

Transport for London

Projects and Planning Panel

Subject: Investing in London's Road Network

Date: 9 January 2014

1 Purpose

- 1.1 The purpose of this paper is to provide information to the Panel about TfL's investment in and management of London's road network.
- 1.2 The Panel is asked to note the paper.

2 Background

- 2.1 Of London's 13,800km road network, 580km of key arterial and orbital roads (the Transport for London Road Network (TLRN)) is managed by TfL, Appendix 1 includes a map showing the TLRN. It is vast and complex, with the following journeys taking place daily: 9.8 million by car and motorcycle; 6.3 million by bus; 6.2 million walking trips; 0.5 million cycling; and 0.3 million by taxi. In addition to these journeys, nearly all freight movement in and out of the city is by road. London's roads are around 40 per cent more densely trafficked than in other UK conurbations and, as a result, London has around 20 per cent of the UK's traffic congestion, estimated to cost its economy at least £2bn a year. This is the current situation and with London's population set to grow to 10 million by 2030 the demand on the road network will continue to increase.
- 2.2 TfL has made great strides in improving the operation of its road network. From 2009/10 to 2011/12, there was a 25 per cent reduction in roadworks numbers, as well as a 42 per cent reduction in the peak volume of works activity taking place at any one time. In the same period, there was a 24 per cent reduction in the level of serious and severe traffic disruption caused by roadworks on the TLRN. Journey time reliability on the TLRN has increased by 0.5 per cent since 2010/11, despite growing pressure on the road network. From 2010-2012, the clear-up time from unplanned events and fatal/life-changing incidents has improved year-on-year by 5-10 per cent and 40 per cent, respectively. In July 2013, the Mayoral commitment to install 1,000 Split Cycle Offset Optimisation Technique (SCOOT) sites was reached, which has delivered, on average, a 13.5 per cent reduction in delay compared with the fixed time signals SCOOT has replaced. Approximately 4,000 traffic signals have been reviewed since 2009 and, in the current financial year, this has reduced traffic delays by 8.02 per cent and has not disadvantaged pedestrians.
- 2.3 This all has contributed to how TfL's customers perceive its management of the road network. Since TfL started measuring customer satisfaction with the TLRN in 2010, overall satisfaction has risen from a satisfaction score of 72 to 76. Satisfaction has also improved with the way TfL manages congestion and traffic signal timings and with how easily customers were able to estimate how long a journey would take. However, as much as TfL has already achieved, there is still more that can be done to improve the way the road network is managed, enhanced and operated.

- 2.4 The Mayor's Roads Task Force released its findings earlier this year, emphasising that, for London to remain a place where people want to live, work and do business, any future investment must ensure that the city can keep moving, encourage sustainable travel and provide for the public spaces that contribute to a high quality of life. It outlined the challenges that will face London's road network in the future, highlighting the need to address congestion and meet growth, while accommodating more walking, cycling and better public space.
- 2.5 TfL has formally responded to the Roads Task Force recommendations, drawing attention to the work TfL is already doing to make London's roads more liveable and effective, and committing to new measures. Surface Transport has taken an approach to ensure that these commitments can be achieved with balanced results for all road users, establishing 10 Principal Outcomes that set the priorities for a complex and interconnected transport system. A number of these outcomes pertain to road users (including Quality Bus Network, Reliable Roads, More and Safer Cycling and Walking, Safer and More Efficient Deliveries, Reduced Casualties and Quality Door-to-Door Transport), emphasising the complexity of the task facing TfL in managing its road network.

3 Investment in the Road Network

- 3.1 As outlined above, TfL's future goals and aspirations for the road network are more ambitious than they have ever been, with improvements planned to address the findings of the Roads Task Force, further Surface Transport's Strategic Outcomes and transform London into a more cycle-friendly city. To make the most of the available road space and to balance the competing demands that are placed on it by all road users, a step change in capability of the network is required.
- 3.2 The measures to expand this capability have been laid out in TfL's latest Business Plan with a substantial increase in investment to meet the challenges of providing a transport network fit for the 21st century and aligned with the changing face of the Capital. This unprecedented level of funding will equip TfL to deliver its key objectives with a clear plan on how these will be achieved over the next decade.
- 3.3 London's road networks are kept running smoothly day to day by sophisticated traffic system technologies that react to the changing conditions of the road network. SCOOT is installed on half of London's more than 6,000 traffic signals, utilising a network of sensors to feed information into a system that optimises traffic signals based on real-time traffic conditions. TfL also utilises its wide network of technology to collect additional information on its network, ensuring a real-time awareness on how the network is operating. When events and incidents (both planned and unplanned) have an impact on the road network that is too great for the technology to mitigate without intervention, TfL's 24/7 traffic management resource steps in.
- 3.4 These capabilities will be expanded to allow TfL greater knowledge and control over its network, with the ability to address varying priorities at key locations on the network. These planned improvements, including expansions to both SCOOT and information gathering and processing, are attached as Appendix 1.
- 3.5 TfL has also committed to a comprehensive programme of investment on the TLRN to encourage more cycling, reduce casualties, assist the reliability of traffic and bus journey time reliability, promote walking and enhance urban realm. These projects are aligned to strategic priorities and developed in conjunction with key stakeholders, including London boroughs. Transformational alterations to London's road network and urban realm will be delivered through major projects at locations such as

Vauxhall, Waterloo, Elephant & Castle and Old Street.

- 3.6 The Mayor's Vision for Cycling set out a number of measures to make London better and safer for cycling, encouraging the uptake of this sustainable mode of transport. Measures include: Cycle Superhighways (major North-South and East-West routes through the city) and a Central London Grid of routes connecting these; Quietways on less-trafficked roads; and Mini-Hollands improving cycling provision in outer London town centres. It also proposes a range of measures to improve cycle safety at junctions and target HGV safety, as well as deliver interventions such as cycle parking and training.
- 3.7 TfL will also be delivering major bridges and tunnels works to avoid future negative impacts on road network performance. This is the largest portfolio of major highway bridge and tunnel projects in the UK, lasting over ten years and addressing 16 bridges and five tunnels. The projects include Hammersmith Flyover, Upper Holloway Bridge, Highbury Corner Bridge, Chiswick Bridge and Fore Street Tunnel. In addition to these improvements, TfL is committed to bringing all road assets – carriageways, footways, bridges, tunnels, lighting, drainage and green estate – to a state of good repair.
- 3.8 'Business as usual' activities comprise a sizeable amount of the investment in the road network and contribute to its successful operation. Corridor Managers supervise the overall performance of each of the TLRN corridors on a day-to-day basis, identifying and prioritising improvements to maximise journey time reliability. TfL reviews the performance of 1,000 traffic signals every year, to ensure that London's traffic signals are operating efficiently and maximising benefits for all road users. Close working between TfL and the Metropolitan Police Services (MPS) has launched dedicated policing at Blackwall Tunnel, contributing to improved reliability and faster incident resolution at this critical location. Road closure times have further been reduced by funding laser scanning equipment to facilitate quicker investigations and establishing a joint roads reopening protocol. The continued funding of the MPS roads policing teams in Safer Transport Command (STC) has been ensured, to tackle congestion through managing collisions, traffic signals failure and vehicle breakdowns.

4 Continuing Innovation

- 4.1 During the 2012 Games, TfL utilised a sophisticated traffic management system consisting of a considerable number of junction layout changes, dedicated Games Lanes and an innovative traffic signal strategy in order to meet ambitious journey time targets for Games Family vehicles. Extensive partnership working across TfL and with other organisations also provided the capability to react to and address issues on the road network as they arose. The outcomes of this were overwhelmingly positive, with agreed network performance targets exceeded during the Games. The technology delivered and the lessons learnt from this experience provided an example of what is possible in road space management, given a suitable level of investment and resource.
- 4.2 To meet the ever increasing and often competing demands from TfL's wide range of customers and stakeholders, TfL must constantly develop its capability to monitor and provide for all modes, including buses, pedestrians and cyclists. Some of the technologies and infrastructure being developed for this purpose include bus and cyclist priority points, which address journey times at key locations on the network. TfL is also enhancing SCOOT for pedestrians and cyclists, developing the capability to detect the demand from these modes and optimise signals accordingly.

- 4.3 High quality bus priority is a key deliverable for ensuring an efficient and reliable service for the over two billion passengers using the bus network each year. TfL continues to develop the interaction between SCOOT and Selective Vehicle Detection (SVD) for buses, using iBus data to investigate how to improve bus reliability and prioritise buses more effectively. Teams within TfL are also working together closely to understand the pinch points for buses on the network and devise solutions to address these.
- 4.4 The development of new technologies like video analytics plays a large role in the management of the road network. An Image Recognition and Incident Detection System (IRID) on some CCTV cameras recognises abnormal levels of congestion and provides an automated warning and the Automatic Roadworks Monitoring (ARM) project uses the same technology to measure the amount of activity on works sites, making it easier to enforce permit regulations. The recently introduced Traffic Information Management System (TIMS) uses data from SCOOT to provide automatic alerts of congestion. SASS (System Activated Strategy Selection) acts as a watchdog at key points on the network and automatically invokes signal timing strategies to prevent congestion occurring.
- 4.5 Another measure to increase TfL's ability to understand and control its network, involves the development and deployment of technology that delivers business intelligence and analysis in real-time, allowing TfL to develop its capability to predict the impacts of both planned and unplanned events on the road network. Currently TfL is able to measure a good level of information on the TLRN but is limited in what information can be gathered on the rest of the road network. The expansion of this technology will allow for a more active approach to road space management that gets the most from the available network resources and promotes effective balancing of the competing demands for road space. It also will help TfL to improve the real-time network information that is provided to customers and shared with third parties for integration into commercial services. The initial research phase is nearing completion and the business plan and overall strategy is being developed, with intention of submission to the Finance and Policy Committee in the summer 2014 for Project Authority approval at £50m-£100m.
- 4.6 Just as important as the development of these systems is their integration. Alongside the expansion of new technologies and capabilities will be a dedicated effort towards ensuring the cooperative working of all intelligent systems used to manage the road network, ensuring the most efficient use of existing and future infrastructure and resources.
- 4.7 TfL also introduced the Transport for London Lane Rental Scheme (TLRS) in 2012. This was a key innovation to reduce road work delays whereby works promoters are charged up to £2,500 a day for working in congested areas and at busy times of the day. The scheme covers over 200 miles (57 per cent) of the TfL road network, covering the areas most susceptible to major roadwork disruption. TfL is not exempt from the rules and the scheme also ensures that its own works are delivered with minimal disruption. Since the scheme was introduced, around 95 per cent of works have avoided the charge by working outside of peak hours, and serious and severe disruption has been reduced by more than a third. By encouraging companies to carry out their work overnight or during off-peak hours, all road users, including drivers, cyclists and bus passengers, will benefit from more reliable journey times and less disruption.

5 Effective Incident Management

- 5.1 Actively managing the impacts and causes of congestion on London's roads is the remit of the Surface Transport and Traffic Operations Centre (STTOC), which co-locates TfL's London Streets Traffic Control Centre (LSTCC) with CentreComm (London Buses' Emergency Command and Control function) and MetroComm (the MPS control room for their STC and Traffic Division). The teamwork, communication and partnership working this arrangement facilitates are essential to keep London moving.
- 5.2 The LSTCC's real-time traffic management is dependent on the continued improvement and expansion of technology like SCOOT and better means of monitoring the network and communicating with customers. Access to over 1,300 CCTV cameras through TfL's own infrastructure and formal camera sharing agreements with the MPS, the Highways Agency and 20 London boroughs, ensures best use of resources across agencies and covers a large portion of London's strategic road network. (There is no overlap between these dynamic cameras and the fixed view Safety Camera estate.) The operational coverage of cameras is rationalised through a CCTV Steering Group, which coordinates requirements across TfL.
- 5.3 Another key factor in managing congestion is the provision of timely and accurate traffic information to road users to help them plan their journeys to avoid disruption and delay. The public access TfL's traffic information directly through the TfL website and by following @TfLTrafficNews on Twitter. The LSTCC also provides real-time information to the travel news media and other stakeholders through a dedicated portal. TfL has embraced the UK open data initiative by allowing over 2,000 third party providers of travel information services (like application and web developers, and satellite navigation providers) to get direct and free access to live data feeds through the TfL data portal. Examples of this data are live updates on traffic incidents and road closures, live bus countdown data and traffic CCTV images refreshed every 2 minutes. The LSTCC keep over 140 roadside variable message signs updated with relevant real-time incident notifications and advance warnings of scheduled events and works. TfL also works with the Highways Agency to set reciprocal messages on each other's networks to advise road users of issues.
- 5.4 This information is also what makes STTOC so successful, as it can be more readily shared among London Buses, the MPS and the LSTCC. Information is gathered from the 8,000 or so bus drivers on the network, every traffic-related emergency call received by the MPS, and TfL staff and contractors who feed information into the LSTCC as part of their daily work.
- 5.5 Once incidents are identified and verified, there are a number of options that can be used to manage the resultant congestion. Traffic signal timing changes can manage the flow of traffic approaching congested areas or MPS Roads Policing Units can also be deployed, providing an important presence on the ground to inform and direct road users. TfL's London Highways Alliance Contractors (LOHAC) also work closely with LSTCC to ensure expedient responses to incidents, for example, when a clean-up or repair is required.
- 5.6 The management of planned events plays a key role in ensuring the effective management of the road network. The LSTCC has an embedded team with responsibility for coordinating approximately 750 planned events per year and TfL's Planned Interventions team is responsible for managing the considerable resource directed towards reducing congestion from roadworks. Initiatives addressing this have

been introduced by the Mayor's Office and TfL and include: the London Permit Scheme; the Mayor's Code of Conduct; the Mayor's Roadworks Pledge and ReportIt tool; and, most recently, the TLRN Lane Rental Scheme. These measures improve cooperation and coordination between highway authorities, utilities and other organisations and develop real incentives for works promoters to apply best practice and reduce the amount of time they spend disrupting traffic. The development of innovative measures to reduce the impact of roadworks, funded by income from the Lane Rental Scheme, further contributes to this area of work.

6 Summary and Next Steps

- 6.1 The measures described above have contributed greatly to TfL's ability to manage its road network and drive further improvements. The recent Surface Integration Programme (SIP), with its rationalisation of responsibilities and roles across Surface Transport, seeks to make it easier to deliver increased capability.
- 6.2 The newly formed Road Space Management (RSM) Directorate is responsible for delivering the roads programme and ensuring the effective performance of the road network. This includes the development and enhancement of new technology as described above and the careful balancing of priorities at key locations on the network. RSM will therefore drive these improvements and work closely with partners, such as the new Directorates of Buses and Enforcement and On-Street Operations and the MPS, to deliver further improvements in road reliability going forwards.
- 6.3 RSM is also currently undertaking a full review of the people, processes and technology associated with its operations. This is being coordinated in the context of the new Surface Transport Strategic Coordination Unit, to ensure it delivers the most pertinent and valuable information to key stakeholders across the business and the travelling public.
- 6.4 Looking forward, TfL and the MPS have been working on a change to the organisation of the STC and the Traffic Operational Command Unit (which is responsible for reducing the number of traffic related deaths, injuries and crimes on London's roads) which will create for the first time a single command dedicated to the policing of the surface transport network. This will have a focus on preventing and responding to collisions where people are seriously injured and providing better road space management, in addition to transport crime related objectives. This change was approved at the MPS Management Board on 5 November 2013 and will provide 24/7 coverage, with a larger available police resource base and specialist units to respond and prevent incidents from occurring on the sections of the road network most vulnerable to disruption. The new Command will be fully implemented by April 2015 with shadow implementation from April 2014.
- 6.5 TfL has demonstrated in the past that effective coordination, cooperation and deployment of technology can deliver real benefits in the management and performance of the road network. This ambitious programme of works planned to address the challenges of the future and the continuing pressure on London's road network will only make this task more challenging, but with the correct level of investment in the network, TfL can ensure the effective management and operation of its network far into the future.

7 Recommendation

- 7.1 The Panel is asked to NOTE this paper.

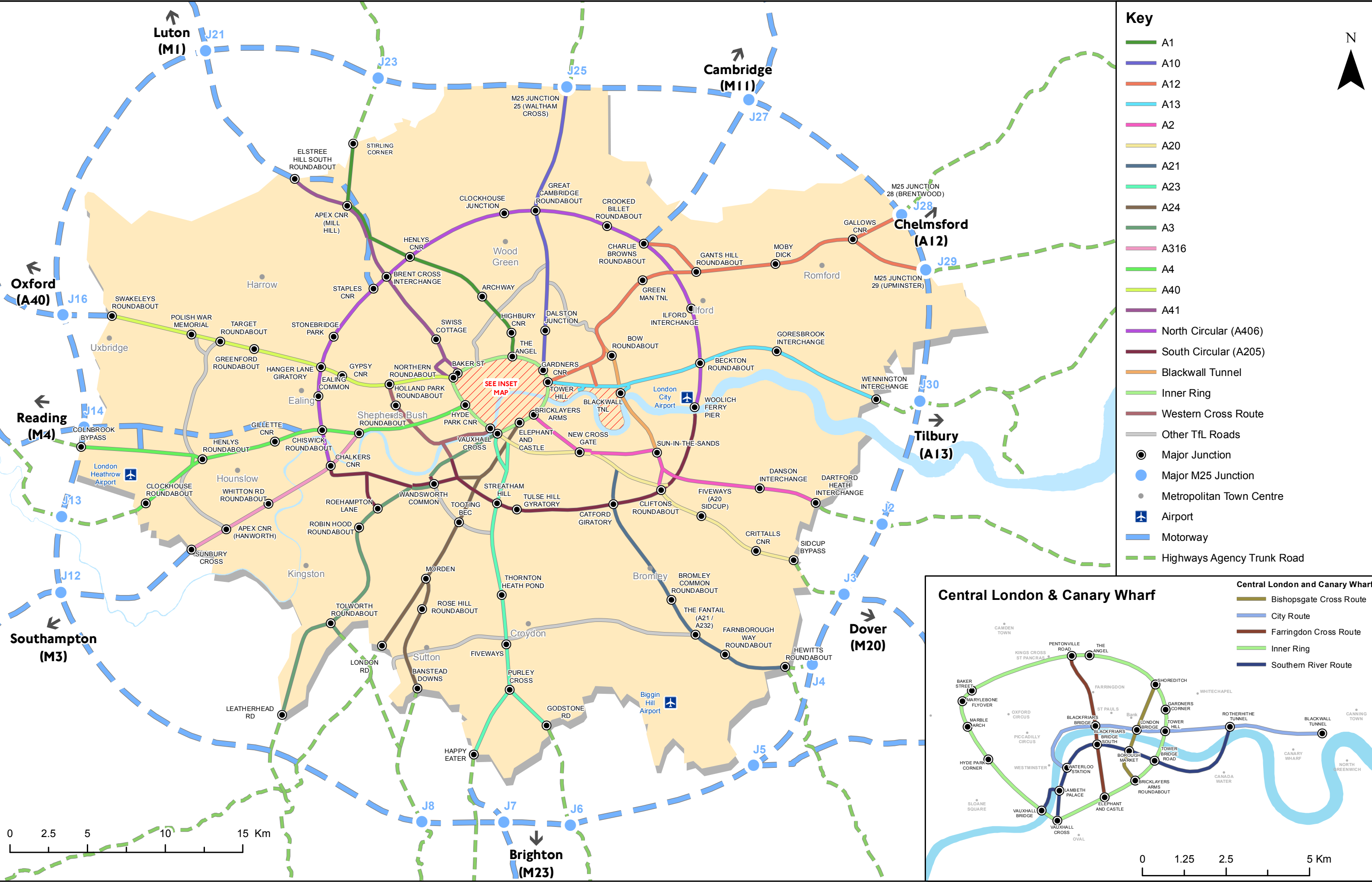
8 Appendices

8.1 The following appendices are provided:

- (a) Appendix 1 – Transport for London Road Network map
- (b) Appendix 2 – Measures to maximize reliability of the road network

9 Contact

9.1 Contact: Alan Bristow, Director of Road Space Management
Number: 020 3054 2593
Email: AlanBristow@tfl.gov.uk



This map is reproduced from Ordnance Survey material with the permission of the Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office © Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. (GLA) (100032379) (2011)

Measures to Maximize Reliability of the Road Network

On 1 February 2013, the package of measures to maximize the reliability of the road network and expand TfL's operational capabilities was approved by Leon Daniels, Managing Director Surface Transport, at Surface Transport Board.

Portfolio elements which expand TfL's operational capabilities include:

- 1 **Installation of SCOOT at an additional 1,500 sites**
Planned expenditure (total 8 years, 13/14 – 20/21) £57m: Installation of SCOOT at an additional 1,500 sites across London's strategic road network will allow TfL to expand its capability to optimise its traffic signals and facilitate complex traffic management strategies in a policy responsive manner. At the completion of this programme 75 per cent of London's traffic signals will be operating SCOOT. The real time operation of SCOOT will be at the core of a Road Space Management Strategy to manage capacity across the network and deliver multi modal service standards and facilitate delivery of an ambitious capital programme. SCOOT has been shown to deliver a reduction in delays of over 13 per cent for general traffic and TfL continues to develop it to be policy and demand responsive for pedestrians and cyclists.
- 2 **Expansion of the Corridor Improvement Programme (CIP)**
Planned expenditure (total 8 years, 13/14 – 20/21) £38m: The Corridor Improvement Programme is fundamental to improvements in reliability and primarily will address congestion hot spots and facilitate emerging multi modal service standards, through relatively small interventions, in order to ensure that London's road network operates effectively. This programme will include Bus and Cycle Priority Points and will be combined with SCOOT and network sensing to facilitate initially a road space management strategy, to enable delivery of an ambitious programme for the central London area.
- 3 **Significantly increased capability in Operational Modelling**
Planned expenditure (total 8 years, 13/14 – 20/21) £12m: With the significant competing demands at local level, it is essential that London has an appropriate operational modelling capability which focuses on the real time environment that can analyse the impacts of the huge numbers of large and small changes taking place on a sub-regional basis. This analysis will ensure that the correct operational decisions are being taken, which translate directly into real time operations. Modelling capability is intended to be delivered by the end of 2013/14.
- 4 **Develop improved and increased network instrumentation**
Planned expenditure (total 8 years, 13/14 – 20/21) £75m: To support the Road Space Management strategy and to be able to operate it across the network in real time, an increase in pervasive intelligent sensing across the network is proposed, to understand better, for example, origin and destination flows. This capability is currently being developed through several demonstrator projects that are exploring technologies that could in time replace the functions performed by Traffic's current technology, which includes CCTV and VMS. The results from these demonstrator projects will inform the strategy for implementation. This work will position TfL to provide a smart network to all its users. TfL has also made the commitment to improve the information it provides about its network and this capability will be expanded over the length of the TfL Business Plan.

Other measures as part of this package are as follows:

5 Build on TfL's previous work to reduce the impact of road freight before and during the 2012 Games

Planned expenditure (total 8 years, 13/14 – 20/21) £13m: An enhanced engagement programme with industry will focus on:

- (a) reducing the traffic impact of road freight through revising the mode of deliveries, collections and servicing away from road vehicles to either water-based transport and rail, or to cycling and walking options and reducing the number of deliveries through consolidation, collaboration and business demand;
- (b) retiming deliveries to avoid peak periods;
- (c) improving routing efficiency, including compliance at the kerbside; and
- (d) ensuring road freight operators 'do the right things' to improve road safety and environmental performance.

6 Addressing identified 'pinch points' in the bus network

Planned expenditure (total 8 years, 13/14 – 20/21) £100m: It is likely that around 30 schemes, ranging from high cost through medium cost to smaller complementary schemes, will be delivered in order to improve bus reliability and congestion in London. Further work is necessary to confirm the exact form of the programme.

7 Delivering high quality bus priority

Planned expenditure (total 8 years, 13/14 – 20/21) £100m: High quality bus schemes provide a direct, fast, reliable and accessible connection from a location with substantial residential and employment growth to its local centres and interchanges. This investment, together with integrated improvements to cycling, walking and the urban realm, will deliver an improvement in local perceptions of the public transport offered. This will mean a greater sustainable transport mode share in and around new developments and less risk of congestion as a result of regeneration schemes.