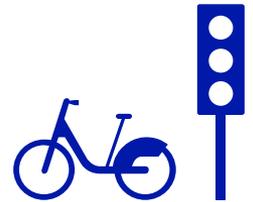
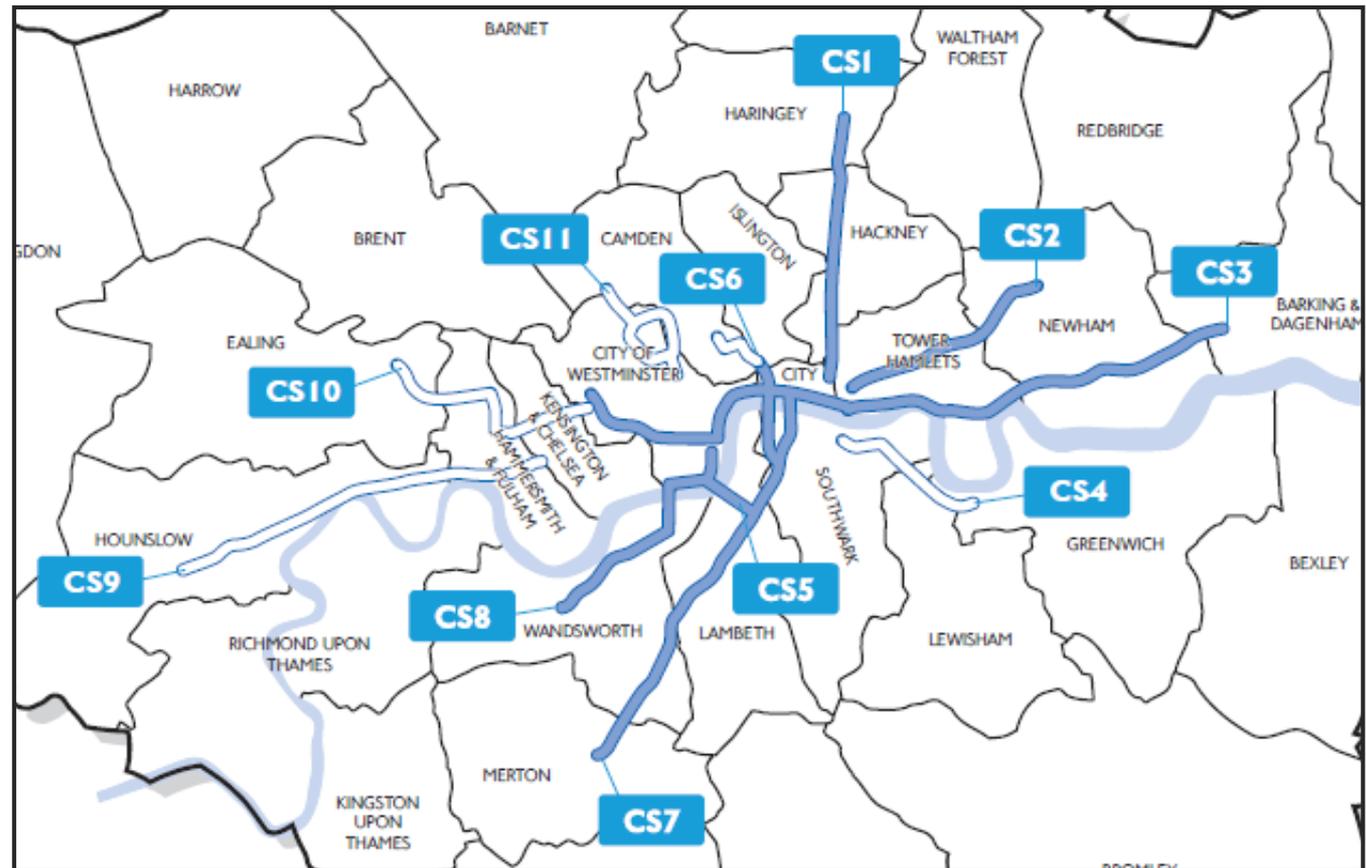


Network Operation: Construction and Optimisation



Overview

- Managing the network during Cycle Superhighway construction
- Optimising the network for cyclists including Cycle SCOOT



Construction: Challenges



- Challenging traffic management
 - Loss of lanes
 - Additional stages
- Temporary signals



- Protect bus network
- Maintain a high standard of safety at junctions for all road users



Construction: Review Traffic Management

- Scheduling of works (conflicting works/events e.g. Marathon)
- Review traffic management / diversions
- Review need for temporary traffic signals



Construction: UTC Temps

Tool:

- Offers flexible signal head location but maintains UTC control



Benefits:

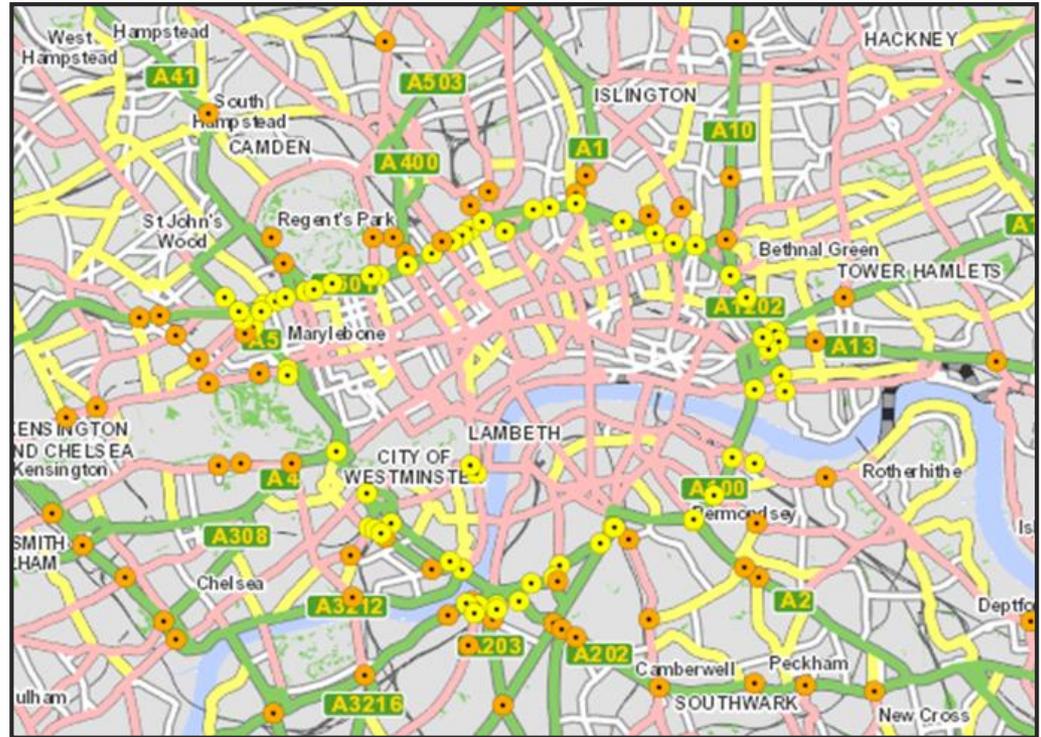
- Change signal timings by time of day
- React to contingency situations
- Maintain offsets between junctions



Construction: ATM

Tool:

- Control flow of traffic approaching major works



Benefits:

- Use appropriate level of ATM to manage flow of traffic for specific TM phase
- Prevent exit blocking and protect major gyratories
- Protects bus network



Active Traffic Management (ATM) Video



Construction: London's Street Traffic Control Centre (LSTCC)

Tool:

- 24/7 monitoring and managing of the network
- Engineer present from 7am-7pm and additional stand up for major works



Benefits:

- Monitor network and bus delays in real time
- Select appropriate signal strategies
- Review level of ATM required



Construction: LSTCC Tools

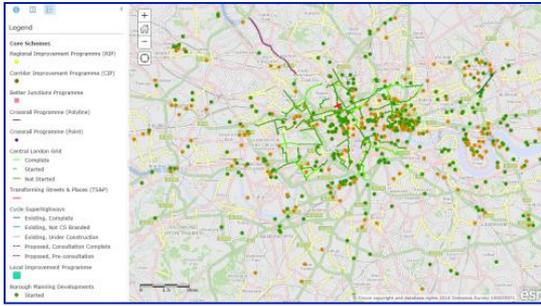
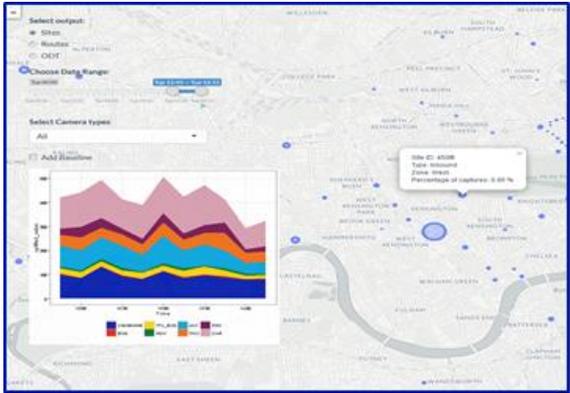
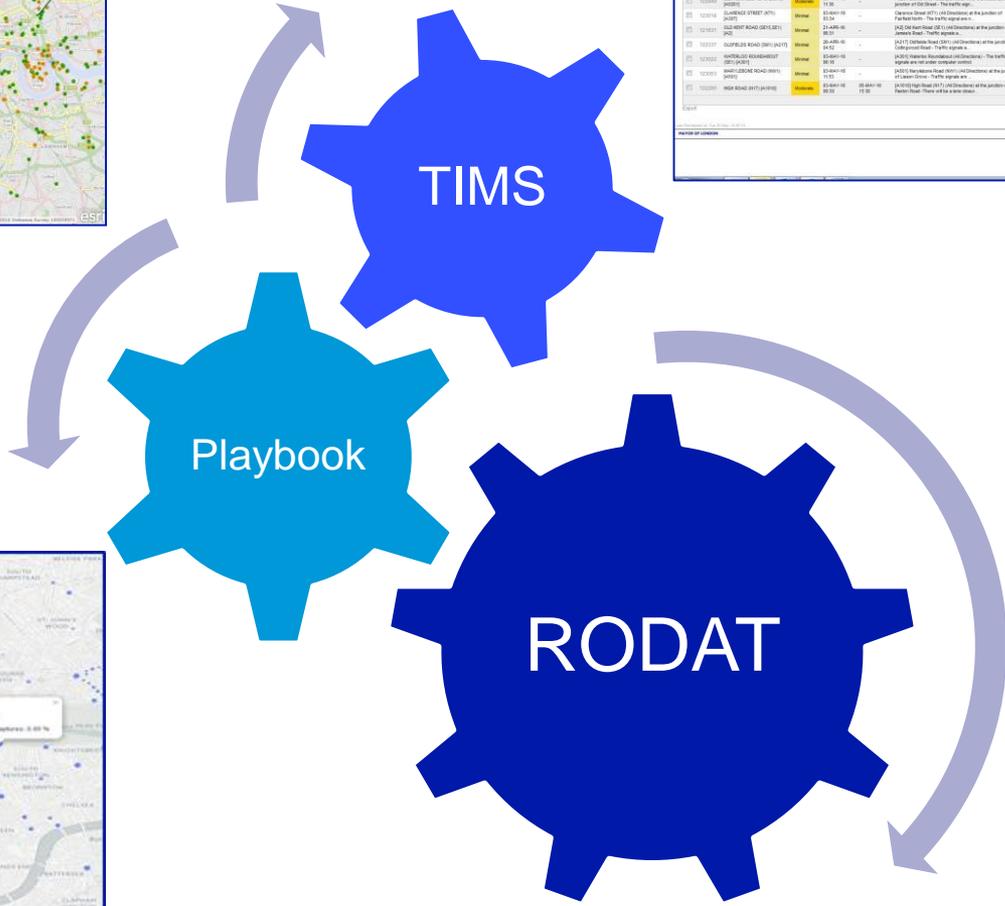


Table with columns: ID, Priority Band, Summary, Start Date, End Date, Extension, Category, SRS, LSTCC, Cost, etc.

ID	Priority Band	Summary	Start Date	End Date	Extension	Category	SRS	LSTCC	Cost	OTC	OTF	OTF P	OTF T	OTF D	OTF S
121211	BRIDLED COTTAGES (SRS)	Area	02-04-18	14-01	02/04/2018 - 14/01/2019	Other	Other	Other	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
121212	WETLANDS (SRS)	Area	14-01	14-01	14/01/2018 - 14/01/2018	Other	Other	Other	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
121213	HOLDINGWELL STREET (SRS)	Area	14-01	14-01	14/01/2018 - 14/01/2018	Other	Other	Other	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
121214	WETLANDS (SRS)	Area	14-01	14-01	14/01/2018 - 14/01/2018	Other	Other	Other	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
121215	WETLANDS (SRS)	Area	14-01	14-01	14/01/2018 - 14/01/2018	Other	Other	Other	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
121216	WETLANDS (SRS)	Area	14-01	14-01	14/01/2018 - 14/01/2018	Other	Other	Other	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
121217	WETLANDS (SRS)	Area	14-01	14-01	14/01/2018 - 14/01/2018	Other	Other	Other	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
121218	WETLANDS (SRS)	Area	14-01	14-01	14/01/2018 - 14/01/2018	Other	Other	Other	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
121219	WETLANDS (SRS)	Area	14-01	14-01	14/01/2018 - 14/01/2018	Other	Other	Other	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
121220	WETLANDS (SRS)	Area	14-01	14-01	14/01/2018 - 14/01/2018	Other	Other	Other	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
121221	WETLANDS (SRS)	Area	14-01	14-01	14/01/2018 - 14/01/2018	Other	Other	Other	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
121222	WETLANDS (SRS)	Area	14-01	14-01	14/01/2018 - 14/01/2018	Other	Other	Other	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
121223	WETLANDS (SRS)	Area	14-01	14-01	14/01/2018 - 14/01/2018	Other	Other	Other	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
121224	WETLANDS (SRS)	Area	14-01	14-01	14/01/2018 - 14/01/2018	Other	Other	Other	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
121225	WETLANDS (SRS)	Area	14-01	14-01	14/01/2018 - 14/01/2018	Other	Other	Other	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
121226	WETLANDS (SRS)	Area	14-01	14-01	14/01/2018 - 14/01/2018	Other	Other	Other	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
121227	WETLANDS (SRS)	Area	14-01	14-01	14/01/2018 - 14/01/2018	Other	Other	Other	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
121228	WETLANDS (SRS)	Area	14-01	14-01	14/01/2018 - 14/01/2018	Other	Other	Other	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
121229	WETLANDS (SRS)	Area	14-01	14-01	14/01/2018 - 14/01/2018	Other	Other	Other	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
121230	WETLANDS (SRS)	Area	14-01	14-01	14/01/2018 - 14/01/2018	Other	Other	Other	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000



Construction: LSTCC Tools

Bus Network Disruption Monitor

MENU

Disruptions
History
User Guide
Settings
About

Disruption List - Above 15 (mins)

DELAYS COLOUR LEGEND

Yellow (Moderate = less than 20 mins)

Orange (Serious = 21 - 40 mins)

Red (Severe = 41+ mins)

Refreshed at: 10:37:55 AM 6/1/2017

Latest feeds from: 7:27:35 AM 5/1/2017

Route	Towards	From Stop Point Name	To Stop Point Name	P2P Delay (mins)	Total Directional Delay (mins)	Trend (mins)	Time First Reported	Last Data Updated	More
65 [RATP]	CHESSINGTON WORLD OF ADVENTURES	GILDERS ROAD	CHESSINGTON WORLD OF ADVENTURES	46	53	No change [0]	05:48:05	07:23:27	
362 [GOAHD]	KING GEORGE HOSPITAL	MANOR ROAD	THE LOWE	25	29	No change [0]	07:03:22	07:18:14	
12 [GOAHD]	DULWICH LIBRARY	CONDUIT STREET / HAMLEYS TOY STORE	HAYMARKET / CHARLES II STREET	15	19	Worsening [4]	07:18:28	07:18:19	
173 [ARRIVA]	BECKTON BUS STATION	RENWICK ROAD	RIPPLE ROAD	15	16	No change [0]	07:03:22	07:23:29	

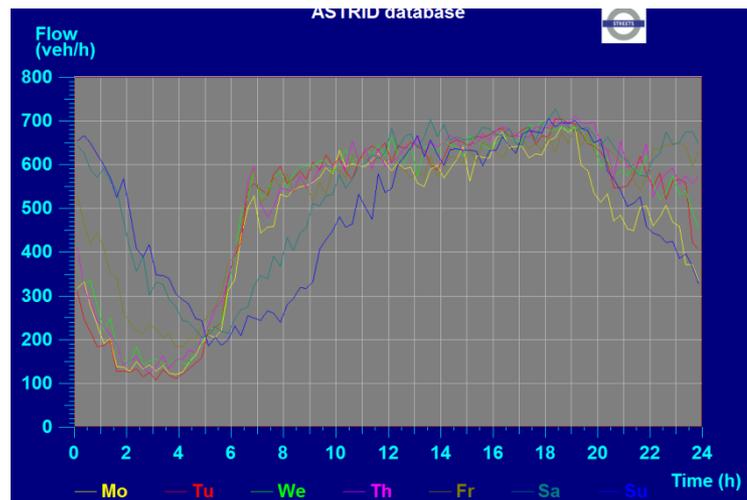
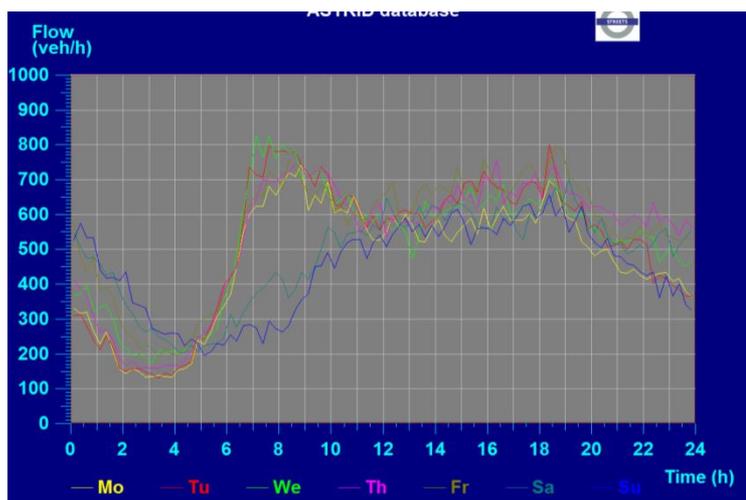
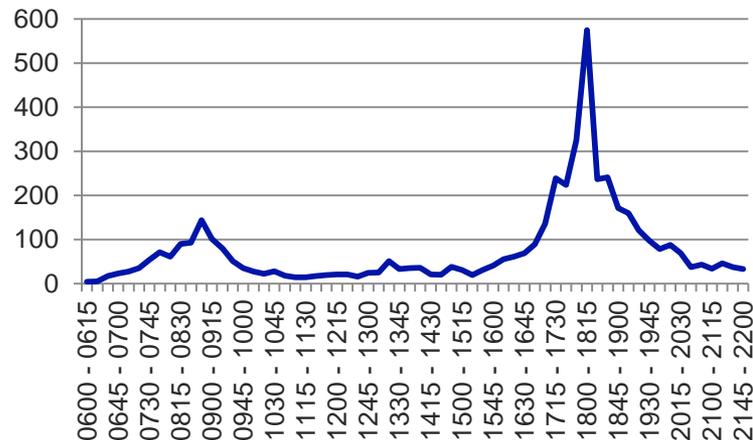
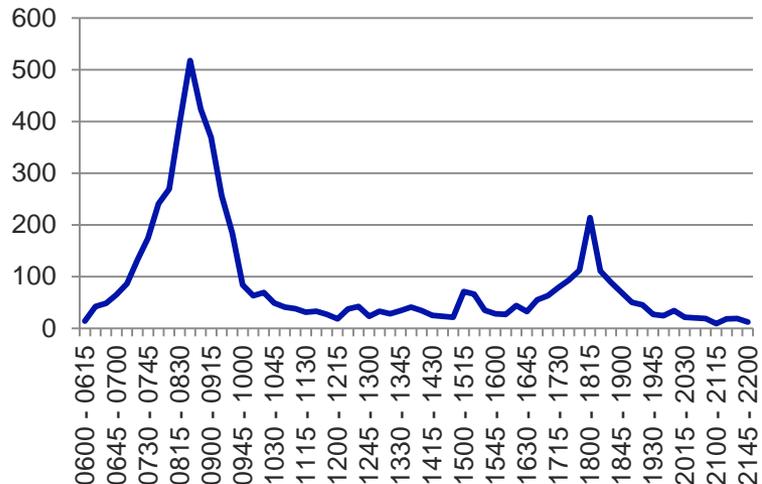


Network Optimisation



Optimisation: Challenges

Blackfriars Junction: Cycle and Traffic Peaks

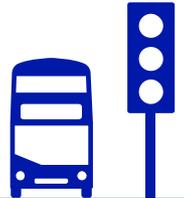


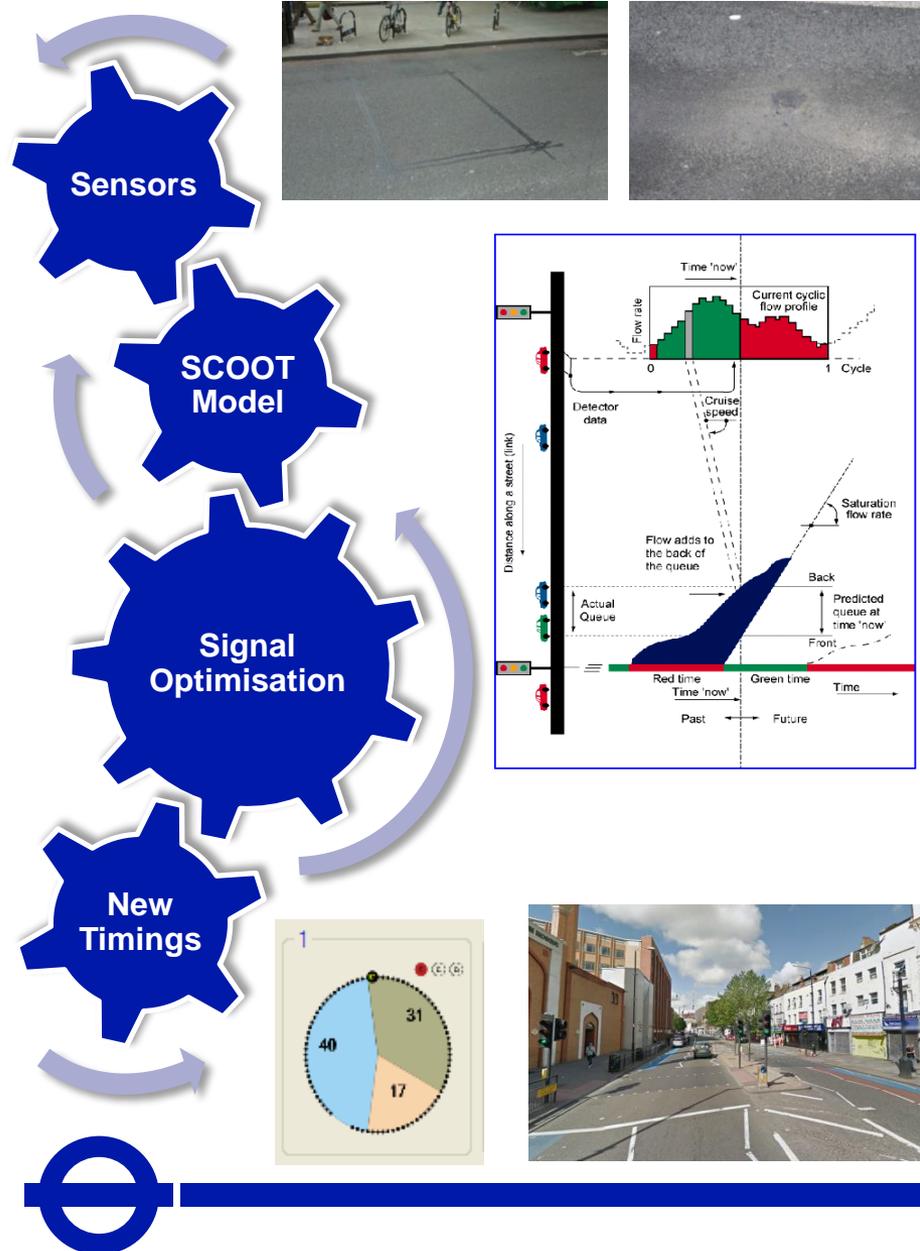
SCOOT: What is it?

TfL uses a bespoke Urban Traffic Control (UTC) system to optimise throughput and combat congestion on London's road network

SCOOT is the software used to optimise signal timings second by second using real time data collected by sensors located on London's road network

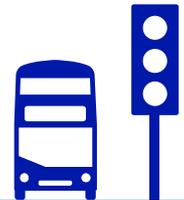
SCOOT can now be used to optimise for general traffic, buses, cyclists and pedestrians.





SCOOT: How does it work?

- Data gathered from sensors in the road network
- Junction modelled second by second within SCOOT
- Buses and their location in the queue are also modelled
- Signal timings optimised to make best use of available capacity
- New timings sent to junction controller



Cycle SCOOT

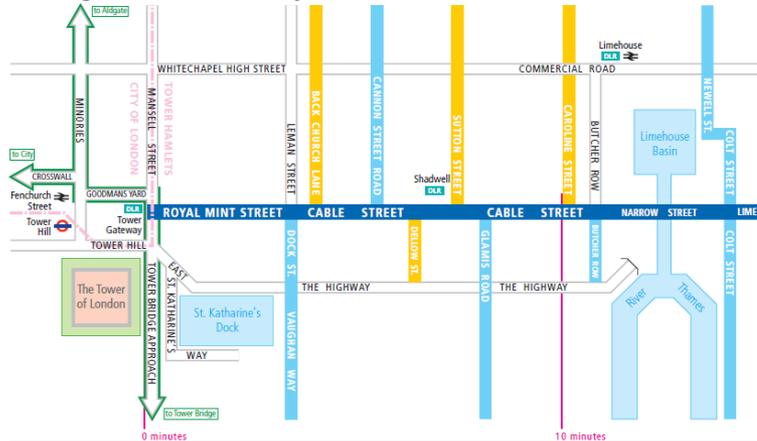
Two directional detectors for cyclist with their own track

Incorporating the demand of cyclist in the normal optimisation of the junction through SCOOT.

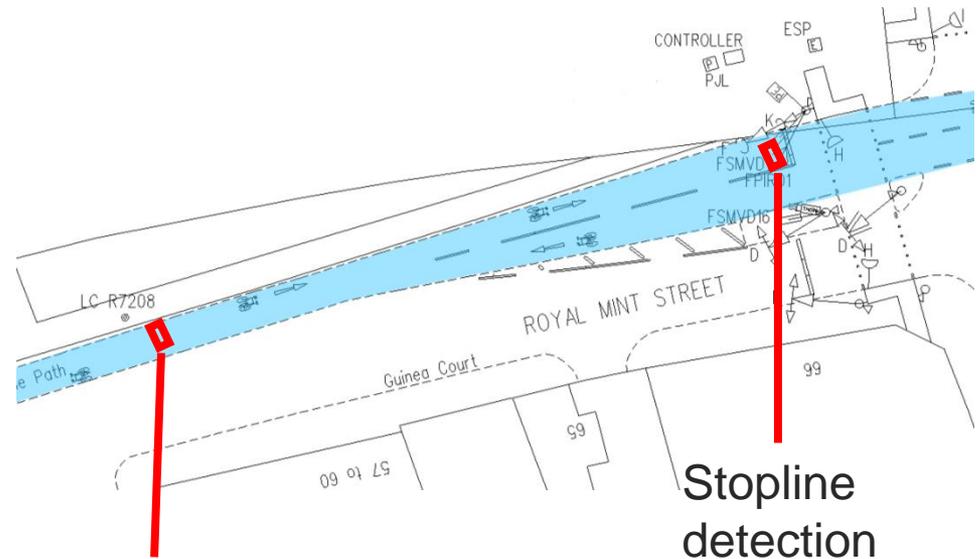


Using SCOOT “normal” and “stopline” traffic links

Barking to Tower Gateway: CS3



This cycle route is about 7.6 miles, or 12.3 kilometres, from end to end.



Upstream detection

Stopline detection

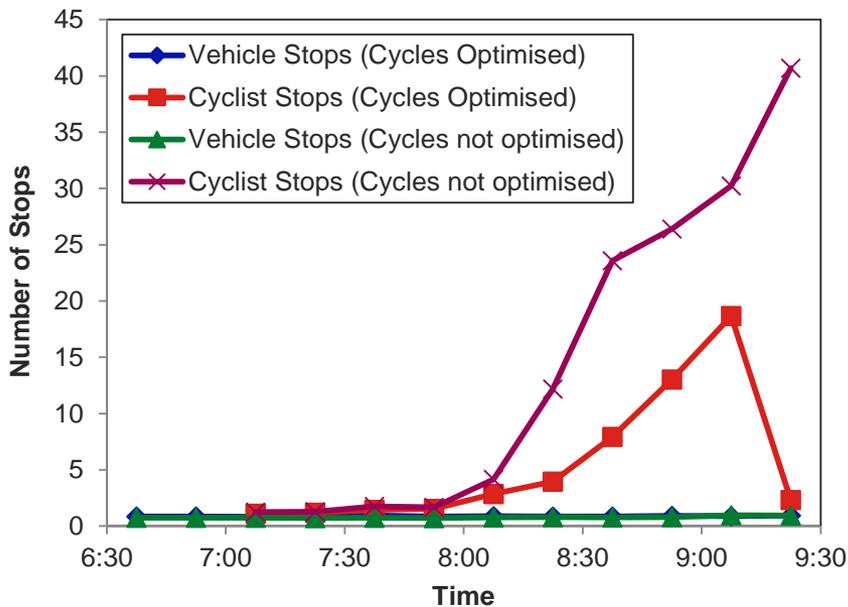


Cycle SCOOT

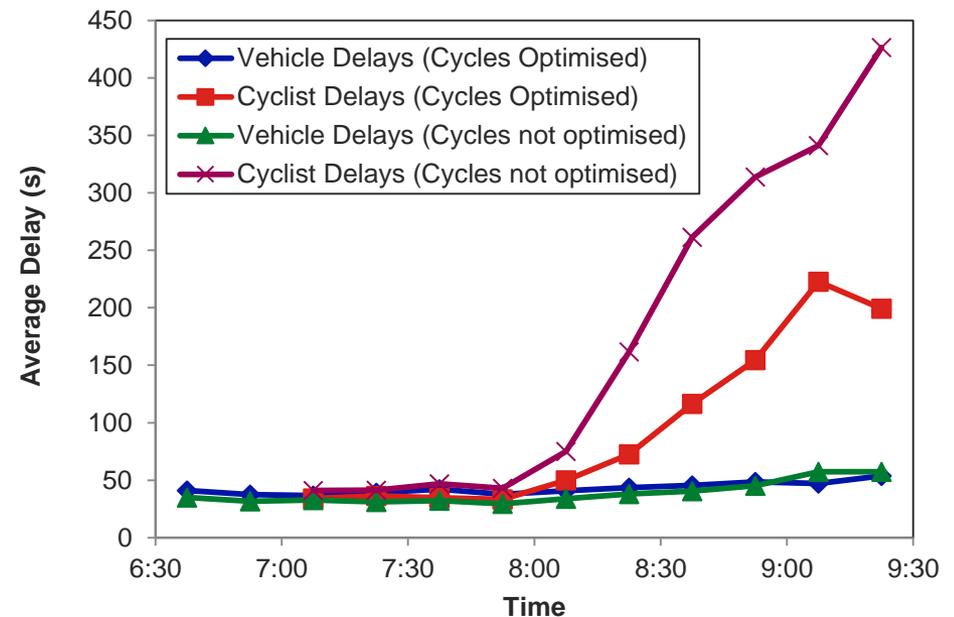
Split Cycle Offset Optimisation Technique

A UTC-VISSIM Study showed that SCOOT optimisation for cyclists can result in significant reductions for cyclists in terms of delays and stops, with no significant adverse impact seen for vehicles. This is now being observed on street.

Average Stops per Vehicle/Cyclist (10 Seeds)



Average Delay per Vehicle/Cyclist (10 Seeds)



Cycle SCOOT Benefits

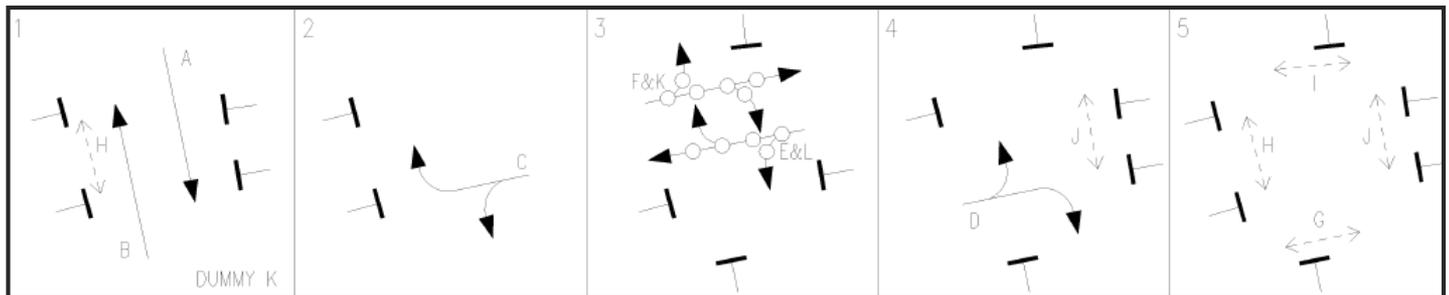
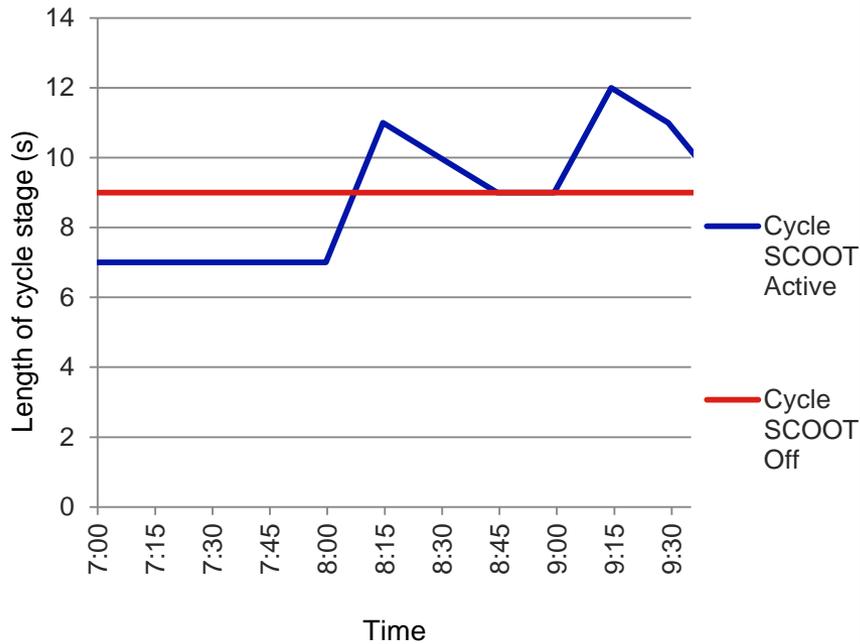
- On average we saw a 6% reduction in cyclist delay and 1% reduction in cyclist stopped at Cycle SCOOT trial sites

Peak	Cycle Time	Delay per Vehicle	% of Vehicles Stopped	Junction Average DoS	Flow	Peak	DoS	Flow	Delay per Cyclist	% of Cyclist Stopped
AM	0.46%	-0.86%	-1.02%	-6.62%	-5.81%	AM	-25.36%	-2.77%	-46.22%	-2.76%
OP	0.67%	3.84%	-0.17%	-3.66%	-7.22%	OP	-4.86%	0.19%	-2.83%	-1.43%
PM	0.34%	5.14%	0.09%	-4.09%	-8.78%	PM	-10.97%	7.25%	-36.32%	-3.16%
LE	0.35%	-1.57%	-1.36%	-3.12%	-1.58%	LE	-1.73%	6.52%	-8.58%	-5.05%
ON	0.37%	0.77%	-3.24%	-3.48%	-4.22%	ON	15.88%	-7.20%	17.95%	0.88%
Average	0.44%	1.47%	-1.14%	-4.19%	-5.52%	Average	-5.41%	0.80%	-15.20%	-2.30%
						40% of benefit measured			-6.08%	-0.92%



Cycle SCOOT

Split Cycle Offset Optimisation Technique



Optimisation: Offsets

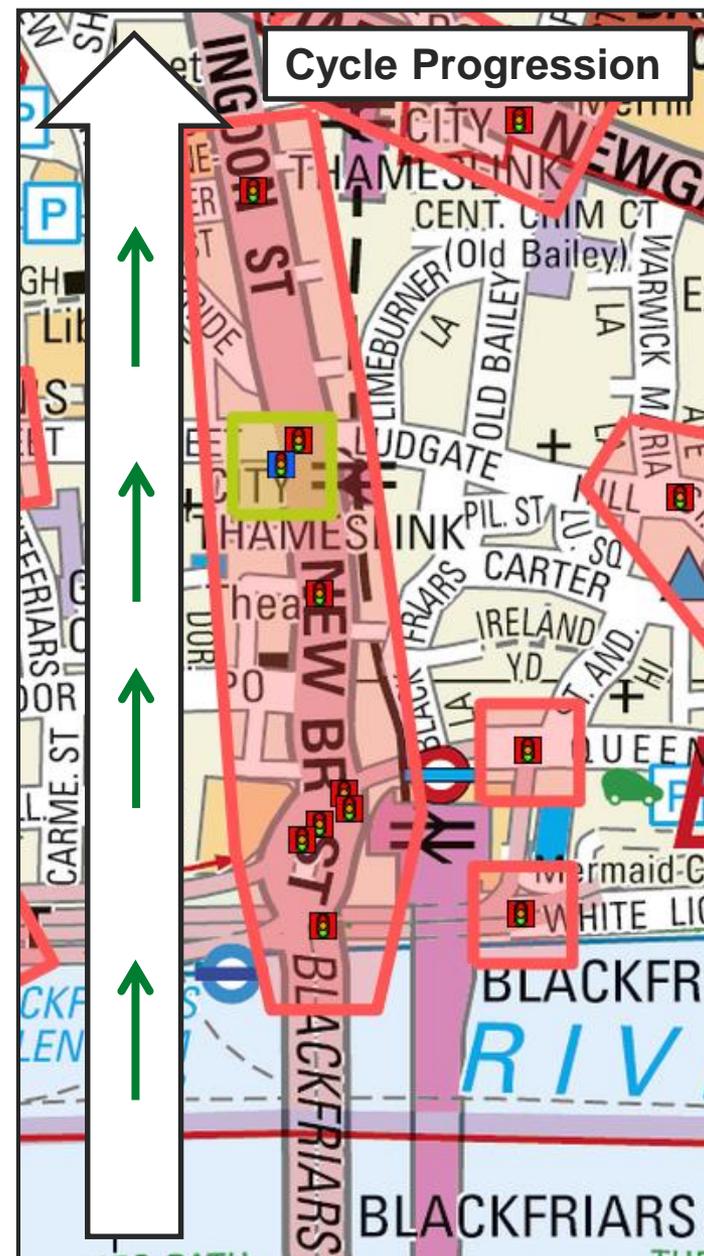
Blackfriars to Ludgate Circus

Tool:

- Cycle SCOOT
- Manual setup of SCOOT parameters

Benefits:

- Reduce cyclists wait time
- Improved compliance with signals



Optimisation: Blackfriars to Ludgate Circus Video



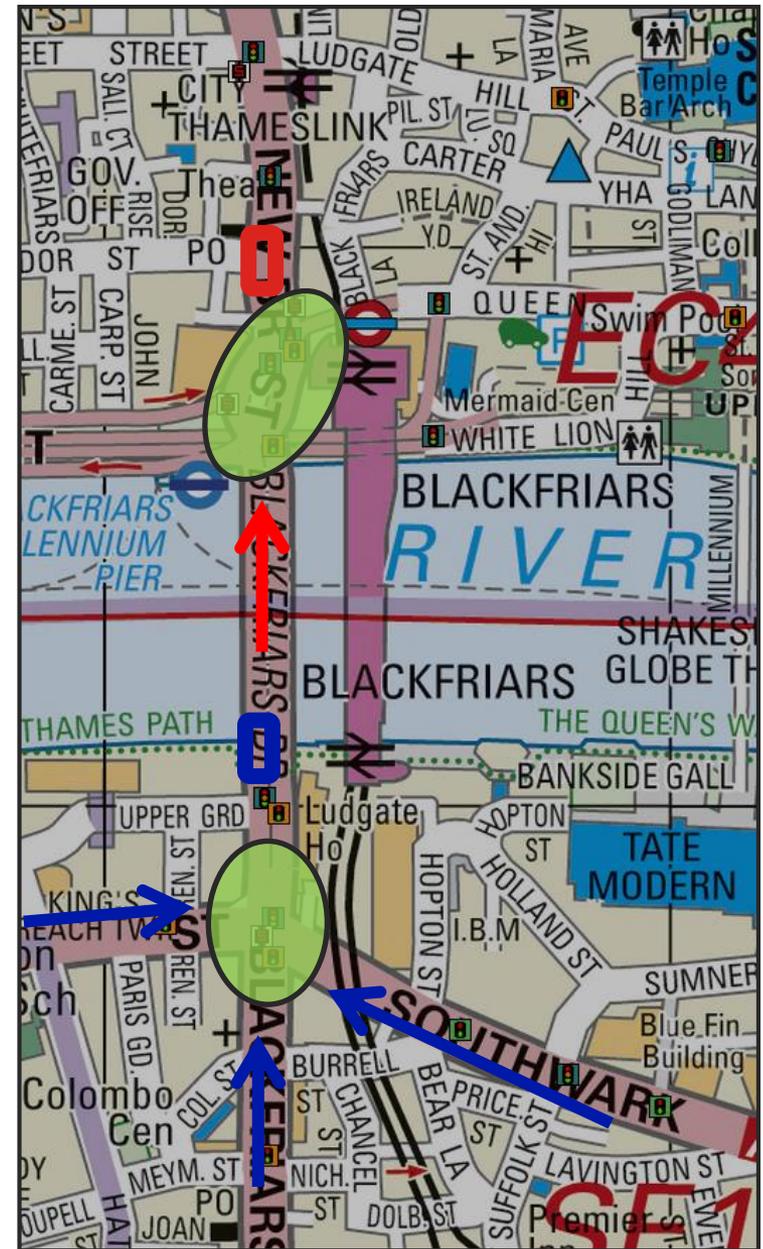
Optimisation: SASS - System Activated Strategy Selection

Tool:

- Logic dependent signal timings

Benefits:

- Dynamically change signal timings to manage congestion and exit blocking
- Useful in oversaturated networks



Summary

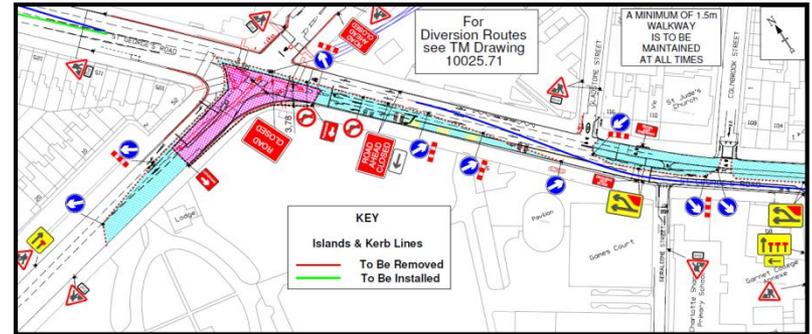
Construction

- Review traffic management
- UTC Temps
- Monitor network
- Active Traffic Management

Optimisation for Cyclists

- Cycle SCOOT
- Cycle stage lengths
- Cycle offsets
- Dynamic signal timings

Questions





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