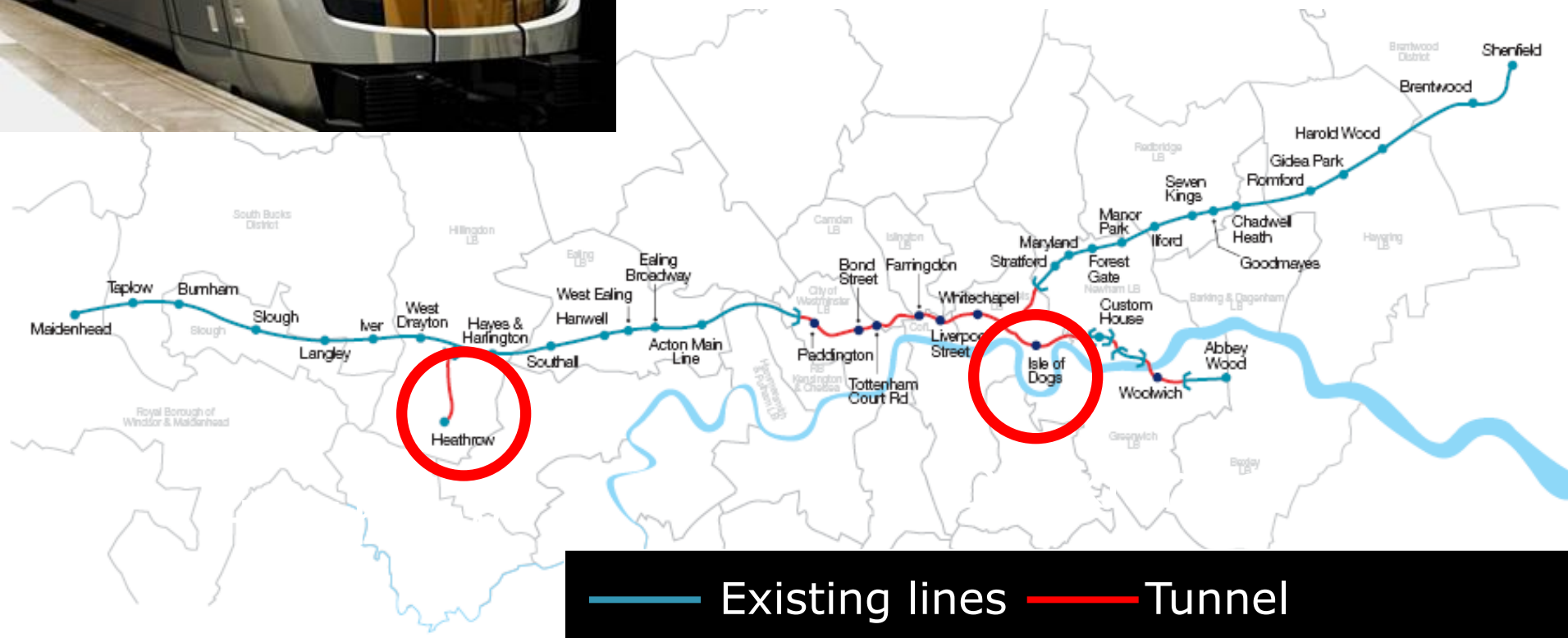


Managing demand  
for transport





# Crossrail



# Orbital connectivity: public transport integration



- Improve interchange opportunities to make orbital journeys by public transport easier
- Provide better information on existing orbital journeys



# Better streets, walking and cycling

## Five stages to improve streets



## Proposals for 'making walking count'

- Better streets
- Making it easier to plan journeys on foot
- Development of the Key Walking Route



## Bringing about a revolution in cycling in London

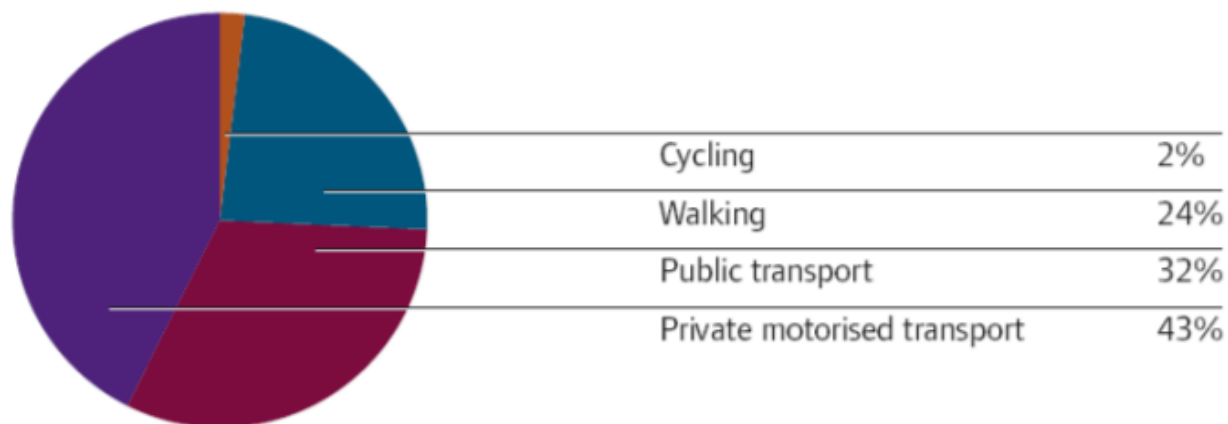
- Working in partnership
- Raising awareness and 'mainstreaming' cycling
- Improving cycle infrastructure, cycle training and safety
- Superhighways and cycle hire



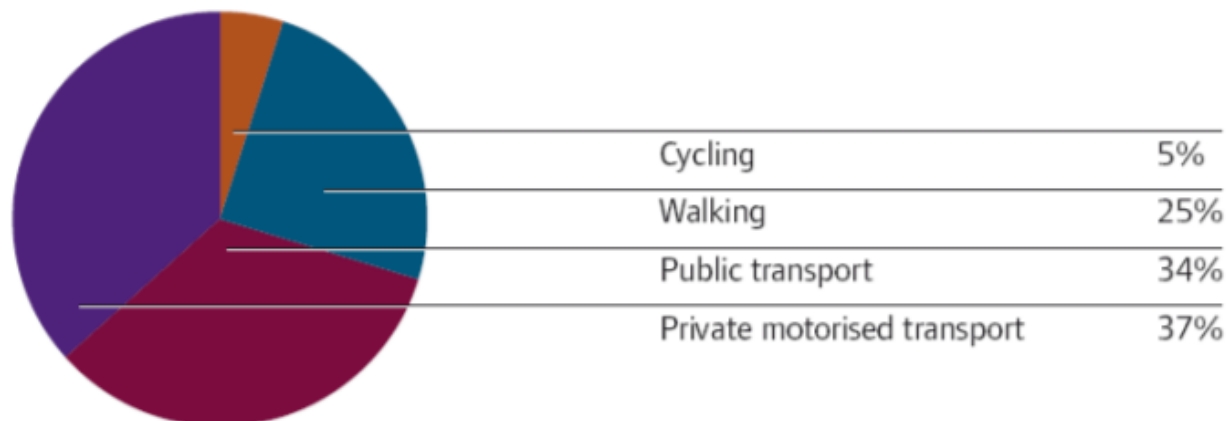


# Forecast mode share

2006



2031



Note: Do not add up to 100 due to rounding

# **Congestion Charging in London**



# London's transport problems

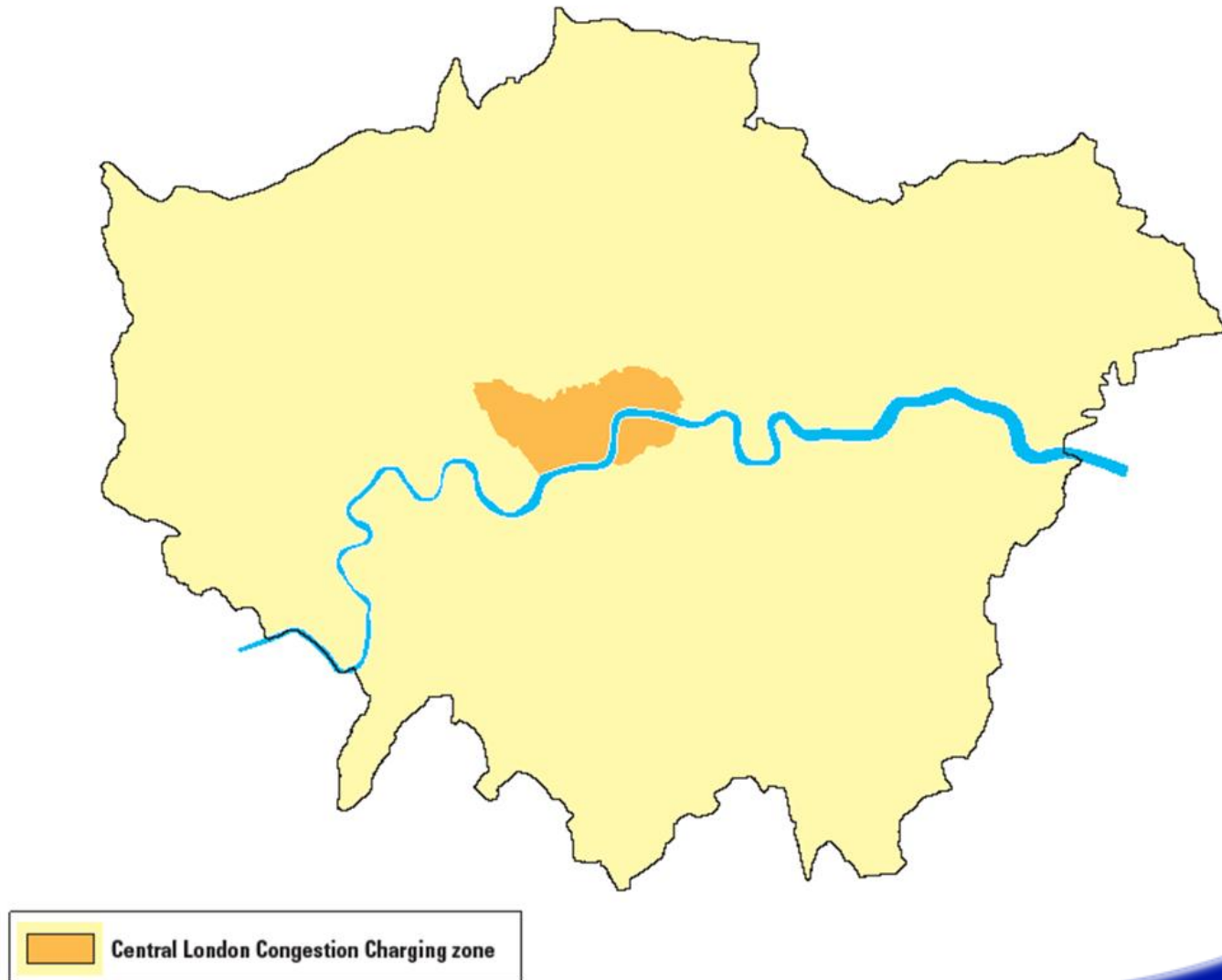




## Westminster Bridge – End of 19<sup>th</sup> Century



# Central London Congestion Charging Zone



# Central London Congestion Charging Zone





# Charge payment

- Daily, weekly, monthly or annual payment for individual vehicle registration number
- Flat charge of £8 per day (was £5 until July 2005) until midnight
- Monday – Friday, 7am – 6pm (was 6.30pm until February 2007)
- Pay Next Day introduced June 2006
- Increase planned to £10 per day (£9 for automatic accounts) in December 2010



# Traffic impacts of Congestion Charging

## Central zone

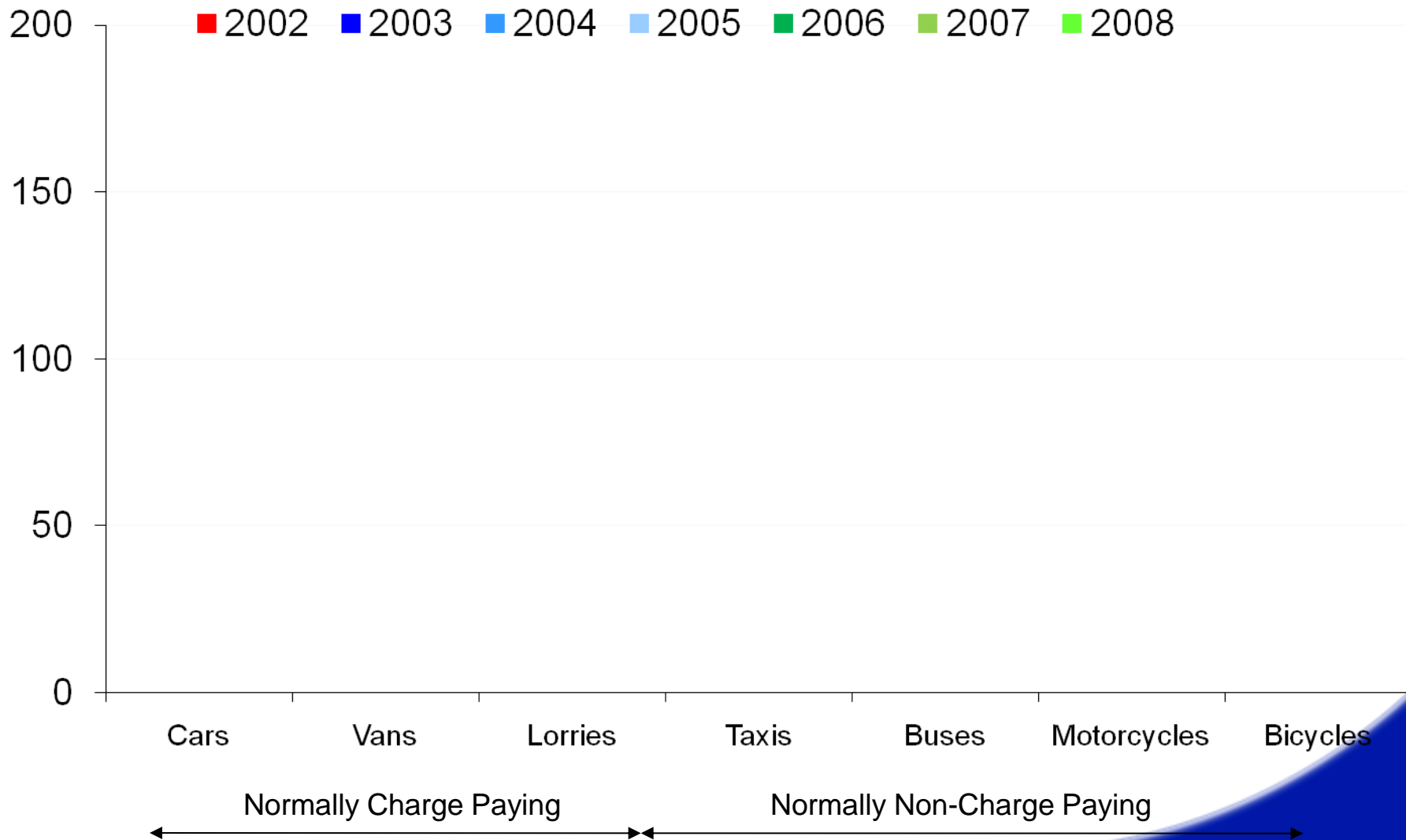
- 25% reduction in traffic (4 or more wheels) entering the zone – has remained constant
- 70,000 fewer vehicles per day
- Bus patronage up, bus services performing better
- Little change in trips to central area with 50-60% moving to public transport

## Western extension

- 19% reduction in traffic entering extension
- 30,000 fewer vehicles per day
- Increase in bus passengers



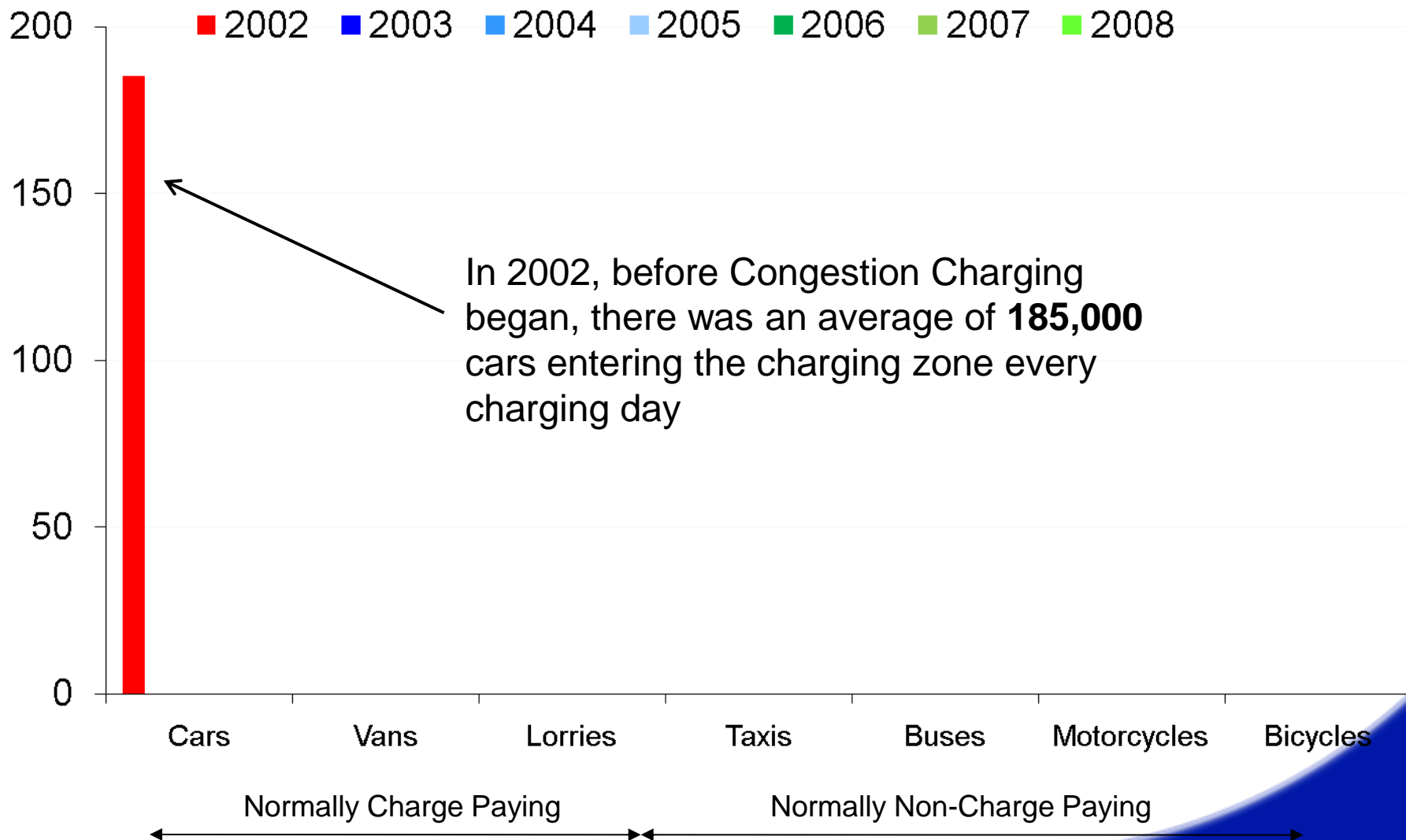
## Average daily traffic entering original charging zone\*



\* During charging hours (07.00-18.00)



## Average daily traffic entering original charging zone\*

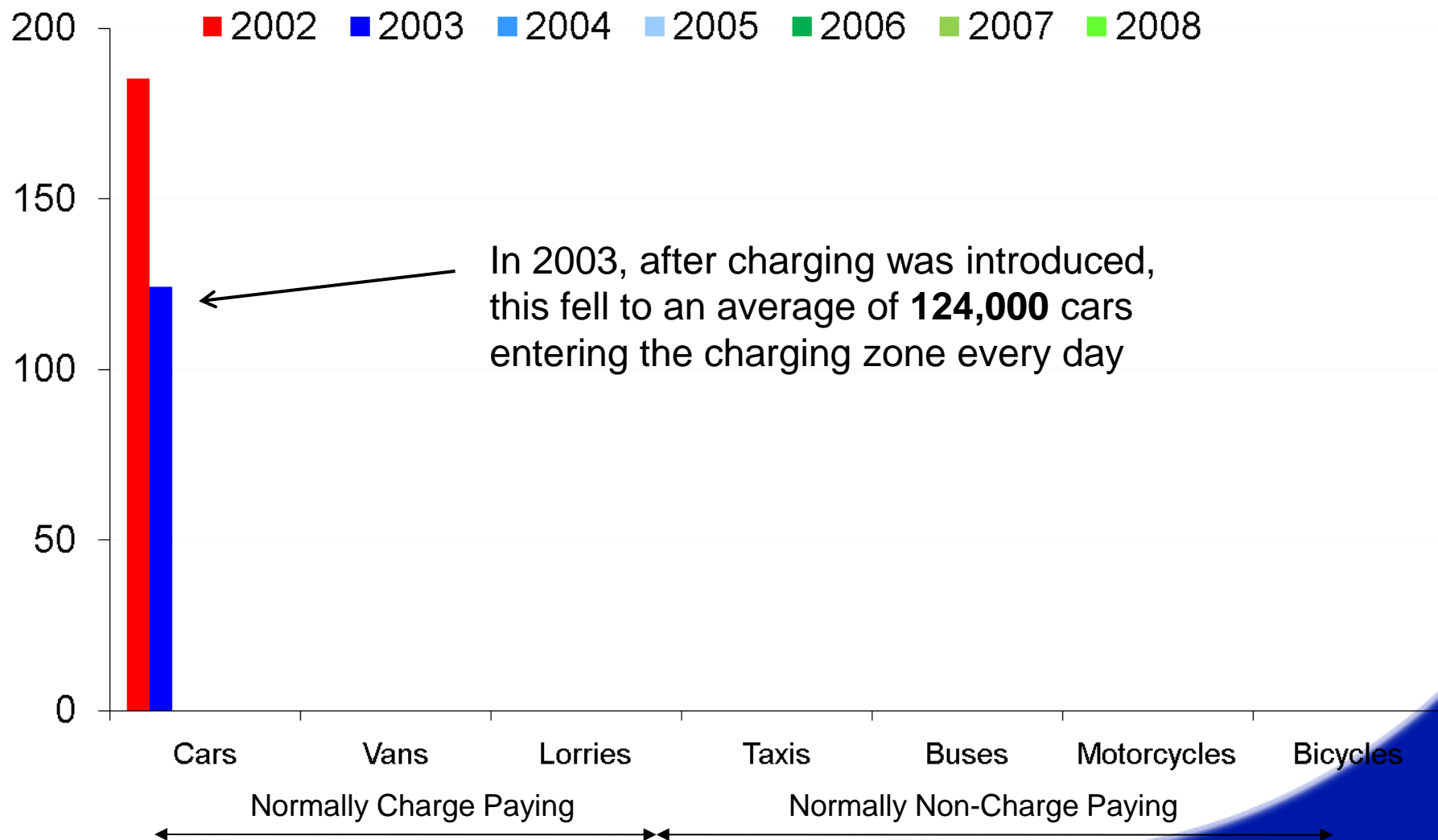


\* During charging hours (07.00-18.00)





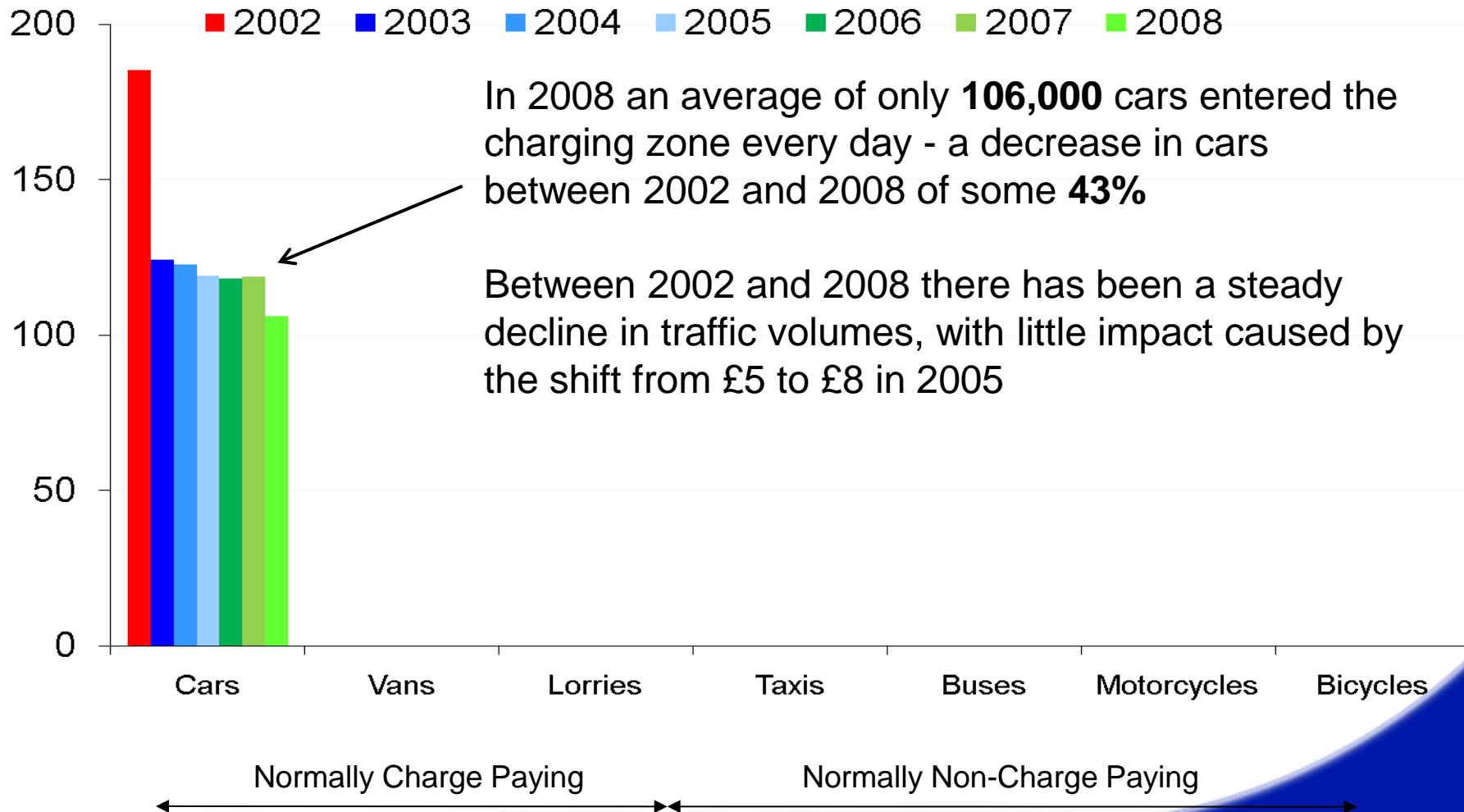
# Average daily traffic entering original charging zone\*



\* During charging hours (07.00-18.00)



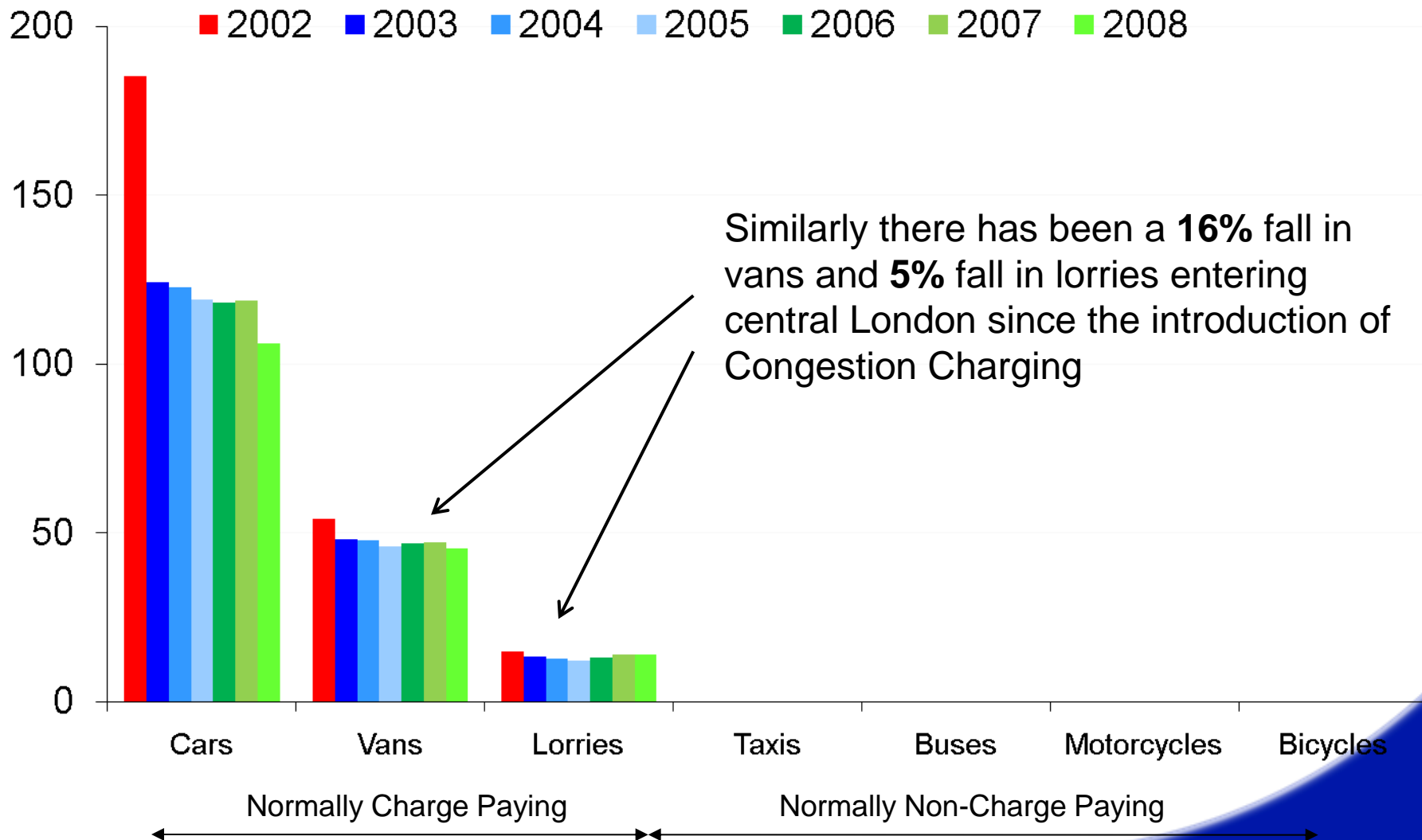
## Average daily traffic entering original charging zone\*



\* During charging hours (07.00-18.00)



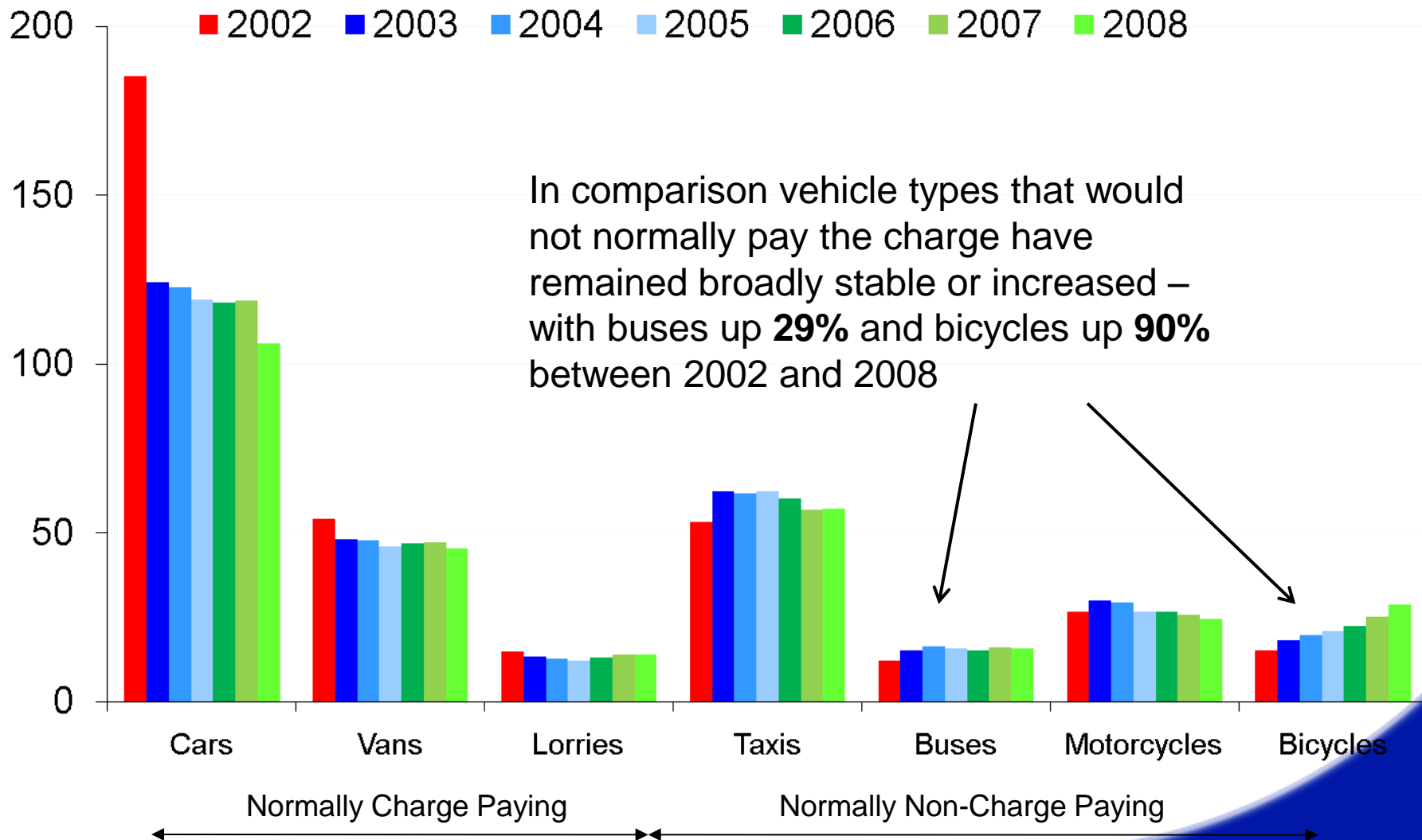
## Average daily traffic entering original charging zone\*



\* During charging hours (07.00-18.00)



## Average daily traffic entering original charging zone\*

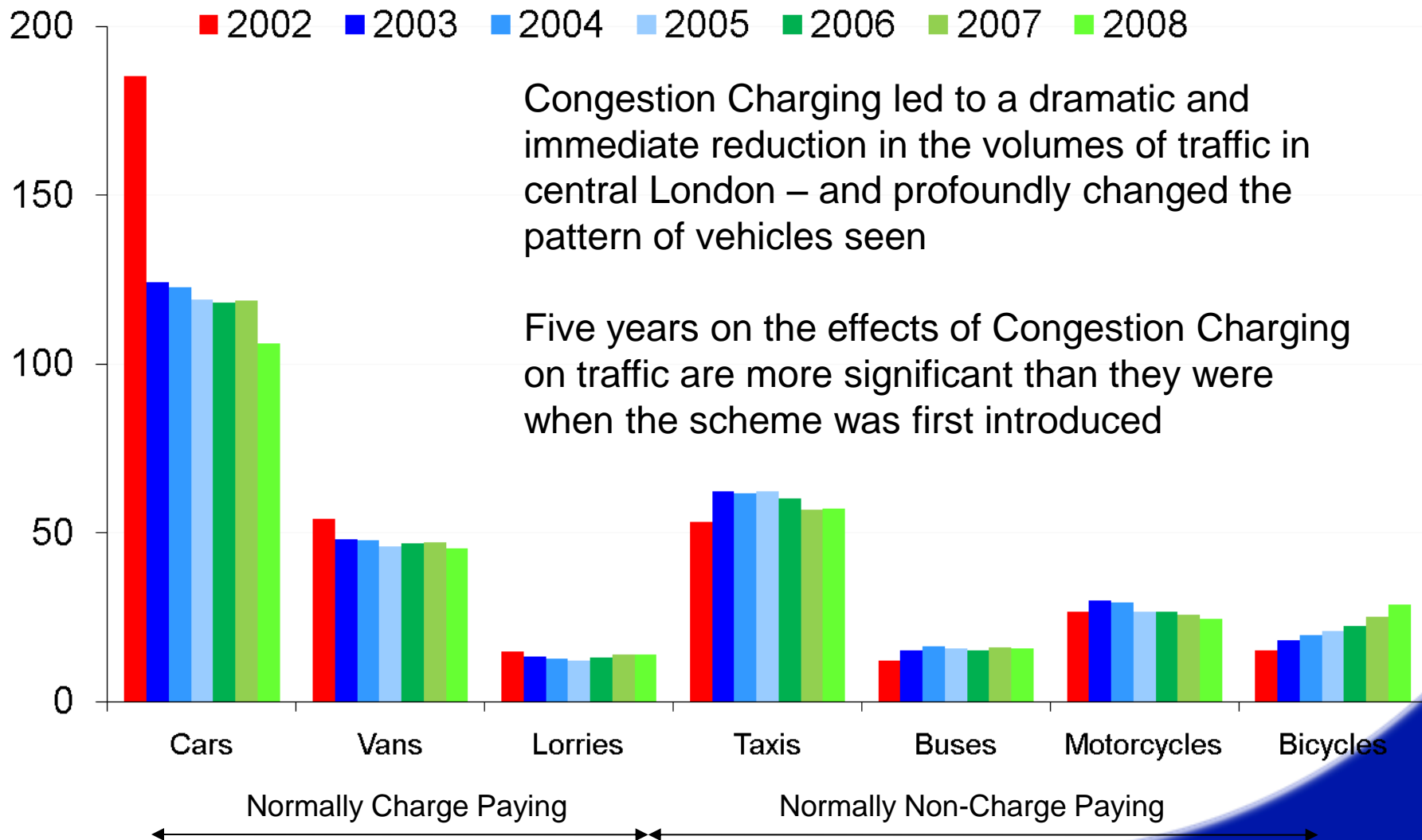


\* During charging hours (07.00-18.00)





## Average daily traffic entering original charging zone\*



\* During charging hours (07.00-18.00)



# Congestion

- Congestion in central zone was initially down, but has gradually increased despite reduced traffic levels:
  - 2003: 30% down
  - 2005: 21% down
  - 2006: 8% down
  - 2007: no change
  - 2008: no change
- In early months of the WEZ, significant congestion reductions, but recent results show congestion now similar to pre-extension levels
- Traffic levels still reduced - increased congestion due to decreased effective capacity as a result of road works and road space allocation to improve conditions for other users

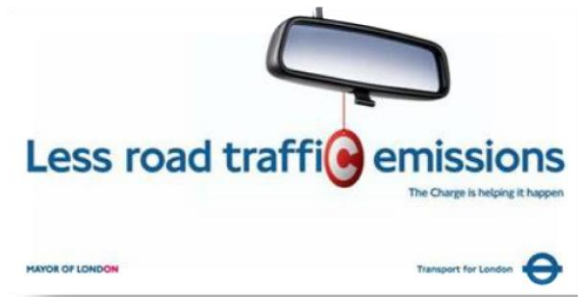


# So why has congestion returned?

- Reflects a reduction in effective capacity of road network for general traffic
  - Urban realm improvement schemes (e.g. Trafalgar Square)
  - Pedestrian, cyclist and bus priority measures
  - Increased road works by utilities (particularly water mains) and major developments (e.g. Scotch House Corner development in WEZ)
- Important to balance priorities – activity being undertaken to address congestion levels



# Other impacts



- Economy
  - Broadly neutral impact overall on business
- Environment
  - Improved vehicle technology and the introduction of charging have led to reductions in CO<sub>2</sub>, NO<sub>x</sub>, & PM<sub>10</sub>
- Road safety
  - Reduced numbers of cars have led to less personal injury road accidents in the central zone





# Revenues

- Net revenues by law must be spent on transport
- Raised total of £268m in 2007/8
  - Scheme costs totalled £131m
  - Net revenues therefore £137m
- Allocation of 2007/08 revenues was
  - £112m - Bus improvements
  - £13m - Roads and bridges
  - £4m - Road safety
  - £4m - Walking and Cycling
  - £2m - Borough plans
  - £2m - Environment



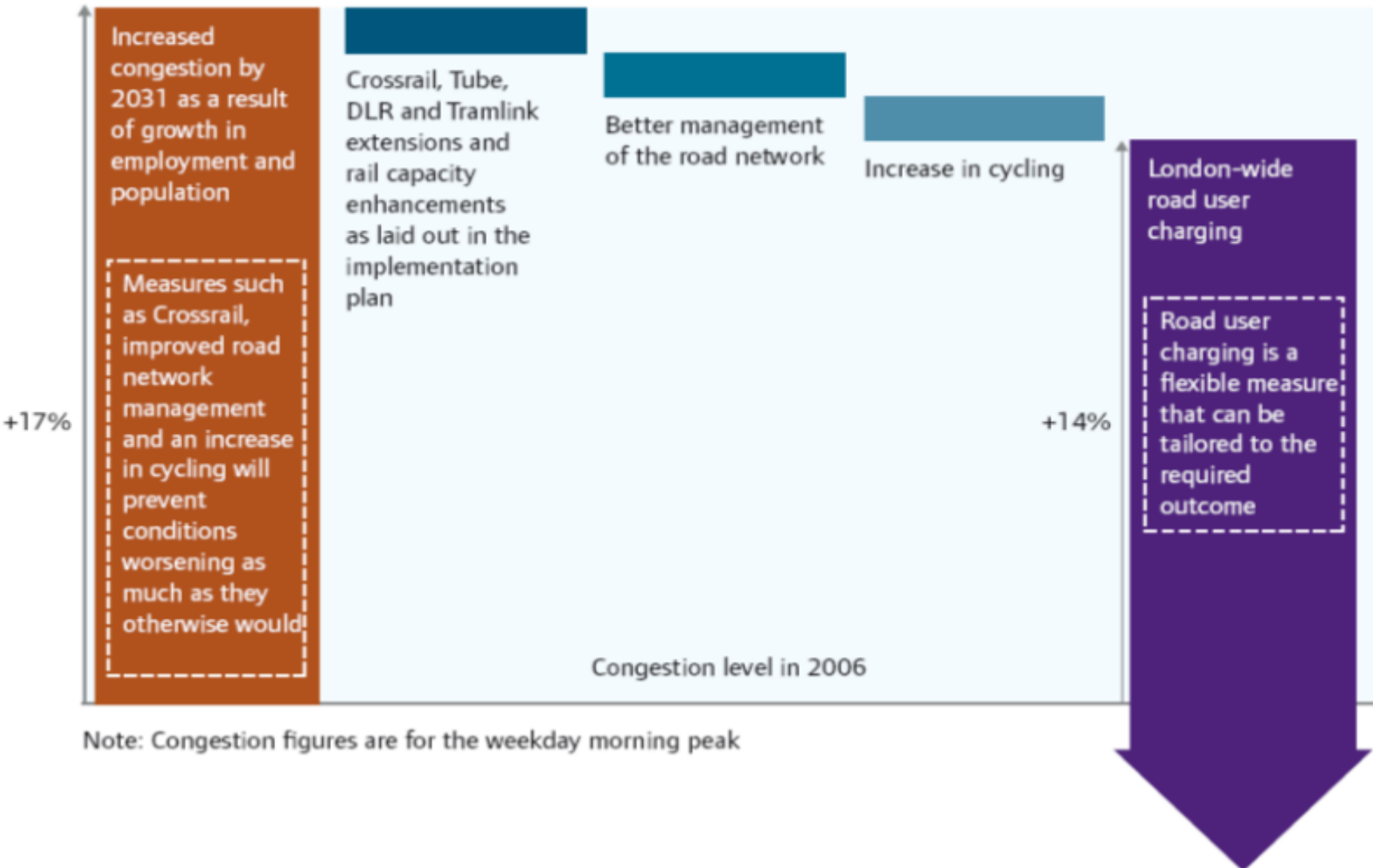
# WEZ Consultation

The Mayor's election manifesto included a commitment to hold a consultation on the future of the Western Extension of the Congestion Charging Scheme.



# Managing the road network

## Mitigation of increased road congestion through a range of policy levers



# **London – Managing Road Capacity**







# Case study - Managing the road network



# The Mayor's Transport Strategy – Smoothing Traffic Flow



- Smoothing traffic flows to better manage congestion
- Maximise efficiency of road network
- Increased focus on journey time reliability
- Selection of routes where percentage of journeys to be completed within 5 minutes of specified, typical time
- Ultimately reduce CO<sub>2</sub> emissions as flow of traffic will be constant

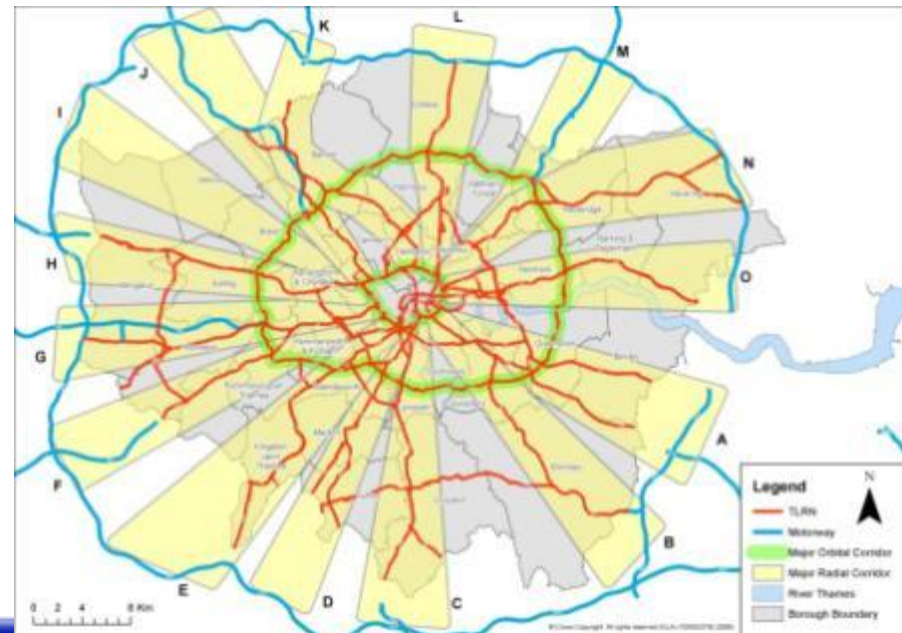




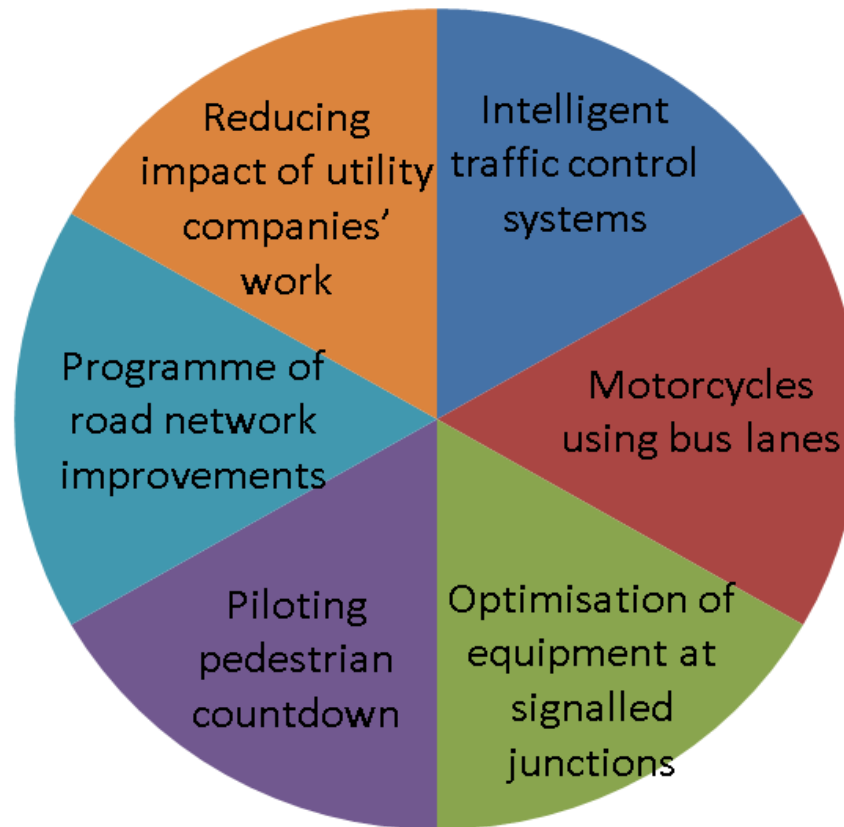
# Managing the Road Network : key elements

- Journey Time Reliability and Smoothing Traffic Flow'
- Capacity and resilience
- Safety
- State of good repair
- Better streetscapes
- Environmental outcomes
- Customer outcomes
- Efficiency

ITS has a considerable role to play



# Smoothing Traffic Flow – 6 Major Elements



# Traffic Operations in London

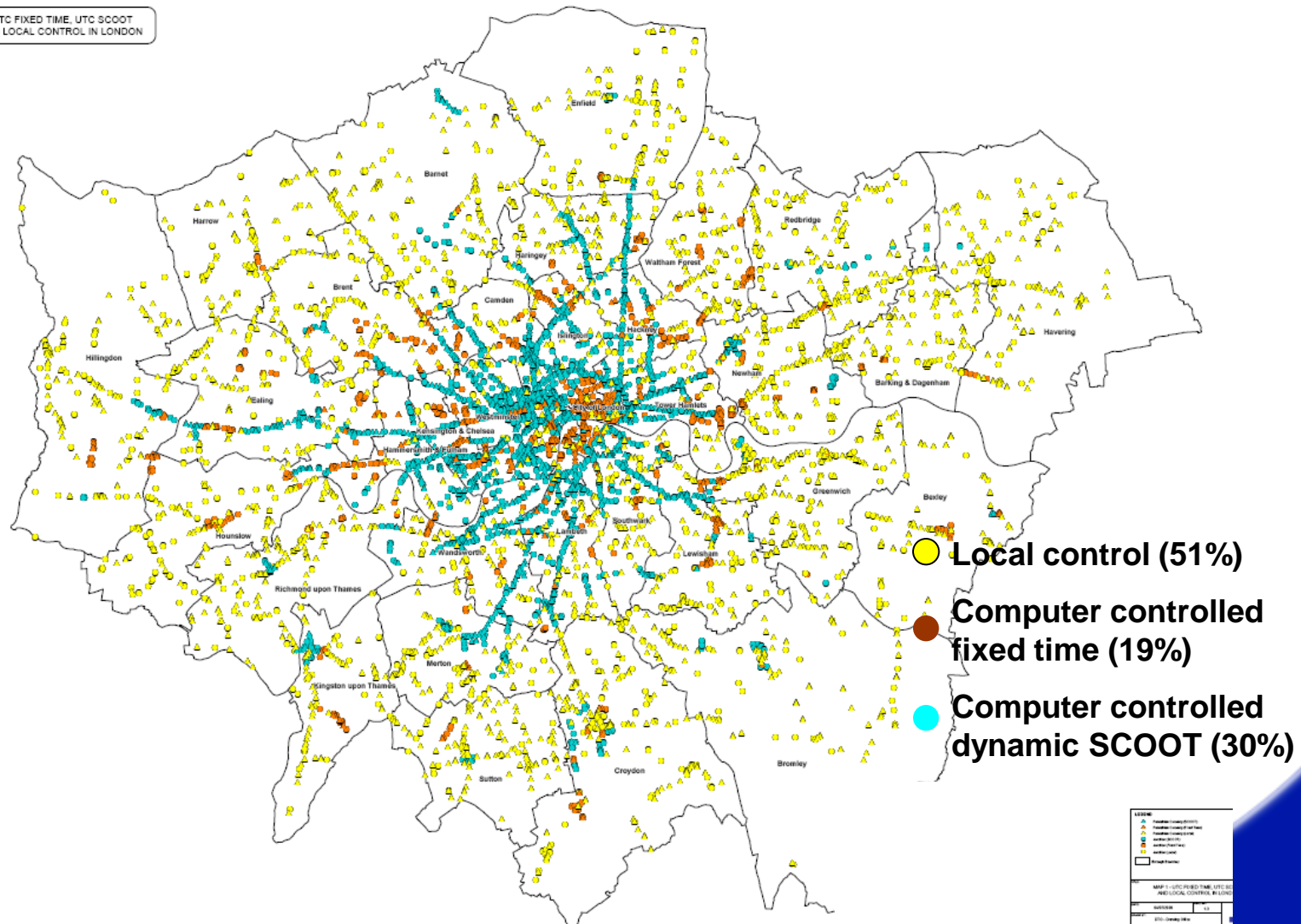
- London's Traffic Signal Authority
- 6,000 sets of signals (50% computer controlled)
- London Streets Traffic Control Centre – real time intervention, 24/7
- 1200 CCTV
- 1900 ANPR monitoring and enforcement cameras
- 135 variable message signs





# Traffic signal coverage

UTC FIXED TIME, UTC SCOOT  
AND LOCAL CONTROL IN LONDON



# Traffic Signal Timing Reviews

- Year 2000 = timings reviewed once every 27 years
- Year 2009 = UTC signals and other critical sites reviewed once every 3 years
- Timing Review :
  - responds to local feedback
  - balances local demands
  - accounts for local land use changes
  - tackles persistent congestion



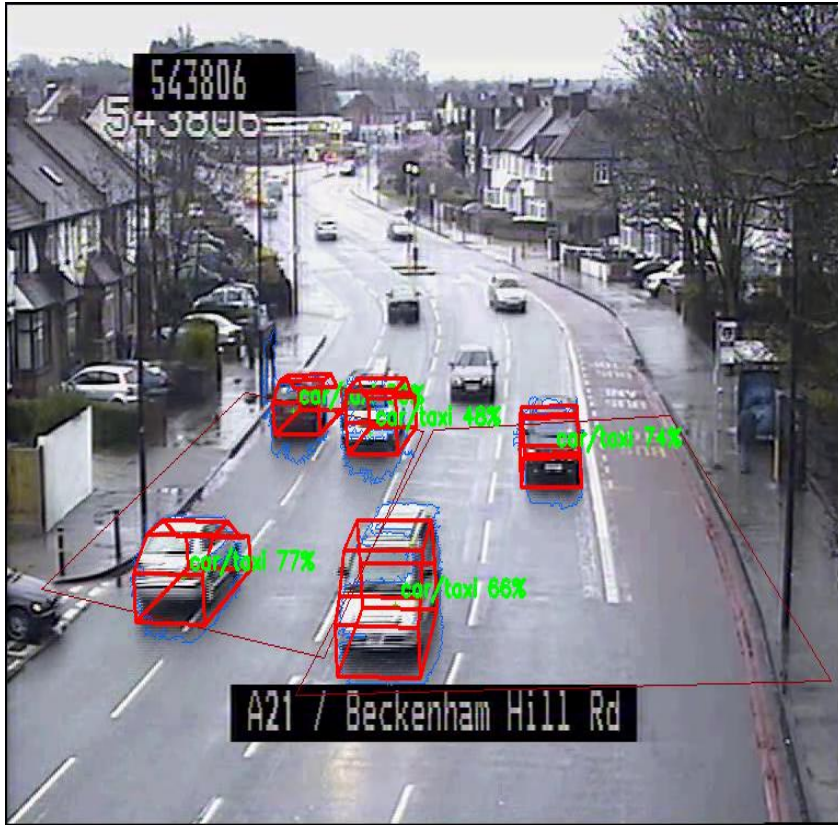
# Timing Review – Road Traffic Goals



- Network stability and resilience
- Target degree of “saturation”
- Practical limits on signal cycle time



# IRID - Image Recognition and Incident Detection



# Measuring Smoothing Traffic Flow

---

## Definition:

The Mayor's aim in smoothing traffic flow is to:

*'Increase the reliability and predictability of journeys, including by tackling "stop-start" traffic conditions which increase emissions of harmful pollutants'*

The aim of the work is to improve conditions for existing road users (including cyclists and pedestrians), not to create additional capacity that would increase car journeys



# Why journey time reliability is so important

- Cost to the economy – lost productivity due to delays and mitigations (e.g. allowing more travel time to compensate for delays)
- CBI London business survey (December 2008) reported that 78% of respondents thought the quality and reliability of the road network was less than satisfactory or poor.

Source: <http://www.cbi.org.uk/pdf/20090218-CBI-Time-to-Change-Gear.pdf>

- Unreliability can affect the supply chain and significantly increase costs for the freight sector (especially just-in-time deliveries)



# Measuring Smoothing Traffic Flow

---

## Journey Time Reliability:

The new draft MTS identifies the need for such a measure, and defines it as:

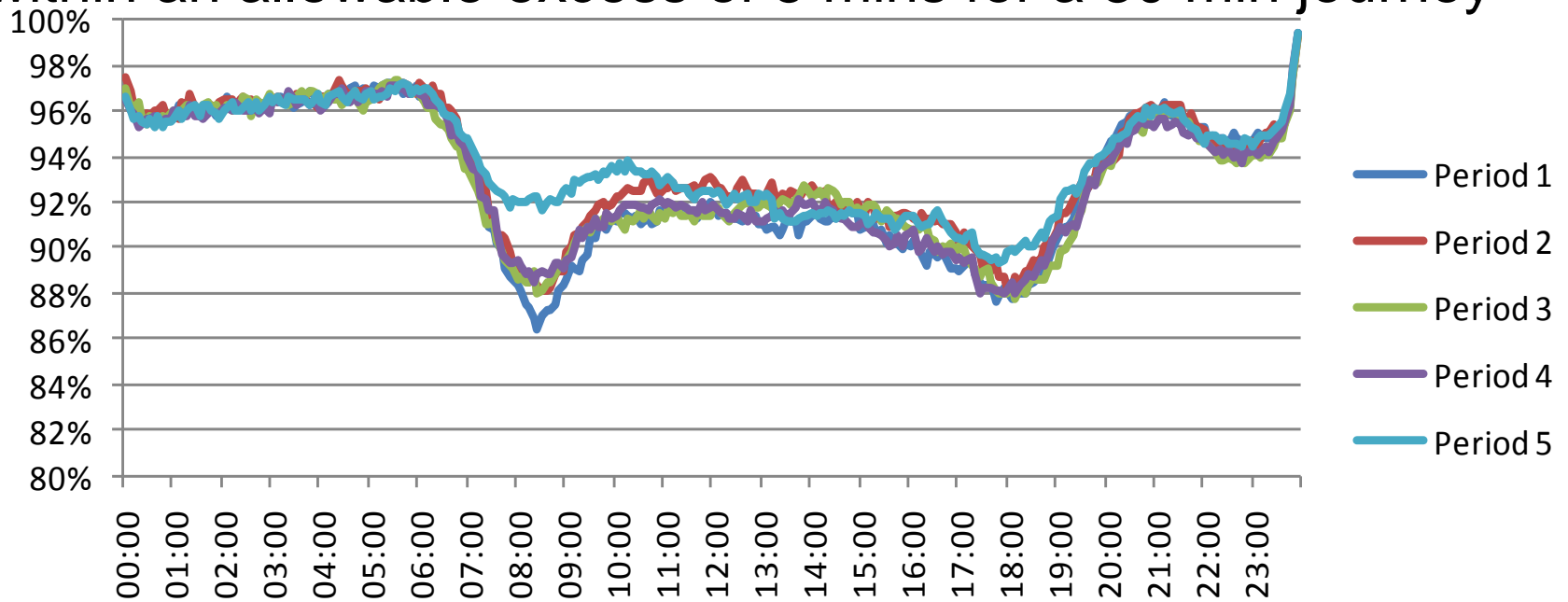
*‘...the Percentage of journeys completed within 5 minutes of a specified typical journey time’*

*(This ‘specified typical journey time’ has been assumed to equate to an average 30 minute journey, representative of all journeys across London)*

Journey time reliability is the KPI for smoothing traffic flow

# Measuring Smoothing Traffic Flow

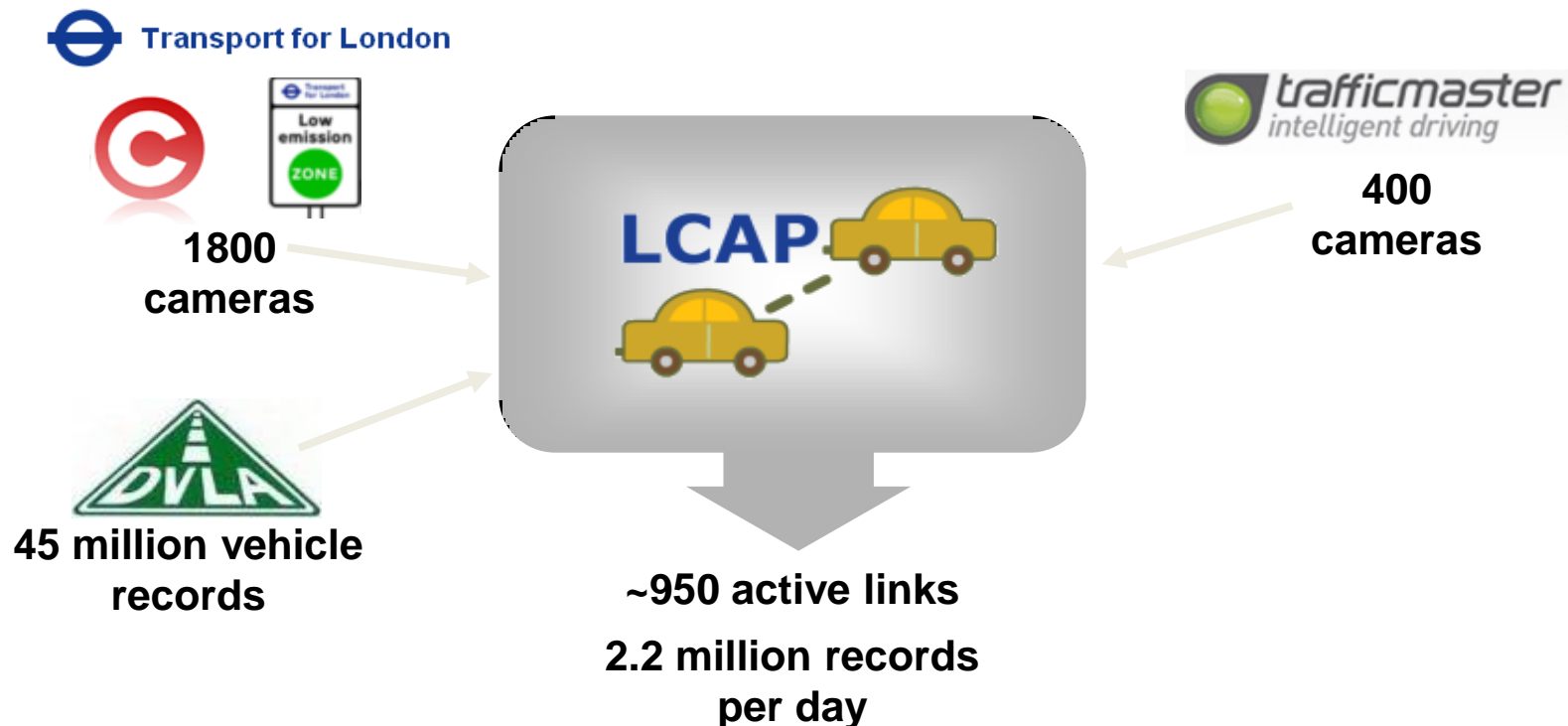
**Average Journey Time and 'Allowable' Variation from the Mean**  
Percentage of journeys on major roads in London completed within an allowable excess of 5 mins for a 30 min journey



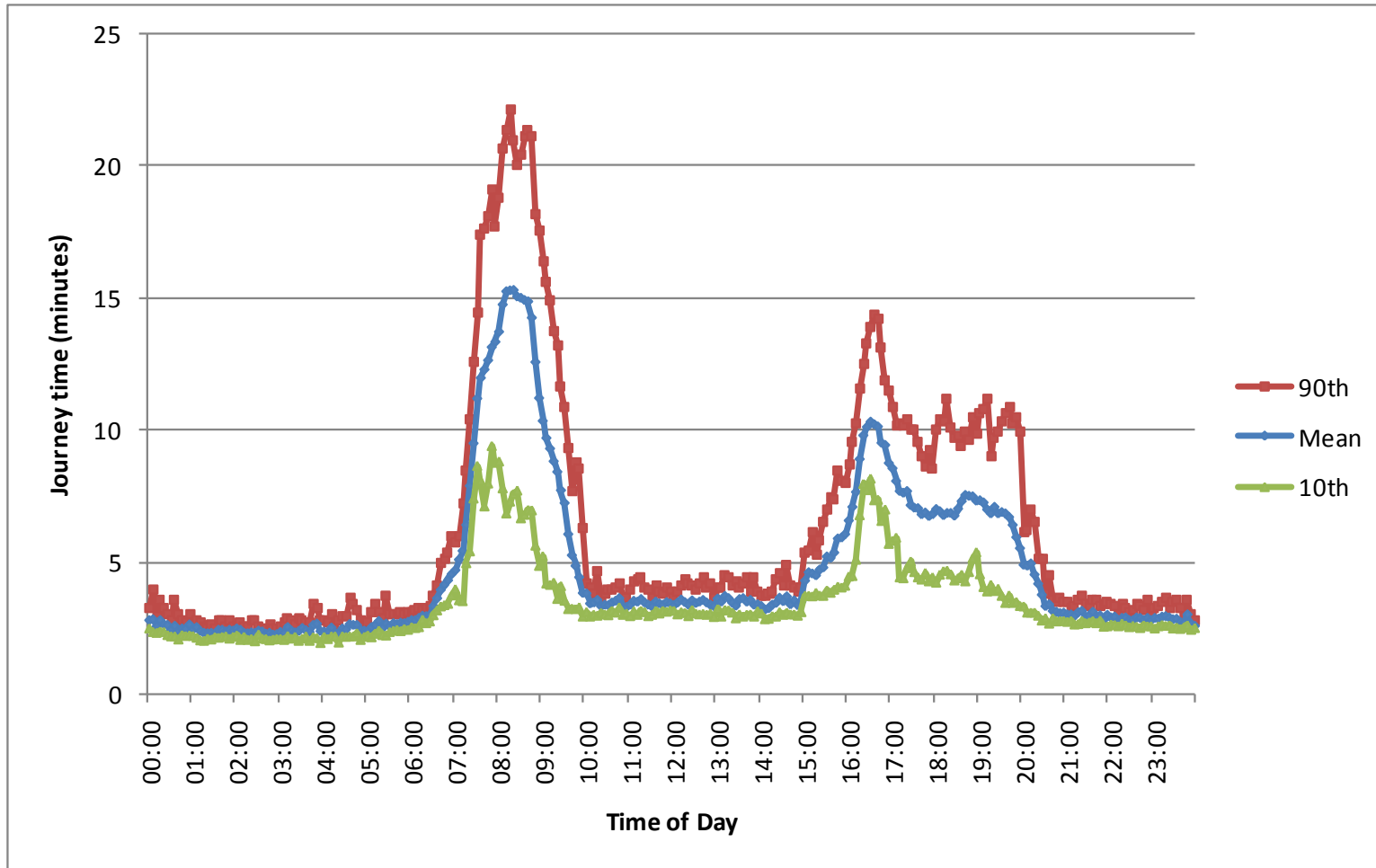
# What is LCAP?

## *London Congestion Analysis Project*

A system that takes raw data from available sources of Automatic Number Plate Recognition (ANPR) cameras and turns it into valuable journey time information



# An example LCAP 24-hour profile





# Walking and cycling

---

- Detection of pedestrians
- Detecting cyclists at signals
- Reliable detection of cyclists at automatic traffic counts
- Pedestrian countdown at traffic signals
- Enhanced walking and cycling travel planning facilities and mapping
- Cycle superhighways
- London Cycle Hire Scheme...



# London Cycle Hire Scheme



- Launches Summer 2010
- Cashless - Payment via account (use of debit/credit cards)
- Available 24 hours a day
- Chip-enabled membership keys will provide faster and easier access to cycles

- 400 docking stations, spaced approximately every 300 metres
- 10,200 docking spaces
- 6,000 bicycles



# Pedestrian Behaviour at Traffic Signals

## research results

- Published at <http://londonroadsafety.tfl.gov.uk/>
- Nine signal sites in London (all-red junctions) where Green man reduced (9 / 10sec to 6sec) and time re-allocated to traffic green
- Pedestrians observed (video analysis), on-street interviews, accompanied walks with impaired road users
- Conclusions
  - Safety neutral, even with increasing non-compliance
  - 2/3 confused about what blackout means
  - More impaired pedestrians noticed the change (felt more rushed, unsafe)
  - General population did not notice the change
  - Pedestrian speeds were unaffected
  - Improved traffic throughput



# Timing Review – Pedestrian Goals



- Pedestrian 'degree of saturation' (over crowding)
- Duration of the invitation to cross (green man)
- Signal Cycle time



# Pedestrian Countdown

An example from Auckland





# Freight – loading and parking

## **Loading bay reservation system**

- Cooperative Vehicle Infrastructure Systems (CVIS) trial of booking system for a freight loading bay

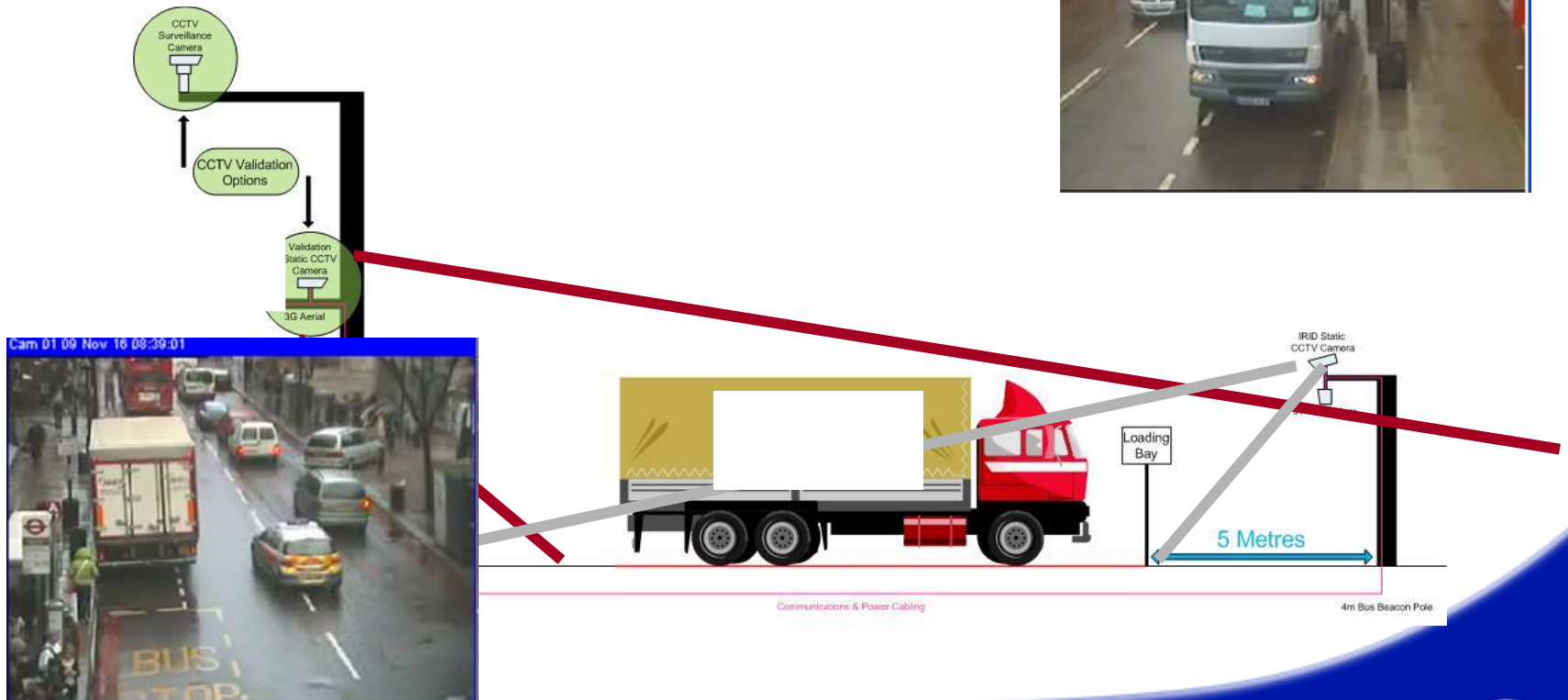


## **Freight specific sat-nav information**

- Exploring how size / weight and stopping / loading restrictions can be made available through sat-nav databases
- Improve availability of dynamic data such as congestion and journey time



# CVIS Trial in London



# CVIS Roadside Signage



# CVIS Enforcement



# Driver training

---

- First Group trial in 1,000 buses in London using in-vehicle monitoring devices
- Real-time feedback on driving style and driving reports to focus training
- Around 5% fuel saving
- Explore possibility of similar applications for other professional drivers



# Future development / Issues for Discussion

## **Congestion Charging**

- Primary issue concerns public acceptability
- ITS role in refining charging systems to make them more equitable
- Political support is critical – *role for EC?*

## **Traffic Management – role for ITS**

- Improved traffic management tools for rapid detection and response to disruption – *real time information*
- Improved detection of pedestrians and cyclists
- V2V and I2V communications
- Situational Awareness ; leading to a predictive capability

## **Input from EC**

- More focused towards needs of (big) cities *eg ITS Action Plan*
- Facilitating role to bring comparable cities together
- Encouraging cities to become more involved with call writing
- Industry needs to fully take into account transport needs of cities
- Less bureaucracy, please !!!





**[www.tfl.gov.uk](http://www.tfl.gov.uk)**

