



Sub-regional transport plan

# South





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## Mayoral foreword

Following my election in 2008, I set out my desire for TfL to “listen and learn from the boroughs...help them achieve their objectives and... negotiate solutions that will benefit the whole of London” (Way to Go, November 2008). TfL thus embarked on a new collaborative way of working based on sub-regions.

As well as better collaboration, the sub-regional programme has led to an improved modelling and analytical capability, that has enabled changes within the sub-regions to be better understood and provided for. This collaboration and analysis helped inform my Transport Strategy (published in May 2010), which set out my broad policies and proposals for London. The Transport Strategy also set out a commitment to develop the five sub-regional transport plans that would provide more detail about the priorities for each region, which in turn would help better inform the development of Local Implementation Plans (LIPs).

I am pleased to see the fruition of that collaborative work. And despite the fact that we are entering into a period of financial constraint, which will impact on our ability to do more in the short term, I am pleased that the sub-regional transport plans are forging ahead in making the case for more investment in London. I also recognise that one size doesn't fit all and that there are different priorities that need to be addressed in each sub-region. I also appreciate that these plans are 'live' and provide a working framework for TfL, the boroughs and other key stakeholders to amend and fine tune the proposals to ensure the transport system can support London's economic and population growth as well as meet wider social and environmental goals.



**Boris Johnson,  
Mayor of London**

## London Councils' foreword

Boroughs play a key role in delivering the transport that London needs and deserves. However, there are many transport issues that cross borough boundaries and this is where the Sub-regional Transport Plans (SRTPs) are particularly important. The SRTPs fill the gap between the strategic policies and proposals in the Mayor's Transport Strategy (MTS) and the local initiatives in boroughs' Local Implementation Plans (LIPs).

We have very much welcomed the GLA and TfL's willingness to engage with London Councils and the boroughs on the development of the SRTPs over the last couple of years. The process has allowed boroughs and other stakeholders to agree on the key challenges for each sub-region and the most cost-effective potential solutions and policy options.

Whilst there are some common themes, the specific transport issues faced by each sub-region do vary just as factors such as the existing levels of transport provision and the anticipated growth in population and employment vary across London. Developing the SRTPs has allowed such variations to be taken into account and provided a range of analysis and information on potential solutions which will be useful for the future development of LIPs as well as TfL's own plans.

The current financial situation is incredibly challenging. Another important function of the SRTPs, particularly in the face of cuts to transport funding, is that we now have agreement on the types of initiatives that will need to be delivered in each sub-region if London's transport system is to meet the needs of all those who live, work and visit here. This means that we can adopt a co-ordinated approach to delivery and to securing funding for longer-term priorities.

London Councils and the boroughs will continue to work with TfL and the Mayor to develop the most effective package for each part of London and to deliver a more efficient, reliable and attractive transport experience for all Londoners.



**Cllr Catherine West,  
Chair, London Councils'  
Transport and  
Environment Committee**

## Executive Summary

Over the past two years, the south London boroughs, South London Partnership and other stakeholders in the region have worked closely together in developing this Sub-Regional Transport Plan (SRTP). The purpose of the plans is to set out the transport strategy to address the particular challenges faced by each of the London sub-regions, of which there are five in all. The plans are informed by the Mayor's Transport Strategy (MTS) and by local authority transport priorities for improvement. The plans provide a sub-regional context for individual local authority Local Implementation Plans (LIPs). The SRTP sets out contributions to meeting the challenges - and hence the outcomes - of the MTS, and form a bridge between the MTS and individual local authority transport objectives.

In February 2010, an Interim Report on Challenges & Opportunities was published, providing initial analysis of the transport challenges facing the sub-region. The SRTP has been informed by this analysis and has been produced alongside the development of a multi-modal model for the sub-region. The plan is a live document and will need to be responsive to changing circumstances, including the impact of the Spending Review on the funds available for transport schemes and programmes. It is proposed that the implementation of the programme set out in this plan, and any changes to the plan, are the responsibility of a Sub-regional Panel, which is suggested will be formed from the participants of the South London Transport Strategy Board, which currently includes TfL, the LDA, representatives from the South London Boroughs and sub-regional partnerships. The Terms of Reference and membership of this group will need to be revised accordingly.

The south sub-region comprises the following London boroughs: Bromley, Croydon, Kingston upon Thames, Merton, Richmond upon Thames, Sutton and Wandsworth. The London boroughs of Lewisham, Southwark and Lambeth are not core boroughs in the sub-region but, in keeping with the 'fuzzy boundaries' approach, also need to be considered with regard to the south, as does Hounslow. In the same way, the plan will consider transport to and from the areas surrounding London, in particular Surrey and Kent.

### South sub-region and the SRTP

The MTS sets out six goals for transport in London, and these form the overarching structure of the SRTPs. The measures in each of these sections are also directly related to the challenges that have been identified for the sub-region.

The following challenges have been identified for the south sub-region:

- Reduce public transport crowding
- Improve access and movement to, from and within key places
- Improve connectivity to, from and within the sub-region
- Manage highway congestion and make efficient use of the road network

### Economic development and population growth

The base of the SRTP is the committed investment in public transport capacity to support growth, including the London Underground upgrades, Crossrail, protection of the bus network and HLOS investment in National Rail. This investment supports economic growth over the next decade, but further improvements to capacity are needed beyond that.

The south sub-region is heavily reliant on the National Rail network, particularly for radial movements. The Thameslink Programme and National Rail investment will provide significant benefits to the sub-region in terms of radial connectivity, providing capacity and frequency improvements into and from central London and areas outside the GLA boundary. Maximising the benefits of this investment by improving walking and cycle access and considering the bus services serving the stations, as well as encouraging urban realm improvements, will be important to the sub-region.

The Government has made a commitment to a High Speed 2 (HS2) rail link between London (with a direct link to Heathrow) and the north of England. An interchange at Old Oak Common in west London is proposed, with all Crossrail, Great Western and Heathrow Express Services calling at the station. TfL is investigating the potential for linking this station to Overground and Underground services, thus providing the area with a strategic interchange and better local connectivity in addition to the access it would provide to international destinations. Providing connections to south London to HS2 will be very important for the area.

Orbital public transport connections in the south sub-region are provided by a comprehensive bus network and the increasingly popular Tramlink system. The bus network is kept under constant review and is able to respond to growth demands as they occur. The orbital rail network is also being improved with London Overground connections to Clapham Junction in 2012, following recent extensions to Crystal Palace and West Croydon.

Growth in Tramlink patronage has risen significantly since its introduction and continues to rise. Although this is very encouraging, it causes crowding issues. Investment in additional capacity, both rolling stock and infrastructure, is essential to cater for additional demand. Extensions of the system to areas such as Bromley, Sutton, Tooting and Thornton Heath

(and potentially northwards) are under consideration, although further investigation of engineering, highway impacts and value for money considerations are required. In addition, within TfL's current business plan to 2017/18, no funding is included to extend the system. However, this remains a longer term aspiration.

Whilst the Underground system does serve parts of the south sub-region, most notably through the Northern and District lines, many parts of the region are not served. As part of the Vauxhall Nine Elms Battersea (VNEB) development, extension of the Northern Line to Battersea is proposed. This will require private funding to see its implementation. In order to improve connectivity, enhance operational performance, increase capacity of the network and serve key growth and regeneration areas, extension of the Bakerloo Line is being considered which would serve Lewisham (via Old Kent Road or Camberwell/Peckham) and onwards to Beckenham Junction and Hayes. Initial assessment of this proposal and possible alternatives has been undertaken and the case is positive. However, the costs are considerable and further engineering, value for money and stakeholder considerations and discussions are required.

The Department for Transport (DfT) has asked the Mayor to review the safeguarding for the Chelsea-Hackney line. Many options are being tested against the current and forecast problems, mainly crowding on the transport network, and this work is ongoing. Whilst the predominant crowding occurs in the core section of the route there are benefits from extending the network further into south London and these are being explored.

Growth in south London is not significant when compared to many other sub-regions. However, the sub-region is forecast to have a population growth of 8% by 2031 and employment growth of 7%. The growth is concentrated principally around the Major and Metropolitan centres, and most notably in the Opportunity Areas of Croydon and VNEB. An

Opportunity Area Planning Framework (OAPF) has been prepared for VNEB and TfL and other key parts of the GLA are working closely with the London Borough of Croydon to develop an OAPF for the town centre.

Access to both Heathrow and Gatwick Airports are key issues for the sub-region. Further connections to Heathrow are under consideration including the Heathrow Airtrack proposal to link to Clapham Junction and Waterloo as well as key stations on route. This proposal is supported in principle but there are many local issues to be considered. The Thameslink and HLOS programmes will improve access to Gatwick Airport and the important Gatwick Triangle, along with consideration of Gatwick Express stopping services.

Car usage in the south sub-region is the highest of all regions with 49% of trips being made by car. This creates congestion and measures to effectively manage the road network are key considerations included within this plan.

### **Enhancing the quality of life for all Londoners**

Journey quality will continue to be improved through reduced crowding, the refurbishment of stations, improved provision of information, increasingly reliable bus services, and a better quality urban realm. The plan outlines improvements that can make town centres a more attractive place to visit, especially on foot.

The south sub-region contains some areas of poor air quality, and there is a need to balance air quality management with accommodating areas of growth. London-wide measures such as the use of cleaner buses, developing walking and cycling and smoothing traffic flow, and potentially, targeted local measures will be used to improve air quality, as set out in the Mayor's Air Quality Strategy. Local measures might include reducing idling, use of shared spaces and restrictions on car parking. Particularly

important on a London-wide basis will be encouraging mode shift to sustainable modes.

Measures to encourage people to use active travel modes such as walking and cycling will bring benefits in terms of both individual wellbeing and in taking pressure off the road and public transport network and reducing emissions from transport.

South London boroughs, most notably Sutton and Richmond, have championed the Smarter Travel programme and demonstrated the considerable gains to be made from such a programme.

### **Improving the safety and security of all Londoners**

Public transport is already a relatively very safe way to travel. Targeted activity to further improve safety includes continued investment in asset renewal, and management of the network, for example with regard to staffing at stations and improvements to urban realm. A strategy to improve transport safety and security in London will be published later this year.

Road safety has been improved significantly over the last decade, but there is more that can be achieved through targeted road safety campaigns and possibly lower speed limits on local roads: the plan identifies priority areas in the sub-region for increasing road safety.

### **Improving transport opportunities for all Londoners**

In terms of physical accessibility, the achievement of an entirely low-floor bus fleet in London has brought significant benefit. Further improvements in the south sub-region need to be made by improving the design and layout of stations and streets. TfL continues to invest in step-free access to Underground stations and a programme of access improvements are proposed for National Rail stations. Access to transport is also a key

factor in achieving regeneration and the Mayor and TfL will work with partners on transport priorities for those areas identified for growth or regeneration in the London Plan. While public transport accessibility levels are generally good, there are areas of lower access in the outer parts of the sub-region. Addressing this issue will need to be balanced with ensuring a good level of access to transport for deprived areas in the sub-region.

### **Reducing transport's contribution to climate change and improving its resilience**

Although CO<sub>2</sub> emissions and climate change need to be tackled on a wider scale than an individual sub-region, it is still useful to consider local initiatives such as promoting cleaner vehicle technology for freight, and promoting the use of car clubs and low carbon electric vehicles in locations where these are most likely to be taken up.

### **Support delivery of the 2012 Olympic and Paralympic Games and its legacy**

Tennis for the Games will be held at Wimbledon, but there are likely to be additional impacts for the south sub-region from visitors to the Games spending time visiting tourist destinations such as Richmond and Hampton Court Palace. In addition, the south sub-region will host the South Africa team and need to ensure ease of movement between training facilities and accommodation.

The Rugby World Cup will be held at Twickenham in 2015 and consideration to access and transport improvements are required to support this important event.

### **Funding and Delivery**

The plan includes both funded and unfunded proposals, but there is no new funding for the plan. The plan will be delivered over the next twenty years by TfL, the boroughs, the TOCs, Network Rail and others.

The plan will be monitored and reviewed jointly by TfL and the South Sub-regional Panel.

The plan is 'live' and will be updated at appropriate intervals.



# Chapter I Introduction

## I.1 Context

This south sub-regional transport plan (SRTP) addresses the goals and challenges set out in the Mayor's Transport Strategy and how they will be met in the sub-region. It was developed through joint working between the boroughs, TfL and other stakeholders. The plan identifies planned investment in the shorter and medium term and potential priorities for longer term investment required to meet transport challenges in the future.

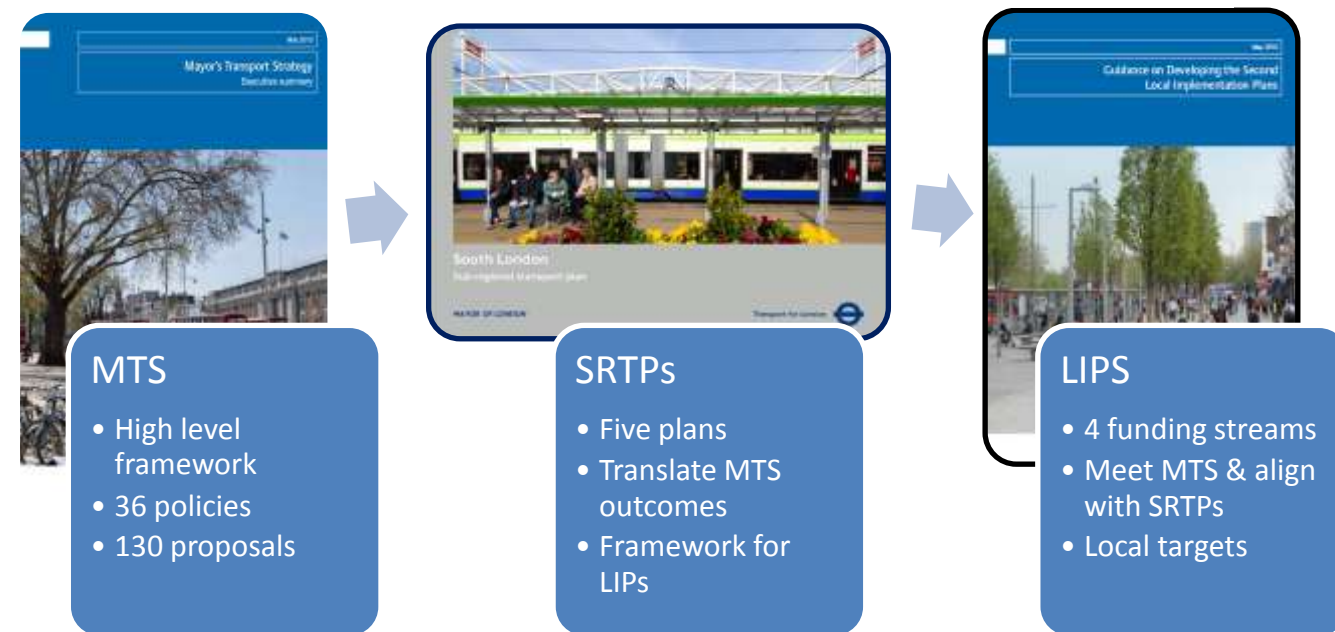
### The MTS context

Between 2006 and 2031, London's population and employment are forecast to grow by 1.25 million and 750,000 respectively. The MTS addresses the transport needs of London for the next 20 years in light of this growth. It sets out the Mayor's vision for a transport system for London that 'leads the world in its approach to tackling urban transport challenges' and seeks to achieve the high level goals of:

- Supporting economic development and population growth
- Enhancing the quality of life for all Londoners
- Improving the safety and security of all Londoners
- Improving the transport opportunities for all Londoners
- Reducing transport's contribution to climate change and improving its resilience
- Supporting delivery of the London 2012 Olympic and Paralympic Games and its legacy

Meeting these goals requires close working, in particular between the London boroughs and TfL. The sub-regional approach provides a conduit for borough priorities, as identified through Local Implementation Plans, while providing the context for delivering the London-wide Transport Strategy.

Figure I.1 Diagram showing relationship between London-wide, sub-region and borough level documents



### Wider context

This SRTP is built upon the London Plan, MTS and Economic Development Strategy. It is also informed by other Mayoral strategies including the draft Air Quality Strategy, Climate Change Mitigation and Energy Strategy, Climate Change Adaptation Strategy, Waste Strategy and Health Inequalities Strategy.

The London Plan Examination in Public (EIP) has now concluded and the inspectors report is expected in spring 2011. The final version of the plan will be published later in 2011. This will be followed by a series of Supplementary Planning Guidance documents which will be relevant for each sub-region.

### Local Implementation Plans (LIPs)

The LIPs are an important mechanism for boroughs to plan and implement key local improvements. They also show how the sub-region's challenges and opportunities, as identified in this Plan and the Interim Report on Challenges and Opportunities, will be addressed.

The LIPs process, as set out in the recently published LIPs guidance, has been simplified to provide boroughs with greater ownership of their own programmes and flexibility to reflect local circumstances. This new second round of LIPs becomes effective from April 2011.

LIP funding from TfL will be allocated to boroughs for Corridors, Neighbourhood and Supporting Measures; Maintenance Programmes; and Major Schemes. £146m will be allocated to support boroughs' investment for the year 2011-12, £142m for 2012-13 and £132m for 2013-14.

Boroughs are required to submit their draft second LIPs to TfL by 20 December 2010. TfL will review/assess boroughs' LIPs to ensure they meet the core requirements of the MTS and are aligned with the SRTPs.

## 1.1 Context

### Rationale for sub-regions and fuzzy boundaries

The MTS includes a commitment for TfL to work closely with boroughs and to make the strategy more relevant at a local level. To this end the Mayor included a policy (28) for the five SRTPs to be produced.

The focus of each SRTP is around a set of 'core' boroughs, however the boundaries are intended to be flexible or "fuzzy" as transport challenges do not stop at borough or sub-regional boundaries.

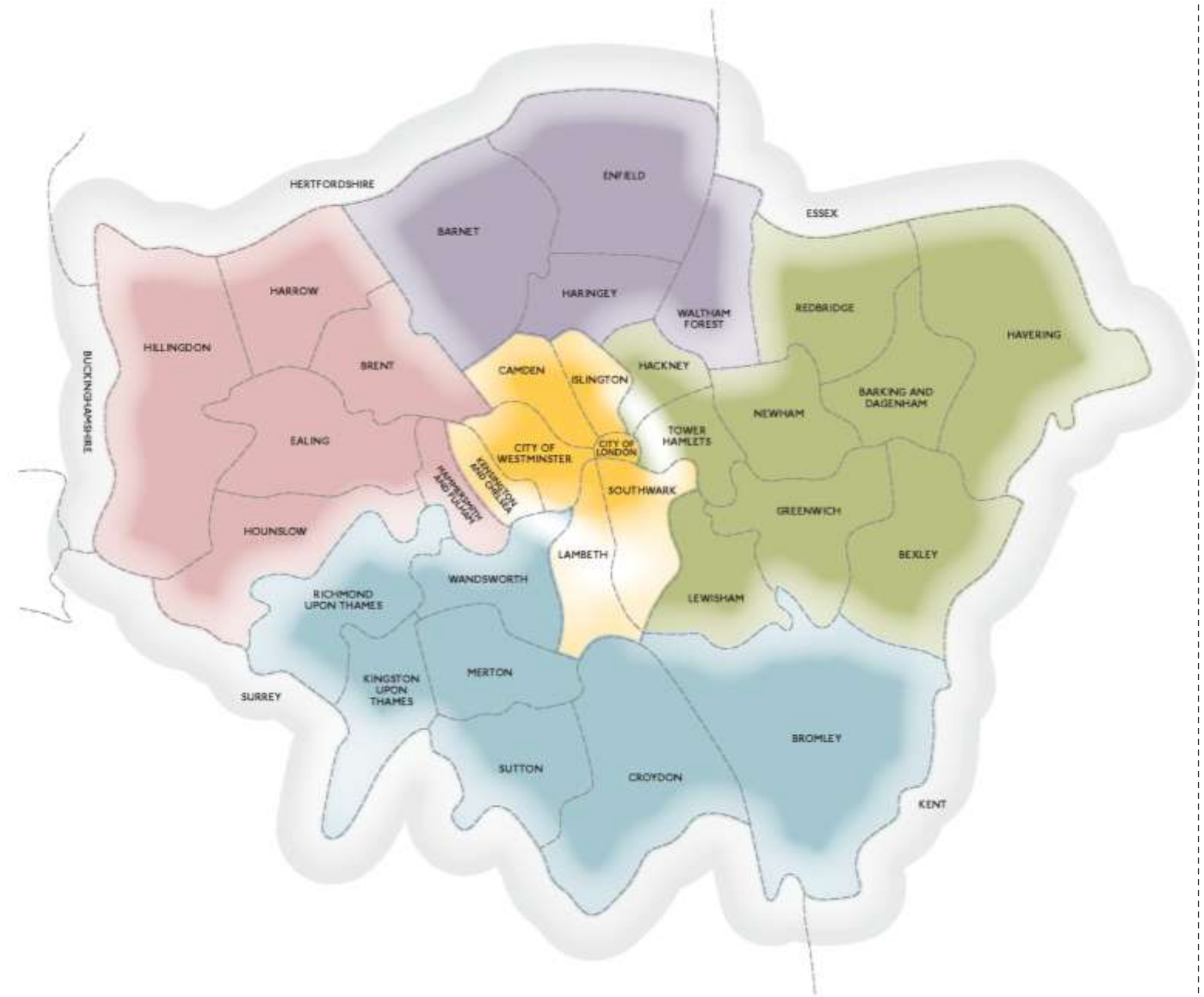
The south sub-region is made up of the following seven London Boroughs: Bromley; Croydon; Sutton; Merton; Wandsworth; Richmond-upon-Thames; and Kingston-upon-Thames.

### Links beyond London

The links to the areas beyond London, including Surrey and Kent, are also critical. The London economy is supported by access to the labour market of the south east of England, and outer London has significant commercial and community links with areas beyond London. As a result the sub-regional approach seeks to work with areas outside London and to strengthen links across boundaries.

In some cases, information is already shared across the boundary (such as the results of town centre surveys), as are traffic models. However, further opportunities for cross-boundary knowledge sharing and increased collaboration should be pursued.

Figure 1.2 Map showing the 'fuzzy boundaries' of the five sub-regions



## 1.2 Planned investment in London's transport network

Over the past decade there has been a determination to reverse the previous underinvestment in London's transport network and provide London with the transport system it needs to prosper and grow. In order to achieve the Mayor's vision London will require a transport system that is efficient and integrated but also encourages a shift to more sustainable modes such as walking, cycling and public transport. The transport system should also contribute to improving quality of life and the environment and offer improved opportunities for Londoners. This section sets out the planned investment in London's transport network that will contribute to meeting the Mayor's vision at the sub-regional level.

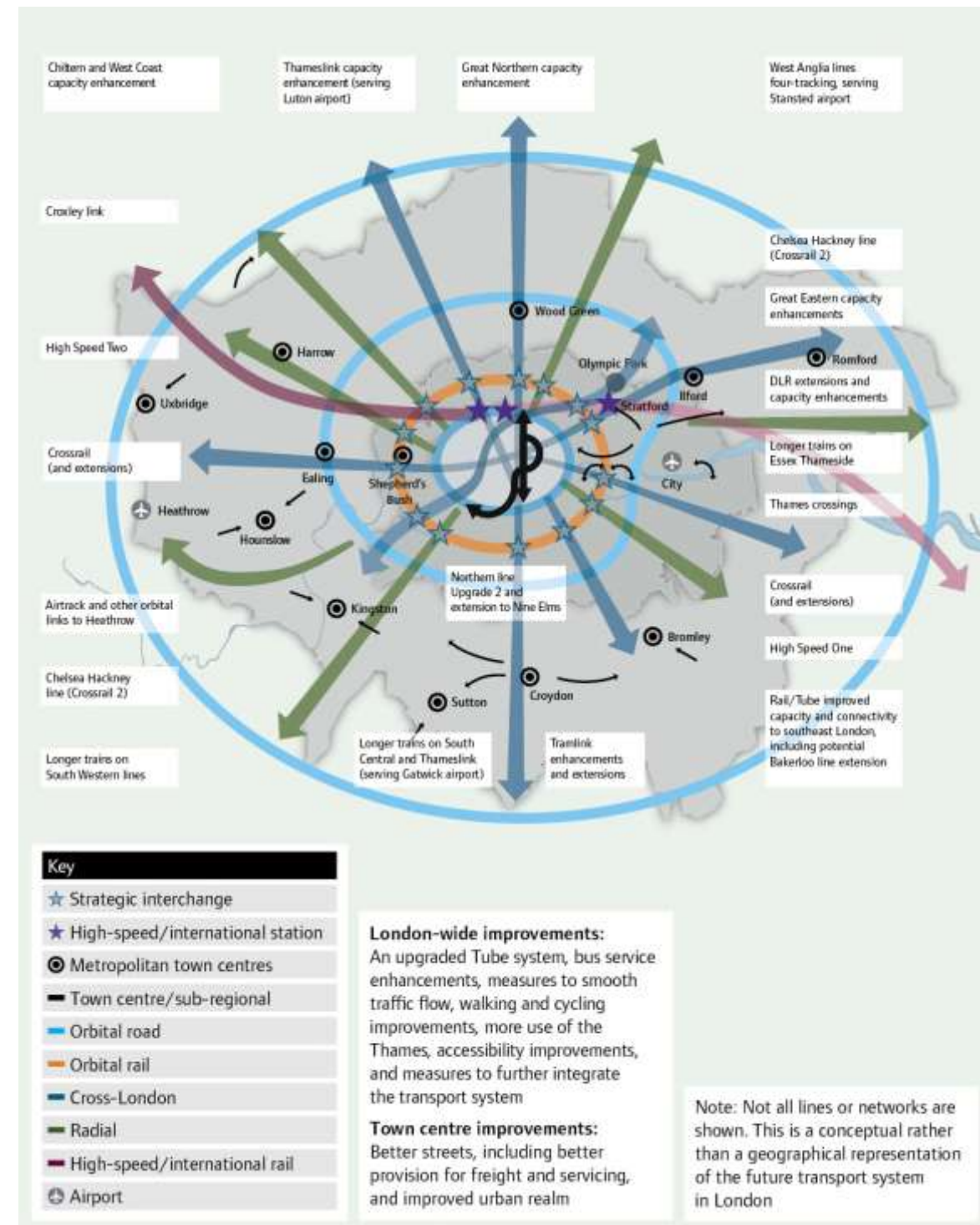
There is a comprehensive package of planned investment across the network funded by TfL, Network Rail and others. The extent of the substantial planned funded and unfunded investment is shown in Figure 1.3. The full list of schemes and priorities affecting the south sub-region is provided in the implementation plan (see Appendix 1).

This section presents the major funded and unfunded schemes and measures planned across London, identifying those which have are relevant to the south sub-region.

### Funding context

The recent spending review and DfT's subsequent confirmation of funded schemes in London provide the funding and phasing context. Unfunded schemes will be taken forward when funding becomes available during the course of the plan period.

Figure 1.3 Significant additions to transport capacity and connectivity in London



### Funding sources

TfL's funding comes primarily from fare revenue and the Department for Transport. Whilst this plan will help to develop TfL's investment, there are a number of other funding sources such as asset utilisation, Community Infrastructure Levy, Section 106, and other third party funding that should be investigated and pursued.

## 1.2.1 Committed investment

Major investments in transport infrastructure affecting the south sub-region are outlined below and on the following pages.



### **National Rail network enhancements (HLOS I)**

Performance has improved in recent years and patronage is at record levels. Increasing capacity is now the main challenge. Existing routes will receive major investment to increase train lengths and frequencies and investment is also targeted at improving station facilities and physical accessibility.



### **Thameslink Programme**

The Thameslink Programme delivers an expanded, more frequent and higher capacity network. It will also support growth and regeneration in Croydon, Sutton and across parts of Lambeth, Southwark and Merton.



### **Crossrail**

Crossrail is due to open in 2018. Although the route will not pass through the south sub-region, there will be indirect benefits to the region from the overall increase in London's public transport capacity and opportunities for interchange.

## 1.2.2 Committed investment



### London Underground Upgrades

The 'Transforming the Tube' programme will deliver major improvements across the network including to the District, Northern and Victoria Lines in the south sub-region.

The improvements will bring about modernised stations, new rolling stock, increased line capacities and reduce journey times. The renewal of signalling and other systems will also help improve reliability.



### Overground extensions and improvements

London Overground began operating services from West Croydon and Crystal Palace to east London in 2010. An extension of the network, from Surrey Quays to Clapham Junction, is due to open in 2012. This will facilitate orbital travel from the south sub-region to the east.

## 1.2.2 Committed investment



### Tramlink

Recent investment in the London Tramlink network includes new livery, stops and shelters.

New systems and track renewal will be delivered during TfL's Business Plan to 2017/2018.



### Buses

The bus network in London has expanded significantly over the past 20 years and has excellent coverage with more than 95% of Londoners within a five minute walk (400m) of a bus stop. The bus network will need to respond to forecast population and employment growth, particularly around the Opportunity Area of Croydon and the other metropolitan centres.



### Walking and cycling

The Merton to City Barclays Cycle Superhighway opened in 2010 and there will be a further four in the south sub-region by 2015.

Four of London's seven strategic walking routes pass through the south sub-region. There is potential for many more walk trips to be made in the region, particularly to, from and within town centres.

### 1.2.3 Unfunded schemes in the sub-region: Background and medium term schemes

#### More investment will be needed

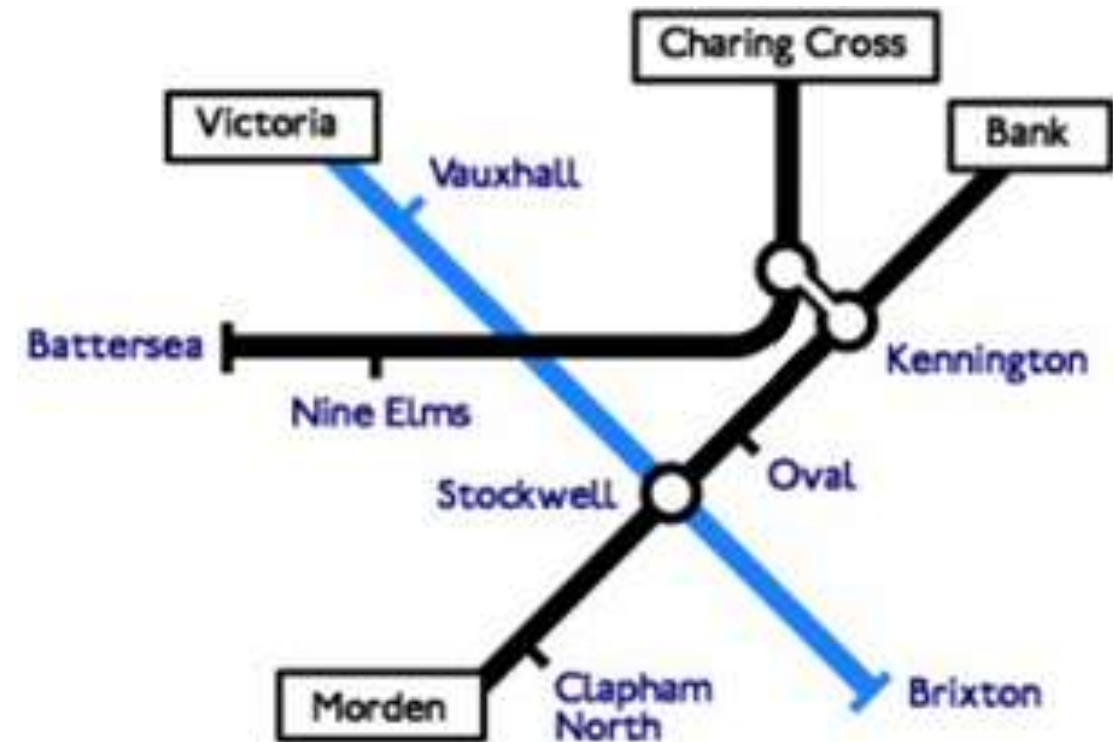
While in the current economic and financial climate there are serious pressures on funding, we must still look ahead and plan for the future in a growing city. The pressures of population growth are set to continue and the economy must be supported to ensure ongoing economic success. Much of the current investment, for example in the Tube, is addressing previous under-investment; meanwhile the growth pressures are continuing.

The schemes set out on this and the following pages are examples of the schemes that could be delivered to accommodate growth in the region.



#### Further National Rail network improvements (beyond HLOS1)

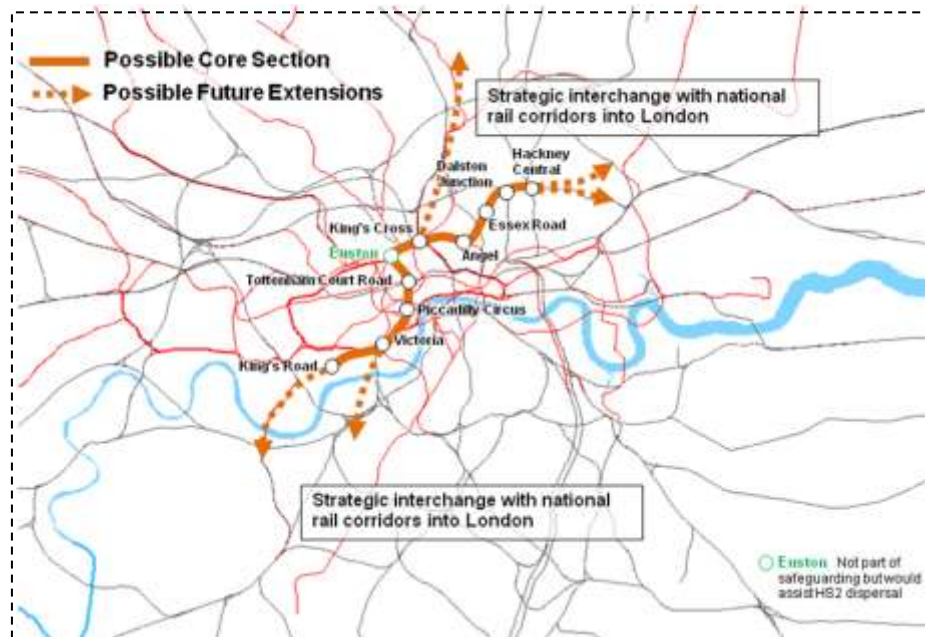
Beyond the schemes funded to 2014, further investment in the National Rail network will be needed to support continued growth. This will include measures such as longer trains in and around peak times and delivery of schemes to enhance or free up capacity on rail corridors.



#### Northern Line extension

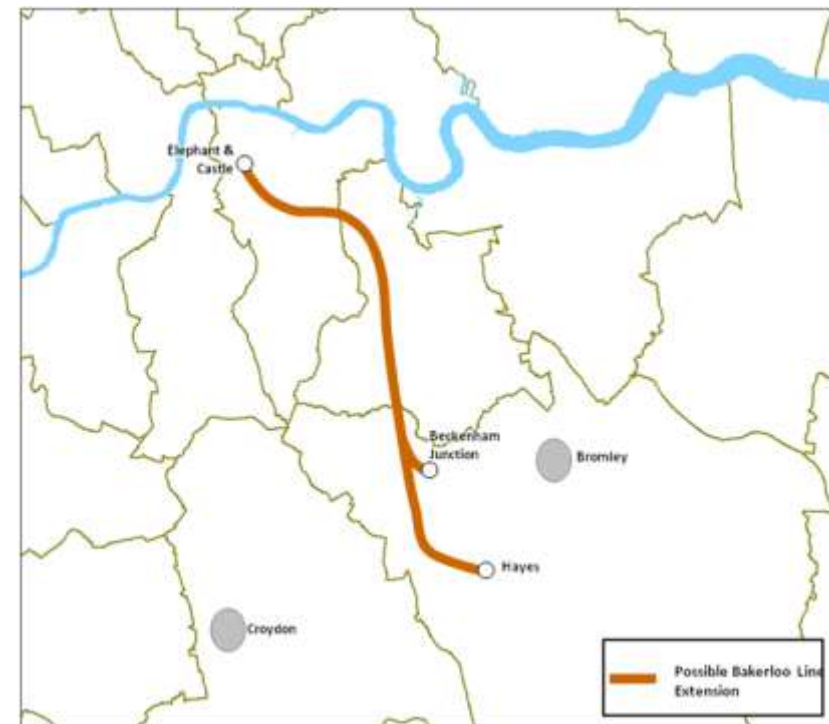
An extension of the Northern Line to Battersea would support growth in the Vauxhall, Nine Elms, Battersea Opportunity Area, and could contribute to transforming the current low value industrial uses to high value Central Activities Zone usage.

## 1.2.4 Unfunded schemes in the sub-region: Longer term rail schemes



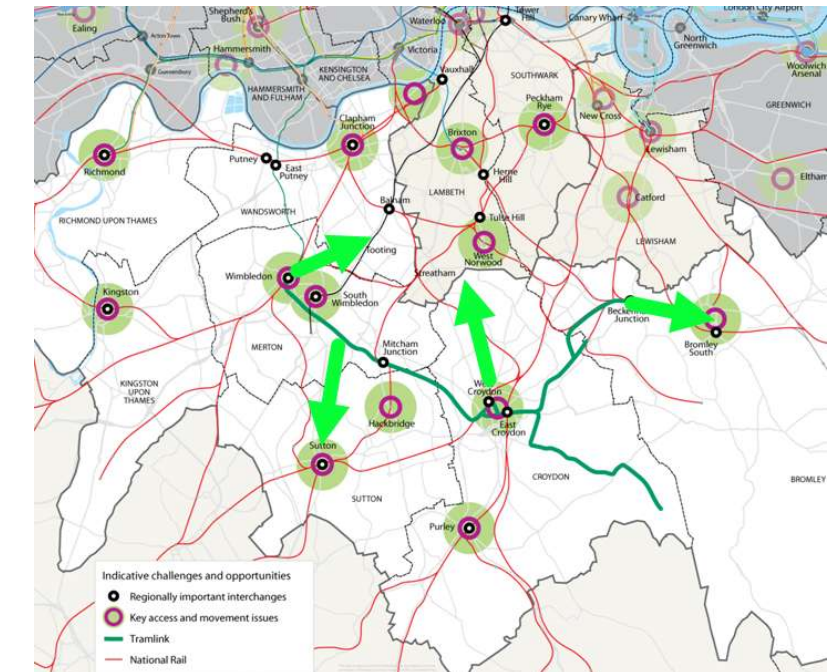
### Chelsea to Hackney Line (Crossrail 2)

TfL is presently reviewing various configurations of a potential Chelsea-Hackney line and this will include consideration of whether the route safeguarded in 1991 is still the right alignment to be developed in more detail or if an alternative might better meet London's needs both now and in the future. Until a decision has been made on the best way forward for CHL, the safeguarded route will remain in place.



### Bakerloo Line extensions

Possible extensions of the Bakerloo line have been assessed to identify the options that best relieve crowding, improve connectivity and support regeneration in the south, east and central sub-regions.



### London Tramlink extensions

Extensions to the Tramlink network could improve public transport connectivity and capacity in the south sub-region. Options for extensions include four shortlisted directions: east toward Bromley; south toward Sutton; and north toward Brixton or Tooting.



## 1.3 Working together

### The SRTP Process

The South SRTP has been developed in collaboration with boroughs and stakeholders from the south sub-region. In addition to meetings with individual boroughs, the key sub-regional dialogue has been via the South London Transport Strategy Board.

This initial version of the SRTP reflects this work with boroughs and other stakeholders, as well as through the analysis carried out as part of this Plan and the Interim Report on Challenges and Opportunities (see section 1.4). In a number of areas, further work is planned to develop the options in greater detail, for example, London Tramlink extensions.

As outlined, these plans are intended to evolve and can be updated as and when required to reflect major developments or changes in the sub-region or more widely. This could be due to, for example, conditions in the sub-region changing, increased clarity over available funding, or further information relating to projects such as Crossrail 2 and High Speed 2.



### Sub-regional Panels

Following publication of the SRTPs, it will be important to continue joint working on sub-regional planning between TfL, boroughs and sub-regional partnerships.

TfL proposes that existing sub-regional groupings are used to continue this work, with representation from boroughs, sub-regional partnerships and TfL as a sub-regional Panel. This will allow for the inclusion of additional boroughs, stakeholders and other parts of TfL to discuss the issues as considered appropriate. The Panel will effectively steer sub-regional engagement, articulate agreed priorities and input to the scoping of areas of work to be taken forward. Specific working groups could be tasked with more detailed work on particular projects or issues, however TfL, the Boroughs and other partners would retain their existing responsibilities. The panel could also be used as part of wider engagement on projects and service changes where a sub-regional discussion would have merit.

Using the SRTPs as the starting point for the work programme, the Panel would:

- facilitate continued discussion of the challenges identified in the SRTP and monitor progress on joint sub-regional priorities and projects;
- ensure multi modal consideration of issues (with consideration of benefits and disbenefits across the different modes / MTS indicators);
- consider how to deliver particular priorities set out in the MTS and SRTP in the sub-region (e.g. improved journey time reliability, mode share, urban realm, safety, emissions) and the priorities related to particular contexts or schemes;
- bring together different relevant interests early in the process to understand aims and implications of options;
- help to integrate transport and land use planning at the strategic level; and
- provide recommendations of further areas of work to support continued development of SRTPs, with terms of reference for each area of work agreed by the panel. Work on each issue or proposal would be managed by officers from relevant departments in TfL, boroughs and partnerships.

## 1.3 Working together

### Sub-regional corridors

The sub-regional panels could add value by considering the long-term operation and development of the strategic road corridors introduced later in this plan (see Section 2.3) over the life of the MTS. They would discuss / review sub regional corridor performance at a strategic level, including;

- share intelligence on day to day operation of corridors and discuss issues and opportunities to smooth traffic flow;
- forum for discussion of matters relating to both the TLRN and boroughs' road networks and their interactions;
- consider interventions that could be applied to improve journey times and smooth traffic flow.

### Places

The panels would provide a mechanism to enable consideration of the aims and vision for particular places and consider key proposals which would help deliver the SRTP.

Ideas for particular areas could be brought forward by boroughs or TfL and assessed in terms of their implications for different objectives (MTS, sub-regional, modal) via modelling, qualitative assessment, review of evidence, and professional judgement. This would also enable consideration of complementary measures to facilitate these aims, for example, buses, road network management, urban realm.

This would enable strategic consideration of aims for places in a similar way as is currently done for Opportunity Areas for example. If ideas / proposals were considered to be a priority or the impacts could be managed, they could be developed further via different mechanisms.

### When will the Sub-regional Transport Plan be revised?

The Plan is “live” and will be updated in response to specific triggers. These trigger points could include the approval of the LIPs or the availability of the south sub-regional model. As options for particular schemes are further developed it will also be important to reflect this within the Plans.

We will need to strike a balance between providing some certainty in relation to the priorities and revising the Plans to ensure they reflect relevant developments.

The Panels will help guide the ongoing development of the Plans and be able to advise on appropriate timescales for review and revision.

If you have any comments on the South Sub-regional Transport Plan, please direct them in the first instance to the Ambassador

[RichardDeCani@tfl.gov.uk](mailto:RichardDeCani@tfl.gov.uk)

### Contacts

Michèle Dix, MD of Planning

Richard de Cani , South Sub-region Ambassador

Matthew Yates, South Sub-region Team Leader

## 1.4 Sub-regional analysis and modelling

### **Analysis**

The SRTPs have been built on a considerable amount of underlying analysis and evidence. Much of the evidence base used in the production of this plan was made available to boroughs in TfL's Interim Report on Challenges and Opportunities published in February 2010. Further analysis has been undertaken since then including using both existing travel behaviour and network data, new work such as the central London rail termini study and town centre surveys, as well as incorporating data or findings of studies undertaken in collaboration with boroughs and other stakeholders. Where appropriate the SRTP analysis either has been or will be made available to boroughs. TfL will work with the boroughs and other stakeholders to discuss any further areas of work needed and priorities for ongoing work. The sub-regional panels (described overleaf) will be an important mechanism for this.

### **Sub-regional models**

An important aspect of the sub-regional work has been the development of a multi-modal computerised transport model for each sub region which has been undertaken in parallel with the production of the plans. These sub-regional models complement TfL's London-wide transport models and the more detailed operational models of smaller areas or junctions. The sub-regional models represent flows and journey times on the highway and public transport networks as well as changes between modes (modal shift) that might result from, for example, a new transport scheme or significant development. The models can be used to examine the situation in the base year, currently taken as 2008, using data from the 'present day', as well as future years with a given set of assumptions about population and employment growth and planned transport improvements. The 'reference case' forecast is 2031 with the London Plan population and employment forecasts and transport interventions that are funded.

The models have been or are being thoroughly tested to ensure that they can replicate the impacts of major transport schemes that have actually happened on the network and used on a real study to demonstrate that, whilst the models have been designed to capture strategic transport movements, they can quickly and cheaply be adapted to model local effects as well, and provide the basis of local transport models. The South London Model has recently been completed and will be used, for example, on the Croydon OAPF Transport Study.

The models represent a significant investment in transport planning in London and it is important that the models are used widely and subject only to the limitations of good practice. They are based on a vast amount of observed data ranging from counts to interviews. TfL is committed to maintaining the sub-regional models and would strongly prefer analysis to be carried out using them where possible, so that the lessons learnt can be captured and made available for later studies.

Therefore, where there are projects that the boroughs wish to pursue, where use of the models may be beneficial, TfL will cooperate in making the model available, subject to ensuring that lessons learnt and information gathered during studies are fed back into the model in a controlled way.

Boroughs who wish to use the models should ask the sub-regional team leader for access to the models and an approved list of suppliers who can develop and run the models. In addition, the models will be useful for developers, including those making significant planning applications, or other organisations who would pay a licence fee, which will enable TfL to maintain and update the models for future applications.

## 1.5 Introduction: the south sub-region

### 1.5.1 Characterising the south sub-region

The south sub-region has four strong Metropolitan Town Centres, namely Croydon – the largest town centre in London – Bromley, Kingston and Sutton. These town centres are key economic location in the region, and have a strong retail draw as well as offices, residential areas and attractive open spaces. The sub-region also has a number of Major Town Centres such as Brixton, Wimbledon, Putney and Richmond.

There is a wide range of environments in the south sub-region. Richmond Park, London's largest, is one of the many parks, while large parts of London's greenbelt are found in Bromley. The region also contains part of the Central Activities Zone at Vauxhall Nine Elms Battersea. Some of London's major tourist attractions are found in the region, including Kew Gardens and Hampton Court Palace. Tennis will be hosted in the region at Wimbledon during the 2012 Olympics, while another sporting venue in the region, Twickenham, will host the 2015 Rugby World Cup.

Toward central London and around the town centres public transport use is relatively high, however in the outer areas of the region the car plays, and is likely to continue to play, a significant role.

Beyond the GLA boundary, Guildford and Gatwick Airport are amongst the key places in the wider sub-region, and connections across the boundary are relatively good, both by road and rail.



## 1.5 Introduction: the south sub-region

### 1.5.2: Background on the south sub-region

#### Population and employment growth

The south sub-region is currently home to 22% of London's residents (1.6m people).

By 2031 the population of the region is forecast to grow by around 8%

Average population density in the south sub-region is considerably lower than the London-wide average with patterns reflecting the inner/outer London split and focused around a network of town centres. Bromley has the lowest population density in the sub-region (2000 people per km<sup>2</sup>), while the highest is found in the inner London Borough of Wandsworth (9,356 people per km<sup>2</sup>).

66% of south sub-region residents (core boroughs only) are of working age, roughly the same proportion as the whole of London (67%).

Job density in the south sub-region is lower than the London-wide figure of 2,970 jobs per square kilometre, at 1,635 jobs per square kilometre.

Employment density varies from borough to borough with the highest density found in the inner London Borough of Wandsworth, and the lowest in Bromley.

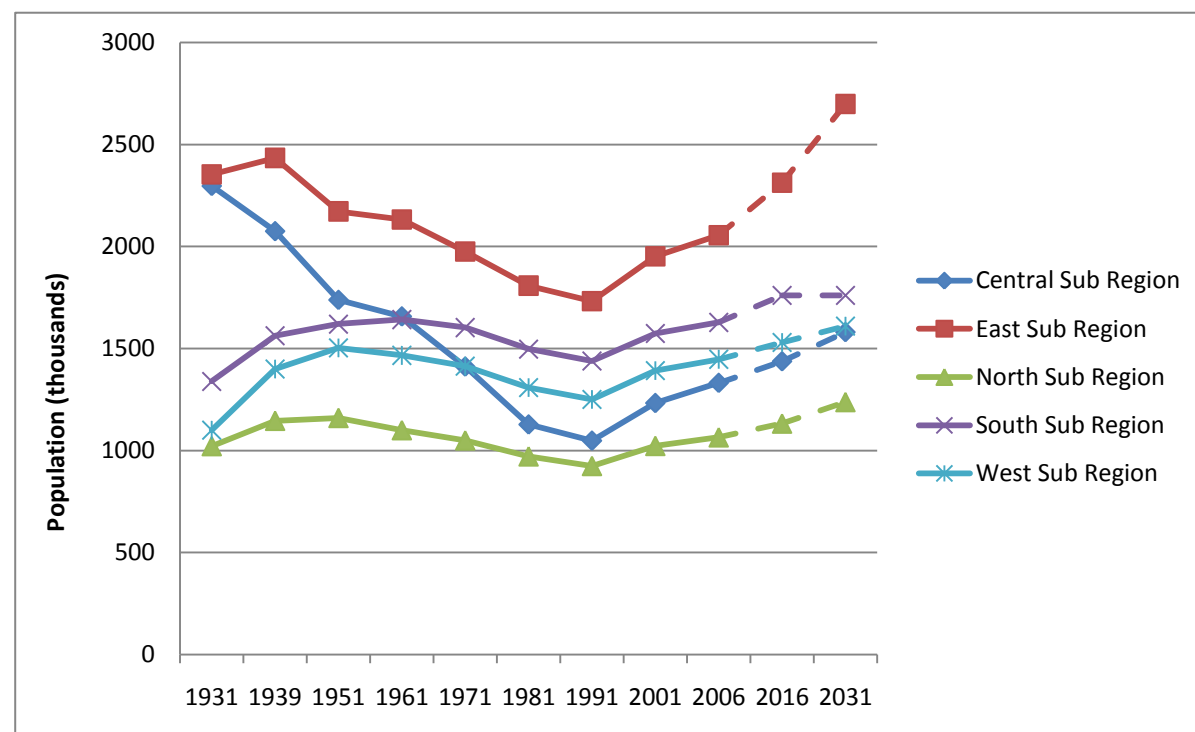
#### The Transport Network

The public transport network in the south sub-region consists of a dense bus network and comprehensive radial coverage of the National Rail network, supplemented by London Tramlink between Wimbledon, Croydon, Beckenham Junction, New Addington and Elmers End.

There is relatively little Underground network coverage in the south sub-region, but some of the northern parts of the sub-region are served by the District Line to Wimbledon and Richmond, Victoria Line to Brixton and Northern Line to Morden. Rail demand is high, resulting in crowding on much of the network travelling to central London during peak times.

The sub-region includes areas of inner and outer London, and this is reflected in the differences in transport network density, service provision and access by road and public transport. These factors contribute to the key challenges facing the south sub-region.

Figure 1.4 Historic and forecast population in the sub-regions



The south sub-region has relatively good connections with the neighbouring regions outside London, both by road and rail.

Approximately 8% of trips made in the sub-region have an origin or destination outside Greater London. By comparison 14% of trips have an origin or destination in central London.

Whilst trips to and from the south sub-region are significant, by far the majority of trips made are within the sub-region, accounting for over 60% of all trips, emphasising the importance of both local and intra sub-regional trips.

## 1.5 Introduction: the south sub-region

### 1.5.3 Opportunity areas

#### Overview of the areas

The south sub-region's future growth is concentrated primarily around Croydon and VNEB, with indicative capacity for 19,000 new homes and 7,500 new jobs in Croydon and 16,000 new homes and 25,000 new jobs in VNEB.

Central Croydon is well connected by public transport, particularly by rail at its East and West stations. London Overground was recently extended to West Croydon, there is planned investment through HLOS1 for longer trains on southern, southeastern and the Thameslink Programme providing longer trains and higher frequency.

Generally VNEB has mixed public transport access and links. The area toward the east has a very high Public Transport Accessibility Level (PTAL) of 6 whilst parts of the west around Battersea Power station have a PTAL of only 1.

#### Key issues

The transport issues for VNEB and Croydon are very different.

Croydon Council is well advanced with five masterplans for the centre and is currently preparing its Local Development Framework and TfL is supporting the Council in preparation of an OAPF for the area. Accommodating further growth and reducing severance of Wellesley Road are key issues. East Croydon rail station is operating at capacity and West Croydon station will require enhancements in the medium term to accommodate the increased flows to and from the new London Overground services.

For VNEB, severance issues occur within the areas across the South West Mainline as well as Nine Elms Lane and access to the river is poor around Battersea Power station. The area will benefit from higher capacity services on both South West and Southern train services and the Victoria Line enhancement will increase capacity by 20% by 2031, although increased supply will be filled by increased demand.

#### Overview of opportunities / options

Many trips to Croydon are local, and measures to support these being transferred to walk and cycling are to be encouraged. Parking in the town centre should be rationalised.

Tramlink operates at capacity at certain times of the day and increased number of vehicles and improvements to track capacity is required to support growth in Croydon. Future extensions to Tramlink's network are proposed to serve new locations and this will also require additional capacity to connect to the existing network. Converting the existing sections of single track to double track (for example, between Harrington Road and Beckenham Junction) will allow more trams to operate with greater reliability.

Network Rail has proposals to improve ticket hall facilities and provide a pedestrian bridge to the north of East Croydon station. In the longer term redevelopment of both East and West Croydon stations is supported. Improvements to bus stopping and standing facilities as well as taxis are required to accommodate future growth.

Measures to reduce the severance of Wellesley Road are supported but the impacts on the road network require careful consideration.

There are many gaps to address in VNEB to support the development aspirations identified as part of the OAPF. This includes an extension of the Northern Line to Battersea Power station, a series of bus service enhancements, in particular 'North West to South East link', a pedestrian and cycle bridge between Nine Elms and Pimlico, upgrades to Vauxhall and Battersea Park rail stations in line with Network Rail's National Station Improvement Programme (NSIP) and congestion relief at Vauxhall Underground station.

## 1.5 Introduction: the south sub-region

### 1.5.4: The south sub-region past, present and future growth

Much of the growth in the south sub-region is expected to be centred around the Metropolitan Town Centres and the two Opportunity Areas: Croydon and Vauxhall Nine Elms Battersea (VNEB). Other Opportunity Areas in Lambeth and Southwark (Elephant & Castle and Waterloo) are covered in the Central Sub-regional Transport Plan. Some of these locations have experienced growth over recent years and further intensification and diversification is supported through policies in the Public Consultation Draft Replacement London Plan. Metropolitan Town Centres across the south sub-region, including Croydon, each have their own plans for future change whether it is in the form of additional retail investment or more mixed use / employment based activities. Transport will play a key role in supporting the delivery of these plans.

#### Past

London's population grew until just before the Second World War. In the post war years a period of decentralisation began with measures such as the building of new towns – the heyday of much of the development in the south sub-region. London's population has increased every year since 1988, with the greatest proportion of people living in the outer boroughs.

#### Present

In terms of absolute population numbers the south sub-region is the second largest sub-region and provides employment for approximately 730,000 people. The region has a relatively high car mode share at 49%, and there is reliance on the rail network for radial travel to central London.

#### Future

The population of the south sub-region is forecast to grow by 8% between 2006 and 2031. The focus of this growth is around the Opportunity Areas of Croydon Metropolitan Town Centre and Vauxhall, Nine Elms, Battersea.

In Croydon, it is expected that the focus of growth will be in the town centre, although additional areas, such as along the A23 corridor are being considered.

Vauxhall, Nine Elms, Battersea has scope for significant intensification in housing and commercial capacity. An Opportunity Area Planning Framework is being prepared for both Croydon and Vauxhall Nine Elms Battersea.

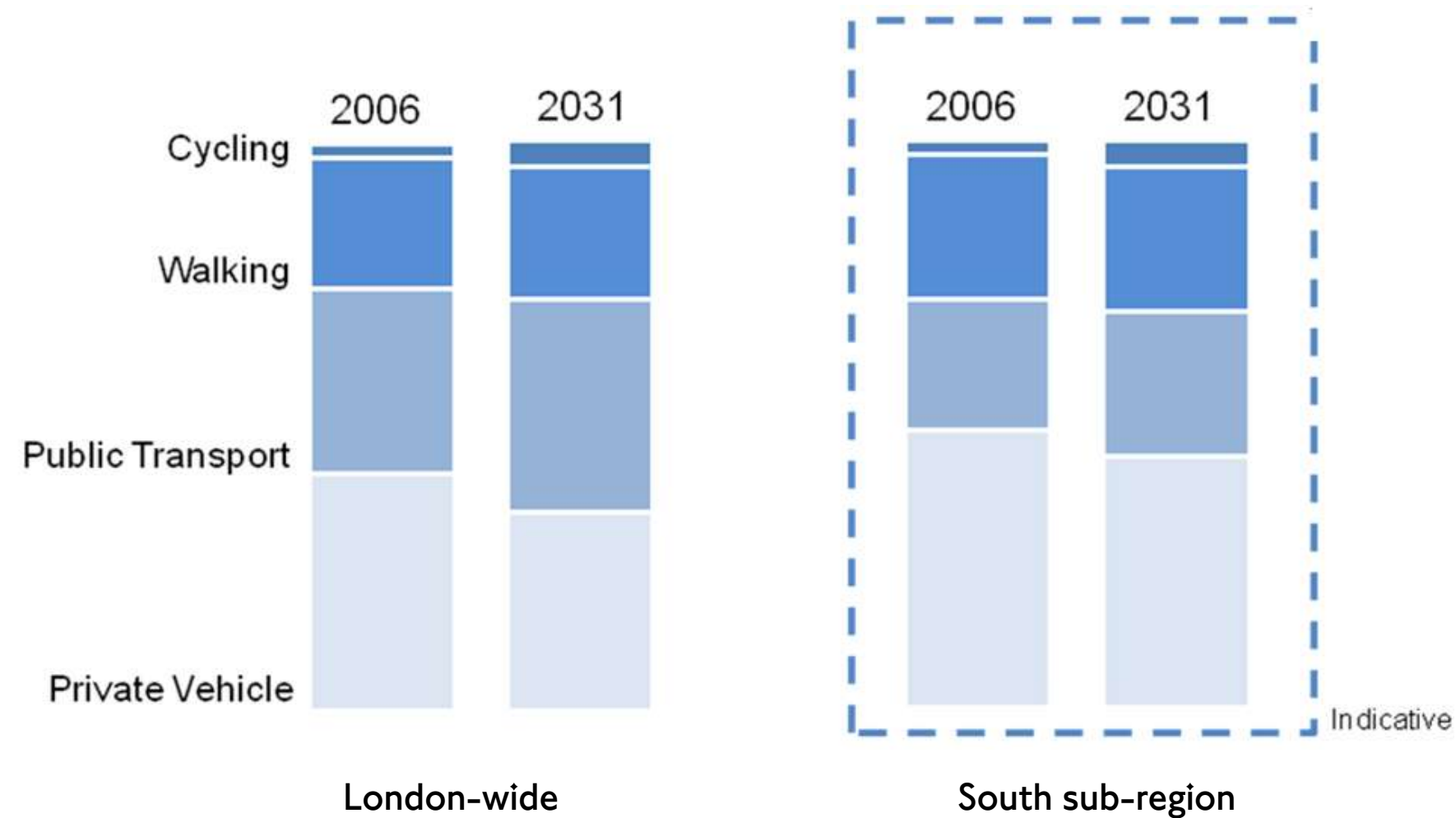
There will be growth in other areas throughout the sub-region. Boroughs develop Area Action Plans for town centres, each setting out the specific issues facing those places.



## 1.5 Introduction: the south sub-region

### 1.5.5 Meeting the mode share target

Figure 1.5 Comparison of total trips and indicative mode share change from 2006 to 2031



Looking forward, London will have more people and more jobs which will lead to an increase in trips. The Transport Strategy sets out the expectation that there will be substantial further mode shift to public transport, walking and cycling, as shown in Figure 1.5 above. The mode shift figures have been determined using a mix of prediction and targets. This need for mode shift represents a significant challenge which covers all the sub-regions and which the Transport Strategy, London Plan and Economic Development Strategy are aimed at delivering.

The large population of the south sub-region already puts strain on the existing transport network. Further growth and development around Opportunity Areas and the Metropolitan Town Centres present a significant opportunity to encourage mode shift of new journeys and existing trips. In order to achieve this shift to more sustainable modes there will need to be considerable behavioural change in addition to investment in infrastructure. Measures to encourage a shift away from car could include smarter travel initiatives and measures to turn walking and cycling potential into reality. Other measures still allow access to services without having to travel as far, for example through better use of IT and freight consolidation.



## 1.5 Introduction: the south sub-region

### 1.5.6 Challenges for the south sub-region

The Challenges and Opportunities document was published in February 2010 as an interim output of the production of this plan. It set out a number of transport challenges for the south sub-region, as agreed through collaborative working between TfL and the south sub-region boroughs. These challenges are set out below and over the following pages.



#### Reducing public transport crowding



Improve access and movement to, from and within key places



Improve connectivity to, from and within the sub-region



Manage highway congestion and make efficient use of the road network



## 1.5 Introduction: the south sub-region

### 1.5.6 Challenges for the south sub-region



#### Challenge One: Reducing public transport crowding

Forecast increases in population and employment will put greater pressure on a public transport network that is already under strain. This challenge predominantly focuses on rail crowding which is more time-consuming and costly to alleviate than bus crowding.

Crowding can impact on economic growth because sustained delays on the transport network increase costs for business and discourage further investment. In particular, overcrowding and delays can result in London becoming a less attractive prospect to employees, visitors and potential customers. In addition, crowding affects journey experience and hence people's quality of life.



This crowding will be alleviated, in part, by the committed investment included within TfL's Business Plan and the HLOS 1 programme delivered by Network Rail, the Department for Transport and the Train Operating Companies. However, by 2031 the population of the region is predicted to grow by around 8% from the current 1.6 million and the number of jobs to grow by around 7% from the current 0.7 million, meaning that crowding on public transport, will continue to be a key issue for the south sub-region, particularly after 2020. This will put increased pressure on a public transport network that already has constraints.



#### Challenge Two: Improve access and movement to, from and within key places

Access to some town centres in the south sub-region is often made difficult by congested links. This is sometimes exacerbated by severance caused by particular routes (for example Wellesley Road in Croydon cuts through the town centre).



Improving public transport connections to key places within the region, including Opportunity Areas, is a key priority. In addition, local links to and between smaller town and district centres or residential areas will improve people's access to local services and jobs, ideally with sustainable modes.

The priority locations are those that are considered to be sub-regionally important, in that they attract trips from outside the borough in which they are situated. Whilst the key locations are Metropolitan Town Centres, Major Town Centres and areas able to accommodate growth. Local district centres are key for local trips and improvements to these locations should be considered at a local level.

## 1.5 Introduction: the south sub-region

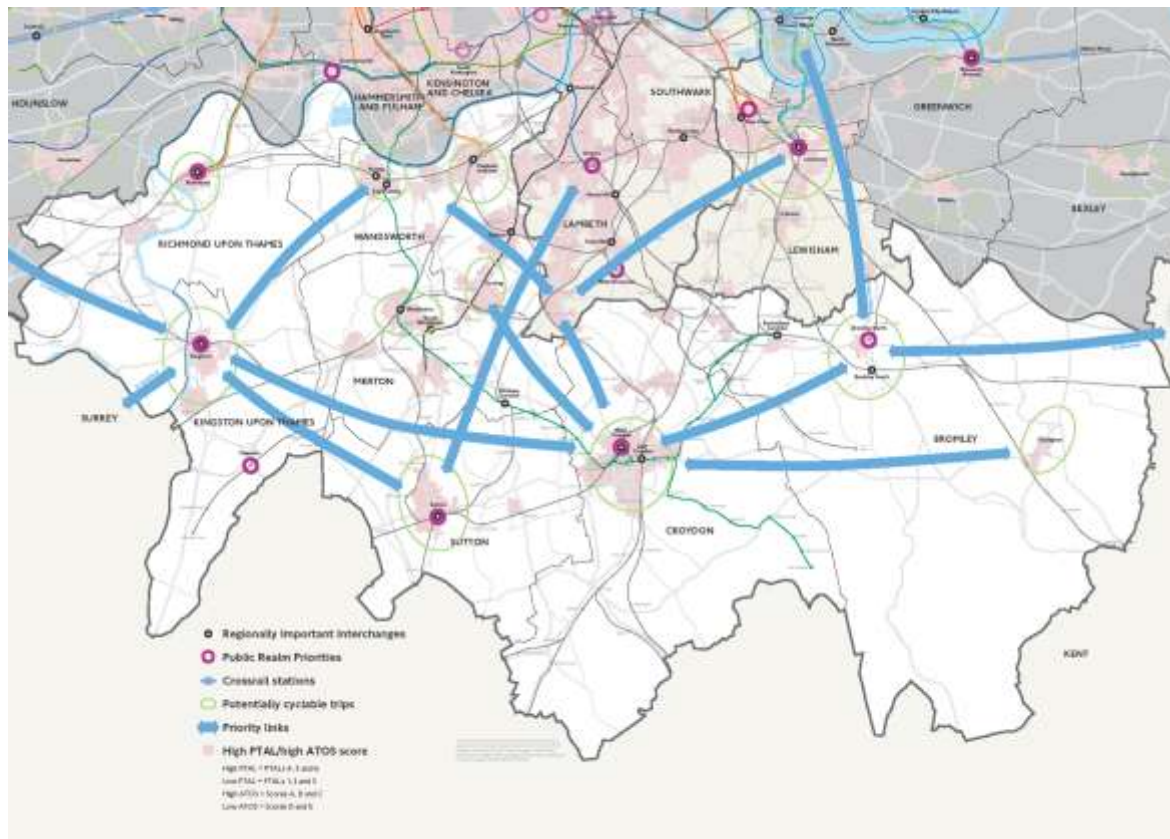
### 1.5.6 Challenges for the south sub-region



#### Challenge Three: Improve connectivity to, from and within the sub-region

Improving connectivity between key locations across the sub-region is a priority. There are existing corridors that experience high levels of demand and, in some cases, crowding and congestion. There are corridors where growth is predicted to take place in the future and corridors where improved connectivity would deliver economic benefits. In many cases the potential solution will be delivered through modification of the existing network and expanding existing bus and rail connections as demand increases. However, in some cases more strategic interventions will be required.

#### Map of connectivity priorities



#### Challenge Four: Manage highway congestion and make efficient use of the road network

Car ownership in the south sub-region is high in comparison with all other sub-regions. London-wide, around 58% of households have access to one or more cars, while in the south, the proportion is around 69%. Only 20% of total trips originating in the sub-region are made using public transport, with 49% made by car.



Mode share varies by borough across the south sub-region, with car usage being higher in the outer London Boroughs.

The average trip rate for London boroughs is 2.6 trips a day. The average in the south sub-region is significantly higher at 2.8 trips per day, 60% of which are entirely within south London, and the majority are made within the borough of origin or neighbouring borough.

Highway congestion is a particular problem around the Metropolitan town centres, particularly in the morning peak and at weekends. Congestion in the region is set to worsen, particularly around Croydon, Purley, Addiscombe and Norwood, and along the corridors connecting central London to Sutton, Croydon and Bromley.

## 1.6 Introduction: the Sub-regional Transport Plan

The rest of this Plan is structured around the six goals and sixteen challenges in the Mayor's Transport Strategy which set out how the Mayor will achieve his vision of a more sustainable transport system for London.

Recent investment and additional planned investment over the next 10 years deliver significant benefits for the south sub-region and contribute to improvements across the different MTS outcomes. But there is more to do to deliver the outcomes set out on the previous page and address the specific challenges identified by boroughs for the region.

The Plan therefore sets out a range of measures or potential options to help meet the ambitions of the south sub-region as well as providing a framework for how the Mayor's vision will be implemented in the region.

### MTS goals and challenges

- Supporting economic development and population growth (Chapter 2)
  - Supporting sustainable population and employment growth
  - Improving transport connectivity
  - Delivering an efficient and effective transport system for people and goods
  
- Enhancing the quality of life for all Londoners (Chapter 3)
  - Improving journey experience
  - Enhancing the built and natural environment
  - Improving air quality
  - Improving noise impacts
  - Improving health impacts
  
- Improving the safety and security of all Londoners (Chapter 4)
  - Reducing crime, fear of crime and antisocial behaviour
  - Improving road safety
  - Improving public transport safety
  
- Improving transport opportunities for all Londoners (Chapter 5)
  - Improving accessibility
  - Supporting regeneration and tackling deprivation
  
- Reducing transport's contribution to climate change and improving its resilience (Chapter 6)
  - Reducing CO<sub>2</sub> emissions
  - Adapting to climate change
  
- Supporting delivery of the London 2012 Olympic and Paralympic Games and its legacy (Chapter 7)

## Chapter 2: Supporting economic development and population growth

### MTS Goal – Supporting economic development and population growth

The population and economy of London are growing rapidly, and are expected to continue to do so over the next two decades. Transport will play a key role in supporting this growth, ensuring that people and goods can move from place to place conveniently and efficiently and allowing communities and the economy to develop in a sustainable and stable manner.

It is vital that the transport network has sufficient capacity to accommodate growing numbers of trips, and TfL and boroughs should also take steps to encourage more sustainable travel wherever possible, for instance through providing better facilities for walking and cycling. Service patterns and public transport priority must be kept under review. TfL and other stakeholders will strive to ensure that travel by both public and private transport is as efficient as possible.

This goal is comprised of three challenges:

- 2.1 Supporting sustainable population and employment growth
- 2.2 Improving transport connectivity
- 2.3 Delivering an efficient and effective transport system for people and goods



## 2.1 Supporting sustainable population and employment growth

### Balancing capacity and demand for travel through increasing public transport capacity and/or reducing the need to travel

The forecast population and employment growth in the south sub-region will further increase demand on the transport network.

This increase in demand will be met to some extent by investment in rail and Underground to increase capacity and regular service reviews of the bus network. Increased capacity on rail, Underground and bus is considered further in this section. However, there is also a need to balance increases in public transport capacity with reducing the need to travel. Potential measures that could reduce the need to travel include more flexible working, such as working from home and teleconferencing, and freight logistics and consolidation centres to reduce the distance travelled by freight. Measures to rethink travel are considered further in Section 2.3.

#### **Making the most of existing infrastructure**

It will be important to ensure that the benefit of the existing transport network and the investment that is being made is maximised. This includes improving interchanges and areas around stations so that public transport continues to be a reliable and attractive choice for people.

#### **Funded capacity improvements**

Future planned investment in the National Rail network is set out by the Department for Transport in its High Level Output Specification (HLOS). The present round of investment is set out in HLOS 1 Control Period 4). These and other major rail schemes directly or indirectly affecting the south sub-region are:

- **Thameslink Programme**
- **London Overground extension to Clapham Junction**
- **London Underground upgrades**

Other capacity improvements include:

- 12 car capability on all South Eastern inner services via London Bridge
- Longer and more frequent outer services via Bromley South
- 10 car capability across Southern inner services
- Heathrow Airtrack

Without these schemes, severe levels of crowding remain across large parts of the National Rail network, and given the forecasts for future employment and population growth, these levels of crowding will worsen sooner than would otherwise have been envisaged. This will potentially affect London's ability to remain an attractive centre to do business.

#### **Buses**

The bus network will continue to support the development of the south sub-region by linking key places and interchanges with their surrounding areas, and by providing sustainable transport options for new developments, such as the proposals for Metropolitan Centres, particularly Croydon.

There will be a need to maintain and improve bus infrastructure, both in and around the town centres. Measures to improve reliability and journey times on radial routes into the town centres will be necessary, and in some cases bus priority schemes may be needed.

#### **Other improvements**

- Smarter Travel measures can be used to help maximise value for money from investment in infrastructure, for example complementary measures to the infrastructure element of Barclays Cycle Superhighways.
- Information also has a key role to play in informing people of their travel choices and providing them with the opportunity to make the most sustainable and efficient choices.
- Legible London and Key Walking Routes supporting transport movement in the region
- Measures can be targeted at specific network challenges e.g. crowding on particular public transport routes, or congestion at key times and places.
- A number of unfunded capacity enhancements have also been considered. Potential London Tramlink extensions, extensions to the Bakerloo line, Northern Line extension to Battersea, Chelsea Hackney Line (Crossrail 2), Heathrow Airtrack, and suburban rail capacity issues have been explored and are set out in more detail later in the document.

## 2.1.2: Maximising benefits of planned capital investment in the south sub-region

Funded investment in the transport network will provide benefits to the south sub-region, and it is essential that these are maximised

### **London Underground Upgrades**

The Transforming the Tube programme will deliver major improvements across the network including to the District, Northern and Victoria Lines in the south sub-region. The improvements will bring about modernised stations, new rolling stock, increased line capacities and reduce journey times. The renewal of signalling and other systems will also help improve reliability.

### **London Overground**

The East London Line extension is now operating to Crystal Palace and West Croydon. Further extensions to Clapham Junction will be implemented shortly in phase 2. One of the key benefits of the East London Line extension is that it provides opportunities for movement around London, avoiding the need to travel into the central area. For example, journeys from stations on the route to Crystal Palace and West Croydon can be made to north and east London, avoiding central London and reducing crowding in the central area. There is a particular benefit to accessing employment opportunities at Canary Wharf and the Isle of Dogs.

### **Crossrail**

Whilst not directly serving the south sub-region, Crossrail will greatly improve east-west access across London, and the resulting capacity increase in central London will benefit the whole of London.

Investment in the capacity of the National Rail network will provide an opportunity to support further growth in key locations. A number of improvements to the National Rail network in the south sub-region should be delivered by 2014, leading to better access from the south sub-region to the growing number of jobs in central London. These are summarised in the table below.

**Figure 2.1 Table of Improvements being delivered under HLOS 1**

HLOS1 Deliverable	Key objectives being met
12 car capability on all Southeastern inner services via London Bridge	<ul style="list-style-type: none"> <li>Reducing crowding, especially between Lewisham and London Bridge</li> </ul>
Longer outer services via Bromley South	<ul style="list-style-type: none"> <li>Reducing crowding between Bromley South and Victoria (mainly on outers)</li> <li>Supporting growth and regeneration in Bromley</li> </ul>
10 car capability across Southern network inners	<ul style="list-style-type: none"> <li>Reducing crowding, especially into London Bridge, Clapham Junction and Victoria</li> <li>Supporting growth and regeneration in Croydon, Sutton and across parts of Lambeth, Southwark and Merton</li> </ul>
12 car East Grinstead services	<ul style="list-style-type: none"> <li>Reducing crowding, especially between Croydon and Victoria and London Bridge</li> <li>Supporting growth and regeneration, especially at Croydon</li> </ul>
Thameslink Programme	<ul style="list-style-type: none"> <li>Reducing crowding, especially along Thameslink route into St Pancras and Blackfriars, and into London Bridge</li> <li>Supporting growth and regeneration in Croydon, Sutton and across parts of Lambeth, Southwark and Merton</li> </ul>
10 car capability on South West inners, and trains to Windsor	<ul style="list-style-type: none"> <li>Reducing crowding, especially into Clapham Junction and Waterloo</li> <li>Supporting growth and regeneration in Wandsworth, Wimbledon and Kingston</li> </ul>
Re-open Waterloo International for domestic services	<ul style="list-style-type: none"> <li>Capacity for more services</li> </ul>

## 2.1.2: Maximising benefits of planned capital investment in the south sub-region

### Thameslink Programme

The Thameslink programme delivers an expanded, more frequent and higher capacity network. It will also support growth and regeneration in Croydon, Sutton and across parts of Lambeth, Southwark and Merton.

To maximise the wider benefits of the Thameslink Programme, TfL will be working with Network Rail (responsible for delivering the project) and the London boroughs. This collaboration will help to ensure that the upgrade is accompanied by station improvements, including better walking and cycling facilities.

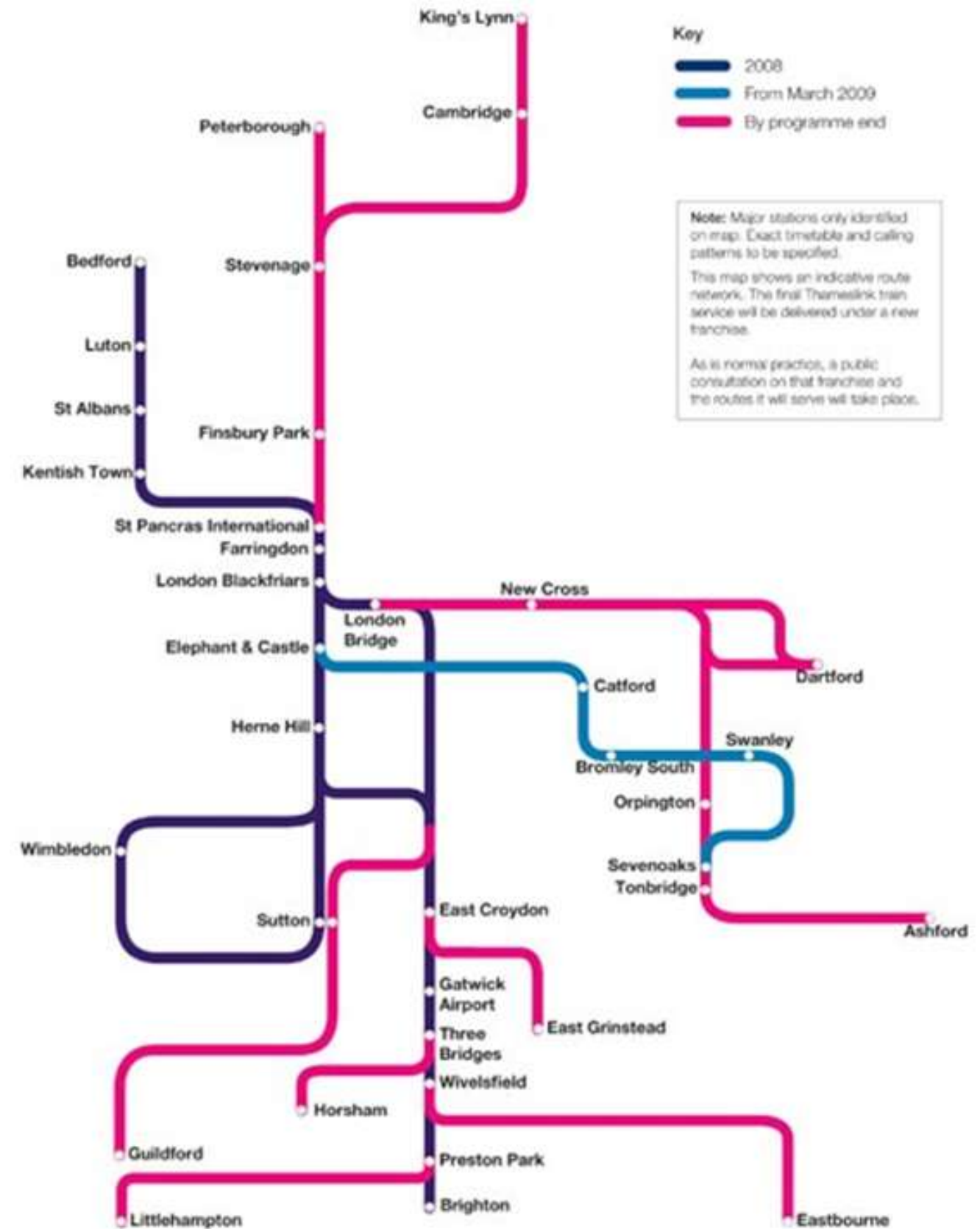
Delivering the Thameslink Programme and the major benefits it entails requires the withdrawal of the South London Line service between London Bridge and Victoria. While this meant that the stations between Queens Road Peckham and Wandsworth Road would be served by an additional 2 trains per hour compared to today, there would be a reduced level of service between these stations and London Victoria, with the East London Line running to Clapham Junction instead.

After investigation, the preferred option identified was:

- Additional stops in some longer distance services to/from Victoria at Peckham Rye and Denmark Hill at peak times
- A new off peak all stations service between Bromley South and Victoria

Following a request by the Mayor of London, the Secretary of State for Transport has given his support to TfL seeking these changes to services with the train operator, Southeastern. TfL is now working with Southeastern to drive forward the implementation of these changes, which would affect selected peak services between Ashford International, Gillingham and Rochester, and London Victoria.

Figure 2.2 Thameslink network





### 2.1.3 Additional public transport investment to support growth

Beyond the current committed investments, a number of improvements are proposed in the MTS that will provide additional public transport capacity for the south sub-region. These have been identified from the assessment of existing challenges and future need including the impact of future growth. The following diagram taken from the MTS shows the key radial corridors in London that are expected to be under stress by 2031 and where further investment is needed. Corridors B, C, D, E and F are of particular relevance to the south sub-region. Sufficient capacity will be required to allow residents of the south sub-region to have access to additional jobs created in central London over the next 20 years, and to accommodate growth in population of the south sub-region and the added pressure this will cause on the network. The following pages outline schemes that could contribute to meeting the capacity requirements for the south sub-region.

Figure 2.3 Stress on radial rail corridors to central London

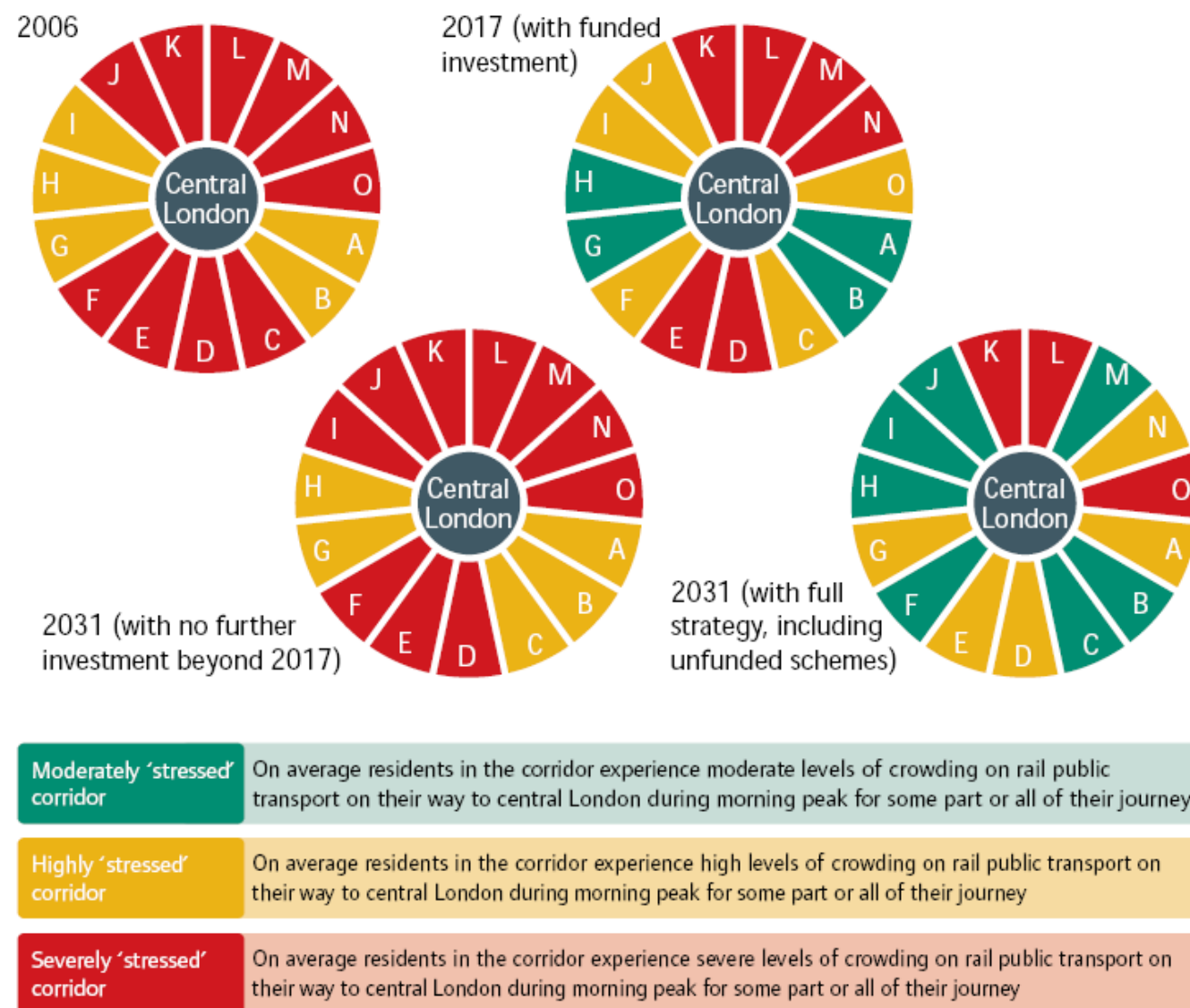
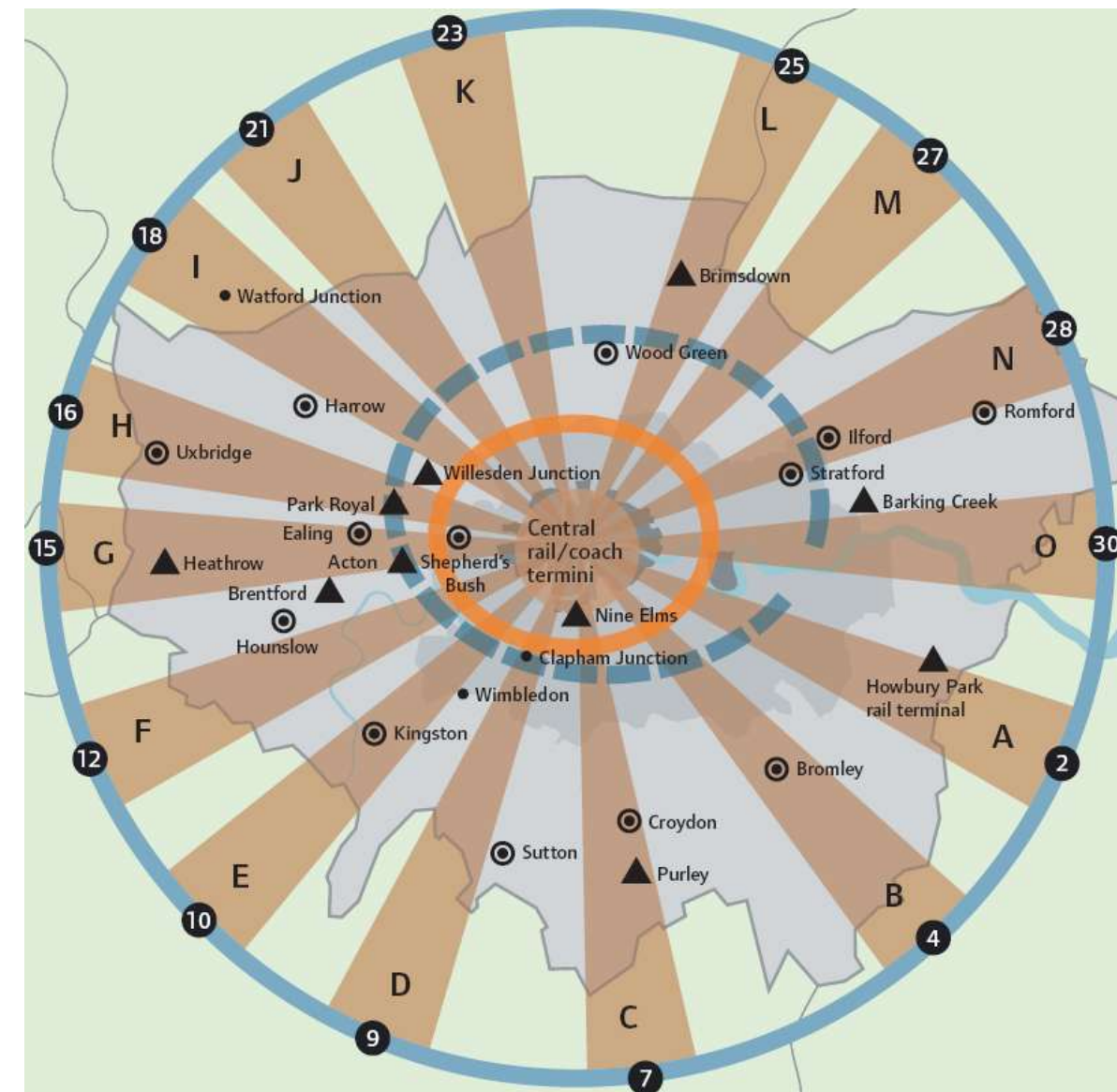


Figure 2.4 Radial rail corridors to central London



## 2.1.4 Improvements to the National Rail network that will support population growth and regeneration and relieve crowding

Beyond 2014 further investment in the National Rail network in the south sub-region will be needed to support continued growth. Improvements following the delivery of HLOS 1 are shown below. These include measures such as lengthening of trains during and around peak hours, and delivery of schemes including Heathrow Airtrack and the Chelsea Hackney Line.

**Figure 2.5 Improvements to the National Rail network beyond HLOS 1**

National Rail corridor priorities (post HLOS 1)	Why are improvements are needed?
Corridor B: Bromley South to Victoria additional capacity enhancement, including: <ul style="list-style-type: none"> <li>• <b>Shoulder peak lengthening</b></li> <li>• <b>Additional fast services to Victoria</b></li> <li>• <b>12-car outers and additional fast services</b></li> <li>• <b>Grade separation at Herne Hill</b></li> <li>• <b>Extend Bakerloo Line to Hayes to release 6 train paths into London Bridge</b></li> </ul>	Continued demand growth means more capacity is needed to avoid worsening crowding. Growth is likely to be especially strong serving Bromley Metropolitan Town Centre. Without further investment in new capacity beyond HLOS 1, this corridor becomes highly stressed again by 2031.
Corridor C: East Croydon to London Bridge and Victoria additional capacity enhancement, including: <ul style="list-style-type: none"> <li>• <b>All fast services 12-car</b></li> <li>• <b>12-car shoulder peaks</b></li> <li>• <b>East Croydon to London Bridge Double Deck shuttle</b></li> </ul>	Continued demand growth means more capacity is needed to avoid worsening crowding. Growth likely to be especially strong given Croydon Opportunity Area and Metropolitan Town Centre. Without further investment in new capacity beyond HLOS 1, this corridor becomes highly stressed again by 2031.
Corridor D: Sutton to London Bridge and Victoria additional capacity enhancement, including: <ul style="list-style-type: none"> <li>• <b>All fast services 12-car</b></li> <li>• <b>12-car shoulder peaks</b></li> </ul>	Continued demand growth means more capacity is needed to avoid worsening crowding. Growth is likely to be especially strong serving Sutton Metropolitan Town Centre. Without further investment in new capacity beyond HLOS 1, this corridor becomes severely stressed again by 2031.
Corridor E: Surbiton to Waterloo additional capacity enhancement, including: <ul style="list-style-type: none"> <li>• <b>12-car inners and outers</b></li> <li>• <b>Heathrow Airtrack</b></li> <li>• <b>Deliver core and additional phases of Chelsea Hackney Line</b></li> </ul>	Continued demand growth means more capacity is needed to avoid worsening crowding, though London Underground provides some of the capacity in this corridor. Without further investment in new capacity beyond HLOS 1, this corridor becomes severely stressed again by 2031.
Corridor F: Richmond and Hounslow to Waterloo additional capacity enhancement, including: <ul style="list-style-type: none"> <li>• <b>Additional capacity on Windsor lines</b></li> <li>• <b>12-car inners and outers</b></li> <li>• <b>Re-open Waterloo International platforms for domestic services to the south west</b></li> <li>• <b>Heathrow Airtrack</b></li> <li>• <b>Deliver core and additional phases of Chelsea Hackney Line</b></li> <li>• <b>Extend Crossrail</b></li> </ul>	Continued demand growth means more capacity is needed to avoid worsening crowding. Growth likely to be especially strong given Heathrow Opportunity Area and serving Hounslow Metropolitan Town Centre. Without further investment in new capacity beyond HLOS 1, this corridor becomes severely stressed again by 2031.

## 2.1.5 The Chelsea Hackney Line

### Chelsea Hackney Line or Crossrail 2

In 1989, the Central London Rail Study proposed a new line across London, taking a north-east to south westerly alignment. A route connecting the Central Line branch to Epping with the District Line branch to Wimbledon via a new tunnel beneath central London was safeguarded in 1991 (refreshed in 2008) and forms the base alignment for a new rail line across London known as the Chelsea Hackney Line.

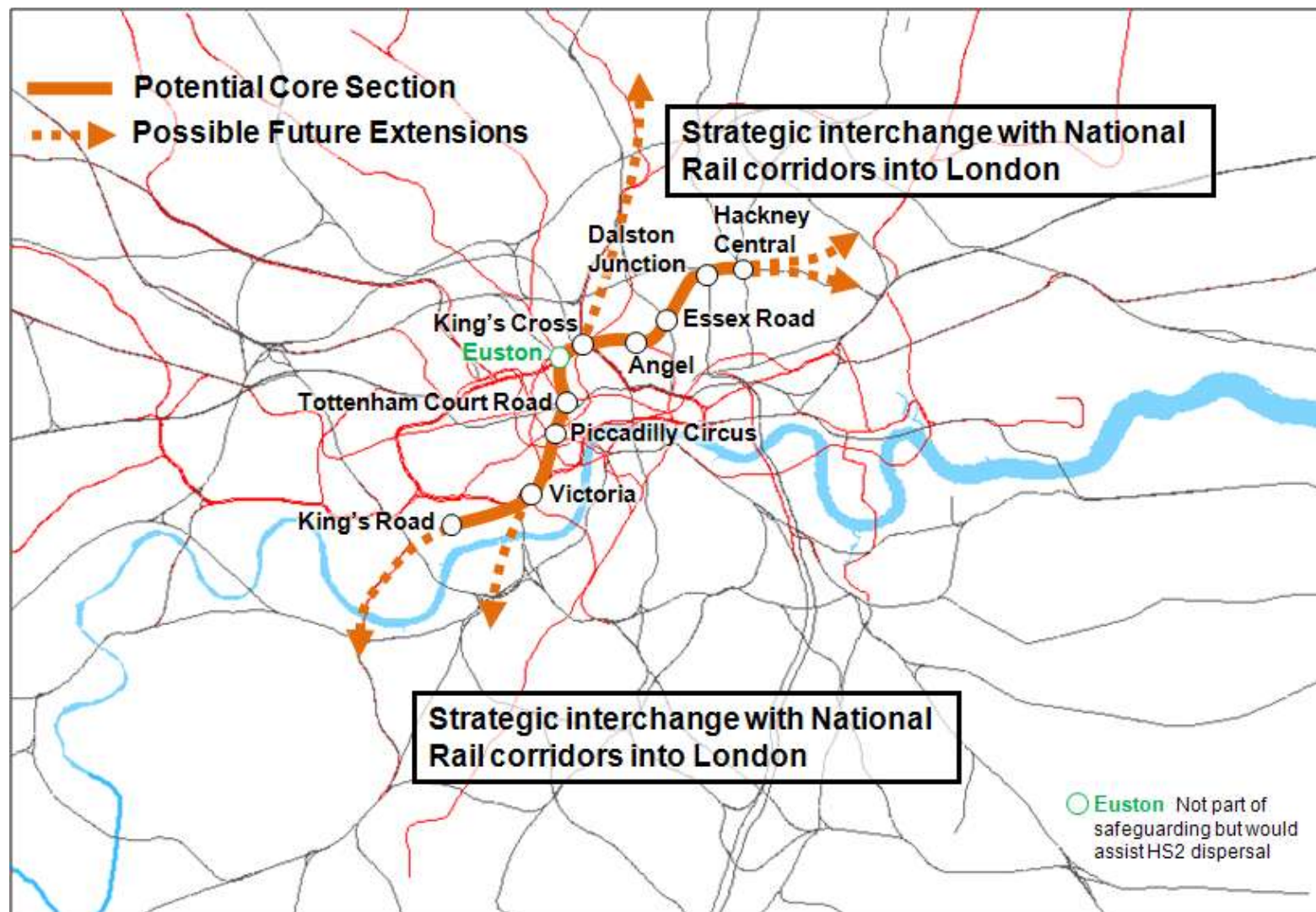
The DfT has asked the Mayor of London to review the Chelsea Hackney Line (CHL) scheme, including considering if the safeguarded route is still the right alignment to be developed in more detail, or, if an alternative might better meet London's needs both now and in the future. Until a decision has been made on the best way forward for CHL, the safeguarded route will remain in place.

### Emerging Strategy for the Chelsea Hackney Line

A strategy is emerging that would see a CHL scheme as a London focused scheme addressing the key challenges facing London in the future and with the ability to be delivered in a number of phases. The first phase would address the key demands of HS2 and London Plan growth by dispersing passengers from the main London termini.

Future phases could be extended along an alignment similar to the safeguarded route, helping to address the issues of poor accessibility and further reduce the pressure on the London termini. The effect would be to create a series of strategic interchanges where movement between National Rail radial/orbital routes and the CHL would be possible.

Figure 2.6 Possible phased approach to delivery of the Chelsea Hackney Line



### Potential benefits of the Chelsea Hackney Line to the south sub-region

The safeguarded alignment passes through several stations in Wandsworth and Merton, and therefore CHL could potentially provide considerable support to population and employment growth across the south sub-region.

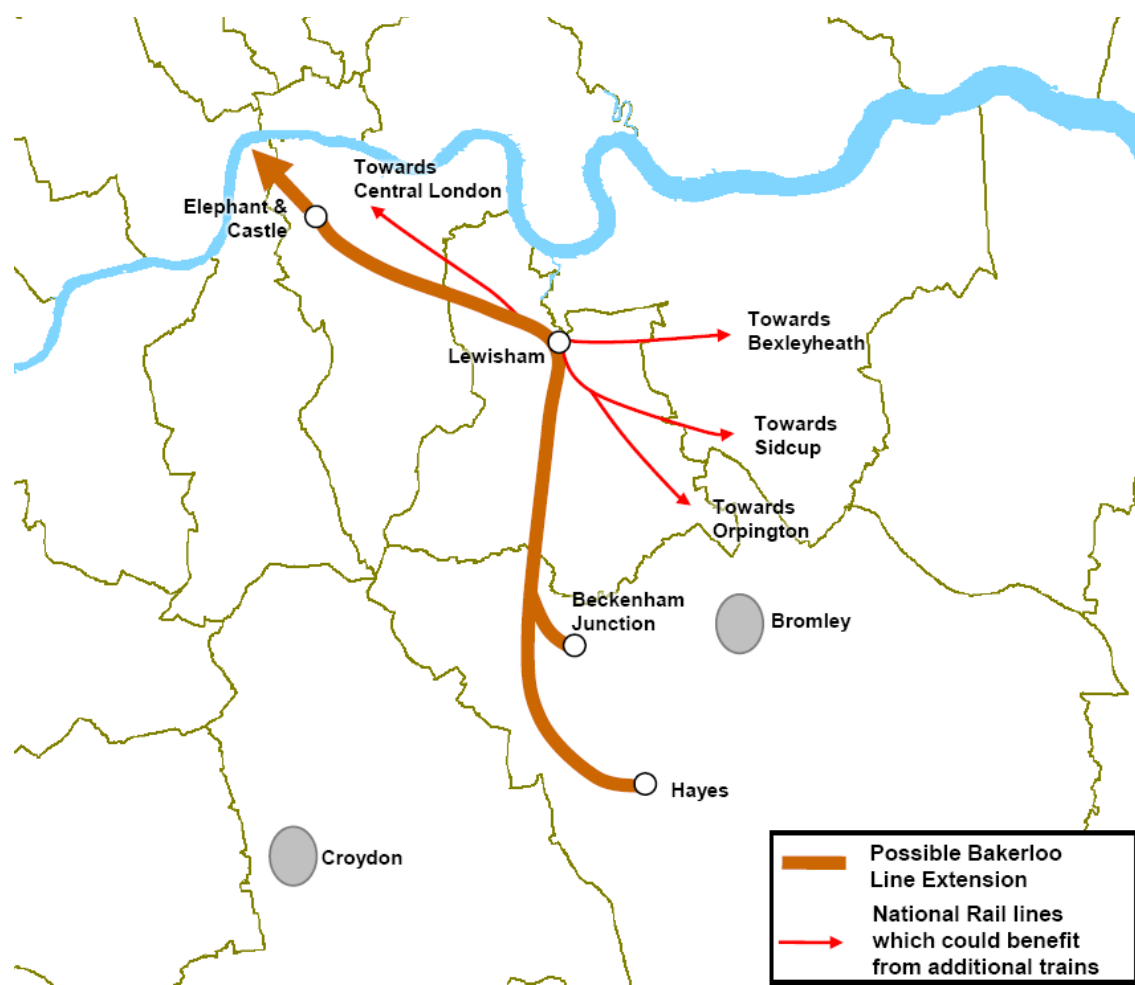
With a primary focus on relieving crowding, CHL could have significant positive impacts on reducing crowding on a number of Underground lines in the south sub-region, particularly the Victoria and Northern Lines. CHL could also greatly assist with dispersal of arriving passengers at a number of major National Rail termini, including Victoria and, potentially, Waterloo.

Depending on the final route(s) chosen, CHL could also offer benefits in reducing journey times to a range of locations across London, by offering new fast links from the south sub-region to places as far afield as Wood Green and Barking.

## 2.1.6: Bakerloo Line extension

Inner south east London is not as well served by Underground as other inner London locations, and as a result journey times from places such as Camberwell and Peckham to central London can be relatively long. The area is subject to further redevelopment and intensification, and improving access to jobs and opportunities is a key priority. Possible route extensions of the Bakerloo Line have been assessed with the aim of identifying a number of key options that would help to relieve crowding on rail and support regeneration in the sub-region. Based on an initial assessment of options, the alignment towards Hayes performs the strongest, with variants of the scheme via Camberwell and Peckham Rye or Old Kent Road. Work will continue with key stakeholders to develop this further. While the Bakerloo Line extension provides new links to the Central Activities Zone, complementary options could further improve connections in south east London. Extension of the DLR to Forest Hill would allow interchange with the Bakerloo Line at Catford, providing access to Canary Wharf. National Rail enhancements will improve access to Lewisham, and these interchange options would improve access to both central London and east London from the wider area.

**Figure 2.7 Possible Bakerloo Line extension**



More detailed engineering and economic appraisal of preferred options will be required to confirm feasibility and capture all scheme benefits.

A number of options were considered for an extension of the Bakerloo Line to meet the following objectives:

- Improved connectivity to key areas of regeneration in inner London
- Free up capacity on National Rail lines into London Bridge, enabling six train paths per hour to be reallocated to other routes in southeast London
- Offer direct access to central London and new orbital interchange opportunities, including improved access to the Isle of Dogs via Lewisham
- Provide crowding relief on key road/bus corridors and on National Rail and Underground
- Link Major and District Centres and Opportunity Areas
- Provide new transport opportunities to areas currently not served by rail

Outer south east London is reliant on the National Rail network with key radial routes into central London. Capacity on the Bakerloo line is currently underutilised and forecast to continue being so following the upgrade. An extension would maximise the efficiency of the Bakerloo line whilst providing much needed National Rail capacity increases to southeast London. The extension will thus help to relieve crowding on many rail lines, and will improve journey times and accessibility from southeast London to key locations in central London and the Isle of Dogs.

As well as enhancing capacity of strategic links, an extension of the Bakerloo line would improve local connectivity, linking key centres and regeneration areas together. In addition to improving capacity and connectivity, an extension could help alleviate crowding from and congestion at central London termini.

### 2.1.7: Northern line extension

Improvements in transport in the Vauxhall Nine Elms Battersea (VNEB) area are being considered to support planned growth. Access to and capacity of the transport network have been identified as the greatest barriers to transforming the current low value industrial uses to high value Central Activities Zone usage.

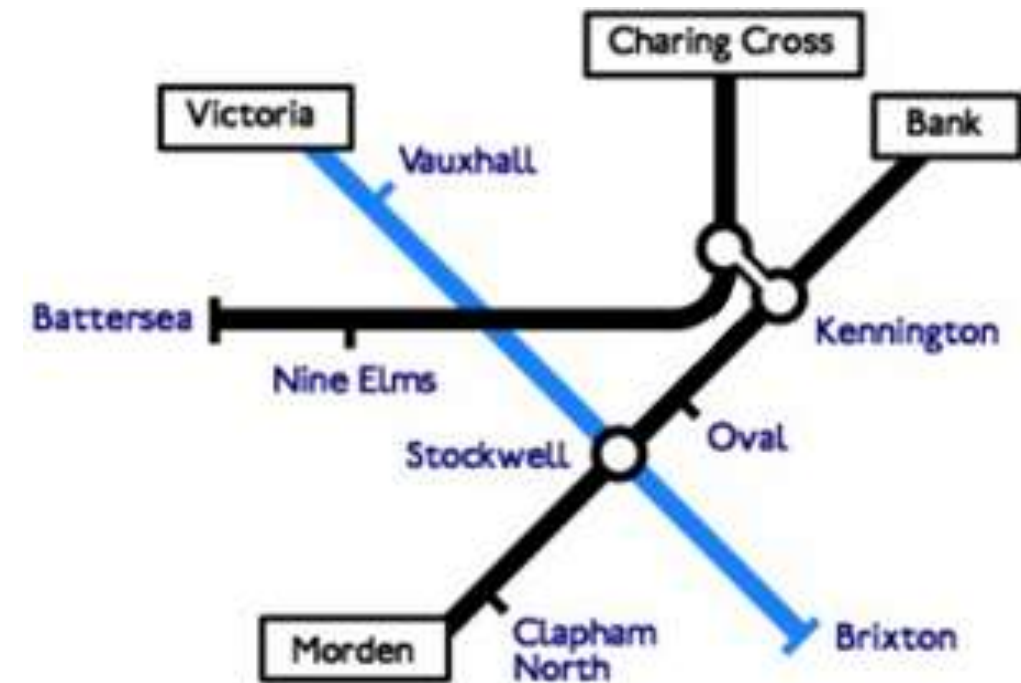
The Northern Line extension has been determined as the transport solution required to support large scale development in the VNEB area. The preferred development scenario in the draft Opportunity Area Planning Framework envisages the area accommodating 16,000 new homes and 25,000 new jobs.

The extension would underpin regeneration and help combat deprivation in an area that, given its proximity to Westminster, the West End and the City, has been underutilised and overlooked following the closure of Battersea Power Station in 1983. The extension would improve public transport accessibility, enabling intensification of new development. The extension also mitigates the increased crowding that would otherwise be experienced on local buses, at Vauxhall station and on the Victoria Line.

TfL is providing support to the developers leading the Northern Line extension scheme in order to establish the technical feasibility and accurate cost estimates. The developers are currently undertaking advanced planning towards a Transport and Works Act (1992) Order submission.

Funding for the scheme will not be available from Government or TfL, so the scheme will need to be privately funded. The GLA, TfL, the boroughs and developers have funded a study to assess the cost of all of the new infrastructure needed to fully develop this area and a set of tariffs are being formulated to apply to new developments across the whole Opportunity Area. This can help fund the Northern Line extension but new funding sources, probably Tax Increment Financing, will still be needed to fully fund this project.

Figure 2.8 Possible Northern Line extension to Battersea



## 2.1.8: Connections to High Speed 2 from the south sub-region

### High Speed 2 Station at Old Oak Common

London Euston has been chosen as the central London terminal location for High Speed 2. The DfT proposals also recommend an interchange with Crossrail before reaching central London, potentially at Old Oak Common in LB Hammersmith & Fulham.

The aim of the station at Old Oak Common would be to support the dispersal of HS2 passengers across London, and therefore reducing the transport impact on Euston. The station would also provide a new hub and access point to the High Speed 2 network. As the West and North London lines pass through the site, there is an opportunity to better connect many parts of the south sub-region in to this new interchange.

Key benefits to the south sub-region of providing direct connections to High Speed 2 at Old Oak Common are:

- Improved access to Heathrow via the hub at Old Oak Common
- Direct access to High Speed 2 services to the Midlands and the North, reducing the need to travel into central London
- Improved orbital journeys and access to other rail services through the creation of a new strategic interchange
- Stimulus for regeneration in the surrounding area
- Improved access to Crossrail

TfL is working with the DfT and HS2 Ltd to ensure that the full benefits of High Speed 2 services through the creation of a new strategic interchange at Old Oak Common can be realised.

Figure 2.9 High Speed 2 Old Oak Common station potential links



## Spotlight: Tourism in the south sub-region

The south sub-region is home to several of the leading tourist attractions in London – including Kew Gardens, Hampton Court Palace and Chessington World of Adventures. London remains the number one city destination for international travellers, and while competition for international tourism is becoming ever more fierce, the 2012 London Olympic and Paralympic Games – when the South African team will be hosted in the region - and the 2015 Rugby World Cup will provide unparalleled opportunities to showcase the city’s attractions to a global audience, and to reinforce London’s status as a premier world destination.

Access to and from tourist destinations is important to the economy of the south region. Boroughs in the region want to promote tourism, and TfL and the boroughs will need to work closely together on initiatives to boost the numbers of visitors to key destinations, and to manage the effects of this, particularly in relation to leisure travel - which is often greatest at weekends.

A number of specific improvements to the transport system in the south region are planned, which will support access to/from visitor attractions. These include: -

- Improvements on National Rail lines serving destinations including Hampton Court Palace, Ham House, the Horniman Museum, Dulwich Picture Gallery, as well the region’s Metropolitan Town Centres
- The Thameslink Programme will also improve access to a number of attractions, both within and beyond London
- Improvements to the London Overground network, including completion of the extension to Clapham Junction via Peckham Rye and Denmark Hill
- Tube upgrades improving access to Kew Gardens and major tennis events at Wimbledon
- Legible London supporting tourism in the region

However, more will be needed to continue to improve access and support the aspirations of the south sub-region’s boroughs to see visitor numbers increase. TfL invests significant funding to support transport improvements in London, and all London boroughs now have greater freedom over local transport spending since TfL streamlined the Local Implementation Plan funding system. This provides more scope for boroughs to invest in projects that make the greatest contribution to their local priorities, including boosting tourism.



## 2.1.9 Buses

### Overview of current bus provision

Buses play a key role in the south sub-region – they account for 11% of all trips originating in the sub-region made by London residents (2006/9, 7 day week), while 6 of every ten public transport trips in the south sub-region are made by bus.

Bus demand is spread throughout the area with density increasing from outer to inner areas and with concentrations in the town centre “hubs”. Services are kept under regular review to address changes in demand, giving good coverage of the area and providing links to and from town centres – 94% of residents of the south sub-region live within 400m of a bus stop. There are thus busy bus corridors approaching each hub, for example 30,000 daily boarders at West Croydon, 60,000 daily boarders at Brixton station, and over 100,000 daily boarders at Elephant & Castle. Within the larger town centres, demand is typically spread across a number of busy locations, rather than being concentrated in one or two places.

### Role of buses

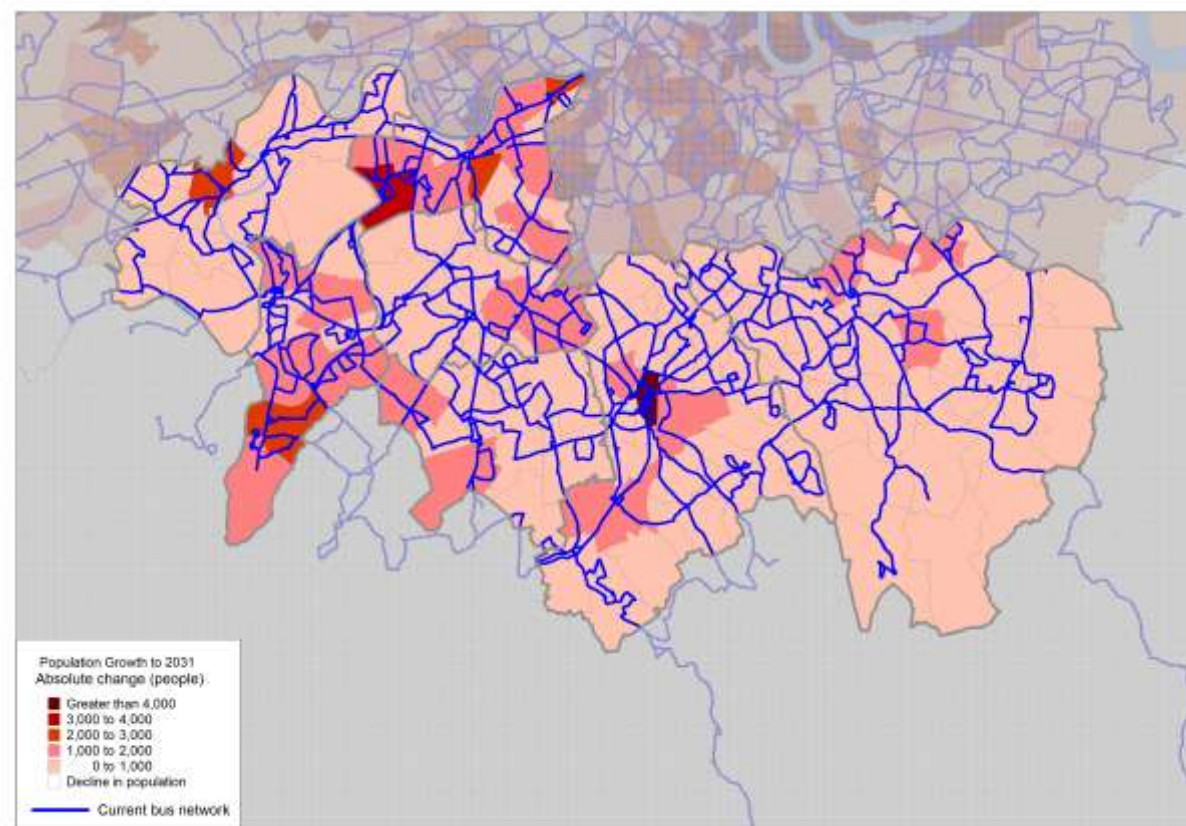
*Access to jobs / services:* for many people, buses provide the means of accessing their local jobs, schools, shops and services in and around their town centres.

*Access to Town Centres:* The network of town centres across the south sub-region generates significant bus demand with a dense network of services focusing on each of these centres. This includes services that operate beyond the London boundary from centres such as Kingston. Many of the services also provide orbital links between centres and to destinations in other regions, such as Heathrow Airport.

*Connectivity:* buses provide direct links between adjacent town centres and connections to wider destinations through interchanging at transport hubs.

*Feeder mode / Interchange:* Access to other public transport modes e.g. rail, underground and tram at interchanges broadening travel opportunities.

Figure 2.10 Current bus routes and population growth to 2031





## 2.1.9 Buses

### Accessibility

The bus network is planned to give systematic coverage in the sub-region. As expected, network density corresponds to population density

All buses are wheelchair-accessible and around half of the bus stops in the south sub-region have been upgraded where necessary. This is above average for the London-wide bus stop accessibility. The provision of clear and accessible information is an important element in ensuring that existing and potential bus users are both aware of the journey options available, through the Web, mobile phones and bus shelters, but also can rely on the services provided.

### Cleaner and Quieter Buses

A well-used bus network contributes to improved air quality. A strategy of improving the emissions performance of buses is in place. There have been significant reductions in the emissions of particulate matter across the bus fleet. All buses now meet a minimum Euro 4 standard for particulate matter from exhausts, with Euro 2 and Euro 3 vehicles having been retrofitted with filters which remove up to 90 per cent of particulate matter emissions.

TfL is also implementing an ambitious hybrid bus programme, with 56 hybrid buses already in service, and 300 in total planned by 2012. Fuel consumption for a Hybrid single deck bus is 26.6 litres / 100km, significantly lower than the most efficient, Euro 4 conventional single deck bus at 37.4 litres / 100km.



## 2.1.9 Buses

### How provision is being improved

The TfL bus network is subject to a continuous review process which involves:

- structured engagement with stakeholders
- extensive market research
- monitoring of performance

This enables key changes in population and employment to be picked up and reflected in the bus network. Changes are driven by user priorities in consultation with stakeholders. Regular research consistently shows that the reliability and duration of overall journey times (including waiting time) are the main priority for bus users and potential users.

The development of the network also requires planning of the infrastructure to support provision of the services e.g. bus garages for bus parking and maintenance; bus stops for the safe waiting, set-down and pick-up of passengers; and bus stands so that bus routes can terminate and wait before beginning the return journey on schedule. The provision of bus infrastructure is a shared responsibility between TfL, local authorities, bus operators and other agencies.

### Forecast change in demand

The south sub-region is not predicted to have the same level of population and employment increase as other parts of London but growth in key locations will have an impact on bus demand.

Bus services will continue to reflect wider changes within the sub-region. Improvements to rail services would increase demand for access to stations but reduce demand on parallel routes. It would be expected that where there are new alignments, for example a Bakerloo Line extension, the changes to bus demand would be more extensive.

Higher demand on bus services into town centres such as Kingston, Sutton and Bromley would be expected due to population and employment increases. A growth in bus demand would be expected on routes serving the Croydon Opportunity Area with corridors into the town centre becoming busier and more activity at bus stops.

As London continues to grow there will also be a need to ensure that appropriate measures are taken to maintain attractive and reliable bus services. Active management of the road network across the region will continue to yield opportunities for bus reliability measures where bus passengers represent a significant proportion of all road users. This includes the major town centres but also the growth areas. Identification of these opportunities will arise both from regular monitoring of road network performance and in responding to planning applications and other third-party proposals.

Maintaining and developing the existing process for reviewing, developing and delivering services and infrastructure across the sub-region, along with appropriate bus priority measures to protect the network from degrading bus speeds and reduced reliability are important to ensure the improvement in service quality witnessed over the past 10 years is not eroded in the south sub-region.

### Supporting Infrastructure

A key challenge for the future is ensuring that there are adequate facilities to accommodate buses including the need for additional bus interchange facilities as well as standing space.

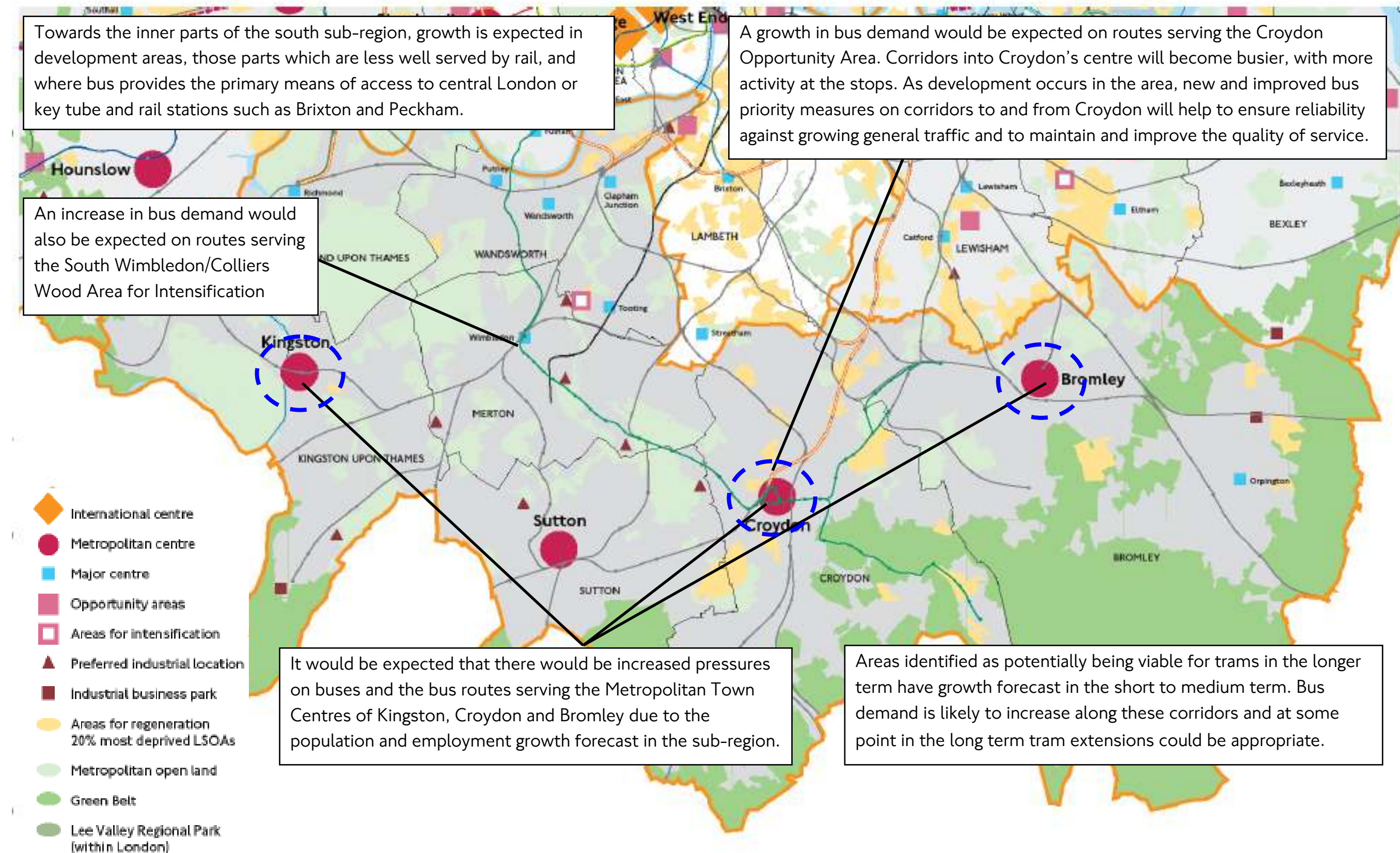
Bus station enhancement or creation should be considered in all town centres. In some cases the specific pattern of demand centre by centre may mean that bus stations are not optimal and on-street stop and stand facilities are preferred. Creation of new stations will usually only be possible in association with a development, both in terms of funding opportunities and land-release.

Bus stands on and off-highway will continue to be required at locations as near as possible to route terminals. In areas of growth, additional bus garaging facilities may be needed, providing for additional services.

Accessibility improvements may also be needed to ensure full benefits of an accessible bus fleet are realised. These improvements could include the removal of clutter and obstructions or realignments of kerbs and footways to provide better access. In the majority of cases London Boroughs are responsible for these streets.

## 2.1.9 Buses

Figure 2.11 Growth pressures for buses in the south sub-region



## 2.2 Improving transport connectivity

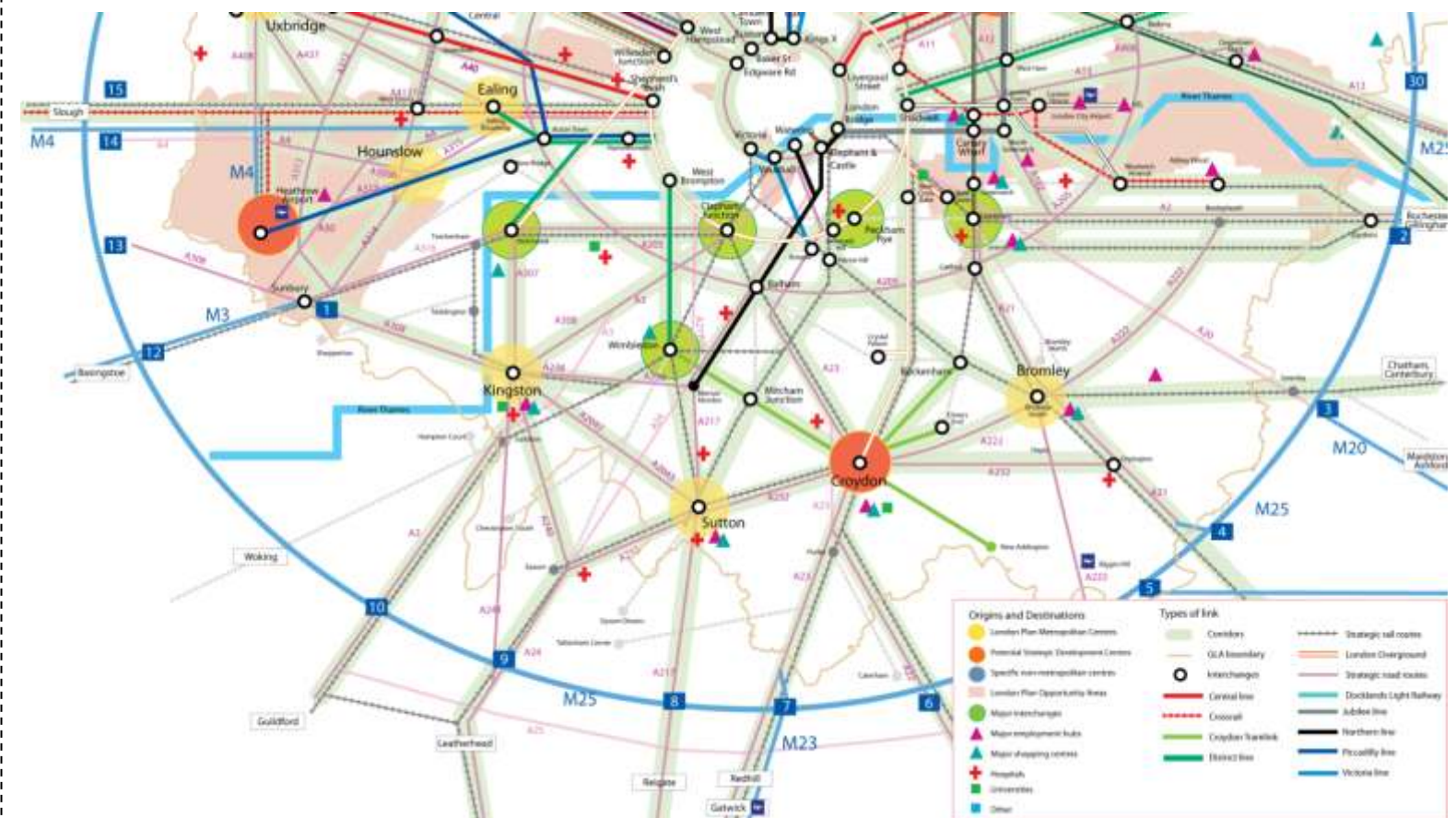
Improving people's access to jobs and improving access to commercial markets for freight movements and business travel, supporting the needs of business to grow.

Maintaining and Improving connectivity is a key priority for Metropolitan and Major Town Centres and Opportunity Areas, where accessibility for business, retail opportunities and freight, as well as education, health and other services is important for social and economic development. Generally the south sub-region has good connectivity in the radial corridors into central London. However, public transport journeys outside of these corridors, including between town centres and growth areas, can take much longer and are often less convenient than the equivalent road journey. This is predominantly due to there being fewer services associated with the more dispersed nature of these trips. This section looks at measures to address the connectivity challenges in selected corridors in the south sub-region and measures to improve connectivity more generally, including improving interchange.

There are a number of priorities that could help meet the challenge of connectivity in the south sub-region. These include:

- London Underground extensions
- London Tramlink extensions
- Extension of the DLR network
- Interchange improvements
- Improvements to bus infrastructure and bus priority
- Barclays Cycle Superhighways and improved cycling infrastructure
- Urban realm improvements to increase walking & cycling

Figure 2.12 Transport geography in the south sub-region



## 2.2.1: Connectivity on selected corridors

<p><b>Corridors to the north of Croydon</b></p> <p>Croydon is an Opportunity Area, and is forecast to grow both in terms of jobs and housing. There are areas to the north of Croydon with high levels of deprivation and highway congestion. Improving connectivity between Croydon and the areas to the north, for example Tooting and Streatham, may help to support regeneration in these areas</p> <p>Short term</p> <ul style="list-style-type: none"> <li>○ Improved rail facilities including London Overground; HLOS capacity enhancements and station improvements</li> <li>○ Improved journey planning targeted at local residents</li> <li>○ Improved cycling infrastructure between key residential areas to the north of Croydon</li> </ul> <p>Medium term</p> <ul style="list-style-type: none"> <li>○ Measures to speed up bus journeys</li> <li>○ Improvements to bus facilities in Croydon town centre</li> <li>○ Rail capacity enhancements on existing lines</li> </ul> <p>Long term</p> <ul style="list-style-type: none"> <li>○ Consideration of Tramlink extensions and further rail enhancements</li> </ul>	<p><b>Bromley to Canary Wharf</b></p> <p>This north-south corridor provides access between one of the major employment centres which is subject to further growth and parts of outer south east London</p> <p>Short term</p> <ul style="list-style-type: none"> <li>○ Rail capacity enhancements through HLOS</li> <li>○ DLR Capacity enhancements to Lewisham</li> <li>○ Improved journey planning information targeted at Bromley residents and Canary Wharf employees</li> </ul> <p>Medium term</p> <ul style="list-style-type: none"> <li>○ Measures to speed up bus journeys</li> <li>○ Lewisham gateway interchange schemes to facilitate bus/rail transfer</li> </ul> <p>Long term</p> <ul style="list-style-type: none"> <li>○ A potential package of rail improvements including extension of the Bakerloo Line as covered in 2.1, and extension of the DLR via Catford and associated recast of National Rail services</li> </ul>	<p><b>Bromley to Croydon</b></p> <p>Both Bromley and Croydon town centres have major plans for growth and expansion over the next 20 years. It will be important to support this growth by, for example, improving access to town centres while minimising the amount of extra road traffic</p> <p>Short term</p> <ul style="list-style-type: none"> <li>○ Improved journey planning information</li> <li>○ Improved interchange at Bromley South and Croydon stations</li> </ul> <p>Medium term</p> <ul style="list-style-type: none"> <li>○ Measures to speed up bus journeys</li> </ul> <p>Long term</p> <ul style="list-style-type: none"> <li>○ Consideration of London Tramlink extension from Beckenham Junction to Bromley</li> </ul>	<p><b>Kingston to Heathrow</b></p> <p>This orbital corridor between a Metropolitan town centre and Heathrow airport is subject to some growth and congestion</p> <p>Short term</p> <ul style="list-style-type: none"> <li>○ Improved travel planning information and awareness of existing options</li> </ul> <p>Medium term</p> <ul style="list-style-type: none"> <li>○ Measures to speed up bus journeys</li> </ul> <p>Long term</p> <ul style="list-style-type: none"> <li>○ Airtrack provides rail connection via Twickenham, however the impact on existing level crossings is a key issue and would need to be addressed</li> </ul>
<p><b>Selected Regionally Important Interchanges</b></p> <p>Improvements to Bromley South, East Croydon, and West Croydon will play an important role in the selected corridor solutions.</p>			

## 2.2.2 Long term extensions to the London Tramlink network

London Tramlink has been very successful at moving people around the south sub-region, and to and from Croydon in particular. The system has seen continued growth and generated a change in travel patterns and shift from car to tram for many journeys.

26 million trips are made annually on the Tramlink network, and this figure is forecast to increase to 29 million by 2016.

There are some immediate priorities for Tramlink in terms of providing additional capacity to meet current and future demand, however, there is long term potential for expansion of the network to support growth and see a further shift from car to tram.

An initial review has identified a number of corridors where there is a justification for some form of public transport improvement and where trams could potentially play a role. Growth, congestion, key attractors, levels of deprivation and connectivity are all issues considered in this review. Some value for money assessment has been undertaken, but further consideration is needed to determine engineering feasibility and overall value for money. A particular challenge for future tram extensions is the planning of alignments and potential impact on other road users and traffic flow.

1. East to Bromley
2. Wimbledon – Tooting
3. South to Sutton
4. North of Croydon

The challenge for future tram extensions is to secure the maximum benefits and value for money without impacting negatively on other road users. Further investigation is needed to determine whether any of these alignments are feasible.

Figure 2.13 Potential extensions to the London Tramlink network

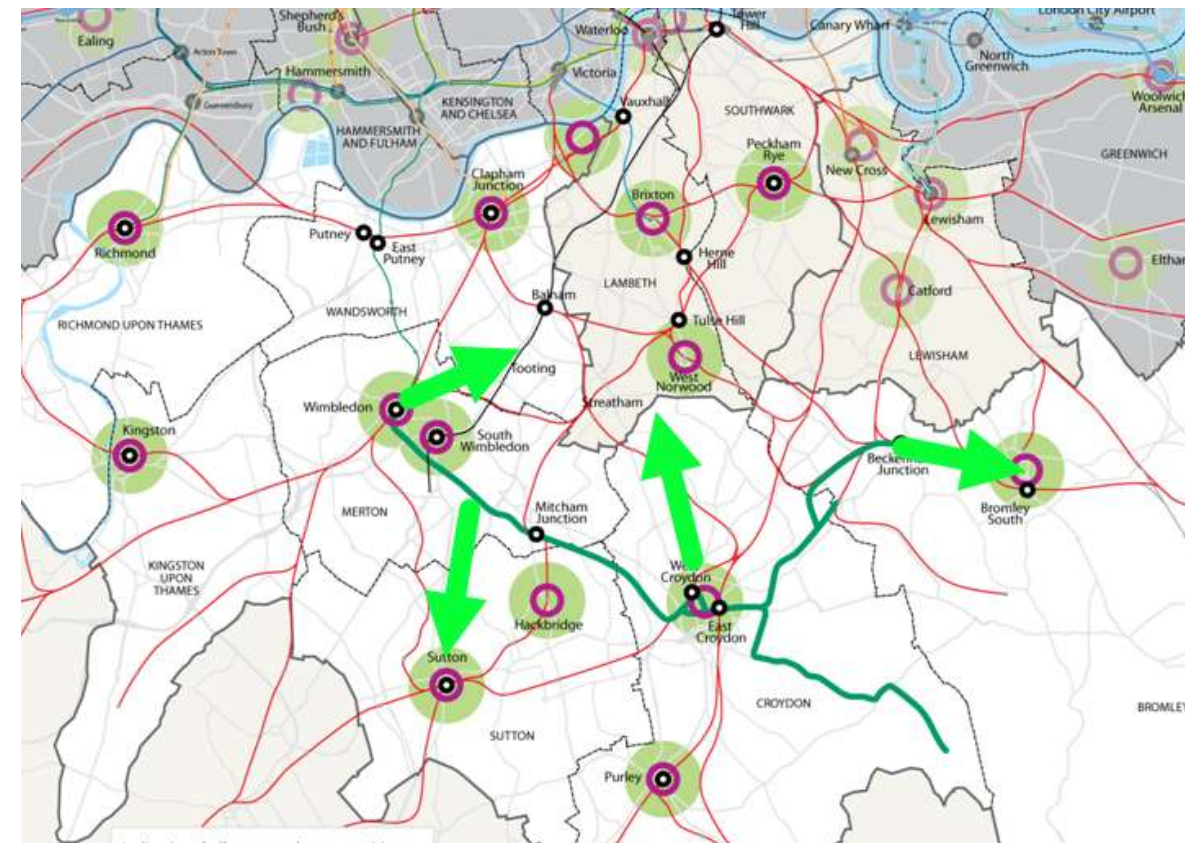
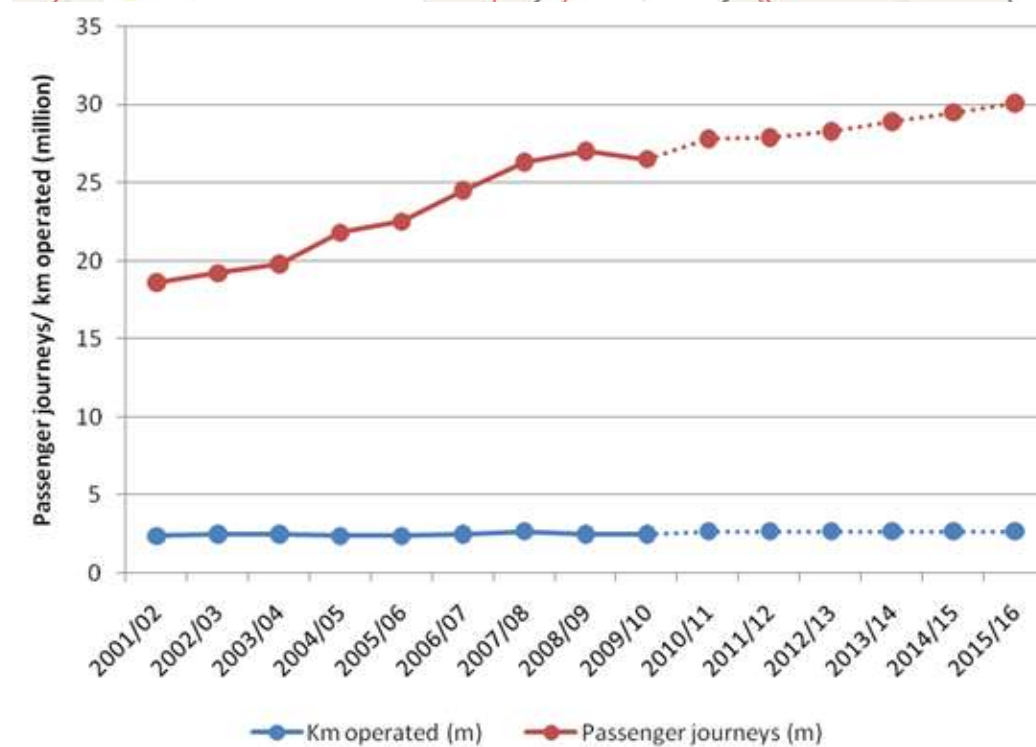


Figure 2.14 Tramlink historical and forecasted growth



## 2.2.3 Airtrack to Heathrow

### Airtrack to Heathrow from South West Train lines

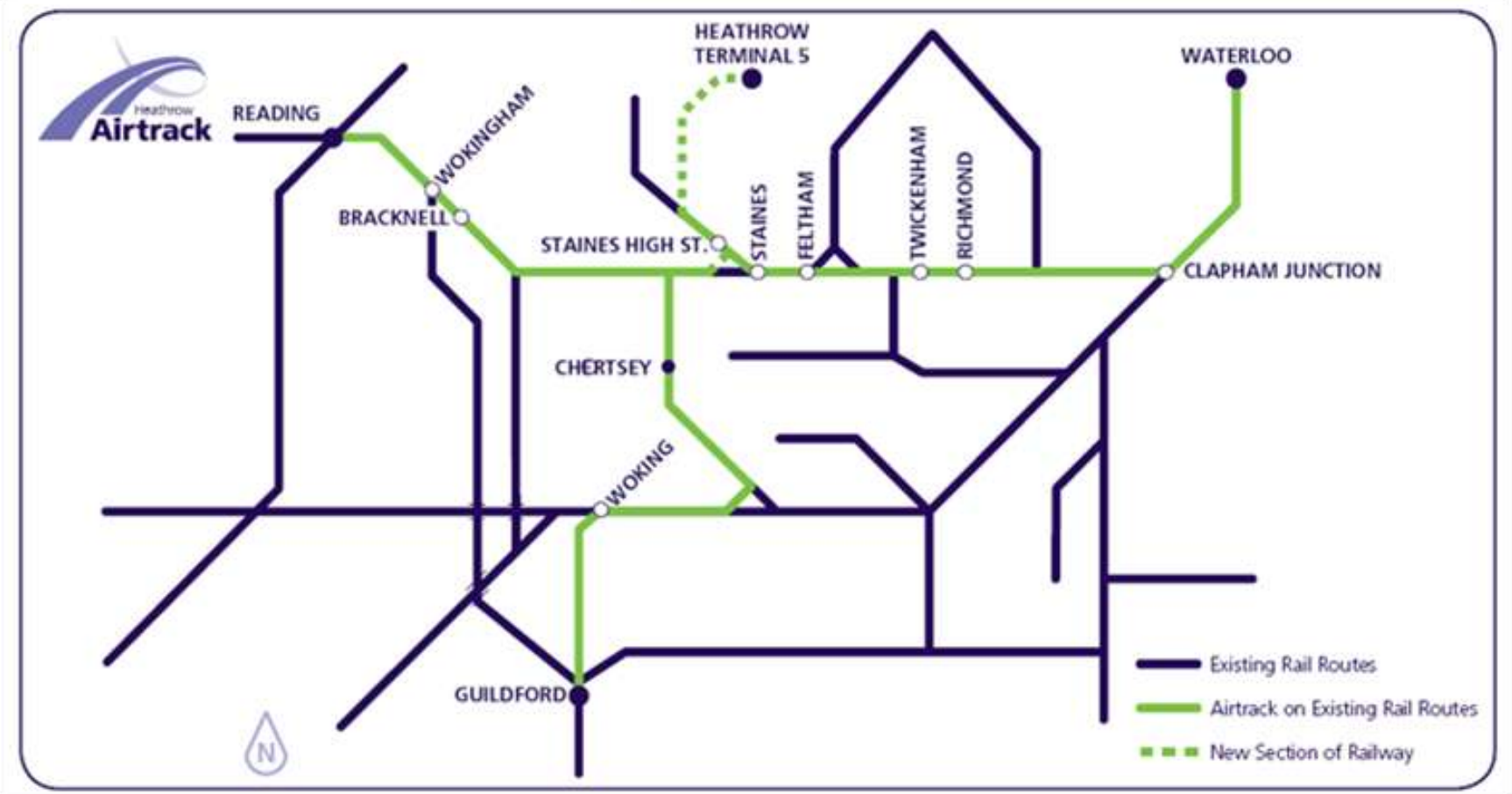
This £700m scheme will provide a new rail link to Heathrow from the South West Trains lines, establishing significant journey time savings to the airport from key centres such as Twickenham and Richmond.

In terms of improving connectivity for the south sub-region, Airtrack will improve connectivity along the Kingston to Heathrow Corridor. The scheme will also improve access from centres outside London such as Guildford and Woking.

The business case indicates that 50% of Airtrack demand is extracted from road, and that 10% of the journey time benefits associated with the scheme are highway-based benefits. The additional Airtrack services mean that level crossings will be closed for longer, potentially causing problems on the borough road network.

This scheme is currently going through a Transport and Works Act Order (TWAO) and a decision is expected in 2011.

Figure 2.15 Airtrack to Heathrow



## Spotlight: Connections across the London boundary

There are important interactions between the south London boroughs and areas outside the London boundary, particularly Surrey and Kent. Both these counties are forecast to see a growth in population of around 20% from 2008 to 2033, while growth in the south London boroughs will be around 9% over a similar period.

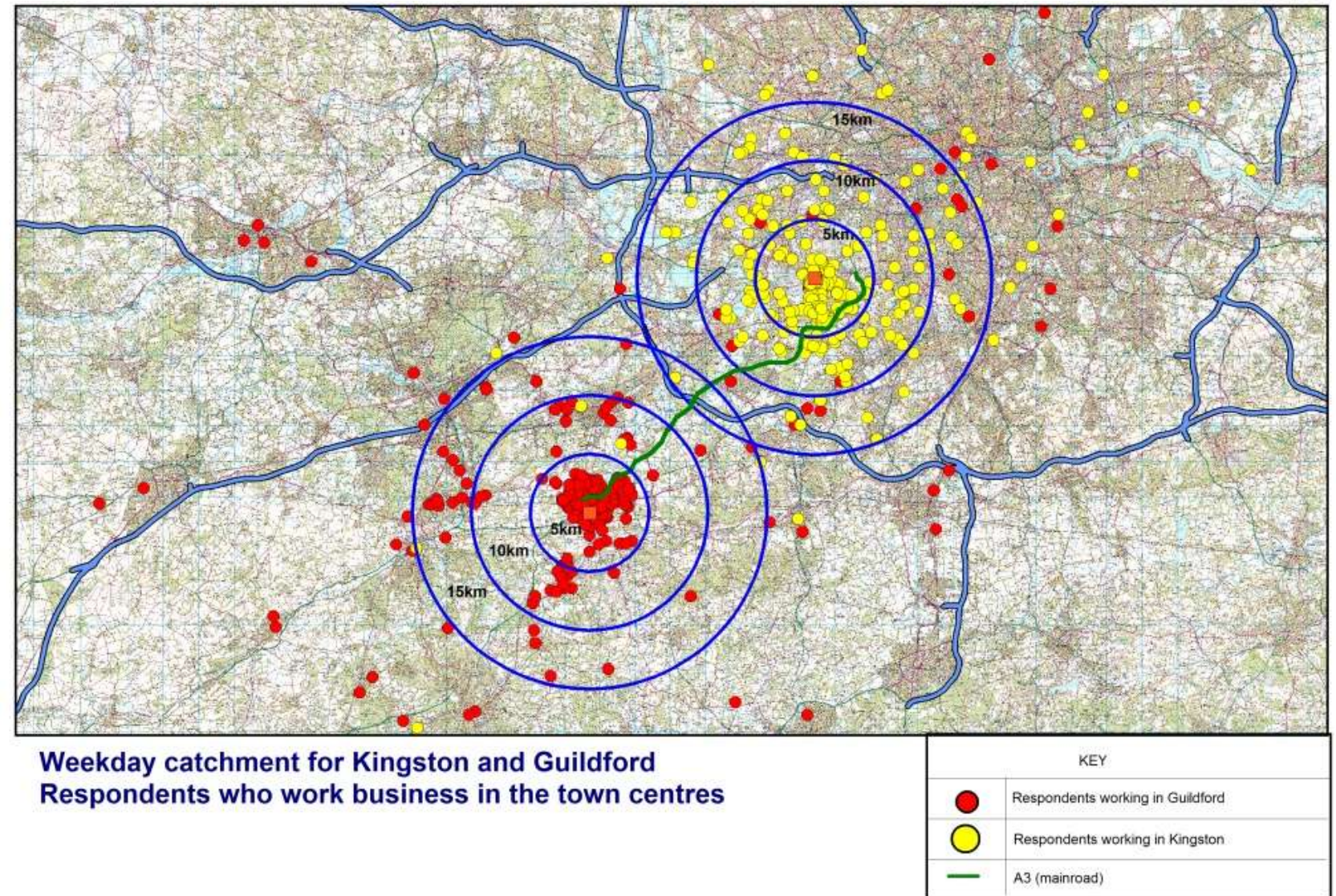
Of all trips made by residents of the south London boroughs, 8% cross the GLA boundary. Around a quarter of Surrey residents work in London, and over half of these travel to work in London by public transport. Similarly, around one in seven of Kent's working residents work in London.

TfL bus services operate across the GLA boundary, providing access to key places. Over 12 million bus trips were made between the south London boroughs and the bordering counties in 2009/10, showing strong links across the GLA boundary. HLOS improvements will improve links across the boundary, with longer and more frequent trains.

Town centre surveys took place in Kingston and Guildford in April 2010. Behavioural surveys were undertaken in both town centres where respondents were asked the origin of their trip to the town centre. As shown in Figure 2.14, the catchment area for work related trips to each centre is wide, and both town centres draw trips from across the GLA boundary.

TfL will continue to work with authorities on both sides of the London boundary to improve data sharing and address common issues.

Figure 2.16 Weekday catchment for trips to Kingston and Guildford





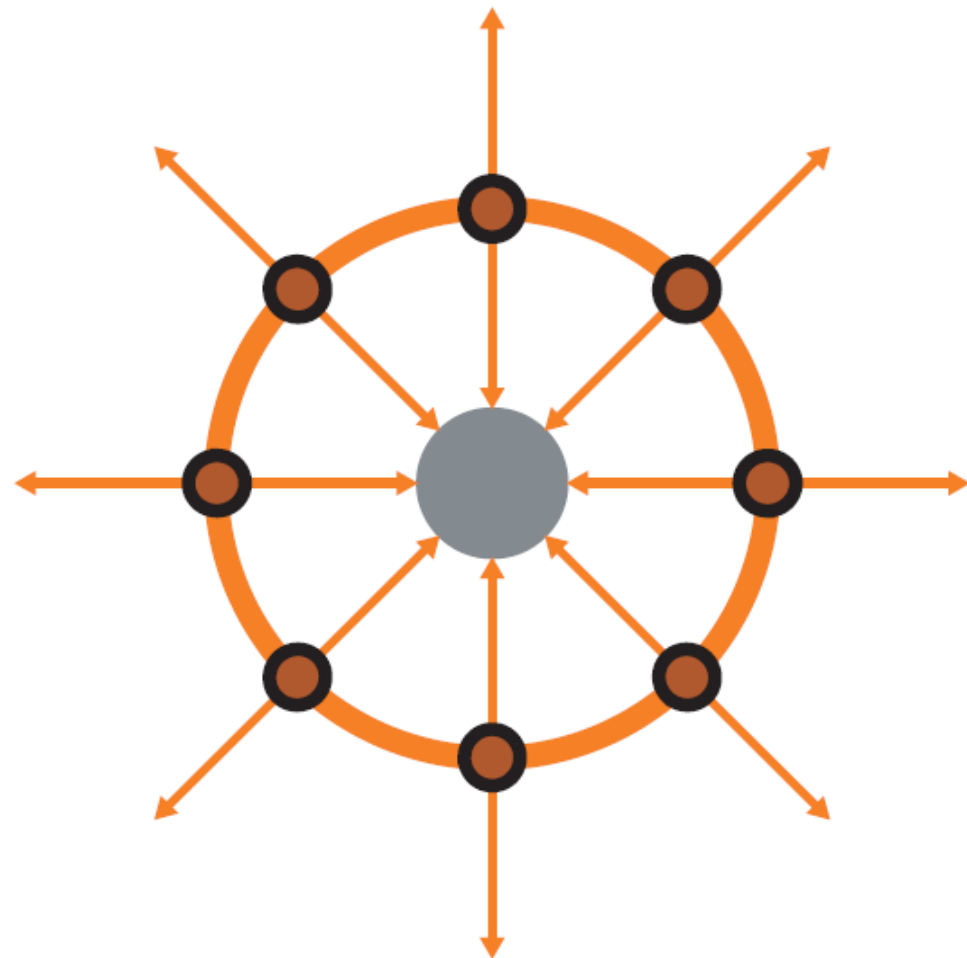
## 2.2.4: Strategic Interchange

### Strategic interchange in the south sub-region

The concept of strategic interchanges is defined in the MTS as follows:

Strategic interchange aims to improve orbital public transport opportunities, in particular linkages between outer London town centres, and to ease pressure on the central London transport system, in particular passenger dispersal pressures at London's rail termini.

Figure 2.17 Strategic interchange concept



There are a number of strategic interchanges in the south sub-region, many of which also play an important sub-regional role. The greatest opportunities for strategic interchange in the south sub-region are:

**East Croydon** with potential links to High Speed 2 via Old Oak Common and the opportunity to facilitate Gatwick stopping services, as well as Thameslink improvements;

**Wimbledon** with potential links to Crossrail 2 and provision for London Tramlink;

**Bromley South** for more Thameslink stopping services;

**West Croydon** to facilitate greater integration between rail, tram and bus;

**Clapham Junction** (see spotlight on next page)

Other interchanges in the region with potential for strategic interchange include:

Richmond

Balham

Peckham Rye

Elephant & Castle

Herne Hill

Tulse Hill

Vauxhall

Catford/Catford Bridge and Lewisham – although not in the core boroughs of the south sub-region, these interchanges provide opportunities for orbital travel from the south region, particularly to Canary Wharf

Each of these interchanges has its own potential to improve access across the south sub-region and the interventions needed to unlock the benefits will vary by location. This could include physical improvements to the station as well as changes to service patterns. Network Rail, the DfT and train operating companies would be key to delivering these benefits.

## Spotlight: Interchange at Clapham Junction

In terms of strategic interchange, the south sub-region has the greatest potential to influence travel behaviour. Clapham Junction has significant potential to alter travel patterns to enable interchange to other orbital services which help customers avoid travelling into central London unnecessarily, which will help relieve pressure on rail termini. The station is operated by Network Rail and sees more trains pass through each day than any other station in Europe. Improvements to orbital services at places such as Clapham Junction have the potential to reduce crowding at Waterloo and Victoria by up to 10%. Clapham Junction also plays an important role at the sub-regional level, including providing links to town centres.

There are a number of constraints on Clapham Junction fulfilling its potential:

- **Efficiency & Usability:** Bottlenecks inside the station result in passenger congestion, particularly at the subway, stairways to the overbridge, platforms and the ticket hall on St John's Hill
- **Efficiency:** Around one third of trains through Clapham Junction do not stop
- **Efficiency:** Crowding on existing lines
- **Quality:** Poor quality station environment

Priorities for Clapham Junction:

- New Brighton Yard ticket hall, and staircase from the overbridge to platforms 9 and 10
- Longer and more frequent trains through HLOS investment
- General platform improvements to platforms 9-14
- Install lifts
- Modify the existing ticket hall
- New Grant Road ticket hall
- Harmonise stopping patterns, facilitate orbital movements and stop more services at peak times, for example the Gatwick Express
- Deliver Airtrack, making Clapham Junction an interchange linking Heathrow and Gatwick
- Widen the overbridge in the long term
- Links to High Speed 2, via Old Oak Common interchange

The wider interchange zone at Clapham Junction provides an opportunity for passengers to transfer between public transport services or by feeder modes. The key issues are:

- **Efficiency:** Lack of capacity for bus waiting and standing, cycle parking and footway congestion.
- **Understanding & Usability:** Poor legibility and accessibility to the taxi rank (currently located in the middle of a busy road) and wayfinding.
- **Quality:** Poor public realm and street clutter



### 2.3.1: Delivering an efficient and effective transport system for people and goods

Making improvements on the road network, including managing delay, improving journey time reliability and resilience.

Improving public transport reliability and reducing operating costs.

Making the most of what already exists, by bringing and maintaining all assets to a state of good repair.

Enhancing use of the Thames for people and goods.

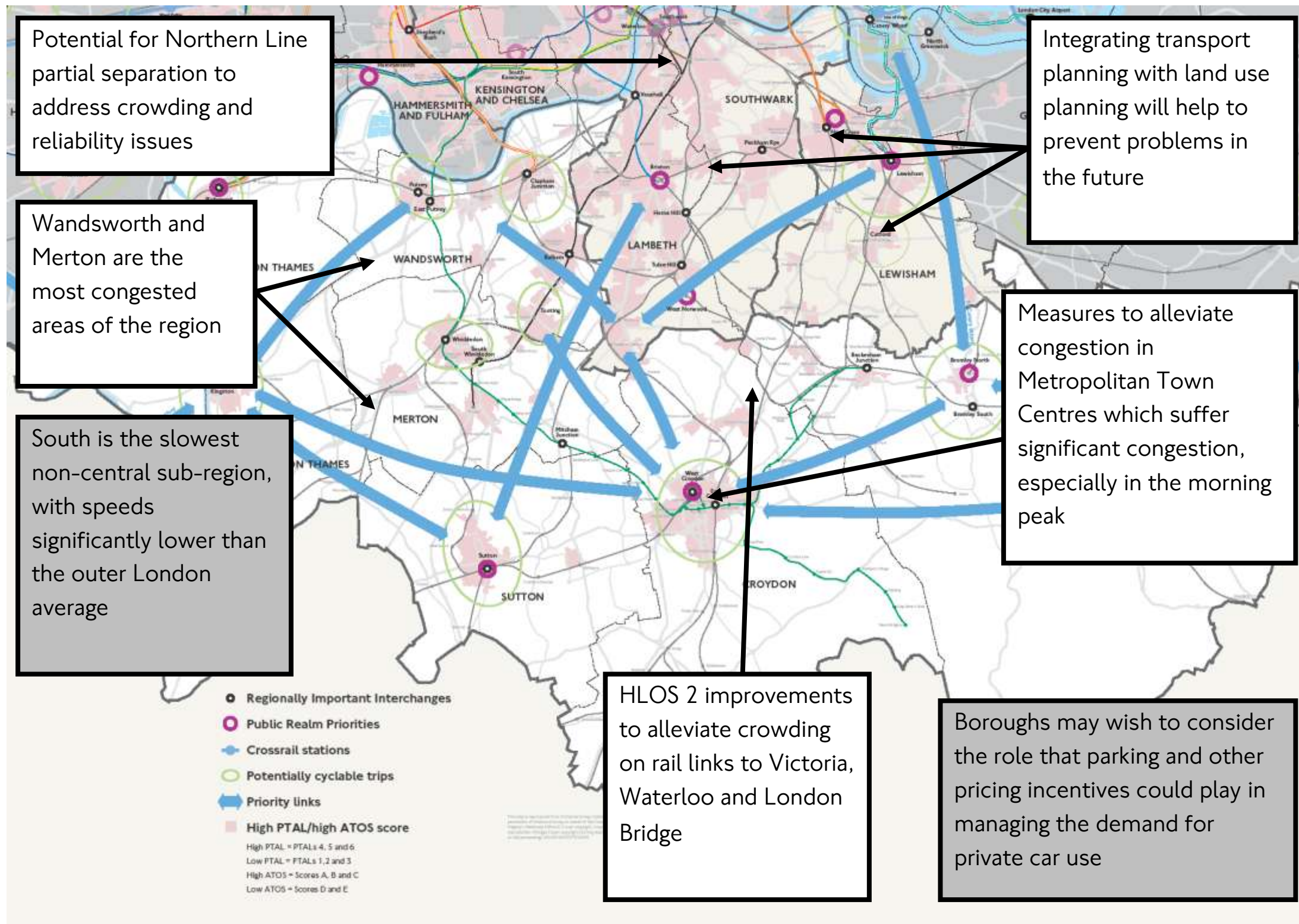
Currently, many parts of the transport network within the south sub-region experience public transport crowding and highway congestion. While the planned investment in the network will go some way to alleviating this, the forecast population and employment growth, and resulting increase in trips, will lead to further pressure on the network. Therefore, delivering an efficient and effective transport system for the movement of people and goods will become more important in the future. In addition to further investment in the public transport and road networks, there is also a need to rethink travel to encourage the use of more sustainable modes and to better integrate land use and transport planning.

Measures to deliver an efficient and effective transport system for people and goods

- Smarter travel initiatives and school and workplace travel planning
- Using parking provision and charges to discourage car journeys
- Freight delivery and servicing plans
- Better linking land-use planning with transport planning to encourage use of more sustainable modes
- Asset renewal to ensure reliability of rail, Underground and bus services
- Provision of enhanced public transport, including new and extended rail services and review of the bus network
- Encouraging modal shift of freight transport away from road, including to rail and better utilising the Thames
- Freight Quality Partnerships



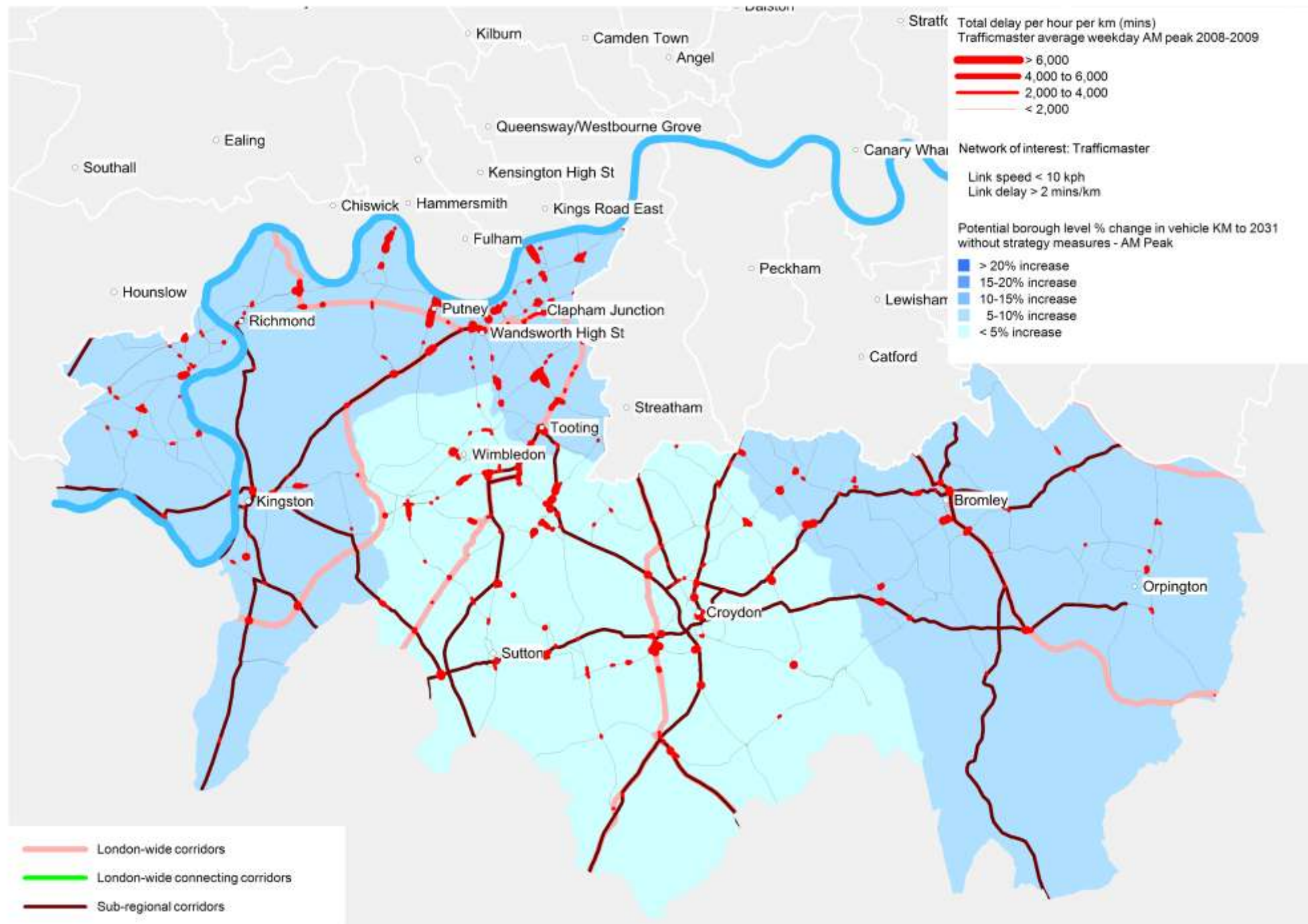
Figure 2.18 Example efficiency issues in the south sub-region



### 2.3.3: Managing the road network

Analysis has highlighted a number of areas in the sub-region that experience clusters of road congestion, as shown below. These clusters of congestion are widespread in inner south London, and around the Metropolitan Town Centres. Addressing congestion will be one of the functions of the Sub-regional Panel. A table of roles and responsibilities for management of the road network can be found in Appendix 2 of this document.

**Figure 2.19 Map of congestion on the road network in the south sub-region**



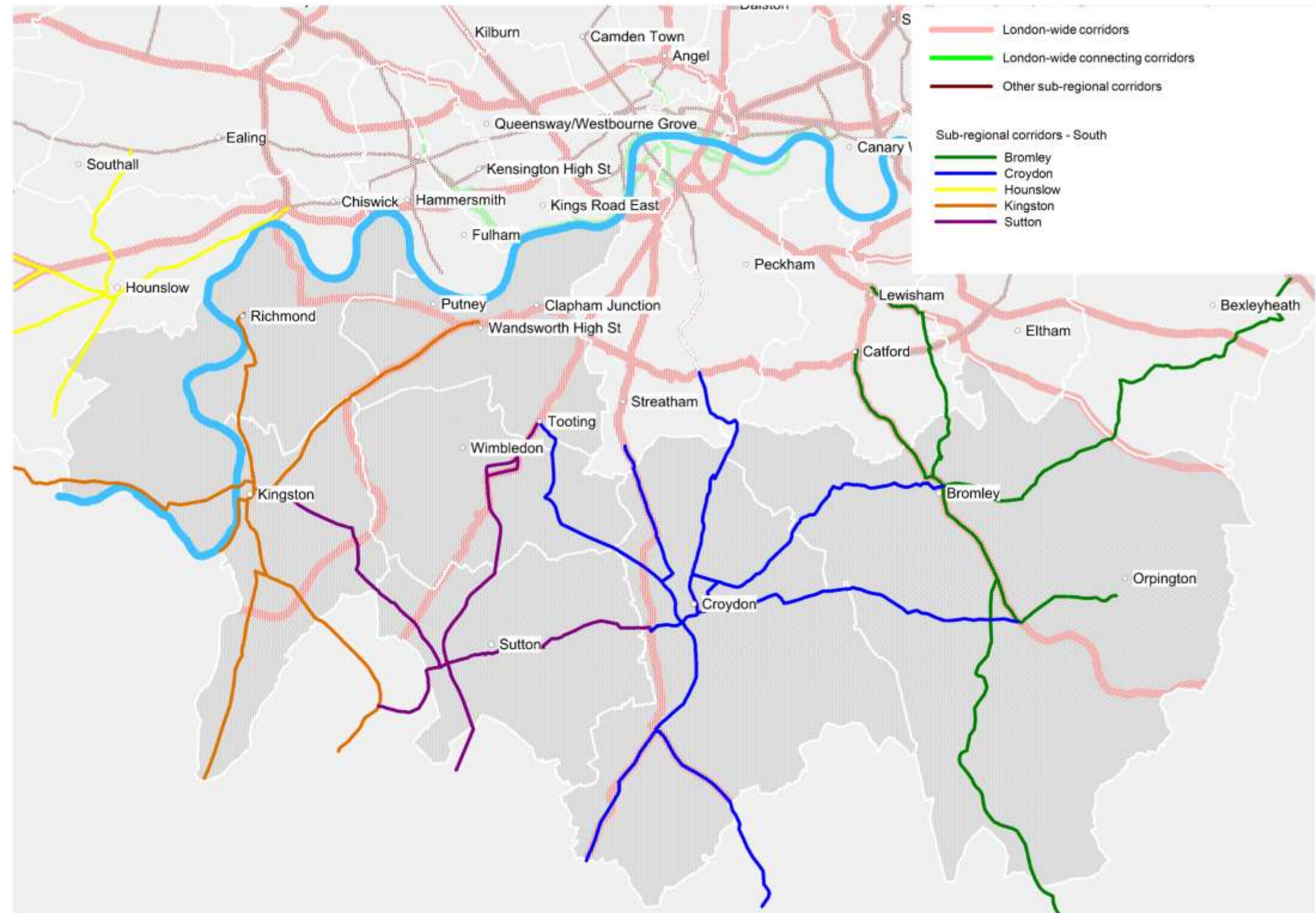
### 2.3.3: Managing the road network

The Mayor's Transport Strategy proposed that the road network would be managed through the development of a corridor approach in which each corridor's strategic significance is determined primarily on the basis of the connectivity it provides.

The map opposite picks out the London-wide and sub-regional corridors running through the south sub-region, and highlights the centres they serve.

The division of responsibilities between TfL and the boroughs in managing these corridors is set out in Appendix 2.

Figure 2.20 London-wide and sub-regional corridors in the south sub-region



### 2.3.3: Managing the road network

Parts of the road network across the south sub-region operate at capacity, with the inner areas being particularly affected. Population and employment growth anticipated in this area will lead to an increase in economic activity. Even with currently funded public transport improvements it is likely that vehicle kilometres, particularly lorries and vans, will increase. Without the right measures in place this will affect the resilience of the network, reducing journey time reliability and increased journey times.

Average speeds across the sub-region in the morning and evening peak periods are 26 and 25 kilometres per hour respectively, making this the slowest sub-region following central. Further analysis suggests delays are more widespread during the evening peak period than the morning peak. Weekend congestion is more severe during the interpeak, particularly at town centres, and during the evening peak.

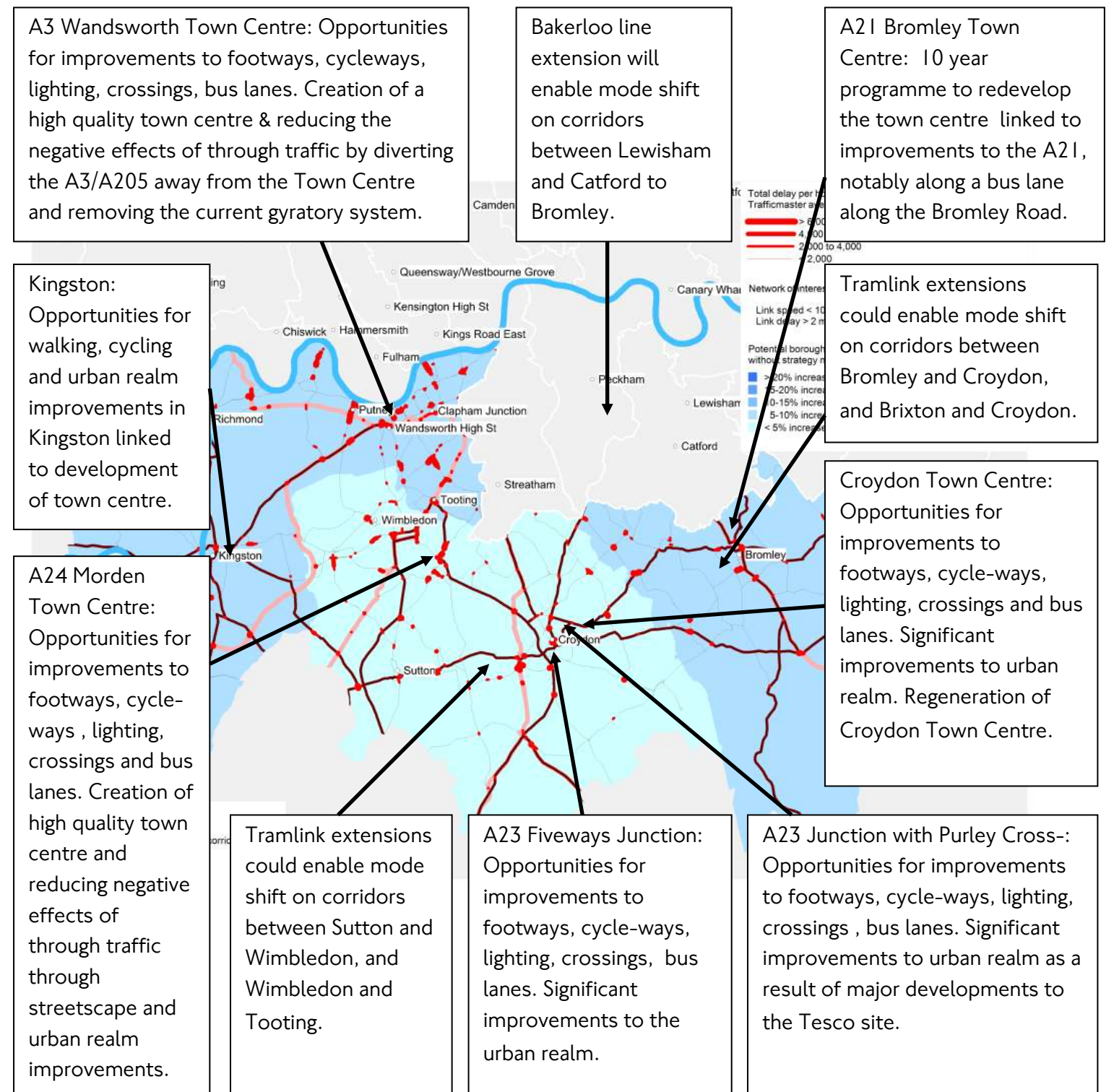
The map opposite identifies congestion hotspots, and indicates that much of the congestion occurs:

- on radial routes (and at junctions to such roads) – especially the A3, A24 and A23
- in centres – particularly Kingston-upon-Thames, Croydon, Brixton and Putney
- on the approaches to certain river crossings within the sub-region

Mapping allows targeted solutions that could include safeguarding of capacity, forward planning of road openings, better management of incidents and network optimisation.

Understanding the nature of the trips in these areas will help encourage mode shift and enable pressure on the network to be eased by managing demand. For strategic routes, long term demand management measure and land use planning along the corridors can be identified in advance. Indicative results of this analysis are presented for example locations below, and this process could be applied to priority sites to reach tailored solutions.

**Figure 2.21 Potential interventions targeted at congested points on the highway**



### 2.3.3: Managing the road network

#### Opportunities to improve the road network

##### Potential targeted interventions on the road network in the south sub-region

The priorities for further targeted mode shift to tackle congestion in the south sub-region are:

- Inner parts of the sub-region
- Metropolitan Town Centres

Effective initiatives that could be deployed in the short term include:

- School and workplace travel planning
- Parking provision and charges
- Freight delivery and servicing plans for town centres

These initiatives will be more effective if accompanied by improvements to walking and cycling facilities, the urban realm, and road safety – potentially delivered as part of town centre redevelopment and regeneration initiatives.

In the longer term there are further opportunities for mode shift through:

- Ensuring that new developments are planned so as to maximise density, accessibility to non-car modes, and a mix of uses that minimises the need to travel
- Provision of enhanced public transport, including new and extended rail and tram services

There are also opportunities for targeted interventions including on corridors with planned or proposed public transport enhancements, and in town centres by measures to encourage use of public transport, walking and cycling in tandem with or proposed land use development, regeneration or urban realm improvements.

Proposed measures will be assessed for their potential to benefit all road users, including pedestrians, cyclists, and vehicle users.

##### Example locations

###### A219 Putney High Street

Long delays are seen on the A219 Putney High Street at the junction with the South Circular Road and the approach to Putney Bridge. Most vehicles travelling on the A219 are single occupancy cars. During the AM Peak, trip origins are dispersed throughout southwest London, while destinations are concentrated in Hammersmith and Fulham. Around 30% of trips are between 2km and 8km in length, indicating potential to ease congestion through mode shift to cycling

###### A3 Clapham High Street

The majority of traffic on the A3 consists of single occupancy cars. The average trip length is relatively long at 26km. A high proportion of trips have origins in southwest London and destinations in central London, and mode shift from car trips to rail trips could therefore play a role in easing congestion.





### 2.3.4: Freight in the south sub-region

#### Freight and Servicing

The south sub-region generates its own freight activity but also accommodates freight passing through the region, into central London or on routes such as the South Circular, and outward to Kent, Dover, and the Channel Tunnel. There are concentrations of freight activity in the key industrial locations in Merton and Sutton and servicing around the Major Town Centres. There is potential for consolidation centres at Strategic Industrial Locations such as Beddington Lane in Sutton.

#### Rail freight

The south sub-region does not contain any existing or proposed rail freight facilities, though a number of smaller rail freight facilities remain in use across the area. As with other parts of London, there can be a tension between accommodating rail freight services on lines heavily used by passenger services. This is a particular issue on lines such as the South London Line, where there is pressure for future growth and limited available capacity.

#### Freight priorities

There are a number of freight priorities for the south sub-region:

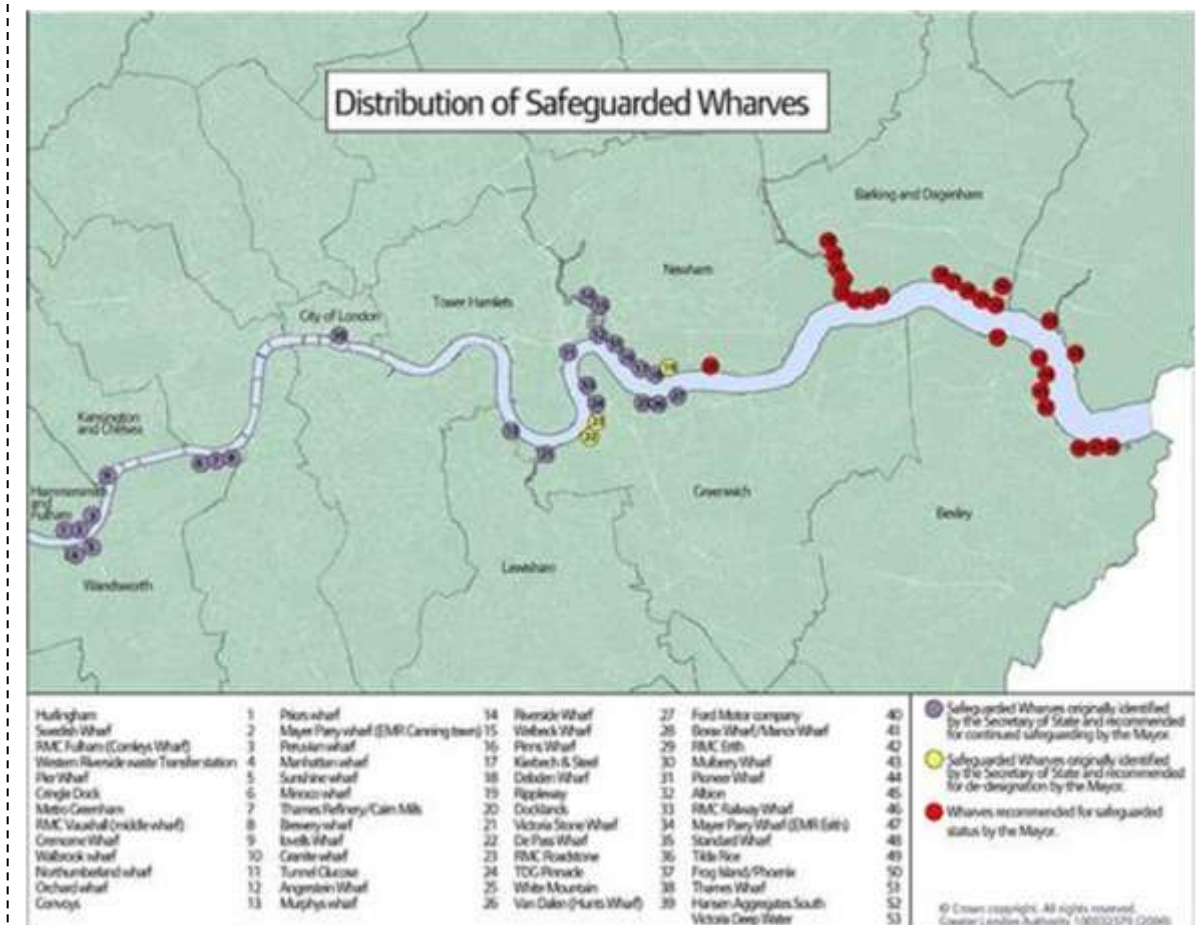
- Planning and providing for freight and servicing as part of the redevelopment plans for Opportunity Areas and town centres
- Opportunities for better use of the River Thames and the Blue Ribbon network, maximising the benefit of existing wharves for construction and waste
- Seeking opportunities for small scale rail freight facilities
- Managing the road network to increase journey time reliability which will benefit freight and servicing traffic
- Extending the application of Freight Quality Partnerships building on the existing south London FQP
- Consideration of consolidation and break bulk centres at strategic points on the road network in outer London.

#### River

In the south sub-region, the River Thames borders or passes through the boroughs of Lambeth, Southwark, Wandsworth, Kingston and Richmond. A number of safeguarded wharves within the south sub-region are either in use or have the potential to be brought back into use.

There is potential to encourage the use of the Thames for construction freight associated with redevelopments at the Vauxhall, Nine Elms and Battersea Opportunity Area, and elsewhere in Wandsworth.

Figure 2.22 Safeguarded Wharves



### 2.3.5: Using the River and London's Waterways

#### Using the river for passenger transport

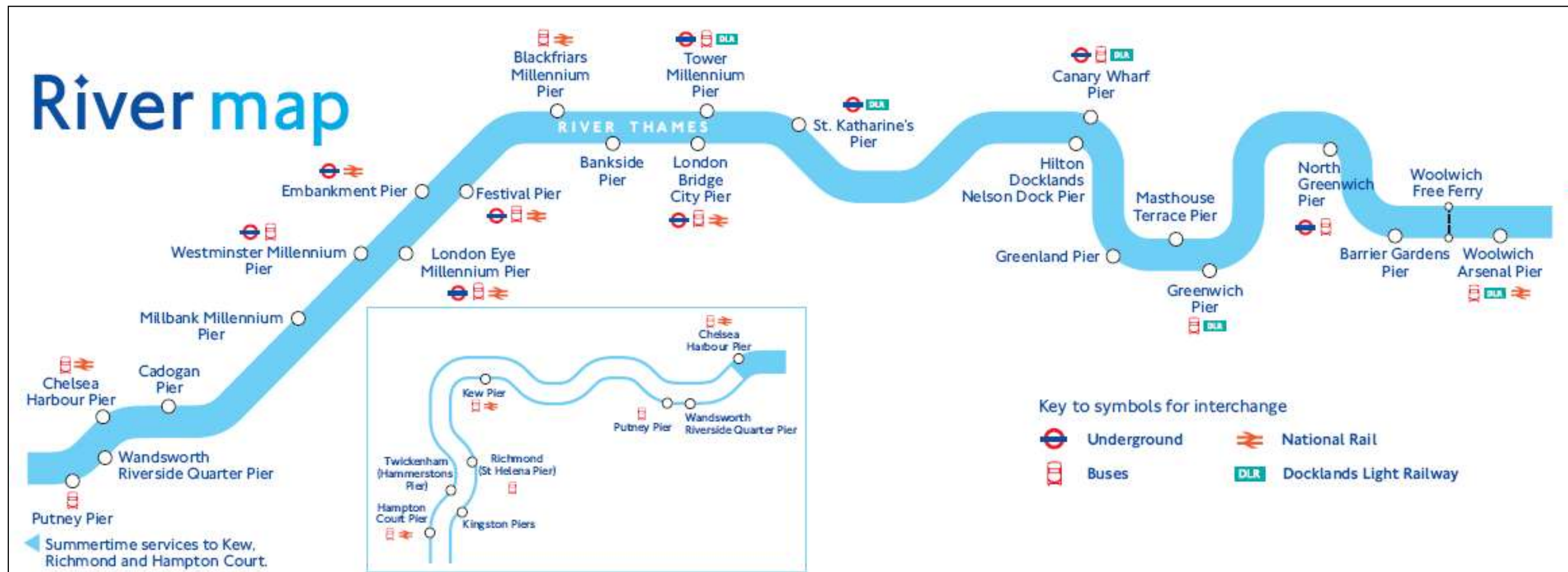
Thames passenger services are significantly less frequent in the south sub-region than those in the east sub-region, for example. They also tend to be irregular, with services restricted to the summer months. This is largely due to the restrictions that Teddington Lock in Richmond imposes on traffic volumes going further west, but also reflects the fact that as a tidal river, the Thames can only support river services at certain times.

#### Opportunities in the south sub-region

However there is a particular opportunity in inner south London, e.g. from Wandsworth to Putney, for targeted investment in piers and services to unlock commuter and tourist demand for using the river.

The Vauxhall Nine Elms Battersea (VNEB) Opportunity Area has a significant section of riverside along all of its northern boundary. As part of the package of transport improvements proposed to support the growth of the Opportunity Area, two new piers will be provided at Vauxhall and Battersea Power Station. The LDA Pier Plan (2009) highlights the potential of the Battersea Power Station and St George's (Vauxhall) Piers to accommodate traffic from VNEB into central London. It also opens up the possibility that new passenger ferry services could be provided from the area to other locations in central and west London.

Figure 2.23 Map of piers on the River Thames



## 2.3.6: Public transport reliability

### **Rail reliability**

Rail-based public transport reliability has been improving over the last ten years as a result of investment in infrastructure and new vehicles. However, major incidents such as signal failures and power problems still cause disruption. Train Operating Companies in the south sub-region have above average reliability: South Eastern, South West Trains (Stagecoach), London Overground, First Capital Connect, and Southern run around 90% of services within 5 minutes of their scheduled times.

Rail transport reliability will be improved through measures such as National Rail train lengthening; increased frequency on key rail lines and London Overground; and asset renewal such as investment in signalling.

### **Underground reliability**

The Northern, Victoria and District Lines are of most importance to the south sub-region. London Underground reliability has been improving in recent years following investment in infrastructure renewal. The excess wait time reliability measure has improved year on year from 2002/03. Many of the assets are currently suffering from age-related reliability issues, which will be addressed as more London Underground lines are upgraded, and assets are replaced or renewed. This will mean that there should be fewer delays resulting from failed assets, such as trains and signalling. The 'excess wait time' should continue to improve. Furthermore, extra capacity will also help relieve crowding in the short run which can lead to fewer passenger incidents, and therefore greater reliability.

### **Tramlink reliability**

Croydon Tramlink is highly reliable, and has high levels of customer satisfaction. The system is however under pressure from increased demand, leading to crowding at certain times which could affect reliability if not addressed through, for example, additional rolling stock and track upgrades. Reliability on the Tramlink network will be improved through new systems and track renewal.



### **Bus reliability**

Bus service reliability has been transformed in the last ten years, with the introduction of Quality Incentive Contracts and central London Congestion Charging, supported by various measures aimed at better managing the road network. Bus priority measures help to hold bus speeds and reliability steady. Excess waiting time across the south sub-region is down more than the 45% London-wide average since 1999/2000, with improvements in individual boroughs ranging between 45% and 54%. The service is also now much more consistent across all areas of the sub-region, with the range in excess waiting time between boroughs having more than halved. There will continue to be a requirement to keep the need for specific bus priority interventions and enforcement under review, as well as to consider the case for further asset renewal.

### 2.3.7: Land use planning and transport planning

#### **Role of land use planning in improving efficiency**

Integrating land use and transport infrastructure is an essential part of planning efficient and successful development. It is vital to ensure that necessary transport capacity and connectivity is provided in advance of or concurrently with new development in order to allow development to proceed. The location, scale, mix, phasing and design will impact on the relationship between demand and capacity and in doing so will influence the mode share and mode shift, trip generation and distribution, patterns of movement and accessibility by different modes. Investment in transport infrastructure increases the value and marketability of development while encouraging sustainability and successful place shaping. Furthermore, increased permeability and high quality infrastructure through land use planning can also improve walkability.

Assessing the impact of new development on the transport network is an essential part of the planning process. Developers are required to prepare a robust up to date transport assessment and travel plan as part of their planning application submission. To assist in this process TfL has produced *Transport assessment best practice guidance (April 2010)* which is available on the TfL website. TfL has also prepared guidance on travel planning, freight, delivery and servicing and cycle parking to supplement advice to developers. It is important to engage in pre-application discussions with local planning authorities and TfL on strategic developments to scope out the effects of development.

Planning permission will only be granted where the impacts of the development are adequately mitigated in transport terms. Once a development has been robustly assessed it may be necessary or appropriate to include planning conditions and section 106 obligations including financial contributions by developers. TfL has an ongoing role with the local planning authority in managing the effects of development and this should be reflected in these control mechanisms.

The phasing of development and transport infrastructure is an important consideration in planning successful development. The effects of individual phases of development should be considered as this will assist in the effective management of demand and capacity of transport.

For larger developments or where there is significant growth expected the London Plan has identified a number of Opportunity Areas and Intensification Areas. It will be essential to assess how developments in these areas will integrate into the existing urban fabric and operate efficiently to minimise transport impacts. The London Plan highlights minimum homes and indicative job targets for each of these areas and in response a number of transport studies and supplementary planning documents are to be prepared by local planning authorities and TfL. The London Plan and Borough Local Development Frameworks and associated supplementary guidance set out the level of planned future housing and employment growth and this must be accompanied by an infrastructure development plan which provides the evidence base to justify the level of growth proposed. Promoting mixed use development that reduces the need to travel and encourages walking and cycling as well as public transport must be central to preparation of transport policies.

### 2.3.8 Mode shift

There are approximately 1.5 million residents aged over 5 in the core boroughs of the south sub-region. South Londoners make up 19% of London residents but make 24% of trips. Residents of the south sub-region make an average of 2.8 trips per day.

Travel distance per person per day is also above average for London, at 17.7km, compared to a London average of 14.9km. The trip rate is the highest of any sub-region, and the distance travelled is higher than all of the 'outer' sub-regions.

Car ownership is also higher than any of the other sub-regions, and this is reflected in the mode share, where car and motorcycle mode share is higher than any other region and is more than double the proportion of trips made by public transport.

The mode share for cycling in Richmond is above the Greater London average at 4%. Richmond contains a number of parks, most notably Richmond Park, and has invested extensively in cycle facilities. This could be a model for mode shift to bicycle in other parts of the region (see section 3.5).

With the expected population growth, if the new residents behaved in broadly the same way as existing residents, we could expect around 50,000 more cars in the region and perhaps a further quarter of a million car trips per day.

Measures to promote mode shift in the south sub-region are set out overleaf.



## 2.3.8 Mode shift

### Smarter travel initiatives

Smarter Travel initiatives bring behaviour change techniques together with the transport planning of small-scale infrastructure schemes, designed to reduce the pressure on transport networks by influencing how, where and when people travel. Principal amongst those techniques available to authorities are workplace and residential travel plans which should be secured through the planning process (as required by the replacement London Plan). These provide the basis from which developers and occupiers can deliver behaviour change amongst residents, employees and visitors to new communities and workplaces from occupation. The targets and measures of these plans can be designed to reflect the opportunities and challenges presented by the specific location and the wider sub-region. These initiatives have been piloted in Richmond and Sutton.



### Car-free and low-car development

In locations with high public transport accessibility and good connections to walking and cycling routes car-free and low-car housing developments can provide a feasible option. These are supported by on-street parking controls and restricting residents from on-street parking permits.

Encouraging further use of car clubs can help reduce this even more. TfL will be working with local authorities to support the further development of car clubs, including in the piloting of car clubs in non established locations and the promotion of low emission vehicles. To this end, TfL has worked with boroughs to finance the development of car club bays across London and to disseminate best practice. There is more detail on the potential for uptake of car club membership in terms of reducing CO<sub>2</sub> emissions in Chapter 6.



### School travel programme

TfL's school travel programme makes a positive contribution to reducing peak road congestion at the AM peak, increasing mode shift to walking and cycling and reducing crowding and dwell times on the bus network serving schools. The programme is highly valued by schools and local communities. The 'school run' is a major contributor to congestion, particularly in the morning peak period. The programme has achieved significant mode shift amongst pupils (average 6.5% reduction in proportion of car journeys to school and with those in TfL's Accreditation scheme achieving up to 12.4% reduction in the proportion of car journeys).

Continued engagement with school children can additionally contribute to improvements in road safety and health, complementing road safety education and training and promoting active travel.



## Chapter 3: Enhancing the quality of life for all Londoners

### MTS Goal – Enhancing the quality of life for all Londoners

Transport can have a powerful direct and indirect effect on people's quality of life. Travelling can range from an enjoyable experience of speed and comfort to a frustrating one of crowding and delays. Since so much of the urban landscape is designed around the need to travel, including walking and cycling, thinking carefully about the design and architecture of transport interventions can improve the experience of travelling in the city.

Our travel can also have an impact on other people's quality of life: noisy or polluting vehicles can degrade the environment, while on the other hand by choosing sustainable modes or low emission vehicles we benefit the wellbeing of ourselves and others. The interactions between these issues are complex, but in many case solutions for one problem will benefit another.

This Goal is comprised of five challenges:

- 3.1 Improving journey experience
- 3.2 Enhancing the built and natural environment
- 3.3 Improving air quality
- 3.4 Improving noise impacts
- 3.5 Improving health impacts



### 3.1.1 Improving journey experience for rail users

Improving public transport customer satisfaction, reducing public transport crowding and improving road user satisfaction for all road users, including drivers, pedestrians and cyclists.

Forecast population and employment growth will put greater pressure on a public transport network that is already under strain, and despite investment to increase public transport capacity, renew assets and improve reliability, problems will remain on the network, particularly on National Rail services with crowding forecast between Wimbledon and Waterloo, and Richmond and Waterloo on South West Trains; between East Croydon and Clapham Junction on Southern; and Bromley South and Victoria on Southeastern. Crowding will also remain on much of the Northern Line in the south sub-region and on the tram on services on the approaches into East Croydon and Wimbledon. The Tube upgrade programme will provide increased capacity, and the new S-stock trains being introduced on the District Line will feature air conditioning to combat high temperatures.



#### Potential measures to improve public transport journey experience

Additional capacity required to support future growth will also improve public transport journey experience by seeking to reduce crowding. A summary of the key priorities for the south sub-region is given below. In addition to this, there is a range of other measures in the MTS that seek to make the experience of travelling on public transport more pleasant, including better information provision, measures to make the journey more comfortable such as cooling the Tube, and measures to reduce crowding. In addition, evidence that exceptional, very poor, experiences can disproportionately affect overall impressions of transport satisfaction, suggests that efforts to target extreme situations would have a significant impact.

Other measures that are relevant in the south sub-region include:

- Additional capacity and infrastructure improvements on rail services
- Asset renewal to improve reliability
- Improved interchange and improvements to reduce station crowding
- Improved service levels – providing a Seven Day Railway
- Maintaining current levels of satisfaction despite continuing growth in trips



### 3.1.2 Improving journey experience for road users including bus passengers

Every day in London the roads are used to make ten million car trips, six million walking and cycling trips and six million bus trips. Key factors influencing the satisfaction levels of road users are the speed with which road works are completed and the way in which they are managed, the state of repair of carriageways and pavements (an issue that is growing, in part due to the recent harsh winters), and a perceived lack of facilities for cyclists. Measures to better manage the road network, improve the urban realm and air quality will help make travelling in the south sub-region a more pleasant experience for all road users.



#### Measures to improve road user journey experience

- Encouraging people to use public transport, walk or cycle for short trips currently made by car to help alleviate congestion
- Other measures to smooth traffic as highlighted in Chapter 2, for example minimisation of the impact and duration of planned road works and unplanned events, increased SCOOT coverage, and development of the road network where appropriate
- Improved facilities for cyclists
- Measures to improve reliability and the provision of live information will help improve road user satisfaction
- Better maintenance of carriageways and pavements to ensure they meet good standards of repair

### 3.2 Enhancing the built and natural environment

Enhancing streetscapes, improving the perception of the urban realm and developing ‘better streets’ initiatives as well as protecting and enhancing the natural environment.

#### **The role of the built and natural environment in transport**

Improvements to the spaces through which people move and spend time can make a journey more pleasant and places more vibrant. For instance, there are strong links between the quality of the built environment and levels of walking, cycling and public transport use. The Mayor’s Approach to Better Streets seeks to find a new working balance between the different users of London’s streets and spaces, distinguishing them with good quality sustainable materials and with high levels of craftsmanship, and reflecting local character.

In addition to improving the quality of spaces and increasing the economic vitality of places, improvements to the local environment can also increase levels of road safety and improve perceptions of personal safety in an area.

The scale of improvement can range from the general tidy up and decluttering of streets across the south sub-region to rethinking the traffic management in an area and recreating the street.

#### **Improving the south sub-region’s town centres**

Working with the boroughs, MTS aims to develop locally agreed improvements that:

- Enhance the vitality of outer London, including improved accessibility to, and between, Metropolitan Town Centres and a greatly improved urban environment within town centres
- Better integrate transport in town centres with local conditions

As with the rest of London, the places in the south sub-region are diverse and each will have differing needs for improvement and change. The typology of places in the region is shown over the page.

Whilst many of the measures will be determined locally by boroughs, there are some areas where numerous factors will need to be taken into account in determining how the “place” should operate, e.g. impacts on traffic, buses, taxis, retail etc. The use of the existing working arrangement for the south sub-region will enable consideration of the strategic issues through “panel” discussions and recommendations.

#### **Natural environment**

The natural environment in the south sub-region ranges from residential gardens through to parks and wild spaces. The sub-region benefits from extensive green space, including Richmond Park – the largest in London – as well as areas of green belt in Bromley. Open spaces provide opportunities for exercise and relaxation and therefore contribute to health and wellbeing.

Access to open spaces is vital to enhance quality of life. This is considered in more detail in the section on accessibility. The natural environment also provides opportunities for cycling and walking for pleasure.

The impact of developments on conservation areas such as Wimbledon Common and the South West London Waterbodies must be taken into consideration.



### 3.2.1 Urban realm 'key places' - typologies

The MTS recognises the importance of the Major Town Centres, particularly in outer London, as a focal point for employment, other services, and leisure activities. Transport plays a key role in the success of these centres and as plans for town centre improvements are brought forward by boroughs, the role and future needs of transport in supporting the implementation of these plans have to be fully integrated. Policy 8 and Proposal 85 of the MTS support this approach by recognising the role of transport in improving connectivity and promoting vitality and viability of town centres.

TfL is working to develop programmes of works for improving and transforming the urban realm of town centres across London, and has produced a series of case studies. A typology of places has been developed so that the treatment set out in these case studies can be applied to other centres with similar characteristics. The typologies reflect both the physical form of the place, and its current transport provision, as set out in the table below.

In the south sub-region, Beckenham, Colliers Wood/South Wimbledon, Orpington, Purley & Purley Way, Putney, Wimbledon, Peckham, Streatham, Waterloo/Southbank are type A (linear) town centres. Camberwell, Clapham Junction, Hackbridge, Morden, Sutton, Twickenham, Wandsworth, Brixton, Elephant & Castle and Richmond are all type B (confluence) town centres. Kingston and Bromley are C I (constrained) town centres.

The Kingston case study is reproduced overleaf – details of the other case studies and TfL's typological analysis are available on request from TfL.



### 3.2.2: Improving the urban realm – example improvements at key places

TfL has worked jointly with the Royal Borough of Kingston upon Thames to develop ideas for implementing the policies outlined above in Kingston town centre. This reflects the growth plans of the Borough for the town centre and seeks to identify:

- Where changes to transport can support these plans; and
- Where additional transport infrastructure and capacity are required

The intention would be to agree the key transport changes with the Borough and have them firmly embedded within the wider development plans for the town centre

#### Kingston (Outer - South Sub Region) Type C1

Kingston is a major leisure destination and employment centre. It relies heavily upon public transport to carry workers and shoppers to the town centre, but the rail and bus stations are separated from the main commercial areas by a three-lane road.



At Fife Road, issues include fast moving traffic, constrained pavements and conflicts amongst road users. A potential solution here is the creation of public spaces at key junctions, allowing safer pedestrian and cycle movement.



Around the railway station gateway, rail and bus passengers are faced with a traffic dominated three-lane one-way road, making access to public transport difficult. The road acts as a barrier to customers gaining easy access to the commercial/shopping/eating offer. A widened and relocated crossing closer to the entrance could help to accommodate pedestrians numbers here.



### 3.3.1 Improving air quality

Reducing air pollutant emissions from transport and contributing to meeting EU air quality targets.

#### Why is air quality important?

Air pollutants such as nitrogen dioxide (NO<sub>2</sub>) and fine particulates (PM<sub>10</sub> and PM<sub>2.5</sub>) are associated with short and long term adverse health effects including respiratory and cardiovascular illness. Long term exposure to pollutants, in particular, to fine particulates can contribute to the development of chronic diseases and can increase the risk of respiratory illness. Particulate matter can aggravate existing respiratory and cardiovascular conditions such as asthma whilst high concentrations of NO<sub>2</sub> can cause inflammation of the airways, and long term exposure may affect lung function and aggravate other respiratory conditions. Air pollutants may also have adverse impacts on ecosystems and vegetation.

#### Air quality in the south sub-region

The south sub-region has relatively poor air quality compared to other parts of the UK but comparatively better air quality compared to some parts of London. Air quality is poorest around major roads and some urban centres such as Croydon and Kingston. Reflecting the London norm, air quality is poorer in inner south London than outer south London, and alongside main roads and motorways, but also with many of the main centres where a mix of traffic, industrial and commerce, and residential emissions, contribute to the elevated air quality levels.

Opportunity areas such as Croydon and Vauxhall Nine Elms Battersea present challenges in terms of balancing air quality management with population and employment growth. In addition, intensification areas and strategic or preferred industrial areas in the sub-region including South Wimbledon/Colliers Wood, Purley Way and Morden Road may result in higher movements of HGVs and LGVs, or increased industrial emissions, as well as increased car traffic (where related to retail and housing). Growth in district centres including Norbury, Thornton Heath, Purley, Morden, Mitcham, East Sheen, Twickenham, Wallington, and Worcester Park could also have air quality impacts, as well as those in the main town centres of Kingston, Bromley and Sutton.

Figure 3.1 Predicted annual PM<sub>10</sub> concentrations in 2011

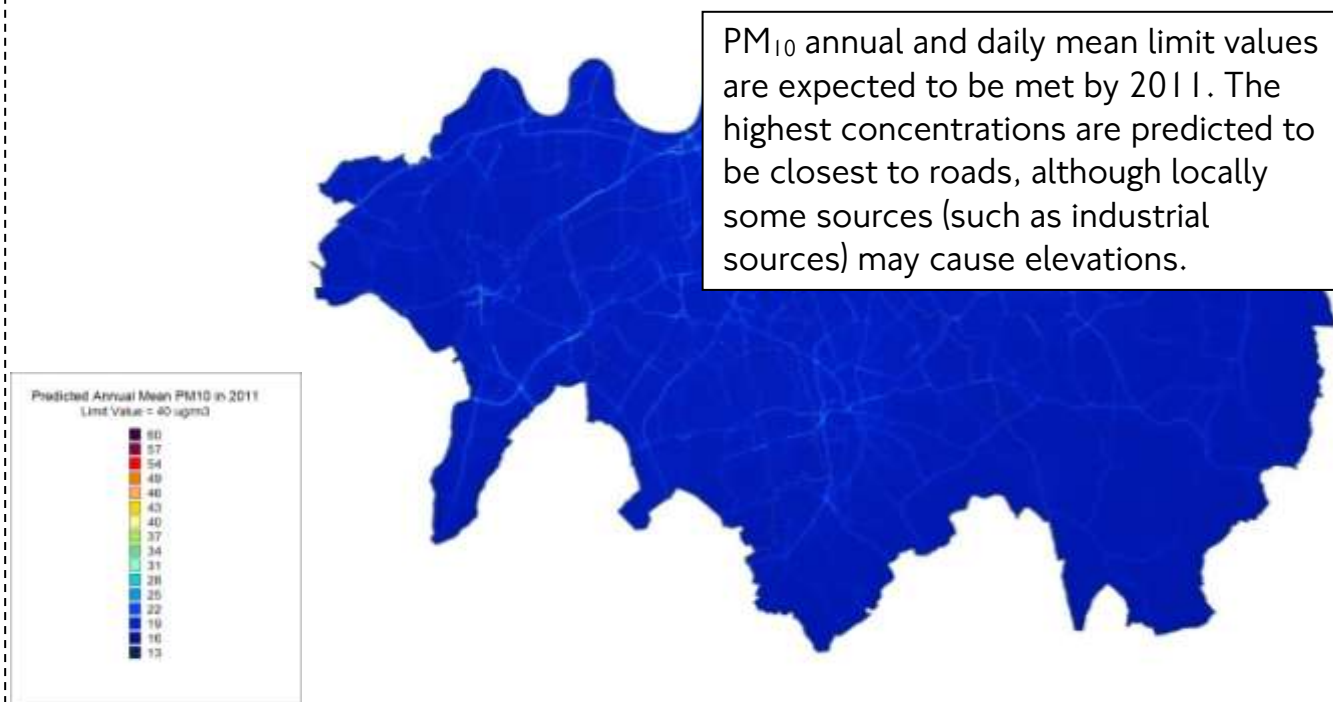
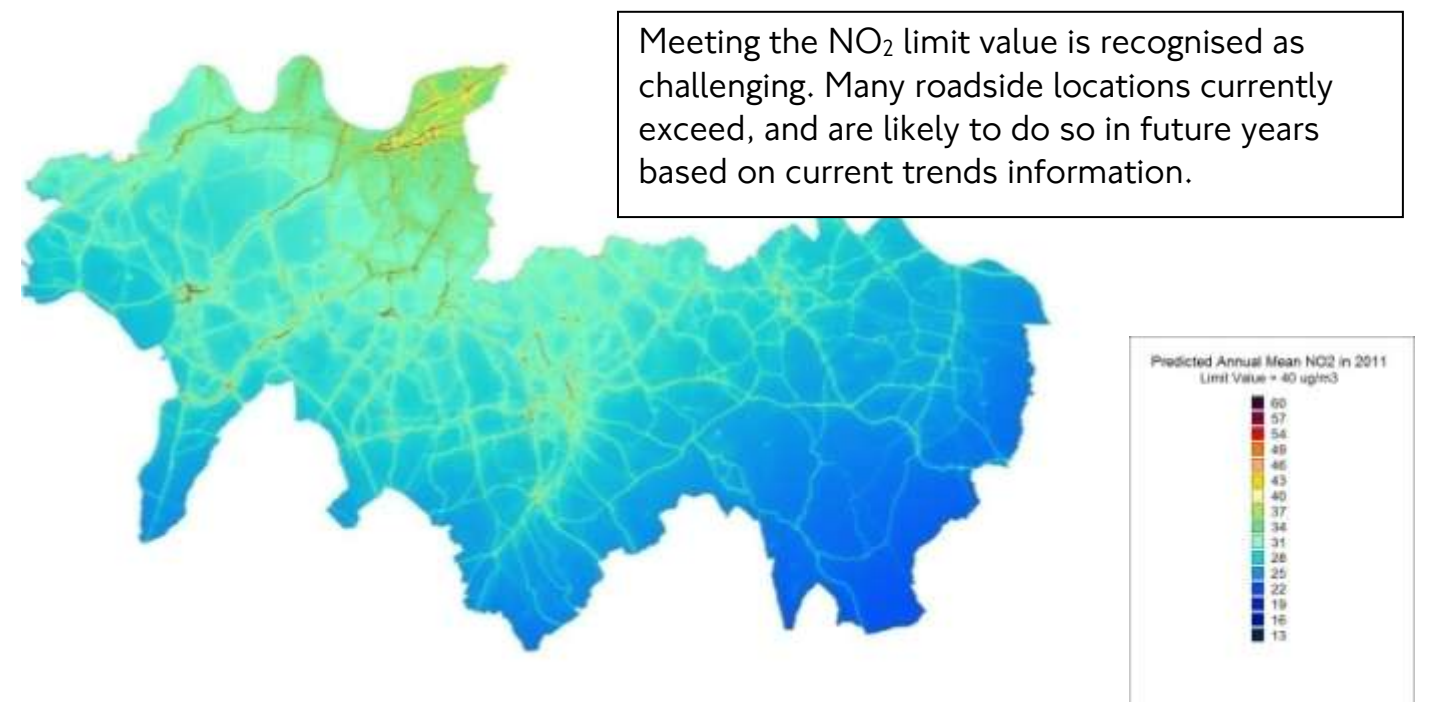


Figure 3.2 Predicted annual mean NO<sub>2</sub> concentrations in 2011



### 3.3.2: Improving air quality

#### Toolkit

##### Local measures

- Adjustment or removal of traffic lights
- Shared spaces
- Access restrictions
- Effective policing of red routes
- Reducing idling
- Toll roads
- Restrictions on car parking
- Vegetation
- Access control/ clear zones
- Local Low Emissions Zones (LEZs)
- Re-routing and road hierarchy
- Roadside emissions testing
- Urban Traffic Management and Control

##### Indirect traffic related measures could include:

- Anti-idling
- Awareness raising
- Cleaner fuelled vehicles
- Development of walking and cycling
- Fleet management and cleaner fuels
- Land use planning
- Parking management and charging

##### Modal measures

- Deployment of cleaner buses, further reducing emissions per passenger
- Adjustment or removal of traffic lights
- Effective policing of red routes
- Extension of FORS

##### Longer term options

- Modification of London-wide LEZ or local LEZs
- Road user charging

Figure 3.3 Map of sub-regional focus areas



Figure 3.4 Table of sub-regional air quality focus areas

Borough	General Description
Bromley	Bromley Tweedy Road A21/High St/Widmore Road A222
Croydon	Norbury London Road
	Thornton Heath Brigstock Rd/High St/Whitehorse Lane
	Waddon Fiveways Corner
	Thornton Heath Pond and London Road to St James Road
Kingston	Purley Cross
	Kingston Bridge/Kingston Street/Wheatfield/Kingston Hall Road/London Road
Sutton	A3 Kingston Bypass at Malden Junction
	Raynes Park junctions Kingston Road/Bushey Road
Merton	Wimbledon The Broadway/Merton Road/Morden Road/Kingston Road
	Morden Road/London Road/Morden Hall Road/Martin Way
	Mitcham London Road A216 from Cricket Green to Streatham Road Junction
	Richmond
Richmond	Richmond Circus and Richmond Bridge with Sheen Road A305
	Richmond Chalker's Corner/Clifford Avenue/A205/Upper Richmond Road/Millstone Green
	Twickenham King Street
Sutton	Wallington Manor Road/Stanley Park Road/Stafford Road
	Sutton A232 Cheam/Carshalton Road/High Street/Brighton Road
	Worcester Park Central Road
Wandsworth	Tooting High Street and Upper Tooting Road
	Clapham Junction Falcon Road/Northcote Road/Battersea Rise/Lavender Hill
	Wandsworth Gyratory Wandsworth High Street/Armoury Way
	Putney High Street/Putney Bridge Road/Richmond Road

### 3.4.1 – Improving noise impacts

#### Improving perceptions and reducing the impacts of noise

##### Noise

A new TfL survey was carried out in June/July 2010 exploring the perceptions of London residents of noise in their local area. This survey found that residents of the south sub-region gave a mean score of 7.3 out of 10 for their satisfaction with the reasonableness of transport-related noise where they live, compared to a London-wide average score of 7.1, suggesting south sub-region residents are slightly more satisfied with transport noise impacts. Nine out of ten respondents thought that transport noise levels had stayed constant or reduced compared to the previous year.

Residents of the region were least likely to say that noise from transport causes them to experience sleep disturbance, with 58% of respondents reporting that they had not experienced sleep disturbance in the last year. However, 21% of south sub-region residents said that they had suffered from sleep disturbance as a result of noise from transport at least once a week, while 17% said they had suffered sleep disturbance less often than once a week. While lower than the London average, this nonetheless represents a large number of people for whom transport noise is having an impact on their quality of life.

##### Noise toolkit

There are a number of ways for TfL, the London boroughs and other stakeholders to improve or mitigate the noise impact of transport, including:

- Timely and effective rail maintenance and replacement works
- Ensuring new transport projects consider noise mitigation
- Introduce road maintenance programmes to replace road surfaces with low noise surfacing
- Improve traffic management and signal control techniques, and discourage noisy, rapid acceleration and deceleration
- Introduce quieter buses and public sector service vehicles
- Encourage quieter driving through publicity campaigns
- Seek to coordinate flight paths to minimise impact on London

Figure 3.5 Daytime road noise map



### 3.5 Improving health impacts

Improving the health impacts of transport and facilitating an increase in walking and cycling.

#### Transport and health

Transport affects both physical and mental health, in several ways. For example, it has a direct and adverse effect through road traffic accidents while air pollutant emissions are harmful to health.

Conversely, it can offer an opportunity for physically active travel – walking and cycling – and this can provide a clear health benefit, by reducing the risks of developing heart disease and diabetes. Nearly one in 10 early deaths in the UK is due to excess weight and obese people die nine years earlier on average. Shifting journeys from car to walking and cycling would also bring about an improvement in air quality, with the associated health benefits outlined above.

The sections on walking and cycling below give further detail on how such a shift might be achieved and what benefits it might bring to the sub-region.

#### Obesity

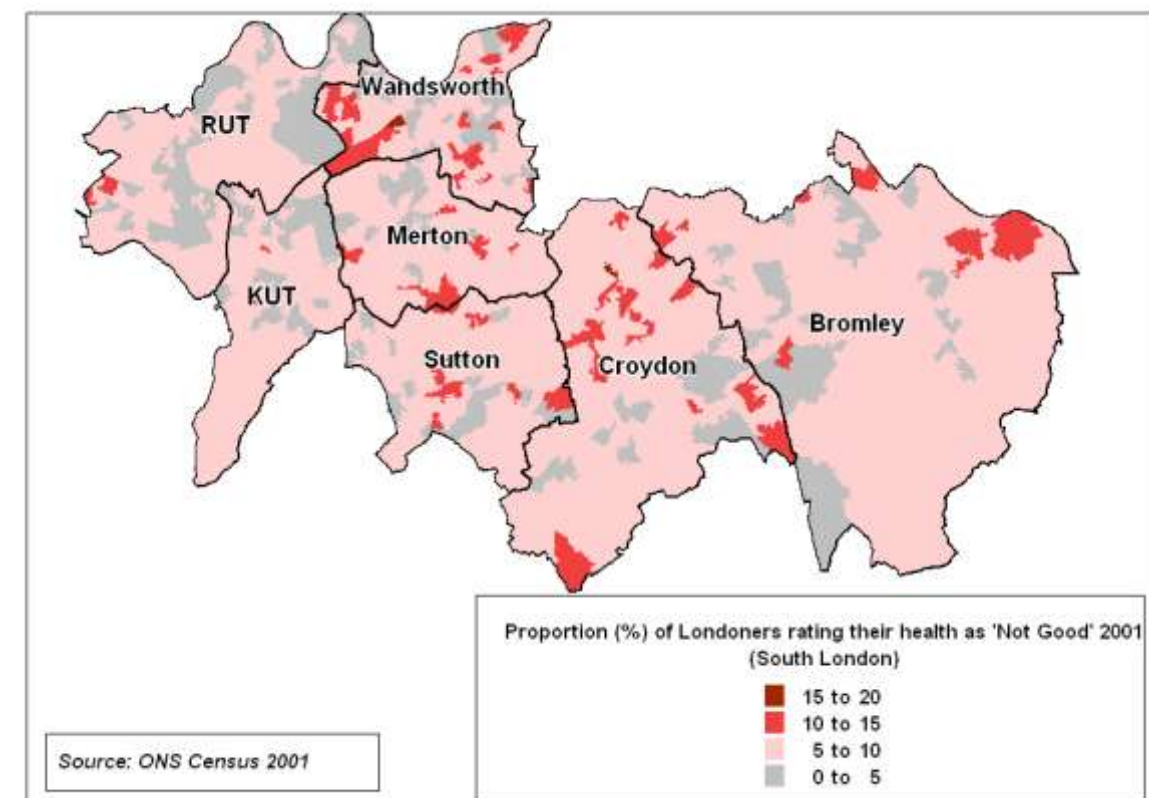
Transport can play a key role in combating obesity by encouraging active travel through walking and cycling and improving access to sports and leisure facilities. In 2007, around 22% of men and 27% of women in London were obese. In the south sub-region, obesity amongst children in reception year at school (4 – 5 years) and amongst children in Year 6 (10 – 11 years) is significantly lower than all the other sub-regions with all boroughs recording the lowest two levels of reception year obesity of 0%-11.6%. However as with other sub-regions the levels of obesity in 10-11 year old children are significantly higher than for 4-5 year olds. Obesity levels in reception year and year 6 are highest in Wandsworth and Croydon.

#### Perceptions of health

Transport can affect a person's perception of their own health. This can be positive, by contributing to improved fitness through walking and cycling, or through access to health care. It can also be negative, for example where air pollution exacerbates existing health conditions.

In terms of perception of health, the south sub-region has a lower proportion of people rating their health as 'not good' than any other sub-region, at 7%. However, there is significant variation within the sub-region in terms of the proportion rating their health as 'not good'. In general, locations where people rate their health as 'not good' tend to coincide with areas with the highest indices of health deprivation.

Figure 3.6: Proportion of Londoners rating their health as 'not good', 2001





### 3.5.1 Walking

#### Context

Almost all residents of the south sub-region walk each day.

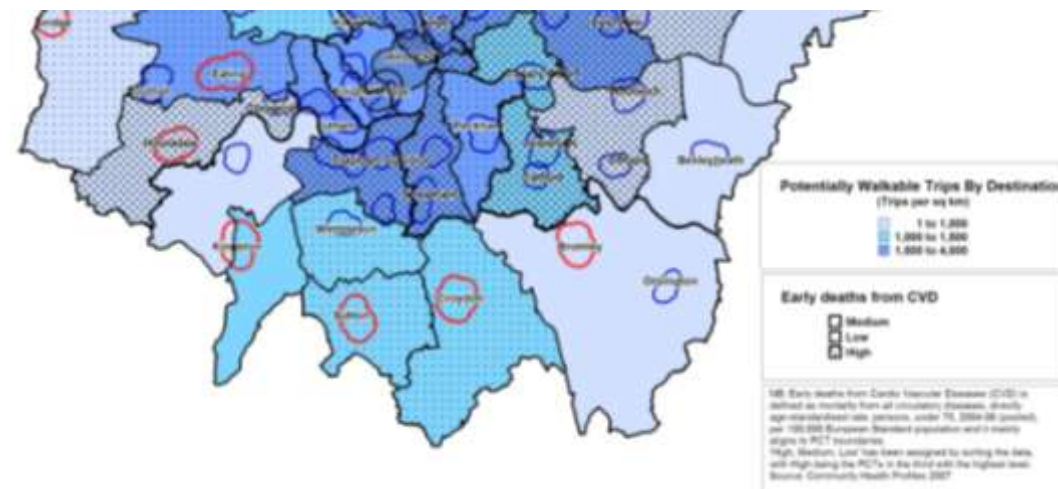
There is potential to shift a considerable number of trips, particularly those made by car, to walk trips in the south sub-region. Walk trips are sustainable, and can support town centres and the local economy.

- On average, around 1.23 million walk trips are made each day which either have an origin or destination in the sub-region (26% of all trips)
- Of trips which are currently made by mechanised modes in the south sub-region, 14% could potentially be walked. Many of these will be from shorter car trips - particularly since the south sub-region has the highest car ownership in London, with 69% of households owning one or more cars - as well as some bus trips, with consequent benefits for the road network as a whole.

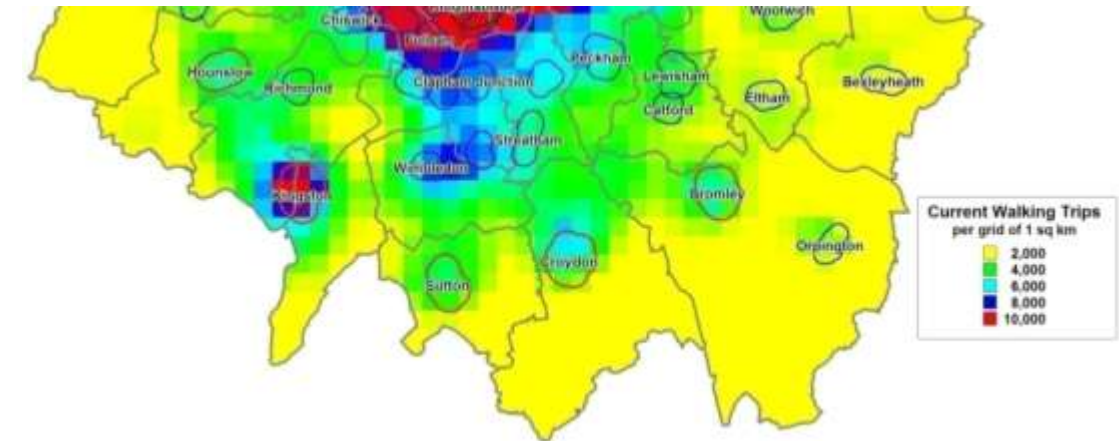
#### The potential benefits of walking to health in the south sub-region

- In addition to the benefits listed above, mode shift to walk would have beneficial health impacts, including a reduced risk of cardiovascular disease, through increasing exercise levels
- Both Wandsworth and Lambeth are shown to have a high incidence of early deaths from cardiovascular disease, combined with a large amount of potentially walkable trips, suggesting that there is potential for significant benefit here

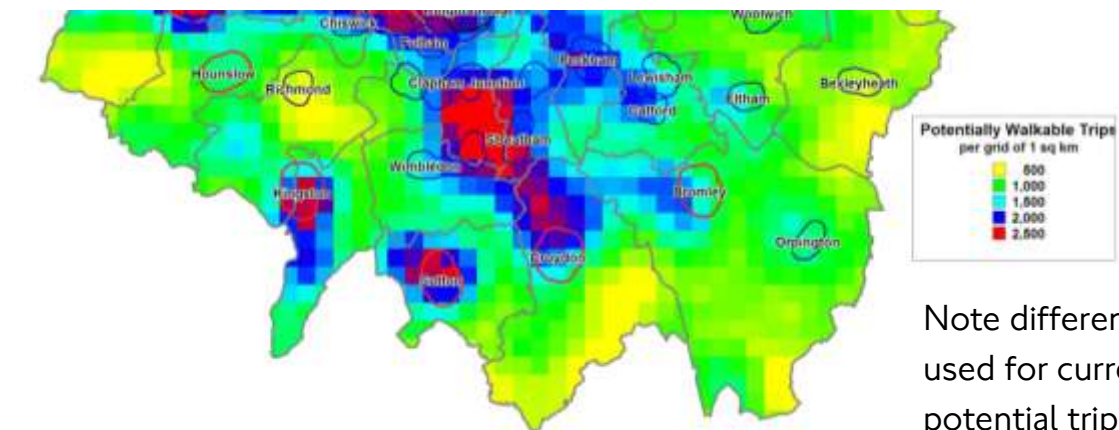
**Figure 3.7 Potentially walkable trips by destination and deaths from CVD**



**Figure 3.8 Current walk trips by origin**



**Figure 3.9 Potentially walkable trips by origin**



Note different scales used for current and potential trips

There are already a very large number of walk trips in the south sub-region, particularly in and around the major and metropolitan town centres. There is also a further set of trips that are currently undertaken by mechanised modes which could potentially be walked.

Possible measures which could be used to stimulate the uptake of walking for these trips, and also to improve the situation for trips that are currently made on foot, are outlined on the following page. Note however that measures to reduce the attractiveness of car travel might be required to fully realise this potential.

There is also an opportunity to increase levels of walking as part of a longer trip. For example, encouraging more walking to and from rail stations in outer London could bring benefits to congestion and bus capacity – a ‘kiss and ride’ drop off replaced by a walk trip saves two car trips.

### 3.5.1 Walking

#### A – Possible schemes

- Key Walking Routes (this is the main approach advocated for LIP bids; bespoke to location)
- Legible London and other wayfinding initiatives to increase walking and use of public transport
- Smarter Travel schemes such as annual “walk to work” weeks and the Schools Walk on Wednesday project

#### B – Possible measures

- Pedestrian safety & security measures (bespoke to location)
- Changes to and greater provision of crossing facilities
- Measures to make the most of the south sub-region’s large areas of green space such as promotion and wayfinding initiatives. This would also link to the aspiration of improving London’s built and natural environment

#### C – Tools to scope and measure schemes/interventions

- Pedestrian audits using PERS
- Monitoring guidance – pedestrian counters, user surveys, post-hoc evaluation
- TfL offers training on designing for pedestrians
- Pedestrian comfort guidance tool (available from TfL)
- Measure walking activity booklet



#### Example schemes in progress

- Sutton Town Centre is undergoing enhancement, with decluttering and new paving
- The Strategic Walk Network provides the main leisure walking opportunities off-carriageway
- Wallington town centre improvements are a good example of walking-led regeneration project

### 3.5.1 Walking

#### What are the opportunities?

Numerous walking routes run through the south sub-region, offering opportunities to promote the uptake of walking as a mode of travel in itself as well as increasing access to public transport. For example, the Green Chain route cuts through the north of Bromley; an extensive portion of the Capital Ring runs through Croydon, Wandsworth, Merton and Richmond; and the Thames Path follows the course of the River Thames from Kingston, through to Richmond and Wandsworth.

Smarter Travel programmes – such as those seen in Sutton and Richmond – could be used to catalyse further walking uptake, and further implementation of Legible London or similar wayfinding schemes such as those in Richmond and Twickenham could also help.

#### Where to target?

Boroughs could also target potential walk trips that could take advantage of the sub-region’s extensive network of green spaces.

There is potential to increase the number of walk trips throughout the sub-region, however concentrations of potential walk trips around the sub-region’s key centres suggest that measures to promote these would be valuable.

Targeting trips that could be replaced by walking will have added benefits of reduced congestion

#### How can we maximise the health benefits of walking?

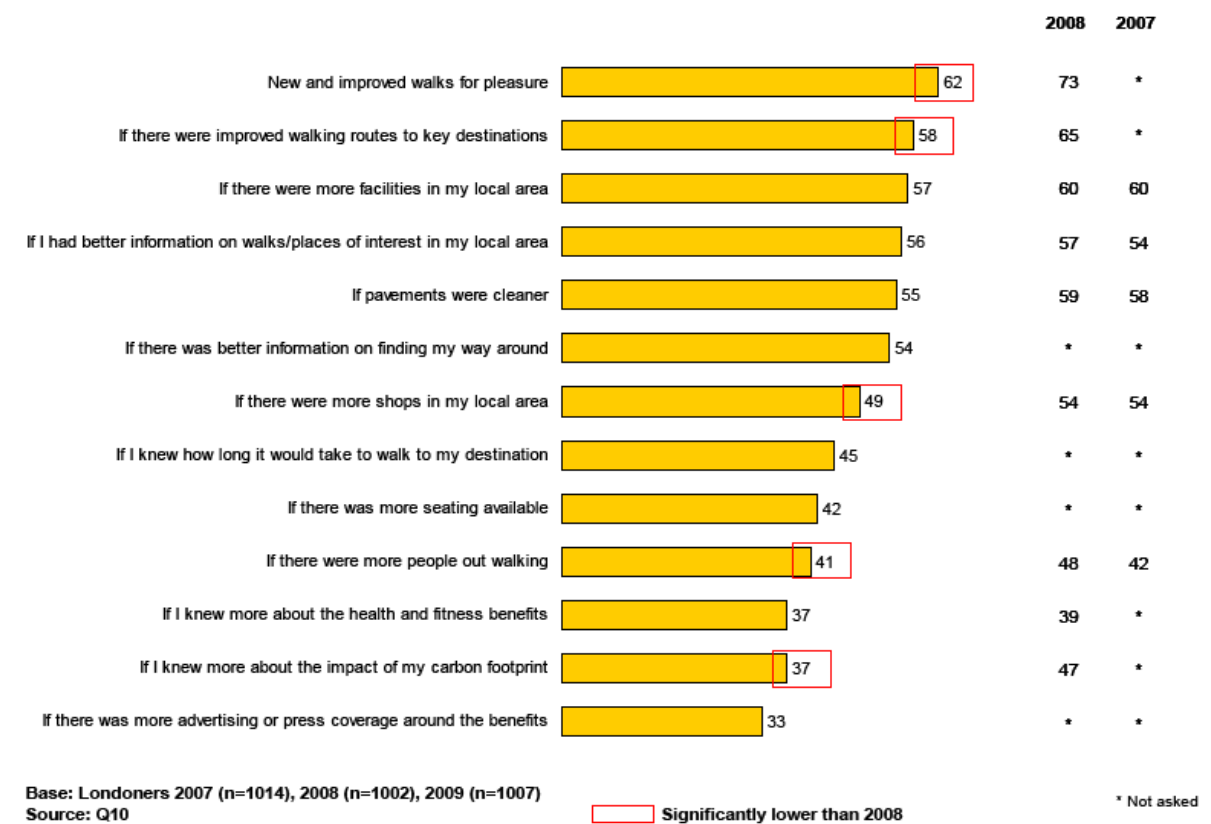
As noted above, both Wandsworth and Lambeth suffer from high incidences of cardiovascular disease, which could be mitigated to some extent by increasing the amount of physical activity taking place there. Promoting the uptake of walking as a mode of transport offers one means of doing this, and TfL will work with boroughs to do this.

#### Overcoming barriers to walking

‘Attitudes to Walking’ is a monthly survey of around 1,000 Londoners, weighted to profile. In 2009, respondents were asked what, if anything, would motivate them to walk more in London:

- More than half of Londoners said they would walk more if there were new or improved routes and if they had information about them
- They also say that they dislike fumes, dirty streets, and some feel unsafe walking in their local area
- However, while addressing these factors is important, doing so will not guarantee growth in walking. Habit and inertia, the convenience of motorised transport, and the relatively slow speed of walk trips all act as a deterrent to walking more

Figure 3.10 Conditions that would encourage more walking



### 3.5.2 Cycling

The Mayor aims to achieve a 5% cycling mode share across London by 2026, which equates to a 400% increase compared with 2000.

#### Why invest in cycling?

There are a number of reasons why it makes sense for TfL, boroughs and other stakeholders to invest in cycling:

- ✓ Predicted growth in trip numbers means it is essential to accommodate the needs of the most efficient users of road space (cycling, walk, buses)
- ✓ Very low cost to users compared to other modes
- ✓ Cyclists and pedestrians spend more money in town centres than users of other modes (monthly average: walk £136, cycle £114, bus £105 and car £95, *Understanding the economic contribution made by bus users to London's town centres TfL*)
- ✓ The overall health impact is positive (on average cycling results in people living longer)

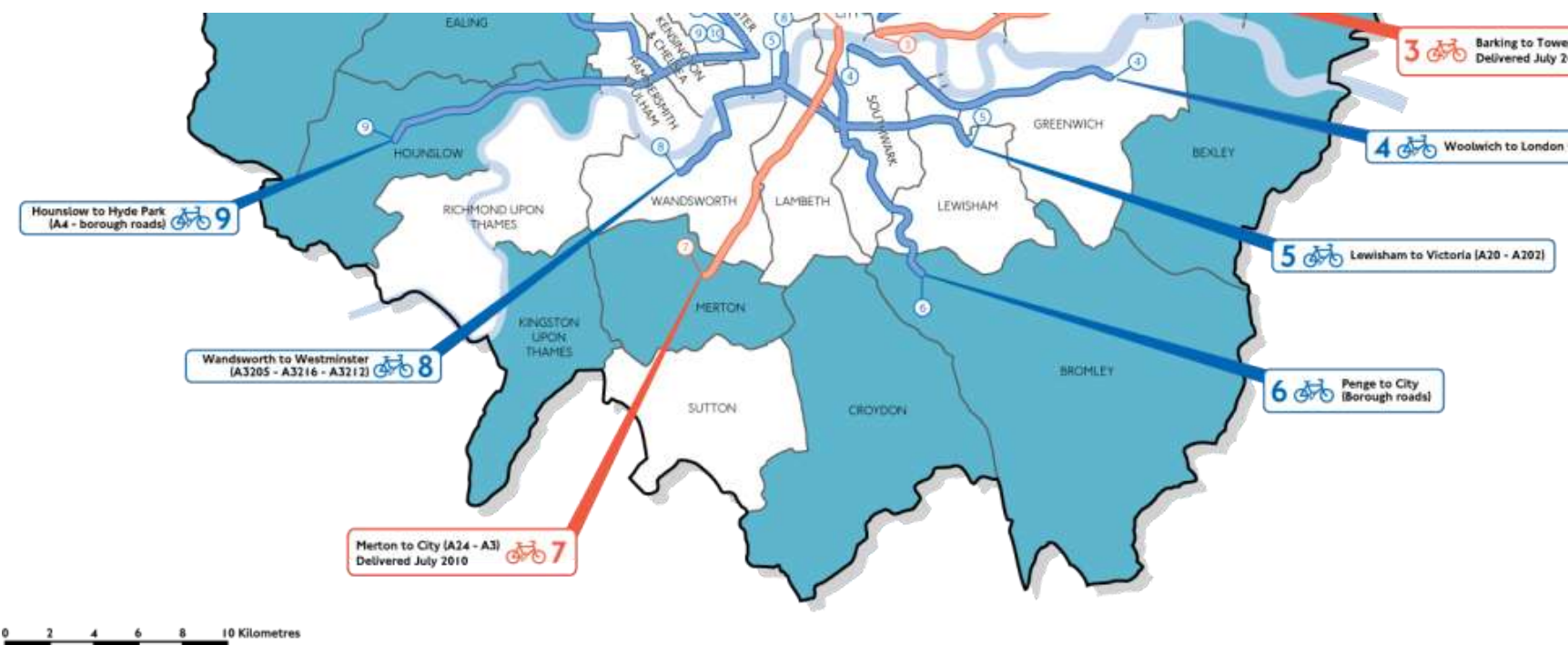
New evidence about cycling potential will allow boroughs and TfL to ensure the best return on investment

#### Current context

On average, around 76,000 trips are made each day by pedal cycle which either have an origin or destination in the south sub-region (1.6% of all trips) and 33,000 people cycle in the region every day (1.9% of the sub-regions population). This is very similar to London overall where 1.7% of trips are made by bike and 1.9% of the population cycle each day.

33% of current cycle trips are being made for work and 41% for shopping and leisure. 6% of residents of the south sub-region are frequent cyclists (cycle 3 or more days a week); another 7% cycle at least 1-2 days a week and 58% never make any trips by bike.

Figure 3.11 Map showing Barclays Cycle Superhighways and Biking Boroughs

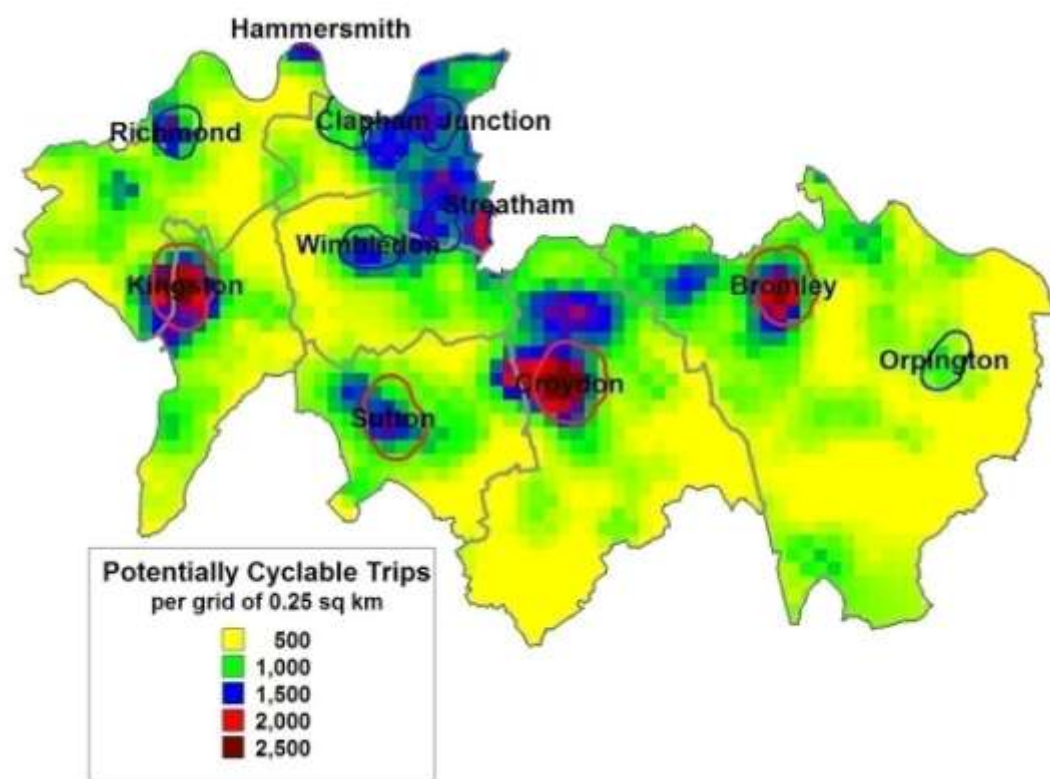


### 3.5.2 Cycling

#### Cycling potential in the south sub-region

Within the south sub-region, clusters of potentially cyclable trips are observed around Croydon, Bromley, Kingston, Streatham and the Clapham Junction area. Less intense clusters are also visible around Sutton, Wimbledon and Richmond area, the origins of the rest of the potentially cyclable trips are quite dispersed. Nearly three quarters of potentially cyclable trips in the south sub-region are currently made by car; most of the rest are made by bus. The south sub-region suffers, as do the other sub-regions, from a high degree of severance cause by large roads and railway lines.

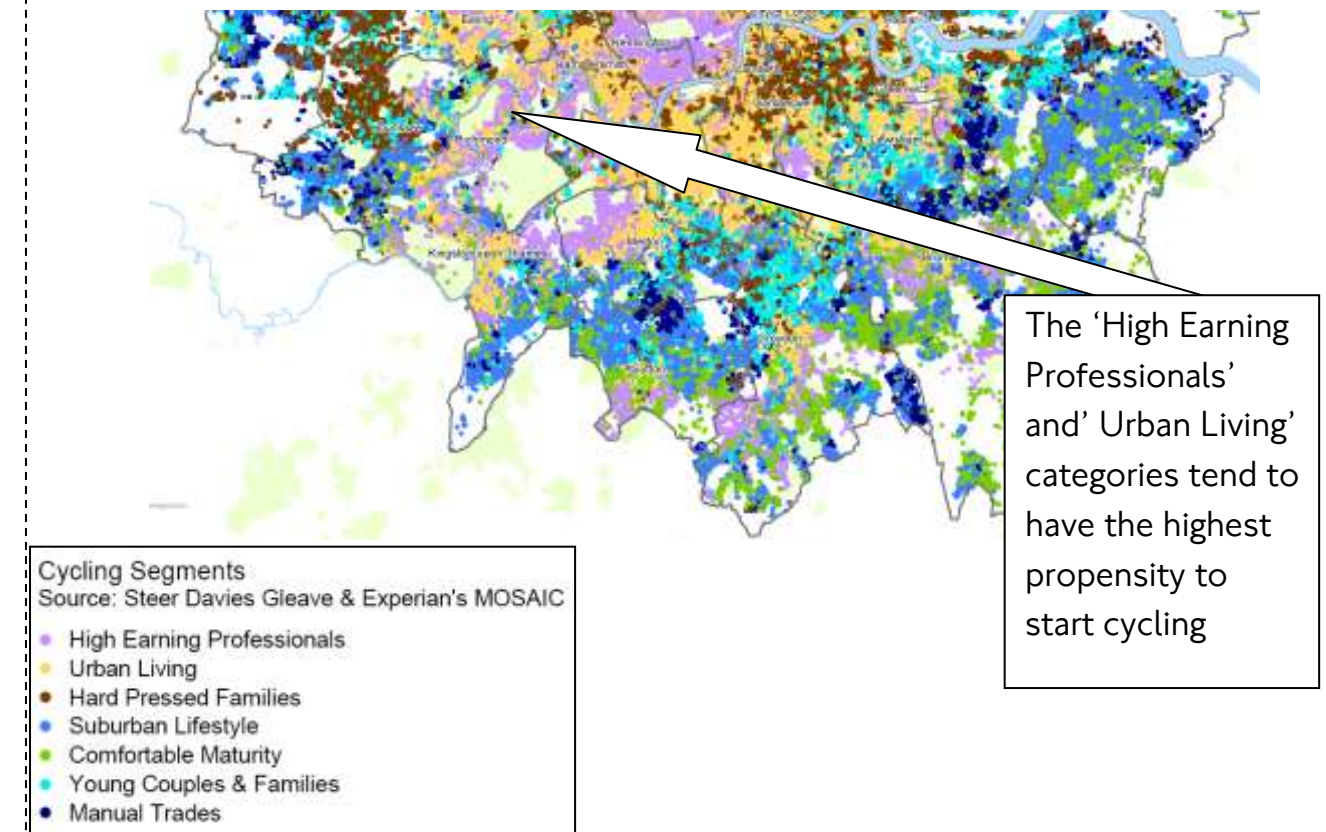
**Figure 3.12 Potentially cyclable trips by destination**



'Potentially cyclable trips' are defined as trips currently made by other mechanised modes which could reasonably be cycled all the way (based on LTDS data)nm

New research into the potential for mode shift to cycling allows greater focus in the delivery of new interventions. The Cycle Segmentation Survey shows us the distribution of households which have the greatest propensity to cycle.

**Figure 3.13 MOSAIC cycling profile map of the south sub-region**



Cycling remains a minority activity in London, which means there is significant potential amongst groups of the population already most likely to cycle. For example, the 'Urban Living' segment is the prime target for cycling, particularly cycling for a purpose.

#### Combined potential cycle trips and market segmentation analysis

A map showing potentially cyclable trips made by people in the categories with the highest propensity to cycle, namely the 'Urban living', 'High earning professionals', 'Young families and couples', and 'Suburban lifestyle' segments by trip origin is also available.

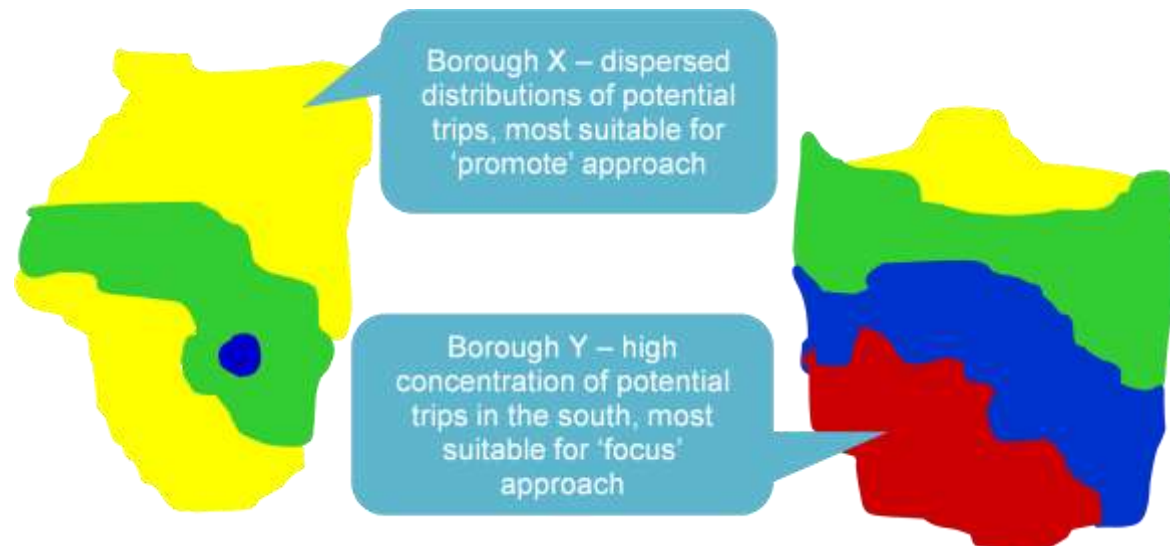
### 3.5.2 Cycling

#### A new approach to cycling investment

The new evidence relating to cycling potential allows decision makers to target resources in the most cost effective way. It can be developed collaboratively between TfL, boroughs, lobby groups, user groups and local delivery agents. It relies on getting the balance right between the following three categories of intervention:

- **Promote:** 'Promote' interventions are not focused on a particular area and are able to reach large numbers of people at relatively low cost. e.g. marketing and training.
- **Focus:** More intensive infrastructure based solutions focused on areas which have been identified as having the highest concentrations of potentially cyclable trips. e.g. cycle lanes and cycle parking.
- **Intensify:** Undertaking evidence based trials and monitoring results of new and innovative measures and sharing results in order to promote best practice. e.g. legislative change.

Different patterns of potential trips suggest a different balance between 'promote' and 'focus'...



#### Promote: non infrastructure solutions to help promote cycling across the whole of London

##### Step one: Identify markets

The MOSAIC cycling profile map on the previous page allows potential cycling markets to be identified which have different characteristics and will respond to different kinds of trigger. For example, this could be through a focus on the near market or on families with children. These two examples focus on two very different markets but within any given borough a large variety of potential markets is likely to exist and the approach taken should vary in order to reflect that. For more information about behavioural change please read [TfL's 2009 Attitudes to cycling report](#) and the [2008 Cycling in London report](#).

##### Step two: Review evidence

Sources of evidence may include potentially cyclable trips, topographical analysis, the identification of existing severance, the level of cycle parking, cycle flows and understanding the barriers to cycling.

Safety is a key barrier for both existing and non-cyclists. The London Cycle Safety Working Group have reviewed the evidence relating to cyclist collisions and have identified the causal factors which need to be addressed by TfL, boroughs and delivery partners. These are set out in the [Cycle Safety Action Plan](#).

##### Step three: Plan interventions

Interventions will vary based on barriers and opportunities identified in different parts of the sub-region, examples might include: marketing and smarter travel initiatives; cycle training; residential parking; embedding cycling into other schemes; and road danger reduction and reducing perception that cycling is dangerous. The behaviour change process is complex and different people are likely to respond in different ways, as confirmed by the market segmentation study. However, research into cause and effect consistently suggests that a package of measures is required.

### 3.5.2 Cycling

**Focus: More intensive infrastructure based solutions focused on areas with the highest potential**

**Step one**

Review TfL potential analysis in order to identify areas of high potential.

**Step two**

Identify characteristics of the potential market (e.g. density, size and existing trips)

**Step three**

Review additional sources of evidence in order to identify key barriers, such as:

- Topography
- Severance
- Existing cycle facilities
- Customer research
- Behavioural research
- Perceived danger

**Step four**

Identify solutions through workshops with TfL and local stakeholders who understand the barriers that exist (e.g. campaign groups, NHS trusts, charities etc) and ensure solutions are joined up with neighbouring boroughs.

The following guidance documents will help to support this process:

- [London Cycle Design Standards \(LCDS\)](#)
- Cycle parking delivery plan (being produced by TfL by the end of 2010)

**Example approach: Wallington Integrated transport improvements**

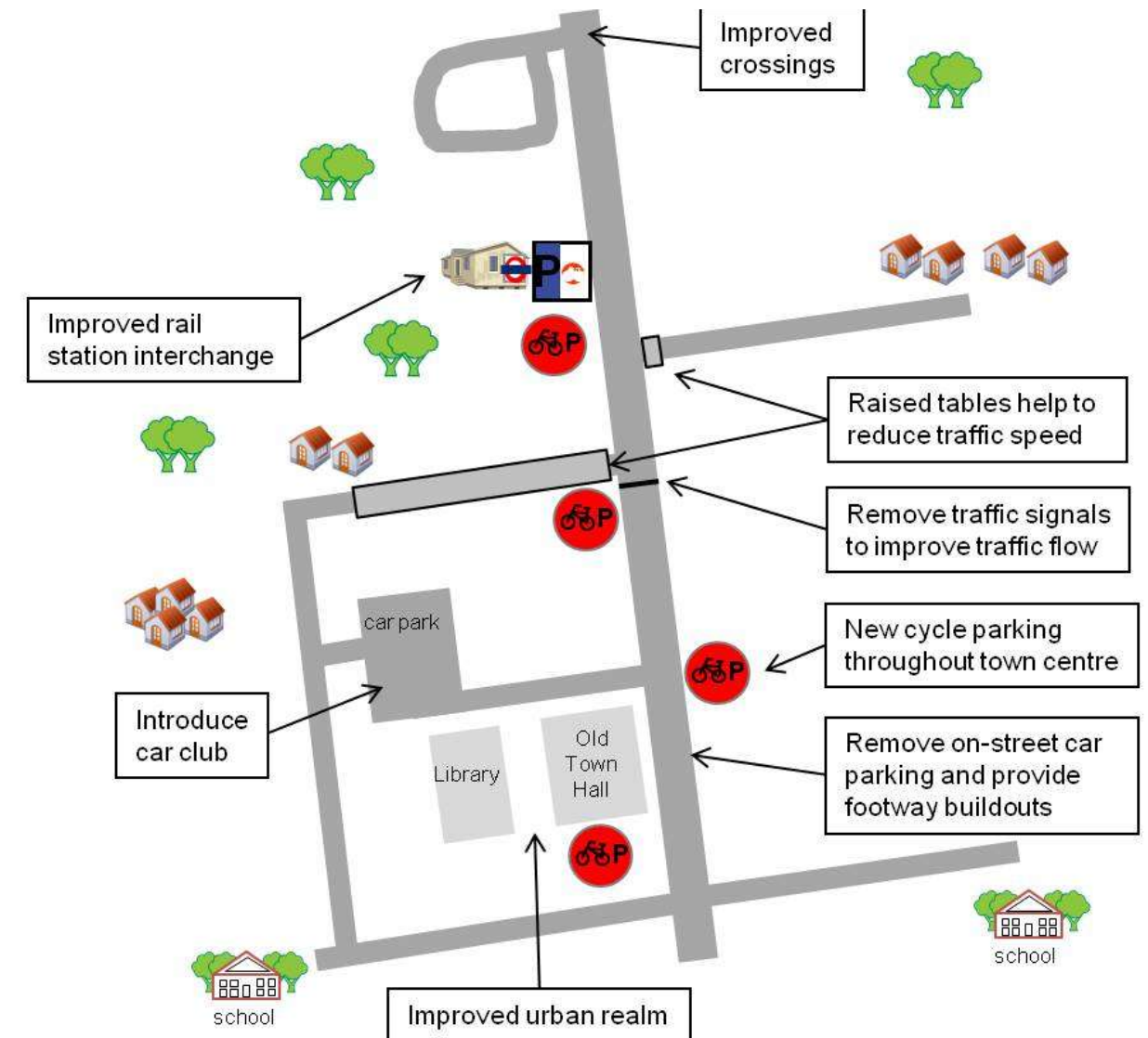
**General approach**

- Schemes are planned which integrate improvement for cyclists into a holistic package of measures across the town centre, and enhance Wallington's role as a cycle/rail interchange
- Infrastructure measures are being combined with a series of 'soft' measures building upon Sutton's Smarter Travel work

**Figure 3.14 Example approach to cycling interventions in Wallington**

The following 'soft' measures are also being taken forward:

- free adult cycle training
- smart water bike markings
- school and workplace travel plans
- buddy rides
- personal travel planning



### 3.5.2 Cycling

#### Intensify: Evidence based trials of new or innovative measures

##### Considerations

Cycling interventions for ‘intensification’ are based on key elements provided by all of the best performing cities around Europe.

##### Potential intensification measures

- Utilising ‘Superhighway’ principles; provide wide continuous cycle lanes and rationalise parking and loading on key routes to reduce need to merge in and out of main traffic stream and implementing cycle lane markings through junctions
- Improving permeability by enabling two-way cycling down one way streets using markings and other innovative methods such as mode filters
- Creating areas of shared space between pedestrians and cyclists
- Developing Greenways in order to provide peaceful, non threatening and attractive conditions to cycle in a largely traffic-free environment and helping to encourage non-cyclists to get on their bike
- Changes to road traffic regulations (working with TfL and the DfT to pilot legislative change).
- Using volunteer rangers to investigate maintenance issues.

Each requires financial commitment from the borough and political leadership. Furthermore, changes should be monitored and results shared (as success may prompt others to follow). TfL can provide strategic support for scoping of monitoring and should also act as a depository for information when published.

The approach to develop an intensify plan is the same as that for ‘focus’.





## Chapter 4: Improving the safety and security of all Londoners

### MTS Goal – Improving the safety and security of all Londoners

London is a very safe place in which to travel. Traffic collision rates have been falling over a number of years, and public transport services continue to demonstrate very high standards of safety. Likewise, those travelling in London can be confident that their security is being maintained by the police and other stakeholders. Nevertheless, TfL, the British Transport Police, the Metropolitan Police and others concerned will continue to work together to ensure that all opportunities are taken to improve safety and security through new technology or emerging best practice.

This Goal is comprised of three challenges:

- 4.1 Reducing crime, fear of crime and anti-social behaviour
- 4.2 Improving road safety
- 4.3 Improving public transport safety



#### 4.1 Reducing crime, fear of crime and anti-social behaviour

Reducing crime rates and improving perceptions of personal safety and security.

Crime rates in the south sub-region remain predominantly low and perception of safety is high. There are some local pockets with higher rates and poor perceptions which should be considered at a local level.

The rail and bus networks in the region generally have low levels of crime and anti-social behaviour (ASB). Crime on the bus network appears to be fairly dispersed throughout the region. Rail crime appears to occur in clusters, however it should be noted that it can be difficult to pinpoint where on the network crime occurs as they are likely to be reported at the destination station.

Figure 4.2 Map of rail crime in the south sub-region

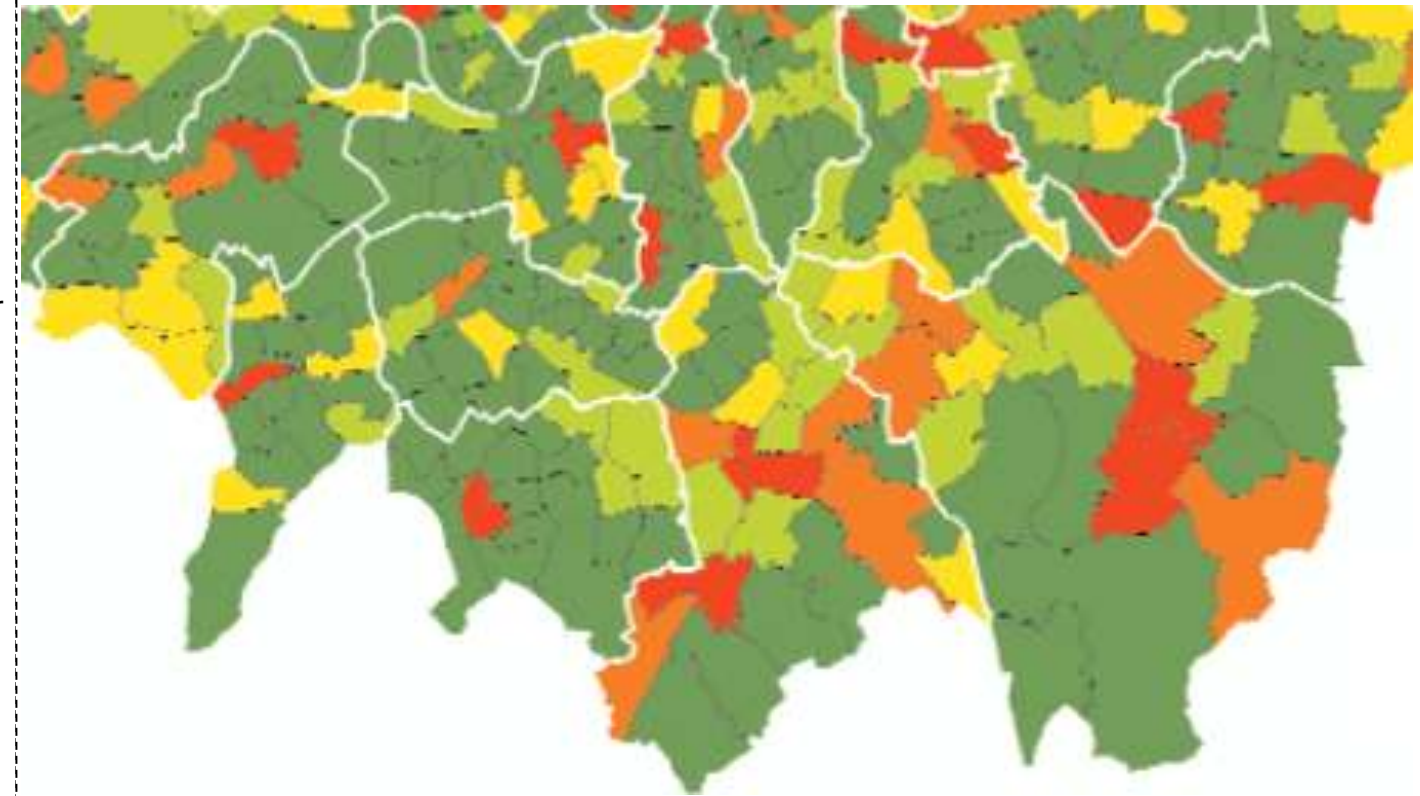
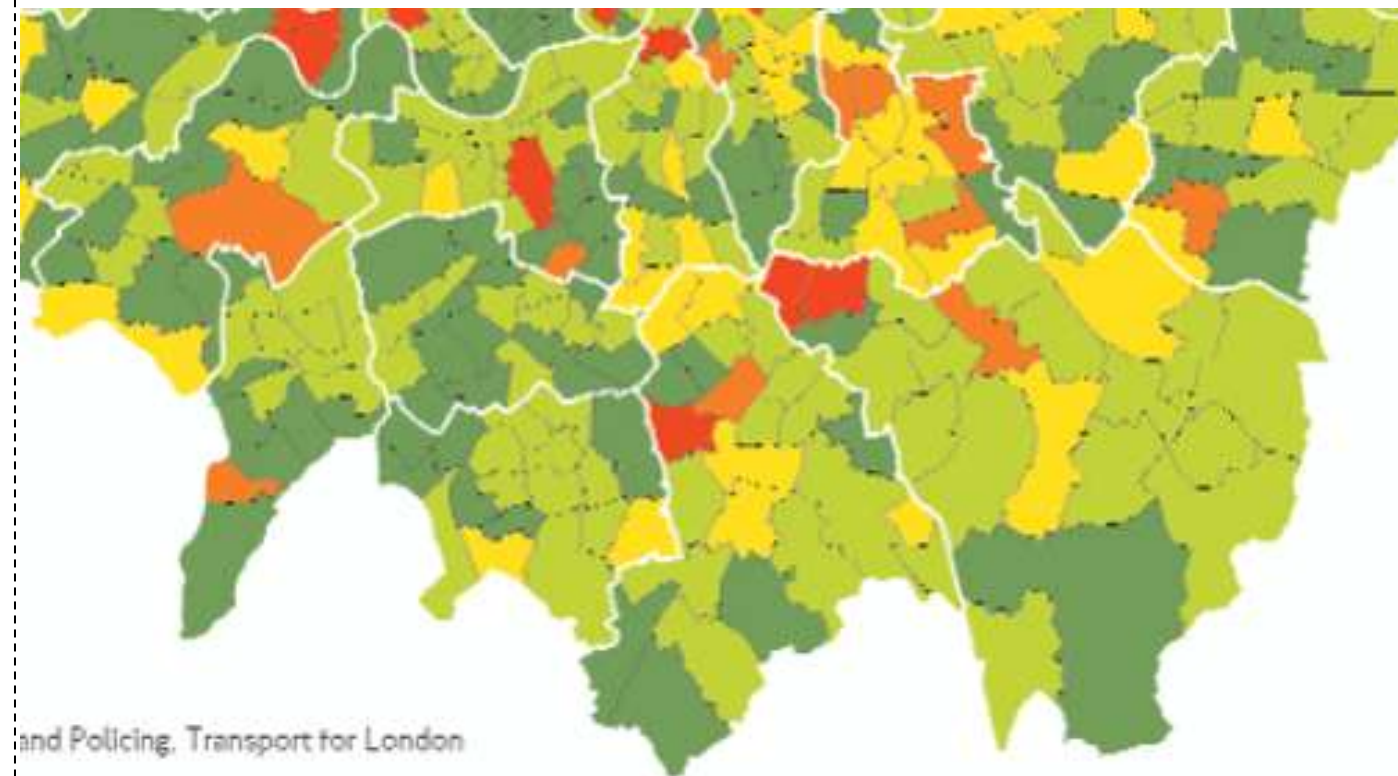


Figure 4.1 Map of bus crime in the south sub-region



Crime reduction can be achieved through identifying local crime issues, tackling low level crime such as graffiti and fare evasion – this can prevent escalation of ASB to more serious crime – and increasing police presence.

By trying to tackle ASB issues that can lead to more serious crime on the network, perception and experience of crime on the network can be improved. This also targets the group most likely to be affected by crime: 14-15 year old males.

Later this year TfL and its policing partners will publish *The Right Direction: The Mayor's Strategy to improve transport safety and security in London 2010-2013*.

## 4.2 Improving road safety

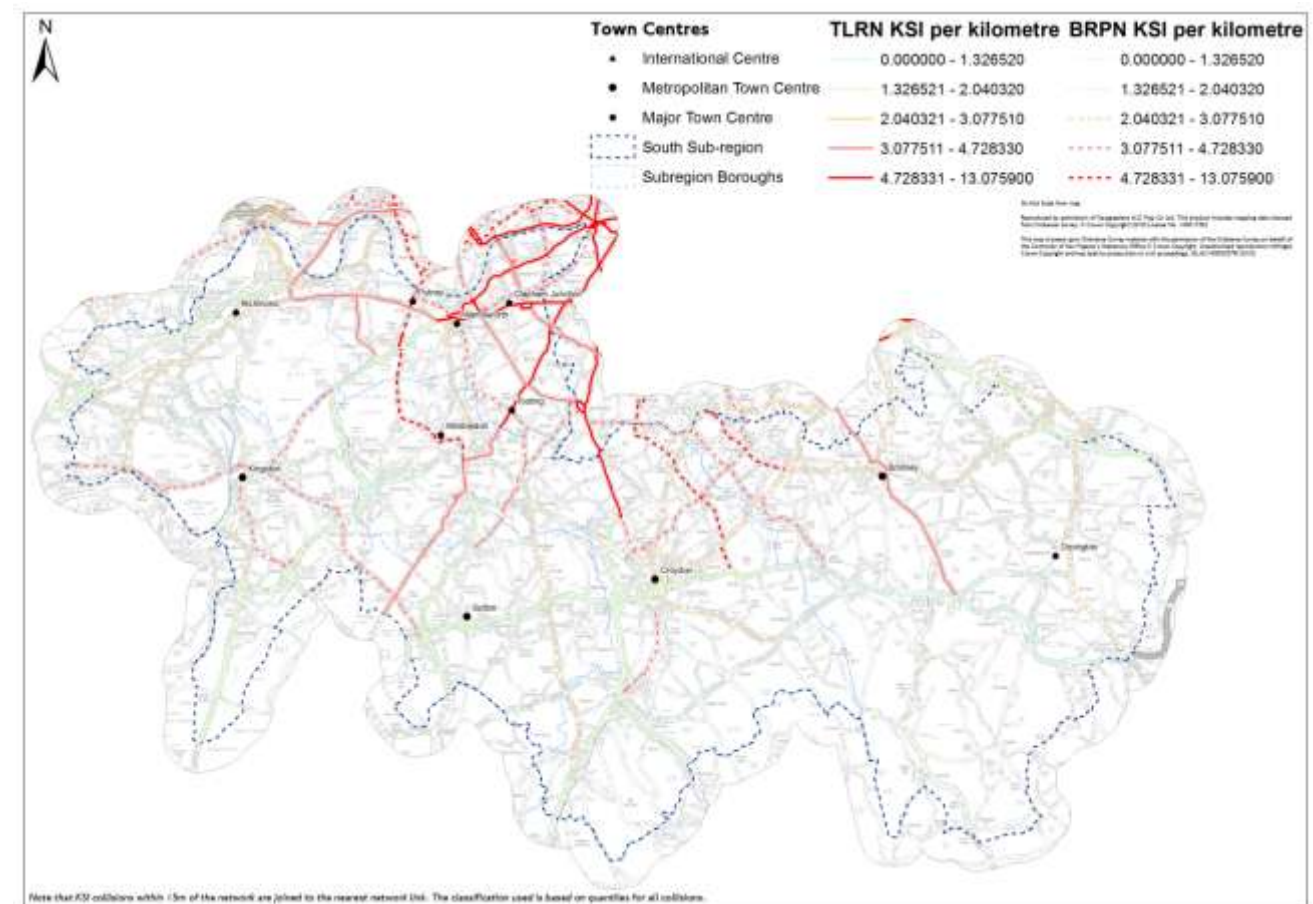
Reducing the number of road traffic casualties.

This Transport Strategy challenge aims to reduce the number of casualties resulting from traffic on London's roads. While there have been significant improvements in road safety in the south sub-region over the last decade, further reductions are needed and new challenges such as those posed by the rapid growth of cycling need to be addressed. Measures which should be considered include road safety engineering, and road safety enforcement, public engagement to improve road user behaviour, educating cyclists and HGV drivers, fitting safety devices to vehicles where appropriate, and work-related safety initiatives. There are also potential benefits from reducing speed limits and improving enforcement, possibly through equipping vehicles with 'intelligent speed adaptation' technology. Motorcyclists are particularly vulnerable, accounting for over 20% of the number of road users killed each year, but less than 1% of all journeys. Consideration should be given to motorcycle issues during the safety audit process of new schemes.

### Safety improvements for A and B roads

The majority of KSIs, almost 60%, occur on 30 mph A roads in this sub-region. While reductions in speed limits are generally not appropriate for these roads, there is scope for targeted enforcement and public information campaigns to improve road user behaviour. The map below shows potential priority areas where these activities could be targeted.

Figure 4.3 Priority areas for improving road safety in the south sub-region



## 4.2 Improving road safety

### The potential for 20mph zones on local roads to reduce KSIs

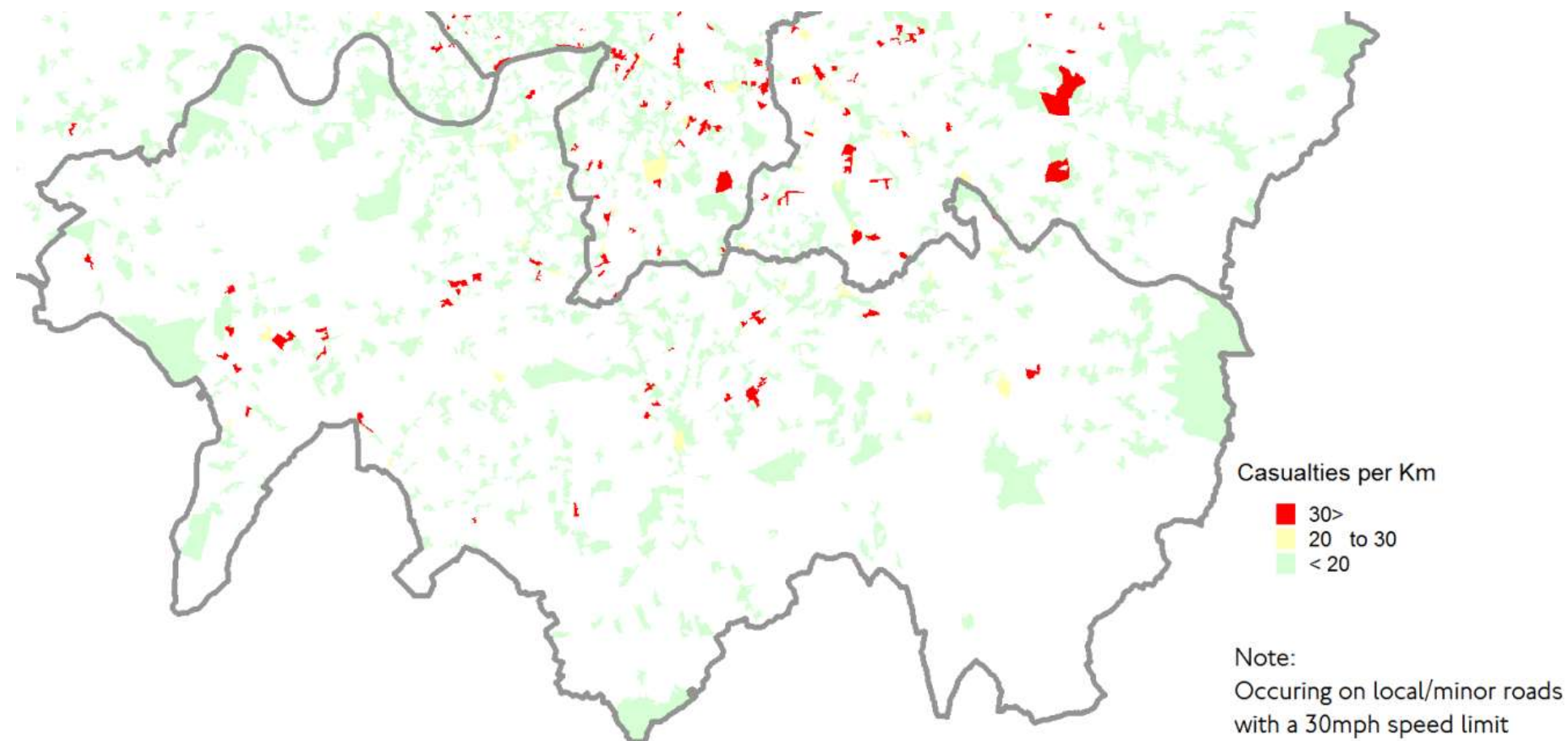
Research has suggested that, London-wide, there are significant potential safety benefits of extending 20 mph speed limits (with traffic calming features or enforcement) to further residential roads. Analysis has shown that reductions in KSIs of about 28% can be expected.

The rate for KSIs on 20mph local roads is 0.07 per km. The equivalent rate for 30mph local roads is 0.11, 1.5 times higher. These rates are the same and lower than the London average for 20 and 30 mph local roads which are 0.07 and 0.20 KSI/Km respectively.

If all local 30 mph roads were converted to 20mph with appropriate enforcement, and assuming a 28% reduction on these roads were achieved, KSIs would reduce by 32 per annum, or 7% of the overall total for all roads in the sub-region.

The map below shows the KSI rate per kilometre of 30 mph local road. It provides an indicative guide to broad areas the sub-region where further conversion of 30 to 20 mph roads might potentially be most effectively targeted.

Figure 4.4 Areas with higher levels of KSIs per kilometre of 30mph local roads, 2007 - 2009

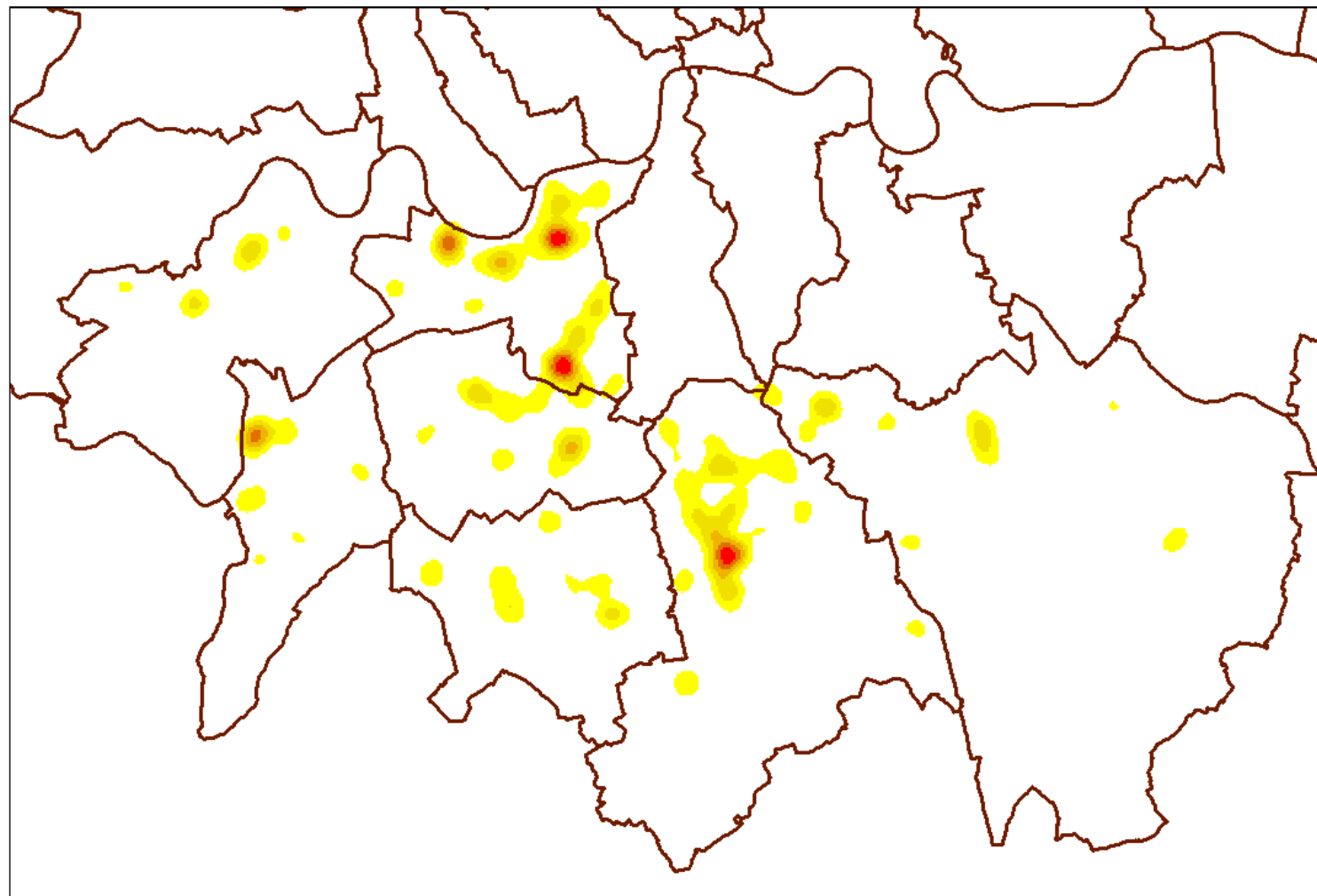


## 4.2 Improving road safety

### Hotspots

Road traffic casualties in the south sub-region are decreasing at a greater rate than the London average. There are hotspots where casualties are concentrated, and these tend not to be around town centres despite attracting many shoppers and workers. A cluster analysis (Figure 4.5) reveals that there are several hotspots where casualties are concentrated. The areas of Tooting, Clapham Junction, Putney, Kingston upon Thames and Croydon have elevated casualty distributions. The town centres of Sutton, Bromley and Penge and Orpington have lower levels of injuries despite attracting many shoppers and workers. This may partly reflect high levels of cycling in Kingston compared to Sutton or Bromley.

Figure 4.5 Map of casualty hotspots in south sub-region – 5 years of data



In the future, due to policies to encourage cycling, there are likely to be more cyclists in the south sub-region and therefore a risk of increased cyclist KSIs. In fact, modelling analysis predicts an almost 20% increase in walking and cycling trips within the sub-region to 2031. An increase in the cycling mode share brings with it the challenge of addressing the risk of increased cyclist KSIs. For this reason, safety is a key element of policies to encourage cycling, such as the Barclays Cycle Superhighway from Merton to the City.

### 4.3 Improving Public Transport Safety

Aiming to reduce casualties on the public transport network

The injury risk posed to passengers and staff on London's public transport network is already very low and there are no specific sub-regional issues. The MTS seeks to ensure that high health and safety standards are maintained as public transport provision expands and to reduce the risk of disruption from unpredicted events.



## Chapter 5: Improving transport opportunities for all Londoners

### MTS Goal – Improving transport opportunities for all Londoners

A key objective of the Mayor's Transport Strategy is to ensure that all Londoners have access to the wealth of opportunities the city offers, bringing benefits both to individuals and entire communities. To achieve this, TfL, along with boroughs and other stakeholders will need to consider the location and accessibility of services, jobs and amenities, identifying gaps and possible improvements. Places which are yet to be built present a particular opportunity for joined up planning. There will also be particular focus on the specific needs of those less able to access travel opportunities than others, and all stakeholders will need to work together to ensure that access to transport is not in itself a barrier to opportunities.

This Goal consists of two challenges:

**5.1 Improving accessibility**

**5.2 Supporting regeneration and tackling deprivation**



## 5.1 Improving accessibility

Improving the physical accessibility of the transport system

### Physical accessibility

Physical accessibility involves the design and layout of all the main component parts of the transport network: vehicles, stations and streets. Improving the physical accessibility of any one of these elements alone produces little benefit. All three realms need to be addressed simultaneously to have significant impacts.

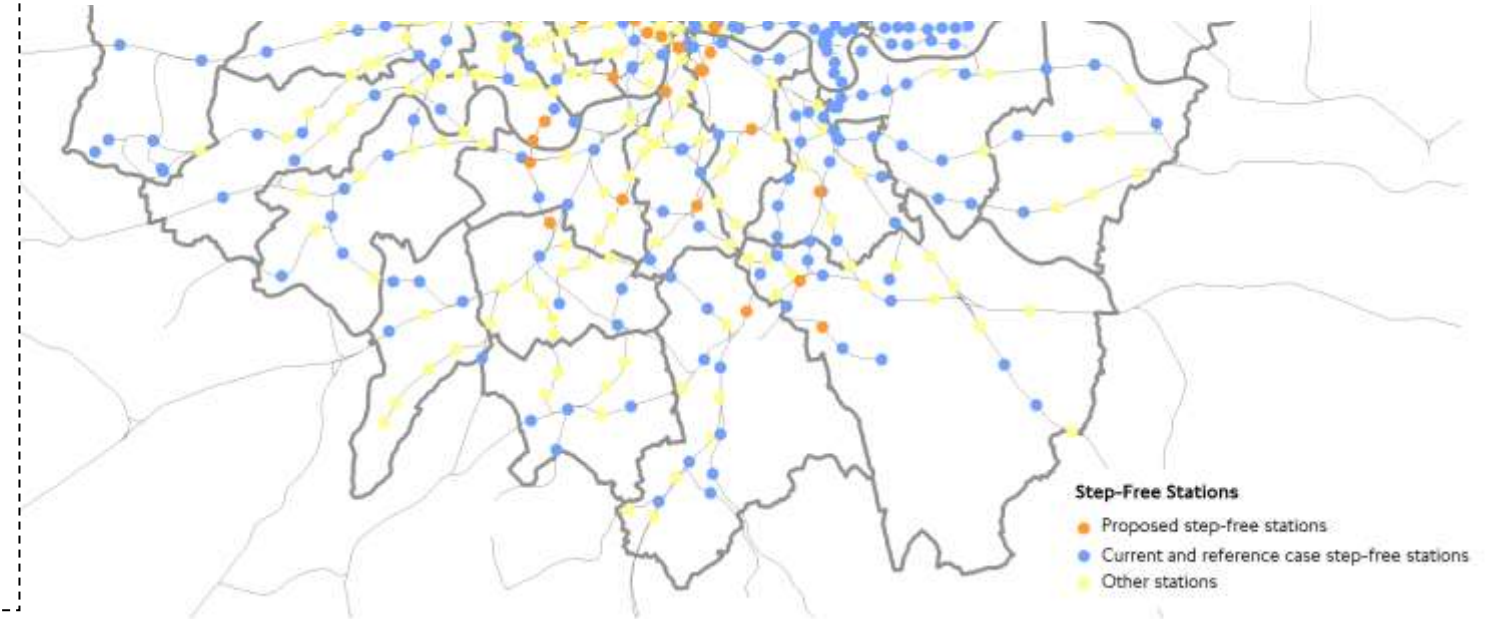
### Improving streets/access

Priorities in the south sub-region are the streets around existing step-free stations with poor levels of accessible urban realm as well as around planned step-free stations.

Measures to include:

- Decluttering – removing unnecessary street furniture and guard railing
- Enforcing regulations regarding A-boards and commercial operations that extend out onto the public footpath
- Widening and smoothing footpaths
- Reducing speed limits
- Ensuring pedestrian desire lines are properly catered for
- Considering the position of bus stops directly outside station entrances
- Removing or relocating onstreet parking
- Improving the integration of footpath and road

Figure 5.1 Map showing current and proposed step free stations



### Vehicles

#### Measures include:

- Awareness campaigns to improve passenger behaviour towards people with mobility impairments
- Addressing crowding where it prevents people with mobility impairment from boarding services

#### Other measures to maximise physical accessibility

- Information and marketing of upgrades and improvements – especially to groups with physical impairments
- Dial-a-Ride improvements



## 5.1.1 Step free access

### **National Rail services**

The DfT's Access for All Programme aims to provide an obstacle free, accessible route to and between platforms at priority stations. This generally includes the provision of lifts or ramps, as well as associated works and refurbishment along the defined route.

There are a number of schemes that are currently being implemented or proposed at strategically important interchanges in the south sub-region. TfL has been working very closely with Network Rail and Southwest trains and the borough to open a new entrance at Clapham Junction in order to access lifts currently being installed. Network Rail are considering improvements to other further stations with a view to making these step-free, such as Bromley South. Other stations in the south sub-region that TfL is recommending to be taken forward by the DfT after 2015 include Peckham Rye, Crystal Palace, Petts Wood, East Dulwich, Gipsy Hill, Raynes Park and Hither Green.

### **London Overground**

The extension of the East London Line to West Croydon has opened up step-free access from the south sub-region to new destinations in east and north London. Step free access is also proposed at Crystal Palace

Further improvements to the accessibility of the Overground network will see step-free access introduced at more stations.

An important development in accessibility will be the step free interchange between London Overground and Crossrail at Whitechapel. Crossrail will radically increase the step-free accessibility of central London, which is currently poor. Four highly accessible stations will provide step-free interchange to most Underground lines, giving access to other accessible stations network-wide. Step-free connectivity and journey times from the south sub-region to central London will be improved as a result of this.

### **How boroughs can help**

Boroughs should consider how they can accommodate the needs of those who rely on their cars for access to stations when considering planning parking provision at rail stations.

In addition, boroughs can help to disseminate information about step-free access and changes to provision to residents with relevant needs, as well as through provision of accessible bus stops.

## 5.1.2 Door to door transport

### Dial a Ride

TfL's Dial a Ride provides a vital transport service for people with permanent or long-term mobility impairments that make mainstream public transport services impossible or extremely difficult to use. It is therefore a crucial element in providing accessibility to opportunities and services for all people. Dial a Ride offers customers transportation to any destination within their local area. Two years ago the service was centralised, allowing journeys to be made across administrative boundaries. Dial-a-Ride also offers a travel mentoring service whereby trained staff accompany customers on mainstream services in order to build up confidence for independent travel.

To improve the accessibility of this service, a vehicle replacement programme for Dial a Ride is underway, with 80 of the 358 strong fleet having been replaced to the new low floor, Euro 5 compliant type. A further 20 new vehicles are due to be introduced by the end of 2010. Further funding is required to upgrade the remainder of the fleet.

Other key accessibility improvements centre around communication technology, information provision and marketing. These include the following short, medium and long term measures:

### Short Term

- Roadshow bus
- DVDs explaining Dial a Ride and the travel mentoring service – made available online and at events
- More liaison with boroughs regarding Dial-a-Ride services and borough-run travel mentoring services
- Publicising that passengers can now make cross boundary journeys

### Medium Term

- Mobile data terminals (PDAs) for drivers instead of schedule sheets
- Service updates to customers by SMS
- Automated telephone booking

### Long Term

- Internet booking system
- Real time information and two-way communication – passengers able to receive information about their dial-a-ride service before they arrive at a station/bus stop etc. and passengers able to let Dial a Ride know that they are running late.



## 5.2 Supporting regeneration and tackling deprivation

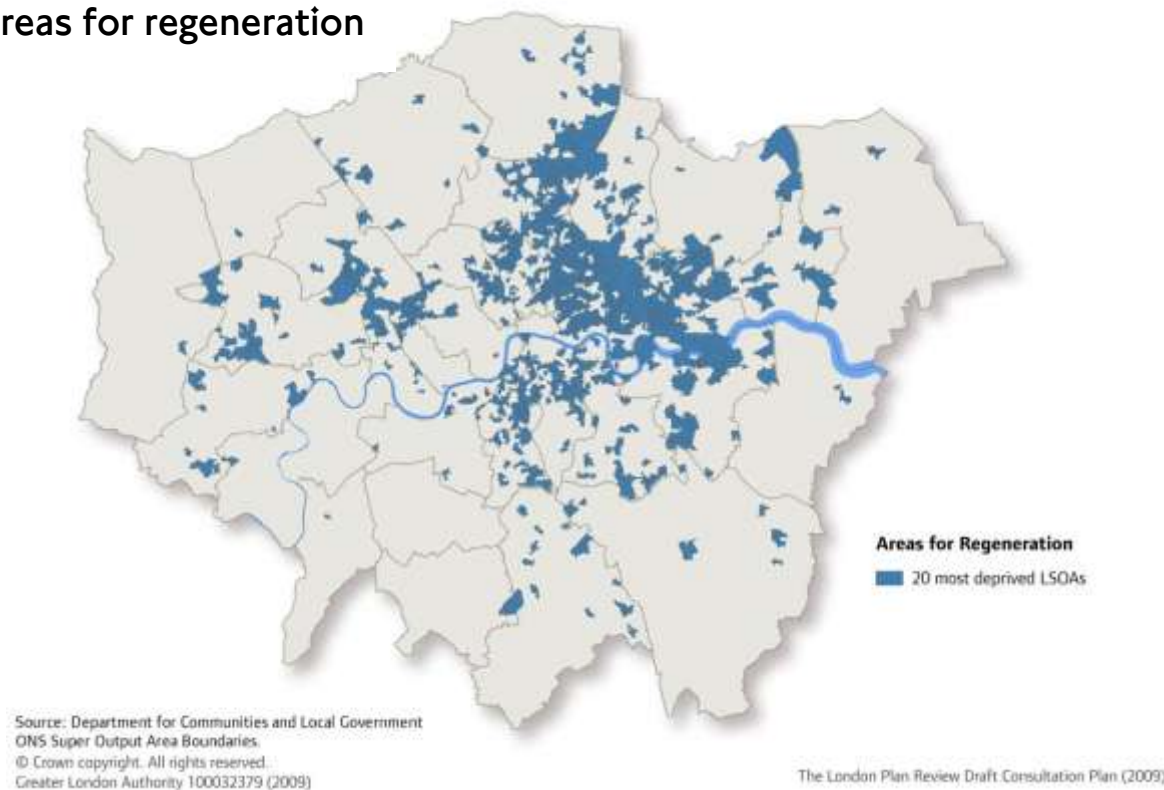
Aiming to support wider regeneration and improving access to services

### 5.2.1 Regeneration

The London Plan identifies key areas of change – Opportunity Areas, Areas for Intensification, and areas for regeneration. Areas of regeneration are defined as the bottom 20% of Local Super Output Areas in terms of the Indices of Multiple Deprivation. These are areas where the Mayor will work with strategic and local partners to coordinate their sustained renewal by prioritising them for neighbourhood based action.

Access to transport is one factor among many in achieving regeneration: transport allows people to access employment, opportunities goods and services, therefore increasing quality of life. Many of the areas for regeneration identified in the London Plan currently enjoy relatively high public transport accessibility levels, and in this case improving awareness and information about existing transport services will contribute to regeneration. In deprived areas with low public transport accessibility, regeneration could be facilitated through additional provision of public transport, giving a wider range of opportunities to travel to and from these areas.

Figure 5.2 Areas for regeneration



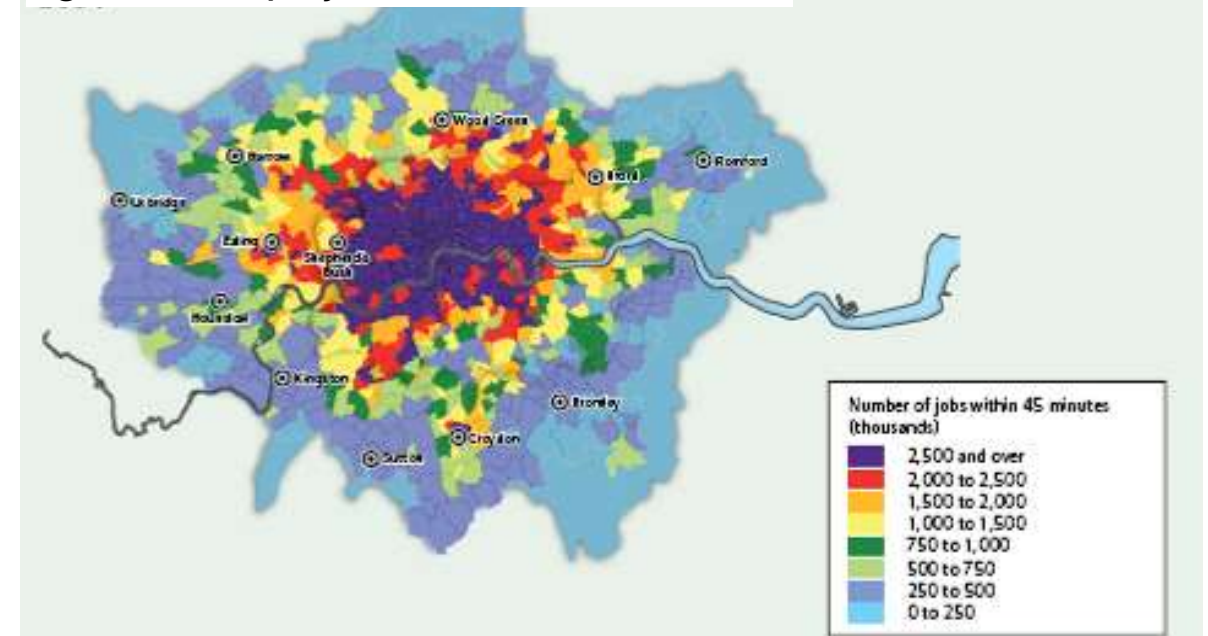
### 5.2.2 Access to opportunities and services in the south sub-region

As with the rest of London, the south sub-region generally has very good access to opportunities and services in comparison with other parts of the UK – this is a result of the relatively high density of people and services. However, the region experiences comparatively poor access to schools and GP surgeries relative to the other sub-regions. Access to blue and white collar jobs within 30 minutes travel time is also comparatively poorer than the other sub-regions. The south sub-region contains pockets of relatively poorer access to services and opportunities, particularly in outer London.

#### Improving access to opportunities and services

Improving accessibility to public transport is principally the responsibility of TfL. However, improving the access to opportunities and services requires the involvement of other stakeholders including service providers, developers and boroughs.

Figure 5.3 Employment access in London



The level of access to public transport in the south sub-region is predominantly influenced by the “hub and spoke” nature of the town centre network. The areas of high PTAL are associated with National Rail stations and the limited number of Tube stations in the region.

## Chapter 6: Reducing transport's contribution to climate change and improving its resilience

### MTS Goal - Reducing transport's contribution to climate change and improving its resilience

In response to the issue of climate change, the Mayor has set an ambitious target of a 60% reduction in London's CO<sub>2</sub> emissions.

Because of its high population density and other characteristics of its transport geography, London is well-placed to take on this challenge – but facing it will require concerted action across the coming years and decades to improve conditions and change travel in the capital.

London will need to find ways to reduce its contribution to climate change even further, whilst leading the world in the face of a potentially fast-changing climate. Dealing with these challenges should generate wider economic and social benefits, while avoiding the potentially serious consequences of inaction.

This Goal consists of two challenges:

**6.1 Reducing CO<sub>2</sub> emissions**

**6.2 Adapting to climate change**



## 6.1 Reducing CO<sub>2</sub> emissions

### Key issues for the sub-region

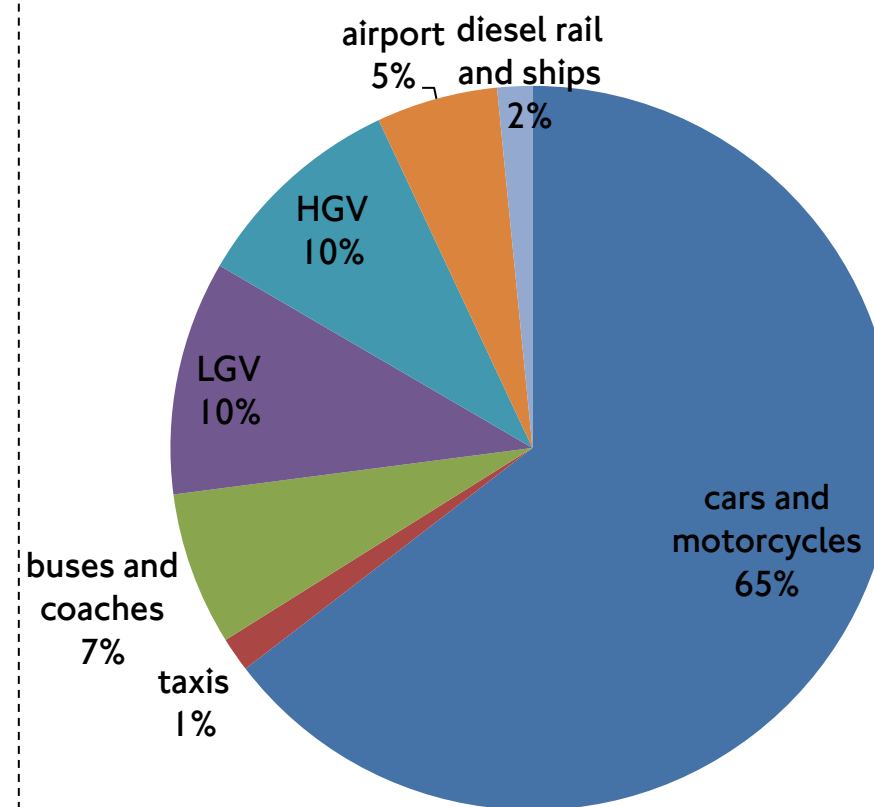
Increasing CO<sub>2</sub> emissions is a global problem and whilst it can be helpful to identify CO<sub>2</sub> hotspots, this can lead to a focus on reducing CO<sub>2</sub> emissions at these specific locations, or shifting the problem. Although a regional and borough breakdown of emissions is presented, it is important to note that population size and the attraction of areas within each sub-region influence the road emissions. It is therefore not appropriate to tackle a single region, borough or mode but the focus should be on helping boroughs reduce carbon emissions across the board, for instance by looking at placing electric vehicle charging points nearest those most likely to be early adopters, implementing policies to reduce mileage from delivery and servicing vehicles. In addition, local measures applied to reduce emissions of air pollutants can reduce CO<sub>2</sub> emissions too, in particular those that reduce congestion at junctions or urban centres.

As part of the process of monitoring LIPs, progress is tracked against five strategic performance indicators on which boroughs are required to set locally specific targets. Annual tonnes of CO<sub>2</sub> from ground based transport is one of these indicators.

### South sub-region emissions

The vast majority of transport based CO<sub>2</sub> emissions in the south sub-region is accounted for by road transport, with the small remaining percentage comprised of aviation, ships and diesel rail. Cars make up 65% of transport CO<sub>2</sub> emissions – a higher proportion than in any other sub-region.

Figure 6.1 CO<sub>2</sub> emissions from ground based transport in the south sub-region, 2008



### Mode shift to sustainable modes

As outlined in section 2.3, there are a number of measures that can be used to encourage people to change their travel behaviour to modes of transport that produce less CO<sub>2</sub> per passenger km travelled. These included smarter travel programmes, better information provision, pricing initiatives and car-free development.



### Freight

Freight vehicles contribute around a fifth of the south region's road transport CO<sub>2</sub> emissions. Local measures can be added to London-wide and national initiatives to reduce the freight industry's contribution to CO<sub>2</sub> emissions.

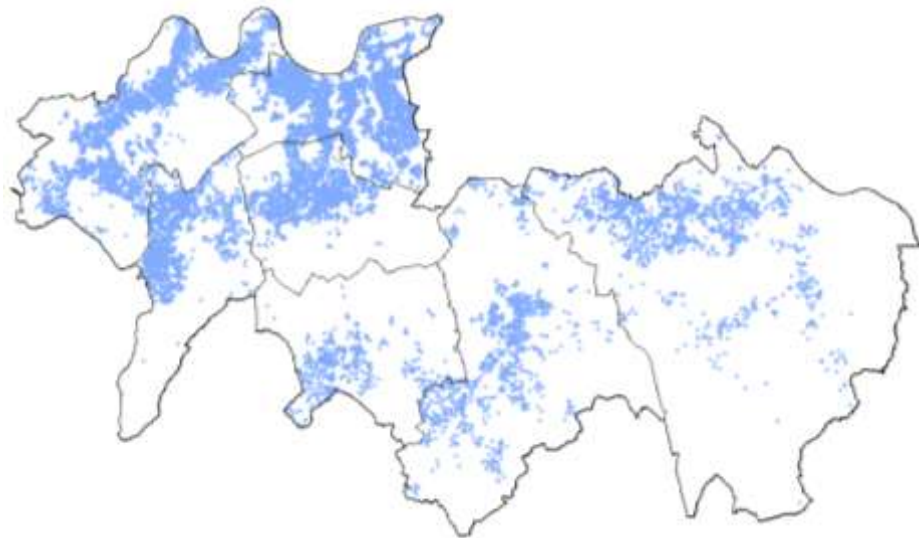
## 6.1.2 Reducing emissions: Electric Vehicles

### Electric Vehicles

Electric Vehicles could play a role in reducing CO<sub>2</sub> emissions due to greater energy efficiency than conventional vehicles, and have potential for a further contribution through using low carbon and renewable sources of energy. Replacement of existing vehicles by electric vehicles rather than purchasing of additional vehicles will be required if the benefits of electric vehicle adoption are to be maximised.

The map below highlights those areas that, given the current socio-demographic make-up of the sub-regions, are likely to purchase an electric vehicle in the short to medium term. The areas with the highest propensity for take-up of electric vehicles are concentrated in Wandsworth, Richmond, Kingston and Merton. Those areas not highlighted are still considered to be suitable locations for EV uptake, but in the medium to longer term as costs and battery range become more in line with conventional vehicles.

**Figure 6.2 Potential for uptake of Electric Vehicles**



Beyond these areas of potential early uptake, new residential and commercial developments should provide facilities for EV charging even if not highlighted on the maps to take into consideration the changes in regional make up over time.

There are good examples of developments encouraging the use of electric vehicles in the south sub-region. Bedzed in Sutton is one example where electric car charging points have been implemented.

Alongside provision for EVs, consideration should be given to alternative fuels and technologies that are being developed. This could be through working in collaboration when trialling new a technology for fleet vehicles and introducing technology neutral incentives for the uptake of low emission vehicles.

### Car Clubs

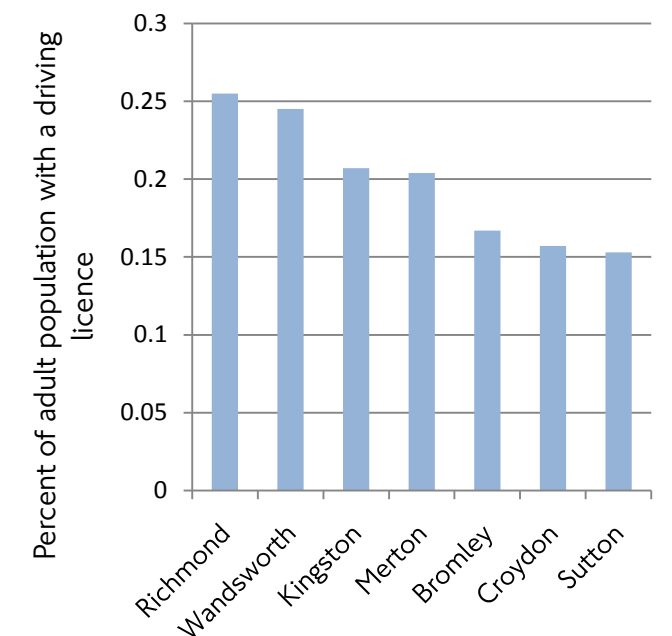
Car clubs enable those who require occasional access to a car to have this on a pay-as-you-go basis without the need to own a vehicle. Thus members have an incentive to avoid non-essential car journeys. Since May 2008, the Mayor and TfL have invested more than £1 million in the development and expansion of car clubs in London, with 127,000 car club members, accounting for 87% of the UK's car club members.

The continued expansion of car clubs in the south sub-region will make an important contribution to the reduction of transport CO<sub>2</sub> emissions as users reduce their mileage and use vehicles that are more efficient than the average private vehicle in London. According to the Carplus annual survey of car clubs 2009/10, recent data indicates that on average car club members report making 4 to 5 car driver trips of less than 25 miles per month compared to 33 for the average London licence holder. On average the car club fleet is between 10% and 33% more efficient than the average UK fleet. Each car club car is estimated to result in an average of eleven private vehicles being sold and a further nine not being purchased.

### Areas of greatest potential

In the south region, TfL analysis based on the socio demographic make-up of the areas, indicates that Richmond and Wandsworth have the greatest potential for the uptake of car club membership, at around 25% of adults with a driving licence. As with electric vehicle uptake, new residential and commercial developments will create greater potential for membership and so provision of car club bays in these areas is encouraged. In existing areas of residential concentrations on street car club bays can alleviate parking pressures and expand the number of members.

**Figure 6.3 Percentage of adult population (with driving licence) that could potentially be a car club member**



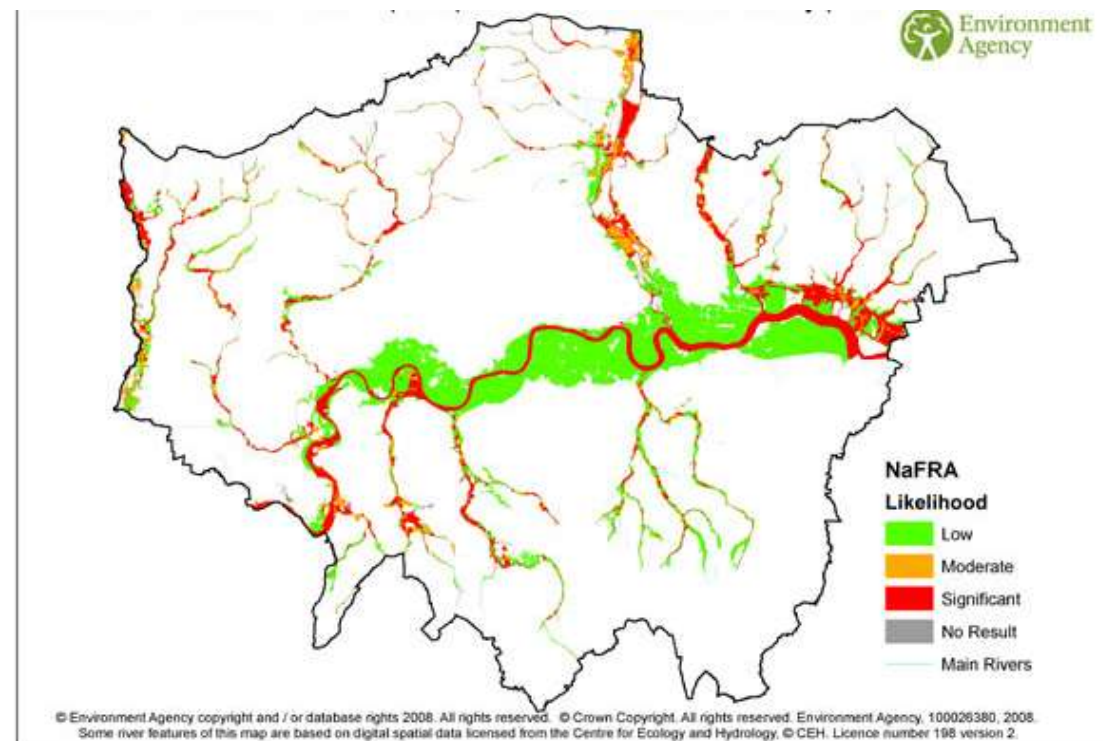
## 6.2 Adapting to climate change

The Mayor's draft Climate Change Adaptation Strategy outlines potential climate impacts and opportunities for London's transport networks, as summarised below.

Flooding has the potential to cause delays and closures to rail and road based transport, particularly affecting underpasses, subways and tunnels. Waterborne freight and other river based transport could be affected by more frequent closures of the Thames and Roding barriers due to flooding. In the south sub-region, Southwark has the second largest number of properties at risk of flooding of all local authorities nationwide, however the likelihood of flooding is low, primarily due to protection from the world-class tidal defences that include the Thames Barrier. Merton and Richmond are amongst the boroughs with the highest number of properties with a significant likelihood of flooding – from rivers rather than the sea.

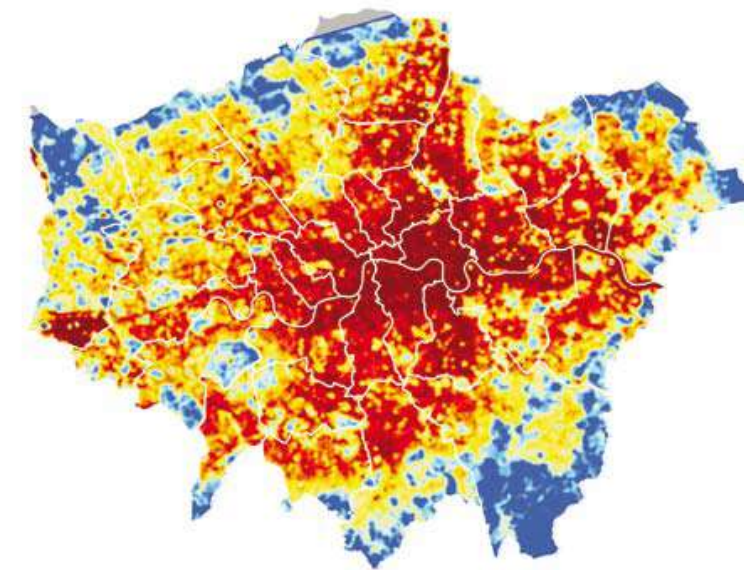
Drought could lead to ground instability on clay soils, affecting escalators, cuttings embankments, and water mains due to fluctuating soil moisture levels, and would also increase the risk of trackside fires for rail transport. Low flows in the Thames, Lea and Roding may cause access problems to jetties and wharves.

Figure 6.4 National Flood Risk Assessment in the Greater London Authority



Areas of dense population and employment are particularly affected by hot conditions. The map below shows the surface temperature of London at a resolution of 90m on the night of 12th July 2006 as a heatwave was starting to build. In the south sub-region, northern parts of Lambeth and Southwark as well as town centres such as Croydon have surface temperatures up to 5°C warmer than suburban areas and parks.

Figure 6.5 Surface temperature in London on 12 July 2006



As set out in the MTS, London's transport network will need to adapt to more frequent and intense extreme weather. Sub-surface lines, such as the District Line in the region, will be air-conditioned. Investigation of the feasibility of innovative methods of cooling deep tunnelled sections such as the Northern and Victoria Lines will continue. New transport infrastructure will be assessed to ensure it is appropriately resilient, and London's built environment will be adapted through measures such as tree planting to ensure sufficient shade and shelter.

## Chapter 7: Supporting delivery of the London 2012 Olympic and Paralympic Games and its legacy

The 2012 Games will place new pressures on London's transport system. Much has been and continues to be done to upgrade and enhance the network to respond to these pressures, including new infrastructure and careful planning. During the Games themselves, TfL, boroughs and other stakeholders are committed to keeping London moving. The Games also present an opportunity for London to capture lasting legacy and regeneration benefits and embed sustainable travel habits in its growing population.

During the 2012 Olympic Games, tennis will be hosted at Wimbledon. As a world class venue, Wimbledon is already well connected by Underground, Tramlink and bus, and benefits from a fast connection to central London by rail, while improvements to the station forecourt have been funded by TfL. As with all events, spectators will be encouraged to travel to the venue by public transport, walking and cycling, and following the Games a sustained increase in active travel would contribute to the legacy.

By 2012 the East London Line extension to Clapham Junction will have improved links from the south region to east London, host to the majority of Olympic and Paralympic venues. The extension will continue to provide a valuable orbital link in the region following the Games.

Following the Olympic and Paralympic Games in 2012, the south region will host another major sporting event in 2015, with Twickenham being one of the main venues for the Rugby World Cup. As with the Games, a lasting increase in active travel and improved access would contribute to the legacy of the event in the south sub-region.



Image property of the All England Lawn Tennis Club



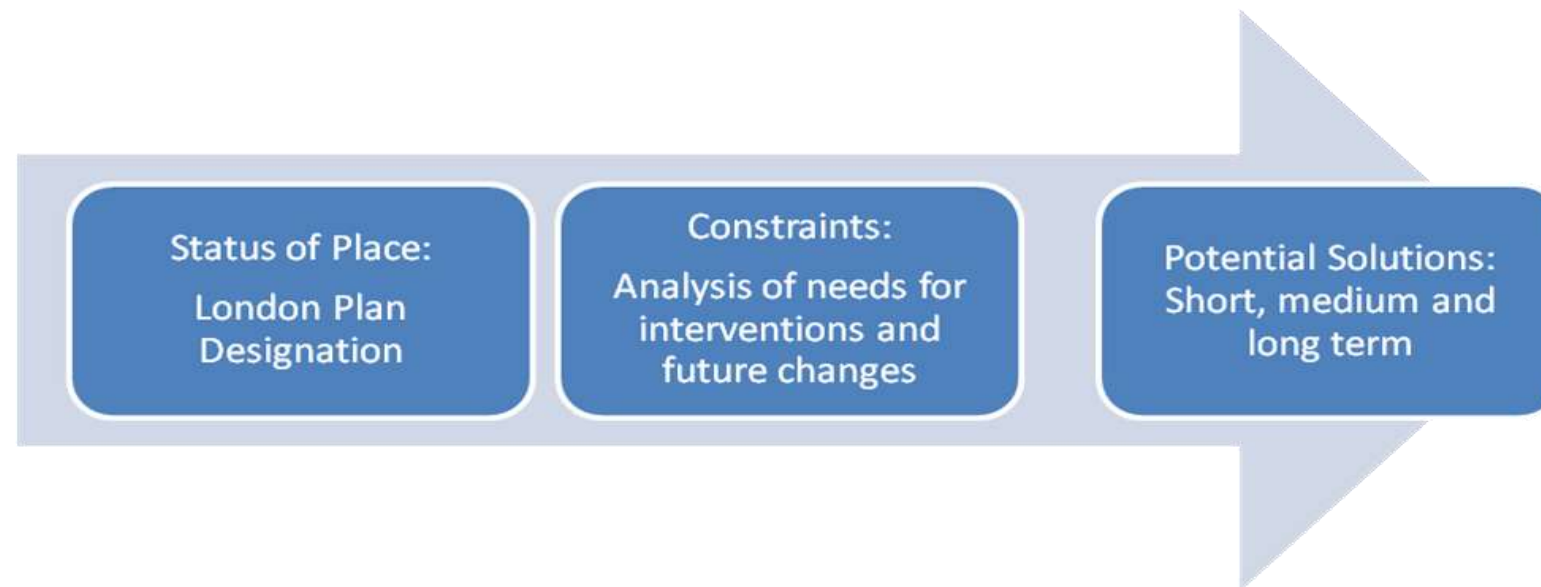
## Chapter 8: Key places

### Overview

Key places for each sub-region were identified in the Challenges & Opportunities documents published in February 2010. These were based on London Plan Designations, local policy documents (SPD, LDFs etc) and engagement with the sub regional boroughs.

The south sub-region Challenges and Opportunities document identified 23 key places in the sub-region including 3 Opportunity Areas (2 overlapping with the central region) and 16 Metropolitan and Major Town Centres. Some additional key places have been added, for example Twickenham given particular issues they will need to address.

Some initial analysis and assessment of some of these areas has been carried out, in line with the process shown below.



In essence, the challenges and potential options set out in the preceding sections of the Plan need to be integrated to ensure good access to, from and within town centres and other key places. The quality of the urban realm is also vital to ensure their attractiveness as places to work, shop, live and visit.

In some areas, additional more specific analysis has been undertaken including surveys of town centres such as Streatham and a few case studies of public realm requirements, including Kingston. Further work will be undertaken in other areas.

In the context of constrained funding, ensuring complementary investment and focusing resources where there are other developments and opportunities will be particularly important. TfL and the boroughs will need to work closely with organisations such as Network Rail and developers, etc to maximise the value of investment.

### Key considerations

Good access to and from key places is vital. In some cases enhanced capacity will be needed to support growth and reduce crowding while in other areas, new links may be needed to improve connectivity. Bus services play a key role in supporting access to town centres and provision will need to be reviewed on an ongoing basis. Interchanges are particularly important, not just in terms of their capacity, quality and accessibility but also their integration to the surrounding area.

There is significant congestion across many of these areas and parking is a key issue. Many areas have significant potential to increase walking and cycling and encourage mode shift but there needs to be a focus on supporting measures such as cycle parking, legibility and information. Freight access to key places and provision for deliveries and servicing is integral for their commercial vitality – but seeking better ways to manage this and reduce the traffic and environmental impacts will be increasingly important.

Access and the quality of movement within these locations must also be prioritised, including encouraging walking and improvements to the urban realm. The value for money of measures is likely to be increased where combined with other initiatives and investment being made, for example in interchanges.

In some cases, tensions between access to and within places may be an increasing issue with the impacts of traffic, including buses, needing to be considered and priorities assessed.

### Next Steps

Some more detailed work has already been undertaken in a few areas to enhance our understanding of current and potential future travel patterns, and some of the issues and opportunities for change.

Further work to try and establish the key transport and urban realm issues in each place will be discussed at the Sub-regional Panel to agree the priorities and approach. In addition, specific studies may be undertaken associated with particular schemes or growth areas, for example Opportunity Area Planning Frameworks which will consider potential transport requirements in greater detail.

## 8.1 Metropolitan Town Centres

### Overview of Croydon, Bromley, Kingston and Sutton

Croydon is the largest of London's town centres and is also one of the south sub-region's two Opportunity Areas. Croydon is served by National Rail services to Victoria, London Bridge and Charing Cross, and is well connected with other areas of the south sub-region by the London Tramlink network.

Bromley town centre is served by Southeastern National Rail, with direct services to Victoria and Blackfriars from Bromley South and a connecting shuttle service (requiring interchange) to London Bridge. Bromley North village is one of the Mayor's Great Spaces. It is well served by buses and provides around 4000 car parking spaces.

Kingston has a strong retail, cultural, office and retail offer and is a university town. Kingston is served by South West Trains to Waterloo and has two bus stations. The town centre provides around 7000 car parking spaces and is the strategic route (A308/A3) to Guildford and J10 for the M25.

Sutton is a historical town served by both Southeastern and Thameslink rail services, offering direct services to Victoria, London Bridge and Blackfriars. The town centre provides around 3,500 car parking spaces.

### Key issues

An Area Action Plan for Bromley has been agreed which could provide around 1820 additional residential units, 2000 new jobs and 42,000 sq m of additional retail, as well as 7000 sq m office space. Accommodating growth in a sustainable way is a key challenge of the AAP.

An AAP for Kingston was adopted in 2008 and includes up to 50,000sqm gross retail space, 1000 new homes and accommodation for 500 students.

For Kingston maintaining and improving bus operations within new developments and improving the link to rail stations, and encouraging cycling are key challenges. The AAP for Sutton would see an additional 2000 jobs and 2000 green homes. Sutton pioneered the Smarter Travel initiative and has recently made improvements to the pedestrianised high street.

### Overview of opportunities / options

Bromley is keen to be connected to both the DLR for better connections to Lewisham and London Tramlink for improved connections to Croydon. Following initial analysis the case for extending London Tramlink to Bromley town centre appears strong whereas it would not be a priority to extend the DLR to the town centre. However, it is recognised that it is desirable to improve connectivity between Bromley and areas such as Canary Wharf, for example by providing a new DLR interchange at Catford. Network Rail has proposals to increase Bromley South station capacity and provide step-free access, and this is supported. Opportunities to improve Bromley North as a Great Space should be developed. Traffic congestion occurs on the A21 and other approaches to the town centre and managing the road network will be key.

There is strong potential to encourage further walking and cycling in and around Kingston. Improving cycle links and cycle parking facilities to key places such as Kingston station should be encouraged. Improving the urban realm around the station and improving links to the town centre are supported. Early consultation with TfL on development proposals such as Eden Quarter, and the implications for bus routeing and standing/stopping facilities are essential. Improved connections to Heathrow are important and Airtrack is supported in principle, however the impacts on level crossings along the route need to be resolved.

Many improvements have recently been undertaken in Sutton town centre including improvements to the pedestrianised high street. The case for an extension of London Tramlink to Sutton town centre appears strong. The Borough has safeguarded land in their AAP for the tram and this is welcomed.

Traffic management is key to each of these centres and weekend management is essential. Given the role of all of these centres, parking management is also a key issue and opportunities to rationalise it should be taken and ideally needs to be coordinated with authorities such as Surrey and Kent.

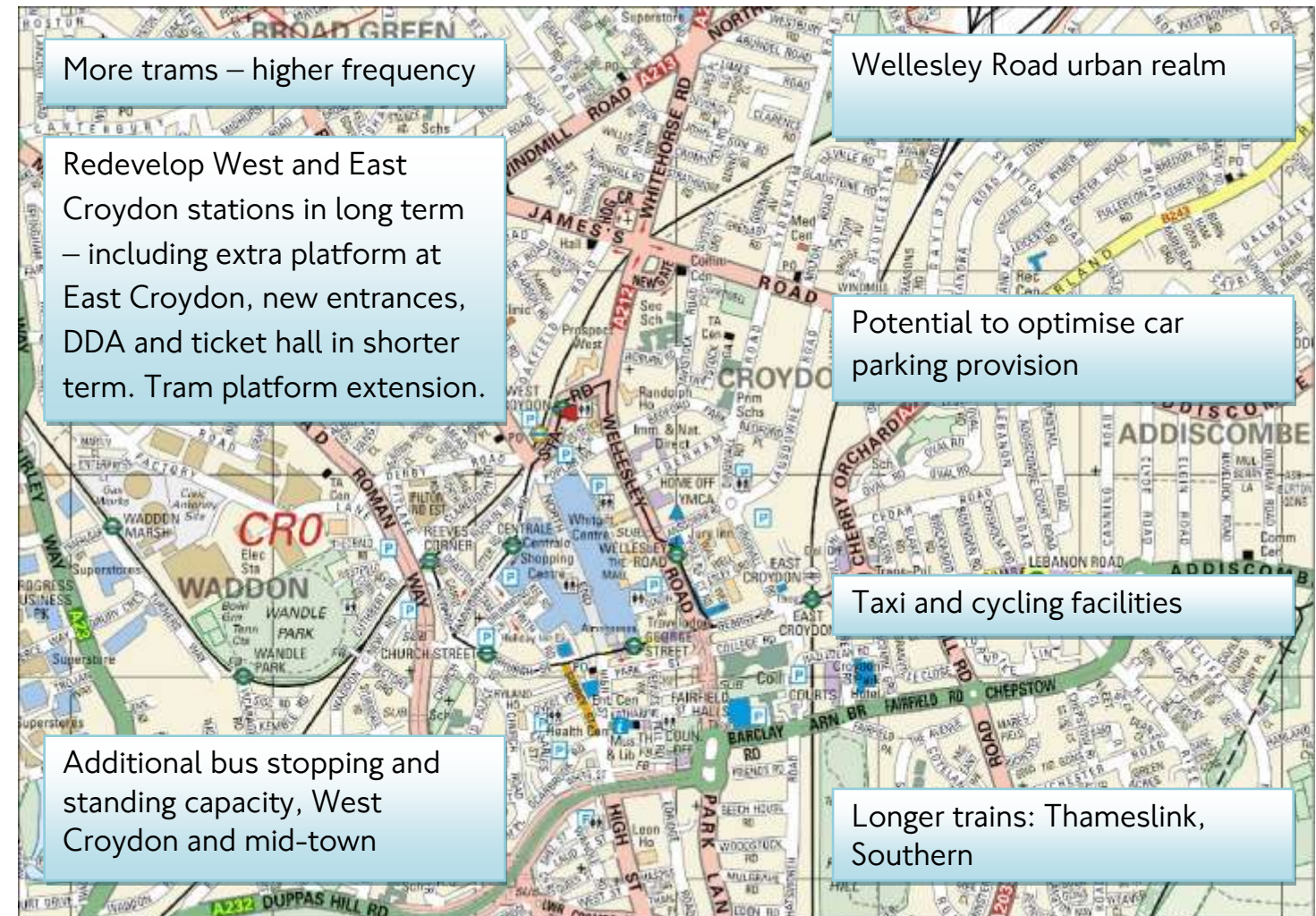
## 8.1.1 Metropolitan Town Centres: Croydon

### Croydon: Key Facts

The Public Consultation Draft Replacement London Plan supports major growth in Croydon and the Borough has identified the potential for an additional 19,000 homes and 7,500 jobs. Croydon is already well connected to central London, the majority of south London and the wider south east including Gatwick Airport through a combination of National Rail, Overground and Tramlink services. However, to support the level of growth identified, a number of improvements to the transport network will be required.

### Opportunities and issues

- HLOS1 longer trains on Southern services
- Thameslink programme – key output 1: longer trains (12 cars)
- HLOS2 – Lengthen all trains to 12 cars and 5 cars on ELL
- Expand ticket hall and platforms at East Croydon rail station, with resulting development opportunities and additional capacity
- New bus stopping / standing such as through redevelopment of West Croydon and mid-town or other locations within the CMC
- Review car parking in the town centre
- Improve urban realm around station and links to town centre particularly across Wellesley Rd
- Wellesley Road urban realm
- Extra trams on Tramlink
- Taxi and cycling facilities at West and East Croydon stations and other key locations
- Improved facilities for pedestrians and cyclists
- Longer term potential for tram extensions



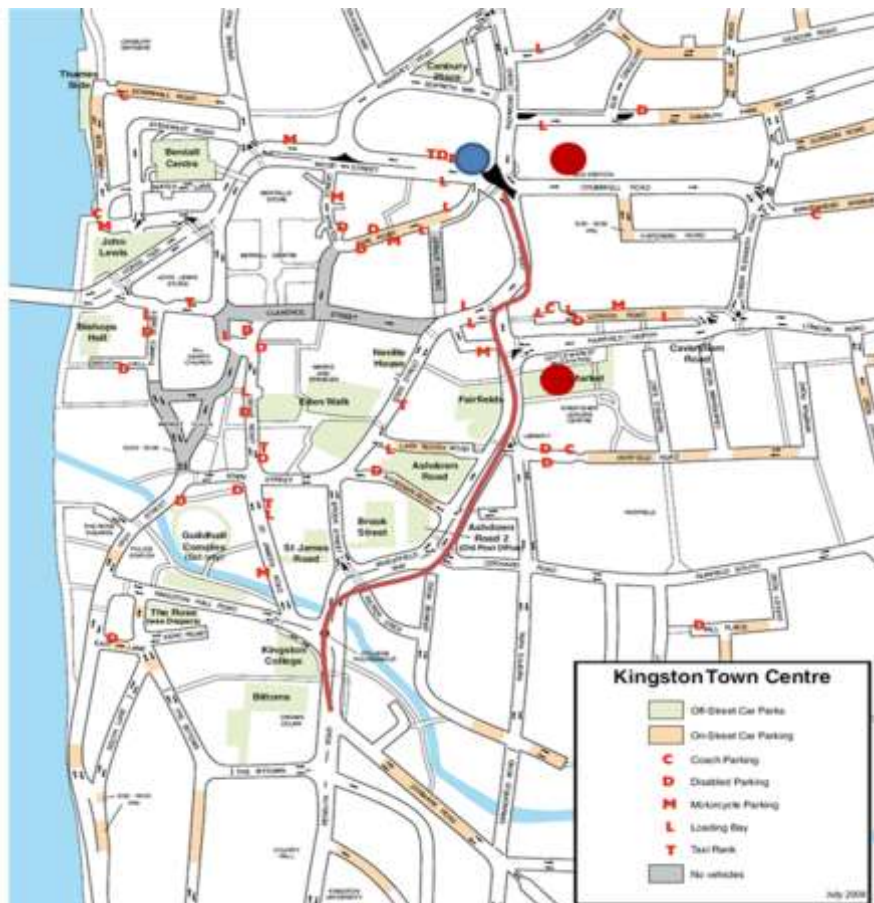
## 8.1.2 Metropolitan Town Centres: Kingston

### Kingston: Key Facts

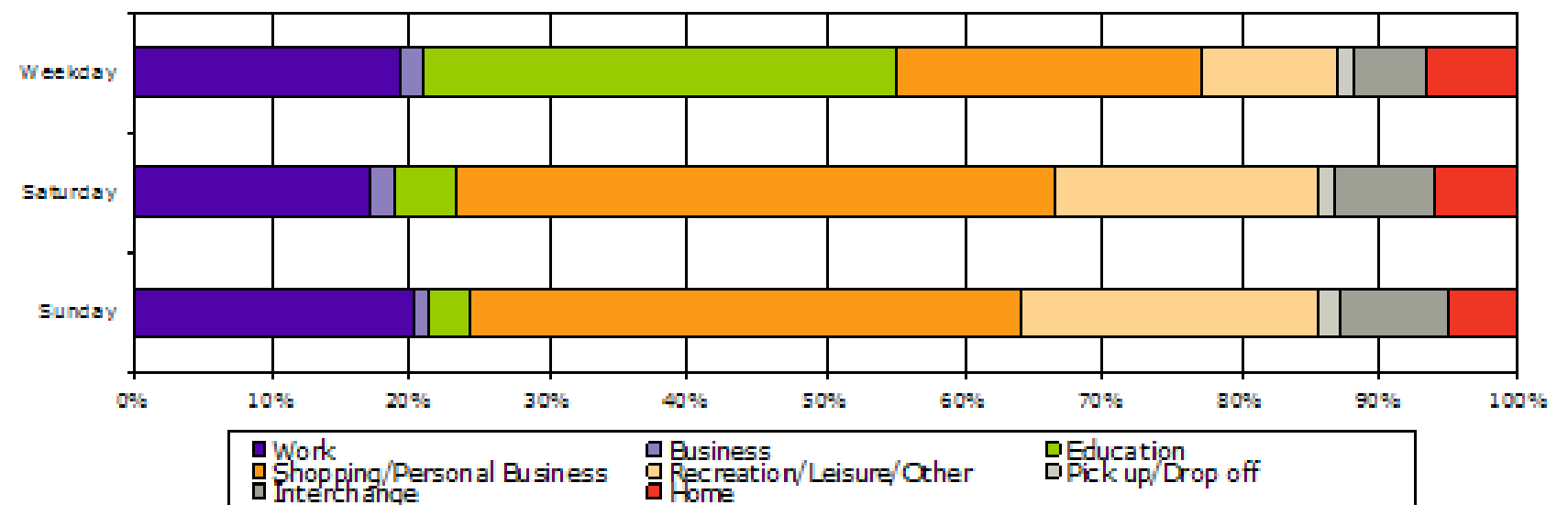
- Ranked 12<sup>th</sup> top retail centre in 2007 by the Experian Index, but expected to drop 2 places by 2017
- University town, large hospital, shopping and office
- South West trains from Kingston station and 2 bus stations
- There has been an increase in servicing activity in line with changes to local economy
- Increase in number of smaller, frequent deliveries in town centre

### Opportunities and issues

- Excellent cycling potential – cycle parking at station, facilities on relief road
- Links to proposed Heathrow Airtrack, which is supported in principle but has an issue with level crossings
- Rationalise car parking, improved marketing, signage – especially at weekends
- Improve urban realm around station and links to town centre
- Early engagement is needed with TfL on bus access associated with the proposed Eden Quarter development
- Longer trains on South West Trains
- Improve awareness of loading and unloading restrictions in town centre



Town centre surveys capturing trip purposes and origins were conducted in Kingston. The highest proportion of trips on a weekday to Kingston town centre was for education purposes, reflecting the importance of the university and schools. On a weekend, the highest proportion of trips are made for shopping and personal business purposes, reflecting the strong retail offer in the town centre.



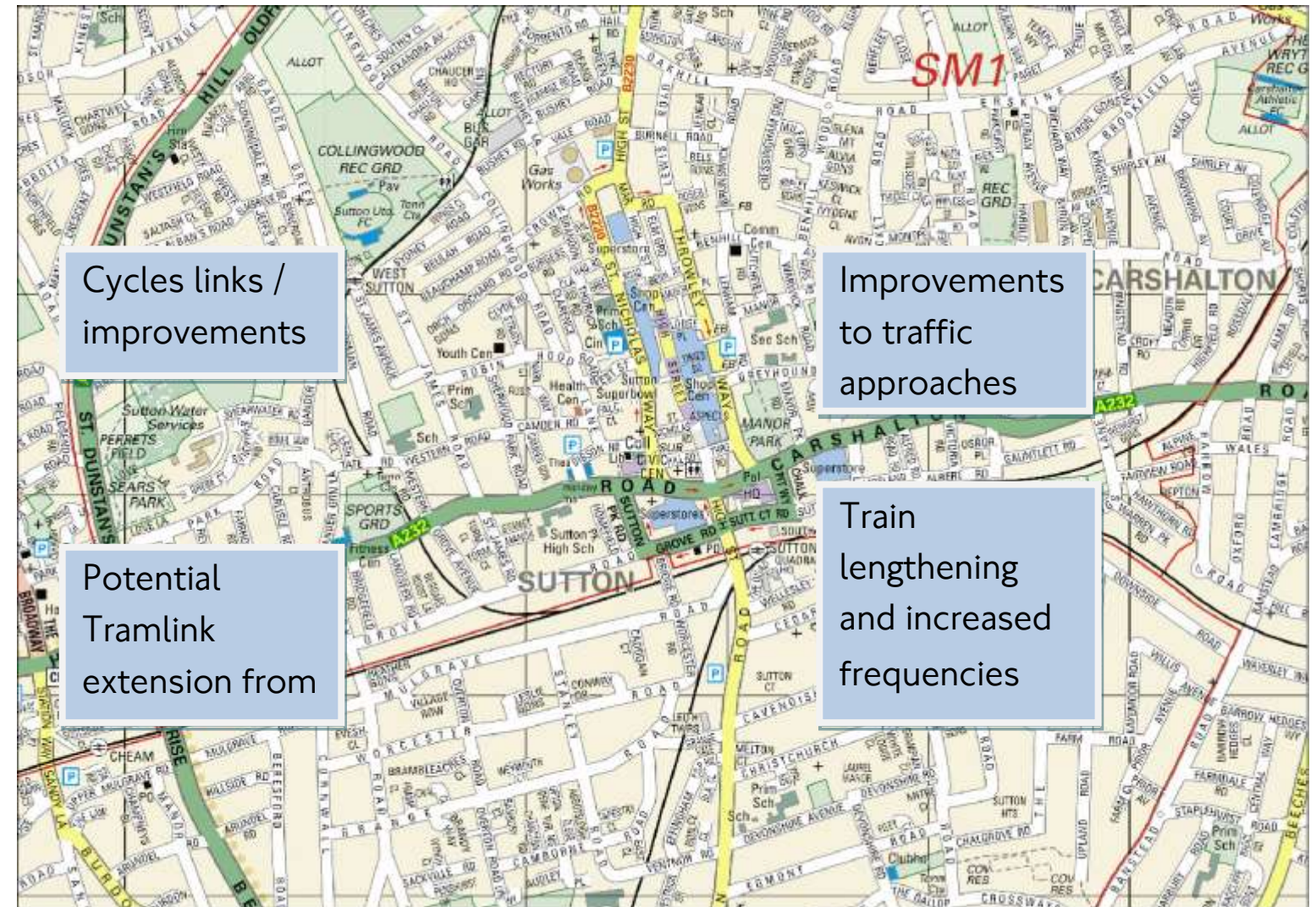
### 8.1.3 Metropolitan Town Centres: Sutton

#### Sutton: Key Facts

- Sutton is a key retail and commercial centre
- Main attractors: cinema, St Nicholas and Times Square shopping centres, thriving High Street, Sutton Adult Education College
- Served by National Rail to Victoria and Blackfriars
- Hub for bus routes in south London
- Successful “Smarter Travel Sutton” project resulted in a 75% increase in cycling in Sutton, which outperforms the experience of other towns across England with similar programmes

#### Opportunities and issues

- Potential for urban realm improvements particularly around the station, and to link the green spaces (Manor Park, St Nicholas Churchyard and Sutton Green) surrounding the town centre
- Area Action Plan for Sutton town centre proposes an additional 2000 jobs and 2000 “green” homes.
- Potential for Tramlink serving town centre and high street
- Loss of through Thameslink service but increased frequency from 2tph to 4tph
- Train lengthening
- Cycle links / improvements
- Junction improvements around the town centre



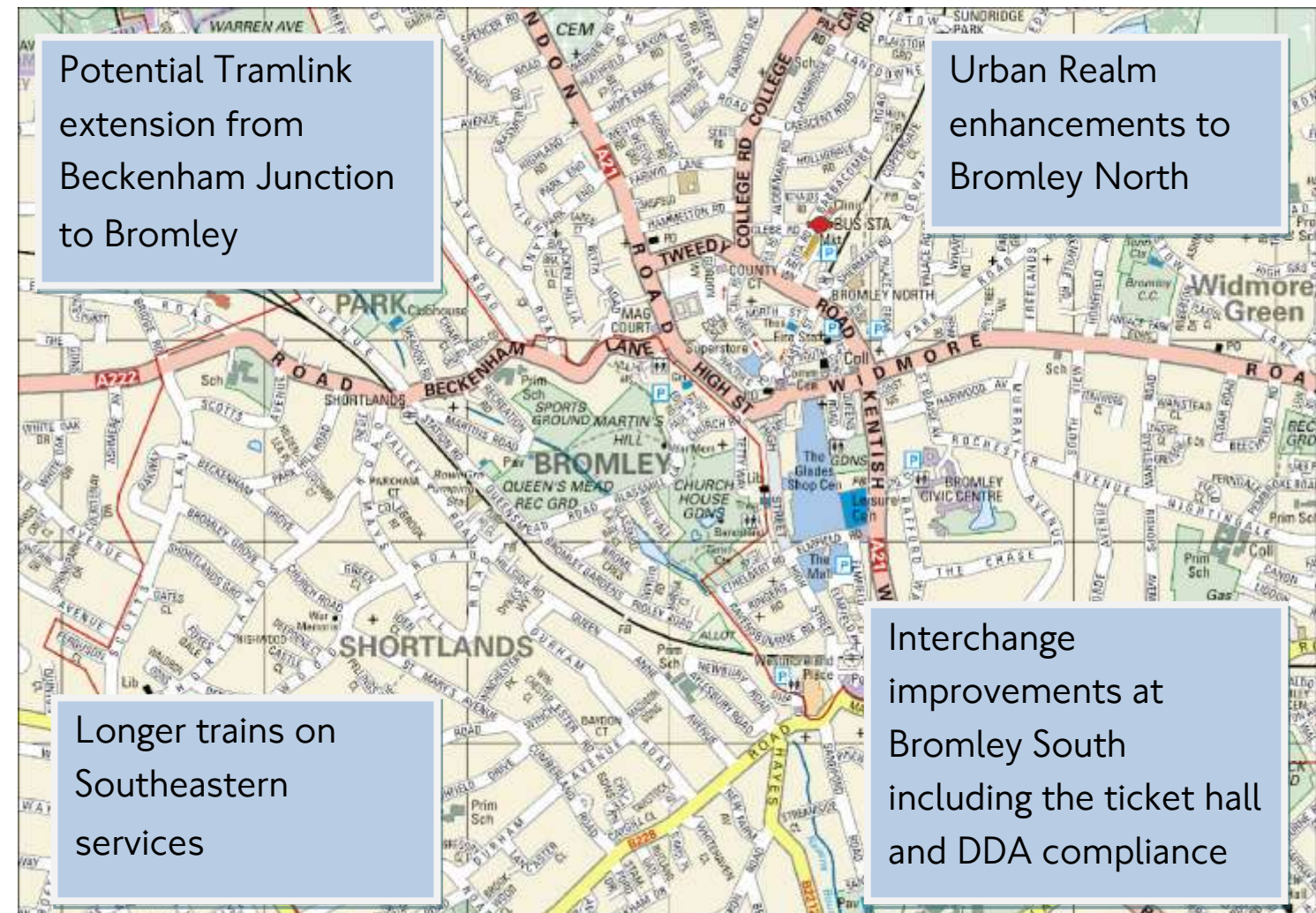
## 8.1.4 Metropolitan Town Centres: Bromley

### Bromley: Key Facts

- Bromley is a key retail and commercial centre
- Main attractors: the Glades and Mall shopping centres, thriving High Street, the Churchill Theatre, Bromley College, national headquarters of Churchill Insurance
- Served by National Rail (Southeastern) to Victoria and Blackfriars from Bromley South station, access to Charing Cross and Cannon Street from Bromley North via change at Grove Park
- Bromley North Village is a location within the Mayor's Great Spaces.
- Hub for bus routes in southeast London.
- Area Action Plan for Bromley Town Centre proposes significant residential, office, leisure and retail growth which will have considerable transport implications.
- Bromley South Station is an example of a 'Strategic Interchange' within the MTS

### Opportunities and issues

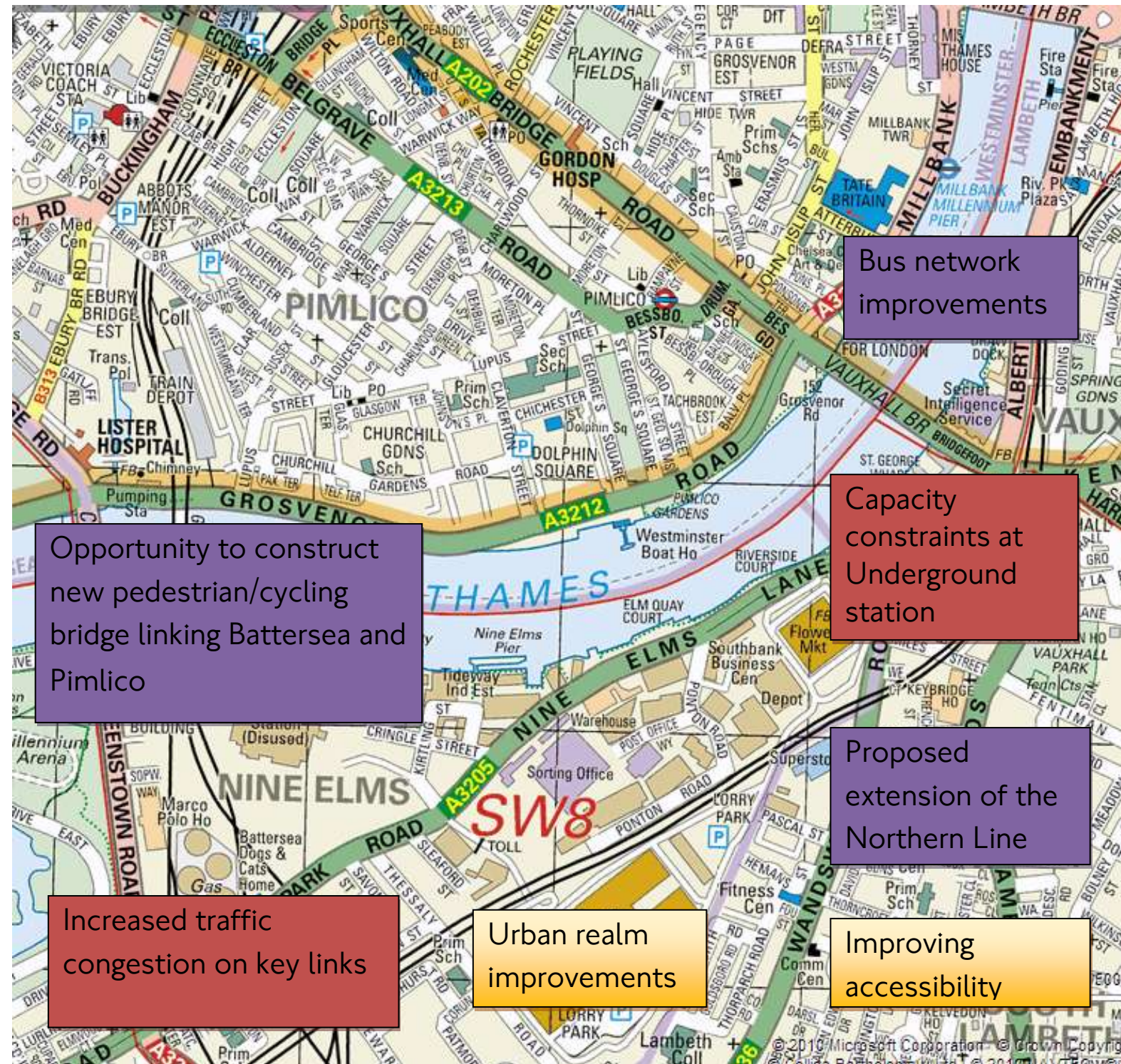
- Potential for urban realm improvements particularly at Bromley North
- Bromley Town Centre AAP potential for over 1700 additional residential units at 14 Opportunity Sites across the town centre
- Potential interchange improvements
- Potential to improve access to jobs and services within the Opportunity Area at Croydon with a Tramlink Extension via Beckenham Junction
- Longer trains on Southeastern services



## 8.2 Opportunity Areas

The south sub-region contains two Opportunity Areas as designated by the draft replacement London Plan: Croydon (covered in Metropolitan Town Centres) and Vauxhall Nine Elms Battersea

### Vauxhall Nine Elms Battersea



#### Vauxhall Nine Elm Battersea (VNEB): Key Facts

Forecast growth of around 16,000 new homes and up to 25,000 new jobs

The predicted growth in housing and employment is expected to generate an additional 40,000 journeys to and from the area

These additional trips will result in increased traffic on key strategic routes and increased crowding on the public transport network

Demand at local stations will increase significantly, especially at Vauxhall Underground station where demand is projected to exceed capacity during the AM peak

There is potential to improve existing bus routes in the area to provide additional capacity and improve accessibility

A new bridge has been proposed for pedestrians and cyclists linking Battersea with Pimlico

An extension of the Charing Cross branch of the Northern Line to serve Battersea Power Station is required to support the planned redevelopment

## 8.3 Major Centres

Clapham Junction, Richmond, Wimbledon, Brixton, Peckham, Wandsworth, Streatham, Putney, Orpington, Tooting

### Overview of areas

These town centres are all major commercial centres in their own right and tend to have a catchment area wider than just the specific borough. They generally contain over 50,000 sqm or retail floor space with a fairly high proportion of comparison goods relative to convenience goods and they also have significant employment, leisure, service and civic functions. Many of the stations in these key places are strategic interchanges and improvements are currently underway at stations such as Clapham Junction (new access) and Wimbledon (forecourt) and Brixton (station refurbishment).

### Key issues

Rail or Underground crowding is common at many of these town centres. Planned Underground upgrades of the Northern and District Lines and proposed longer trains on South West, Southeastern and Southern will provide some relief in the medium term. Further improvements to these regionally important and strategic interchanges will be needed and better integration with surrounding areas will also be key. Borough officers are working closely with TfL to improve the environment around Clapham Junction.

Traffic congestion occurs in and around many of these areas, particularly those towards inner London. Urban realm improvements in places such as Peckham, Tooting, Clapham Junction and Wandsworth town centres would provide significant improvement to the areas.

### Overview of opportunities / options

HLOS1 proposals of 10 car capability on south western inner rail services are needed to relieve crowding into Clapham Junction and Waterloo, also affecting Wimbledon, Richmond and Twickenham. HLOS 1 will also deliver the re-opening of Waterloo International platforms. Further lengthening of these trains in HLOS2 to 12 cars is recommended. In the much longer term, options for a Chelsea-Hackney line (Crossrail 2) are being considered with possible routing options serving Clapham Junction and Wimbledon and some options reaching as far as Kingston and Sutton. Development is proposed over Wimbledon station and enhancements to transport should be maximised, including opportunities to increase platform capacity for Tramlink.

Many of these places are areas of potential significant growth. The Streatham hub will extend the active town centre southwards, and will impact traffic on the A23. Given that these centres typically are on either the TLRN or SRN in constrained roads space, protection for buses is essential. Heavy pedestrian demand occurs around key interchanges with pavement width, wayfinding and road crossings a particular issue at places such as Richmond, Clapham Junction and Wimbledon. Borough officers are working closely with TfL to improve the environment around Clapham Junction. While recent applications for development of Clapham Junction and the Ram Brewery at Wandsworth were refused, opportunities to implement improvements such as to the urban realm in Wandsworth and station improvements at Clapham Junction should be maximised as appropriate. Many of these areas such as Clapham Junction, Streatham and Tooting have the potential to significantly increase cycling.



## 8.4 Other places (Districts Town Centres, Areas for Intensification)

Colliers Wood / South Wimbledon (Afl), Purley / Purley Way, Morden, Twickenham, Camberwell, Beckenham, Hackbridge

### Overview of areas / key issues

Although clearly of local importance, generally district centres would not have a sub-regional role. However, it is important that development of these centres is monitored to decide whether there are sub-regionally important issues. For instance, the Rugby World Cup 2015 will be held at Twickenham and it is imperative that the transport infrastructure is in place to support a successful tournament, including improvements to Twickenham station and train service frequencies.

Merton council also has aspirations to develop Morden town centre which may impact heavily on the Northern Line station, bus stopping facilities, urban realm and the operation of the A24 gyratory in this location.

Areas for intensification will also need to accommodate forecast growth. For example, South Wimbledon / Colliers Wood has been identified as having an indicative employment capacity of 500 and 1,300 new homes. This location contains a range of major opportunities for intensification and brownfield development including Wimbledon dog track, Durnsford Road industrial estate and Colliers Wood. Meanwhile, Hackbridge will have 1000 new homes. Purley Way is a significant out-of-town retail park which impacts the A23 and in particular the Fiveways junction in Croydon.

### Overview of opportunities / options

TfL is developing a strategic traffic model which will enable the testing of potential options. Development is proposed at Twickenham which would see enhancements to the station from Section 106 funds. There are opportunities to improve the Fiveways junctions in Croydon, which involve signing and modifying signal timings. However, much more substantial improvements such as grade separation are required to make a significant impact on this junction, which should be considered with the Opportunity Area Planning Framework for Croydon. TfL support the Borough's aspirations for longer platforms at Hackbridge to allow all train doors to open.

## Chapter 9: Delivery of the plan and sustainable assessment

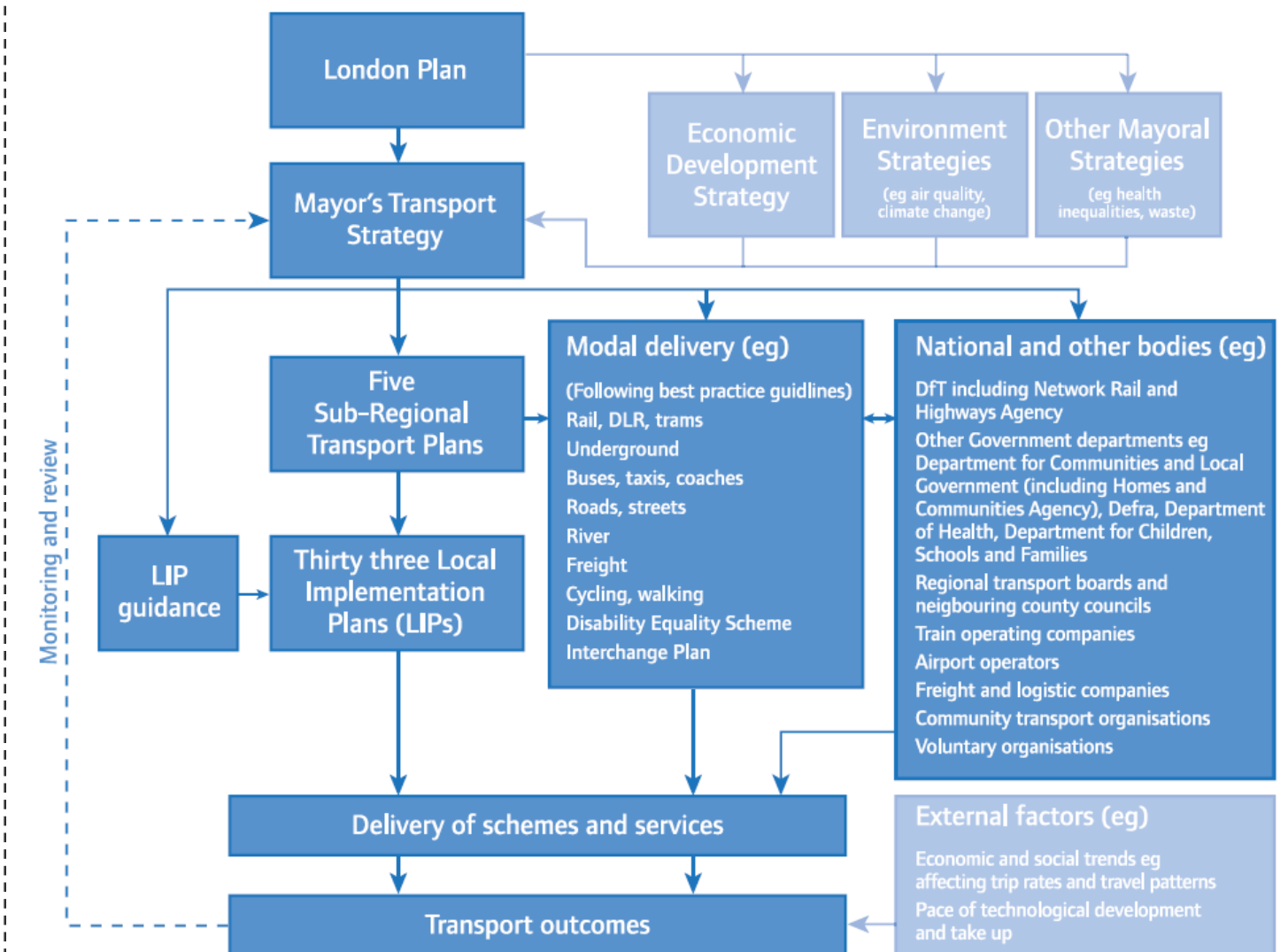
The challenges set out in Chapter 1 of this plan were agreed by TfL and south sub-region boroughs and partners as the major transport issues for the sub-region over the next 20 years. The plan has set out various schemes, measures and initiatives that contribute to meeting the sub-regional challenges, and these are also summarised below.

This sub-regional plan will be delivered over twenty years and that details of this, including phasing and funding are shown in the Implementation Plan at Appendix 1.

The delivery process is set out in the MTS and in the LIPs guidance. These set out the organisations involved and shows how the SRTP (in full) relates to London boroughs' LIPs. Figure 9.1 summarises the process.

An overview of how the sub-regional challenges will be met by the implementation plan is provided below. This is followed by information about the Assessment of Sustainability carried out on the plan.

Figure 9.1 Delivery Process



## 9.1 Meeting the sub-regional challenges

The sub-regional challenges have been addressed throughout this Plan. However, the cross-cutting nature of these challenges has often meant that the potential schemes and priorities have been identified under a number of MTS goals and objectives. Below is an outline of some of the key measures identified for addressing each challenge. More details on the priorities for delivery in the sub-region are outlined in Appendix I.



### Challenge one: Reducing public transport crowding

- London Overground extensions
- London Underground upgrades
- Thameslink Programme
- Heathrow Airtrack
- Network Rail and rolling stock improvements on South West, South Central and South East
- Crossrail 2
- Improvements and extensions to the London Tramlink network
- Bakerloo Line extension
- Northern Line extension
- Ongoing review of the bus network in the region
- Maximising the efficiency of the network through information provision e.g. leading to increased use of strategic interchange at locations such as Clapham Junction and East Croydon
- Targeting areas with high potential for more trips to be made by active modes such as walking and cycling. As detailed in section 3.4, high potential for these trips has been identified around the Metropolitan Centres, and also throughout Wandsworth
- Encouraging active travel through improved infrastructure such as the four Barclays Cycle Superhighways planned to pass through five boroughs in the south region



### Challenge two: Improve access and movement to, from and within key places

- Town centre improvements encouraging walking and cycling, as detailed in Chapter 8
- Urban realm improvements at areas such as Wellesley Road in Croydon, Bromley North, Sutton town centre, and around Kingston station
- Targeting access improvements at areas with low levels of access to services and poor public transport accessibility
- Continuing to improve physical accessibility through measures such as step-free access to stations including Bromley South and Clapham Junction
- Ensuring bus reliability against growing general traffic and maintaining and improving quality of service in growth areas such as Croydon through new and improved bus priority measures



### Challenge three: Improve connectivity to, from and within the sub-region

- London Overground extensions
- Heathrow Airtrack
- Extensions to the Bakerloo and Northern Lines
- Connecting the south sub-region to High Speed 2 at Old Oak Common via West London Line and North London Line
- Extensions to the London Tramlink network



### Challenge four: Manage highway congestion and make efficient use of the road network

- Encouraging mode shift to public transport, walking and cycling through increased provision, improved service quality, and information
- Collaborative working amongst the various highway authorities
- Building on Smarter Travel Richmond and Sutton throughout the sub-region through targeted measures such as school and workplace travel planning, parking provision and charges
- Reducing congestion in locations where clusters of 'hotspots' are seen as detailed in section 2.3, around the Metropolitan centres and in inner south London
- Measures to encourage freight efficiency such as potential consolidation centres (e.g. Beddington Lane) and freight delivery and service plans

## 9.2 Assessing the SRTPs



The nature of the SRTPs is such that they are not legally subject to a formal Strategic Environmental Assessment, otherwise known as an SEA. Nonetheless, to deliver best practice, TfL decided to undertake an Assessment of Sustainability, which includes a non-statutory SEA for each SRTP. The objective of carrying out the AoS was to maximise the contribution that the SRTPs can make to progressing sustainability across London in line with the vision set out in the MTS.

The AoS incorporates non-statutory consultation with those organisations who would otherwise have represented the 'statutory consultees' for an SEA, namely: The Environment Agency, Natural England and English Heritage. Comments from these consultees have been considered and used to inform the development of the SRTPs.

The Scoping Report and the subsequent Assessment of Sustainability for the West sub-region will be made available as separate documents in due course.

## Chapter 10: Next steps

### 10.1 Ongoing work

#### Using the sub-regional panels

The South Sub-regional Transport Plan has now been produced, but this does not mean that the work is finished. The SRTP process has led to an improved analytical capability as well as more collaboration between TfL, boroughs and other stakeholders. It has built upon the broad policies and proposals set out in the MTS and provided more detail about the challenges, opportunities and priorities for the south sub-region.

The Plan is a 'live' document which means that, although London and the UK are facing a period of financial uncertainty, the importance of planning beyond the short term is even greater. The Sub-regional Transport Plans will continue to make the case for more investment in London, helping to prioritise the limited resources available and improving the evidence base upon which decisions are made. Whilst no additional money has been identified to deliver the specific elements of the plan, the scene has been set for what will be required to meet the needs of all those who live, work and visit London.

The next phase of the work will use the sub-regional panels to help steer sub-regional engagement, articulate the agreed priorities and scope further work to be taken forward within the sub-region. The programme of work will include additional analysis, assessment of options and, where appropriate, the sub-regional models may be used to test future scenarios.

#### Future work areas

This SRTP makes reference to some areas and issues where further study is required to develop the Plan further. These need to be agreed via the sub-regional panels but could include:

- Managing the road network, initially with agreement on which sub-regional corridors to focus on next
- Walking and cycling priorities
- Freight movement in the south sub-region

In addition, further understanding of the implications of the CSR, especially in relation to HLOS I and the OAPFs will influence the development of the Plan.

#### Further Development and Assessment of Options

Initial investigation has been undertaken into the range of schemes and proposals developed and supported in this Plan. This has involved an assessment of options against the Goals and Objectives outlined in the Mayor's Transport Strategy. Both qualitative and quantitative data (where available) has been used in this assessment, including use of TfL's Strategic Assessment Framework.

In some cases, to determine demand and secondary impacts, individual mode and route options have been modelled using TfL's Railplan model. At this stage no traffic modelling has been undertaken to determine the highway impacts. In some cases high level engineering feasibility has been undertaken but if priorities identified by the sub-regional panel are to be progressed, further analysis is needed.

## 10.2 Monitoring

### Monitoring MTS outcomes

The top-level monitoring of the outcomes in the MTS will be via TfL's annual Travel in London report. The MTS identifies 24 indicators to monitor the strategy's outcomes, the key Strategic Outcome Indicators (SOIs). In addition, the Travel in London report contains data, analysis and interpretation relating to other Transport Strategy policies that are not directly covered by the 24 SOIs.

The majority of MTS SOIs can be disaggregated to the more local level, be it network, sub-region or borough without additional work. However, for several, it is not readily possible to obtain robust statistics that directly reflect sub-regional geography (for example, some of the survey/perception-based indicators).

In other cases, such as operating costs, a sub-regional disaggregation is not appropriate (for example, they relate to transport network geography). Some indicators are more appropriately monitored on a case-by-case basis (for example, supporting regeneration, Olympics and Paralympic Legacy), and these will be covered by appropriate, specific content (for example, case studies) in future *Travel in London* reports.

The first two *Travel in London* reports are available from [TfL's website](#).

### Link with LIPs

Local Implementation Plan Guidance mandates five LIPs performance indicators. These cover:

- transport mode share
- bus service reliability
- road traffic casualties
- CO<sub>2</sub> emissions from ground-based transport, and
- highway asset condition.

These are in alignment with the 24 MTS SOIs, and can be readily aggregated to the sub-regional level.

TfL's *Travel in London* report will continue to include data, at a borough level, on each of these LIPs performance indicators.

### Potential development of particular sub-regional monitoring

The principal area where additional work may be required is to monitor, perhaps on an 'exemplar' or 'case study' basis, the contribution to local and strategic transport goals of specific transport infrastructure development or policies. The Olympics and Paralympics, Opportunity Areas and major projects such as Crossrail are examples where this additional work may be required.

## APPENDIX 1: IMPLEMENTATION PLAN

The table below sets out the schemes planned for implementation in the south sub-region, their phasing and whether funding has already been or is yet to be secured. Funded schemes are shown in yellow, unfunded in red. Some schemes are labelled as unfunded as they require further funding to be made available before they could be taken forward, or because they fall outside the timeframe of TfL's current Business Plan.

The schemes identified in this plan are shown in three time periods for delivery:

- Short term: The period up to and including 2012
- Medium term: From 2013 up to and including 2020
- Long term: From 2021 up to and including 2031

The implementation plan reflects the current delivery priorities. The plan will be regularly reviewed through the TfL Business Plan, the GLA Corporate Plan and the DfT's Network Rail and Highways Agency investment programmes to ensure ongoing alignment with priorities. Longer-term unfunded schemes are at varying stages of development. Scheme development will be regularly reviewed to ensure alignment with policy priorities, value for money, deliverability and to take account of opportunities for funding that may become available.

This implementation plan is consistent with the MTS and London Plan implementation plans published earlier in the year, while providing more detail, where appropriate, of schemes particularly relevant to each of the sub-regions<sup>1</sup>.

<sup>1</sup> This implementation plan table does not list improvements to national and international services that will predominantly benefit all of London, such as improvements to national rail long distance services, or international rail services. (Where relevant to London, these are included in the MTS and London Plan implementation plans).

The reference numbers used in this table are common to all five sub-regional plans – this is to aid cross referencing between plans, hence the numbering is not sequential as some measures are not relevant for this sub-region.

Key to Implementation Plan	
	Funded schemes
	Unfunded schemes
*	2012 for TfL schemes and 2014 for Network Rail schemes (as per HLOS CP4)
†	2013 for TfL schemes and 2015 for Network Rail schemes (post HLOS CP4)

Reference Number	Scheme	Description	Completion 2010–2012*	Completion 2013–2020†	Completion Post 2020
<b>Rail (DfT/Network Rail/TOC led schemes)</b>					
3	High Speed 2 - new line from London northwards	London to the West Midlands and beyond with Strategic interchange at Old Oak Common and terminus at Euston. Opportunities to link into West London line, North London line, Crossrail and Heathrow Express as well as High Speed 1			
4	Thameslink phase 1	Phase 1: 12-car capability on most of mainline and 16 trains per hour through core			
5	Thameslink phase 2	Phase 2: 24 trains per hour through core, expanded network			
6	Thameslink - potential further enhancements	Lengthening more shoulder peak services to 12 cars			

Reference Number	Scheme	Description	Completion 2010– 2012*	Completion 2013– 2020†	Completion Post 2020
14	South central London enhancements	Ten-car capability on inner suburban			
15	South central London enhancements	Twelve-car East Grinstead services			
16	South central London enhancements	Further capacity increases (including, redeveloping Victoria station with more platforms for Southern services, and further train lengthening (more inners to 12 car))			
17	South central London enhancements	Conceptual schemes to provide East Croydon to London Bridge Double Deck shuttle, or potential new tunnel from Purley to Central London as per Sussex RUS (this would follow all other possible enhancements)			
18	South central London enhancements	Longer distance services to stop at Denmark Hill and Peckham Rye when East London Line extension phase 2 opens in 2012			
19	Southeast London enhancements	Train lengthening on services to Cannon Street/ Charing Cross - this includes 12 car capability at peak on all inners via London Bridge			
20	Southeast London enhancements	Lengthen all South Eastern outers to 12 cars and relocate "Venice Simplon Orient Express"			
21	Southeast London enhancements	Conceptual scheme to redevelop Victoria station with additional platforms for South Eastern and grade separation of rail routes at Herne Hill			
23	Southwest London enhancements	Ten-car capability on inner suburban and Windsor lines			

Reference Number	Scheme	Description	Completion 2010– 2012*	Completion 2013– 2020†	Completion Post 2020
24	Southwest London enhancements	Lengthen inners and more outers to 12 car and reopen Waterloo International for domestic services			
33	Airtrack service to Heathrow	Link Southwest London railway network to Heathrow (partly BAA funded)			
34	Rail service standards	Improved first and last train time consistency, and off-peak service frequencies to be at least four trains per hour including weekends			
35	Improved rail freight terminals to serve London	New and/or expanded rail freight terminals to serve London			
<b>Rail (TfL led schemes)</b>					
40	London Overground enhancements	Completion of extension to Clapham Junction. 4tph to run Dalston Junction - Clapham Junction			
41	London Overground enhancements	Lengthen East London Line services and platforms to 5 cars			
42	London Overground enhancements	Further train lengthening			
46	Chelsea Hackney line	Enhanced southwest – northeast London capacity and connectivity. All new infrastructure will be fully accessible.			
<b>Stations and interchanges</b>					
48	Further Tube station congestion relief schemes	Targeted station capacity expansion programme			
49	Tube station refurbishment/modernisation programme	Continuing programme of refurbishment/ modernisation of stations			



Appendices

Reference Number	Scheme	Description	Completion 2010– 2012*	Completion 2013– 2020†	Completion Post 2020
51	Develop strategic interchanges	Programme of schemes under development including increasing frequency on orbital London Overground routes, stopping more trains at strategic interchanges, and improving pedestrian routes			
52	Rail station refurbishment/modernisation programme	Delivery of National Station Improvement Programme (NSIP) in London, and other service standards as agreed in rail franchises (Station facilities, notably availability and quality of CCTV, help points, shelter, lighting, passenger information, cleanliness, cycling facilities such as parking, and availability and quality of ticket retailing)			
53	Interchange enhancements	East Croydon concourse refurbishment, new pedestrian bridge, interchange declutter			
54	Interchange enhancements	Bromley South accessibility enhancements and ticket hall enlargement			
55	Interchange enhancements	Wimbledon station forecourt improvements			
56	Interchange enhancements	West Croydon - improved integration between, rail, trams and bus station			
57	Interchange enhancements	Clapham Junction accessibility improvements and new entrance			
58	Interchange enhancements	Clapham Junction station improvement - capacity enhancements, widen overbridge, provide escalators			

Reference Number	Scheme	Description	Completion 2010– 2012*	Completion 2013– 2020†	Completion Post 2020
59	Improved surface-rail interchange	Improvements including enhanced bus services, interchange and urban realm at selected Crossrail and/or Thameslink stations			
<b>Tube</b>					
64	Northern Line upgrade phase 1	Phase 1: Northern Line upgrade to provide additional capacity and improve journey times			
65	Northern Line upgrade phase 2	Phase 2: Northern Line Upgrade 2 to deliver a further 33 per cent increase in peak capacity through the simplification and recasting of service patterns			
66	Northern Line extension	Extension to Battersea, developer-led, to support the regeneration of the Vauxhall/Nine Elms/Battersea opportunity area			
67	Victoria Line upgrade	Victoria line upgrade including new rolling stock and signalling to provide additional capacity and improve journey times			
69	Sub-Surface Line Upgrade	Circle, District, Hammersmith & City and Metropolitan Line upgrade (including new air-conditioned rolling stock and new signalling) to provide additional capacity and improve journey times			
72	Bakerloo Line extension	Potential Bakerloo Line southern extension from Elephant & Castle via Lewisham to Hayes and Beckenham Junction.			
73	Cooling the Tube programme	Enabling operation of services post line upgrades and improved passenger comfort			
74	Tube network core asset renewal	Programme of core asset renewal to lock-in benefits from the upgrades and maintain assets in a state of good repair			

Appendices

Reference Number	Scheme	Description	Completion 2010– 2012*	Completion 2013– 2020†	Completion Post 2020
75	Energy-saving initiatives	Initially, a programme of trials to include low energy lighting, smart electricity metering at stations and low loss conductor rails			
76	Regenerative braking and automatic train control	To be implemented as an integral part of the Tube upgrade programme			
<b>DLR</b>					
81	DLR extensions	Potential extension to Forest Hill			
<b>Tramlink</b>					
84	Tramlink potential extension to Bromley	Potential extension from Beckenham Junction on-street to Bromley			
85	Tramlink capacity	New trams providing capacity between Therapia Lane and Elmers End			
86	Tramlink potential extension from Wimbledon to Sutton	Potential extension from Wimbledon to Sutton on-street via Morden and St Helier			
87	Tramlink potential extension from Croydon to Thornton Heath and beyond	Potential extensions from Croydon to Thornton Heath as a first phase with potential for extensions further northwards towards Streatham and Brixton. However, potential traffic issues along A23			
88	Tramlink potential extension from Wimbledon to Tooting	Potential extension from Wimbledon to Tooting as a mixture of segregated and street-running track			
<b>Bus</b>					

Reference Number	Scheme	Description	Completion 2010– 2012*	Completion 2013– 2020†	Completion Post 2020
90	Bus network development	Regular review of bus network, including reviews of the strategic priorities underlying the process approximately every five years, to cater for population and employment growth, maintain ease of use, attractive frequencies and adequate capacity, reliable services, good coverage and good interchange with other modes			
91	Bus network development	Re-patterning of bus services to take in to account new infrastructure and the related changes in demand			
92	Development of a New Bus for London	Pilot to create new iconic bus for London (which will include enhanced accessibility design features)			
93	Phasing out of 'bendy' buses	Anticipated by the end of 2011			
94	Low emission buses	Intention that all new buses entering London's fleet post 2012 be low emission (initially diesel hybrid)			
95	Enhanced real time service information	Delivery of Countdown 2; enhanced real time information at stops, on internet and mobiles			
96	Bus priority	On a case by case basis, implement bus priority measures to maintain service reliability			
97	Provision of suitable bus infrastructure to support Opportunity Areas/new developments	Review individual developments on a case by case basis and provide as necessary bus priority measures, accessible bus stops, additional bus stands, upgraded or new bus stations. To be delivered in phases to support development in area			

Reference Number	Scheme	Description	Completion 2010– 2012*	Completion 2013– 2020†	Completion Post 2020
98	Provision of suitable bus infrastructure to respond to new rail infrastructure such as Crossrail, Tube Upgrades, HLOS upgrades	Review individual sites on a case by case basis and provide as necessary bus priority measures, accessible bus stops, additional bus stands, upgraded or new bus stations. To be delivered in phases to support development in area.			
99	Additional bus stands and upgraded or new bus stations	On a case by case basis, provide additional bus stands and/or upgraded or new bus stations to support demand in specific locations in order to increase capacity and improve service reliability			
<b>Cycling</b>					
101	Barclays Cycle Hire scheme enhancement	Possible expansion of area covered and/or additional bikes in London Cycle Hire scheme where demand justifies			
102	Additional cycle parking	Around 66,000 additional cycle parking spaces in London			
103	Barclays Cycle Super Highways	Two initial trial radial routes to central London, followed by further routes			
104	Borough cycling initiatives - infrastructure based	Infrastructure based solutions such as cycle parking, cycle routes and improved signage, on areas with highest potential including Biking Borough initiatives			
105	Borough cycling initiatives - non-infrastructure based	Non-infrastructure solutions to help promote cycling across London including identifying the markets and planning interventions based on evidence and other Biking Borough initiatives			
<b>Walking and the urban realm</b>					
106	London-wide 'better streets' initiatives to improve pedestrian connectivity and urban realm	Improvements to urban realm and pedestrian environment			

Reference Number	Scheme	Description	Completion 2010– 2012*	Completion 2013– 2020†	Completion Post 2020
107	Access to stations and surroundings	Targeted programme of works to improve accessibility and personal security on walk and cycle routes to stations and bus stops, prioritising activity based on current demand and future growth			
109	Walking information and campaign	Walking campaigns, including the '2011 year of walking', that will focus on walking routes, wayfinding , events and activities			
110	Improved wayfinding	Targeted introduction of on-street wayfinding specifically designed for pedestrians, for example, using 'Legible London' principles			
111	Urban realm improvements as part of the Mayor's Great Spaces initiative	Urban realm improvements to revitalise some of London's recognised and lesser known streets, squares, parks and riverside walks			
112	Urban realm improvements in town centres	Urban realm improvements			
113	Improving urban realm and walking conditions on key routes which have high demand, for example between stations and town centres	Urban realm improvements			
118	Increased tree and vegetation coverage	Additional 10,000 street trees by 2012 (funded), with a target of an additional two million trees in London's parks, gardens and green spaces by 2025			
<b>Roads</b>					
119	Improved traffic control on London-wide and sub-regional corridors	Improved traffic control systems, for example further roll out of SCOOT			
120	Improved management of planned interventions on London-wide and sub-regional corridors	Minimising the impact of planned interventions on the road network with the potential to disruption traffic flows through the use of the permit scheme for road works for example			

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Reference Number	Scheme	Description	Completion 2010– 2012*	Completion 2013– 2020†	Completion Post 2020
121	Improved management unplanned events on London-wide and sub-regional corridors	Minimising disruption from unplanned events (accidents, emergencies etc) in 'real time' as they occur and returning the network quickly and efficiently to its planned steady state operation as soon as possible			
122	Review of loading and waiting restrictions in central London and elsewhere	Review and report on potential improvements - using a targeted demand led approach			
125	Potential gyratory and one-way system improvements, eg at Morden and Wimbledon	Improvements to make greater contribution to urban realm, environmental, safety and quality of life goals, for example, as well as enabling appropriate vehicular movement and smooth traffic flow			
131	Blackwall Tunnel (northbound) refurbishment	Refurbishment of tunnel			
132	Road improvement scheme at Lewisham	Road improvements			
136	Further highway enhancements and/ or changes to the local road network	Consideration of further highway enhancements that will smooth traffic flow and/ or changes to the local road network related to major developments in response to increased local demand			
137	Achievement of state of good repair of road infrastructure	Ongoing programme of maintenance			
138	Continue trials of intelligent speed adaptation technologies	Continue trials and technology development			
139	Encourage further implementation of average speed camera technology	Continue trials and technology development			

Reference Number	Scheme	Description	Completion 2010– 2012*	Completion 2013– 2020†	Completion Post 2020
140	Investigation of merits of 20 mph zone or zones	Assess contribution of 20 mph zone or zones in central London or elsewhere to MTS goals including safety, air quality, CO2 and congestion benefits			
141	Car club support	Support expansion of car clubs			
142	Low Emission Zone enhancements	Further LEZ enhancements and vehicle coverage			
143	Provision of infrastructure to support low emission road vehicles	Introduction of electric vehicle recharging points by 2015 - and support distribution networks for other alternative fuels such as hydrogen and biofuels (unfunded)			
144	Continue to work with DfT on road pricing feasibility programme	Review the option of road user charging and/ or regulatory demand management measures to influence a shift to more CO2-efficient road vehicles and lower carbon travel options, such as walking, cycling and public transport			
145	Promote emission-based parking charges	Boroughs and car park operators to be encouraged to expand coverage of parking charges to vary by duration of stay and vehicle emissions			
<b>London river services and river crossings</b>					
152	Improvements to Thames passenger services	Consistent service standards, examine opportunities for enhanced pier facilities (including at North Greenwich and Isle of Dogs) and development of the River Concordat			
153	New Thames passenger services	Encourage new passenger Thames services to support development of VNEB Opportunity Area			

Appendices

Reference Number	Scheme	Description	Completion 2010– 2012*	Completion 2013– 2020†	Completion Post 2020
154	Promote the use of Thames and other waterways for freight movement	Enable freight access to waterways			
<b>Other measures</b>					
155	Integrated fares and ticketing	Integrated fares collection system and ticketing across all London public transport services, including Oyster zonal fares on all suburban rail services and Oyster on river services			
156	Enhanced travel planning tools	Ongoing programme of enhancements to information availability, including TfL Journey Planner			
157	Richmond 2009 to 2012 Smarter Travel Programme	Complete the three-year programme of smarter travel initiatives in Richmond			
158	Targeted smarter travel initiatives	Smarter travel initiatives to reduce the environmental impact of travel, make more efficient use of limited transport capacity and/or encourage active travel such as walking and cycling			
159	Increased use of travel plans	Increased use and power of travel plans for workplaces, schools and individuals			
160	Continued development and roll-out of freight initiatives	Town centre and area-based DSPs, CLPs and promotion of collaborative approaches such as consolidation centres and/or break-bulk			
161	Promotion of freight best practice	Development and incentivisation of membership of the FORS and develop functionality of the freight information portal			
162	Integrated transport policing	Establish joint transport policing intelligence unit and reporting systems to enable integrated working between the agencies policing London's transport system			

Reference Number	Scheme	Description	Completion 2010– 2012*	Completion 2013– 2020†	Completion Post 2020
163	Tackling antisocial behaviour	Programme of initiatives to tackle antisocial behaviour, including preventative and enforcement measures			
164	Enhanced CCTV capability and Help points	Including introduction of two-way audio-visual communication at Help points and further expansion of CCTV coverage and enhanced 'smart' monitoring capability			
165	Transport system climate change adaptation	Develop a strategy to improve transport system resilience and safety to the impacts of climate change			
166	Olympic & Paralympic Transport Legacy Action Plan	A range of interventions to secure the maximum benefit of the physical infrastructure provided for 2012; staging of the event and longer term opportunities this presents; behavioural change as a result of the event; and supporting convergence.			
<b>Accessibility</b>					
169	Chelsea Hackney line	All new infrastructure will be fully accessible			
170	New accessible tube and rail rolling stock	New rolling stock will be Rail Vehicle Accessibility Requirements compliant			
171	National Rail step-free access station programme	DfT's Access for All to increase number of step-free rail stations in London to 160 (47 per cent) by 2015, from around 100 today			
172	Continuing roll out of step-free access schemes on the Underground	Continuing programme of station step-free access schemes			
173	Tube platform to train level-access	Platform humps rolled out across the Tube system as new rolling stock is introduced to provide level access from platform to train			

Appendices

Reference Number	Scheme	Description	Completion 2010– 2012*	Completion 2013– 2020†	Completion Post 2020
174	Tube station upgrade programme	To include some of the following features at upgraded stations: - Audible and visual information at all platforms and ticket hall - Improved handrail colour contrast and design - Improved visual contrast at leading edge of each riser and tread on steps - Removing, modifying or highlighting obstructions - Induction loops at Help and Information points - Listening points at some stations - Improved lighting and public address systems - Improved signs and wayfinding - Tactile walking surfaces on every platform and staircase - Increased amounts of seating - Accessible unisex toilets at all step-free stations where toilets already exist			
175	Tube wide-aisle ticket gates	Explore opportunities for further implementation of wide-aisle ticket gates			
176	Tube travel information	Accessible Tube map showing step-free and mostly step-free routes			
177	Bus network development	Regular review of bus network, including review of the strategic priorities underlying the process approximately every five years, to cater for population and employment growth, maintain ease of use, attractive frequencies and adequate capacity, reliable services, good coverage and good interchange with other modes			

Reference Number	Scheme	Description	Completion 2010– 2012*	Completion 2013– 2020†	Completion Post 2020
178	Bus stop accessibility	Improved accessibility of bus stops, for example, through removal of street clutter			
179	Development of a New Bus for London	New bus will include enhanced accessibility design features			
180	Accessible crossings programme and urban realm improvements	Improve the physical accessibility of the streetscape, particularly in town centres and on routes to stations and bus stops, taking accounts of the whole journey approach			
181	Travel information	Improve the availability, quality, quantity and timeliness of accessibility-related travel information			
182	Staff availability	To ensure staff are available to provide assistance, information and reassurance throughout services hours			
183	Staff training	To ensure the needs of the disabled passengers are understood by all frontline staff			
184	Initiatives to improve attitudes of staff and travellers	Stakeholder, staff and public initiatives to improve staff and public attitudes and raise awareness of people's accessibility needs			
185	Enhanced Dial-a-Ride service	New Dial-a-Ride fleet and review of operations			
186	Further Extensions to the public transport system	All extensions to the public transport system will meet the requirements of the Disability Discrimination Act			
187	Blue Badge discounts	Discounts on Congestion Charging schemes			

Appendices

Reference Number	Scheme	Description	Completion 2010– 2012*	Completion 2013– 2020†	Completion Post 2020
188	TfL's Disability Equality Scheme (DES)	A statutory document, updated every three years, which sets out in further detail what TfL is going to do to ensure that the services it offers are accessible to disabled people			

## APPENDIX 2

### Roles and responsibilities for managing London’s strategic road corridors

The table below sets out the roles and responsibilities for managing the strategic road corridors in London. The table is ordered by the Proposals set out in the MTS. Operational improvements offer significant opportunities to improve journey time reliability and manage congestion (delay) in the short term. Beyond this, the way in which the road network is managed will make a crucial contribution to improving quality of life, safety and environmental outcomes.

Tool	Responsible party		
	TLRN	SRN	Other Borough Roads
<b>Maximising the efficient and reliable operation of the road network</b>			
Monitor and report on the overall performance of the network	TfL	TfL	TfL
Develop a better understanding of the performance of the network to identify pinch-points and hot spots and target interventions to improve journey time reliability for all users.	TfL	Boroughs	Boroughs
Further use of Intelligent traffic control systems (e.g. urban traffic control system and SCOOT)	TfL	TfL	TfL
Review traffic signal timings	TfL	TfL	TfL
Remove unnecessary traffic signals	TfL	TfL/Boroughs	TfL/Boroughs
Upgrade, rationalise or remove traffic management equipment	TfL	Boroughs	Boroughs
Pedestrian countdown	TfL	TfL	TfL
Targeted programme of works including junction upgrades to improve traffic flow and conditions	TfL	Boroughs	Boroughs
Utilise advances in ITS technology	TfL	TfL	TfL
Improve/simplify traffic regulations (e.g. parking/loading/stopping restrictions)	TfL	Boroughs	Boroughs
<b>Minimising the impact of planned interventions</b>			
Monitor and report on the impact of planned interventions	TfL	TfL	TfL
Develop a better understanding of the cause/effect nature and impact of planned interventions to identify and target appropriate measures to mitigate disruption caused by such events	TfL	Boroughs / TfL	Boroughs



Implement and embed London Permit Scheme for Roadworks	TfL	Boroughs / TfL	Boroughs
Sign up to and apply the key principles of the Mayor's Code of Conduct for Roadworks, including: <ul style="list-style-type: none"> <li>• Working outside of peak hours, implementing 24/7/ or extended hours working wherever possible</li> <li>• Sharing long term plans and improving collaboration</li> <li>• Coordinating roadworks activity and implementing 'workathons'</li> <li>• Using plating or bridging techniques and innovative road engineering techniques</li> <li>• Providing standard information signage/courtesy boards at works sites</li> <li>• Promoting first time reinstatement at works sites</li> </ul>	TfL	Boroughs/ TfL	Boroughs
Fully utilise "LondonWorks" to enable improved coordination of roadworks between highway authorities and utilities	TfL	Boroughs	Boroughs
Incentivise shorter works durations by implementing "lane rental"	TfL	Not currently applicable	Not currently applicable
Improve enforcement of works sites to ensure application of best practice (including by making better use of other enforcement resources, e.g. parking wardens and network inspectors)	TfL	Boroughs	Boroughs
Minimising disruptions from unplanned events			
Monitor and report on the impact of unplanned events	TfL	TfL	TfL
Identify and eliminate potential causes of unplanned disruption	TfL	TfL/Boroughs	TfL/Boroughs
Minimise response and clear up times on incidents	TfL	TfL/Boroughs	TfL/Boroughs
Effectively manage traffic around such incidents	TfL	TfL/Boroughs	TfL/Boroughs
Provide better information before and during journeys and in the vicinity of incidents	TfL	TfL	TfL
Improve response times to incidents and target resources to key locations where incidents have the most effect on overall network reliability	TfL	TfL/Borough	Boroughs

Maintaining road network assets for safety and efficiency			
Deliver maintenance and renewal programmes to ensure that the TLRN and borough road network is fit for purpose and serviceable	TfL	Boroughs	Boroughs
Ensuring highway structures are inspected regularly	TfL	Boroughs	Boroughs
Developing a Tunnels and Long Underpasses Safety Enhancement Programme	TfL	Boroughs	Boroughs
Developing the road network where appropriate	TfL		Boroughs
Where a strong economic case exists and environmental and/or other benefits are delivered, pursue targeted improvements to the road network to improve overall reliability	TfL	Boroughs	Boroughs
Achieving targeted modal shift from car journeys to more sustainable modes			
Walk capacity and volume	TfL	Boroughs	Boroughs
Cycle capacity and volume	TfL	Boroughs	TfL/Boroughs
Bus priority	TfL	Boroughs	Boroughs
Bus service planning	TfL	TfL	TfL
Non-highway improvement in transport	TfL/Boroughs	TfL/Boroughs	TfL/Boroughs
Other Factors			
Road safety	TfL	Boroughs	Boroughs
Urban realm	TfL/Boroughs	Boroughs	Boroughs
Demand management	TfL/Boroughs	Boroughs	Boroughs
Freight operations	TfL/Boroughs	Boroughs	Boroughs

*The Network Operating Strategy provides information and guidance to local highway authorities and others on TfL's operational management of the road network in London. The purpose of the document is to provide a strategic framework for the operational management of London's road network, together with specific advice and guidance for those involved in day to day decision-making in TfL, the London Boroughs and other organisations charged with the delivery of the road management related aspects of the Mayor's Transport Strategy (MTS).*