



Transport plan for the east sub-region 2012 update

MAYOR OF LONDON

Transport for London



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I. Commissioner's foreword

Publication of the transport plan for the east sub-region in November 2010 reflected significant collaboration between TfL, boroughs, the Regional Partnership, the London Thames Gateway Development Corporation, and the London Councils as well as a range of other stakeholders.

It is now just over a year since the plan was published. The sub-regional process is an ongoing programme, enabling TfL boroughs to work closely to address strategic issues, progress medium- and longer-term priorities and also respond to changing circumstances.

This document, together with its counterparts for the other sub-regions, is intended to be an 'addendum' to the original plan – providing a snapshot of the latest situation and very much rooted in the ongoing collaboration.

An update was considered useful to allow a number of developments to be incorporated, and to bring the plans up to date in a number of respects.

Firstly, it provides an opportunity to report on the implementation of funded transport schemes and progress with other schemes.

Secondly, this update allows developments in other, related, policy areas to be incorporated in the plans. These support a renewed emphasis on

facilitating sustainable growth. This is the principal aim of the new National Planning Policy Framework which the Government announced earlier this year. It is also integral to the vision driving the London Plan, which was adopted in July 2011.

Thirdly, the update incorporates the latest modelling and analysis to refine the definition of the challenges.

Fourthly, the Addendum also allows progress made across the east sub-region, for example through borough LIPs and the sub-regional Panels, to be reflected.

Over the past year there have been some notable successes for London's transport system, many of them on the national and TfL rail networks. The Secretary of State's recent announcement on High Speed 2 marks an important milestone for a project which offers enormous potential to strengthen our ability to generate economic growth in the future. It is a key priority to ensure that the east sub-region benefits fully from HS2.

The initial stage of the Thameslink project was completed in December 2011, increasing morning peak seat capacity between Blackfriars and King's Cross St Pancras by 17%. Over the coming months the extension of the London Overground from Surrey Quays to Clapham Junction will also start

operating, completing the transformation of London's orbital rail system.

The Government's announcements of support for renewal of the safeguarding of the Crossrail 2 route and ongoing work to assess route options provides an opportunity to ensure future schemes serve future needs as closely as possible.

The financial context remains constrained, but it is vital that we look beyond the current TfL Business Plan, and continue to plan and address the challenges which a growing population brings. In fact rather than diminishing the importance of forward planning, the difficult economic situation makes it all the more important, because, as the Chancellor has made clear, investment in transport infrastructure will play a vital role in stimulating future economic growth.

Experience gained from working through the sub-regional panels, and the benefits of the latest sub-regional transport modelling which TfL has undertaken, are also incorporated in the Addendum. This has allowed us to update our understanding of the transport challenges facing the east sub-region and to refresh our view as to how to these could best be met.

It is for the east sub-regional Panel to discuss this draft update and agree the

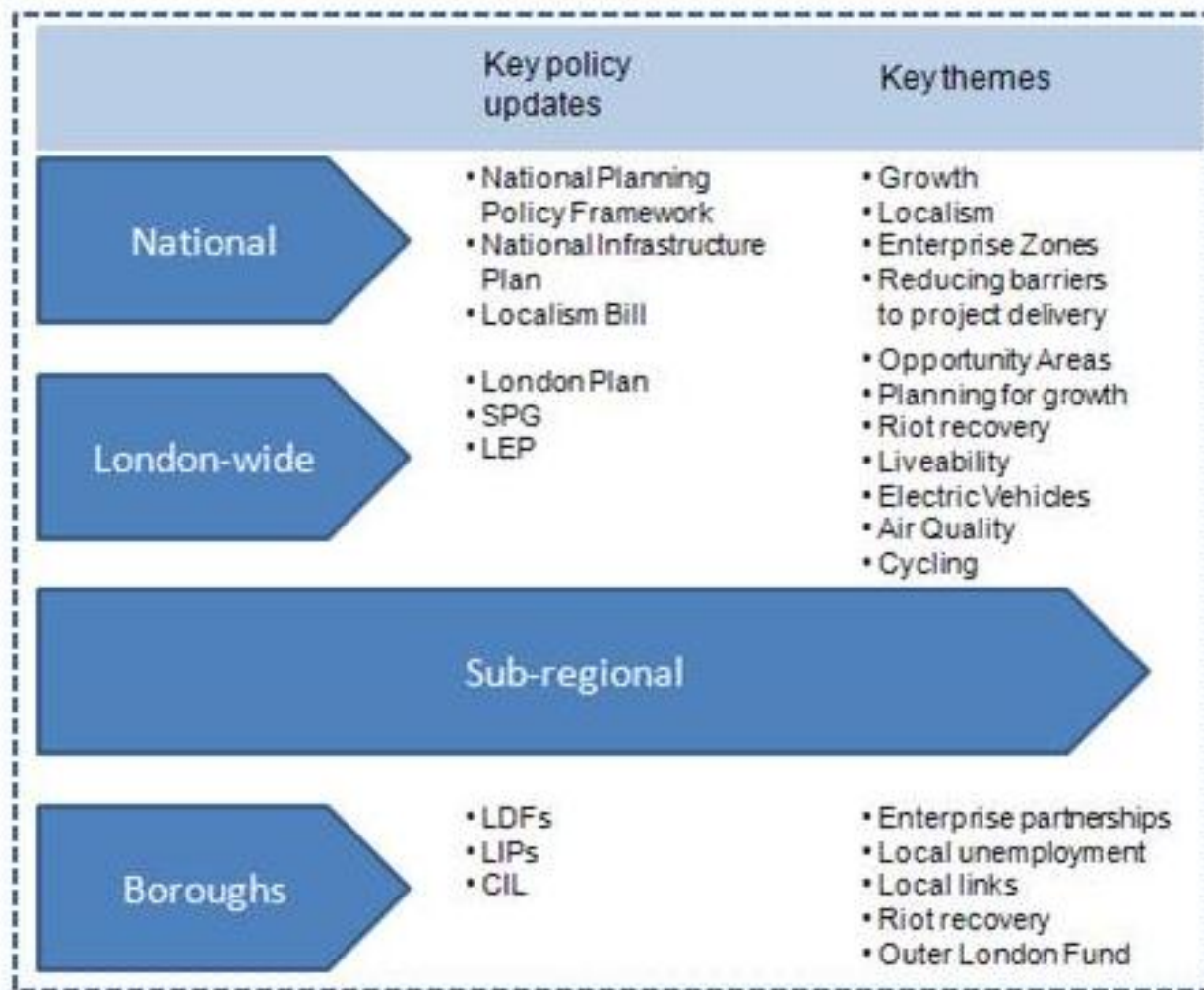
next steps. I would welcome discussion and comments on the content and process so that together we can continue to plan this great city and ensure that the east sub-region fulfils its significant potential within it.

*Peter Hendy
Feb 2012*



2. Policy context

2. Policy context



The context for transport in London has changed in a number of key ways, with changes taking effect at national, regional, sub-regional, and borough levels.

National level

At a national level, the increased level of concern over the state of the world economy, and the heightened focus on economic growth, is reflected in a number of policies.

The Chancellor has published a National Infrastructure Plan aimed at stimulating economic growth. The Plan refers to exploring options for river crossings as well as a commitment to build a lower Thames Crossing and reduce rail fare increases.

The new draft National Planning Policy Framework abolishes much national planning

guidance and in an effort to unlock development adopts a 'presumption in favour of sustainable development', which is aimed at reducing barriers to project delivery. It also focuses strongly on business growth. It is unclear what the outcomes will be for the east sub-region but given the significant quantum of growth to be accommodated, transport policy will need to be responsive to changing needs.

The Localism Bill was given Royal Assent on 15 November 2011, becoming an Act. This Bill is intended to shift power from central government back into the hands of individuals, communities and councils.

The Aviation National Policy Statement may also have relevance to the east sub-region.

London-wide level

At the London-wide level, the adoption of the new London Plan, with its emphasis on high-quality growth, collaboration with delivery partners, and fostering localism, highlights the Opportunity Areas as a focus of growth. In the east sub-region there are 12 Opportunity Areas and two areas of intensification.

The east sub-region also has eight areas designated as Strategic Outer London Development Centres. Stratford, for example, is a key outer London centre for leisure, office, Higher Education and retail.

The Olympic Legacy Action Plan and host boroughs' document, Securing the Olympic and Paralympic Transport Legacy, set down transport challenges, and close working with the newly designated Mayoral Development Corporation will be required.

The events of this summer in which rioting broke out in many areas of the capital and in other cities in the UK mean that the role of transport in facilitating social inclusion and providing access to employment and other opportunities will be scrutinised more closely than ever. In the east sub-region this is likely to include renewed emphasis on ensuring that the urban realm underpins a sense of local pride, as well as facilitating walking and cycling.

Sub-regional level

At a sub-regional level, planning and timely delivery of transport measures to support growth is a key issue.

The east sub-region faces particular challenges in this regard, with London Plan projections that it will accommodate around half of London's population growth and around a quarter of London's employment growth to 2031, and the recent designation of the Royal Docks as an Enterprise Zone.

However, it is not just the scale of growth which is a challenge. Significant changes in land use, anticipated demographic change, and aspirations that the legacy of the Olympics will bring convergence in socio-economic outcomes all imply changes in travel demand., as does the recent opening of the Westfield shopping centre in Stratford.

While supporting and driving this growth, the sub-region will also need to ensure this growth is sustainable – and that the quality of life for Londoners is maintained and as far as possible enhanced.

Ensuring that growth is not constrained by transport challenges and that we can support more sustainable travel options is one of the principal objectives of the ongoing work in the sub-region. There is also an aspiration to rebalance the national economy away from a perceived overreliance on the financial services sector, which could well have sub-regional impacts.

Borough level

At a Borough level, the Local Development Frameworks and Local Implementation Plans published by the east sub-region boroughs (those of Havering and Tower Hamlets, for example) will also strongly influence the sub-region's continued development.

Local needs will also be influenced by the findings of the Outer London Commission, re-formed to examine issues such as town centre development and the need for flexibility in applying parking standards.

The Mayor has established a Regeneration Fund (£70 million) as a direct response to the riots. This will fund major long term improvements to the damaged town centres and High Streets. Initial bids from boroughs were submitted in mid-November.

3. Progress report

3. Progress report: 2011 year in review

The east sub-regional panel met four times in 2011, with full representation from the east boroughs, GLA, LDA, the London Thames Gateway Development Corporation, and the Partnership. Thurrock and Dartford council representatives also attended to provide a useful outside London perspective.

At the inaugural panel meeting we agreed some key priorities for the panel to focus on during the year:

Growth – how do we address the challenges brought about by high levels of growth

Capacity of Network – to understand and address the cumulative impact of development on the network

Gap Analysis – e.g. River Crossing and connectivity

These key priorities underpinned and guided the panel meetings and discussions. Regular updates on the sub-regional work, including planning for growth, generated lively and constructive contributions.

Through a number of excellent presentations from boroughs, GLA, and TfL, the panels complemented the transport planning work with a broader understanding of the challenges and opportunities in the region. This included an overview of the key drivers for change and regeneration, outlining how emerging Government policies and reforms may impact on housing, education,

health and the economy of the region. A session on the use of the new sub-regional models explained how they could assist in assessing the sub-region's transport challenges and solutions.

The panel also looked beyond the region and London to take in examples of best practice in transport planning. This included exploring examples of residential developments which encourage more sustainable modes of travel whilst managing travel demand, such as Hammarby in Stockholm.

In addition to this broader perspective the Panel also focused in on borough and area specific planning work for examples of best practice. The GLA gave an insightful summary of the London Riverside OAPF work for example and Tower Hamlets shared their work on working towards a new long term transport strategy for the borough.

The Panel identified the key role that proactive bus service network planning could have in providing new and strengthened links to key growth locations in presently under-developed areas to embed sustainable transport opportunities at early development stages.

The Panel also had the opportunity to discuss the planned analysis work on the alignment of Borough LIPs to the Regional Transport Plan and the Mayors Transport Strategy.



Use of Sub Regional models

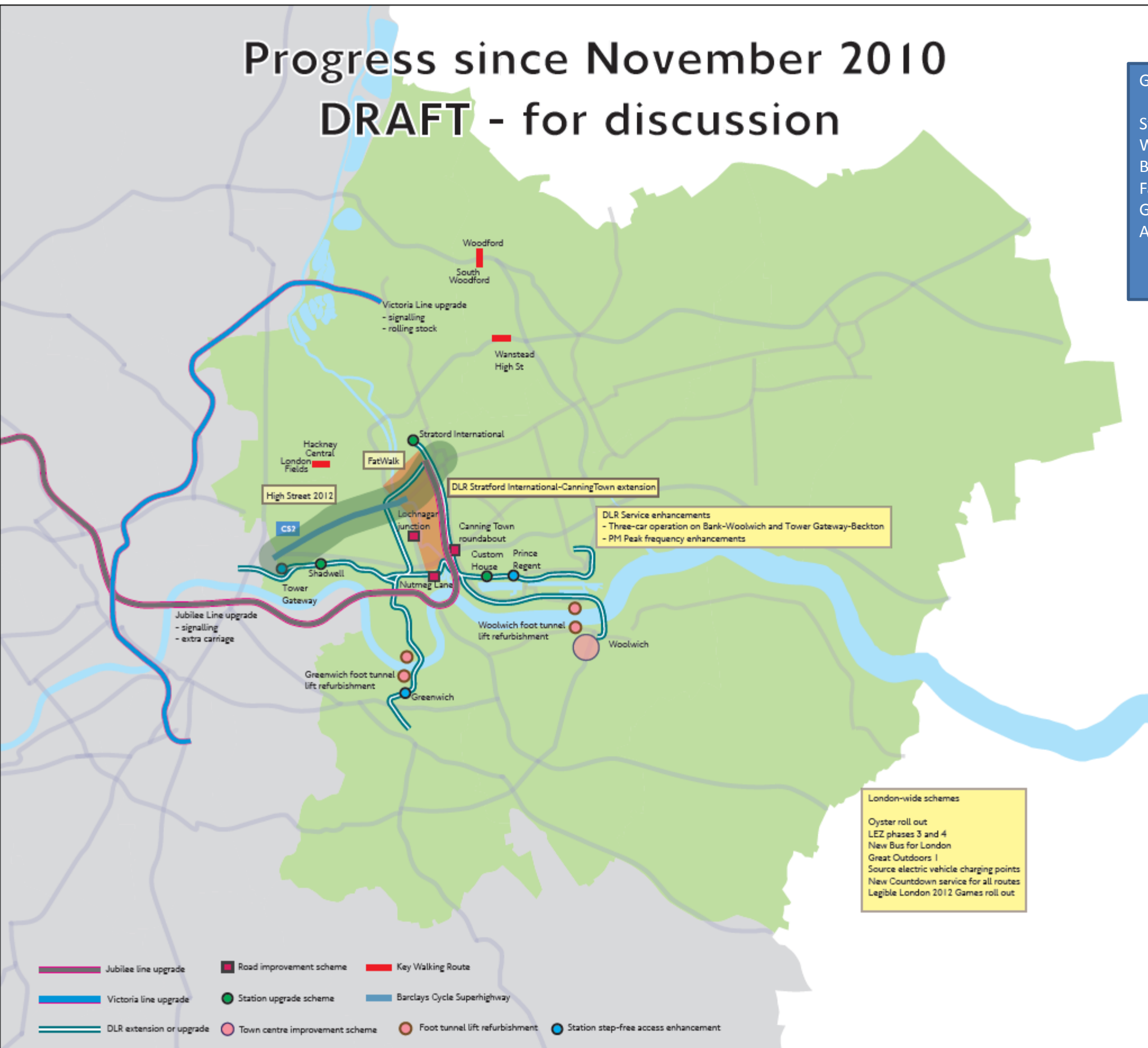
TfL's suite of multi-modal models continue to be used to help understand transport challenges and effects of interventions at a number of locations in the East sub-region. This has included use for the London Riverside OAPF, Olympics SPG as well as LB Tower Hamlets Transport Strategy and for strategic inputs to Transport Assessments of planning applications.

Progress since November 2010

DRAFT - for discussion

Great Outdoors schemes including:

- St Chad's Park
- Woolwich Town Centre
- Beckenham Place Park
- Fairlop Plains Country Park
- Gants Hill
- Aldgate Gyratory/Braham Street Park



London-wide schemes

- Oyster roll out
- LEZ phases 3 and 4
- New Bus for London
- Great Outdoors 1
- Source electric vehicle charging points
- New Countdown service for all routes
- Legible London 2012 Games roll out

3 Further planned and funded measures

Building on the progress made in the last year, these funded schemes and programmes will deliver further improvements for the east sub-region.

London Underground

A new timetable will be introduced on the Victoria line in 2013, bringing 33 train per hour capability to the route core. On the sub surface lines, new walk-through trains with air conditioning are being introduced and will be fully in service on the District line by 2016. A signalling upgrade on the District line, set for 2018, will deliver a further 14% uplift in capacity.

Emirates Air Line

The Emirates Air Line will be the first urban cable car system of its kind in the UK, and a much-needed river crossing in the area. Open to cyclists and pedestrians, the scheme will increase connectivity between the Greenwich Peninsula and the Royal Victoria Docks from summer 2012.

London Overground

The Overground extension from Surrey Quays to Clapham Junction is due to open in December 2012.

National Rail schemes

Three Thameslink Phase 2 contracts for track, signalling and station redevelopment at London Bridge have been awarded, and a 1,200-vehicle fleet of Siemens trains is being procured which will facilitate commencement of metro-style services in 2018.

Enhancements to High Speed 1 domestic services, and on the West Anglia, Essex Thameside and Great Eastern lines will bring increased capacity to key commuting links.

Crossrail

The main civil engineering construction works for Crossrail are planned to complete in 2017, with services commencing on the

central section between Royal Oak and Canary Wharf by late 2018, followed by a phased introduction of services along the rest of the Crossrail route over several months.

Buses

The bus network will continue to be developed to meet the emerging needs of the east sub-region, catering for growth in population and the specific impacts of developments such as the Westfield Shopping Centre at Stratford.

Building on the first phase of the East London Transit, which sees services running from Ilford to Dagenham Dock station via Barking town centre, the second phase will run from Barking town centre to the Barking Riverside development. Highway improvements for phase 1b are underway should expect to be completed in late 2013.

Over half of London’s 19,500 bus stops now meet all three of the accessibility criteria, including protection from parking/loading obstructions, with the east sub-region comparing well with others in London. Progress has been strongest in Hackney and Royal Greenwich.

| | % Compliant |
|------------------------|-------------|
| East sub-region | 62% |
| Barking & Dagenham | 59% |
| Bexley | 51% |
| Greenwich | 82% |
| Hackney | 88% |
| Havering | 33% |
| Lewisham | 70% |
| Newham | 49% |
| Redbridge | 60% |
| Tower Hamlets | 62% |
| Central | 72% |
| North | 46% |
| South | 62% |
| West | 63% |
| All London | 62% |

Good progress has also been made with provision of new bus shelters.

By the end of 2012 there will be 300 diesel-electric hybrid buses in service. These are expected to yield savings of around 30% in fuel use, and emission levels, compared to standard diesels and a reduction in noise.

Cycling, walking, and the urban realm

The extension of Barclays Cycle Hire to the east will see the scheme reach as far as Bow by Spring 2012, covering an additional 20km², including all of the London Borough of Tower Hamlets and North Shoreditch in Hackney. Hundreds more docking points are also being added in central London.

The Mayor and TfL announced funding to develop cycling improvements along the Superhighways, including parking and training. In addition, 80,000 more cycle parking spaces will be provided across London by 2015, including £1.3 million joint TfL and Network Rail funding for cycle parking at stations managed by Train Operating Companies over two years.

Four key delivery priorities have been identified to 2015:

- Reducing the number of cyclists killed and seriously injured across London, including targeted improvements at collision hotspots and urgent action to improve cycle HGV safety. This includes redesigning cycle facilities at Bow Roundabout to improve safety for cyclists.
- Working with Biking Boroughs (need to list) to unlock cycle potential in outer London
- Improving the cycling experience in London, including improved road maintenance regimes, wayfinding and cycle routes
- Harnessing excitement about the Olympics, including local Greenways; a walking and cycling incentives scheme and a large-scale active travel programme for the Games and beyond.

The second phase of the Wanstead High

Street scheme and ongoing work on the High Street 2012 programme will .

Highway

The Lodge Avenue DBFO agreement and Canning Town Roundabout scheme will help to address issues at these key locations.

Accessibility

TfL is continuing to develop Journey Planner based on feedback from users and best practice. Journey Planner is being updated to enable customers to plan journeys with step-free access, not only from street to platform, but throughout the whole journey, including from platform to train.

This will significantly improve Journey Planner for those who require step-free access for their whole journey. Furthermore, Journey Planner will feature the additional capability to re-route journeys based on the availability of accessibility related infrastructure. For example, if the lifts at a certain station are out of service, then Journey Planner will be able to re-route the journey to the nearest step-free station.

Further measures will be needed

Despite the major levels of investment, a number of challenges remain for the east sub-region specifically and across the sub-regions overall. It is therefore important that – despite the financial constraints we are currently facing – we continue to explore potential additional options to address the key challenges and plan for the longer term to ensure growth within the sub-region is sustainable.

4. Update on the east sub-region's transport challenges

4. Update on the east sub-region's Transport Challenges

Introduction

Challenges for the east sub-region were identified as part of the 2010 Plan. These have since been consolidated with the London-wide challenges of improving air quality, reducing emissions of CO2, and achieving the targets for an increase in the mode share of cycling and walking, which are reflected in the Mayor's Transport Strategy and require concerted action at the sub-regional level. These eight key challenges for the east sub-region are set out below.

The latest assessments of the focal points and severity of these challenges are informed by the enhanced capability of our modelling and analysis, particularly the availability of the sub regional model suite as well as any new or updated sources of data.

Key Challenges for the east sub-region

-  **Manage highway congestion and public transport crowding and make efficient use of the transport network**
-  **Reducing physical barriers to travel including the River Thames in East London and improve the resilience of the transport network**
-  **Ensure that the benefits of existing and funded transport investment are maximised**
-  **Supporting the efficient movement of goods and encourage sustainable freight movement**
-  **Improve connectivity to, from, and within key locations to support existing communities and growth**
-  **Transforming the role of cycling and walking in the sub-region**
-  **Helping London to meet the Mayor's CO2 targets**
-  **Improving air quality to meet and exceed legal requirements and ensure health benefits for Londoners**

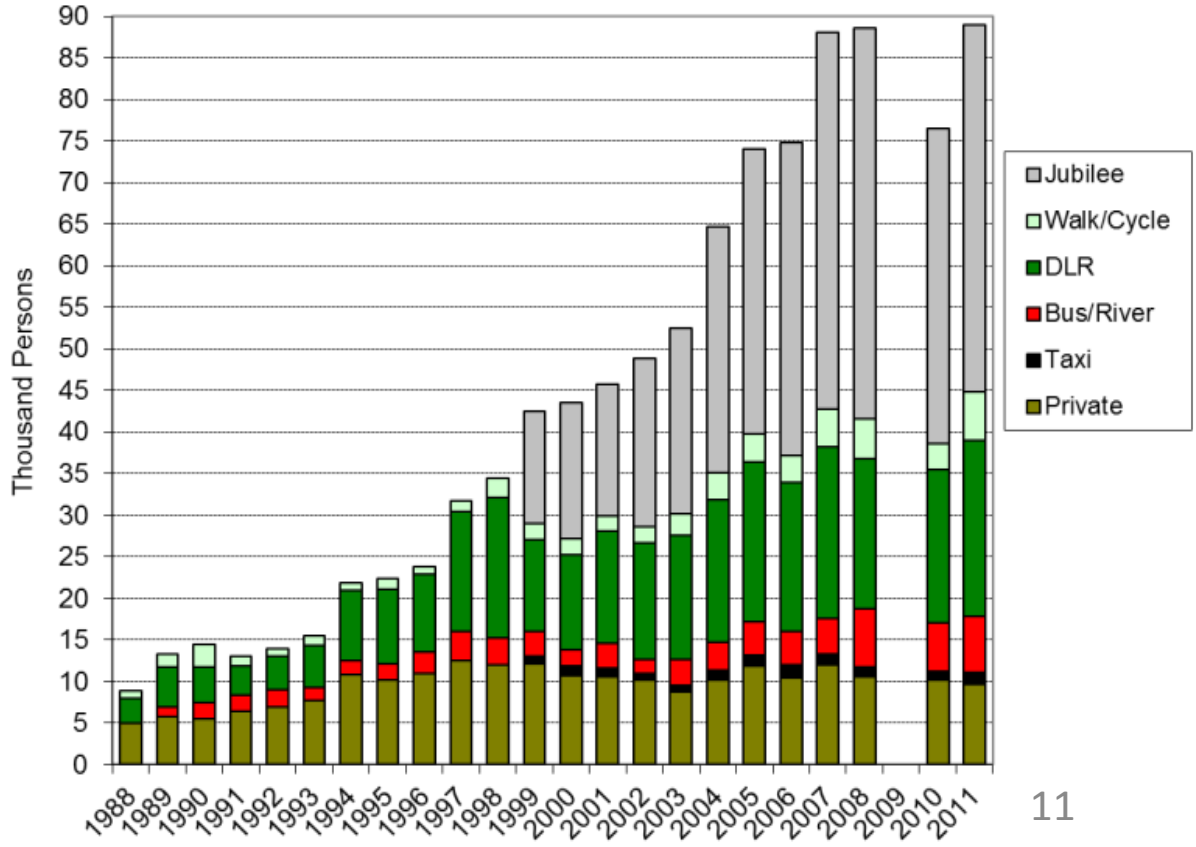
Growth and regeneration – the context in the east sub region

The latest London Plan forecasts highlight that the east sub-region's population is projected to grow significantly over the coming twenty years, with the highest growth expected to be seen in the London Boroughs of Tower Hamlets and Newham. Greenwich is also anticipated to see significant population growth, but relatively little increase in employment.

Employment growth is projected to be concentrated in the Isle of Dogs and Metropolitan town centres, and fostering this will be a key priority. The chart below, taken from the Isle of Dogs cordon survey, shows how travel demand has grown as the area has developed, and the contribution that different modes make in providing access to the Isle of Dogs.

Growth of the scale envisaged will inevitably increase pressure on the transport network, with the east sub-region expected to see total trips increase by more than 25% to 2031. The geographical distribution of these trips will also change over time and will be influenced by decisions on development locations. For example, development to the east and south east of the Isle of Dogs may result in a more balanced pattern of commuting from the east and west.

A significant proportion of the growth expected in the east sub-region will be in Opportunity Areas. Work is ongoing between GLA, TfL and boroughs and key stakeholders to understand the infrastructure requirements to enable these areas to develop.



4. The east sub-region's transport challenges: key points



Manage highway congestion and public transport crowding and make efficient use of the transport network

Over the last 20 years, significant investment has helped to transform key places in the east sub-region. Currently committed investment will help to relieve severe crowding on the Jubilee line and absorb some demand to and from Canary Wharf.

The major investment in the Overground will also significantly reduce crowding on the North London Line.

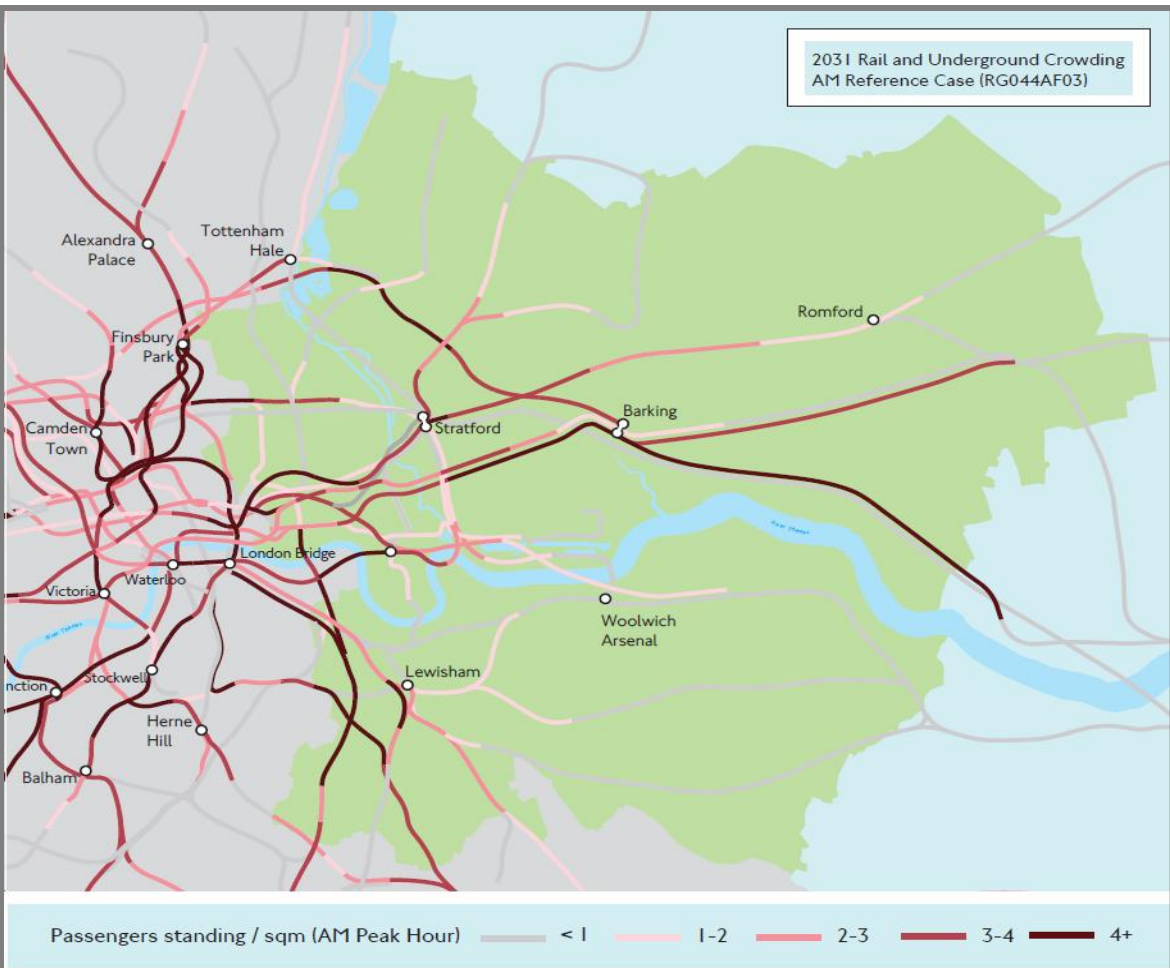
However, many of the rail links in the sub-region

will remain crowded in 2031, with the Thameside route becoming more crowded. Maintaining sufficient capacity on the public transport network is important to support future growth in the area.

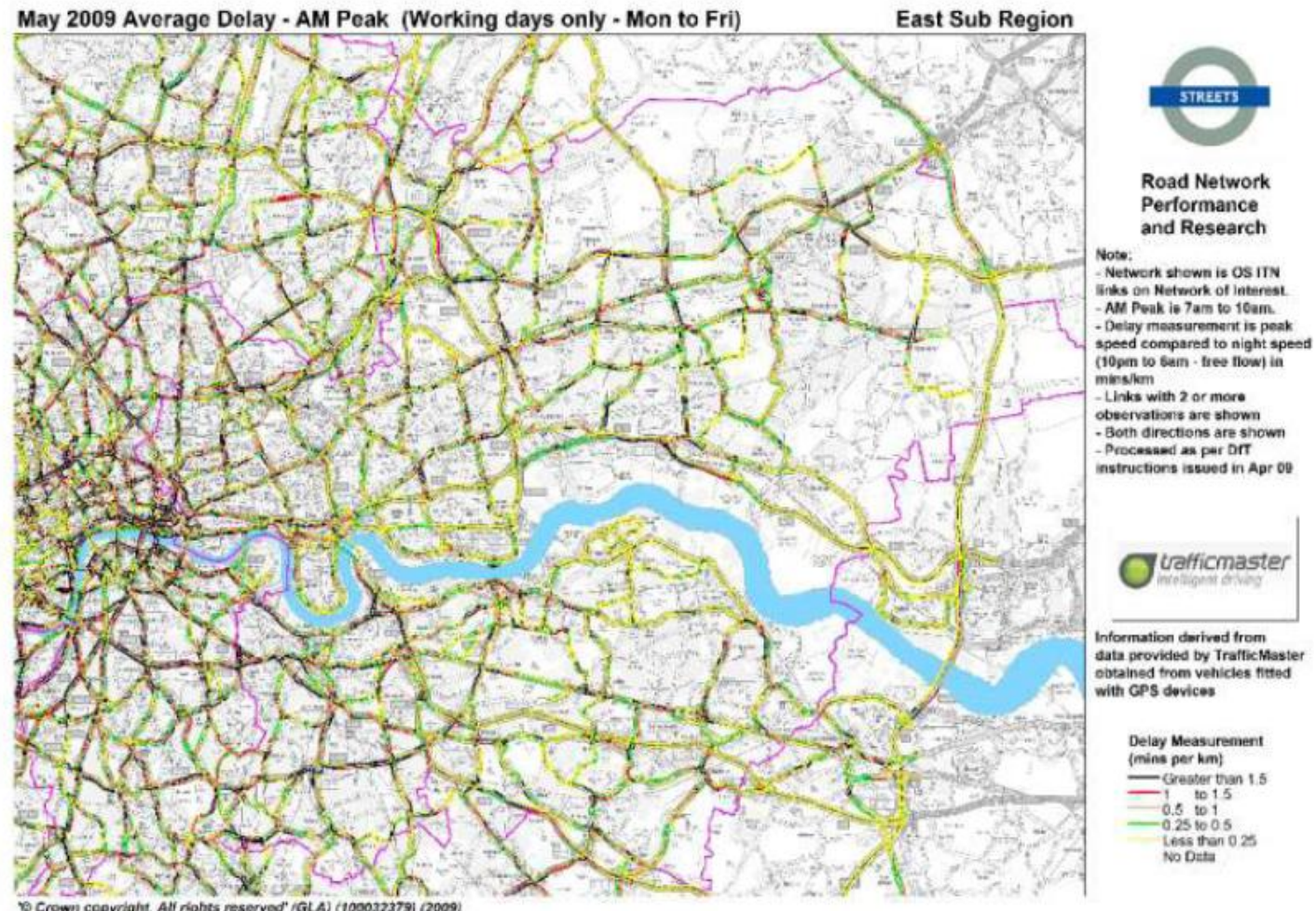
Highway congestion affects many parts of the sub region today, particularly in inner London. Over the next twenty years, congestion, measured in terms of vehicle delay per km, is projected to increase by around 18%, with the A12, A13 and A2 likely to experience particular

pressure.

Current and future congestion issues need to be addressed to maintain reliability of the network which also affects bus reliability, freight as well as impacting on other road users such as pedestrians & cyclists.



Peak hour rail and underground crowding in 2031, with currently committed investment



Highway Congestion in 2009: Delays in minutes per kilometre

4. The east sub-region's transport challenges: key points



Reducing physical barriers to travel, including the River Thames in east London and improve the resilience of the transport network

There are locations in the east sub-region where travel is physically curtailed by the presence of major barriers – for instance the River Thames, or major roads such as the A13 and southern sections of the A12.

Pressure to address the significant barrier effect of the River Thames in east and southeast London is growing. At the moment, the number of routes available to vehicles is limited. There is a width restriction at the Rotherhithe Tunnel and a height restriction at the Blackwall Tunnel. These can lead to tunnel closures and delays for all vehicles.

The lack of resilience and choice leads to further delay and congestion for drivers – at the Blackwall Tunnel this is on average 20 minutes per vehicle in the morning peak. For businesses, it is an additional cost and can discourage investment. Without action now, these problems will only get worse. In order to cater for expected significant levels of growth in the surrounding area, further highway river crossing capacity is required.

Land bridges are also likely to be needed on the A12 to support development either side of this major route, and measures are also needed to minimise severance at the Royal Docks.



Ensure that the benefits of existing and funded transport investment are maximised

The 2012 Olympic and Paralympic Games have brought significant levels of investment to the east sub-region in recent years, with transformational impact in and around the Olympic Park itself.

The implementation of Crossrail also represents a major focus for investment in the sub-region, affording opportunities to provide an important uplift in the quality of transport interchanges – an issue on which all stakeholders will need to work together. It also is of crucial importance (and indeed a part of the Legacy Action Plan) that the benefits of these major investments are maximised.

Development of the bus network and measures to encourage walking and cycling are likely to be key means of increasing catchment of key infrastructure improvements and investment. Ensuring development is well-integrated into the transport network is also important.



Supporting the efficient movement of goods and encourage sustainable freight movement

The east sub-region has historically had a great deal of industrial land, and the significant growth expected here will inevitably bring with it further increases in the need for freight and servicing.

The recent expansion of the Excel centre, and the new Westfield shopping centre at Stratford, as well as the Olympic and Paralympic Games, all carry a freight and servicing requirement. It will also be vital to manage the impact of the proposed Shellhaven port on junction 30 of the M25 as well as on distribution into London and the rest of the UK.



Improving connectivity to, from and within key locations

Investment is taking place in east London to provide the transport infrastructure to support the 2012 Olympic and Paralympic Games, wider growth aspirations and help support regeneration.

However there are several places identified within the region that will remain isolated and suffer barriers to travel, where modelling of the transport corridors into these places show either connectivity issues or where limited corridors exist they are shown to be heavily crowded. Highway links across the River Thames are particularly problematic. Improved connectivity is needed within the London Riverside Opportunity Area as well as it being better connected to areas adjoining it.

This connectivity is often associated with change arising from development. Different mixes of development are considered as part of Opportunity Area development and masterplanning exercises.

4. The east sub-region's transport challenges: key points

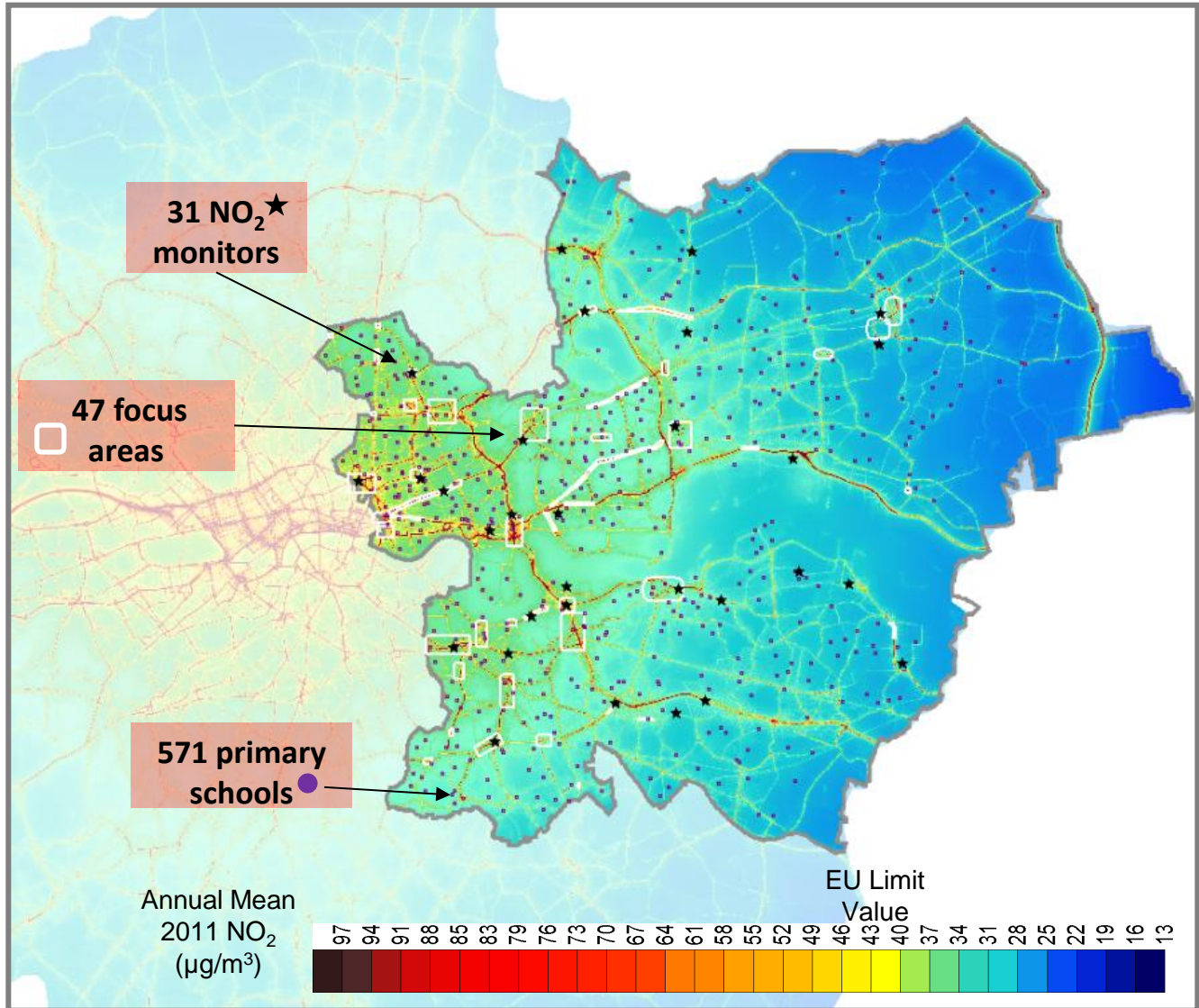


Improving air quality to meet and exceed legal requirements and ensure health benefits to Londoners

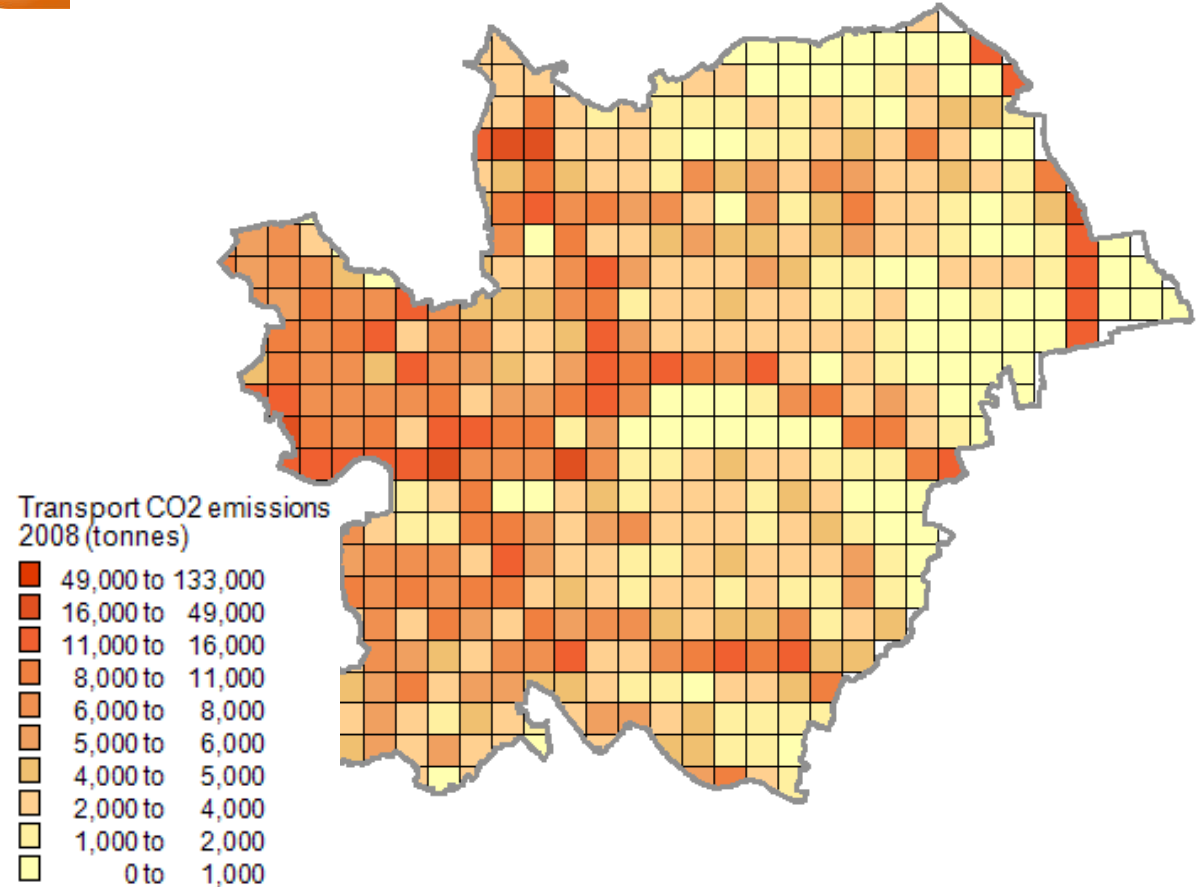
Transport's major contribution to concentrations of atmospheric pollutants is apparent on the map below.

Around three in every hundred east Londoners live in areas which exceed the EU limit value for concentrations of oxides of nitrogen.

To try to reduce this number, NO₂ focus areas have been identified by TfL, to reflect current concentrations of NO₂, levels of public exposure, any relevant local characteristics, and predicted air pollution trends for the future. The areas identified have been cross-referenced with boroughs' Local Air Quality Monitoring. A package of local measures to address NO₂ at these sites will be developed and delivered by TfL, the GLA and boroughs.



Helping London to meet the Mayor's CO₂ targets



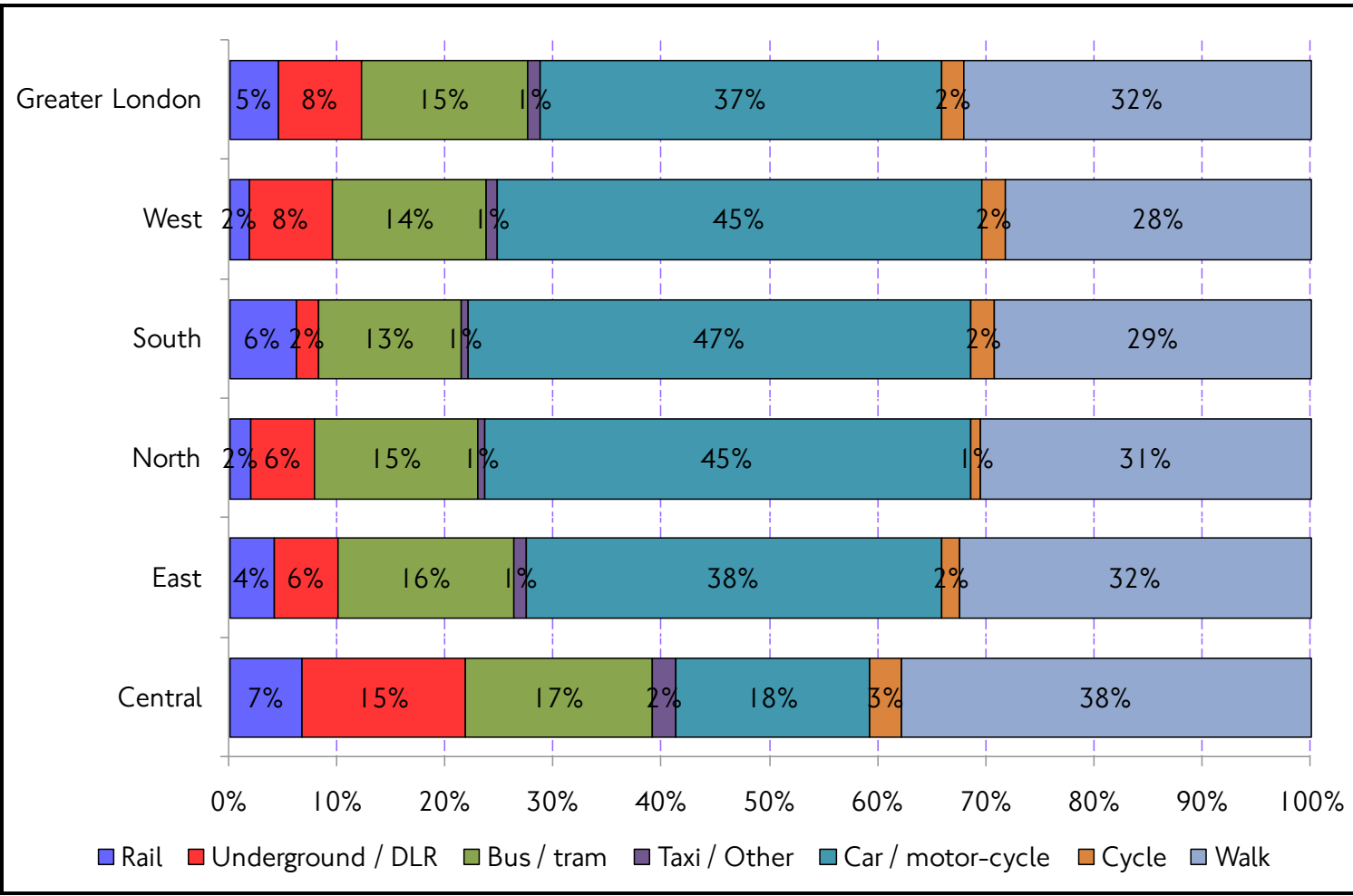
The Mayor has committed to achieving a 60% reduction in London's CO₂ emissions by 2025 from a 1990 base.

The map above shows the east sub-region's CO₂ emissions from transport in 2008, by kilometre grid square in the east sub-region. These are highest in inner London parts of the east sub-region, where roads are busiest.

While encouraging a greater use of sustainable modes will play an important role, driving the uptake of cleaner vehicle technology will be critical

4. The east sub-region's transport challenges: key points

Sub-regional mode share (2008-2011)



Source: London Travel Demand Survey 2008/9-2010/11

Delivering mode shift

1. 'Natural increase arising from growth in population & employment'

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1. London's population and workforce are expected to grow between 2006 and 2031. We could assume that the same proportion of these new trips would be cycled / walked as at present, leading to 'natural growth' in active travel in terms of absolute numbers of cycling and walking trips.

2. Mode shift amongst existing travellers

→

2. It will also be necessary to achieve mode shift to walking for 'existing' trips so that, in aggregate, trips currently made by another mode are cycled or walked in future.

3. Higher mode share in new trips from growth in population & employment

→

3. We will also need to deliver a higher mode share for active travel for new trips and in growth areas than current levels. The scope for this will depend on the characteristics and location of the new trips, the demographics of the trip makers and the interventions put in place.



Transforming the role of cycling and walking in the sub-region

There has been significant progress in promoting walking and cycling over the last year or so, but further investment and initiatives are required to meet challenging London-wide by 2031 cycling and walking mode share targets.

While growth in population is likely to bring with it a corresponding increase in the absolute number of

walking and cycling trips, it will also be necessary to achieve further mode shift towards walking and cycling wherever possible, so that in future trips that would otherwise be made by another mode are instead cycled or walked.

Whilst all walking trips in east London remain at around 23 per cent, the mode share of walking trips by only residents of London is around 32 per cent (the higher share reflects local trips made by

London residents). This is the highest level of walking in London outside central London.

One of the key ways of delivering a change in mode share in the sub-region will be to ensuring that the proportion of new trips which are made by active modes is greater than the current average (both by existing and new travellers).

The scope for this will depend on the characteristics and location of

the new trips, the demographics of the trip-makers and the effectiveness of interventions put in place, but the 2012 Olympic and Paralympic Games represent a once-in-a-lifetime opportunity to promote sustainable forms of transport.

Naturally, each borough will have its own approach, but coordinating between boroughs will help maximise their effectiveness.

5. Responding to the challenges: beyond funded measures

5. Opportunity Areas and Areas of Intensification

Background

Accommodating future growth is a key challenge for all sub-regions.

Each OA has different characteristics but most are on brownfield land and as part of their development require changes in land use type and mix. Typically each OA can accommodate at least 5,000 jobs or 2,500 homes. The areas often require visioning and master planning to set in place aspirations.

The transport challenges for these areas involve accommodating development trips in already constrained conditions on the highway and public transport networks. Improved connectivity in areas to integrate the area with existing land uses and to improve urban realm and place making with a public transport, walking and cycling led strategy alongside consideration of highway access and capacity requirements.

Development in these areas provide the opportunity to make a difference sub regionally by improving public transport connections and aspiring to increase mode share for walking and cycling, meeting MTS outcomes for air quality and CO₂ and integrating transport and land use.

This also provides the opportunity to design in urban realm priorities, eg offering 'attractive spaces', as an integral part of wider development schemes. Including ensuring good bus, cycle and delivery access, as well as bus priority and bus infrastructure provision (stands and bus stations) where necessary.

Areas of Intensification (AI) are typically built up areas with good existing or potential public transport provision, which can support redevelopment at higher densities.

Opportunity Area Planning Frameworks

TfL works with the GLA and Boroughs to develop transport strategies for these areas as part of Opportunity Area Planning Frameworks (OAPF), with boroughs developing their own local priorities in this context. These may be produced as a variety of policy or Supplementary Planning documents, Area Action Plans or Opportunity Area Planning Frameworks that are adopted by the Mayor. In line with national policy, it is anticipated that there will be a focus on business growth.

The purpose of OAPFS is to provide;

- A strategic and design-led approach to spatial planning, specifically considering how key development sites fit together with the existing and emerging policy context
- Positive planning to identify and resolve contentious policy issues at an early stage in planning process
- Give greater certainty to the development process and investment
- Building consensus with public and private stakeholders
- Strategic overview in respect of cross borough issues
- Process as valuable as the end product

This involves determining transport objectives arising from challenges in the area and through capacity analysis using the sub-regional models, as well as connectivity analysis and assessment of the extent to which MTS and borough objectives can be met.

Progress

Since the East Sub Regional Plan was published the Olympics Legacy SPG and London Riverside OAPFs have been produced for consultation, each was underpinned by a transport studies undertaken by TfL.

TfL is currently also working closely with Newham and GLA to identify the infrastructure needs for the future development of the Royal Docks OA, part of which comprises the Enterprise Zone.

For the Sub regional Work TfL has also considered the cumulative effects of all the projected end state growth in the East Sub Region.

This highlights the following challenges:

Highway congestion hotspots, most notably:

- Stratford and Olympics SPG area
- North Greenwich
- Woolwich
- Ilford
- Key junctions on A13, such Renwick Road access to Barking Riverside (London Riverside)
- High levels of public transport crowding:
 - Jubilee Line – Waterloo / Canary Wharf
 - Central Line – Leytonstone / Holborn
 - Piccadilly Line – Southbound from Manor House
 - Eastern branches of Crossrail
 - Essex Thameside
 - Lines entering London Bridge

Opportunity Areas and Areas for Intensification in the east sub-region

Bexley Riverside

Charlton Riverside

Deptford Creek/Greenwich Riverside

Greenwich Peninsula

Ilford

Isle of Dogs (Canary Wharf)

Lewisham, Catford and New Cross

London Riverside

Lower Lea Valley/Stratford

Royal Docks and Beckton Waterfront

Thamesmead and Abbey Wood

Woolwich

Dalston (Area for Intensification)

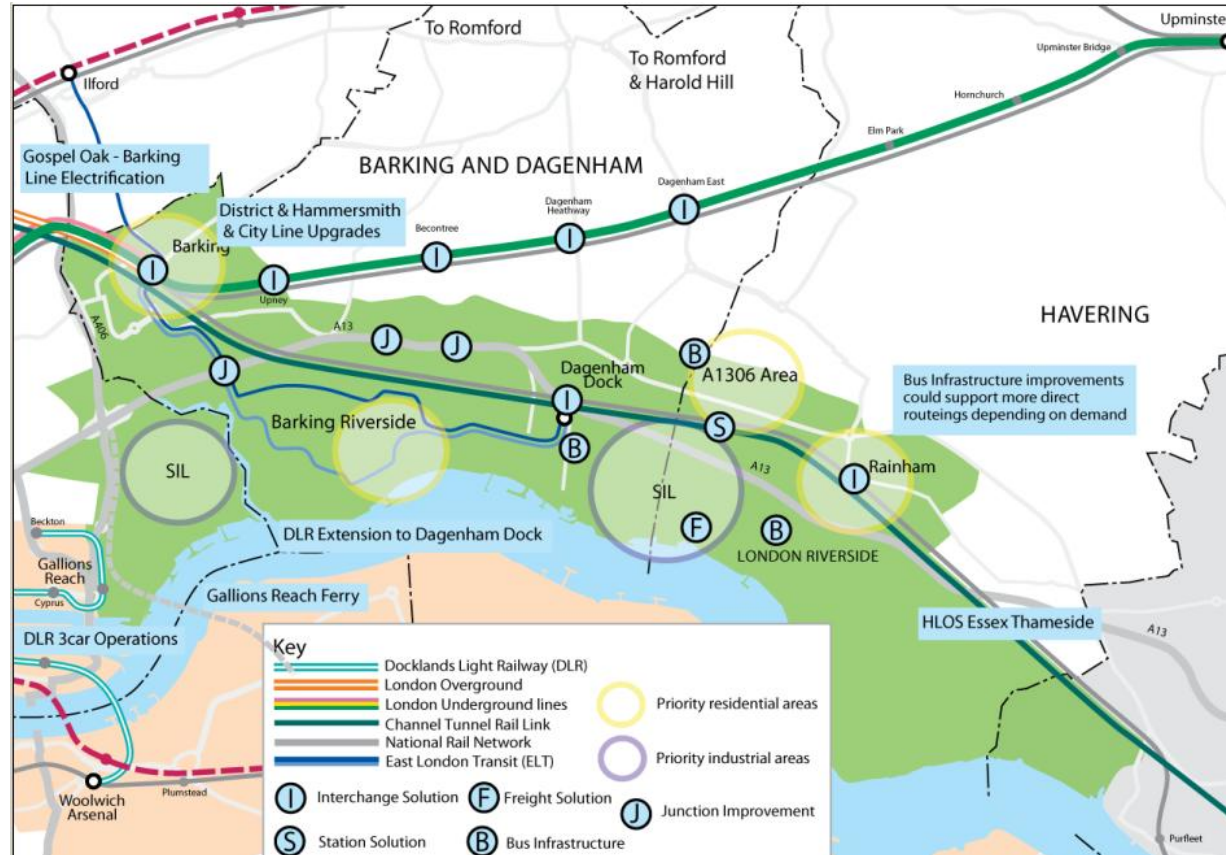
Kidbrooke (Area for Intensification)

5. Opportunity Areas: London Riverside

An Opportunity Area Planning Framework (OAPF) has been produced by GLA working with the London Borough of Newham, Barking and Dagenham and Havering, LTGDC and TfL. The transport strategy for the OAPF identifies measures to support 26,500 new homes 16,000 jobs and mitigate any adverse effects on the existing transport network. The Mayor recently put Beam Park, one of the largest brownfield sites in east London, on the market for redevelopment. The 70 acre site has enormous potential to regenerate this part of the city. The Mayor is working with the London Boroughs of Barking & Dagenham and Havering to ensure that Beam Park's full potential is realised and that new job creation is maximised through its development.

Challenges

- Severance caused by A13, A406, rail lines and River Roding make it difficult to make local connections by walking and cycling. Due to size of the OA local connections also need to be made by bus.
- Need to improve connectivity to key stations e.g. Dagenham Dock, Barking, Rainham and Dagenham Heathway
- Future crowding issues at London Underground stations; Barking, Upney and Dagenham Heathway
- Crowding on National Rail line to Barking
- Congestion at key junctions on A13 and A406 e.g. A13/Creekmouth junctions, A13/A406 junction negatively impacts all road users including buses and freight
- Thames acts as a barrier to travel south
- Ensuring growth in freight can be accommodated to enable employment growth to meet potential
- Supporting sustainable travel for employment areas
- Supporting Barking Riverside development
- Possible major strategic leisure development at Beam Park presents further transport challenges



Indicative Bus Network to support growth in future demand, improve bus connectivity and bus to rail interchange at a number of stations. Improving bus links to and from around the London Riverside and is a key priority.

Interventions include:

- East London Transit Highway improvements, and extension into Havering
- Upgrade of Barking station
- Bus bridges across Beam River, Rainham Creek and River Roding
- Bus access to and standing facilities north of Dagenham Dock
- Highway changes to Mardyke Estate/Fredrick Road to improve bus access
- North-south bus access from Barking Riverside to communities north of the A13

Transport Measures to support the proposed development

- DLR extension to Dagenham Dock
- Capacity enhancements on Essex Thameside Line with longer trains and more frequent services, and additional station at Beam Park
- Interchange improvements and capacity enhancements at key stations

Highway congestion will remain at key junctions on the A13 and A406.

Interventions to improve this include:

- Renwick Road junction improvements
- Lodge Avenue Flyover Replacement Scheme
- Gallions Reach Ferry

This area will remain an area of significant industrial activity, in order to support the continuation and growth of this activity and to minimise the negative impacts, a number of interventions have been identified:

- Effective use of safeguarded wharves and freight travel planning
- Multi-modal freight facility
- Potential Express Rail Freight Facility

5. Opportunity Areas: Olympic Legacy Supplementary Planning Guidance

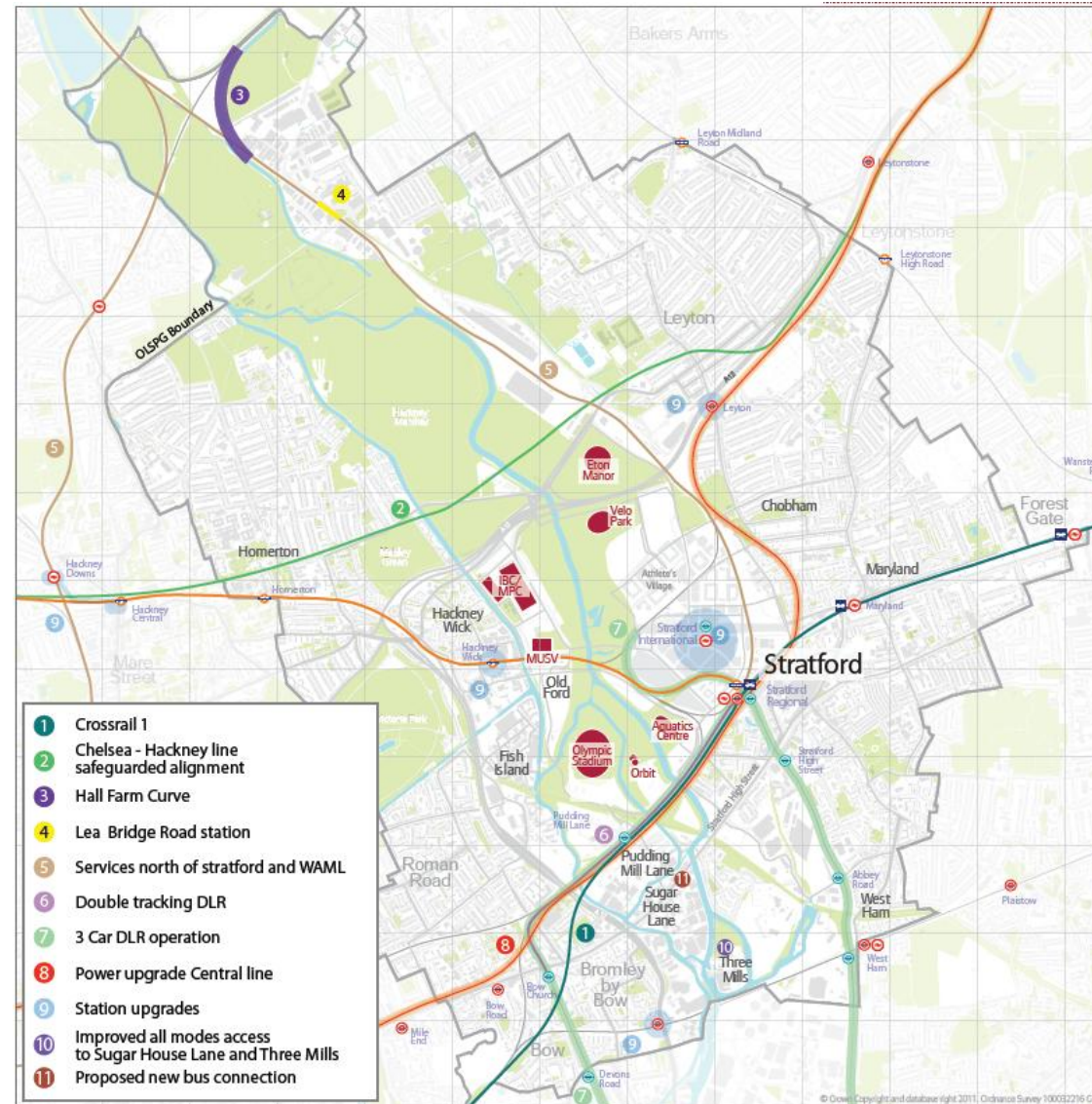
OLSPG Connectivity and Transport Development Principles

To ensure that existing and new communities across the OLSPG area are linked by a network of strategic and more fine grained local connections, to use the area's public transport infrastructure to achieve a lasting shift to more sustainable forms of transport and movement such as walking and cycling, and to minimise adverse impacts on the capacity and operation of the area's public transport and highway networks.

Improving strategic connectivity and capacity: Development proposals and plans in the OLSPG area should help improve strategic connectivity, capacity and accessibility, and the strategic transport interventions and projects set out in this Guidance should be identified in local development plans, and developed and implemented as opportunities and funding become available.

Improving local connectivity and permeability: Development proposals and plans in the OLSPG area should help reduce physical severance and improve connectivity by contributing towards, implementing or reinforcing the key local connections.

Land use, freight and servicing: Development proposals and plans in the OLSPG area should coordinate land use and transport planning and support the delivery of Crossrail.



The Olympic Park

Olympic Legacy Supplementary Planning Guidance has been produced by the GLA working with the London Boroughs of Hackney, Newham, Tower Hamlets and Waltham Forest and TfL.

- **Highway** enhancements to maintain an acceptable performance
- **Design in sustainable transport** to encourage walking & cycling, car clubs, taxi facilities, improved information
- **Local connectivity** – 23 key additional links have been identified across the area
- **Parking Standards** applied on all land use types to encourage low car ownership and use
- **River Crossings** – Silvertown crossing and cable car to mitigate impacts at Blackwall Tunnel
- **School travel planning** – c14,000 children from high proportion of family housing
- **Other Measures** to encourage demand for employment comes from local residential areas or to the east

Rail:

- Assumes Crossrail and all planned LU upgrades
- DLR double-tracking Stratford – Bow Church
- DLR 3 car operation on both Stratford routes
- Central Line power upgrade
- Increase services north from Stratford such as West Anglia main line upgrade and/or Hall Farm Curve and/or infrastructure improvements at Tottenham Hale
- Station improvements including Hackney Wick, Stratford International, Hackney Central/Hackney Downs
- Links to Chelsea-Hackney Line

Bus:

- Protect and provide bus infrastructure to meet future demand
- Road layout to support direct routings and bus only links
- Services enhancements to support substantial growth between Stratford and Walthamstow, Leyton, Mile End, Bow, Hackney, West Ham and along the Romford Road corridor
- Measures to ensure traffic conditions do not compromise the reliable operation of the bus network

5. Spotlight: Olympic & Paralympic Transport Legacy Action Plan

Purpose

- Provides a framework for TfL, the boroughs, Mayor and the MDC to work within to deliver the transport legacy for the area
- Provides a context for continuation of some good practice initiatives beyond the Games
- Provides a context for monitoring transport legacy over the medium to longer term
- Supports agencies in making the case for further investment in the area to ensure the transport legacy is delivered
- Sets out key transport projects that are key to delivering convergence

Policy context

The Mayor identifies the Olympic Park and the surrounding area as London's single most important regeneration project for the next 25 years

Delivering the action plan, in partnership with the six Olympic host boroughs was a requirement of MTS, and supporting convergence was an outcome of the MTS

Convergence

Convergence is defined as: 'Within 20 years the communities who host the 2012 Games will have the same social and economic chances as their neighbours across London.'

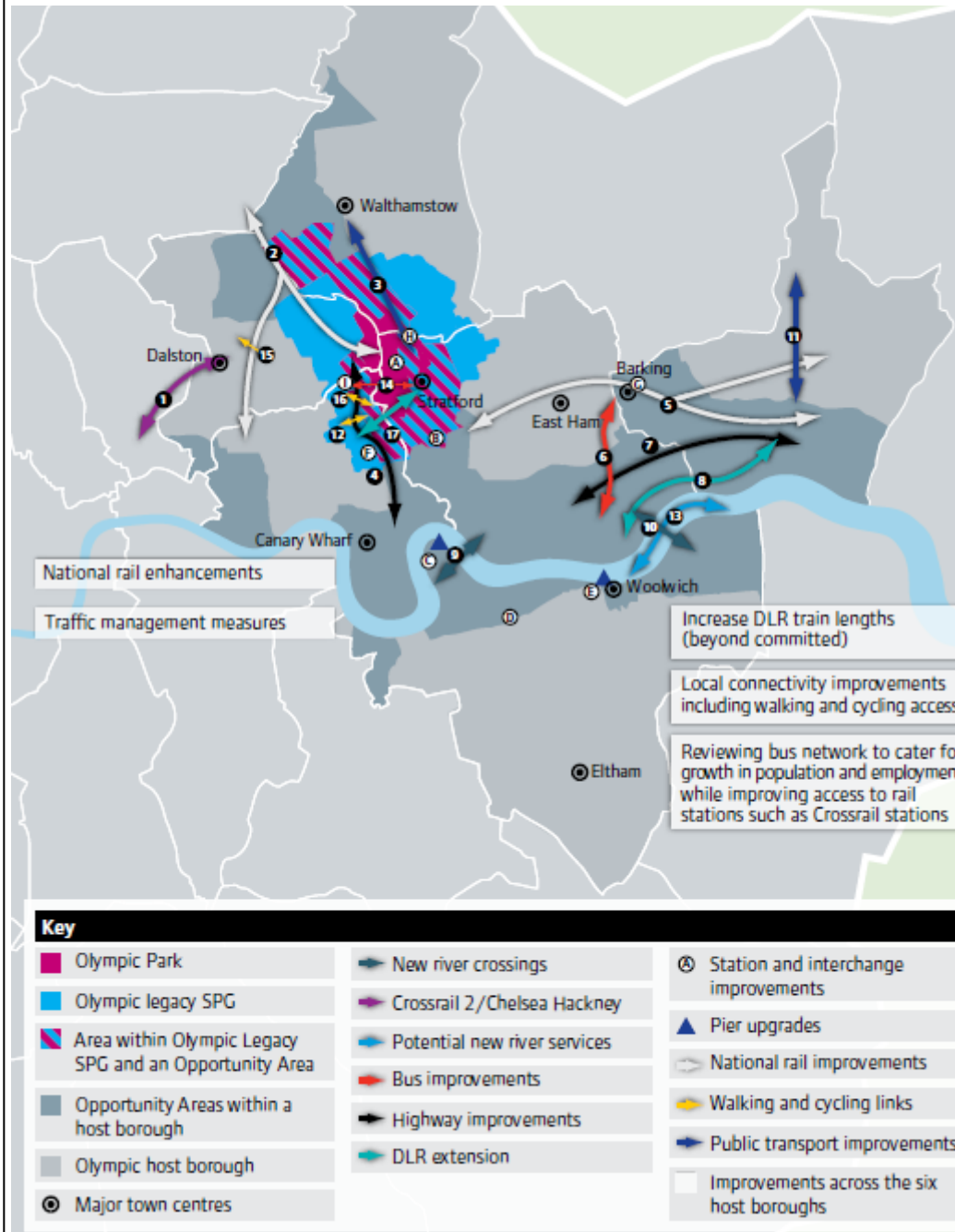
Defined convergence outcomes:

1. Creating a coherent and high-quality city within a world city region
2. Improving educational attainment, skill and raising aspirations
3. Reducing worklessness, benefit dependency and child poverty
4. Enhancing health and wellbeing
5. Maximising the sports legacy and increasing participation
6. Homes for all
7. Reduce serious crime rates and antisocial behaviour

Transport outcomes that support convergence are:

- Improving connectivity (and access to jobs)
- Improving highway network reliability
- Improving access to education
- Improving access to sport
- Improving the built environment
- Improving air quality
- Reducing noise impacts
- Increasing active travel
- Improving access to healthcare
- Reducing crime, fear of crime and anti social behaviour on the transport network

Projects identified that support convergence



Corridor improvements

- 1 Chelsea Hackney/Crossrail 2
- 2 West Anglia Main Line 4 Tracking
- 3 Improved transport links between Walthamstow and Stratford
- 4 Improved road management on A12 and Blackwall Tunnel Approach
- 5 Increased capacity on C2C lines
- 6 Barking to Royal Docks bus infrastructure improvements
- 7 Improved road network management including A13 Renwick Road junction improvements
- 8 DLR Dagenham Dock extension
- 9 New Thames road crossing at Silvertown
- 10 Thames vehicle ferry crossing at Gallions Reach
- 11 Improve public transport access north of Dagenham Dock
- 12 A12, River Lea and Canal pedestrian and cycle crossings
- 13 Commercial River Thames commuter services beyond Woolwich
- 14 Improve bus links between Olympic Park, Stratford City and wider local area
- 15 Improved pedestrian link between Hackney Downs station and Hackney Central station
- 16 Improved access to Fish Island
- 17 Double-tracking the DLR between Stratford and Bow Church

Station and interchange improvements

- 18 International services calling at Stratford International
- 19 National rail improvements at West Ham station
- 20 North Greenwich bus interchange long term capacity issues
- 21 Charlton station improvements to support growth
- 22 Fit out Woolwich Crossrail station
- 23 Bromley by Bow improvements to access growth areas
- 24 Barking station improvements
- 25 Leyton station improvements to increase capacity
- 26 Hackney Wick improvements to access Olympic legacy area

Links to other plans

The action plan makes a commitment for TfL to develop in partnership with the six host borough, further plans and projects through updates to this East Sub Regional Transport Plan, to help support convergence.

Other mechanisms to deliver the required transport investment will be through the Olympic Legacy SPG and the Opportunity Area Frameworks.

Monitoring

Monitored within Travel in London performance measures based on these transport legacy outcomes, which include:

- Accessibility to jobs and services by public transport, walking and cycling
- Walking, cycling and public transport mode share
- Local air quality

5. Opportunity Areas: Royal Docks

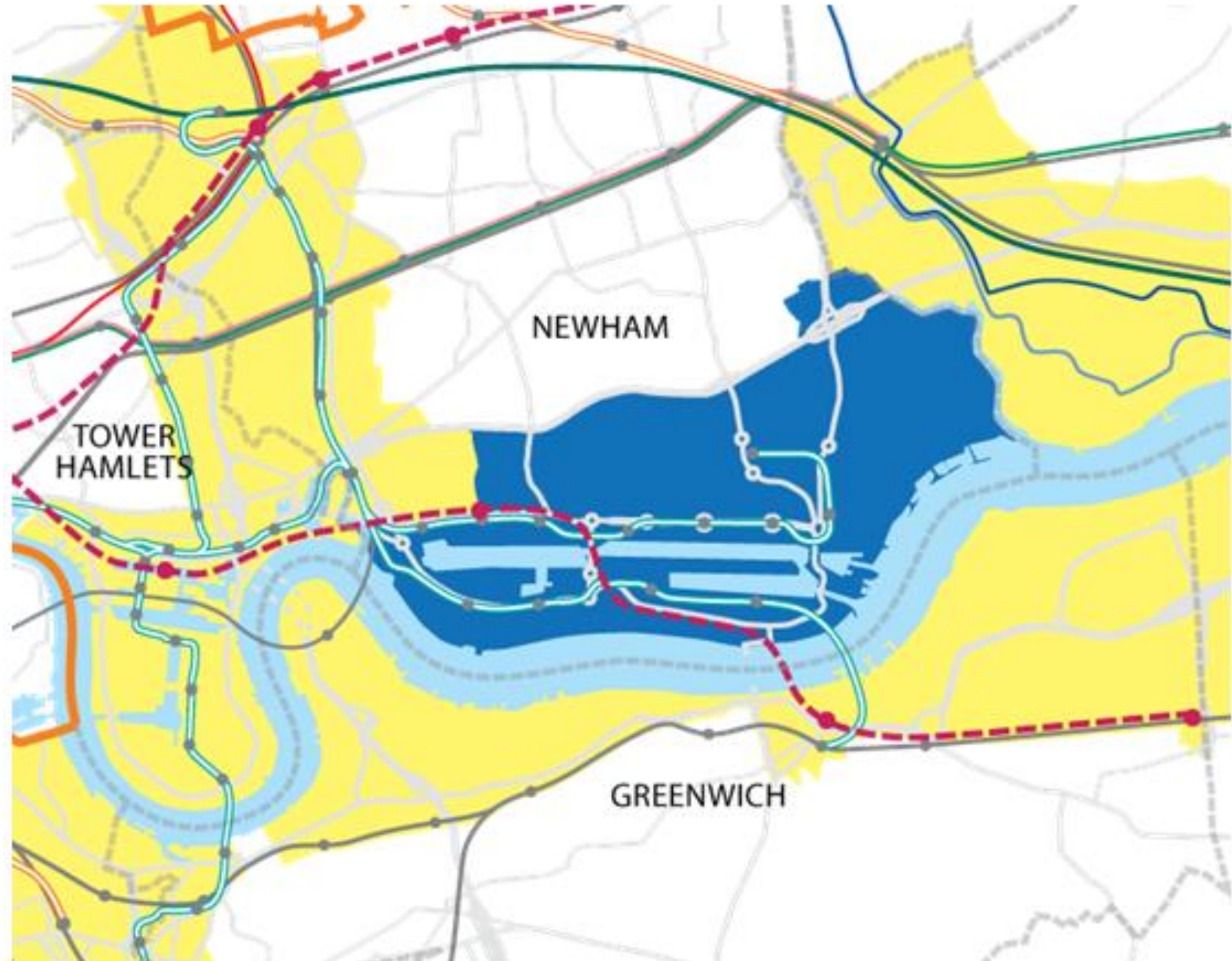
London Borough of Newham, Design for London and TfL are working together to identify infrastructure required to support the development in the Opportunity Area and Enterprise zone.

Transport challenges and opportunities:

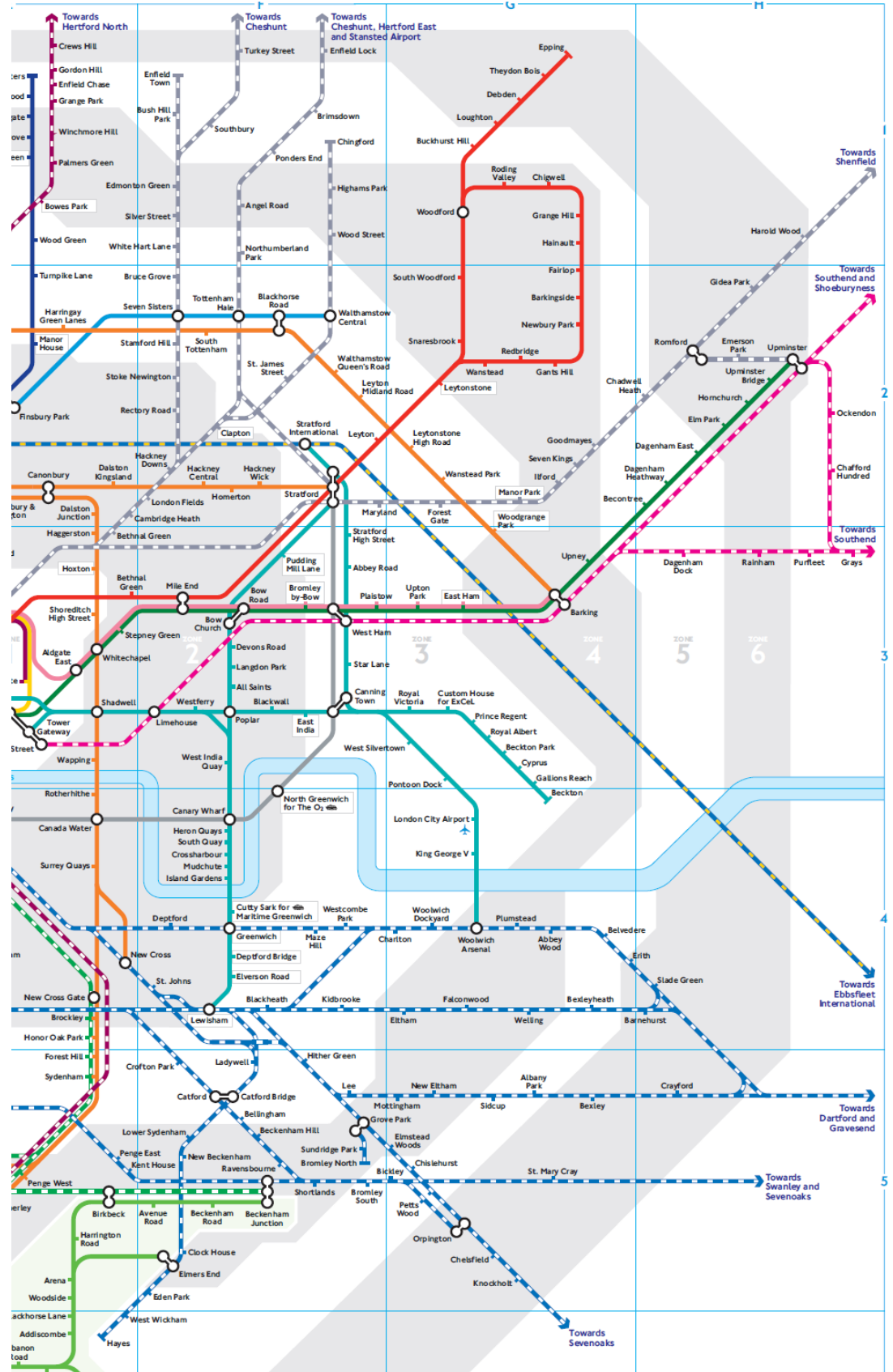
- Severance within the OA and into the surrounding area is a significant challenge, particularly in the Docks
- Ensure the benefits of the Enterprise Zone are maximised so that transport can support development
- Maximise existing transport investment across the OA, through DLR, London Underground and the Emirates Airline
- Crossrail is a unique opportunity to strategically connect the OA — good links to Custom House Station must be ensured through walking, cycling and bus

Enterprise Zone

In 2011, The Royal Docks was awarded Enterprise Zone status by the UK Government, which will enable businesses locating to the area benefits from substantial business rates relief over five years, together with a simplified planning approach to development within the zone.



Making the most of existing rail networks and enhancing rail capacity



National rail network

A clearer focus on the way the services are operated together with relatively modest investment could go some way to addressing a number of relevant challenges.

Devolution

The separate management by central government of London's local railways from those run by TfL results in a confusing mix of ticket products, fare levels, service quality standards and information provision for customers.

The Mayor's recently announced rail vision proposes that responsibility for London's inner-suburban rail services should be devolved to the Mayor, with a single investment strategy, a single fares policy, consistently high levels of customer service and safety and a network fully integrated across London.

As demonstrated by the highly successful integration of the London Overground in to the TfL network, devolution can significantly improve service quality and operational performance.

Gross savings through adopting a more efficient franchising model from the Southeastern and West Anglia franchises alone could amount to £100m over 20 years. This money could be used to improve the passenger experience with more reliable services, higher customer service standards, improved stations and higher

off-peak frequencies.

Station congestion relief

Historically there has been a poor record of investment in London's suburban stations.

Station accessibility

TfL has recommended further 26 stations to be provided with step free access from platform to street. The total package has a capital cost of £40m and a benefit:cost ratio of two to one.

Service quality recommendations

Other recommendations are the operation of more routes with 'turn up and go' frequencies, better information and security measures for passengers, cycle parking and gating.

Capacity schemes

- Capacity on the West Anglia Main Line is growing by 40%, although the constrained stopping pattern of services still restricts local access onto these. Three or four tracking of the current 2 track railway is actively being sought by TfL and local boroughs.
- Thameside/C2C enhancements services
- HS1 international services
- Links to outside London and wider region

As yet unfunded plans to improve the local stopping services on the West Anglia mainline will also improve the level of service at Tottenham Hale, potentially significantly improving links to Stratford from the north, and cementing Tottenham Hale as a key

Gateway to the stations in Upper Lee Valley that are situated to the north.

There is an opportunity to go beyond the scope of the committed Victoria line upgrade to extend 33 tph capability beyond Seven Sisters to Walthamstow – requiring works on a crossover and signalling at the latter. This would improve reliability of services across the whole line.

A further upgrade of the Central line, including new trains and signalling, would increase capacity, reliability and frequencies.

Docklands Light Railway

In the short to medium term, demand to and from Stratford is growing more rapidly than expected. Addressing this will involve lengthening remaining two-car Stratford-Canary Wharf services and introducing peak Beckton-Stratford International services, together requiring around 19 additional railcars.

Looking further into the future, as the Royal Docks continues to grow, eventually the last remaining two-car services – to Stratford International – will need to be lengthened to three-car, requiring about 15 further vehicles.

Platform lengthening at Royal Albert and Gallions Reach would enable these stations to benefit from three-car operations.

5 Extensions of the rail network

A key means of increasing connectivity is to identify specific areas where existing rail services could be extended to provide new connections.

In the east sub-region, extensions of the Docklands Light Railway and/or Bakerloo line could increase accessibility and connectivity to the transport network, and TfL is investigating potential synergies between these options.

DLR extensions

Further development of DLR routes are considered a promising means of addressing a number of challenges.

An extension to Dagenham Dock, for example, would help stimulate development in London Riverside, as well as facilitating economic growth in wider Thames Gateway area. The extension would also be a key means of relieving congestion on the existing C2C rail link.

For example a potential extension to Euston and St Pancras could help relieve overcrowding on the Northern Line and accommodate increases in passenger numbers that would result from HS2.

An extension of the Lewisham branch to Catford and Forest Hill appears to offer strong connectivity and crowding benefits to the Overground and Jubilee Line in particular.

TfL is also undertaking an engineering feasibility study for an extension of the route southwards from Lewisham to

either Forest Hill or Bromley North, with an incremental extension to Bromley South also undergoing assessment.

Bakerloo Line extension

TfL has also been assessing possible extensions of the Bakerloo line, and has confirmed that a route from Elephant and Castle to Lewisham and then to Hayes would offer the most transport benefits, along with a possible link to Beckenham Junction. Depot facilities would be needed in the Hayes area.

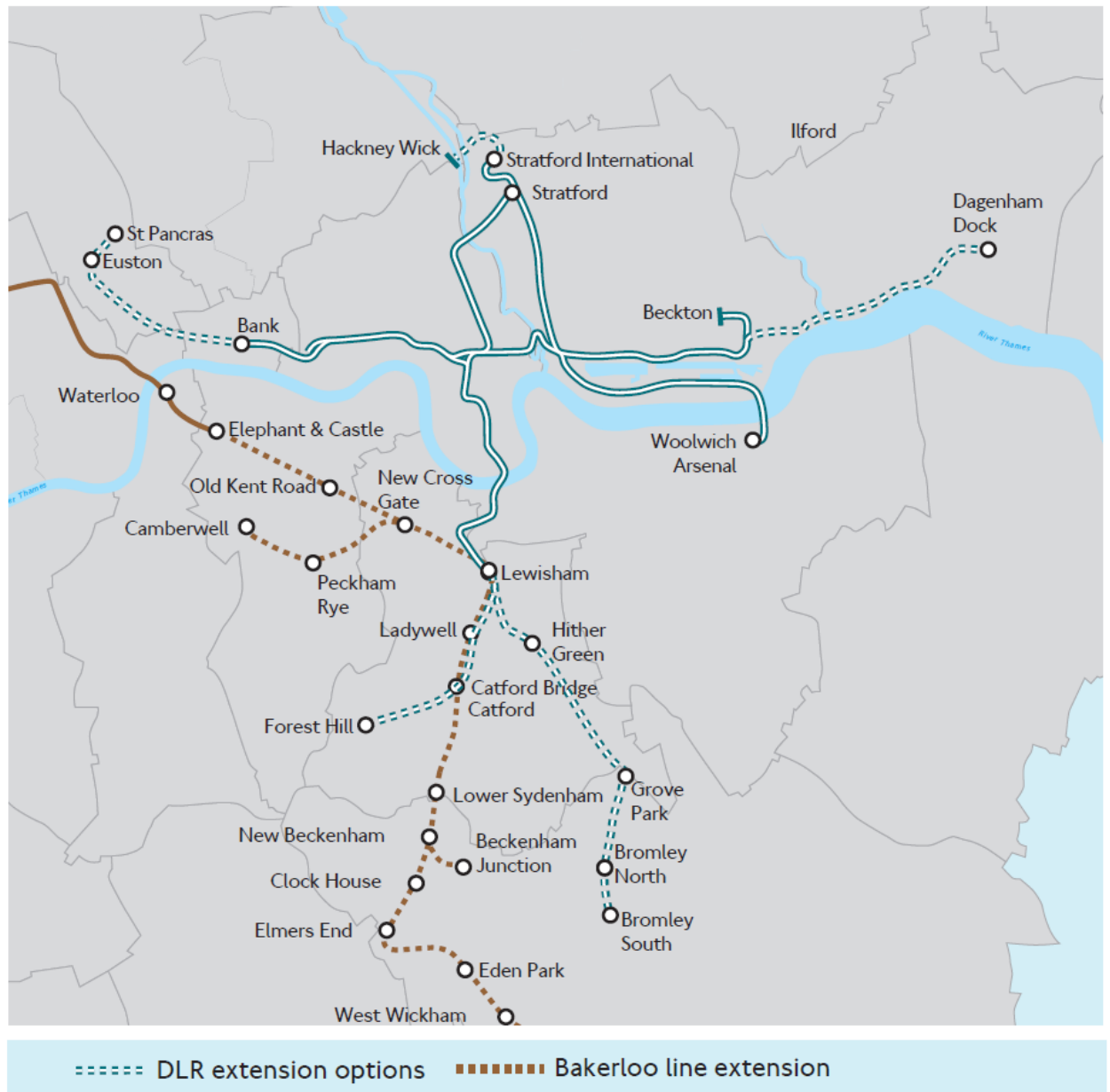
By taking over the Hayes national rail line, capacity would be freed at Central London terminals and release six train paths per hour which could be used to strengthen capacity on key crowded South Eastern routes.

TfL plans to continue working to develop the case for this extension and refine the options. In particular, further investigation of route options between Elephant and Castle and Lewisham is needed.

One option is to provide a direct route with an intermediate station at Old Kent Road, offering significant regeneration potential; alternatively, a longer route with stations at Peckham and Camberwell would help address connectivity gaps in these locations.

Essex Thameside

The consultation on the Essex Thameside franchise notes the possibility of extension of services from Barking to London Liverpool Street.



Eastward Crossrail extension

Safeguarding is in place for a possible eastern extension of Crossrail services beyond Abbey Wood, including four-tracking between Slade Green and Dartford.

This would improve connectivity to a number of areas in the sub-region, including in particular the major Opportunity Areas along the Bexley

Riverside. It could also connect to the HS1 station at Ebbsfleet via Dartford, improving access to national and international rail services.

5 Crossrail 2

In response to a request from the DfT, TfL has undertaken a review of route options for a second cross-London rail line. This has allowed a shortlist of optimised alignments to be identified that appear able to meet the objectives set for the project.

In particular, TfL has assessed an automated metro (Option A), which would operate on a new tunnelled alignment between Clapham Junction & Seven Sisters, and a regional metro (Option B) which would link existing national rail routes in the south west and north east by means of a new tunnelled alignment.

Both the options provide greater crowding relief to existing lines than the safeguarded alignment. They both also provide much needed capability to disperse HS2 passengers at Euston.

While Option A would be considerably less costly than B, it would provide fewer benefits and to some extent be less satisfactory operationally. While it would provide relief to the Victoria and Piccadilly lines it would not offer significant relief to the national rail network.

Option A would also generate very high interchange demand

at Clapham Junction which would require significant modifications or a rebuild of the station.

Option B would deliver substantial capacity and enhanced connectivity and crowding benefits to the South Western Main Line allowing many more locations in the sub-region to be directly connected to the core route as the map above shows.

These route options are currently being appraised and evaluated with further work continuing through 2012 to identify a preferred alignment.

A programme of stakeholder engagement has been established, including:

- briefing on recent developments to London Councils Rail Group in Jan 2012;
- continued and on-going briefings to relevant Sub Regional Panel meetings
- further briefing to London Councils Rail Group again in summer of 2012, to update on progress, ahead of reporting back to the Mayor in autumn
- specific meetings with individual boroughs/groups of boroughs, as desired to cover local issues.



Of the two best-performing options, the Regional Metro scheme offers most

potential for further connectivity benefits in the east sub-region.

5 Responding to HighSpeed2

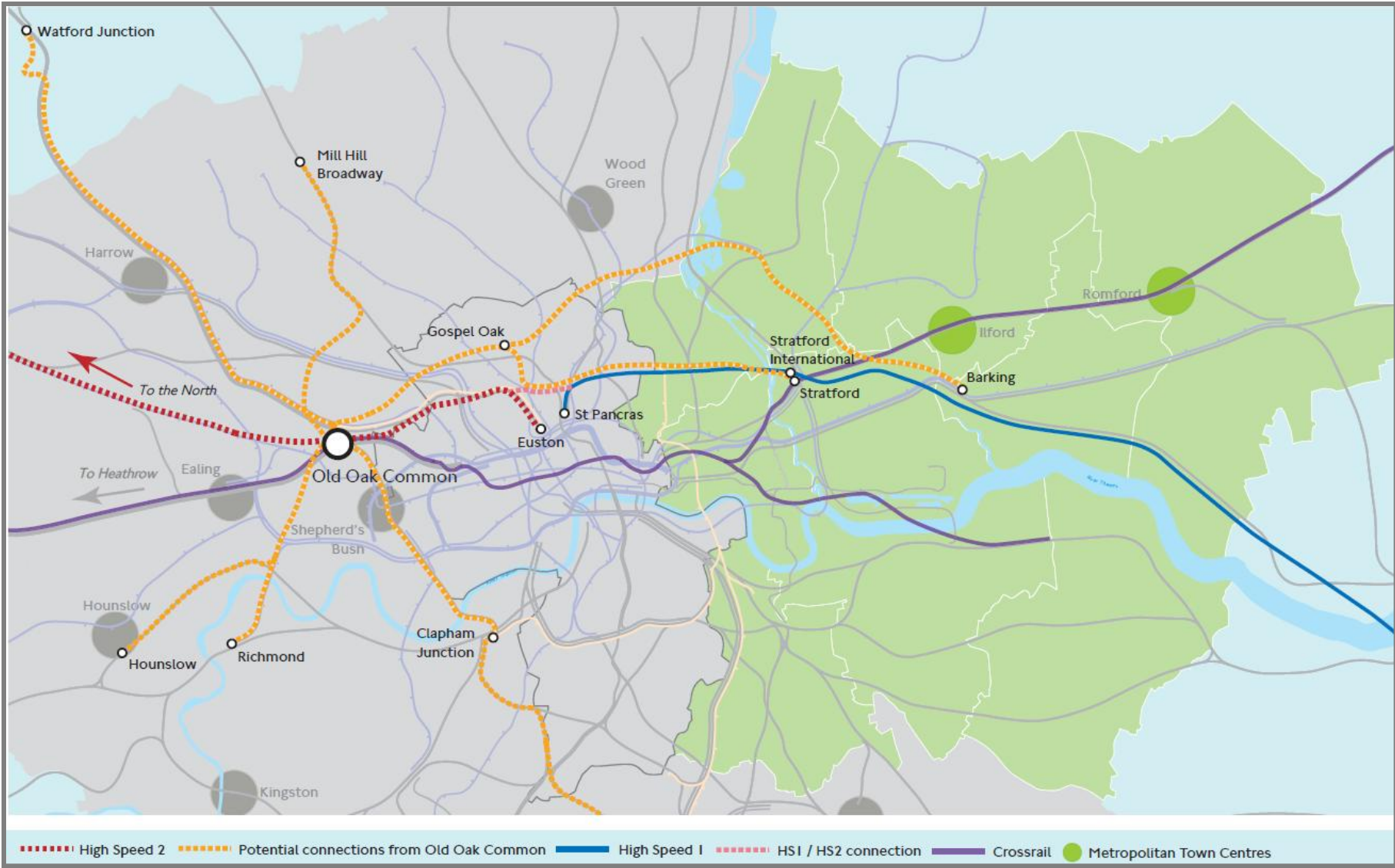
The Government's recent announcement that it will progress with a new high speed line between London and Birmingham confirmed the enormous benefits of the project. Over the past year or so TfL has been assessing the impacts that the implementation of HS2 would have on London and its transport system.

Through its response to the Government's consultation on HS2, the Mayor set out a number of changes that would be required in order to support the project.

- These changes related to:
- Negative impacts on property and people, particularly in west London
 - The extra pressure that the project would put on onward dispersal of passengers at Euston, and the need for measures to accommodate this – for example, Crossrail 2 / the Chelsea-Hackney line
 - Old Oak Common and the need to link to the wider transport network; and the HS2 – HS1 connection and impact on North London Line.

Over the coming year it is vital that adequate connections to London's two planned HS2 stations are planned and agreed with the Government and TfL will be working to this end working closely with the DfT, HS2 and sub-regional partners to ensure that this takes place.

Both Euston and Old Oak Common would be likely to be used by people in the sub-region to reach HS2, with preference varying considerably depending on the specific location within the east sub-region.



Old Oak Common would also provide interchange for passengers from the east sub-region wishing to reach Heathrow airport in the future.

A well connected interchange at Old Oak Common, including London Overground services, could offer direct connections to key centres in east London, including Stratford and Barking. need for north south links with Woolwich and Abbey Wood should be mentioned as needing improvement in order for areas south of the river to benefit from HS2.

Of more direct interest to east London boroughs is the connection between HS2 and HS1. The proposed link would use the existing North London Line tracks and, as proposed, would impact on London Overground capacity and performance.

TfL has requested that alternative options are considered which would include more dedicated infrastructure for HS2 services but would be more expensive. High Speed Two Ltd accepts this. and is

working with Network Rail to provide a more robust solution.

A remit has recently been agreed detailing how the two organisations will work together to achieve this. Two options are being explored, including the possibility of providing an extended tunnel that would remove any interaction HS2 and North London Line services.

5 Enhancing interchange

The map highlights key interchange locations in the east sub-region. By enhancing interchange opportunities at these locations orbital movements across London can be improved enabling a more efficient use of the network to avoid the need to travel into Central London.

For example encouraging more passengers to interchange at Lewisham will help to relieve pressure into London Bridge as well as on the Northern and Jubilee lines. Enhancements could include improvements to London Overground, DLR and National Rail services as well as future options, such as extending the Bakerloo Line.

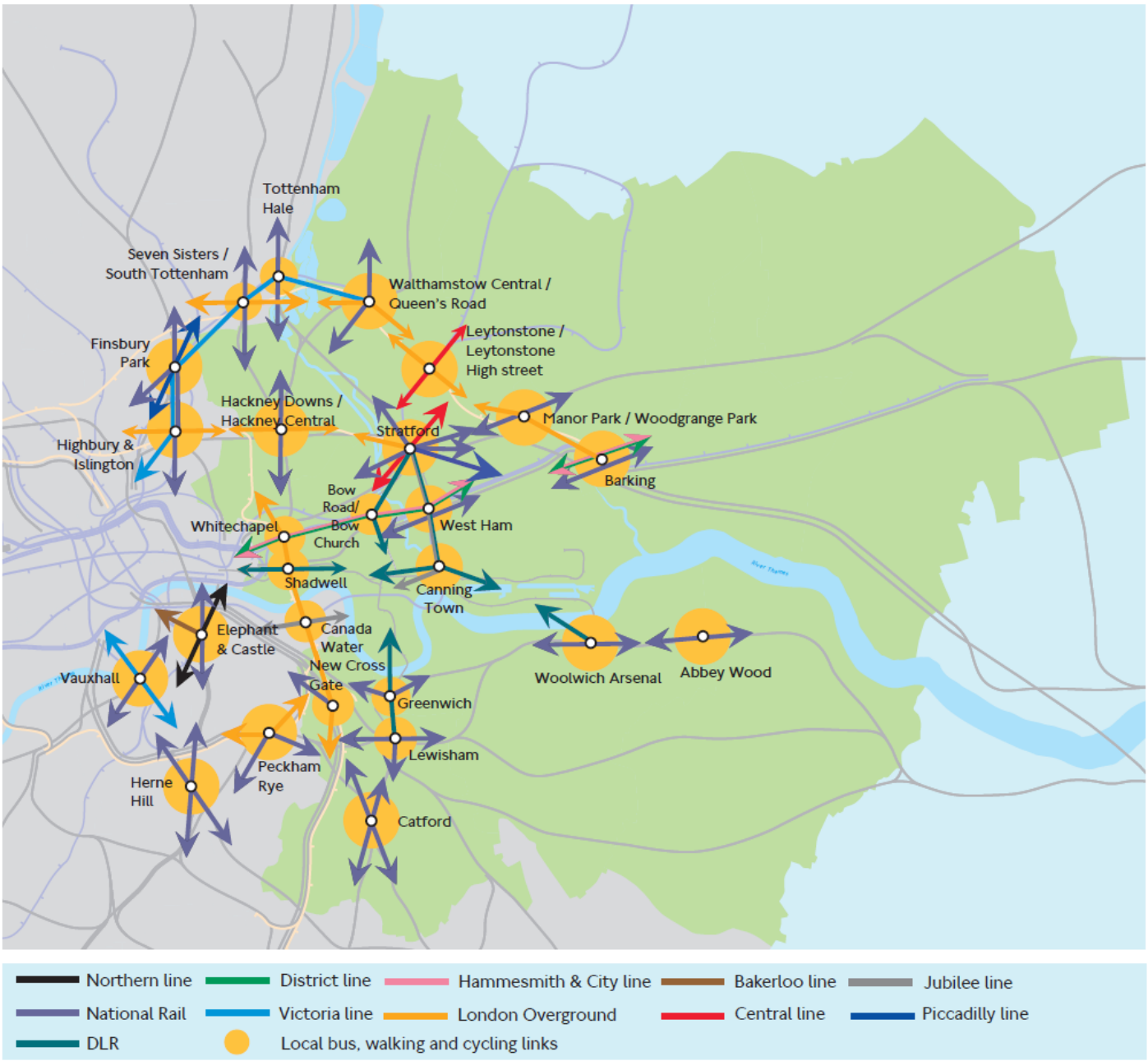
Key Strategic interchanges in the region include Stratford, Shadwell, Abbey Wood, Barking, Woolwich Arsenal, Lewisham, Catford, West Ham, Hackney Downs/Hackney Central, and Walthamstow. Further station improvements may be necessary to keep Shadwell working smoothly, particularly with London Overground to Clapham Junction in place and with the Jubilee line effectively full between Canada Water and Canary Wharf.

Development of proposals for other interchanges in the Sub Region include Bromley-By-Bow, Abbey Wood, Custom House, Ilford, Manor House, Romford and Hackney Wick and should continue. In many cases these are required to support new developments in the area.

Crossrail

The Crossrail project offers the opportunity to review and if necessary upgrade interchange facilities at stations along its route. New funding sources may be needed to be provided to facilitate implementation of urban realm enhancements around the more major Crossrail stations such as Ilford and Romford.

Ensuring adequate bus, walk, cycle and taxi facilities for onward movement is key to providing good interchange. For example taxi provision at interchanges. All mainline stations and major interchanges have taxi ranks, for dedicated use by licensed taxis. These can also be useful for providing a taxi supply for hotels, shopping centres and areas with busy late night economies.



With the reductions in vehicle emissions and congestion, and increased safety associated with taxi ranks, identifying additional locations within the sub-region for the short to medium term would be useful. In the east sub-region, taxis also play a key role at City Airport, around Canary Wharf and Excel with large or multiple taxi ranks appointed in these areas to deal with the high level of demand.

Different priorities

Congestion

- A key pressure on a number of roads in the east sub-region
- Will not always be possible to reduce congestion

Access to and within key places – by different modes

- The focus should remain on people movement and efficient use of road space
- The exact mode mix will vary depending on location

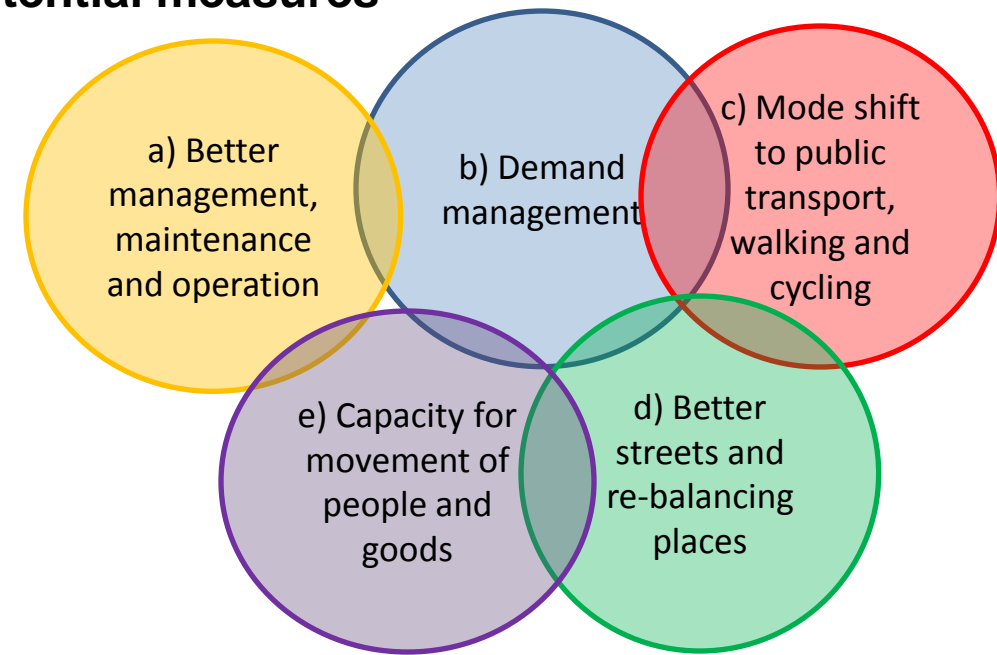
Road safety

- A high priority in all locations
- Frequency and severity of accidents can be improved through good design and measures which reduce traffic speeds

The quality and sense of place

- There is an opportunity to build on the unique characteristic of the east sub-region's town centres by improving quality of life
- This will involve trade offs between different objectives

Potential measures



As highlighted in section 4, congestion is already a challenge on many of the roads in the east sub-region – and the problem is set to get worse in the longer term as growth pressures continue (both background and in particular areas associated e.g. with Opportunity Areas) and many parts of the network reach saturation point.

The road network plays a vital role in ensuring access to key places. It is also vital for supporting the increasing needs for freight /servicing that keeps London functioning. But while the strategic links help ensure places are accessible and vital, they can also impact negatively, creating severance and environmental problems, undermining a sense of place, and seeing conflicts between users with resultant safety impacts and impacts on the attractiveness of sustainable modes of transport.

Tackling congestion and ensuring good access to key places is thus a priority within the sub-region, but so too is creating better places, ensuring adequate maintenance improving road safety, supporting cycling and walking and

improving the environment. There are often synergies between these different aims – but there are also potential tensions in particular locations and difficult decisions and trade-offs will have to be made.

TfL is keen to work with boroughs through the corridor studies process established to assess these issues and to agree the strategic priorities in different areas. The ongoing work via the sub-regions will help strike the balance between these different priorities in different places and the measures needed to support the agreed outcomes.

The benefits from better management and operation of the network clearly need to be maximised, but there are inevitably limitations. In growth areas additions to the road network may be required in order to provide access to the surrounding area. On some existing road corridors further action may also be required in order to improve people movement. This could be through measures such as enhanced priority for the most space efficient modes or potentially through increased road capacity for general traffic.

In other areas, place functions and priorities such as walking/ cycling need to be prioritised. For Opportunity Areas, there is the potential to embed a different approach from the outset and steer less car dependent growth. In many Inner London areas, where public transport accessibility and the density of service provision is relatively high, there would appear to be significant scope for a more ambitious approach, with opportunities to develop inspiring places, reduce car use and promote significantly higher sustainable mode shares. In many areas of Outer London, the reliance on private car is likely to continue. But even in many outer town centres, given the relatively high number of short car trips, there should be potential to switch many trips to walk / cycle / bus and encourage different models of car ownership and use e.g. car clubs/share.

There could also be potential for reducing and re-timing freight deliveries.

Network Operating Strategy

The Network Operating Strategy was released for consultation in May 2011. It sets out the main techniques which can be used to improve journey time reliability for cars

and freight. Some of the main measures which have been implemented include:

- traffic signal timing adjustments
- further application of SCOOT
- lane rental and permitting schemes
- better computerised management of the network through improved interactive technologies

In addition to measures to enhance public transport, there are also significant opportunities to encourage mode shift to walking and cycling. Alongside initiatives to reduce the impact of freight movements, these are likely to reduce levels of congestion on the road network, as well as reduce parking pressures, and emissions of CO₂ and air quality pollutants.

TLRN investment programme

It is also vital that London continues to renew its assets. Investment in schemes across the Transport for London Road Network in the east sub-region (as well as in the other sub-regions) will contribute to smoother operation of the network.

The following section looks at different priorities and measures in turn.

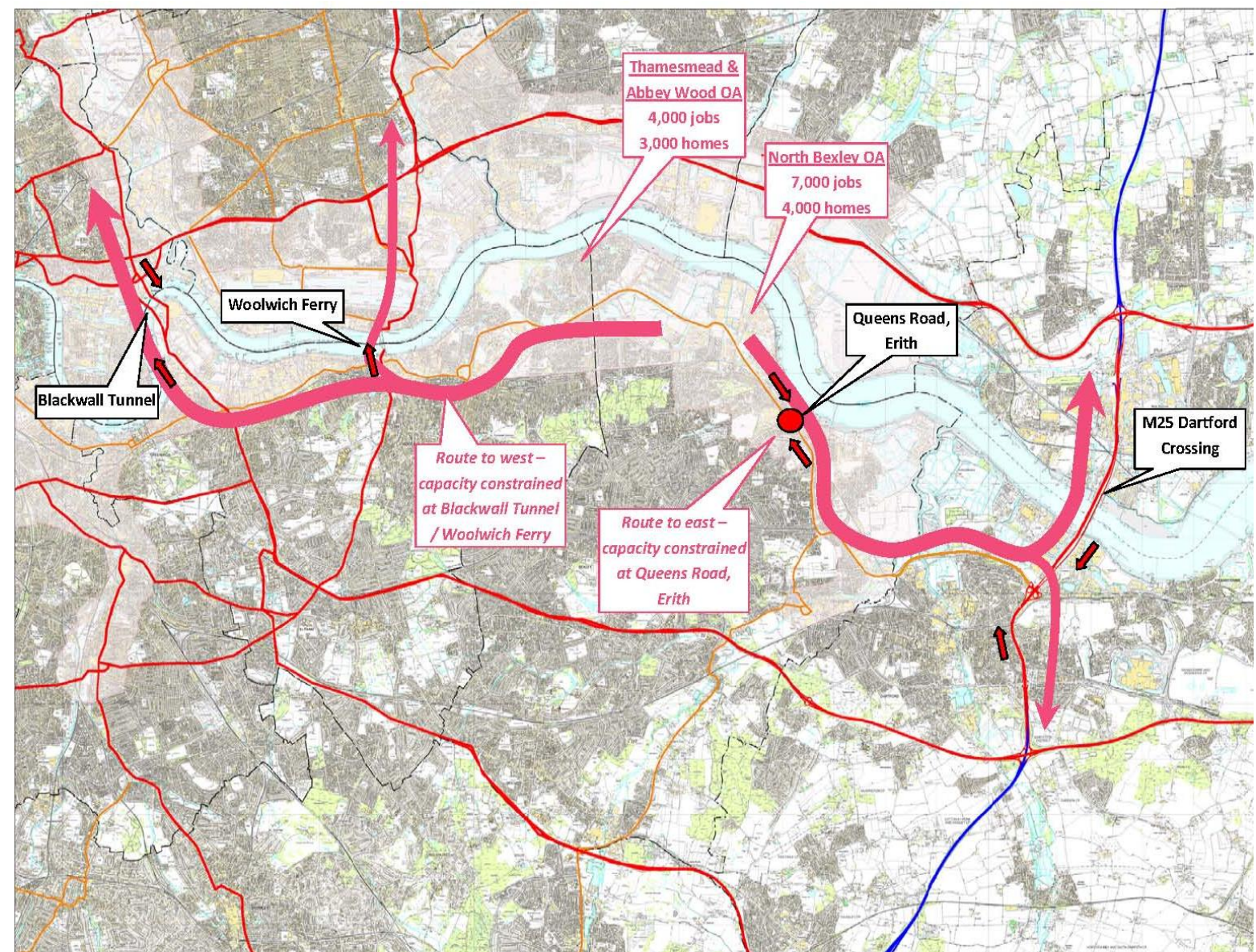
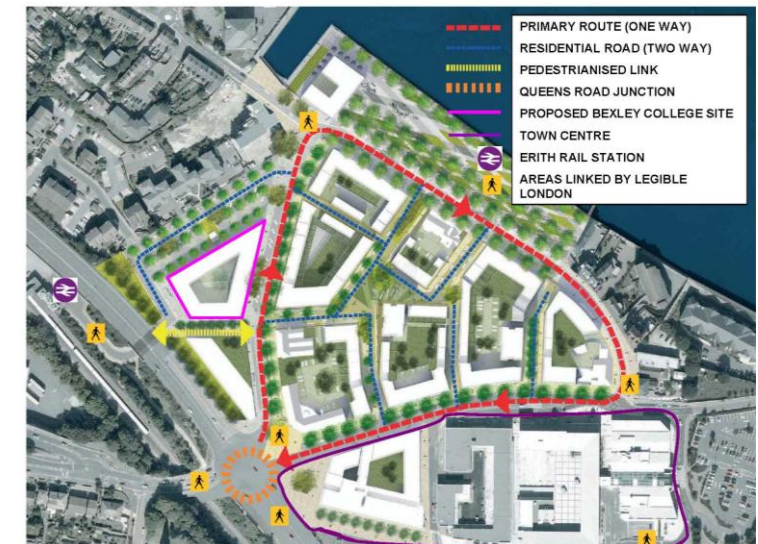
The Queens Road Junction Improvements Scheme (QRJI) in Erith is a major infrastructure scheme of both sub-regional and local significance. This junction on the A206 South Thames Development Route, which is part of the London Strategic Road Network (LSRN), is a bottleneck and an acknowledged barrier to growth in development and employment in the north of Bexley and beyond, an area that already suffers amongst the lowest land values in London.

The QRJI scheme seeks to address traffic capacity issues and unlock sites for housing and employment growth. It includes providing a new road bridge over the North Kent Line which would provide extra lanes for traffic and significantly reduce congestion at this key junction. By replacing the overloaded roundabout with traffic signals, it will be possible to provide wider footways to significantly improve facilities for pedestrians and cyclists as well as much needed additional traffic capacity.

The junction is an essential part of delivering the Borough's growth predictions of 1,400 jobs over the next 14 years, the retention of nearly 8,000 jobs in Erith and Belvedere, as well as circa 2,000 new homes in the north of the Borough.

Without improvement, the Queens Road Junction would restrict access to Abbey Wood Crossrail Station as well as access to the M25 and wider London channelling additional traffic through the Blackwall Tunnel which is already over capacity. Delivering the QRJI scheme would

contribute to the creation of more commercially viable and attractive development schemes providing a crucial uplift where it is most needed both in Erith itself and in the major growth area of Belvedere including the Bexley Riverside Opportunity Area to the north west.



Responding to current and future freight and servicing challenges will require a flexible and innovative approach to meet the specific demands of the east sub-region.

Existing measures

Freight initiatives aimed at improving the efficiency of freight movement and improving its contribution to other mayoral goals include the Freight Operator Recognition Scheme, Delivery and Servicing Plans, Construction and Logistics Plans and the Freight Information Portal. These are complemented by measures such as wharf safeguarding, improving rail freight facilities, and encouraging quiet out-of-hours deliveries.

New opportunities: Olympics legacy

The Olympic and Paralympic Games in 2012 will bring opportunities and challenges to freight and servicing across the east sub-region, and could also be of benefit for the rest of London.

TfL is currently working with businesses to ensure they are as prepared as possible for the Games, including analysing road network impacts on each Games day. This also provides a great opportunity to build on the lessons learned during the Games and create an enduring legacy of sustainable freight operations.

Improving freight impacts will involve testing the long term applicability of the “Four Rs” approach to freight behavioural change for different sectors and areas:

- Reducing deliveries;
- Revising the mode;
- Re-timing; and
- Re-routing

The roll-out of existing freight and servicing

measures should be implemented at new developments, not only those in areas of high congestion around town centres.

In an early case study at TfL’s Palestra office, deliveries were reduced by 20 per cent overall using a Delivery Service Plan, with even greater reductions (around 40 per cent) in deliveries of catering supplies, stationery supplies and archiving.

Further measures for implementation in the east sub-region should include:

- Influencing public sector procurement practices to encourage use of consolidation principles (eg NHS, schools etc, to reduce the need for separate/uncoordinated deliveries, without the need for consolidation centre technology).
- A similar approach at Business Improvement Districts (BIDs) to reduce the number of deliveries to an area or shift their timing.
- Use of section 106 agreements to improve the effectiveness and enforcement of planning conditions related to freight, and the use of pooled contributions.
- Making better use of street-space during different times of day, eg shared use of loading space at different times of the day with other uses such as footways; or use of new technology for finding and booking loading bays.
- Investigating the potential for a consolidation centre located in the sub-region.
- Identifying locations where out-of-hours deliveries could be implemented more, building on the 2012 Games lessons for legacy operation, though it will be important to ensure that this is not at the expense of residential amenity
- More consistent enforcement between boroughs to minimise possible confusion and provide

clear standards for operators to conform to.

In addition to implementing further measures there is a clear need to get a better understanding of the servicing sector and van use in London overall and also in particular geographical areas. Identifying locations in the east sub-region which would be willing to participate in a case study exploring this would be a useful first step.

Waterborne freight in the east sub-region

LOCOG is planning a multi-modal trial to assess sustainable ways of making deliveries to the Olympic Village. The trial could compare the conventional approach of using lorry transportation all the way from Tilbury with alternative operations, such as the use of barges to deliver the freight to a wharf in East London, followed by a short onward road journey, or the use of alternative lorry configurations. LOCOG estimates these approaches could significantly reduce transport emissions associated with freight.

Results of the trial will be made available after the Games. If multi-modal deliveries can be shown to be economically feasible, there may be scope to make more extensive use of waterborne modes to move goods out of the Olympic Park and other Olympic venues once the Games period is over. Recent investments to improve the Park’s access to the waterway network may make freight transport by smaller barges in the years after the Games more attractive.

TfL will continue to gather evidence on the potential costs and benefits of alternative freight transportation approaches to better advise operators and their clients of steps they can take to minimise the negative impacts of freight transport.

5 Managing demand – exploring different models of car ownership and use

Managing demand and mode shift

In addition to measures to enhance public transport, there are also significant opportunities to encourage mode shift to walking and cycling. Alongside initiatives to reduce the impact of freight movements, these are likely to reduce levels of congestion on the road network, as well as reduce parking pressures, CO₂ and other air pollutant emissions.

Targeting measures for mode shift work best where there are alternatives available, as well as where there is a propensity to shift mode in the first place. Even in places where people still rely on cars there is potential to reduce the level of car dependency, eg via different models of car ownership, such as car clubs.

Every day, Londoners make more than 0.5m trips under 1km and 1m trips between 1-5km by car. Nearly three quarters of car trips shorter than 20 minutes are wholly contained within a single borough, for car trips shorter than 10 minutes, this increases to around 85%. Whilst these trips may be associated with trips to/from town centres, there is a concentration of trips beyond inner London for trips outside the peak periods (see figure).

There is a 'toolkit' which could be implemented in places where there is a high potential for mode shift, through a combination of development planning, better balanced streets and targeted information provision (see later section).

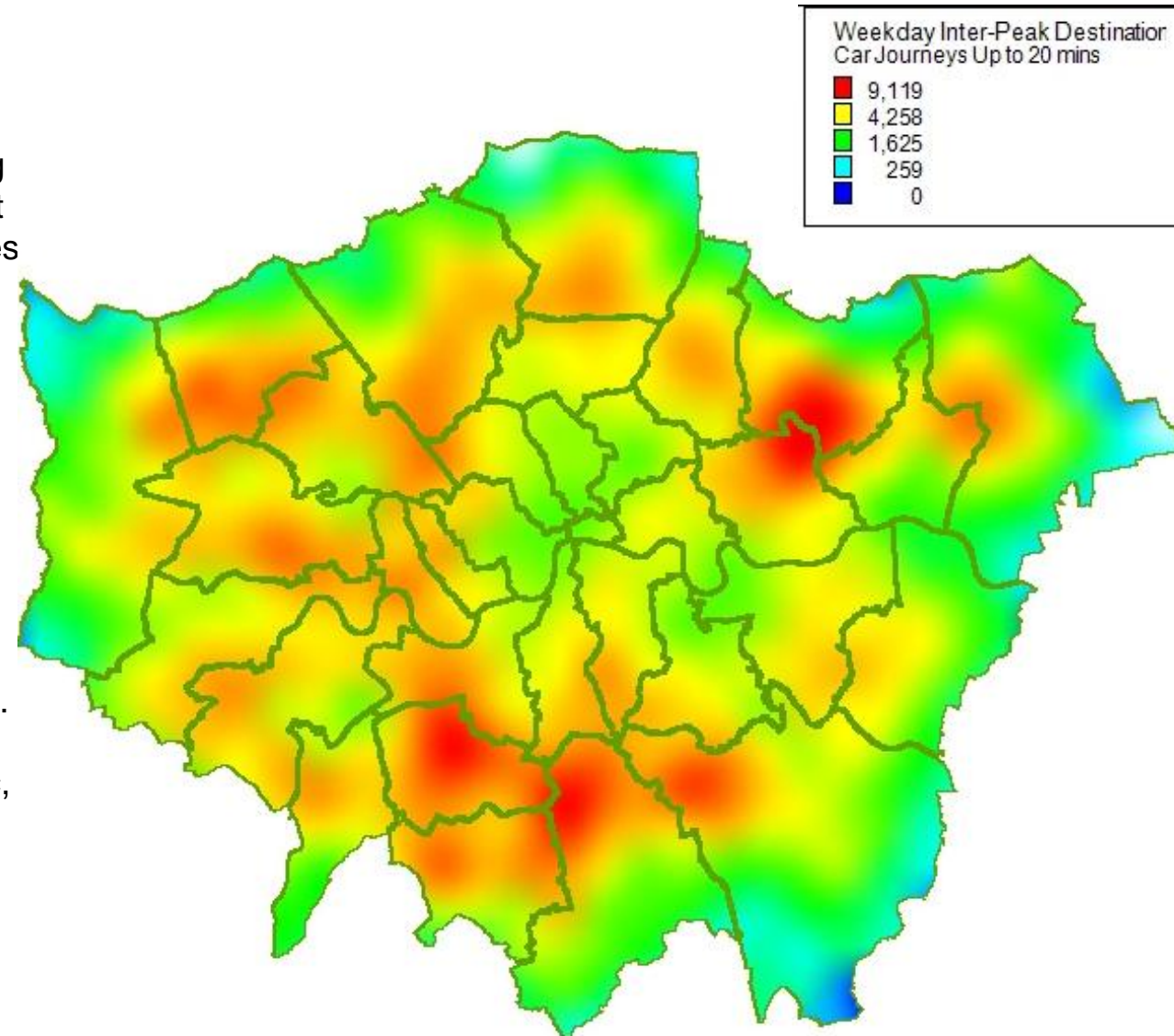
In the case of households requiring access to cars, there are some areas where the take up of car club membership is more likely and could have a greater impact. For instance, households with more than one car generate a disproportionate number of short car trips – just 28% of car-owning households own more than one car but about 40% of car trips under 20 minutes are made by people in this group. The impact of shifting one car to a car club car is shown to reduce the amount of short car trips and can reduce the pressures on space and environment.

In 2011, Borough Demand Analysis Packs for car clubs were circulated to boroughs which helped to support the case for expansion of car clubs and to inform local discussions with operators. Furthermore, if the implementation of these car clubs were to be fully electric, with a focus on EV infrastructure to support it, the CO₂ and air pollutant emissions would be reduced.

In the east sub-region there is some potential for car club implementation to the east of central London.

The River Thames

TfL will continue to assess the potential for passenger services on the Thames to achieve significant modal shift. The significant quantum of future riverside developments anticipated in the sub-region will play a key role here.



5 Delivering better streets and re-balancing places



Putting pedestrians and cyclists at the heart of places and improving the experience of walking and cycling is one of a range of approaches to enhancing the attractiveness of places in the east sub-region.

Analysis indicates that in the east sub-region, it is the inner London boroughs that need to support the greatest increases in walking. In the outer boroughs, the town centres are key focal areas.

But more widely there are still significant opportunities for modal shift to walking, and there must be an emphasis on delivering a step change in conditions for walking, particularly in inner London

neighbourhoods and town centres across the sub-region.

In many areas, win-wins are possible through intelligent rebalancing of priorities; in others, choices between competing objectives are inevitably required.

As well as ensuring high quality access for walking and cycling, reducing the dominance of motor vehicles in the street to create spaces where all users can spend time can support local business and endow the area with a socially and economically valuable cafe culture atmosphere.

Potential measures could include:

- high quality interchange
- accessible crossings, removal of guardrail, widened footways in key locations, de-cluttered streets
- greening' of the street
- simplified junction designs, removal of traffic signals, widened footways and improved accessibility
- better walking routes/wayfinding
- ensuring that all new development inspires people to walk and cycle and includes high quality urban realm and cycle parking facilities
- making the most of mass participation events to inspire people to walk and cycle and see places in a different light
- new ways of thinking about costs and incentives – creating financial incentives to walk/cycle and encouraging people to shop locally and reduce short car use
- improved connections to green spaces; green grid links
- exploration of 20mph zones in defined locations
- development of 'future urban villages' to bring together a comprehensive package of measures to help reduce car dependency, encourage active travel and deliver environmental benefits

The Mayor confirmed in April 2011 that LIP funding would be maintained at £148m for each of the three years.

The new Olympic Park will be the most important new green space in

London for over a century. It will be linked to the Thames through the proposed Lower Lea Valley Park and to the wider area by the East London Green Grid.

Good access for buses and ensuring the infrastructure to support these services (e.g. stands) is vital to ensure places remain accessible for work or shopping or leisure.

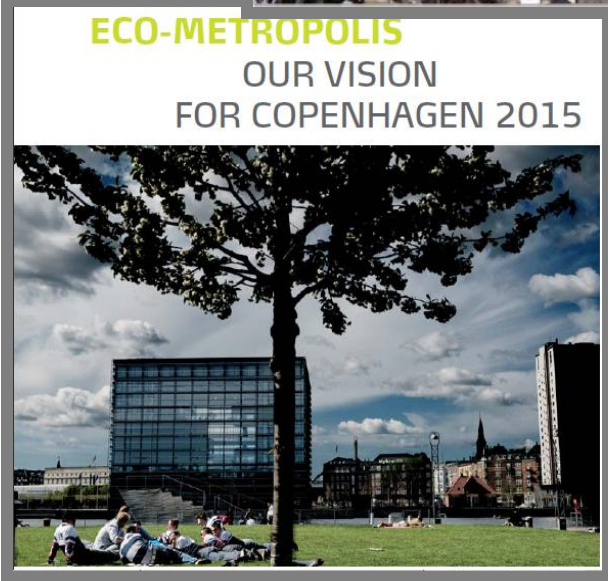
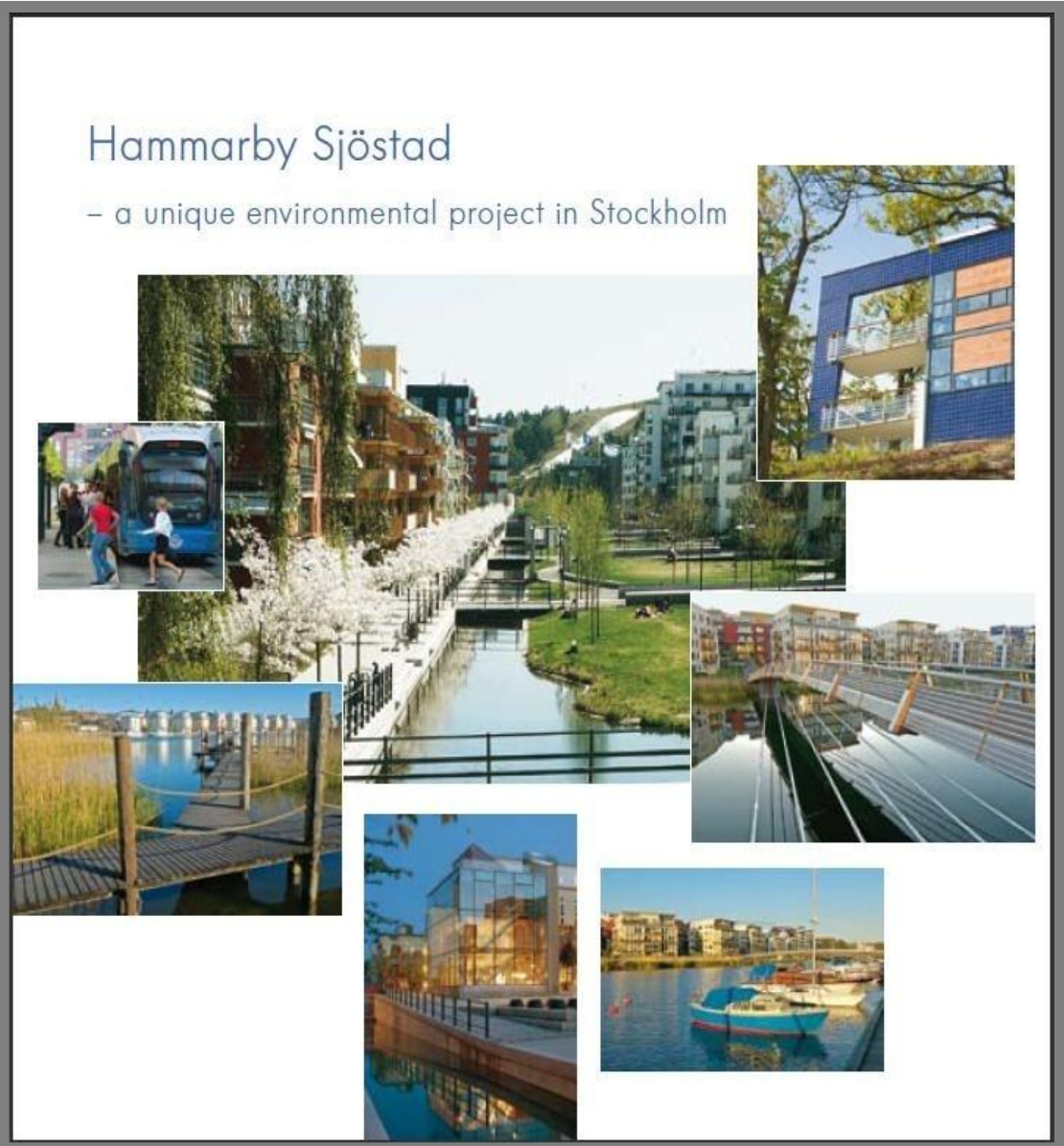
The Outer London Fund

The Outer London Fund, launched by the Mayor on 13 June 2011, is a three-year initiative dedicated to strengthening the vibrancy and growth of high streets and surrounding areas. At the centre of the initiative is funding of up to £50 million, supported by the offer of advice that can be targeted at improving the character, quality and economic vitality of selected high street places.

On 3 August 2011 the Mayor announced the Round One successful bids - the award of nearly £10m of funding to 20 boroughs across London. These made a visible contribution to the vibrancy and self-confidence of high streets in the lead up to the holiday trading season and beyond.

The second round of the Outer London Fund will continue the package of support, adding more places and shifting the balance towards large physical projects that can deliver lasting improvement.

5 Urban realm: lessons from elsewhere



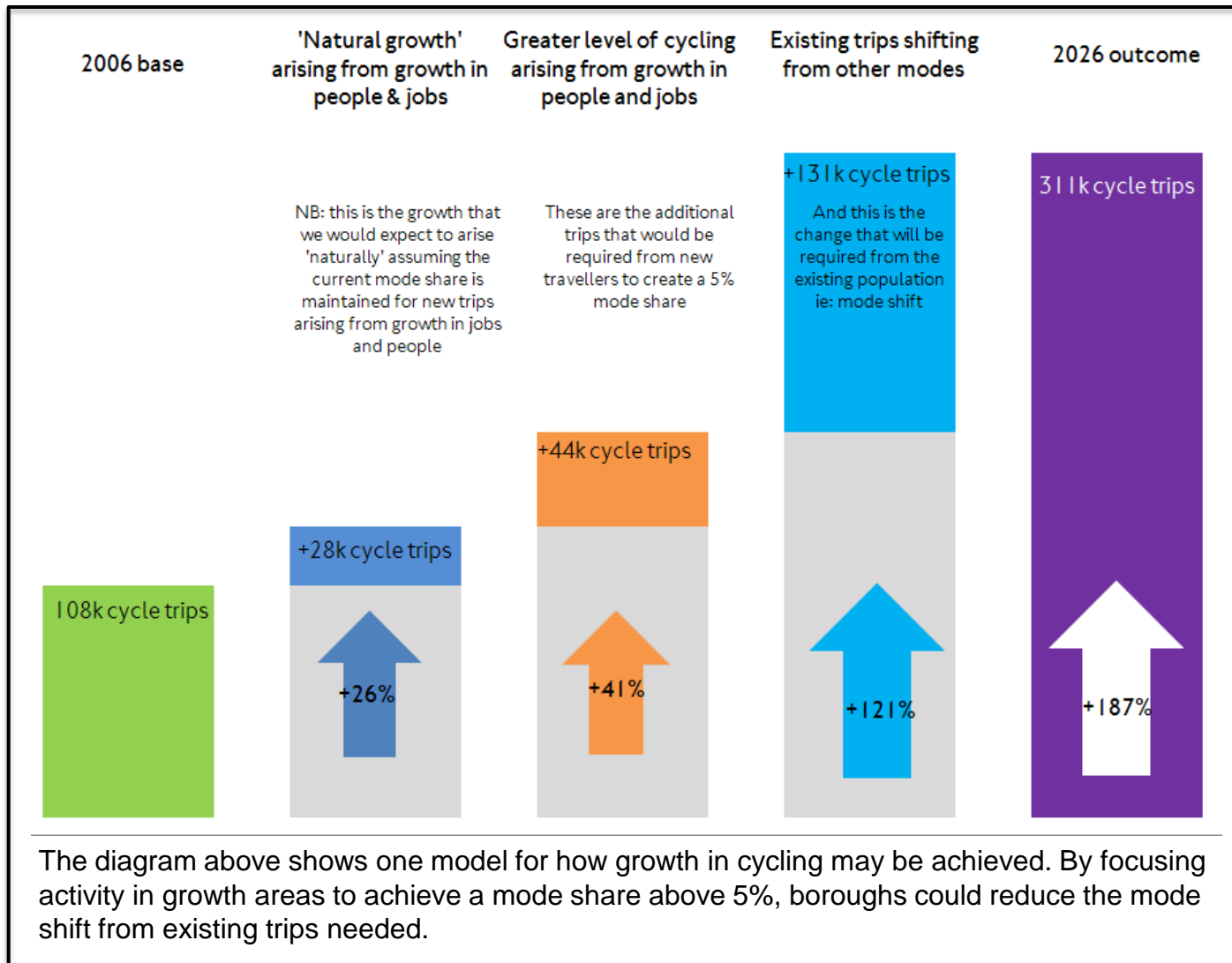
In considering how best to approach issues of urban design in London, instructive examples from elsewhere will be useful. Places such as Freiburg in Germany have adopted innovative approaches to parking and access and measures to embed walking and cycling – creating more liveable streets and promoting sustainable modes while safeguarding access to car transport

where needed. In Sweden's Hammarby, the focus is on integrating environmental goals into the development and expansion of an inner city neighbourhood. There is a particular opportunity in the east sub-region for collaborative working between boroughs, TfL and

other stakeholders to think differently about how places function in order to encourage sustainable change. The scale of growth expected in the Opportunity Areas means that it should be possible to ensure that conditions are created to minimise the risk of car dependency and maximise the attractiveness of sustainable modes of travel.

With the continuing increase in population, innovative means of decoupling regeneration and economic / social activity from car ownership and use – as far as practicable – will be increasingly important ('car-lite' growth). The development of the Greenwich Peninsula provides an example of how low-car development can be achieved in the east sub-region.

5 Increasing cycling



There are high densities of potentially cyclable trips in inner London and in the outer London town centres. This offers an opportunity for focused interventions.

Policies relating to road network management, public transport provision & place-shaping can be as influential as policies targeted specifically at cycling in the choice to cycle (or not).

Using lessons learned from Biking Boroughs for inner London could help capitalise on significant potential – learning from success stories to create a bespoke package tailored to the needs of inner London boroughs (focus on residential bike parking and security, permeability, maximising use of bus infrastructure etc).

Alongside this, TfL could work with all outer London boroughs to roll-out the types of activities from existing Biking Boroughs to ensure consistently high levels of cycling provision. On the strategic road network...

On the strategic road network, there needs to be enhanced focus on improving the cycling environment – starting with the review of key TLRN junctions. A focus on new development and, for example, embedding cycling even more strongly within OAPFs and masterplanning will be key to delivering the step change required.

There are significant challenges in the medium term and continued investment will be vital.

Cycle Safety

While the rate of deaths and serious injuries sustained by cyclists fell by 7% in the two years from 2008 to 2010, the absolute number of cycle casualties has increased because of the increasing popularity of cycling. The perception that cycling is not safe is the reason most frequently given by non-cyclists to explain why they do not cycle more. London's roads must be safe – and feel safe – for cyclists.

- Review of a number of key TLRN junctions (such as at Bow roundabout) and future design
- Reducing conflicts between cyclists and other vehicles through a joined up approach of education campaigns, more enforcement and improvements to road space.
- Working with the freight industry: innovations in technology/vehicle design .

Cycle Security

- Cycle theft is still a big problem in London and is a major factor in putting people off taking up cycling as well as causing new cyclists to revert to cars/public transport. There must be provision of more secure cycle parking and increased cycle registration.

Helping people make the change

- There are many people who are 'just like' cyclists but do not currently cycle, offering a substantial 'near market'. Measures designed to encourage leisure travel as a 'first step' eg events, training and quiet or off-road cycle routes
- Some of the anticipated population growth in The east sub-region is amongst groups of the population eg young families which currently have a low propensity to cycle and tend to aspire to drive.
- Expanding the appeal of cycling to a wider group of people - especially

women, people from ethnic minorities & lower income groups.

- Making cycling affordable for low income groups eg bike libraries, improving access to cycle-to-work scheme, community insurance, company bikes (similar to company cars), green points etc..
- Making the most of events such as a 'Marathon on Wheels' to inspire people to cycle
- Measures to help keen cyclists who move to London and find they don't have the cycle facilities they were previously accustomed to eg storage space at home and/or work, safe cycle routes

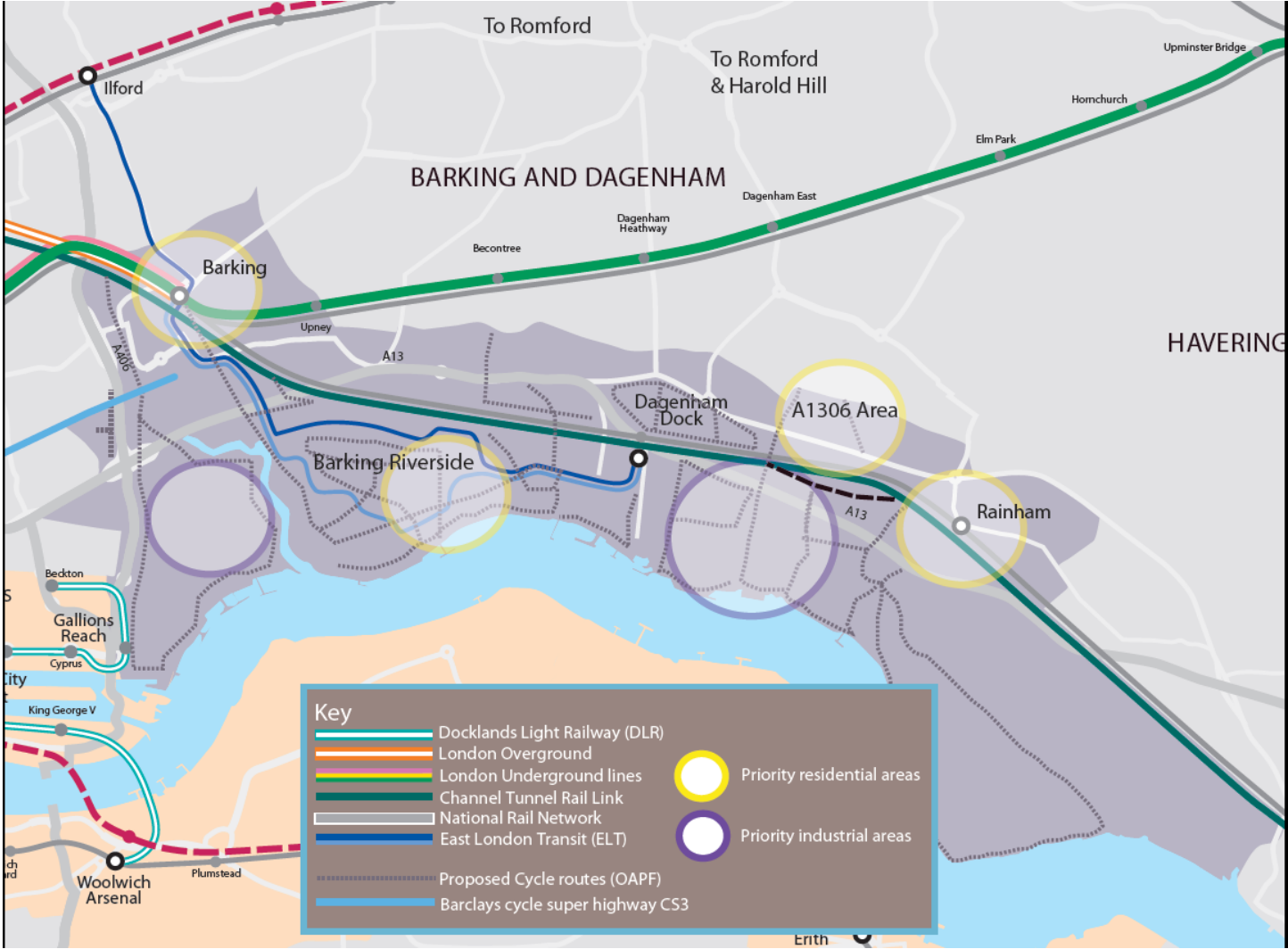
Integration into places

- Ensuring that the needs of cyclists are taken into account in the design of new places, from long-distance cycle commuters to young children learning to ride a bike
- A series of Cycle Hubs in high density destinations – dedicated routes, wayfinding, secure parking, maintenance, cafes & cycle shops.
- High quality interchange between cycling and PT, particularly rail
- Supporting the private sector to develop commuter cycle hubs offering paid-for cycle storage, maintenance, changing room and locker facilities at major employment destinations.
- Networks of connecting routes and cycle friendly treatments in local centres – quiet routes for accessing schools or for leisure travel; fast, direct routes for commuters ('Principal Cycling Routes'); improved legibility and permeability of streets.
- Visible and easy-to-follow routes to access shopping and leisure destinations.

5 A Cycling Demonstration in East London – London Riverside

London Riverside Plan

- The London Riverside Opportunity Area Planning Framework puts forward potential on- and off-road **cycle tracks**. These will extend CS3 and will help cyclists navigate the high number of large roundabouts and T junctions.
- **London Riverside Conservation Park** should become a cycling attraction, with clearly signed cycle routes that minimise the effects of humans on the local wildlife.
- Analysis shows that current residents may have a low propensity to cycle, so there needs to be an emphasis on **promotional activities and events** in schools and workplaces.
- Currently cyclists are isolated by the River Thames and River Roding. The new Gallions Reach to Thamesmead ferry (due to launch in 2017) will significantly improve cycle connectivity to south east London. The A13 provides the largest crossing over the River Roding and currently has cycle tracks in place. All future **river crossings** should consider cycle accessibility for the required growth in cycling to be achieved.
- **Cycle parking** will need to be conveniently located and secure. The huge levels of development expected need to be accompanied by workplace and residential cycle facilities such as parking, showers and lockers. Cycle parking should be as convenient as car parking, and on street car parking should be minimised wherever possible.
- Levels of **cycle access** could be improved by a cycle hub in the region, learning from the cycle hubs in Barking and Romford. Workplaces and schools could also set up their own schemes with assistance from the boroughs.



Progress so far

- ELT has provided better connectivity and reduced car numbers on the A13.
- London Riverside Conservation Park provides natural cycling territory, although may be a barrier for public transport expansion in the east of the area.
- Cycle Superhighway 3 (CS3) connects the region with inner London and early figures indicate that there has been an increase in cycle flows of 24% since CS3 opened.
- The London boroughs of Barking and Dagenham and Havering are both Biking Boroughs and as part of their funding they are aiming to deliver two new cycle hubs, in Barking and Romford town centres.

Key challenges

- Severance caused by the River Roding, the River Thames, and the A13.
- Relatively low public transport access.
- Predominantly industrial brownfield land, which is not attractive to cyclists.
- Across all three boroughs containing London Riverside, the mode share for cycling is low, at just 1% of trips originating in the area, compared to a London-wide average of 2%.
- Predominantly segments with a low propensity to cycle.

5 Increasing walking

Walking is the most common mode of accessing district town centres. It is also the second most common means of accessing all types of town centres after buses, with mode share increasing to 28% since 2009.

Those who walk to town centres spend the most per head per month (£373) – substantially higher than any other mode (buses are next closest on £282). Pedestrians also spend more per month in every type of town centre than any other mode; average monthly spend in town centres by pedestrians has increased from £360 in 2009 to £373 in 2011. Securing the benefits of good pedestrian access to both local and district centres is therefore a key priority.

Through the Mayor's Making Walking Count programme, TfL is focusing on three main themes:

- **Infrastructure**
- **Information**
- **Promotion**

Each theme is supported by a series of walking programmes and projects that deliver walking enhancements and realise the Mayor's walking objectives.

Key Walking Routes

The Mayor is committed to rolling out the key walking route approach to all boroughs. By March 2012 TfL and boroughs will have delivered 14 Key Walking Routes, including four in the east sub-region.

Legible London

With the Greater London base map now complete and available for use, TfL and the

boroughs are engaged in a significant expansion of the system on-street. Major implementations are planned for the Olympic fringe and the 2012 Games Walking & Cycling Routes.

As well as the on-street signs, TfL and partners are working to expand the reach of the system. LU stations and London bus shelters are already transferring to Legible London mapping for customer information.

TfL is also working with train operating companies to install Legible London maps across London's suburban rail stations.

Walk London network

TfL funding with borough support was allowed this network of seven walk routes to complete on time for the 2012 Games and Diamond Jubilee.

TfL data highlights that leisure walking opportunities support people to consequently undertake more utility (everyday) walking over time.

TfL aims to work with the boroughs through LIP to support and maintain usage of this network now that physical improvements to the routes are complete, with the London LOOP, Lea Valley Walk, Jubilee Greenway and Capital Ring all passing through the region.

Safety

A key delivery priority for walking beyond the three programmes above is to reduce the number of pedestrians killed and seriously injured across London, using targeted projects

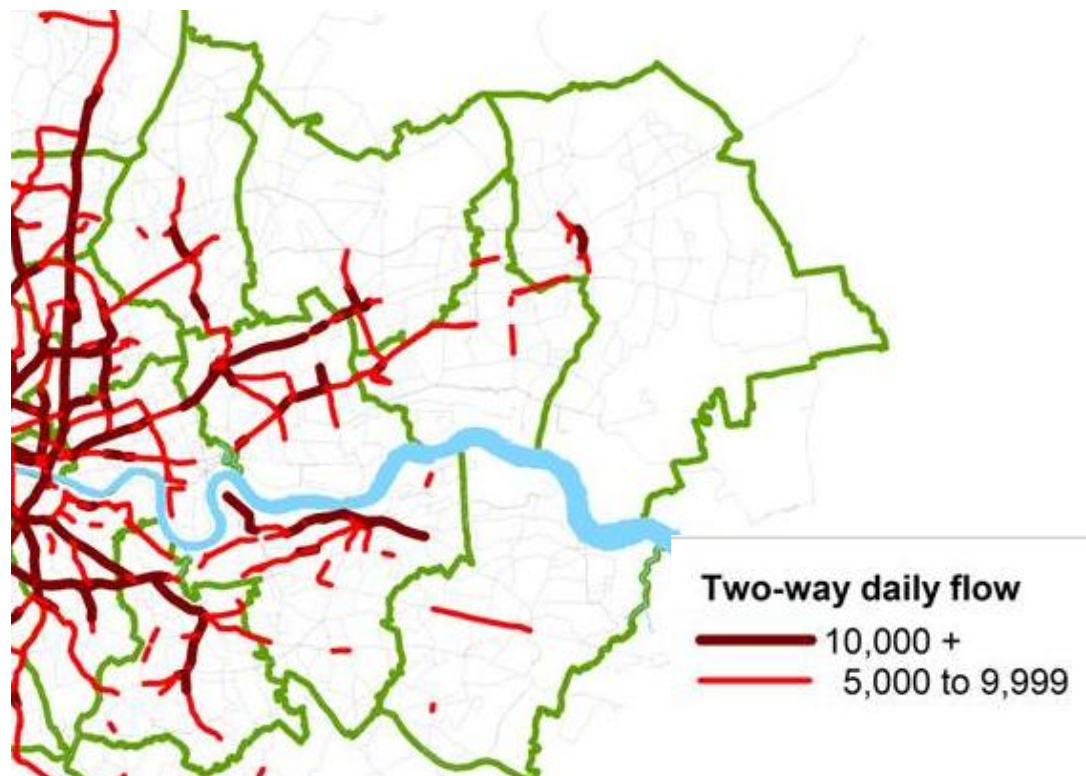
at collision hotspots.

The walking KSI figures significantly exceed those for cycling that are rightly a key Mayoral priority.

There is also an opportunity to harness excitement about the Olympics, including local Greenways; a walking and cycling incentives scheme and a large-scale active travel programme for the Games and beyond so that improved levels of walking can be maintained. The Lea Valley Walk runs adjacent to the Olympic Park and has a critical role to play in facilitating pedestrian access through the Lea Valley as a spine and in legacy post-Games for active travel movements.

5 Bus: developing the network and infrastructure

Bus network: two-way flows of at least 5000 passengers per day



Strategy

The development of the bus network will continue, in consultation with boroughs and other stakeholders, with the strategic aim being to maintain a network which is:

- Frequent
- Comprehensive
- Reliable, and
- Easy to use

This strategic aim is based on the priorities of existing passengers and potential passengers. However, there are different responses to the challenges over the short, medium and long term.

Short Term

Short term changes in demand from new developments, particularly housing, will be accommodated through adjustments of existing services or extra services where funding is available.

The Olympic legacy will require new services

in and around the Olympic Park. Indicative plans were prepared during 2009/10 as part of the funding process and these will be refreshed as the post Olympic plans continue to be developed.

Improvements to reliability will be possible through planning using additional data, eg iBus, and through better management of projects affecting the highway, including roadworks.

In some cases the scope of bus priority measures may be changed in the short term, with boroughs and TfL working together to maintain the efficiency of existing priority and keeping potential facilities under regular review. The most important locations will remain the town centres as hubs of the network and corridors with high bus frequencies.

The measure of bus reliability, Excess Wait Time shows improvement in each borough of the sub-region.

Medium Term

Bus services are designed as part of the wider transport network. Good integration with rail, tram, walking and cycling helps maximise overall benefits.

The opening of Crossrail towards the end of the decade will significantly change the capacity needs in the east sub-region.. A particular result is likely to be an increase in demand for orbital travel to stations along the route. TfL is undertaking work on the possible reconfigurations of the bus network required as a result of the changes. This will include:

- Maintaining or improving bus journey speeds
- Providing sufficient bus stopping and terminating space and maintaining or improving interchange facilities, particularly where new Crossrail services are expected to attract significant numbers of new trips – in Bexley, for example, and at Harold Wood, Romford and Ilford.
- Retaining and improving bus access to major passenger attractors, including town centres, stations and health facilities and various Crossrail stations, particularly to Woolwich and Abbey Wood from the south

In parts of the sub-region where substantial new development is planned, opportunities for more extensive bus priority can be taken, particularly where new local road networks are needed in any case.

London Riverside is an area characterised by lower density development – justifying increased service levels will require higher-density development to be concentrated close to existing transport hubs. In addition, continuing to improve bus services and bus penetration will be a key part of successful regeneration of the area.

Ensuring that there is sufficient space for terminals near to where routes end is a key priority to enable the network to operate reliably. These are often in town centres where demand for space is limited, with Abbey Wood and Woolwich requiring specific improvements. Furthermore, garage capacity is essential to providing a bus network. The locations of bus garages in the sub-region and the locations are generally well-matched to the network they support.

The transport interchange opportunity being implemented at Rainham Station developing and improving interchanges and access to town centres, such as the East London Transit routing in Barking.

Long Term

All of the challenges of the medium term will carry through to the longer term beyond 2020. There may be opportunity to exploit selective additions to the road network where justified by intensification at new developments and in Opportunity Areas, eg Silvertown Crossing and on selected transverse road links in the Barking and Havering Riversides. In these locations the case for bus priority should always be considered from the earliest stage of design.

Supporting growth

Bus services are the only public transport serving all areas of the sub-region. Bus services and bus infrastructure are therefore relevant to almost every medium or large-scale planning exercise in London.

The table over the page shows the main hubs of the bus network in the region and gives examples of residential, commercial and social development which could be supported by investment in bus services or infrastructure. Some are existing sites, others are forthcoming or aspirational.

5 Managing streets: supporting growth across the sub-region through buses

The effectiveness of bus service improvements always depends on the supporting infrastructure, both in new developments and at other places served by the routes in question. For example, intensification of bus services between a town centre and a new housing area can be supported by bus priority on-site but will also need new terminal capacity in the town centre.

| Place-type | Locations in the sub-region | Pressures include: | Measures to support bus use | Examples where undertaken |
|------------------------|---|--|--|--|
| Major hubs | Romford, Lewisham, Ilford, Barking, Bexleyheath, Woolwich, Hackney, Walthamstow, Stratford, East Ham | Population growth creating pressure on roadspace and terminal capacity | <ul style="list-style-type: none"> • Direct access to major passenger interchanges • High quality interchange facilities • Sufficient terminal capacity • Bus priority on approach corridors | Masterplanning exercises in various major town centres Crossrail integration |
| Other significant hubs | Eltham, Dalston, Catford, Greenwich, North Greenwich, Sidcup, New Cross, Abbey Wood, Erith, Grove Park, Hornchurch, Beckton, Chingford, Canary Wharf, Bethnal Green, Canada Water | | | Overground integration Crossrail integration |
| Residential areas | Throughout the area. | Requires additional public transport capacity | <ul style="list-style-type: none"> • Direct alignments through the site • High quality bus stops • Bus terminals where appropriate • Bus priority on-site and on adjacent links | Lewisham, Greenwich and Bexley riverside Barking and Havering riverside Lower Lea Valley Harold Wood Royal Docks |
| Commercial sites | Industrial, office, retail and leisure sites throughout the area. | | | |
| Social facilities | Healthcare and education sites throughout the area. | | | Healthcare reorganisation schemes, eg. use HSTAT to efficiently plan health services to reduce transport impact |

5 Making the roads safer

London has achieved substantial reductions in casualties and collisions over the last decade, including the great success in reducing the numbers killed and seriously injured and the numbers of reported slight injuries.

Compared to the 1994-8 baseline, the number of people killed or seriously injured in road traffic collisions in the Capital has fallen by 57%, and the number of reported slight injuries by 33%. 3,798 fewer people were killed or seriously injured on London's roads; and 12,994 fewer slight injuries were reported in 2010 compared to the baseline years.

TfL, London Boroughs and the Police continue to work extensively to deliver comprehensive road safety programmes which are helping to improve the safety of our roads. TfL have been working closely with key stakeholders over the last year to develop a new Road Safety Plan for London that reflects the needs of all road users in London.

The draft Road Safety Plan will shortly be going out to external consultation. The initiatives designed to reduce road casualties can be divided into two broad categories. The first are those activities that are applied London-wide, with the aim of achieving overall reductions in casualties. The second category are those targeted activities designed to tackle particular issues or the casualties affecting specific road user groups. We need to pay particular attention to the types of travel and traveller who are over-represented in the casualty figures:

- Walking accounts for 21% of daily journeys, but 32% of KSI casualties in London;
- Powered two-wheelers account for 1% of daily journeys, but 21% of KSI casualties in London;
- Pedal cycles account for 2% of daily journeys,

but 16% of KSI casualties in London.

- A significant focus for road safety activity in London is, therefore, on providing targeted road safety interventions for pedestrians, motorcyclists and cyclists to address their disproportionate casualty rates.

London-wide

London-wide programmes help reduce road casualties in a variety of ways, including:
Changing the physical environment – using highway engineering to deliver safer streets and public spaces

Education, Training and Awareness – using public awareness campaigns and a wide range of communication methods to change user behaviour

Enforcement – action by police and other agencies to ensure road users behave safely
Working with others – leveraging knowledge, insights, resources and activities of other organisations.

Targeted initiatives

Alongside the roll-out of London-wide programmes, achieving change depends on the combined actions of boroughs in the sub-region and many organisations. This collaboration is a central tenet of the proposed approach to achieve progress in the future and to allow measures to be tailored to target local concerns. In addition, improved information and analysis, insights from data and research will assist in targeting specific issues and user groups and help reduce road casualties.

TfL will work with other organisations to develop and implement specific programmes where analysis and data suggest further work is required, including:

- Car occupants
- Pedestrians
- Children
- Cyclists
- Powered two-wheeler users
- Tackling excessive or inappropriate speed
- Uninsured / illegal driving / hit and run

Cyclists and HGVs

Most cyclist and Heavy Goods Vehicle (HGV) collisions happen when vehicles turn left at traffic lights or other junctions.



What TfL is doing

- Providing free Fresnel lenses to operators
- The Olympic Delivery Authority distributed 5,000 FRESNEL lenses to vehicles working on the Olympic site
- FORS distributes stickers which warn cyclists of the dangers of undertaking on the left of an HGV
- Free or low cost cycling training is available in all London boroughs
- Training film to teach cyclists and lorry drivers safe driving techniques
- Junction reviews
- "Trixi" mirrors

5 Managing streets: London's Great Outdoors

The 2012 Olympics has brought the world's attention to the east of London and thousands into its public spaces. Investing in public space sits within the London Plan, as well helping to deliver on many of the policy aims of the Mayor, such as the Transport Strategy, Biodiversity Strategy, London Health Inequalities Strategy and Draft Climate Change Adaptation Strategy.

The Mayor's lead provides strategic leadership for regional partners and stakeholders, creates momentum, and brings investment from other sources, including the private sector.

Since 2009, a range of projects have been completed under the London's Great Outdoors programme, which was launched by the Mayor in 2009 and brings together a wide range of projects and investment to improve the quality of London's streets, squares, parks and open spaces.

Public space projects delivered to date include improvement of Barking town centre, and the Dagenham Washlands (whose 4km of new and improved foot and cycle paths will create the final link in the green network along the Beam Valley, and reconnect 40,000 local people to the Thames for the first time in 90 years), and improved interchange at Gants Hill, which have improved safety for pedestrians, cyclists and

motorists, and created new public spaces for Redbridge residents.

Projects underway include Ingbourne Valley, Avery Hill Park, and Hornchurch Town Centre, as well as Mayesbrook Park and the Rainham to the Thames works.

By the end of 2011, 45 projects had been completed, and a further 35 are on track to be delivered by summer 2012.

These projects, all investing in the public space to some degree, have been delivered with productive collaboration with the boroughs by Transport for London and the London Development Agency, supported by Design for London, and championed by the Mayor's Design Advisory Panel and others.

One of the successes of London's Great Outdoors programme has been the demonstrable ability to leverage funding from other sources. Since 2009, the programme has expanded from £225million in secured funding to £355million. This investment in public space is not all from the mayor; £171 million has been leveraged from third parties.



Erith Marshes and Belvedere Links

5 Developing the road network

The Mayor's Transport Strategy states that TfL will give consideration to new road schemes where there is an overall net benefit when judged against the following criteria:

- Contribution to sustainable development/regeneration including improved connectivity.
- Extent to which congestion is reduced.
- How net benefit to the environment can be provided.
- How conditions for pedestrians, cyclists, public transport users, freight users and local residents can be improved.
- How safety is improved.

In tackling congestion there are a number of potential solutions (albeit that these may help mitigate potential increases rather than permanently solve the problem). The previous sections emphasise the need to encourage mode shift, reduce demand for travel by car and promote more sustainable freight transport – but there are limits to what can be delivered in terms of journey times and reliability given the traffic levels at which the network is operating.

Given the importance of ensuring efficient access for freight and the continuing need in some cases for travel by private car, there also needs to be a focus on what can be done on the supply side to support such journeys. This can be split into two distinct categories:

1. The provision of new links which provide access into Opportunity Areas and other growth areas
2. New road capacity for strategic traffic

New links to serve Opportunity Areas will be required in order to provide access to the new developments as they get developed. As well as providing limited access for cars and freight these links give the opportunity provide good access for buses, pedestrians and cyclists. It is also vital that these modes are provided with good links into the surrounding network. It will be possible for

instance, to build in cycle lanes and bus priority. At this stage when people move into an area they will tend to evaluate their transport options, it is vital that they are offered a choice of mode and this offers a good opportunity to encourage people to switch from car to public transport, walk or cycle.

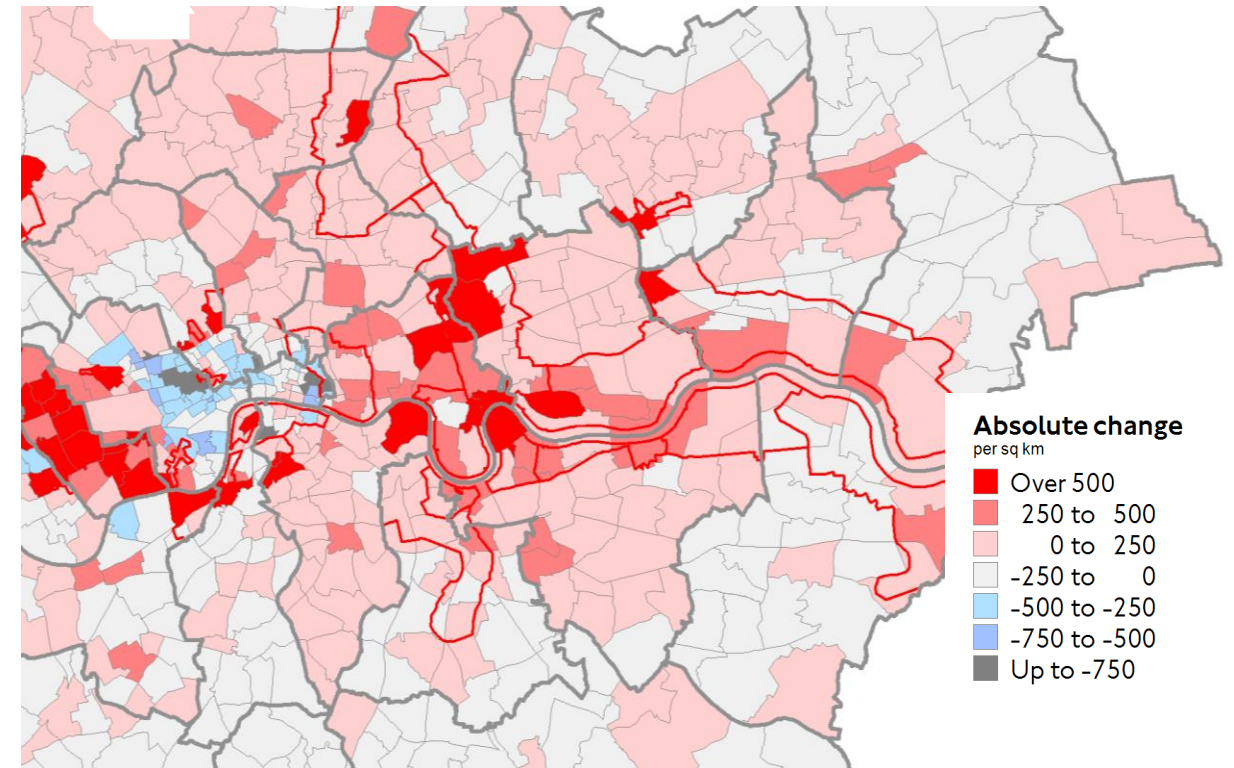
In some parts of London where tackling congestion is a priority and all opportunities for mode shift and demand management have been explored then it may be necessary to consider further development of the road network through additional road capacity such as bypasses or tunnels. Such schemes would only be considered where they met the criteria from MTS set out above. Instances where such proposals might be required might include:

- New strategic connectivity, such as river crossings.
- Providing alternative routes for current traffic in order to relieve congested locations (e.g. town centres) which may also contribute to place making and measures to improve quality of life.
- Relief on key radial and orbital corridors where other measures are inadequate.
- Improving routes for buses, cycles or pedestrians by providing additional road space which is dedicated for their use.

The sub-regional planning process offers an opportunity for TfL and Boroughs to work together to integrate congestion measures with other priorities in locations where there is particular conflict or current / future pressures.

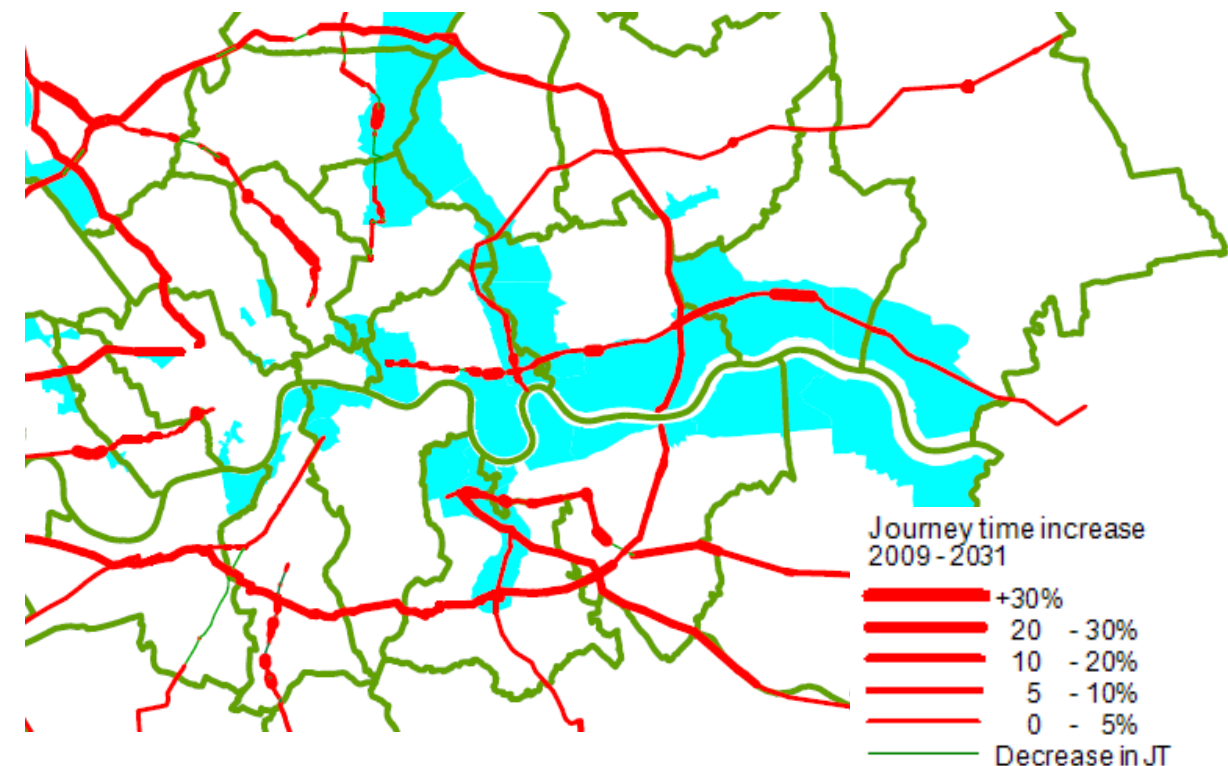
The following maps show future changes in demand for car travel and the corresponding increases in journey time in 2031.

Absolute change in trip destinations for car trips per square kilometre between 2007 and 2031 (AM peak)

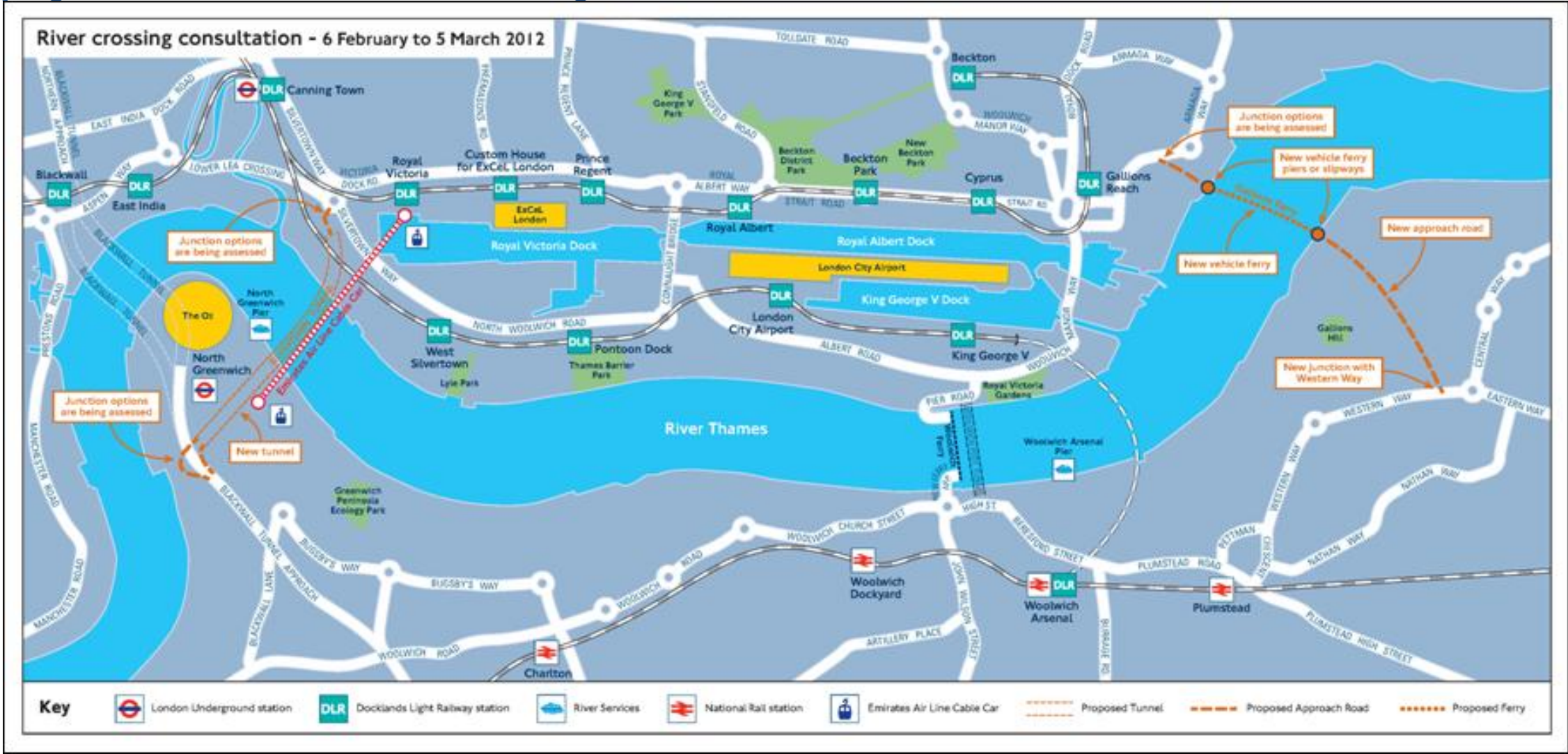


London-wide route – inbound journey time changes

AM peak HAM analysis



5 Developing the road network – River Crossings



TfL recently consulted on behalf of the Mayor on proposals to improve highway river crossings in east and southeast London. Further consultations would follow if the Mayor chooses to progress one or more of these schemes. The proposed package consists of a new road tunnel at Silvertown and a new vehicle ferry at Gallions Reach.

The Silvertown Tunnel
 A new road tunnel at Silvertown here would add more capacity to the road network and offer an alternative to the Blackwall Tunnel. It would also be designed to

accommodate tall vehicles, which the Blackwall Tunnel cannot. This would reduce the peak period delays at the existing tunnel and reduce closures. It would also help to realise the potential of the surrounding development areas like the Royal Docks and Greenwich Peninsula (some 13,000 new jobs and 24,500 new homes).

Any local traffic and air quality impacts would be carefully managed. The earliest a new road tunnel at Silvertown could be opened is 2021, provided that the necessary consents and funding are available.

Gallions Reach ferry
 The ferry and piers at Woolwich will be fifty years old next year. While recent investment means it can continue in the short-term, in the longer term we need new boats and piers. At the same time TfL is considering the location of the ferry crossing. Options need to take account of where the growth and demand will happen, help relieve existing congestion and be well-integrated with the road network. A new vehicle ferry crossing at

Gallions Reach would improve connectivity for vehicles wishing to cross the Thames between Thamesmead and Beckton, and provide an alternative route into the Royal Docks from the south east. It would be purpose-built to modern standards and be able to carry more vehicles per boat than the existing Woolwich ferry. This location would provide a more direct route for most traffic, with better queuing facilities and would also help to relieve congestion in Woolwich town centre. It could be delivered by 2017 subject to securing the appropriate consents and funding.

5 Tackling air quality hotspots

PM10 concentrations

As highlighted in Section 4, the highest concentrations of airborne particulate matter in the east sub-region tend to be close to major roads, although some pollutant sources (such as industrial activities) can contribute to local elevations.

While PM₁₀ annual and daily mean limit values are expected to have been met by 2011, it will still be important to continue to focus on reducing PM10 and PM2.5 emissions.

NO2 concentrations

Meeting the NO₂ limit value is recognised as challenging and the problem is much more widely spread across London than for PM₁₀.

Many roadside locations in the east sub-region currently exceed, and are likely to do so in future years based on current trends information.

47 focus areas were identified in the east sub-region and a toolkit of potential measures for consideration was presented.

Some locations are corridors where housing is in close proximity to longer sections of roads other locations are junctions where a combination of traffic flows from different road is affecting air quality

in the area. There are also locations in town or district centres where complex traffic flows and junctions are important

NO2 – London-wide measures

The Mayor's Air Quality Strategy proposes that the London Low Emission Zone be extended to place standards on NO_x emissions as well as PM₁₀. A Euro IV standard for heavy vehicles is planned for 2015 but implementation requires assistance from central Government.

To ready the London bus fleet for the tighter emissions standards the DfT have awarded TfL with funding to fit Selective Catalytic Reduction (SCR) and replace diesel buses with hybrids.

Retrofitting a Euro III bus with a SCR reduces NO_x emissions by around 70%. A hybrid bus emits around 40% less NO_x and 30% less CO₂ than a standard diesel bus through reduced fuel consumption.

Across the focus areas, buses contribute on average 36% of NO_x emitted by road transport, and at 32 sites the contribution of buses is over 50%. Tackling buses represents an opportunity to significantly reduce levels of NO₂.

NO2 – local measures

Using a similar approach to the

PM₁₀ Clean Air Fund, a fund will be developed focussing on NO₂ focus areas, which are located across Greater London. This would be a mixture of GLA Group-led initiatives and community-led initiatives.

Examples of possible GLA Group measures include:

- Urban greening.
- Retrofitting schemes to reduce NO_x emissions from gas heating.
- Trials of innovative technology and processes (eg. photocatalytic surfaces, Copenhagen Wheel).
- Local freight consolidation schemes.
- Small-scale traffic management schemes
- Cleaner bus technology and efficient deployment along routes that include priority locations.

The fund will also assist local communities at priority locations to develop their own air quality schemes, such as:

- School and business engagement campaigns (including local 'air quality champions').
- Promotion of accessible air quality information.

Schools NO2 toolkit

32 primary schools are located within NO₂ focus areas, along with a number of secondary schools.

The Mayor's Air Quality Strategy includes proposals to raise

awareness of air quality issues in London, to encourage innovation in air quality management, to improve energy efficiency of buildings and to encourage smarter choices and sustainable travel.

There has recently been much research into the impact of air quality on young people, particularly with regards to lung function and the onset of asthma.

The GLA and TfL are seeking to develop advice to schools that would help them:

- promote student understanding of the causes and impacts of pollution;
- maximise the air quality benefits of school travel plans and energy efficiency programmes;
- take practical measures to reduce exposure of staff and students to poor air quality.

Taxis

Maximum age limits for taxis and PHVs have been reduced to help improve air quality across the Capital. Other measures, such as providing dedicated taxi ranks and parking bays for PHVs, can also help improve air quality by reducing unnecessary engine idling and the need for vehicles to be constantly moving.

5 Reducing CO2 emissions

London has a target of reducing CO2 emissions by 60% from 1990 levels by 2025. Each sector is taking on this challenge. Currently funded transport schemes are likely to lead to a 20% reduction compared to 1990 levels.

The CCMES was published in October 2011, setting out a range of transport and other measures to tackle climate change. While CO2 reduction is a London-wide - and indeed global task - action must also be taken at a sub-regional and local level.

Measures to support people in making a switch to more sustainable modes and changing their behaviour will play a key role in reducing the environmental impacts of growth. Technological change will also play a critical role in helping us to meet the CO2 targets in London.

Further use of ultra-low carbon vehicles

The Mayor is introducing low carbon buses, with 300 hybrid buses coming into service by the end of 2012, including the New Bus for London which has fuel consumption expected to be nearly 40 per cent better than a conventional diesel double decker bus. The Mayor is also working to introduce hydrogen-fuelled vehicles into London.

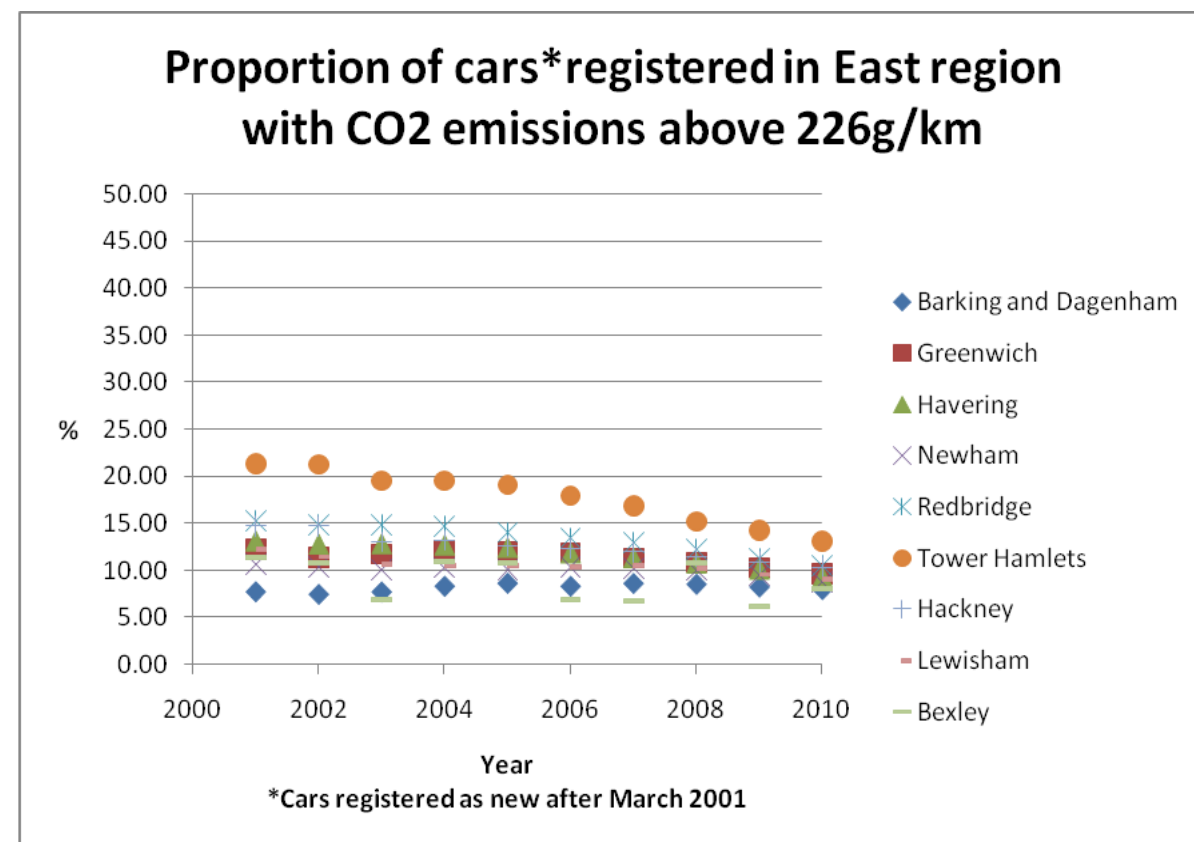
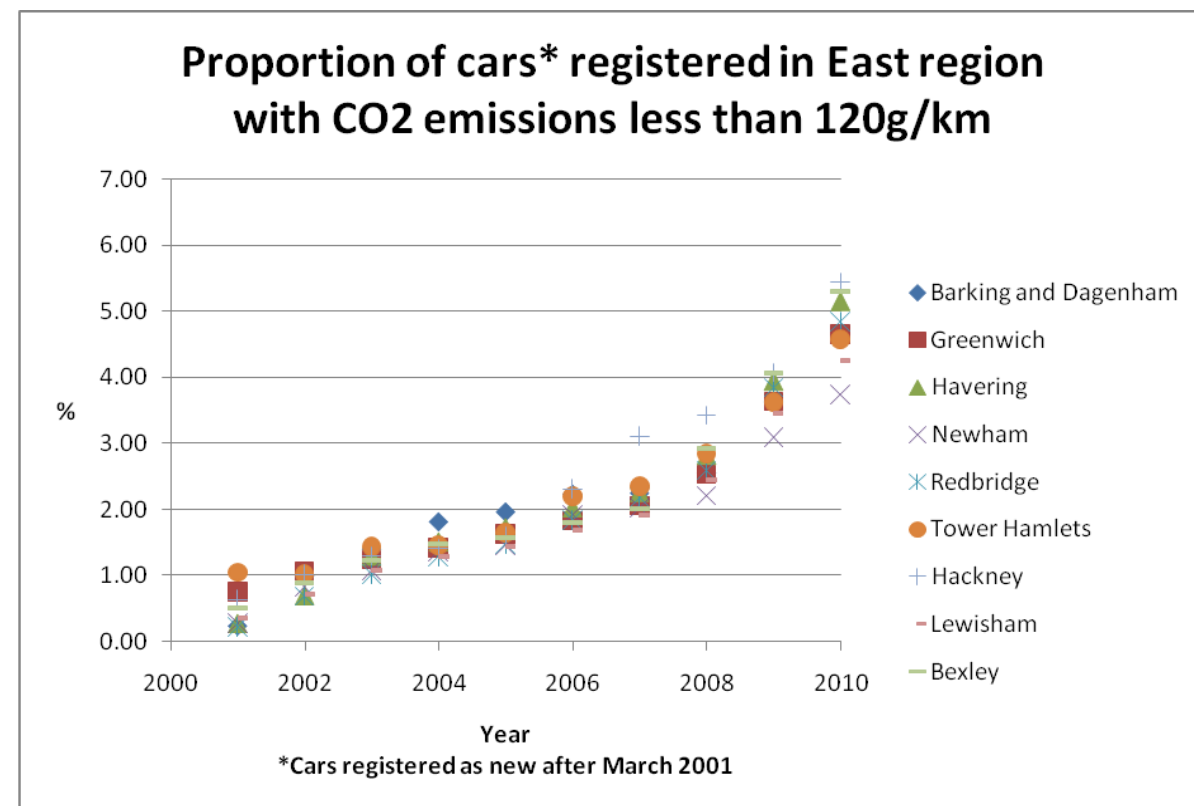
Electric vehicle rollout

The Mayor wants London to be the electric vehicle capital of Europe, with

new charging infrastructure being rolled out to support the introduction of 100,000 electric vehicles on London's streets.

As part of this is Source London was launched in May 2011. This is the UK's first citywide electric vehicle charging network and membership scheme.

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6. Funding and delivery

6 Scheme assessment, funding and implementation

Strategic assessment of proposals to deliver the sub-regional plan

Transport for London (TfL) has developed a Strategic Assessment Framework (SAF) to help examine different project options and their contribution to the delivery of the Mayor's Transport Strategy (MTS) goals and outcomes. The SAF is intended to ensure that project development and ultimately, funding decisions, are informed by the assessment of the broader strategic impacts of interventions against the MTS and their deliverability. Thus ensuring due consideration of cross modal solutions to key transport challenges.

Funding

The availability of funding is a critical issue. In some cases further work is required to identify funding sources and exact delivery timescales for priorities. The gap between what is assumed funded and what is needed widens over time.

The importance of working in partnership with businesses, BIDS and other third parties is critical to securing match funding and maximising delivery. For example, since 2009, 45 projects have been completed under the Mayor's Great Outdoors Programme, and a further 35 are on track to be delivered by summer 2012. This £355million investment in public space is not all from the Mayor; £171 million has been leveraged from third parties, which is an approach we should continue to seek.

In addition to this boroughs and other stakeholders should continue work with partners to secure additional local sources of funding, practical assistance with cycle maintenance and training, or – potentially in the case of larger businesses – the installation of electric vehicle charging points.

The figure on the right illustrates the potential sources of funding for 'core' business and extensions to the transport system. London's growth creates opportunities for funding schemes that otherwise could not be delivered.

In summary, therefore, it will be increasingly necessary to harness additional resources to enable the services and investment needed to meet long term outcomes through: partnership working, match funding, making the most of Government grant for basic service provision and asset maintenance and renewal; and developing and lobbying Government for innovative sources of income for network extensions to support development of the transport system.

Implementation Plan

Appendix A sets out the schemes planned for implementation in the central 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 2014
- 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 which include Local Implementation funded schemes. 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.

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.

| Maintain & Renew | Enhance | Expand |
|--|---|--|
| Traditional funding sources <i>(Government grant, fares, efficiencies and savings)</i> | | Innovative funding sources <i>(eg CIL, business rates, tolls, EU)</i> |
| Renewal of life-expired infrastructure Replacement rolling stock, signalling, escalators etc Replacement highway infrastructure Infrastructure maintenance Core service provision Improvement in air quality and a reduction in CO2 | Additional rolling stock Increased track capacity Better streets & highway development Operational enhancements Station and interchange schemes Bus service capacity enhancement | <ul style="list-style-type: none"> • Schemes with localised impacts which enables value capture eg extensions to growth areas (suited to CIL and other planning contributions) • Major highway development / river crossings which generate value / encourage development • Major new London-wide schemes with large network impacts (would require BRS) • Business Improvement District and landowner contributions for public realm schemes and servicing and delivery improvements • European funding which funds or match funds transport innovation |

6 Delivery – Local Implementation Plans

The Sub-Regional Transport Plans were written to provide a bridge between the Mayor’s Transport Strategy and the Local Implementation Plans.

For this round of LIP (2010/11 – 2012/13) boroughs had the SRTP Challenges and Opportunities Paper, rather than the full SRTP to align their LIP against.

| <u>SRTP Challenge</u> | <u>Major Schemes</u> | <u>Integrated Transport Schemes</u> |
|---|---|--|
| 1) Maximising the benefits of committed investment | | <ul style="list-style-type: none"> Woolwich Crossrail Station improvements with £2.631m S106 funding in 2011/12-13/14 (Greenwich) |
| 2) Improving connectivity to, from and within key locations | <ul style="list-style-type: none"> Hornchurch Town Centre public realm, W&C, safety and bus stop improvements with £2m TfL and £2m Council funding in 2011/12-13/14 (Havering) Romford Town Centre as above, £620k LIP, £30k S106 and £3.7m Council funding in 2013/14 (Havering) Broadway Market Step 1 Major Project Funding of £500k and Council funding of £1.2m in 2011/12 Woolwich Town Centre / Wellington Street Major Scheme with £220k LIP funding in 2011/12 Sidcup Town Area Renewal with £70k LIP funding in 2011/12 (Bexley) | <ul style="list-style-type: none"> Improvements to PT interchanges at Romford, Harold Wood, Hornchurch and Upminster railway stations with £670k LIP funding in 2011/12-13/14 (Havering) Barking Station forecourt improvement with £500k LIP and £400k LTGDC funding in 2011/12-13/14 (Barking & Dagenham) Longbridge Road Shopping Parade Improvements with £600k LIP, £120k Council and £60k S106 funding in 2011/12-13/14 (Barking & Dagenham) Station Accessibility at Chadwell Heath and Becontree with £600k LIP funding in 2011/12-13/14 (Barking & Dagenham) Manchester Road / Island Garden urban realm improvements with £550k LIP funding in 2011/12-13/14 (Tower Hamlets) Welling Corridor with £1.8m LIP and £30k S106 funding in 2011/12-13/14 (Bexley) |
| 3) Reducing physical barriers to travel | | <ul style="list-style-type: none"> Surrey Canal Road Underpass with £1.336 LIP funding in 2011/12-13/14 (Lewisham) |
| 4) Supporting the efficient movement of freight | | <ul style="list-style-type: none"> Road maintenance with £1.35m LIP and £7.5m Council funding in 2011/12-13/14 (Tower Hamlets) Bridge maintenance with £735k LIP funding in 2011/12-13/14 (Tower Hamlets) |
| 5) Addressing public transport crowding, congestion and reliability | | <ul style="list-style-type: none"> Romford and Harold Hill congestion release projects with £1.165m LIP and £1m Council funding in 2011/12-2013/14 (Havering) Merry Fiddlers Junction improvement with £1.1m LIP funding in 2011/12-13/14 (Barking & Dagenham) Bow Neighbourhood Package |

| Reference Number | Scheme | Description | Completion 2010-2012* | Completion 2013-2020† | Completion Post 2020 | Status update |
|--|--|--|-----------------------|-----------------------|----------------------|---|
| Rail (DfT/Network Rail/TOC led schemes) | | | | | | |
| 1 | High Speed 1 international services at Stratford | International services stopping at Stratford | | | | Work on-going with boroughs, other authorities, operators. |
| 2 | High Speed 1 domestic services enhancements | Enhanced domestic services | | | | Completed |
| 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 | | | | Government announcement made about route and further work underway through OAPF process. |
| 5 | Thameslink phase 2 | Phase 2: 24 trains per hour through core, expanded network | | | | Anticipated for completion in 2018 |
| 7 | West Anglia enhancements | More trains lengthened to eight cars on inner services and Twelve-car capability (outers) to Stansted and Cambridge | | | | Completed December 2011 |
| 8 | West Anglia enhancements | Lea Valley four-tracking - potential for enhanced frequency (4tph to local stations) and journey time improvements for longer distance services. | | | | HLOS 2 proposals for partial four-tracking submitted to DfT and are currently being considered. |
| 9 | West Anglia enhancements | Potential scheme to provide rail access from Chingford to Stratford via Hall Farm Curve, requiring increased platform capacity at Stratford | | | | Not being progressed due to capacity constraints at Stratford regional station. |
| 10 | West Anglia enhancements | Provision of Seven Sisters to Enfield/Cheshunt shuttle service | | | | Due to recent capacity enhancements this scheme is not being progressed but it remains a longer term option for increasing the frequency of services via Seven Sisters. |
| 11 | Essex Thameside enhancements | Twelve-car capability on all routes | | | | Completed |
| 12 | Essex Thameside enhancements | Further capacity increases - 12 car shoulder peak trains | | | | Proposals subject to future development |
| 29 | Great Eastern enhancements | Additional and longer outer services, plus more trains calling at Stratford | | | | Completed |
| 30 | Great Eastern enhancements | Additional inner services (2 extra trains) | | | | Delivered with December 2011 timetable change. |
| 31 | Great Eastern enhancements | Further capacity increases (outers only) | | | | Proposals subject to future development, recommended in RUS. |
| 33 | 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 | | | | Achieved on Southern. Included in HLOS2 proposals for Lea Valley line |
| 34 | Improved rail freight terminals to serve London | New and/or expanded rail freight terminals to serve London | | | | Radlett (Herts) Midland main line Colnbrook (near Heathrow, Great Western) and Brent Cross Cricklewood schemes being progressed through the planning process. |
| 35 | Improved rail freight routes | Conceptual freight link from Barking to Gospel Oak line to West Coast Main Line | | | | Proposals subject to future development |
| Rail (TfL led schemes) | | | | | | |
| 36 | Crossrail 1 core scheme | Core scheme: Maidenhead and Heathrow in the west to Shenfield and Abbey Wood in the east | | | | Under construction, due 2018-19 |
| 38 | Crossrail 1 easterly extensions | Easterly extension to Gravesend | | | | Proposals subject to future development |
| 39 | London Overground enhancements | Completion of extension to Clapham Junction. 4tph to rural Dalston Junction - Clapham Junction | | | | Due end 2012 |

| Reference Number | Scheme | Description | Completion 2010–2012* | Completion 2013–2020† | Completion Post 2020 | Status update |
|----------------------------------|--|---|-----------------------|-----------------------|----------------------|--|
| 40 | London Overground enhancements | Lengthen East London Line services and platforms to 5 cars | | | | Included in TfL's HLOS 2 proposals to DfT |
| 41 | London Overground enhancements | Further train lengthening | | | | Included in TfL's HLOS 2 proposals to DfT |
| 42 | London Overground enhancements | Diversion of Watford Junction services to Stratford (instead of Euston) to release capacity for High Speed 2 at Euston | | | | Under consideration - links with HS2 work |
| 43 | London Overground enhancements | Barking to Gospel Oak line – electrification and train lengthening | | | | Included in TfL's HLOS 2 proposals to DfT |
| 44 | London Overground enhancements | Extension to Highbury and Islington. 8 trains per hour will run beyond Dalston Junction | | | | Completed |
| 45 | Crossrail 2 | Enhanced southwest – northeast London capacity and connectivity. All new infrastructure will be fully accessible. | | | | Safeguarding under review - report to the Mayor (to inform DfT discussions) due before end 2012. |
| Stations and interchanges | | | | | | |
| 47 | Further Tube station congestion relief schemes | Targeted station capacity expansion programme | | | | Vauxhall station and Finsbury Park schemes have been approved and funded. Prioritisation study for further schemes is underway |
| 48 | Tube station refurbishment/modernisation programme | Continuing programme of refurbishment/modernisation of stations | | | | 166 Tube stations have been refurbished since 2008 |
| 50 | 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 | | | | Revised design developed for proposed link between Hackney Central and Hackney Downs stations. Overground service upgrades introduced May 2011. ELLX Phase 2 to open to public in December 2012. |
| 51 | 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) | | | | NSIP works nearing completion at Norbury and Balham. New Greater Anglia franchise will deliver station deep cleans and extra cycle parking facilities by 2013. Lobbying continues for enhancements on other routes. |
| 58 | Improved surface-rail interchange | Improvements including enhanced bus services, interchange and urban realm at selected Crossrail and/or Thameslink stations | | | | Rolling programme of master plans being developed with local authorities at all Crossrail locations, initial work reviewing bus needs underway. |
| Tube | | | | | | |
| 62 | Jubilee line upgrade | Jubilee line - upgrade involves installation of new signalling to provide faster more frequent services and provide 33% more peak capacity and 22% reduction in journey time | | | | Signalling upgrade complete |
| 68 | 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 | | | | New trains being delivered, signalling work underway, due to be complete by 2018. |
| 71 | Bakerloo line extension | Potential Bakerloo line southern extension from Elephant & Castle via Lewisham to Hayes and Beckenham Junction. | | | | Scheme options to be further reviewed. |
| 72 | Cooling the Tube programme | Enabling operation of services post line upgrades and improved passenger comfort. | | | | The programme continues to improve the network ventilation system by returning out of service fans to beneficial use. The station cooling projects at Oxford Circus and Green Park have been accelerated and are on track to deliver cooling in time for the Olympic period. |
| 73 | 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 | | | | Ongoing |

| Reference Number | Scheme | Description | Completion 2010–2012* | Completion 2013–2020† | Completion Post 2020 | Status update |
|------------------|--|---|-----------------------|-----------------------|----------------------|--|
| 74 | Energy-saving initiatives | Initially, a programme of trials to include low energy lighting, smart electricity metering at stations and low loss conductor rails | | | | A detailed study has been prepared looking at factors such as inverter substations, extra low loss conductor rail, coasting, sectionalisation and changes to voltage and current settings. A trial is being planned for an inverter substation on the Victoria line and key energy saving initiatives are being considered as part of the base case for the deep tube programme. These include full use of extra low loss composite conductor rail in tunnels, higher voltages (750 v) and higher regenerative braking currents (4,500A). Additional measures such as inverter substations, amended sectionalisation and permanent magnet motors are under current review and will be incorporated into the base case if determined desirable. |
| 75 | Regenerative braking and automatic train control | To be implemented as an integral part of the Tube upgrade programme | | | | Ongoing |
| | DLR | | | | | |
| 76 | Network-wide capacity upgrade | Infrastructure enhancement to enable three-car operation network-wide | | | | Completed |
| 77 | Network-wide capacity upgrade | Provision of additional rolling stock to provide further three car services | | | | Funding to be secured |
| 78 | DLR extensions | Extension from Stratford International to Canning Town | | | | Completed |
| 79 | DLR extensions | Potential extension westwards from Bank | | | | Scheme options to be further reviewed, subject to development of sub regional plan |
| 80 | DLR extensions | Potential extension to Forest Hill | | | | Scheme options to be further reviewed, subject to development of sub regional plan |
| 82 | DLR extensions | Potential extension to Dagenham Dock to serve Barking Riverside | | | | Scheme options to be further reviewed. |
| 83 | DLR capacity enhancements | North Route capacity enhancement between Canary Wharf and Stratford | | | | Funding to be secured |
| | Tramlink | | | | | |
| | Bus | | | | | |
| 90 | East London Transit | Phase 1b (Barking to Dagenham Dock via Barking Riverside), construction to be complete in 2013 | | | | Main works construction contract has been awarded and due to commence works in March 2012. |
| 91 | 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 | | | | Regular reviews ongoing. Bus service to be discussed with sub regional panels during 2012 |
| 92 | Bus network development | Re-patterning of bus services to take in to account new infrastructure and the related changes in demand | | | | Impacts of Crossrail currently being assessed and discussed with boroughs, see item 58. |
| 93 | Development of a New Bus for London | Pilot to create new iconic bus for London (which will include enhanced accessibility design features) | | | | First bus entered service Spring 2012 |
| 94 | Phasing out of 'bendy' buses | Anticipated by the end of 2011 | | | | Completed |
| 95 | Low emission buses | Intention that all new buses entering London's fleet post 2012 be low emission (initially diesel hybrid) | | | | 300 diesel hybrid buses are to be introduced by 2012. |
| 96 | Enhanced real time service information | Delivery of Countdown 2; enhanced real time information at stops, on internet and mobiles | | | | Largely complete |

| Reference Number | Scheme | Description | Completion 2010–2012* | Completion 2013–2020† | Completion Post 2020 | Status update |
|------------------------------------|--|--|-----------------------|-----------------------|----------------------|---|
| 97 | Bus priority | On a case by case basis, implement bus priority measures to maintain service reliability | | | | Bus service to be discussed with sub regional panels during 2012 |
| 98 | 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 | | | | This is an ongoing requirement and will be particularly important in serving some of the large new developments which are planned in east London. A recent example is the opening of the Stratford City bus station in September 2011 which was paid for with developer contributions. |
| 99 | 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. | | | | New rail services may mean that amended or new bus infrastructure is desirable at interchanges, depending on demand and service changes. TfL is currently discussing the potential Crossrail-related bus demand changes around stations with the affected boroughs. See item 90. |
| 100 | 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 | | | | This is an ongoing requirement which involves discussion with all of the key stakeholders including boroughs. |
| Cycling | | | | | | |
| 102 | Barclays Cycle Hire scheme enhancement | Possible expansion of area covered and/or additional bikes in Barclays Cycle Hire scheme where demand justifies | | | | East extension to Bow will be delivered in Spring 2012 |
| 103 | Additional cycle parking | Around 66,000 additional cycle parking spaces in London | | | | Excellent progress has so far been made towards meeting the Mayor's aim to secure the delivery of 66,000 additional cycle parking spaces by the end of 2012. |
| 104 | Barclays Cycle Super Highways | Two initial trial radial routes to central London, followed by further routes | | | | Four of twelve routes delivered, four more will be opened in 2013 |
| 105 | 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 | | | | Programme developed and implementation started in 2011. |
| 106 | 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 | | | | Programme developed and implementation started in 2011. |
| Walking and the urban realm | | | | | | |
| 107 | London-wide 'better streets' initiatives to improve pedestrian connectivity and urban realm | Improvements to urban realm and pedestrian environment | | | | Since 2009, a range of projects have been completed under London's Great Outdoors. By the end of 2011, 45 projects had been completed, and a further 35 are on track to be delivered by summer 2012. |
| 108 | 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 | | | | This is being delivered as part of Better Street initiatives. Recent improvements have been made to Green Park and Clapham Junction. |
| 110 | Walking information and campaign | Walking campaigns, including the '2011 year of walking', that will focus on walking routes, wayfinding, events and activities | | | | The Making Walking Count Campaign was run successfully in 2011. One of the highlights was the public transport congestion relief pilot held in September 2011, promoting walking trips |
| 111 | Improved wayfinding | Targeted introduction of on-street wayfinding specifically designed for pedestrians, for example, using 'Legible London' principles | | | | The Legible London base map of Greater London was completed in December 2011. TfL supplied Legible London mapping to Network Rail; train operating companies (TOCs), LOCOG and Crossrail, ensuring the system continues to spread across London's transport network. In 2011/12 Legible London mapping has been further integrated within the TfL family, including Crossrail hoardings, Barclays Cycle Hire docking stations and on Barclays Cycle Superhighways routes. |
| 112 | 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 | | | | Schemes along Grand Union Canal, Exhibition Road, Piccadilly 2-way system, Britannia Junction and Russell Square delivered, amongst others. |
| 113 | Urban realm improvements in town centres | Urban realm improvements | | | | The new Great Outdoors programme will focus on town centre regeneration. Most of the key walking routes below are linked with town centres. |
| 114 | Improving urban realm and walking conditions on key routes which have high demand, for example between stations and town centres | Urban realm improvements | | | | Ten Key Walking Routes were delivered in 10/11. Another nine Key Walking Routes will be delivered by March 2012. These include: Cheapside, Euston to St Pancras, Camden, Ruckholt Road, and Bromley North Village. |
| 118 | Urban realm improvements in key locations in central London | Pedestrian and urban realm improvements, potentially in locations such as West End (e.g. the vicinity of Piccadilly, Pall Mall and St James), vicinity of the river (e.g. Jubilee Gardens) and other key locations with very high footfall | | | | Schemes along Grand Union Canal, Exhibition Road, Piccadilly 2-way system, Britannia Junction and Russell Square delivered, amongst others |

| Reference Number | Scheme | Description | Completion 2010–2012* | Completion 2013–2020† | Completion Post 2020 | Status update |
|--|--|---|-----------------------|-----------------------|----------------------|--|
| 119 | 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 | | | | Over 5,000 trees have been installed in the Olympic Park and London is set to meet its 10,000 street tree target by the end of 2012. |
| Roads | | | | | | |
| 120 | Improved traffic control on London-wide and sub-regional corridors | Improved traffic control systems, for example further roll out of SCOOT | | | | Ongoing |
| 121 | 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 | | | | Ongoing |
| 122 | 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 | | | | Ongoing |
| 123 | Review of loading and waiting restrictions in central London and elsewhere | Review and report on potential improvements - using a targeted demand led approach | | | | The Intelligent Transport Systems (ITS) sector is developing a 'virtual' loading bay solution designed to help reduce congestion. As the technology comes to market, TfL will investigate possibilities for deployment on the TLRN and borough road network, in conjunction with borough councils. |
| 129 | Potential gyratory and one-way system improvements | 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 | | | | Henlys Corner complete. Euston Circus has just completed public consultation on detailed design proposals. There is also a commitment to review cycle safety at junctions on the TLRN with Bow Roundabout the first to go on site pre Olympics. |
| 132 | Blackwall Tunnel (northbound) refurbishment | Refurbishment of tunnel | | | | Completed |
| 134 | Road improvement scheme at Canning Town | Road improvements | | | | Committed and is likely to happen in the medium term |
| 137 | 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 | | | | TfL's Capital Development Team continues to enhance the Transport for London Road Network (TLRN) through the delivery of small schemes including new cycle lanes, revisions to pedestrian crossings and urban realm improvements. |
| 138 | Achievement of state of good repair of road infrastructure | Ongoing programme of maintenance | | | | Ongoing |
| 139 | Continue trials of intelligent speed adaptation technologies | Continue trials and technology development | | | | Ongoing |
| 140 | Encourage further implementation of average speed camera technology | Continue trials and technology development | | | | Average speed cameras were implemented on the A13 in 2011 with enforcement by the Metropolitan Police. TfL is closely monitoring collision rates and initial results are positive. TfL's network of speed cameras are currently being renewed and average speed cameras are likely to replace existing speed cameras on suitable sections of the TLRN. |
| 141 | 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 | | | | Some boroughs have implemented, further investigation to take place |
| 142 | Car club support | Support expansion of car clubs | | | | With support and funding, 46% of London residents now live within 5 minutes' walk of a car club vehicle. |
| 143 | Low Emission Zone enhancements | Further LEZ enhancements and vehicle coverage | | | | LEZ phases 3 & 4 delivered |
| 144 | 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) | | | | Source London has delivered 300 publicly accessible charge points, set to grow to 1,300 by 2013 |
| 145 | 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 | | | | Mayor's Climate Change Mitigation and Energy Strategy published, setting out approach to reducing CO2 emissions |
| 146 | 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 | | | | Parking review undertaken for Outer London Commission |
| London river services and river crossings | | | | | | |

| Reference Number | Scheme | Description | Completion 2010-2012* | Completion 2013-2020† | Completion Post 2020 | Status update |
|-----------------------|--|---|-----------------------|-----------------------|----------------------|---|
| 150 | Road vehicle river crossing(s) in east London | New vehicle ferry between Gallions Reach and Thamesmead - to be implemented in advance of a potential fixed link | | | | Consultation on river crossings started in February 2012 |
| 151 | Walk/cycle river crossings in east London | Including schemes in central London and walk/cycle links to access Isle of Dogs from east and west, including cable car crossing | | | | Emirates Air Line to open 2012 |
| 152 | Road vehicle river crossing(s) in east London | New and enhanced road vehicle river crossing(s) in east London (package of measures) - programme of works under development to improve cross-Thames links in east London | | | | Consultation on river crossings in February 2012 |
| 153 | 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 | | | | Thames strategy under development by GLA / Mayor |
| 155 | Promote the use of Thames and other waterways for freight movement | Enable freight access to waterways | | | | Safeguarded Wharves review underway |
| Other measures | | | | | | |
| 156 | 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 | | | | Oyster now on all national rail services in London as well as all TfL modes |
| 157 | Enhanced travel planning tools | Ongoing programme of enhancements to information availability, including TfL Journey Planner | | | | <p>The TfL Journey Planner has undergone a series of improvements to increase capacity and enable access to third party developers under our open data arrangements for the production of new applications and services. A dedicated piece of software has been built for this purpose.</p> <p>For the 2012 Games improvements are being made to the Journey Planner accessibility information to enable better planning of level access routes.</p> <p>Customer information has been improved through the launch of the new Bus Arrivals service which advises customers of the arrival times of the next buses from any bus stop on the network. Information for drivers has been improved through the launch of an improved Traffic Information facility which also now shows the key road corridors in London as well as supporting information on how those corridors are managed.</p> |
| 159 | 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 | | | | TfL have introduced targeted smarter travel initiatives along the Barclays Cycle Superhighways including cycle parking, training and safety checks. |
| 160 | Increased use of travel plans | Increased use and power of travel plans for workplaces, schools and individuals | | | | <p>TfL funding for voluntary Workplace Travel Plans stopped in 2010, however employers are still requested to initiative Workplace Travel Plans as part of the development control process as set out in London Plan and on the new website http://www.lscp.org.uk/newwaytoplan/ and boroughs can still take forward e.g. the north London boroughs have jointly funded Work Place Travel Plan Coordinators.</p> <p>94% of London schools have a travel plan in place and one third are registered on the School Travel Accreditation scheme (STAR). These schools demonstrate a higher than average increase in active travel modes and a reduction in car use. A new monitoring tool has been developed to record schools achievements (STARTRACK). More details can be found at http://www.startrack.org.uk/</p> |
| 161 | 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 | | | | <p>A closely-monitored trial of a DSP at a TfL building has seen the number of overall deliveries reduced by 20%.</p> <p>TfL is promoting a number of measures to be taken up by freight operators and their clients in order to reduce the number of freight and servicing trips on the road network during the Games. TfL will monitor their effectiveness for future application in Legacy.</p> <p>Planning policy (Replacement London Plan published July 2011) is supportive of the principle of privately financed consolidation centres.</p> |
| 162 | Promotion of freight best practice | Development and incentivisation of membership of the FORS and develop functionality of the freight information portal | | | | Close work with the freight industry is being undertaken to promote the four 'Rs' for 2012 Games. |

| Reference Number | Scheme | Description | Completion 2010–2012* | Completion 2013–2020† | Completion Post 2020 | Status update |
|----------------------|--|---|-----------------------|-----------------------|----------------------|--|
| 163 | Integrated transport policing | Establish joint transport policing intelligence unit and reporting systems to enable integrated working between the agencies policing London's transport system | | | | TfL funds a dedicated unit within the Met - the Safer Transport Command. It provides additional police support to London's buses, licensed taxis and private hire vehicles. It also helps to reduce congestion and bus flow issues, improves the safety and security of cycling and enforces red route parking restrictions. |
| 164 | Tackling antisocial behaviour | Programme of initiatives to tackle antisocial behaviour, including preventative and enforcement measures | | | | TfL has more than 2,500 TfL-funded police officers patrolling the network. Specialist transport police units focusing on specific issues like illegal cabs, criminal damage, theft, robbery and staff assaults and around 500 revenue inspectors patrolling the network to reduce fare evasion and tackle antisocial behaviour |
| 165 | Transport system climate change adaptation | Develop a strategy to improve transport system resilience and safety to the impacts of climate change | | | | Mayor's Climate Change Adaptation Strategy published |
| 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 | | | | Action Plan to be published early 2012 |
| Accessibility | | | | | | |
| 167 | Crossrail accessibility | All stations through central London and the majority of stations in Outer London to offer step-free access | | | | Under construction |
| 168 | DLR fully accessible extension | Canning Town to Stratford International | | | | Completed |
| 169 | Crossrail 2 | All new infrastructure will be fully accessible | | | | Proposals subject to future development. See item 45. |
| 170 | New accessible tube and rail rolling stock | New rolling stock will be Rail Vehicle Accessibility Requirements compliant | | | | Victoria line delivered, Subsurface underway |
| 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 | | | | DfT has funded an additional 10 station schemes for delivery by 2015 |
| 172 | Continuing roll out of step-free access schemes on the Underground | Continuing programme of station step-free access schemes | | | | Green Park opened Sep 2011. Vauxhall is now a committed scheme. |
| 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 | | | | Humps completed on Victoria line. |
| 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 | | | | Ongoing |
| 175 | Tube wide-aisle ticket gates | Explore opportunities for further implementation of wide-aisle ticket gates | | | | More than 250 wide aisle gates have been installed on Underground stations |
| 176 | Tube travel information | Accessible Tube map showing step-free and mostly step-free routes | | | | Map published on TfL website |
| 177 | Bus stop accessibility | Improved accessibility of bus stops, for example, through removal of street clutter | | | | 59 per cent of bus stops are now accessible, up from 29% since 2008 |
| 178 | Development of a New Bus for London | New bus will include enhanced accessibility design features | | | | First buses on street and remaining to be delivered in 2012. See item 91. |

| Reference Number | Scheme | Description | Completion 2010–2012* | Completion 2013–2020† | Completion Post 2020 | Status update |
|---|---|---|-----------------------|-----------------------|----------------------|---|
| 179 | 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 account of the whole journey approach. | | | | Accessibility continues to be improved through the Better Streets and Major Schemes Programmes. In addition TfL has set out its current targets in the Draft Accessibility Implementation Plan which was published in 2011. |
| 180 | Travel information | Improve the availability, quality, quantity and timeliness of accessibility-related travel information | | | | Numerous improvements made, including on-train and on-station information improved on Tube; on-bus and at-stop info improved on bus services; better real time information on mobile and internet. See also item 94. |
| 181 | Staff availability | To ensure staff are available to provide assistance, information and reassurance throughout services hours | | | | A trial of the 'Integrated Interchange Management and Staff Assistance Programme' has been conducted at Finsbury Park and Marylebone/Baker Street which involves improved sharing of information between staff at different stations. |
| 182 | Staff training | To ensure the needs of the disabled passengers are understood by all frontline staff | | | | All front line staff working in Tube stations receive disability awareness training, and undertake a refresher course every year. Bus driver big red book in use and also being developed |
| 183 | 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 | | | | Programme under development. |
| 184 | Enhanced Dial-a-Ride service | New Dial-a-Ride fleet and review of operations | | | | Dial a Ride made a record 1.3 million trips in 2010/11, an 18 per cent increase on 2007/08 with 200,000 more journeys |
| 185 | Further Extensions to the public transport system | All extensions to the public transport system will meet the requirements of the Disability Discrimination Act | | | | All new London Overground stations are step-free such as Shoreditch High Street, Hoxton, Haggerston, Dalston Junction and Imperial Wharf. |
| 186 | Blue Badge discounts | Discounts on Congestion Charging schemes | | | | Ongoing |
| 187 | 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 | | | | To be revised during 2012 as a Single Equality Scheme under the Equality Act 2010 |
| International and national rail links (DfT/Network Rail/TOC led schemes) | | | | | | |
| 188 | High Speed 1 international service enhancements | Direct services to a wider range of European destinations (making use of new European infrastructure) | | | | It is expected that Eurostar and other international operators will provide access to a wider range of European destinations from St Pancras International during the course of the next 5 years. |
| 189 | Potential link between High Speed 1 and High Speed 2 | Potential link between HS1 and HS2 allowing through services between HS2 and Europe, including calls at Stratford. | | | | To be subject of further investigation by HS2. |
| 190 | West Coast Main line enhancements | Train lengthening and frequency improvements to London Midland services | | | | Programme to be defined (for delivery in 2014) |

*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)