

# Monitoring and Improving Bus Performance



**Presentation to London TravelWatch  
15 April 2014  
Alex Moffat**

# Agenda

- **Reliability (QSI) monitoring**
- **Quality Incentive Contracts**
- **Using iBus to improve bus service reliability**
- **Curtailments (Short Turning)**
- **Using iBus to prioritise investment**
- **Bus priority to help improve reliability**



# Key Facts – Bus Operations

- Buses operate 24 hours per day, 7 days per week
- 700 routes (from 1 to 50+ buses)
- 8,600 buses
- 24,000 drivers
- 19,000+ bus stops, 30 bus stations



# Monitoring objectives

- Provide a comprehensive representation of the bus service quality from a passenger perspective
- Incentivise bus operators to provide good performance
- Identification and investigation of poor performance
- Continuous improvement in services to passengers



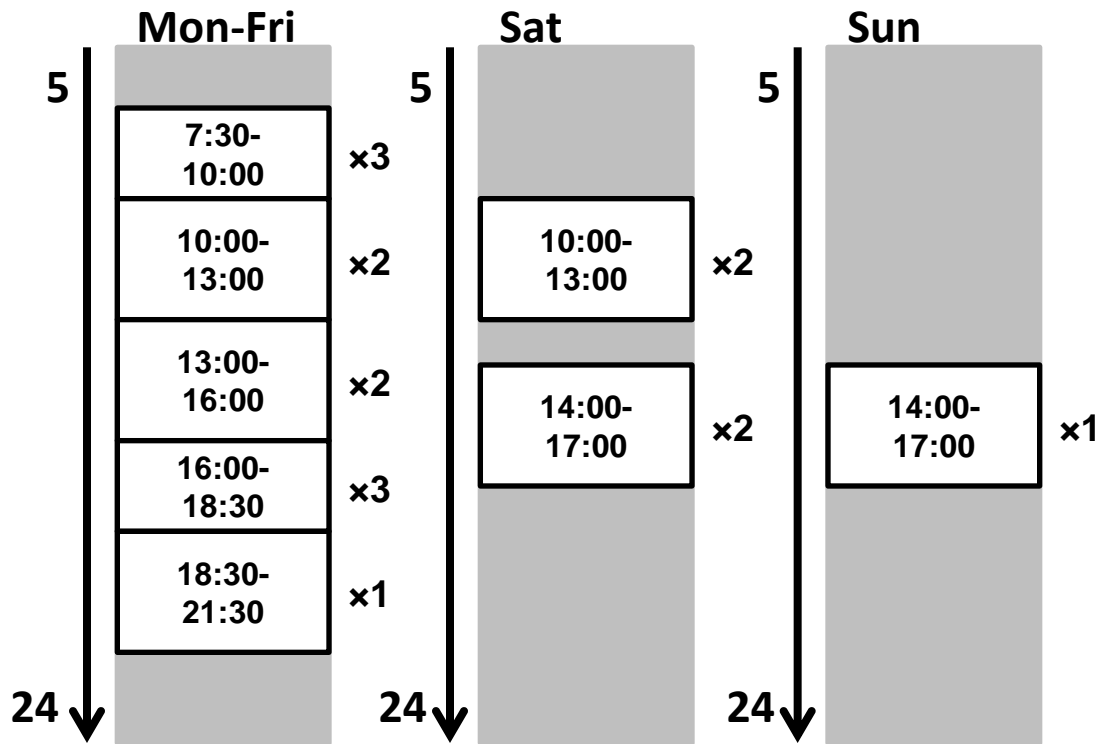
# Full iBus QSI Monitoring

- QSI recordings were originally sampled manually at a limited number of QSI points and time periods.
- iBus (Automatic Vehicle Location System) allows TfL and bus operators to track the location of every bus in London by time and point.
- Since April 2012 iBus used to measure QSIs. iBus offers a major enhancements in
  - time periods covered
  - number of QSI points monitored
  - continuous monitoring

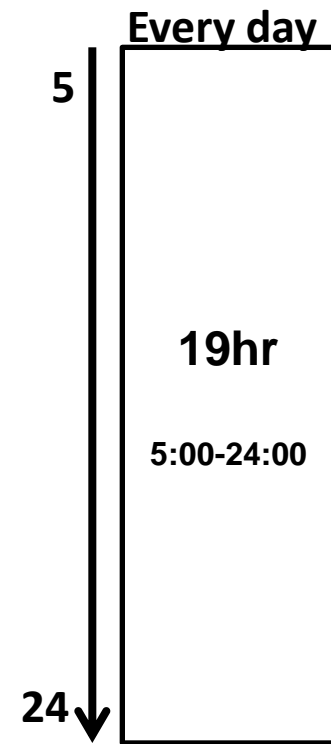


# Expansion of Time Periods

## Legacy system:



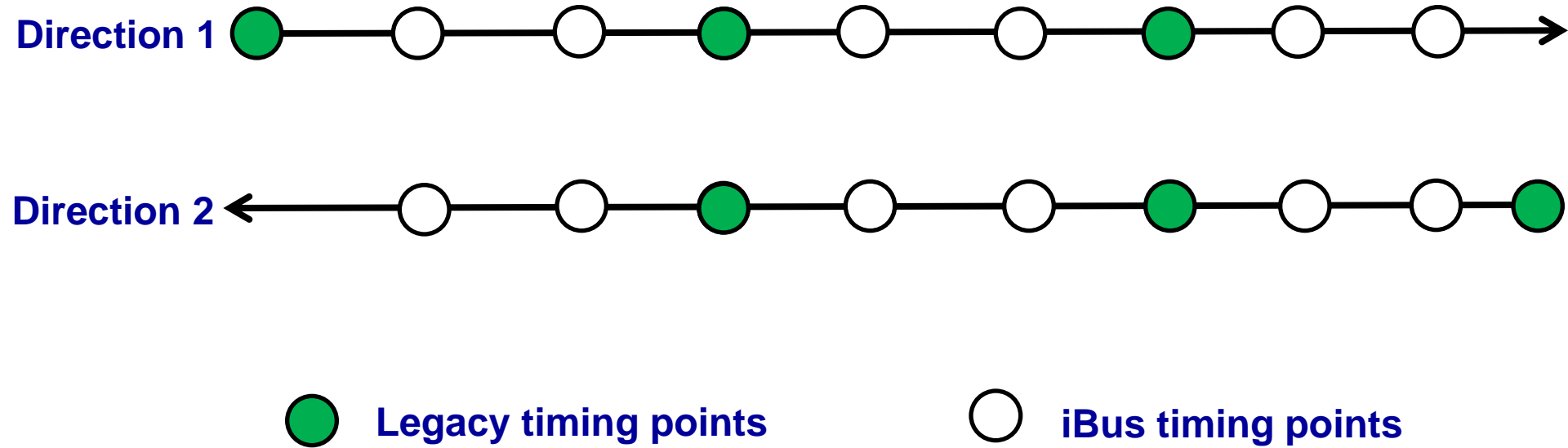
## iBus:



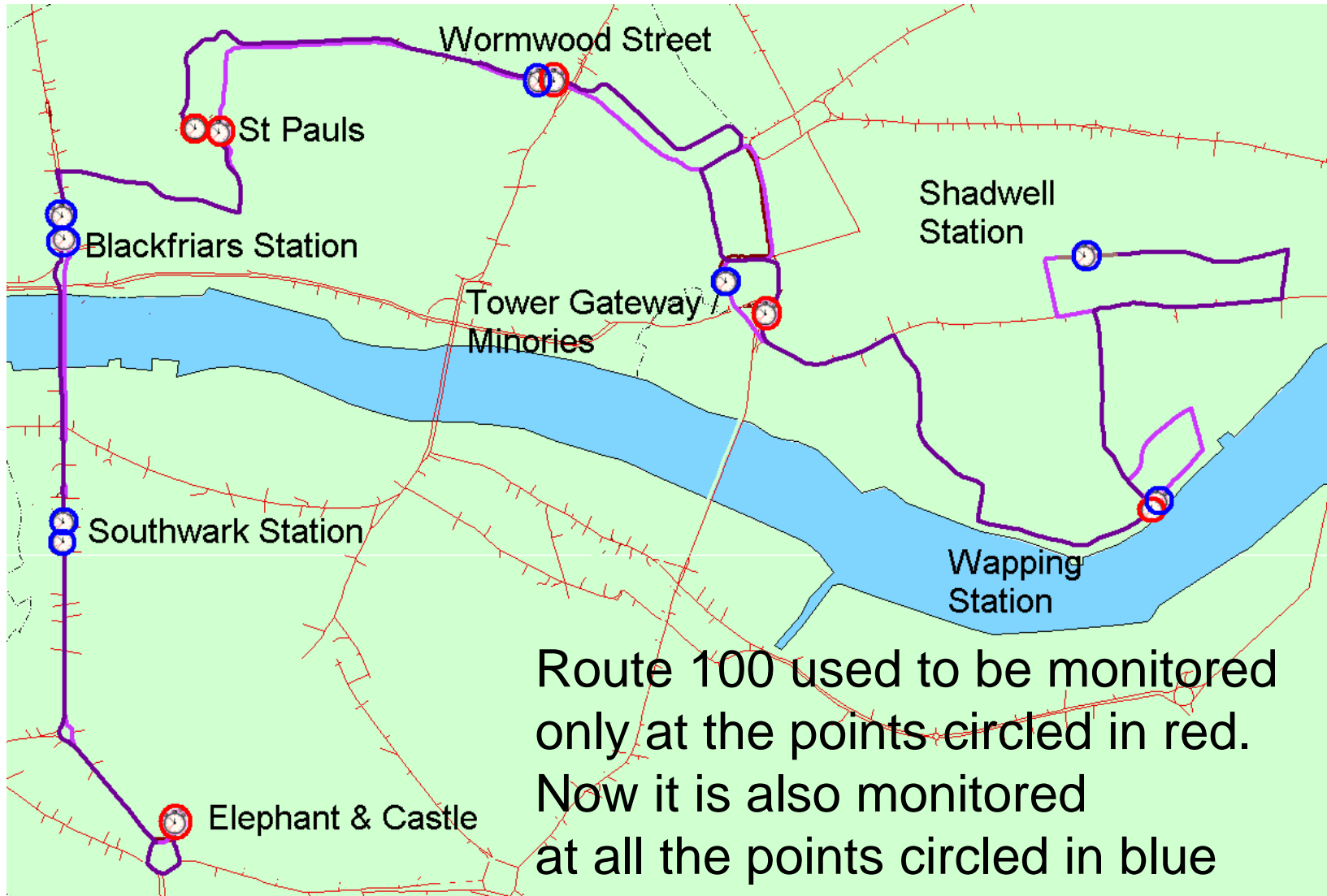
Day Routes



# Expansion of QSI Points

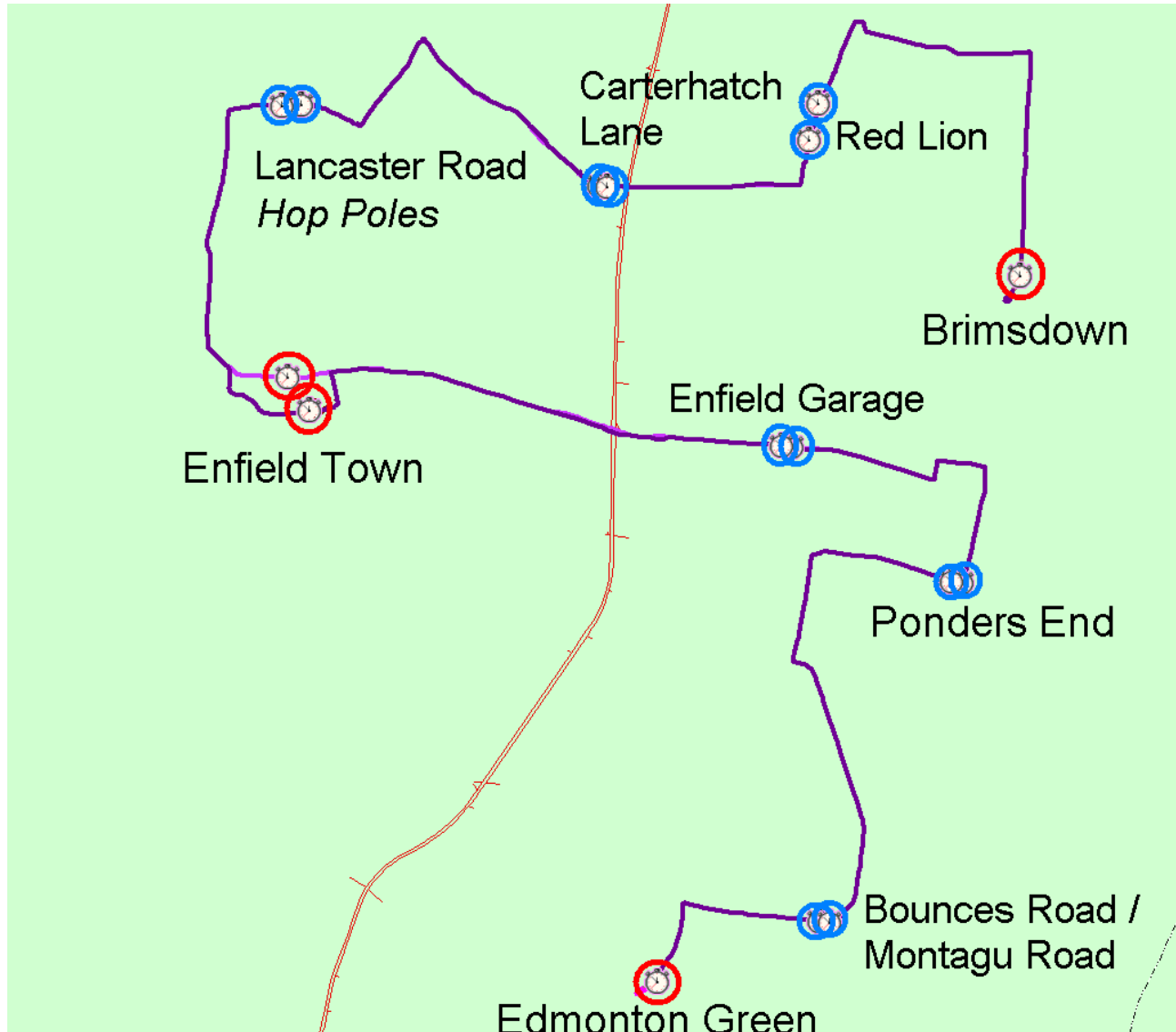


# Route 100 – expansion of QSI points





# Route 191 – expansion of QSI points



Route 191 used to be monitored only when departing each terminus, and mid-route in Enfield Town.

Now it is also monitored at all the points circled in blue



# Bus Service Reliability (Quality of Service Indicators)

- High frequency routes (5 buses per hour or more)
  - Passengers expect a regular service
  - Excess Waiting Time (EWT) measures the gaps 'headway' between buses at 'QSI points'
- Low frequency routes (4 buses per hour or less)
  - Passengers expect a punctual service
  - % On-Time measures times of arrival compared to the timetable at 'QSI points'
  - Window of 2½ minutes early or 5 minutes late

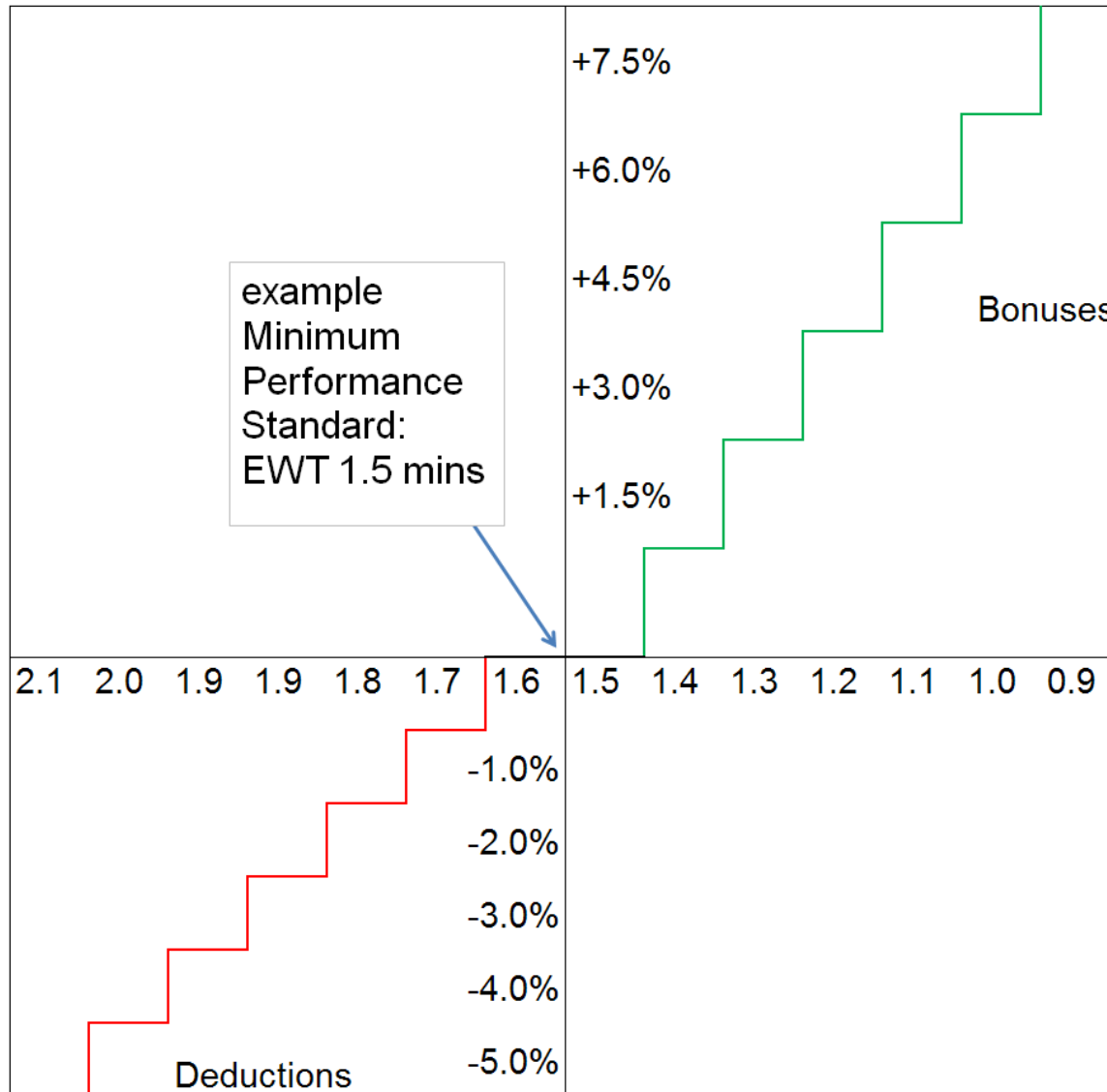


# Quality Incentive Contracts

- Mileage deductions made for mileage lost for causes within the bus operators control (staff and vehicles).
- Each route has a reliability Minimum Performance Standard (MPS) set by TfL. Reliability performance is incentivised by
  - Bonuses for performance above MPS
  - Deductions for performance below MPS

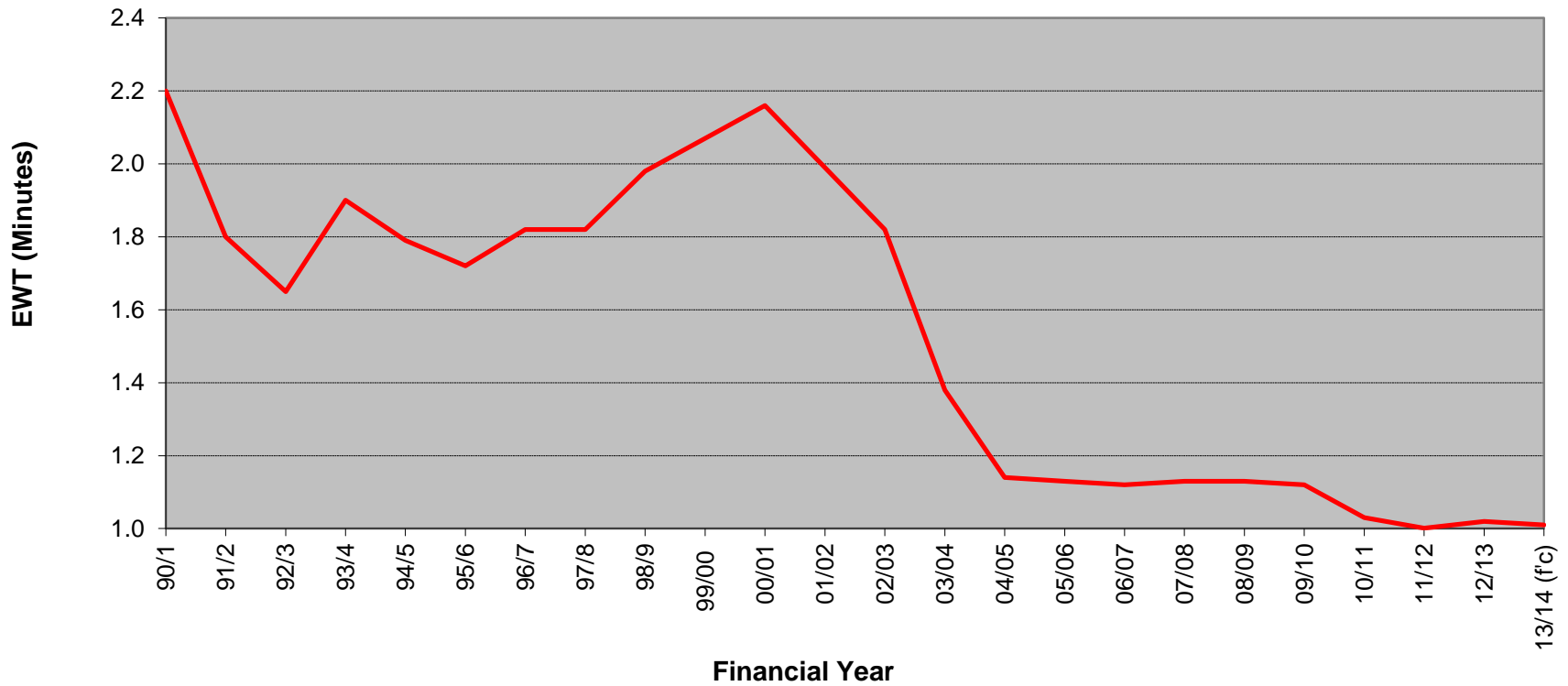


# Quality Incentive Contracts (Reliability)



# Bus performance long term trends

## Excess Waiting Time for High Frequency Buses



# How can iBus data help identify poor performance?

- Real time information to support operations
  - Immediate and on-going information on delays
- Better visibility of route, area and operator performance:
  - QSI results by location, time of day, day of the week
  - Information to explore trends and patterns
  - Develop more accurate schedules and service control strategies



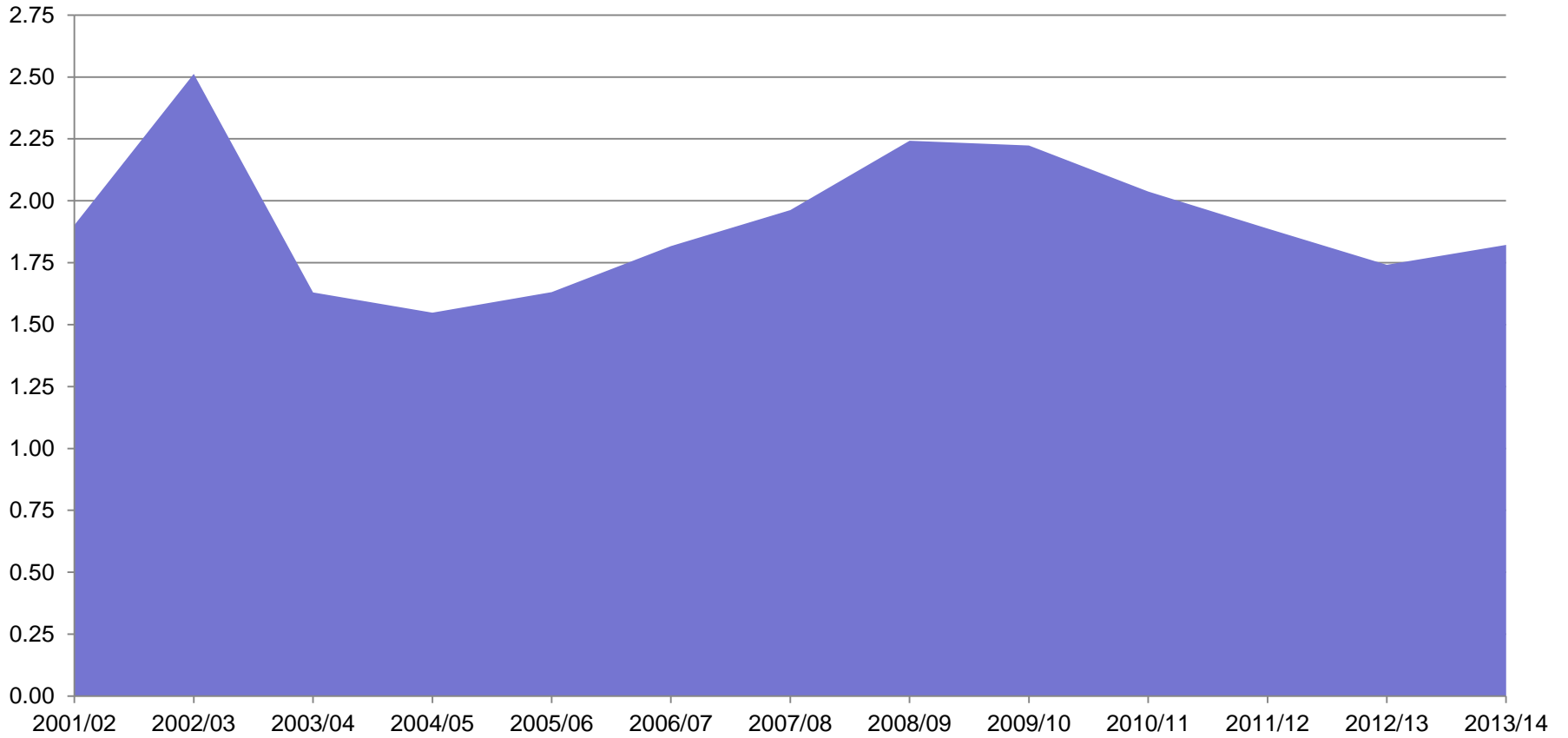
# Curtailments (short turning)

- Why do buses need to be curtailed?
  - Delays
  - Planned roadworks or events
  - ‘Insufficient’ layover
  - Improve overall reliability of the service e.g. fill gaps in service elsewhere on the route
  - Prevent breaches of Drivers Hours regulations
- How much mileage is lost through disruption?
- How many trips are disrupted?



# Traffic Lost Mileage

% by Year (from 2001/02)



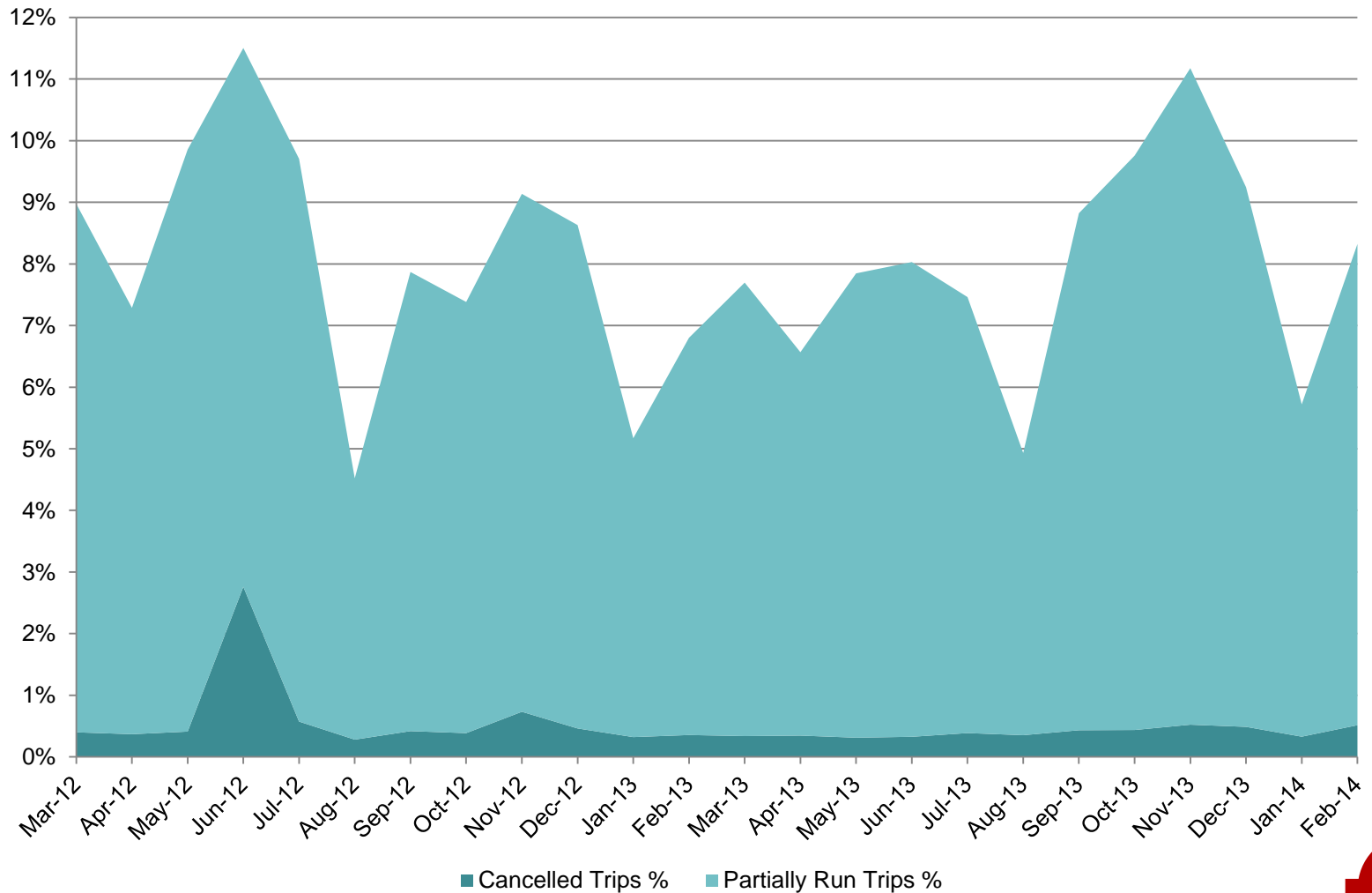
■ Traffic & OND Losses





# % Partially or Non-Operated Trips

## Cancelled & Partially Run Trips



# Using iBus data to help prioritise investment

- Use of Automatic Vehicle Location (AVL) data to enhance understanding of network performance and the impacts of congestion on reliability.
- Bus speeds reports will soon be available at various levels of spatial disaggregation. This will be used to understand the worst affected areas of the network.
- New reports are currently in development to measure the variability of running times – another important component in the reliability of the network



# Average Bus Speeds by Borough



# Bus priority to help improve reliability

- The Mayor's Roads Task Force examined the significant and growing pressures on road space and commended bus services as an important element of the response:

*“As London grows, bus journey times and reliability will be threatened by increasing pressure on road space from other users. Given the important role of buses in moving large numbers of people, it is essential that bus reliability and journey times are at least maintained”.*



# Bus priority to help improve reliability

- The Bus Pinch Points Programme (BPPP) will target up to 35 key locations delivering schemes to improve bus reliability, estimated budget of £100m to 2020/21.
- The High Quality Bus Priority Corridors (HQBPC) programme will support growth in London. It will promote bus use by improving transport links and urban realm along those corridors. It will have an estimated budget of £100m to 2020/21.
- The Local Bus Challenge, based around bus route Joint Inspection Meetings, is a low cost initiative between the boroughs, bus operators and TfL.





# Questions?

