



West London

Sub-regional transport plan - 2012 update

MAYOR OF LONDON

Transport for London



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1. Introduction

I. Introduction

Publication of the sub-regional transport plans (SRTPs) in November 2010 reflected significant collaboration and joint work between TfL boroughs, sub-regional partnerships, business organisations and London Councils as well as a range of other stakeholders.

It is now just over a year since the plans were published. The sub-regional process is an ongoing programme, enabling us to work closely with boroughs to address strategic issues, progress medium-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 which drives the London Plan, which was adopted in July 2011.

Thirdly, by allowing the latest modelling and analysis to be incorporated the update allows the definition of the challenges to be refined.

Fourthly, the addendum also allows progress made across the west sub-region eg through borough Local Implementation Plans and through the sub-regional panels, to be taken account of.

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.

Usage of the bus network continues to grow and TfL's ongoing review programme continues. Reliability has been maintained. Over 150 hybrid buses were introduced in 2011 and there will be over 300 in service by the end of 2012. Since autumn 2011 real-time bus arrival information has been available for the 19,000+ bus stops across London, via text message and mobile web. All 2000 Countdown signs are being upgraded and a further 500 will be added by mid-2012. The New Bus for London commenced trial service in February.

With the growth which is forecast in London it is vital that every effort is made to manage our roads and public spaces effectively. Urban realm which is conducive to access by public transport, walk and cycle has been shown to have positive economic benefits. TfL is already working with boroughs in the north sub-region to ensure that the long term needs of key corridors and places are balanced, to achieve win-wins where possible, or to make choices about which objectives to prioritise. This approach can be explored with boroughs in the west over the coming year.

Ensuring the benefits of High Speed 2 are realised through a new strategic interchange at Old Oak Common will be essential if businesses and residents in the region are to fully benefit from this.

West London is home to a number of major development areas: Southall, Heathrow, Old Oak, White City and Earl's Court. The concentration of several Opportunity Areas in inner west London is one where an analysis of the cumulative impact of this growth is essential. The cumulative impact of the development of non-Opportunity Areas is also significant. The recent temporary closure of Hammersmith Flyover indicates how the resilience of the existing network is an issue already and the scale of growth in these areas will put further pressure on an already congested network. The Western Arc study has helped analyse the impacts of this growth and further work will be needed on these issues this year.

Since the last plan was published the west London boroughs have been examining how some of their key road corridors and places need to function. TfL has been involved in this work and is keen stay involved with the further work that comes from it.

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

The experience gained of working through the sub-regional panels and the benefits of

the latest sub-regional transport modelling which TfL has undertaken are also incorporated. All this has allowed us to update our understanding of the outstanding transport challenges facing the west sub-region and to refresh our view as to how to these could best be met.

It is for the sub-regional panel, to discuss this draft update and agree the next steps. I would welcome engagement and comments on the content and process so that together we can continue to plan this great city and ensure that the west sub-region fulfils its potential.

Peter Hendy
Feb 2012

2. Context

2. Context

	Key policy updates	Key themes
National	<ul style="list-style-type: none"> • National Planning Policy Framework • National Infrastructure Plan • Localism Bill 	<ul style="list-style-type: none"> • Growth • Localism • Enterprise Zones • Reducing barriers to project delivery
London-wide	<ul style="list-style-type: none"> • London Plan • Supplementary Planning Guidance • London Enterprise Partnership 	<ul style="list-style-type: none"> • Opportunity Areas • Planning for growth • Riot recovery • Liveability • Electric Vehicles • Air quality • Cycling
Sub-regional		
Boroughs	<ul style="list-style-type: none"> • Local Development Frameworks • Local Implementation Plans • Community Infrastructure Levy 	<ul style="list-style-type: none"> • Enterprise partnerships • Local unemployment • Local links • Riot recovery • Outer London Fund

National level

Increased concern over 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 (NIP) which the Government hopes will help stimulate economic growth.

The new draft National Planning Policy Framework (NPPF) 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 is unclear what the outcomes will be in the sub-region but transport policy will need to be responsive to changing needs.

The Localism Act came into force on 15 November 2011. It is intended to shift power from central government back into the hands of individuals, communities and councils.

Regional level

The publication and adoption of the new London Plan, with its emphasis on high-quality growth, collaboration with delivery partners, and fostering localism, confirms that Opportunity Areas will be the focus of growth. In west London, these are Heathrow, Southall, Park Royal / Willesden Junction, Wembley, White City and Earls Court in conjunction with the sub-region's designated Area for Intensification Harrow and Wealdstone.

The Mayor is setting up a London-wide Community Infrastructure Levy (CIL) under powers in the Planning Act 2008 and the Community Infrastructure Levy Regulations 2010. CIL will be paid by most new development in Greater London and is intended to help meet part of the cost of Crossrail.

Other Mayoral strategies, including Supplementary Planning Guidance also raise transport needs.

This focus on the economy does not mean other outcomes are not important. In fact, 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 sub-region this may mean a redoubled emphasis on ensuring that the urban realm facilitates walking, cycling and a sense of local pride.

Sub-regional level

A key driver of this addendum is how Transport for London (TfL) plans for growth across London and the particular challenges in west London in this regard. The scale of the growth to be accommodated is clear from the London Plan and boroughs' aspirations in their LDFs and added impetus has been provided with the NPPF and the NIP. West London will need to play a key role in supporting and driving this growth – but we also need to ensure this growth is sustainable – and that the quality of life for Londoners is maintained and enhanced.

Ensuring growth is not constrained by inadequate transport supply and that mode sustainable travel options are

supported – is one of the principal objectives of the sub-region's ongoing work. There is also an aspiration to rebalance the national economy away from a perceived overreliance on the financial services sector.

The London and South East Route Utilisation Strategy (LSE RUS) was published in July 2011. It included the proposed development of High Speed 2 (HS2), a fundamental part of the strategy.

Borough level

The context of the Local Development Framework's (LDFs) and Local Implementation Plans (LIPs) published by the west London boroughs is also critical. A significant achievement since the SRTP's publication is that all the LIPs in the west sub-region have been submitted by boroughs and approved by the Mayor. This is an important milestone.

There is potential for additional transport infrastructure provision through Borough CILs. Brent and Hammersmith & Fulham will be introducing borough CILs.

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

In order to ensure that economic growth does not come at an unacceptable cost to the environment and people's quality of life, the Addendum also seeks to encourage sustainable travel patterns and different ways of thinking about growth and how to embed different behaviour and mode shares.

2. The west sub-regional panel – looking back over the year

The sub-regional panel

The West London Panel has met every two months throughout 2011, bringing together borough heads of transport, TfL representatives, West London Business, BAA and the West London Alliance.

The panel, chaired by the TfL west London sub-regional ambassador Alex Williams, discussed a variety of topics in 2011 and had many lively and interesting debates on some of the key transport issues facing west London.

These included:

- Managing the road network, focusing on key corridors. WestTrans subsequently commissioned a study to analyse these issues (early results are reported later)
- High Speed 2
- Air quality
- The Western Arc study on the cumulative impacts of growth
- The London and South East Route Utilisation Strategy
- Local Implementation Plans
- Heathrow Surface Access

The panel provides an excellent opportunity to openly discuss many issues facing west London and the debates have helped inform this addendum.

Progress in 2011

Over the past year there has been important progress with the implementation of schemes featured in the initial sub-regional transport plans. Those of particular significance to the west sub-region are shown on the map overleaf.

There has been progress in a range of areas including capacity, connectivity and accessibility schemes on the public transport system and a wide range of initiatives which will help improve the sustainability of the transport system. These include schemes to encourage walking, cycling, and other improvements to the public realm, like Greenford town centre – a Better Streets scheme part of the Mayor's Great Outdoors vision, Station

Road in Harrow and Ruislip Manor. The New Bus for London was introduced and the western extension of the Congestion Charging Zone was removed.

On the Underground the Jubilee line's frequency was increased to 27 tph and a new fleet of trains introduced on the Metropolitan line, part of a planned upgrade to deliver a 27 per cent capacity increase. On the Overground 4-car operations on the West and North London lines started.

The completion of the roll out of the Oyster system, brought fare and ticketing integration across London's principal public transport modes.

The Network Operating Strategy, released for consultation to boroughs and other stakeholders in May 2011, sets out measures including traffic signal timing adjustments, further application of SCOOT, lane rental and permitting schemes, and better computerised management of the network through improved interactive technologies.

For air quality Phases 3 and 4 of the Low Emission Zone (LEZ) were implemented together with more stringent age limits for taxis and private hire vehicles. Source London was launched in May 2011 by the Mayor, to bring together London's new and existing public charge points into one network. With significant savings in costs and emissions associated with the running electric vehicles.

The improvements in the physical accessibility of the transport system also cover various modes. They include commencement of the Access for All scheme at Wembley Central and delivery of step free access at Heathrow Terminal 1,2,3. TfL published its Mayor's Transport Strategy (MTS) Accessibility Implementation Plan which can be found at tfl.gov.uk/mts.

Bus use has increased significantly over the past 10 years, with an accompanied expansion of the network and growth in capacity on routes. There has also been an increase in levels of reliability (see table), eg. through the use of bus lanes and signal priority, as well as improved quality of customer service through training, information provision, eg ibus and Countdown, and the introduction of newer, cleaner buses.

Over half of the 19,500 stops in London now meet all three of the accessibility criteria, including protection from parking/loading obstructions. 63 per cent of bus stops in the west sub-region are

accessible (the highest level out of central London).

Service enhancements in the last year included increased frequencies on routes H17, 696, 697 and 698, and route 427 was extended to the Town Hall in Acton to increase accessibility.

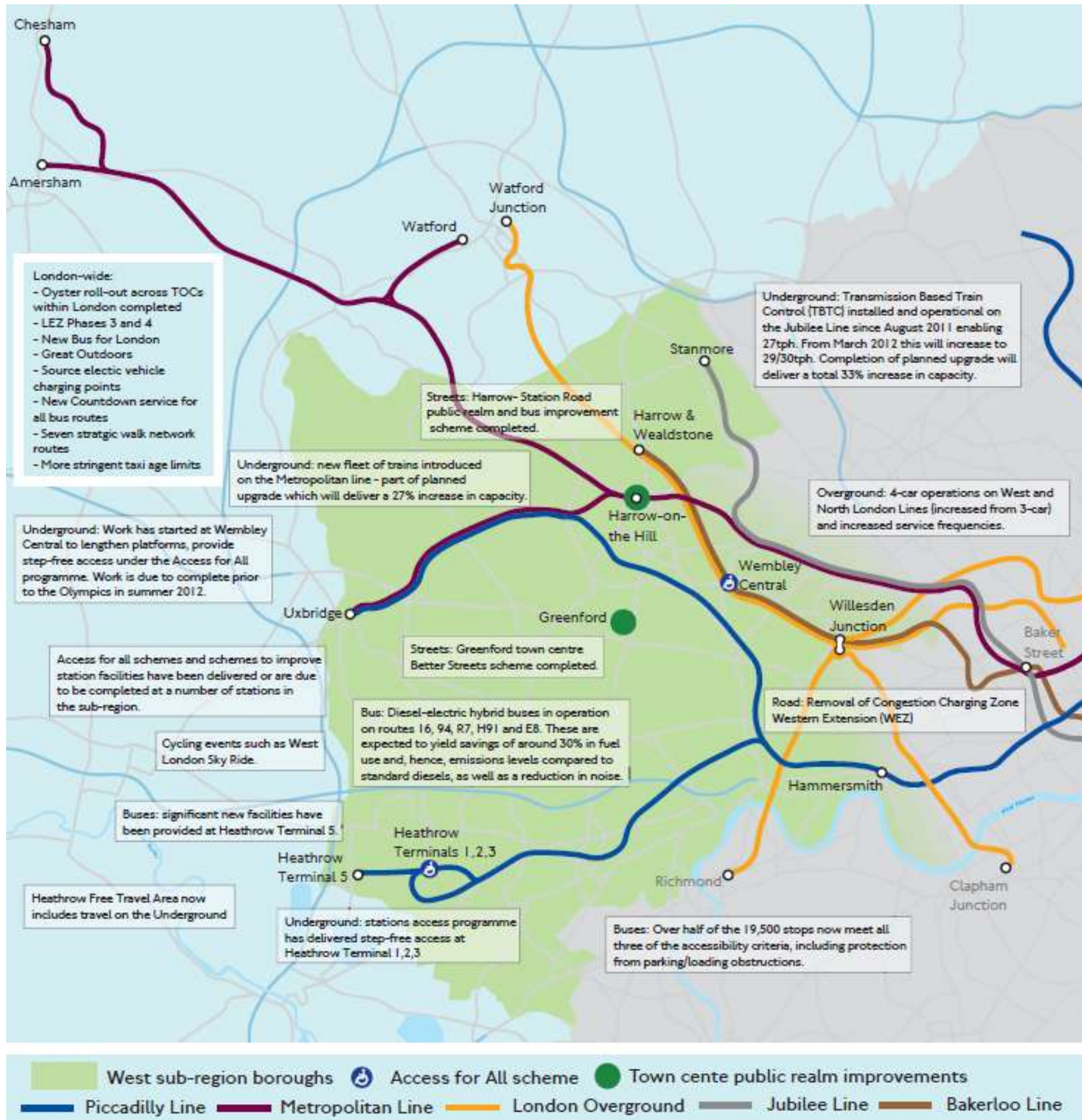
These improvements build on the new bus stations which have opened in the west sub-region over recent years at White City and Hammersmith (lower level) with significant new facilities also provided at Central Middlesex Hospital and Heathrow Terminal 5.

Use of models

TfL's suite of multi-modal models have been successfully used to help understand transport issues at a number of scales in the west sub-region. Over the last three years, the White City OAPF has involved close working between TfL, GLA and the boroughs of Hammersmith & Fulham and Kensington & Chelsea. This work has used LTS, Railplan and the more recent WeLHAM highway assignment model. WeLHAM is also being used to inform Harrow AAP and LB Hounslow's Core Strategy, particularly to understand development potential along the Golden Mile.

3. Progress report

3. Since the initial SRTP...



3. Committed schemes

London Underground

Jubilee line - future timetable improvements to take full advantage of new technology and potential for further reliability / frequency improvements.

Two old Victoria line trains will be refurbished for use on the Bakerloo line from the start of 2014. This will enable an additional 2 tph in the peaks.

Sub surface lines - new walk-through trains with air conditioning due to be fully in service on the Metropolitan line by the end of 2013; the Circle line / Hammersmith & City (H&C) lines by end of 2014 and the District line by the end of 2016. Signalling upgrades on the Metropolitan line, Circle / H&C lines and District line, starting 2015 and completed by 2018, will deliver further uplifts in capacity of 24 per cent, 29 per cent and 14 per cent respectively.

London Overground

- Expanded North London Line / West London Line (WLL) from 4-car to 5-car
- Expanded Southern services on WLL from 4-car to 8-car
- 2 tph Clapham Junction – Shepherd's Bush to be operated by Southern 8-car trains (currently 4-car)

National Rail schemes

Great Western

Electrification of line to Oxford and Newbury and trains lengthened to 8-car

South Western

- Reading trains lengthened from 8-car to 10-car

Stations

Further Access for All schemes and schemes to improve station facilities are due to be implemented at Kensal Rise (by

March 2014).

Buses

By the end of 2012 there will be 300 diesel-electric hybrid buses in service. 172 are already in service with five routes in west London (16, 94, R70, H91 and E8). These are expected to yield savings of around 30 per cent in fuel use, and emission levels, compared to standard diesels and a reduction in noise.

Cycling

The Mayor and TfL announced funding to help develop cycling improvements along the Barclays Cycle Superhighways (CS) including parking and training. CS9 Hounslow to Hyde Park (borough roads) will be launched in 2013 and CS10 Park Royal to Hyde Park (A40-borough roads) is a planned route subject to further consultation.

Phase 2 of Barclays Cycle Hire will include a small western extension of twelve docking stations out to the Westfield Shopping Centre in White City by spring 2012. Six docking stations will potentially be on the grounds of Westfield.

Phase 3 site identification work is underway into an extension to the west and southwest of the current zone, and will include for the first time the borough of Hammersmith & Fulham. The boundary of this new phase is currently under discussion but is likely to include Shepherd's Bush, West Kensington and Hammersmith Town Centre. Subject to TfL Board approval, Phase 3 could be operational by summer 2013.

Hammersmith & Fulham already has high proportions of potentially cyclable trips and have an above-average uptake of Barclays

Cycle Hire membership among its residents. The proposed area will improve transport options in areas with less public transport accessibility.

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. However, many more additional spaces will be required at schools, workplaces, stations, on street and in residential areas in order to meet growing demand for cycle trips in these areas by TfL, the boroughs, developers and other transport organisations. In response to high demand at stations across London, TfL and Network Rail recently launched a joint £1.3m fund for provision of cycle parking at London stations managed Train Operating Companies, with delivery prioritised at those stations which currently have no cycle parking, are within a Biking Boroughs, have a high mode share for cycling and where demand exceeds supply.

Locally led initiatives to deliver a step-change in cycle travel in the west sub-region's four 'Biking Boroughs' of Brent, Ealing, Hillingdon and Hounslow.

Four other delivery priorities have been identified to 2015:

- Working with Biking Boroughs to unlock cycle potential in outer London
- 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. TfL is conducting a review of all major schemes planned on TfL roads as well as all junctions on the existing Barclays Cycle Superhighways, to

ensure that they were delivering improvements for all road users.

- 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.

Work has started on a new bicycle hub near Ealing Broadway station, west London. The facility will feature CCTV offering more secure, covered and illuminated cycle stands. The new stand increases parking places to approximately 130, and includes a separate folding cycle hire facility. Ealing Borough Council secured £286,500 TfL funding towards the project. The hub is scheduled for completion by May 2012.

Heathrow Airport has recently opened a cycle hub for airport employees

3. Further committed schemes

Walking

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 KWR, including one (Willesden Green, Brent) in the west 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 Ealing, Harrow, Hounslow and Brentford town centres, Uxbridge, Hillingdon, Wembley, Brent and further expansion across Hammersmith & Fulham. 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 (Strategic Walk Network): TfL funding with borough support has 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 their LIPs to support and maintain usage of this network now that physical improvements to the routes are complete, with the London LOOP, Thames Path and Capital Ring all passing through the sub-region.

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.

Urban Realm

London's Great Outdoors is intended to cover a diversity of projects and investments, from large scale to small interventions, all with the common theme of improving the places that matter most: the public realm of our streets, squares, parks and open spaces.

Alongside this range of projects, the Mayor wants to focus particularly on three priorities that directly relate to the economic, social and climactic imperatives of this decade.

We need to especially support London's high streets, to be the places where we choose to come together, to enjoy each other's company, and to shop and work; we need to allow London's unique landscapes to shine through, encouraging easy access to the best open spaces across the Capital; we need to continue greening the city in order to combat the effects of climate change, and we need to make everyone aware of what we have around us – to uncover hidden places, and to make the most of London's great outdoors

Acton town centre - urban realm and wayfinding programme to create public space and environmental improvements to make it easier to travel to and around the town centre by foot and create a more attractive visitor destination.

Brentford High Street: programme of public realm works including: improved access, wayfinding, lighting and creating a cycling hub.

Ealing Broadway interchange: design funding looking at complementing Crossrail investment in a new station, seeking to provide bus operational improvements and enhanced pedestrian and cycle accessibility to the new step free station forecourt. Scheme funding has been secured.

Harlesden town centre: design funding for improved connections to and from the centre, especially for those walking and cycling. Identify if two way working can be introduced on some stretches of the carriageway.

Harrow town centre: proposals to transform Harrow town centre into a retail and cultural destination. Measures include major improvements to the public realm including decluttering and repaving, a new town centre park, accessibility improvements, Legible London and car park wayfinding signs.

Hounslow High Street: remodelling the High Street to improve the pedestrian experience and the creation of two new squares.

King Street, Hammersmith & Fulham: reconnecting residential areas with King Street by providing a bridge and a new square. The project will be delivered by a

joint venture between the borough and a private developer. The borough is running an open competition to appoint a design team for the square.

Park Royal Southern Gateway, Station Square: the project provides a sense of place and arrival at a key public transport location at the edge of the Park Royal Opportunity Area. Due 2013.

Shepherd's Bush town centre: design funding for plans to improve linkages and routes between the two stations on the Hammersmith and City Line.

Southall Broadway Boulevard : a £4.5million, three-year Urban Realm town centre regeneration project. Creating a safer and more comfortable environment for pedestrians and creating safer more convenient loading and parking bays. Introduction of a 20mph speed limit and junction improvements to smooth traffic flow.

West Drayton and Yiewsley town centre: design funding for proposals for regeneration of linked town centres including footway widening, better street lighting, decluttering, creating piazzas and improvements to bus interchange at West Drayton station which will be linked to Crossrail in the longer term.

Better Green and Water spaces

The Crane Valley is a valuable wildlife corridor through the built up area of west London. A £0.4 million grant will improve footpaths and cycle routes; resting points with attractive carved benches; new signage; new footbridge across the river; improved wildlife habitat.

3. Further committed schemes continued

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 throughout a 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.

CO₂

By April 2011 there were 30 electric vehicle charging points installed by the west sub-region's boroughs. By April 2012 there are anticipated to be a total of 37. However the numbers are only the points installed by boroughs, there are more points being delivered with other partners.

The London Borough of Hillingdon has commissioned an emissions database which will be used to assess changes in emissions and fuel consumption of individual and combinations of measures in the Council's Local Implementation Plan.

Air Quality

Maximum age limits for taxis and Private Hire Vehicles (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. From 1 April 2012 taxi and PHV age limits will become more stringent - new taxis will, as a minimum, have to satisfy Euro 5 emission standards and new PHVs will as a minimum, have to satisfy Euro 4 emission standards. Any new PHV that is more than 5 years old will not be licensed.

However, despite the major levels of investment, a number of challenges remain for west London 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.

3. Further committed schemes



4. Update on the transport challenges

4. Reviewing west London's transport challenges

The transport challenges

Sub-regional		Enhance east-west capacity and manage congestion
		Improve access to, from and within key locations
		Enhance the efficiency of freight movement
		Improve north-south public transport connectivity
		Improve land-based air quality
London-wide		Transform the role of cycling and walking
		Meet CO₂ targets

The latest London Plan forecasts show that west London's population will grow from 1.46m to around 1.59m by 2031, focussed in the outer boroughs and the Opportunity Areas. Employment growth is more evenly spread across the sub-region but with pockets of high growth in the Western Arc at White City, Wembley and Heathrow.

In comparison, Underground passenger journeys decreased by 10 per cent in aggregate during the recession, but growth had recovered strongly to pre-recessionary levels of around six per cent year on year by September 2010. Having fallen by 1.4 per cent during 2009, patronage on London and south east National Rail services also recovered strongly, with year-on-year growth of five per cent in 2010/11.

Bus demand in London is continuing to grow, by about 2 per cent year on year. Buses are able to respond to crowding issues dynamically through incremental changes to the bus network – they have provided much of the increased capacity on the public transport network over recent years. Whilst there is a forecast increase in demand, the current outlook is for no net increase in bus kilometres.

Despite the recession, there is nothing to suggest that the pressures identified are likely to abate. Indeed looking ahead the projections indicate significant pressures as population and employment growth continue and the additional public transport capacity delivered by the TfL Business Plan commitments is filled, and the efficiencies achievable from the road network are maximised.

Overview of challenges
The specific sub-regional challenges identified for the west sub-region remain of critical importance and central to this plan.

In addition, the London-wide challenges of improving air quality, reducing emissions of carbon dioxide (CO₂), and achieving the targets for - and desired outcomes from - an increase in the mode share of cycling and walking all require concerted action at the sub-regional level.

This results in a total of seven challenges, as set out in the box opposite.

Further investment will be needed to avoid significant increases in crowding and congestion and to ensure that inefficiencies in the transport network do not constrain the Capital's future economic growth.

The following pages consider these a little further.

Introduction

As the previous section showed, progress on delivery of many of the schemes and projects identified to help meet west London's transport challenges has been considerable.

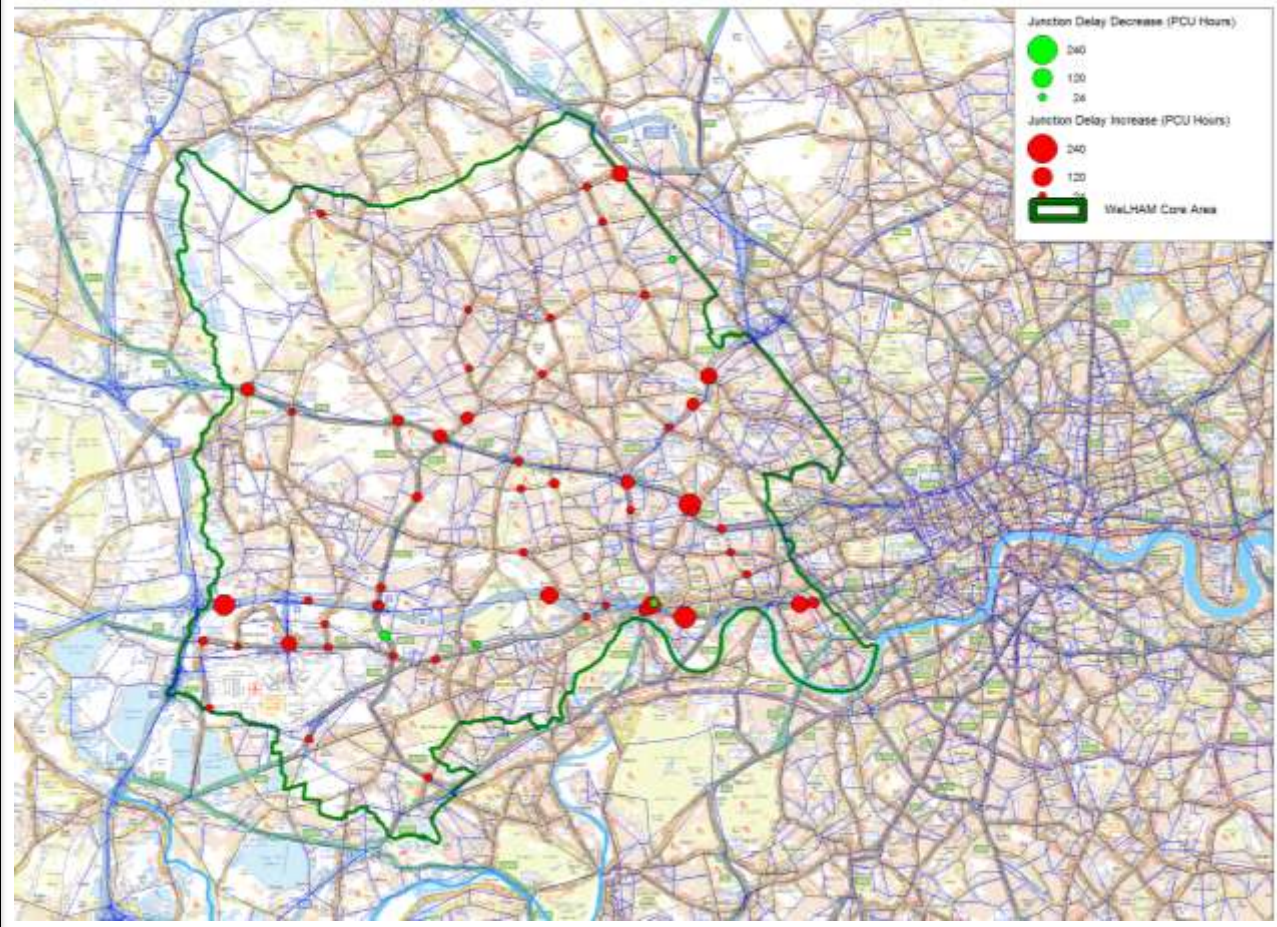
some growing pressures and need for further action in the medium-longer term across a number of London-wide challenges to which the west sub-region must play its part in responding.

This section reviews these challenges. In many cases this is informed by improvements to our modelling and analysis capability made during 2011. Sub-regional challenges remain a key focus but this further analysis and review of progress against MTS challenges set out in 'Travel in London 4' have highlighted

London is set to experience significant growth in both population and employment over the coming years, of which 10 per cent of population growth is to be accommodated in the west sub-region - the least of any sub-region - and 13 per cent of employment growth.

4. West London's transport challenges: key points

Change in three hour AM peak road traffic delay at junctions over the period 2009-2031



Enhance east-west capacity and manage congestion

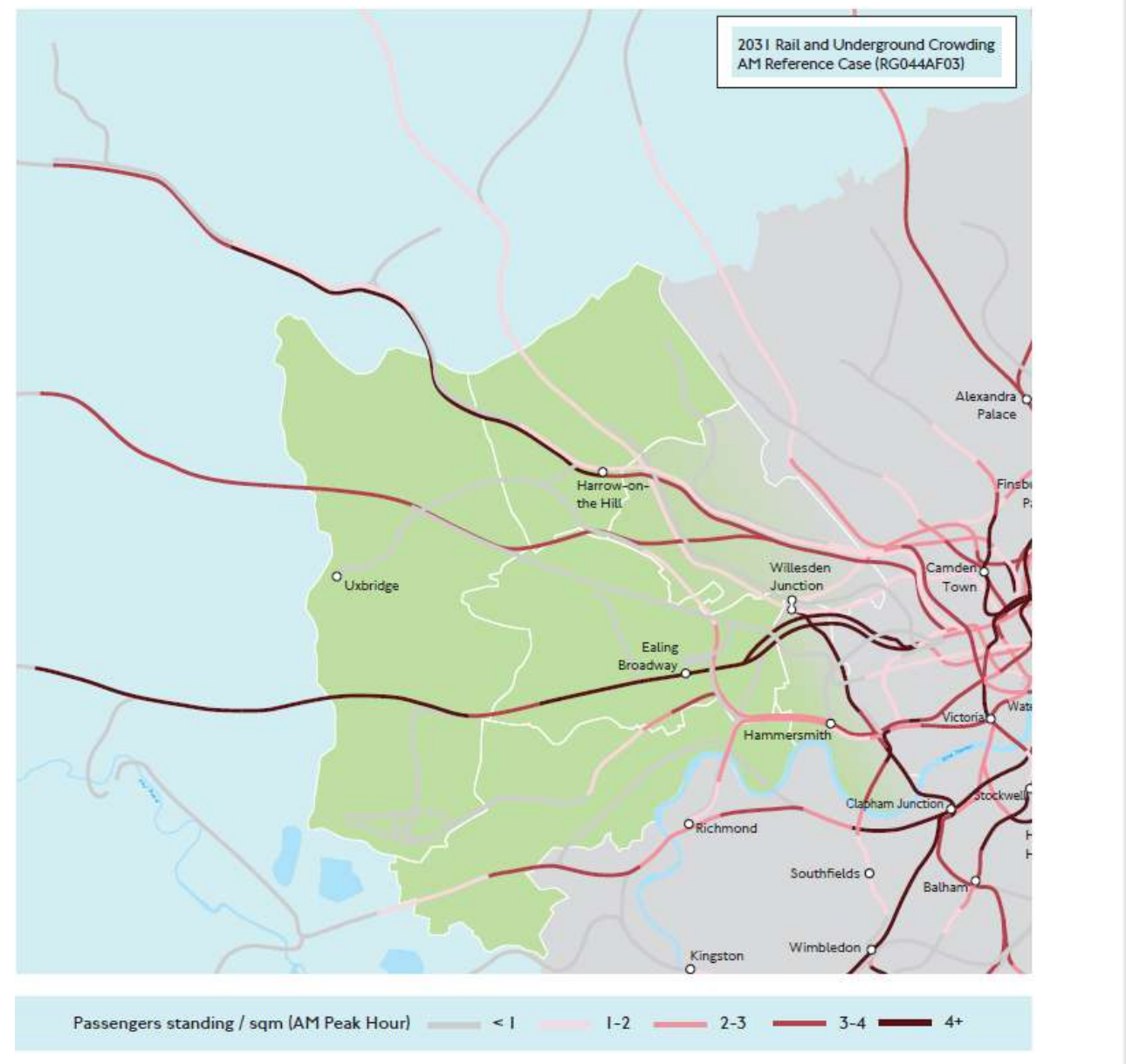
Total highway travel in the west sub-region is forecast to increase by more than 80,000 kms per year between 2009 and 2031, or seven per cent. Over a similar period highway congestion, measured in terms of vehicle delay per km, is forecast to increase by 14 per cent in the west, with average speeds decreasing from 28.0 kph to 26.6 kph, or five per cent. This should be viewed in the context of a forecast increase in population of approximately 130,000 over the same period.

Analysis of the west sub-region highway model indicates a number of congestion

'hotspots' in 2009. These include major radial routes, such as the A4, A4020 and A40, as well as junctions on some orbital routes such as the A312 with M4/A4 and A406 with A4088. The pattern in 2031 is very similar. Comparing junction delays between 2009 and 2031 (above), highlights worsening conditions around the Park Royal and Wembley Opportunity Areas and along the A4, particularly the Chiswick Roundabout. (Absolute figures for existing delay [2009] and future delay [2031] are shown in Appendix A).

Modelling of critical bottlenecks gives a greater insight into the role they play.

Rail and Underground crowding in 2031, with currently committed investment



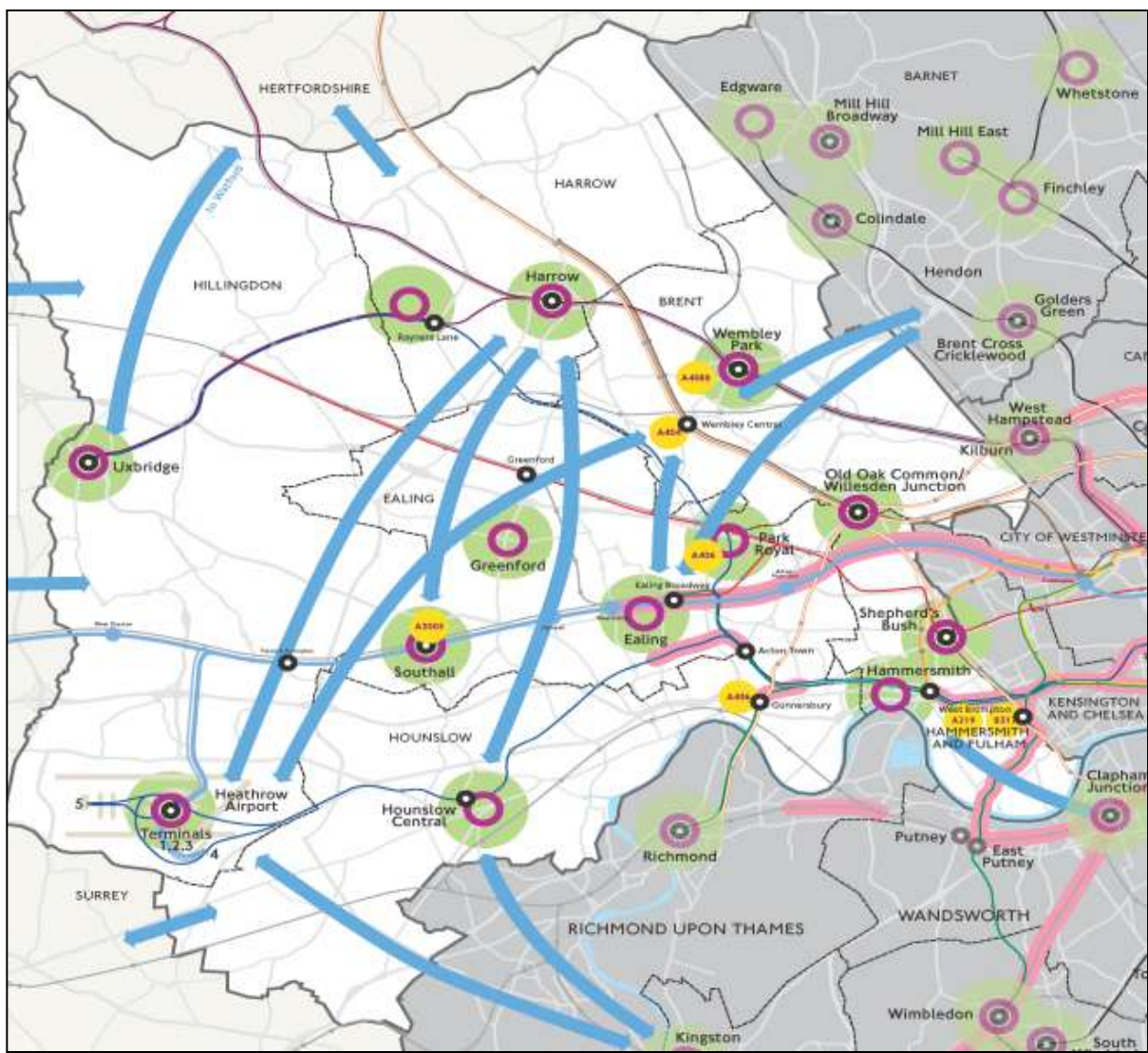
For example, without intervention, bottlenecks on the A40 will contribute to a forecast increase in end-to-end journey times in the AM peak from around 37.5 minutes to over 41 minutes around 10 per cent in the peak direction. Measures to alleviate east-west movement must not adversely affect orbital movement.

The public transport network in the west sub-region is well-established and the Tube line upgrades and Crossrail services will significantly enhance capacity and accommodate most of the sub-region's growth.

However, crowding is forecast to remain an issue in 2031, with residual crowding on the District, Jubilee and Piccadilly lines on the approaches to central London and severe crowding on Great Western and Crossrail services.

Currently bus capacity is set to remain unchanged overall, though the ongoing review programme will mean regular change to the distribution of resources in the sub-region.

4. West London's transport challenges: key points continued



Improving access to, from and within key locations

Accessibility to each of the sub-region's Metropolitan centres is forecast to improve particularly along the Crossrail and Overground corridors.

The Opportunity Areas (OAs) of Earl's Court, Heathrow, Park Royal, Southall, Wembley, and White City will accommodate new housing, commercial and other development. This growth must be linked to existing or potential improvements to public transport accessibility, eg Southall and Wembley will

be served by Crossrail and the upgraded Jubilee and Metropolitan lines respectively; Heathrow and Park Royal will be significantly affected by plans for HS2. With the potential changes in development associated with HS2 in the west sub-region, the GLA and TfL will work with boroughs and other stakeholders on the development of a new Opportunity Area Planning Framework for Park Royal/Old Oak Common and Kensal Canalside over the coming year.



Enhance the efficiency of freight movement

Population and economic growth creates major increases in freight and servicing requirements which will have significant congestion and emission impacts, particularly in the west sub-region - a key freight gateway for London.

Significant growth in the OA's of Park Royal on the A40/A406 and Heathrow at the M25/M4/A4 will place increased pressure on these strategic routes. This will be even greater if HS2 is constructed.



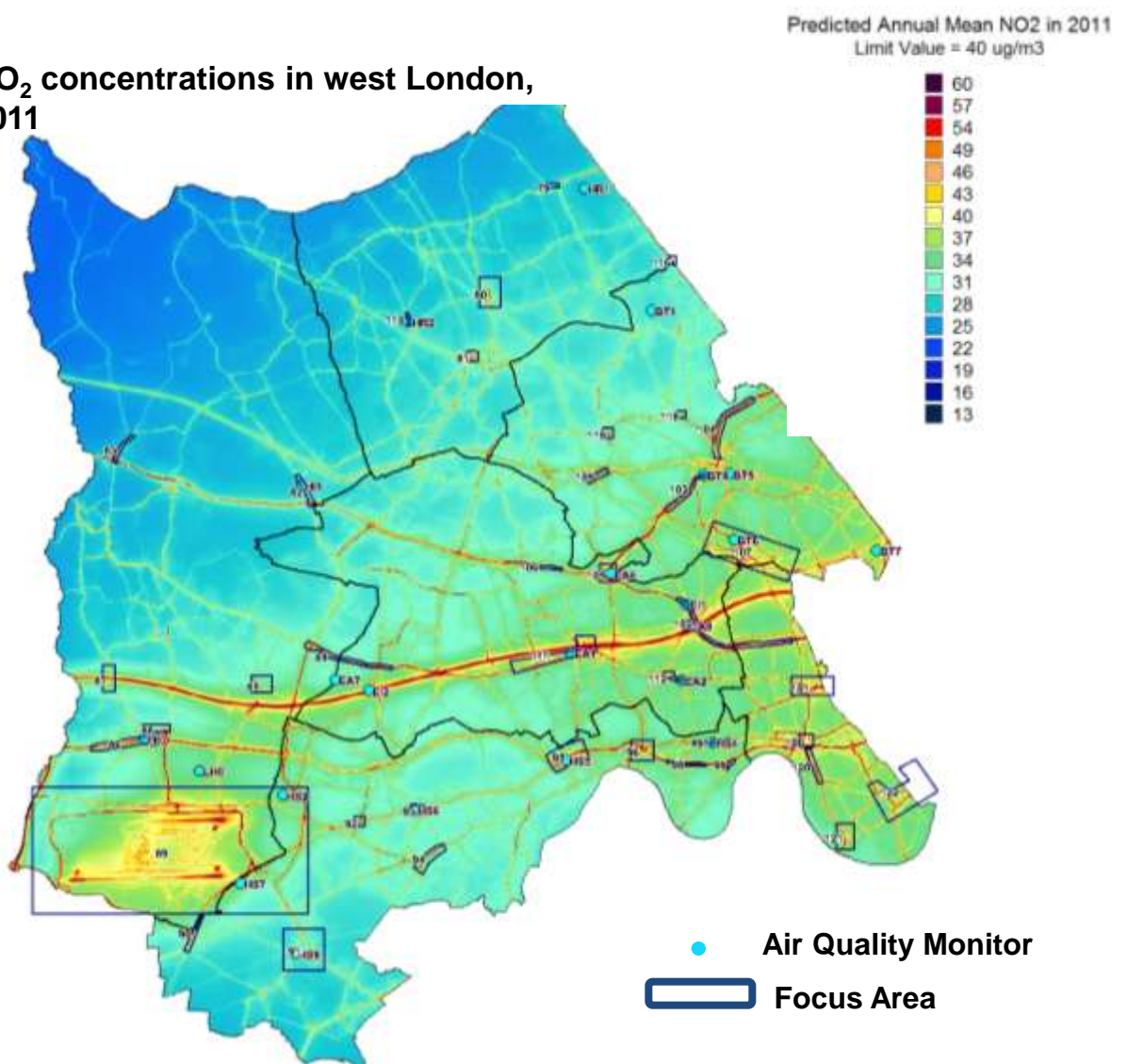
Improve north-south public transport connectivity

The SRTP identified seven sub-regional corridors as having north-south connectivity 'gaps'. WeLHAM model analysis forecasts an increase in AM peak car journey times for these routes between 2009 and 2031. Most of these increases are largely due to population and employment growth. However the increases are not uniform with bottlenecks occurring. WestTrans commissioned a study to analyse these issues and will report later in 2012.

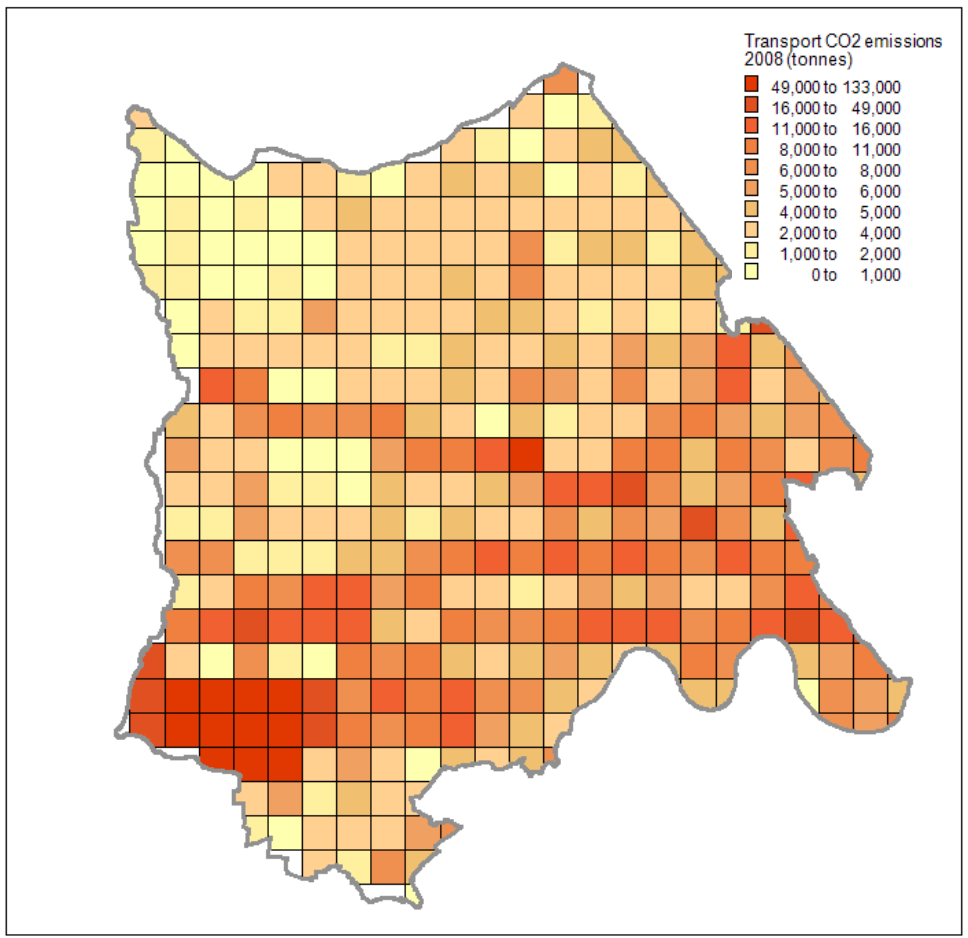


4. West London's transport challenges: key points continued

NO₂ concentrations in west London, 2011



Total CO₂ emissions in 2008 by 1km²



Improve land-based air quality

Air pollutants such as nitrogen dioxide (NO₂) and particulates (PM₁₀ and PM_{2.5}) are associated with short and long term adverse health effects including respiratory and cardiovascular illness.

Although MTS measures are likely to achieve both MTS objectives and legal EU limits for PM₁₀ in the short to medium term, oxides of nitrogen (NO_x) emissions will not be reduced enough to meet either MTS objectives or EU limits

for NO₂. For the objectives and limits to be met everywhere in London, NO_x emissions within London would need to be over 80 per cent lower in 2015 than current projections.

Across London, exceedence of NO₂ emissions limits will occur primarily along major roads and around Heathrow Airport – of particular concern in the west sub-region. Ten focus areas have been identified for action in the west sub-region.

Furthermore, it will be important to continue to reduce PM emissions, with a key focus on smaller particles (PM_{2.5}) in order to deliver ongoing health benefits for Londoners – according to the WHO, guideline values cannot fully protect human health.

Meet CO₂ targets

The Mayor, through TfL and working with other agencies has committed to

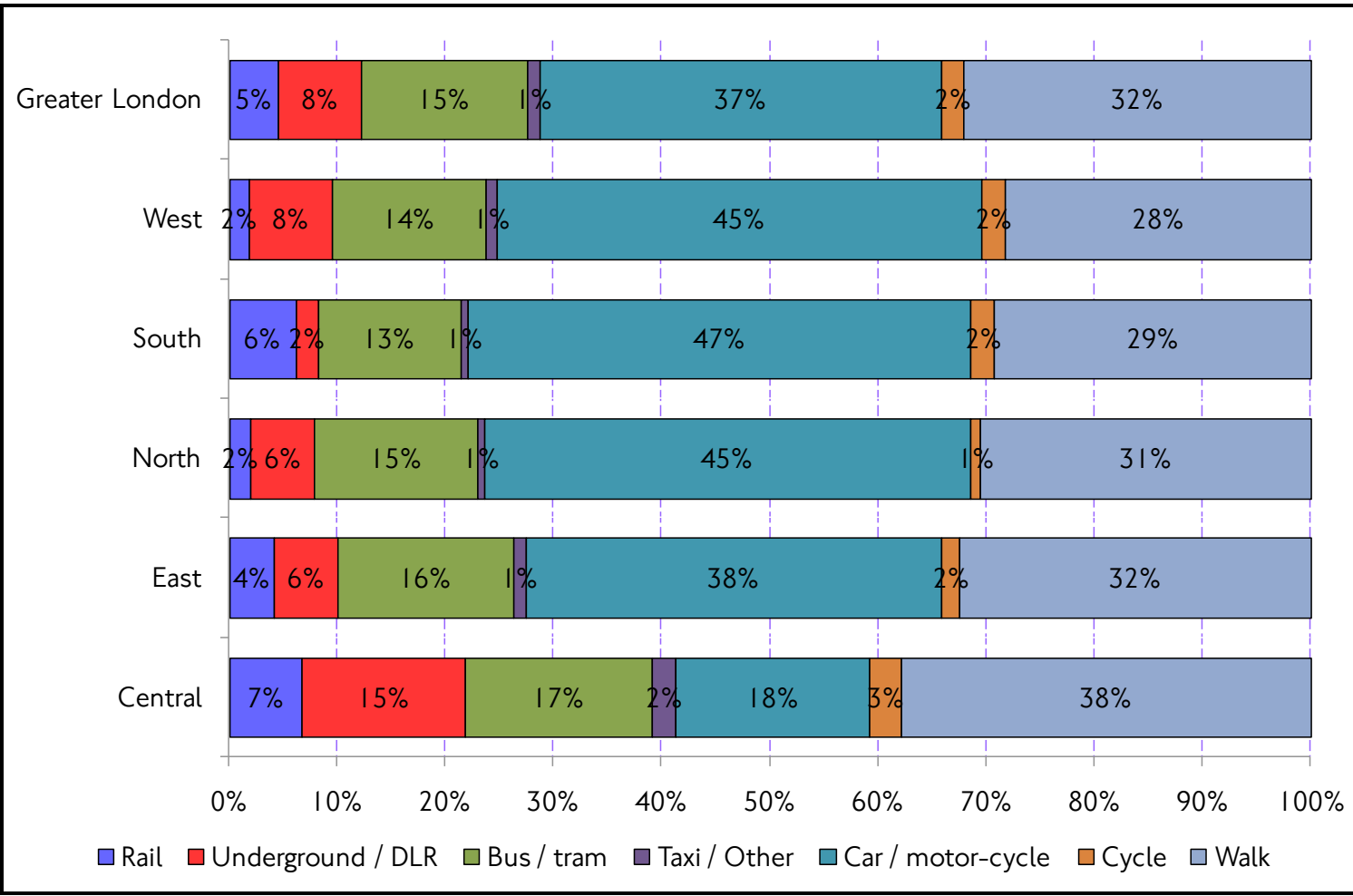
deliver the required contribution from ground-based transport to achieve a 60 per cent reduction in London's CO₂ emissions by 2025 from a 1990 base.

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 west sub-region's transport challenges: key points continued

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'

➔

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 over the last year or so, but further investment and initiatives are required to meet a five per cent cycle mode share and a 25 per cent walking mode share target London-wide by 2031. For walking this equates to an extra 1.1m walk trips per day London-wide. In the west sub-region the cycling target is four per cent

While growth in population is assumed to bring with it a corresponding increase in the absolute number of walking and cycling trips wherever

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

Whilst all walking trips in west London remain at around 23 per cent, the mode share of walking trips by only residents of London is around 28 per cent. This mode share is higher as there are more local trips made by residents of London. However, it is still one of the lowest levels of walking in 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 and reach of interventions put in place. Each borough will have their own approach, but coordinating between boroughs will help maximise their effectiveness.



5. Responding to the challenges: beyond the TfL Business Plan

5.1. Rail: Making the most of existing networks and enhancing capacity`



Station congestion relief
Historically, there has been poor investment in London’s suburban stations. However, improvements are underway or proposed eg congestion relief measures at Ealing Broadway as part of Crossrail. For the period 2014-19 , Network Rail is proposing a National Stations Improvement Plan fund. Bids for this funding can be made when there is a need to relieve congestion at stations.

Station accessibility
Brondesbury station is on the DfT’s indicative list for step free access beyond 2014 . West Brompton and West Kensington are required to receive step-free access as part of the Earl’s Court and West Kensington Opportunity Area redevelopment. proposals (2015-20). LB Harrow would like Harrow on the Hill, which has significant accessibility problems, to be addressed when funds are available.

Service quality recommendations
Other recommendations in line with MTS policies are more routes operated with ‘turn up and go’ frequencies, better information and security measures for passengers, cycle parking and gating.

Capacity schemes
Network Rail ‘s LSE RUS examined where the greatest long-term capacity challenges exist and was based on close working with TfL to develop options to address these challenges. In August 2011, in anticipation of High Level Output Specification 2 (2014-2019), TfL submitted a preferred package of solutions to inform the HLOS2 process . This included train lengthening to 12-car operation on a number of South Western, South Central and South Eastern services, additional stops at stations such as Denmark Hill and Peckham Rye and some additional trains. It also included additional trains on key orbital routes such as Clapham Junction to Shepherd’s Bush and longer trains on Southern services on the WLL. Between now, and completion in 2017, the Great Western Main Line (GWML) is being electrified,

between London and Bristol, South Wales, Newbury and Oxford. This important scheme will ensure a more reliable railway, and deliver capacity enhancements by allowing the operation of longer trains, up to 8 cars, on the outer suburban services between Paddington and both Newbury and Oxford.

In the longer term, a broad case has been identified for incremental capacity schemes including 6-car operation on selected orbital Overground routes and extension of 12-car capability on South Western routes.

The LSE RUS identifies rail connectivity to Heathrow as a strategic gap and proposes further development of options to provide a new western connection from Heathrow T5 going north to the GWML and a western connection from Heathrow Terminal 5 going south to the Windsor lines via Staines. The former has considerable support and Network Rail are progressing feasibility work.

TfL will also give support to promising rail proposals from Network Rail, boroughs and others which offer connectivity benefits between the sub-region and Heathrow Airport.

Underground upgrades
The Bakerloo line and Piccadilly line upgrades are likely in the 2020’s. Central line fleet replacement including associated power / upgrade signalling works is anticipated in mid-to-late 2020’s.

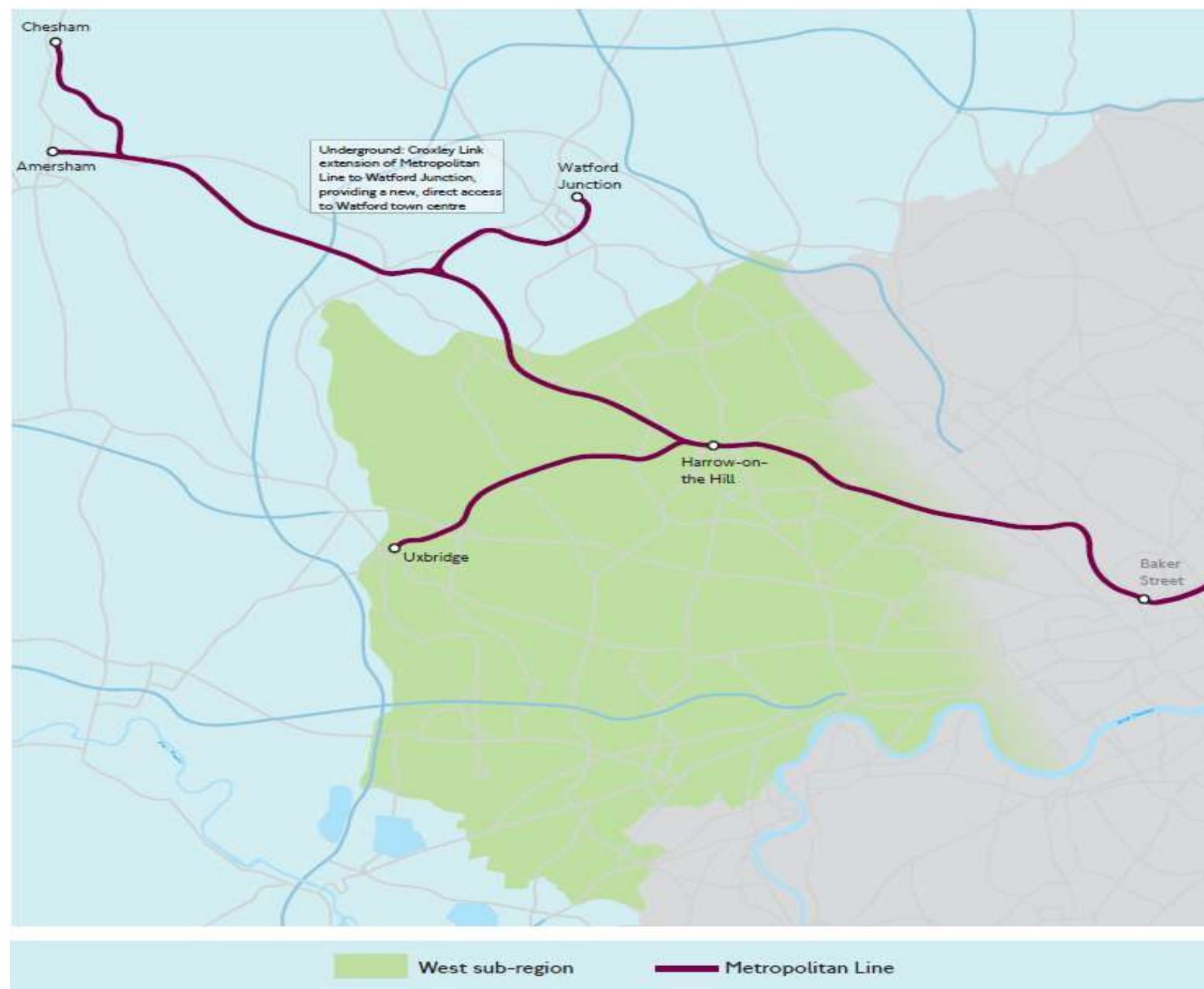
Next generation ‘EVO’ trains are to be introduced. These are shorter, lightweight articulated vehicles, which passengers can walk through with double doorways throughout. They allow for a higher degree of reliability and automation. Being energy efficient and air conditioned, reduces the need for costly power supply and tunnel cooling infrastructure.

Rail 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 rail vision offers an alternative. Responsibility for London’s inner-suburban rail services should be devolved to the Mayor. In that way a single coherent vision for the city’s railways can be made real: a single investment strategy, a single fares policy, consistently high levels of customer service and safety and a network fully integrated

across all of London.
As demonstrated by the highly successful integration of the London Overground into the TfL network, devolution can deliver significantly improved 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.

5.1. Rail: *extensions*



Croxley Rail Link

The Croxley Rail Link is a proposed diversion and extension of the Watford Branch of the Metropolitan line to Watford Junction via Watford High Street. New stations will be provided on the new rail link at Ascot Road, which forms a park and ride site for the area, and Vicarage Road serving the Watford General Hospital

and the proposed Watford Health Campus development. As part of the proposals the existing Watford Metropolitan terminus station will close to passenger services. Hertfordshire County Council (HCC), LU, Network Rail, Watford Borough Council and Three Rivers District Council are working in partnership to deliver the project.

In December 2011 Croxley Rail Link was awarded central government funding required for its construction. HCC and LU are proceeding through the Transport and Works Act Order process which is the statutory means for gaining the powers to construct, operate and maintain the link.

Economic, housing and environmental benefits will come from better transport links between Watford, Hertfordshire and London as a whole.

5.1. Rail: connections to HS2 and Heathrow airport



Artist's impression of possible future Old Oak common station



Vision for Old Oak Common

Hammersmith & Fulham have aspirations for large scale regeneration at Old Oak Common. Sir Terry Farrell has been commissioned to produce a masterplan for the site. These plans would see approximately 10,000 homes and 40,000 jobs created. Major improvements to the local transport network would be needed in order to accommodate a new development of this scale. The masterplan discusses the following transport links:

- Local highway connections would be needed to link the site to the strategic road network, in this case the A40 and A406.
- Pedestrian links to Willesden Junction, Kensal Gasworks and Park Royal would be required.
- A light railway or other light rapid transit system to transport residents within the site and to allow access to key transport interchanges and trip attractors.

TfL is supportive of regeneration associated with a new transport interchange, but concerned about the development impact on the operation of the Crossrail depot. In particular, Crossrail Ltd are not making any provision for the required piling for 'decking over' the Crossrail depot, meaning that any future development cannot be located directly above the depot. The GLA will be leading an Opportunity Area Planning Framework study in 2012 investigating, amongst other things:

- Improved public transport links
- Development potential
- Improved highway links
- Links to Park Royal, Willesden Junction and Kensal Gasworks
- Interface with other railway land, including Crossrail depot
- Looking at possible connectivity to the West Coast Main Line

In January 2012 the Government gave the go-ahead for plans for HS2 a new high speed rail link to be progressed towards a Hybrid Bill submission in late 2013. There is some local opposition which TfL will work with the boroughs, such as Hillingdon, to address these concerns as soon as possible.

Implications for the west sub-region

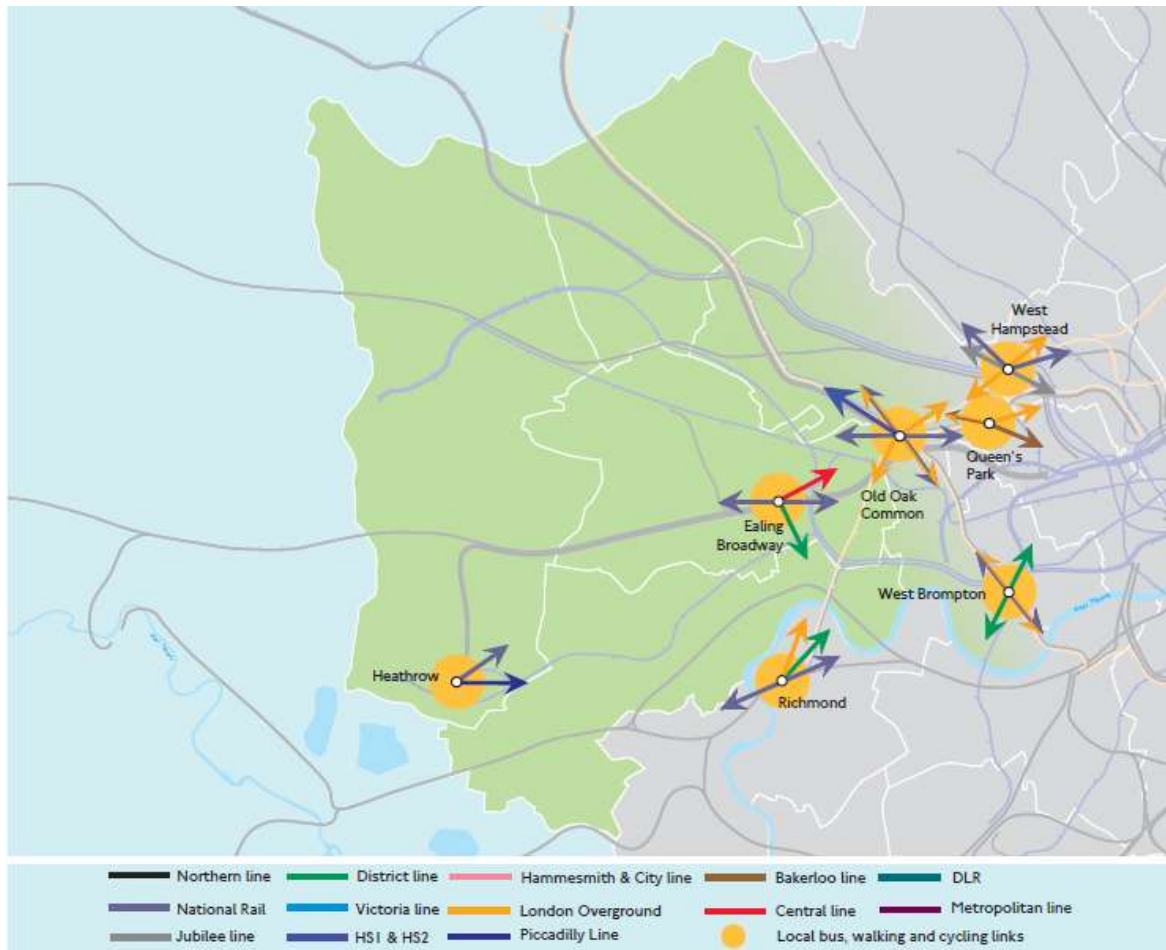
The majority of the issues for the west sub-region centre around the potential for a new interchange at Old Oak Common, though there is local opposition against the environmental impacts from boroughs such as Hillingdon. The plans for HS2 would result in an interchange between Crossrail and HS2 trains.

TfL and Hammersmith & Fulham believes the current plans offer insufficient local access to

the station. Access would be limited only to those on Crossrail. Despite the North London Line and West London Line both passing through the Old Oak Common area, the Government's plans for the station do not include links to these lines. A well connected interchange at Old Oak Common, including London Overground services, would offer direct connections to key centres in west London, including Wembley and Harrow, as well as providing enhanced connectivity across the sub-region. The figure above illustrates the potential connectivity made possible by a well connected station at Old Oak Common.

HS2 Phase 2 plans for a spur to Heathrow. In the interim travellers accessing Heathrow will need to interchange at Old Oak Common.

5.2. Enhanced interchange



Some locations in the west sub-region are well suited to the concept of strategic interchange, as defined in the MTS. The scope will be influenced by the progress made in the implementation of funded schemes (such as Thameslink) and unfunded major schemes such as Crossrail 2, HS2 and station upgrade works.

Ealing Broadway

There is great potential to build on the development of the Crossrail station at Ealing Broadway. The interchange opportunities are already significant, including between national rail services and two Tube lines (District and Central). However, as with all of the new Crossrail stations, the rebalancing of buses around the stations is an important consideration in future plans.

Heathrow

The west sub-regional transport plan emphasises the important role that

Heathrow plays in the sub-region as the UK's only hub airport and a major driver of economic activity. BAA has invested heavily in transport infrastructure at the airport and has been particularly active in working to develop, in collaboration with other transport operators, a wide-ranging network of services and continues to aspire to improved rail connections to the airport, particularly from the west, as well as increasing modal shift towards more sustainable travel modes. With seven rail stations and two transport interchanges, Heathrow is already a major multi-modal transport interchange, as well as the busiest bus and coach hub in the UK. With the introduction of Crossrail services from 2019, a potential new western rail connection to Reading and Slough, and a direct link to the new high speed rail network, Heathrow's role as a major interchange is likely to increase.

Taxis play a key role at Heathrow Airport with taxi ranks appointed to serve each terminal, with the ranks in turn fed by the largest taxi feeder park in London.

Old Oak Common is identified in the Government's latest plans for High Speed 2 as a strategic interchange between High Speed 2, Crossrail and the Great West Mainline rail services. London Overground rail routes are nearby, as is Willesden Junction - a key hub in the Overground network. TfL consider it vital that the nearby Overground routes are integrated into plans for the Old Oak Common interchange. This would enable a direct route from London Overground stations in North London to Old Oak Common, as well as potential new routes connecting Brent Cross / Cricklewood and the Thameslink route towards Luton directly to Old Oak Common.

TfL will lobby for the integration of the London Overground network into plans for the Old Oak Common interchange as planning for HS2 progresses.

Willesden Junction

Willesden Junction already plays a significant role as a strategic interchange in the west sub-region. It allows transfer between the radial Bakerloo line and the orbital North London Overground Line. The extension of the Overground network from Dalston Junction to Clapham Junction via Surrey Quays will complete

the London Overground orbital railway around the Capital later in 2012.

Ensuring there are good connections, both surface and rail, between Willesden Junction and a potential HS2/Crossrail station at Old Oak Common needs to be an important consideration in future development in this area.

Other 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.

5.3. Making the most of existing networks: overview of the different priorities on the road network

Different priorities

Congestion



Access to and within key places – by different modes



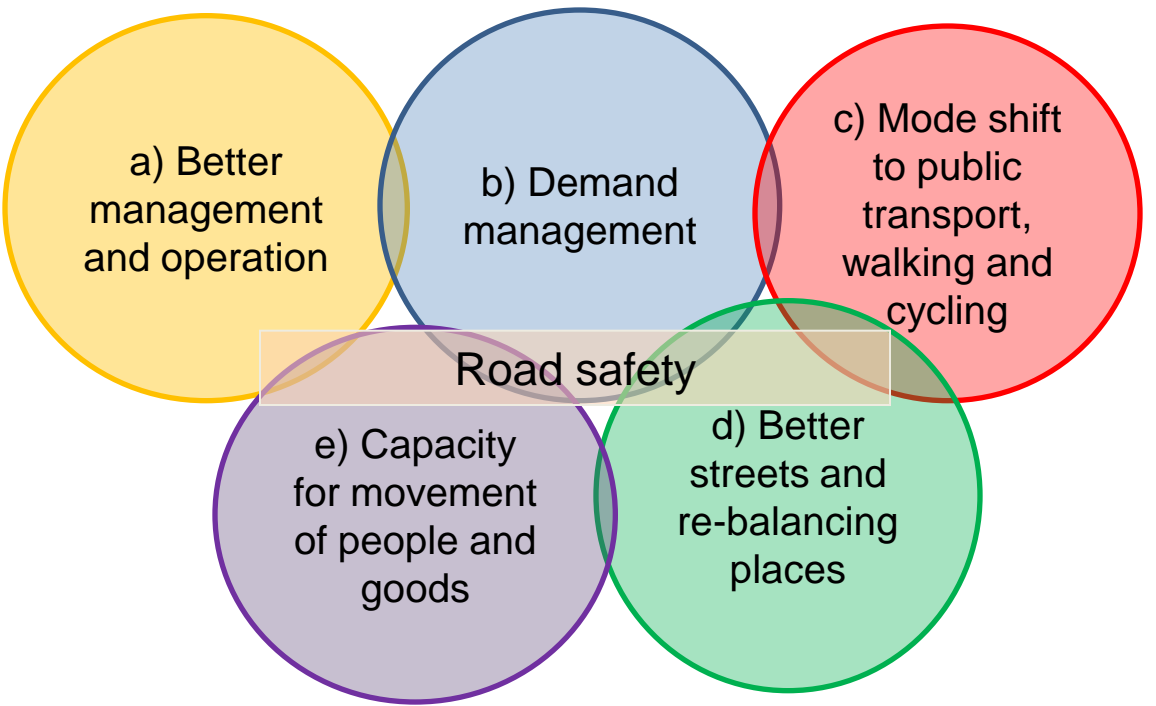
Road safety



The quality and sense of place



Potential measures



There is a range of measures that can be implemented in relation to the road network to achieve the different priorities. The balance between them will clearly depend on the priorities in particular locations.

As highlighted in section 4, congestion is already a challenge on many of the roads in the west sub-region – and 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 by a range of modes, including bus, cycling, car and taxi. 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 any real sense of place, and seeing conflicts between users with resultant safety impacts and impacts on the attraction of alternative modes.

Tackling congestion and ensuring good access to key places is thus a priority within the sub-region, but so too is creating better places, improving road safety, supporting cycling and walking and improving the environment. There are often synergies between the 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 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.

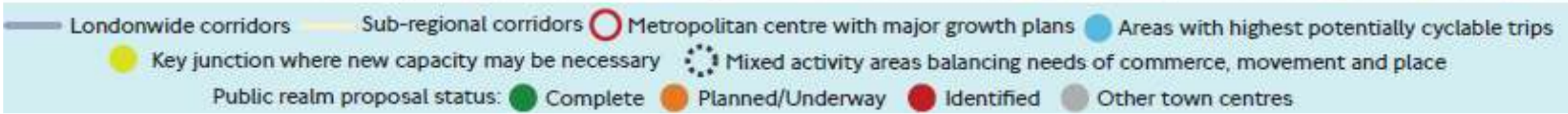
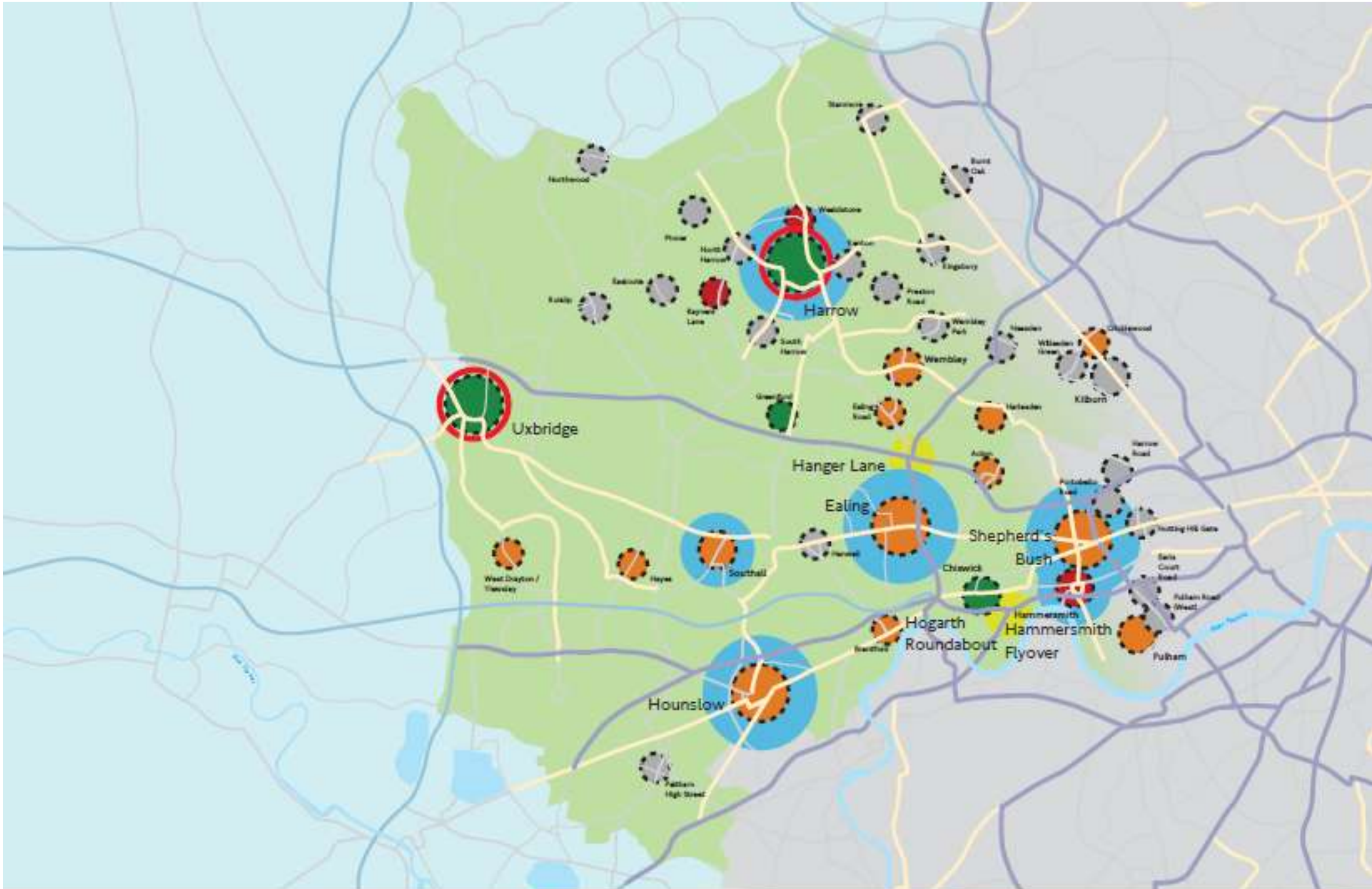
The benefits from better management and operation of the network clearly need to be maximised, but there are inevitably limitations. In growth areas, development of the road network may be vital to enable growth to be unlocked. And on some of the strategic corridors further action potentially in terms of capacity solutions may be needed.

In other areas, place functions and priorities such as safety / cycling need to be prioritised. As London grows, we must not only seek to mitigate the environmental pressures, but think innovatively about enhancing the quality of places and their future 'shape'. 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 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. The following pages highlight some of the ways in which these issues are being tackled and the corridors and hotspots that are of particular interest.

5.3. Road / street network: overview of the different priorities



5.3a and b. Better management and operation, and demand management

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 per cent. 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

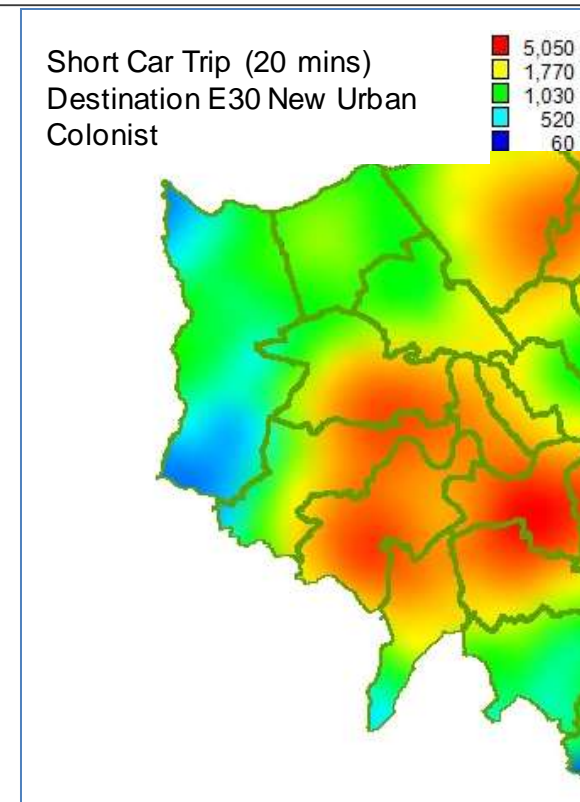
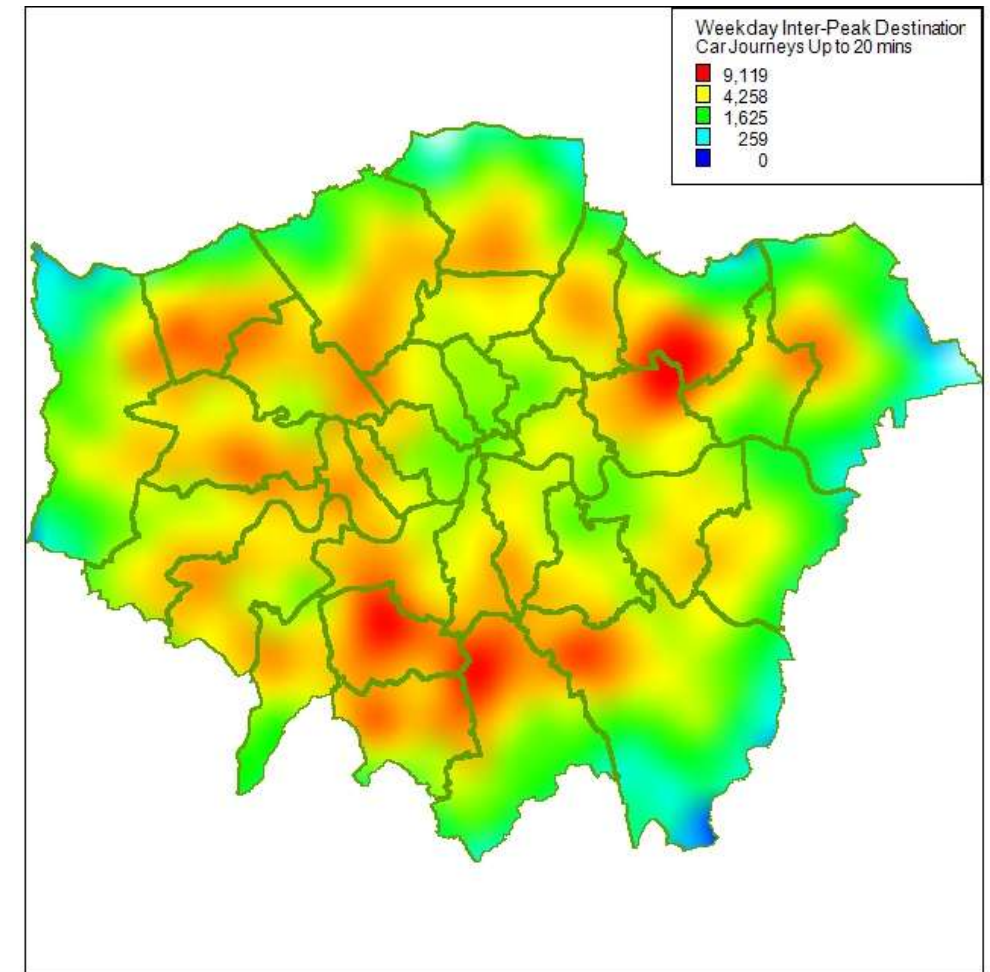
where the take up of car club membership is more likely and could have a greater impact. For instance, households with more than one car generate a disproportionate number of short car trips – just 28% of car-owning households own more than one car but about 40% of car trips under 20 minutes are made 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.

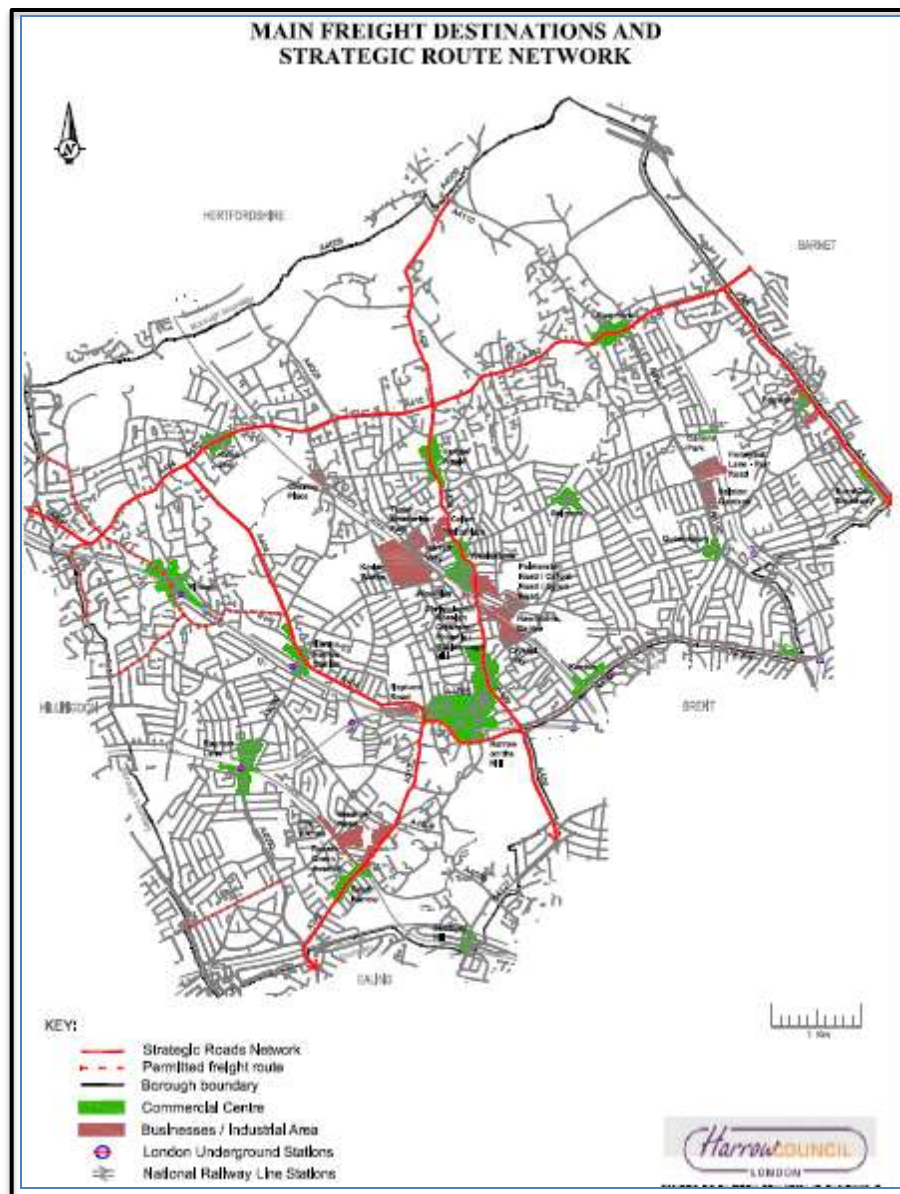
In the west sub-region there is good potential for car club implementation on the borders of Ealing, Hammersmith & Fulham and Hounslow. This will particularly link to boroughs in the south sub-region.

Mode shift reductions can also be achieved through car-sharing. Heathrow has made significant improvements in reducing single occupancy using this approach.

Destination of short car trips – inter-peak period (10am – 4pm)



5.3a. Better management and operation: freight and servicing



Local Freight Movement Operational Strategy – Harrow

Harrow has prepared a freight strategy to balance the ease and efficiency of freight vehicle access with the environmental and social impacts imposed on the local area. This means reducing:

- the amount of freight traffic on inappropriate roads
- freight journeys through the borough that do not use permitted freight routes.

Following public consultation the strategy will be implemented over the next two years using £160k of Harrow and LIP funding. It includes a signed and dedicated freight route in Harrow that serves all the borough's major destinations, improved information for freight operators and satellite navigation suppliers, loading bays at appropriate destinations and better enforcement of restricted roads.

Responding to the current and future freight and servicing challenges will require a flexible and innovative approach to meet the specific demands across west London

Existing measures

Current freight initiatives aimed at improving the efficiency of freight movement and improving its contribution to other mayoral goals include the Freight Operator Recognition Scheme (FORS), Delivery and Servicing Plans (DSPs), Construction and Logistics Plans (CLPs) and the Freight Information Portal. These are complemented by measures such as safeguarding wharves, improving rail freight facilities, and

encouraging quiet out-of-hour deliveries.

Heathrow Airport is a pioneer of freight and goods consolidation in west London with a large Construction Logistics Centre at Colnbrook established for the T5 project and still in operation, and a Retail Consolidation Centre at Stockley Park. Both aim to reduce overall HGV movements to the airport, reduce movements during peak hours (hence relieving congestion) and enable efficiencies in logistics practices.

New opportunities: Olympics legacy

The Olympic and Paralympic Games in 2012 will bring opportunities and challenges to freight and servicing across London, including in the west sub-region. TfL is currently working with businesses to ensure that they are as prepared as possible for the Games, including analysing road network impacts on each Games day. But this also provides a great opportunity to build on the lessons learned during the Games for continuation during legacy.

This will involve testing the long term applicability of the "Four Rs" approach, as developed with the freight and logistics industry deliver freight behavioural change for different sectors and areas, by:

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

The roll-out of existing freight and servicing measures, such as CLPs and DSPs, should be implemented at new developments, not only those in areas of high congestion around town centres. In an early case study of a DSP at TfL's Palestra office in Southwark in 2009, deliveries reduced by 20 per cent overall, with even greater reductions in deliveries (c.40 per cent) for catering supplies, stationery supplies and archiving. The reductions in freight trips have a much wider impact than in the immediate vicinity of the office locations.

Further measures for implementation in the west 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 could be used at Business Improvement Districts (BIDs) in the west sub-region to reduce the number or shift the timing of deliveries to an area.

• Use of section 106 agreements to improve the effectiveness and enforcement of planning conditions related to freight and 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

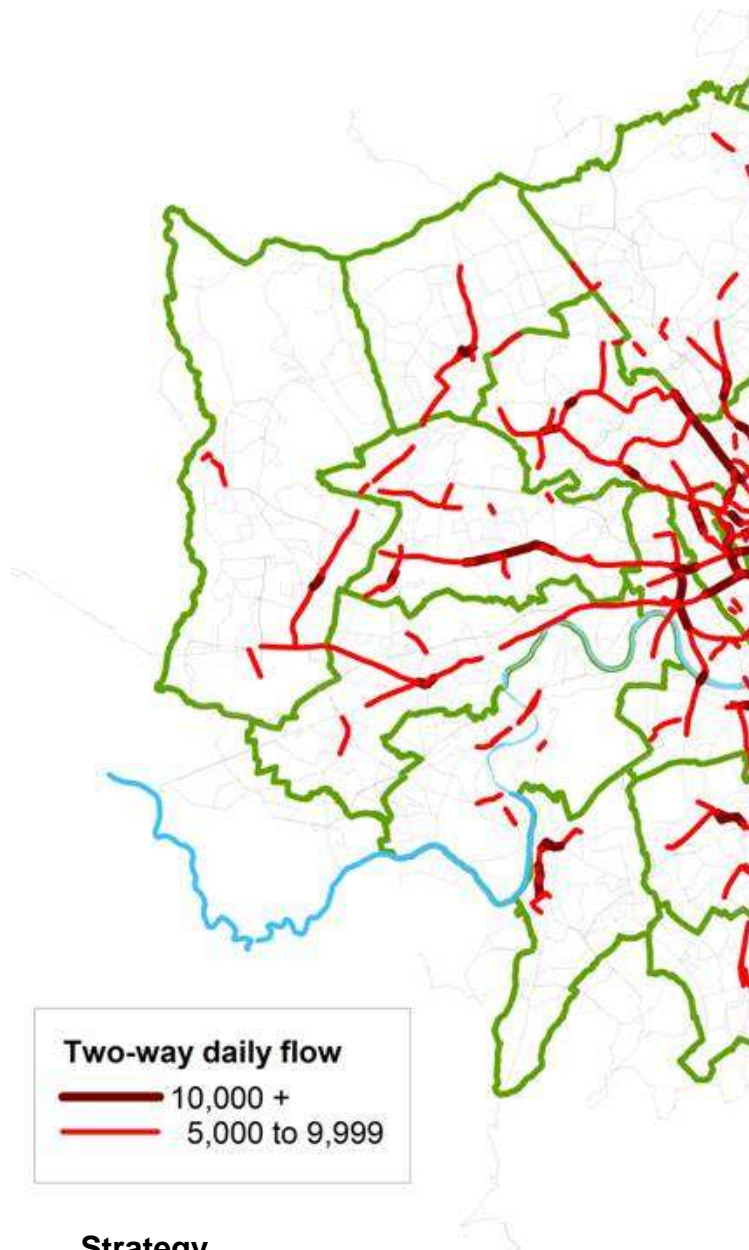
• Investigating the potential for a consolidation centre located in the sub-region

• Identifying locations where out-of-hour deliveries could be implemented more, building on the 2012 Games lessons for legacy operation

• 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 particular areas. Identifying locations in the west sub-region which would be willing to participate in a case study exploring this would be welcomed.

5.3c. Mode shift: bus



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.

New bus links have been prepared for the retail and residential development at Wembley, including the relocation of Brent's Civic Centre into the area by 2013.

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 (EWT) 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 west sub-region. TfL is undertaking work on the possible reconfigurations of the bus network required as a result of the changes. Furthermore, the developments associated with Park Royal, Southall and Wembley, as well as the concentration of employment at Heathrow, will impact on the bus network.

At Southall, the gasworks development site is adjacent to the Crossrail station. There are plans to possibly create new road links to the site, which, along with the development opportunities could be used to provide faster journey times to and from Southall and Hayes.

It is possible that the one-way traffic system east of Wembley Stadium will be reconfigured to become two-way. Additional bus terminating space will be needed in the area

At Park Royal the challenge will be continuing to provide an effective set of bus connections to the surrounding area. Opportunities may arise to justify greater levels of bus priority in the areas on the border of the area, particularly in the context of links to Old Oak Common and the Crossrail station at Acton Main Line, and this will be considered. 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. Furthermore, garage capacity is essential to providing a bus network. Garage locations in the sub-region are generally well-matched to the network they support.

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, for example at Old Oak Common. In these locations the case for bus priority should always be considered from the earliest stage of design.

Supporting growth

Bus is the only public transport mode 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.

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.

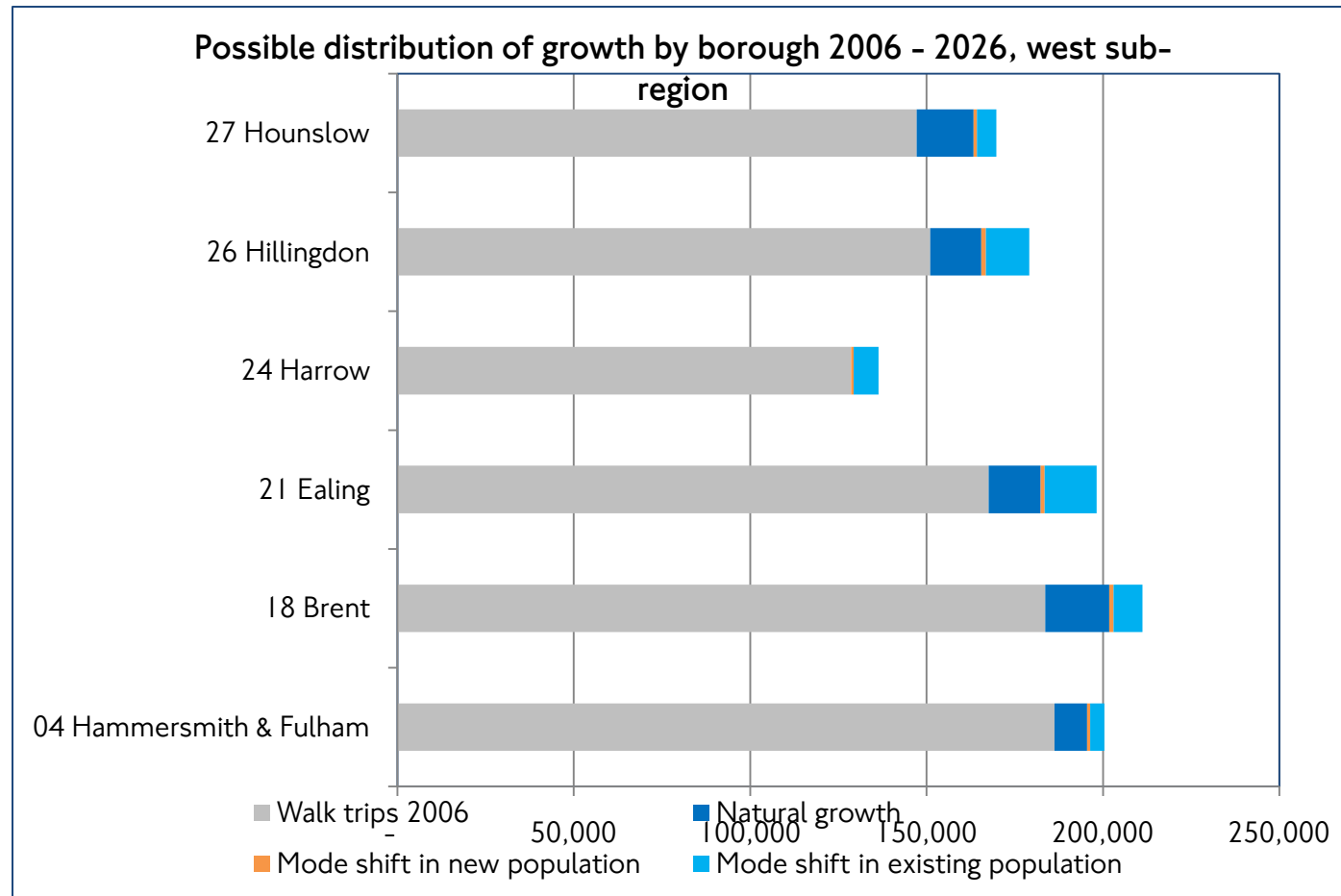
This strategic aim is based on the priorities of existing passengers and potential passengers. However, there are different responses to the challenges over the short, medium and long term.

5.3c. Mode shift: bus

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	Ealing, Uxbridge, Hounslow, Harrow, Hammersmith, Heathrow and Shepherd's Bush	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, eg. Crossrail integration
Other significant hubs	Southall, Chiswick, Greenford, Acton, Ruislip, West Drayton, Fulham, Wembley and Willesden			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 	Southall Gasworks site (LB Ealing)
Commercial sites	Industrial, office, retail and leisure sites throughout the area.			Park Royal (LBs Ealing and Brent) Heathrow Airport and surrounding areas
Social facilities	Healthcare and education sites throughout the area.			Healthcare reorganisation schemes, eg. use Health Services Transport Analysis Tool to efficiently plan health services to reduce transport impact

5.3c. Mode shift: walking



Walking is the most used means of accessing district town centres. It's also the second most used means of accessing all types of town centres after buses, with mode share increasing by three per cent (to 28 per cent) 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.

The west sub-region has realised 71 per cent of its walk potential, this is the proportion of trips that could be walked actually being walked. This means there are 438,000 potential walk trips existing in the west sub-

region. Suggested areas of focus include: Hillingdon and Ealing. Willesden Green is a useful example to feature here, reducing the dominance of motor traffic to the benefits of place activities.

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

TfL has been working with boroughs for a number of years to implement Key Walking Routes. A Key Walking Route links together places that people need to travel between, with high quality walking facilities.

Key Walking Routes offer proven potential to increase walking trips and pedestrian numbers. They also support town centre regeneration and local businesses whilst helping to reduce the number of short car and public transport trips undertaken. The choice to walk to and within town centres across London has to date often been inhibited by poor walking environments that encourage car dependency.

The type of place that Key Walking Routes might link together includes:

- public transport stations and stops
- schools
- local shopping parades and centres
- health, care and community centres
- leisure facilities
- other key destinations

Key Walking Routes directly tackle the factors that Londoners consistently state as preventing them from walking more often (Attitudes to Walking, TfL 2011) and might include a mix of the following:

- widened and repaved footways
- new and improved pedestrian crossings on desire lines
- improved accessibility through step-free access
- removal of obsolete signs, poles, columns and railings
- trees and planting to green streets

- seating
- removal of hiding spaces and blind corners
- signing, in particular Legible London
- street lighting for pedestrians
- shared space

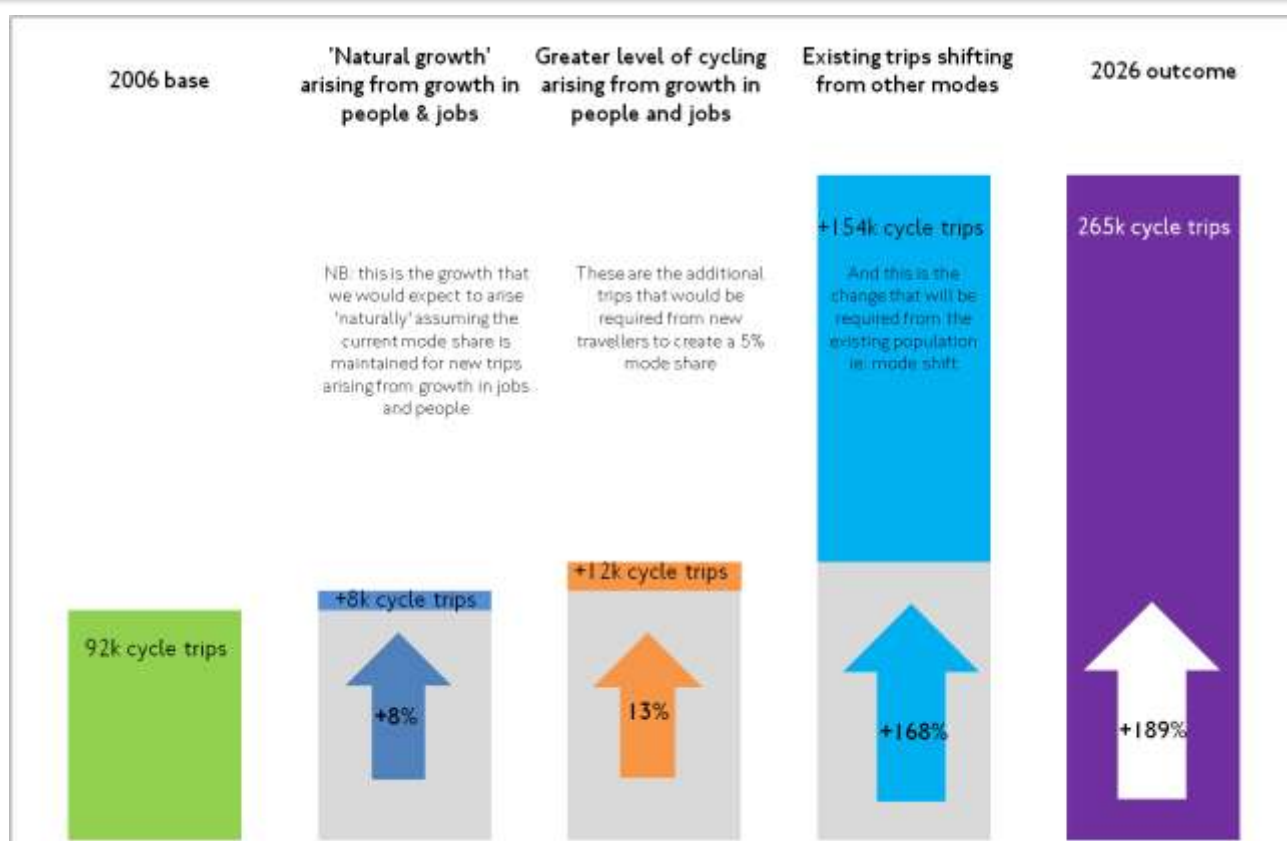
Key Walking Routes are applicable to central, inner and outer London but are especially relevant to metropolitan town centres where known walking potential exists.

Key Walking Routes should be implemented in areas that are currently used by large volumes of people or places with a known pedestrian demand that is not being met. They should be based on an understanding of pedestrian needs and behaviour.

It is important to emphasise that Key Walking Routes are not about one-off treatments, but are coordinated approaches to walking improvements.

The west sub-region has one Key Walking Route, in Willesden Green, Brent.

5.3c. Mode shift: cycling



The diagram above shows one possible model for how growth in cycling may be achieved. By focusing activity in growth areas to achieve a London-wide mode share above five per cent, boroughs could reduce the mode shift from existing trips needed – but given lower growth levels in the west than other regions, measures to encourage people to switch mode are likely to be particularly important.

There are high densities of potentially cyclable trips in inner London and in the outer London town centres. West London has significant cycling potential that is concentrated in the large urban centres such as Ealing, Harrow, and Shepherd's Bush. This offers an opportunity for focused interventions.

Policies relating to road network management, public transport provision and 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 such as Ealing to create a bespoke package tailored to the needs of inner London boroughs.

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, there needs to be enhanced focus on improving the cycling environment – starting with the review of key TLRN junctions and CSH junctions which started late 2011 and will continue until June 2012 with any junction improvements delivered after the 2012 Games.

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.

Hounslow wish to extend CS9 from Hounslow town centre.

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

Key building blocks for growing cycling in west London:

Cycle Safety

The cycle KSI rate has decreased by seven per cent (2008-2010). However, the absolute number of cycle casualties has increased in recent years and the perception that cycling is not safe is the reason most frequently given by non-cyclists to explain why they don't cycle more. London's roads must be safe for cyclists, and feel like they are.

- Reducing conflicts between cyclists and other vehicles through a joined up approach of education campaigns, more enforcement and road space improvements
- Working with the freight industry to improve safety for cyclists with innovations in technology/vehicle design eg Hammersmith & Fulham and Hillingdon.

Cycle Security and Theft Prevention

Cycle theft is still a big problem in London and a major factor in putting people off taking up cycling as well as causing new cyclists to revert back to cars/public transport.

- Provision of more secure cycle parking and increased cycle registration

Helping people to 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' include events, training and quiet or off-road cycle routes

Some of the forecast population growth in west London is amongst groups of the population which currently have a low propensity to cycle and tend to aspire to drive, eg young families.

Expanding the appeal of cycling to a wider group of people - especially women, people from ethnic minorities and lower income groups – is important.

- Making cycling affordable for low income groups eg bike libraries, improving access to cycle-to-work scheme, community insurance, company bikes (like company cars), green points.
- Making the most of events such as 'Marathon on Wheels' to inspire people to cycle.

Helping existing cyclists move to/within London

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 cyclists needs are taken into account when designing new places, from long-distance cycle commuters to young children learning to ride a bike.

- A series of Cycle Hubs (such as the one being built in Ealing) in high density destinations – dedicated routes, wayfinding, secure parking, maintenance, cafes and cycle shops. Heathrow airport has a cycle hub for staff.
- High quality interchange between cycling and public transport, particularly rail
- Developing cycle hire solutions for centres outside of the central zone such as Ealing and Harrow.
- 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.
- Consistent wayfinding

A demonstration of cycling in Harrow

Harrow is a proactive cycling borough and a watching partner of the Biking Borough programme. The borough is looking to improve some potential off-road shared use cycle tracks such as upgrading the existing disused railway line approximately 2.5 km in length known as the Belmont Trail, as well as providing secure cycle parking at key locations, cycle training and promotion.

Successful campaigns have previously been targeted at families, a key potential cycle growth area in the borough. Harrow's Local Implementation Plan has set out further ambitions for cycling improvements, many

of which are incorporated in the ideas below. The approach outlined is an initial demonstration of the level of investment and type of measures likely to be necessary to transform cycling in Harrow. To achieve a step change in cycling a package of measures is needed, which is best delivered by the boroughs and supported by TfL. TfL is keen to work with the other boroughs in the west sub region to identify the priorities within each area. Although no specific funding is currently identified for such measures, this work will help shape TfL discussions in the context of Business Planning.

Harrow Borough Approach

Harrow has a history of successful schemes such as Station Road town centre improvements, 20mph zones around schools, Petts Hill Bridge Improvement and promotional events such as Dr Bike and free cycle training.

The following improvements are committed and are in varying stages of completion:

- College Road two-way cycle improvements
- Rayners Lane Station access scheme
- Streatfield Road / Christchurch Ave
- Clamp Hill / Uxbridge Road cycling corridor
- Cycle skills travel maps for all schools in the borough that have a travel plan.

Harrow has future ambitions for the following schemes:

- Completion of strategic cycle network along Marsh Road, Pinner Road and Hindes Road.
- Belmont Trail linking Stanmore to Wealdstone and beyond Brent – to provide a cross borough north-south link.
- New cycle hire/parking schemes such as those carried out in Guildford and Ealing by Brompton.

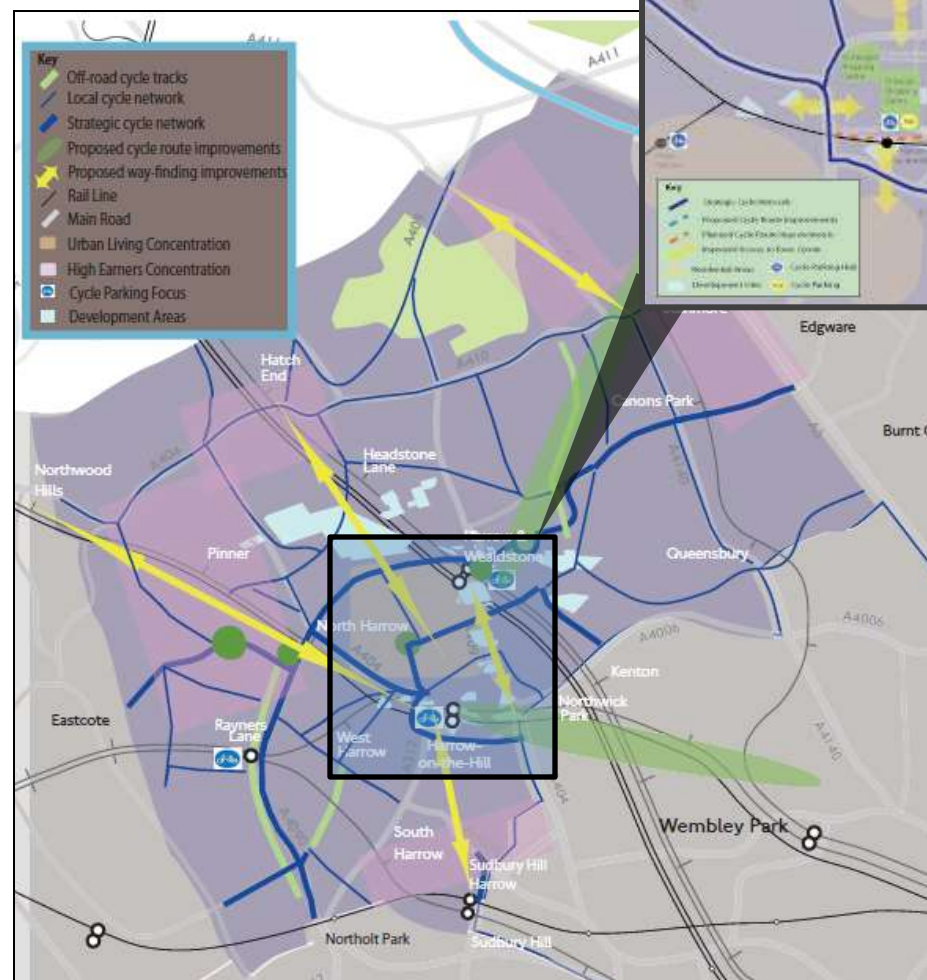
The cycling ambitions of Harrow and work by Sustrans, along with TfL research into cycling potential and cycling infrastructure, have informed the package of potential measures detailed below:

- West London Greenway: attractive cycle link between Stanmore and River Thames, providing improved links between Harrow, Brent and Ealing.
- Further work to the Sustrans Greenway Network
- Cycle parking retro-fitted in or near existing residential areas and workplaces, and required in all new developments. Workplace match-funding.
- Further speed reduction schemes such as 20mph schemes around schools to facilitate school children and family cycling.
- Cycle training and promotion, particularly focusing on groups who have been identified as less likely to cycle such as women and people from some minority ethnic groups.
- Further Sky Rides focusing on routes within Harrow.
- High quality cycling facilities around the outer edges of Harrow, potentially including leisure bike rental schemes.

TfL also encourages boroughs to prioritise measures in LIPs funding, and for both them and TfL to maximise leverage for third party contributions potentially via development and sponsorship. This is especially important in Harrow as there is potential for large scale private sector development in the future. Partnership working between TfL, borough councils and the local community will be essential to maximise the impact of limited funds on encouraging the uptake of this sustainable mode of travel.

Harrow Town Centre Approach

These potential measures focus on the town centre and large residential/business development. To be effective, they need to be targeted to high potential areas and groups. New infrastructure must also be supported by non-infrastructure measures such as cycle training and marketing to improve public awareness and confidence.



- **Improvements to access of the town centre from all feeder routes.** Cycle permeability across the main roads around the town centre are currently poor and deter both cyclists and pedestrians. There is potential for trials of cycle access in pedestrianised routes.
- **Town centre cycle hub.** This would provide capacity for increased cycling mode share for trips to the town centre. Suggested locations are the rail and bus stations. They could include a service & repair shop and bike rental system with a key focus on secure cycle parking.
- **Improved cycle parking.** Focus should be around Harrow & Wealdstone, Northwick Park, West Harrow Station, St Ann's Road and College Road.
- **Improving cycling conditions along key routes.** This includes further improvements to Station Road, giving a larger road allocation to cyclists.
- **Campus cycle rental scheme.** This could be set up working in partnership with cycle manufacturers, Brent Council, the university and hospital. This could reduce short trips taken by students via the Tube, and help to raise the profile of cycling in Harrow.

5.3d. Better streets and re-balancing places

Before



After



Station Road, Harrow town centre Originally a dated street dominated by the needs of motor traffic built up over decades. The street scene was renewed with granite paving, removal of street clutter and easier crossing with reduced through traffic and low kerbs. The carriageway was widened to allow two way bus movements, unlocking two way operation for other town centre roads. Traffic signals and priorities at the junctions were revised. New street furniture was installed including granite benches, bins, lights and trees (in Autumn 2011). Additional loading bays were put in to facilitate the servicing of businesses. Additional disabled bays were installed off Station Road and public spaces created with seating and shade. Harrow intends to continue area improvements in the town centre.

It is important to improve the 'attractiveness' of key places in west London to live, work and visit, putting pedestrians and cyclists at the heart of our thinking. With the forecast increases in population and employment in the sub region it will also be necessary to seek improvements in the efficiency of people movement along certain corridors – including bus, walk and cycle - ensuring good access to town centres and other key places.

As buses are efficient users of scarce road

capacity, implementing priority for bus passengers is one effective way of dealing with travel demand arising in line with the expected growth in London's population.

Measures to promote this include:

- high quality interchange: walking / cycling / public transport
- accessible crossings, removal of guardrail, widened footways in key locations, de-cluttered streets
- 'greening' of the street environment, simplified junction designs, removal of traffic signals, widened footways and improved accessibility
- improved walking routes and wayfinding. Ealing, Harrow, H&F and Hounslow are already or will be rolling out Legible London
- 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 car use for short trips
- 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

Hillingdon is undertaking studies for the area around Hayes station and towards the town centre, looking to support the redevelopment of the Blythe Road areas situated in the heart of the Heathrow OA.

It will also be important to continue

the Mayor's 'London's Great Outdoors' programme. In recent years this programme has enabled various schemes to be taken forward, including Greenford, Harlesden and West Drayton.

Good access for buses and ensuring the infrastructure to support these services (eg stands) is vital to ensure places remain accessible for work or shopping or leisure – but it is vital that these are planned in conjunction with the wider aims for the area.

Process for moving forward: thinking re how to develop places linked in to area / corridor studies – prioritise differently in different areas.

5.3d. Managing streets: London's Great Outdoors

London's Great Outdoors, launched in 2009, brings together a wide range of projects and investment to improve the quality of London's streets, squares, parks and open spaces. Through the Great Outdoors programme a number of public space projects have been delivered across the central sub region eg Exhibition Road.

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

The 2012 Olympics has brought the world's attention to London and thousands into its public spaces. The spirit of collaboration has been exemplary, delivering great places such as Piccadilly-two-way and the Southbank for this global event.

Investing in public space sits clearly within the London Plan, as well helping to deliver on many of the policy aims of the Mayor, such as the MTS, Biodiversity Strategy, London Health Inequalities Strategy and Draft Climate Change Adaptation Strategy. This follows through to more detailed documents, such as the Supplementary Planning Guidance for the All London Green Grid.

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.

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.

The Mayor remains committed to supporting the quality of design of public and open space, across the full range of projects. The Great Outdoors programme will be revisited in 2012 and will continue to deliver the good work from the initial Great Outdoors programme as well as focusing on areas such as High Streets and London's green spaces.



5.3e. Capacity for movement of people and goods

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 'solve' the problem). The previous sections emphasise what could be done e.g. in relation to encouraging mode shift, reducing demand for travel by car and promoting 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.

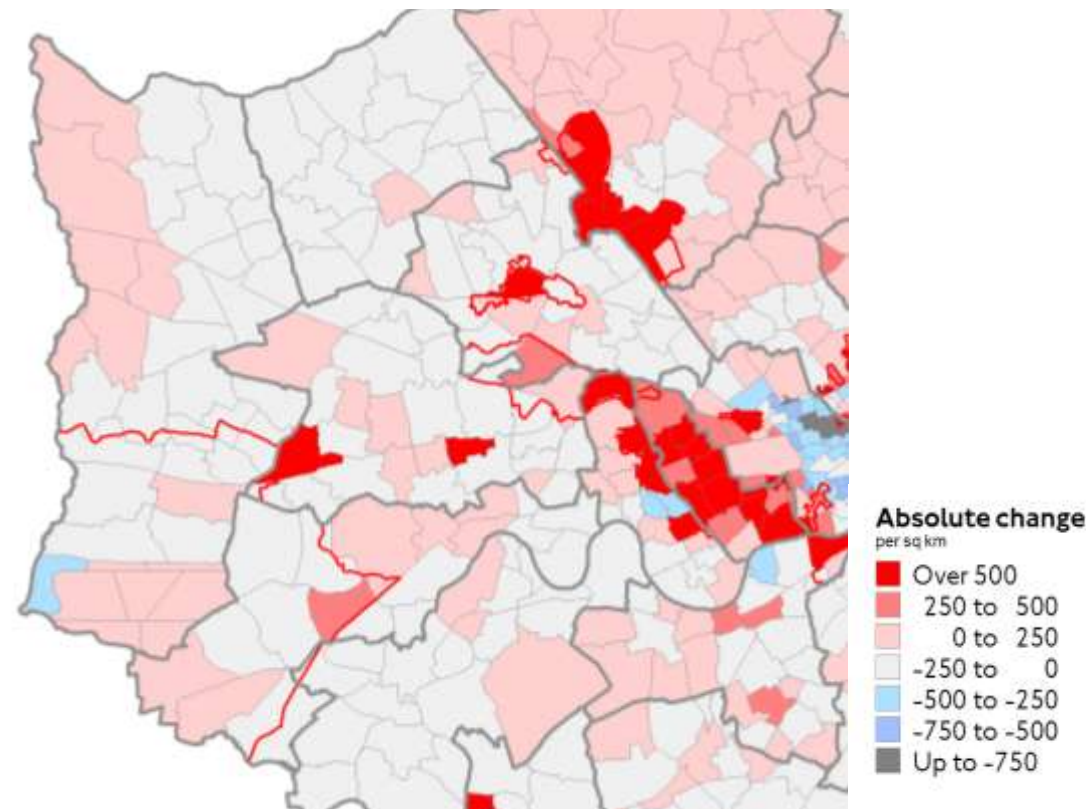
In some parts of London where tackling congestion is a priority and all opportunities for mode shift and demand management have been explored then it may be necessary to consider further development of the road network through additional road capacity such as bypasses or tunnels. Such schemes would only 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.

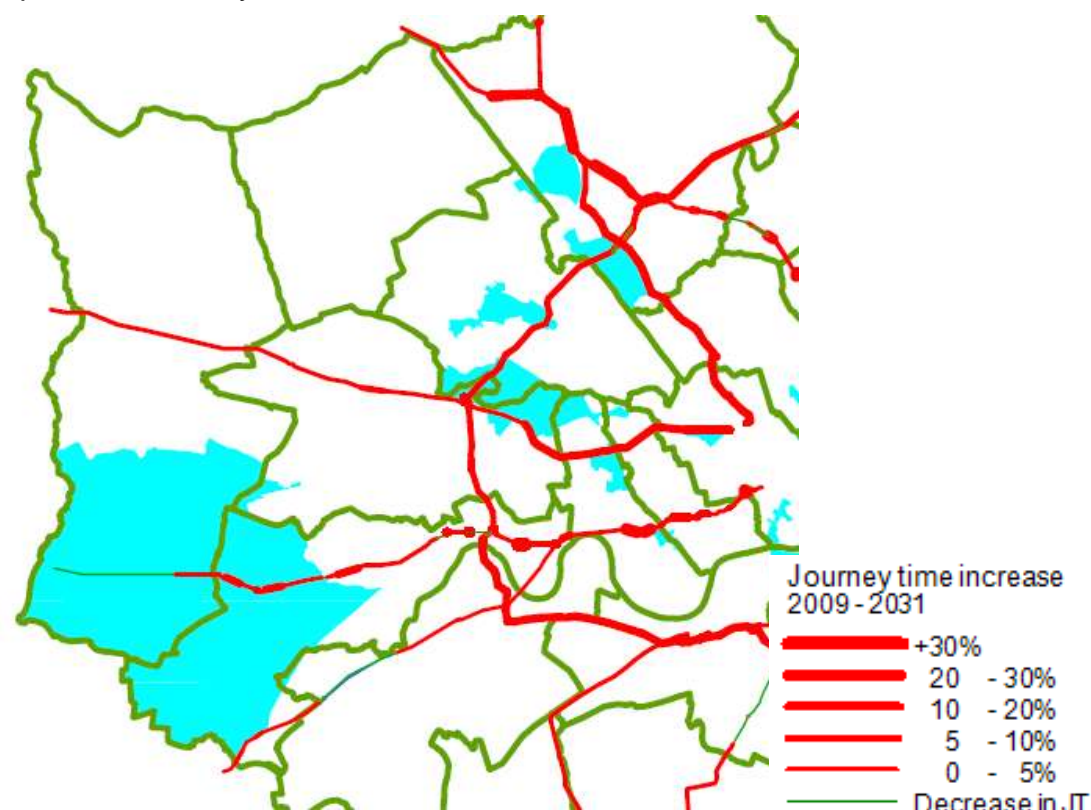
The following maps show future changes in demand for car travel and the corresponding increases in journey time in 2031.

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



5.3f. Tackling road safety issues



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 per cent, and the number of reported slight injuries by 33 per cent. 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 has 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 per cent of daily journeys, but 32 per cent of KSI casualties in London;
- Powered two-wheelers account for 1 per cent of daily journeys, but 21 per cent of KSI casualties in London;
- Pedal cycles account for 2 per cent of daily journeys, but 16 per cent 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 the police and other agencies to help ensure road users behave safely;

Working with others – leveraging the knowledge, insights, resources and activities of other organisations who have an interest in reducing road casualties.

TfL will work with boroughs to help identify where these measures are most appropriate.

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 boroughs and 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

Cycle safety – junction reviews

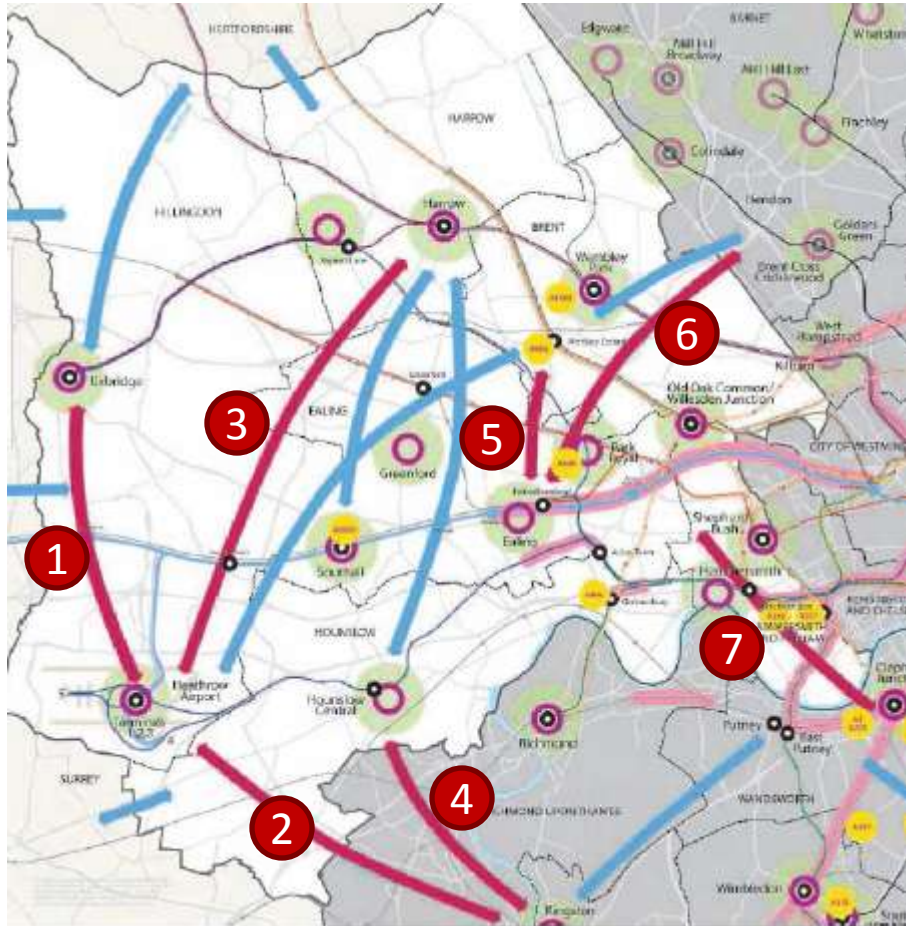
Towards the end of 2011 a number of cyclists were killed on London's roads. The Mayor asked TfL to carry out a thorough review of around 150 major junctions and planned schemes on TfL roads as well as all junctions on the existing Barclays Cycle Superhighways, to see if more could be done for cyclists in these locations.

TfL has confirmed which key London junctions will be the first of 500 to be examined as part of a major review of cycle safety ordered by the Mayor.

Junctions were prioritised using a range of criteria including cycle collision statistics.

TfL has formed a steering group and held the first of a series of meetings with key stakeholders as part of the junction review programme. Senior staff from TfL and representatives of the main road user groups including freight vehicle drivers, motorists, cyclists, pedestrians and road safety organisations will continue to meet regularly to discuss the establishment and progression of the review. The findings of the group will inform the design options for various junctions and to identify a preferred option in each case.

5.4. WestTrans corridor study



Corridors in west London with connectivity challenges

Connectivity

Following the identification of seven 'select' corridors in the West SRTP, suffering from poorer connectivity due to highway congestion and/or poor public transport links, WestTrans commissioned a study to identify potential areas of improvement.

The corridors identified were:

1. Uxbridge – Heathrow*
2. Kingston – Heathrow
3. Harrow – Heathrow
4. Kingston - Hounslow Central
5. Wembley Central – Ealing

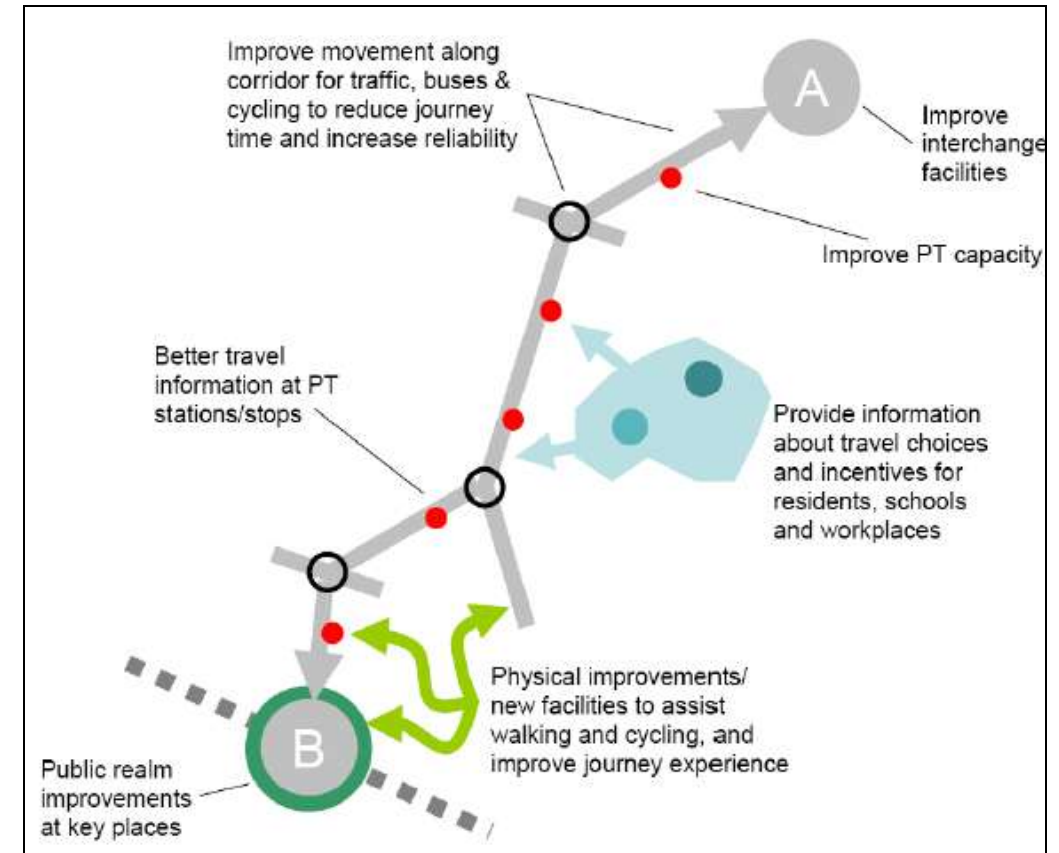
6. Brent Cross/Cricklewood – Ealing
7. Shepherd's Bush – Clapham Junction

Objectives

The objectives of the study were:

- to define and describe problems and issues affecting 'Point to Point' journey times and experience as a result of poor links, congestion or overcrowding;
- To identify connectivity challenges associated with the stated corridors;
- To identify and develop appropriate, multi-modal scheme proposals for each corridor, that will deliver relevant outcomes that reflect and enhance the unique characteristics of each area.

*Due to corridor 1 being entirely contained within Hillingdon, it was agreed that this would not be part of the study. Corridors 2 and 4 were considered as part of the same assessment due to the partial overlap of corridors.



WestTrans corridor study: overview of improvement opportunities

Approach

The high-level corridor assessment was divided into two phases. The first phase was a Corridor Review, which defined the key movement routes within each of the corridors and categorised the different sections of the corridor based on the predominant characteristics, eg 'link', 'place', 'interchange' (see Appendix B). The second phase undertook a detailed appraisal of the identified issues, data analysis and stakeholder feedback. It identified opportunities for improvements/solutions that could be made within the corridors and provided a high level evaluation of their relative benefits and costs.

Early findings and recommendations

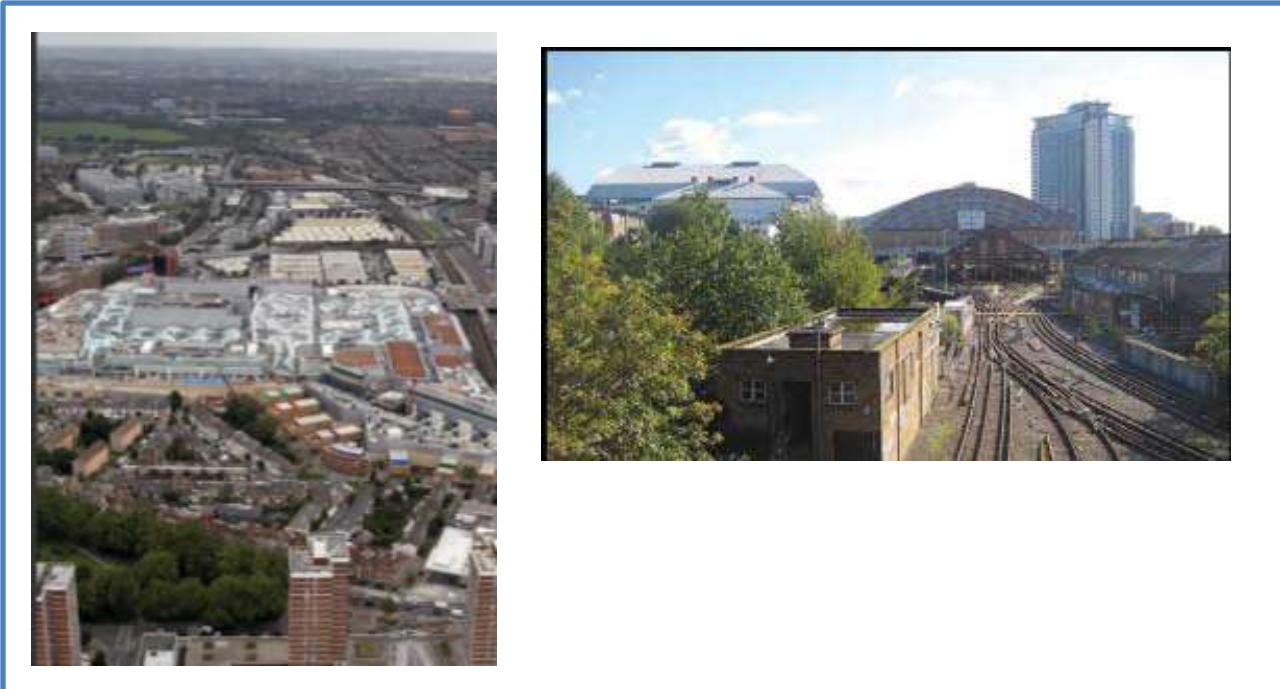
The final reports for each corridor were published in mid-March 2012 and provide a useful summary of many of the issues

faced and the opportunities that exist for improvements in the short-term (2012/13 – 2013/14); medium-term (2013/14 – 2020/2021); and long-term (2020/21 – 2030/31).

Appendix B provides an example of the possible 'concept solutions' for corridors 2 and 4.

The recommendations are now being reviewed and taken forward as part of the ongoing West Sub-regional Panel meetings and the WestTrans group. As the priorities and concept solutions emerge from the corridor study, the feasibility and appropriateness of them will be considered when boroughs and other stakeholders are identifying spending priorities as well as in future sub-regional work and engagement.

5.5. Opportunity Areas and Areas of Intensification



Background

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

Each Opportunity Area (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, 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.

The cumulative impact of development of OAs and non-OA development near each other is also significant.

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). 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.

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

Old Oak Common/Kensal Canalside

As set out earlier, given the significant development potential associated with a possible HS2 interchange at Old Oak Common, an OAPF study will be undertaken this year to ensure that the transport implications of any proposals are taken into consideration as early as possible both in terms of connectivity and land use implications.

Progress on the OAs and AIs in the West Sub Region

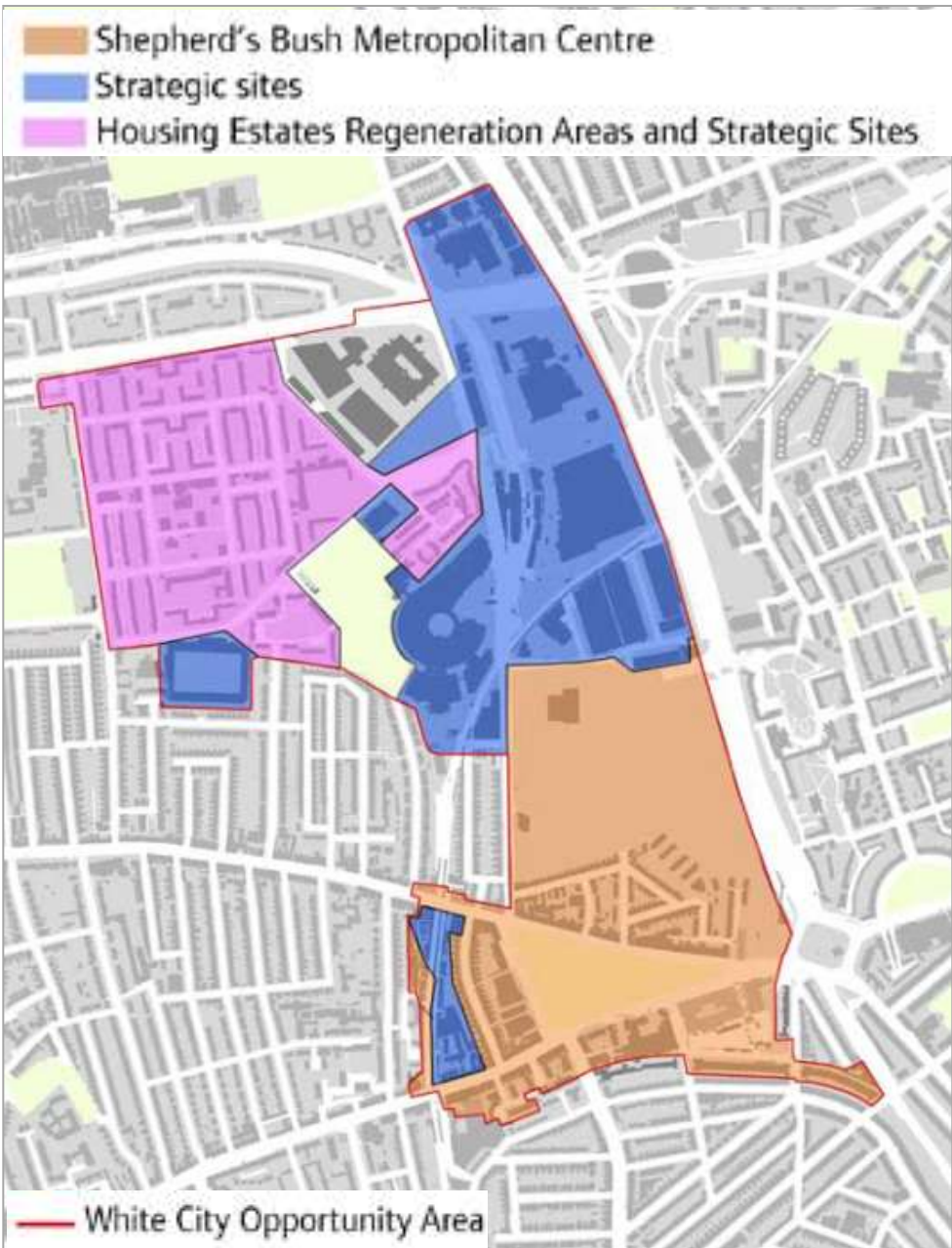
The London Plan identifies six OAs and one area of intensification in West London. These are Heathrow, Southall, Park Royal / Willesden Junction, Wembley, White City and Earls Court in conjunction with the sub-region's designated Area for Intensification Harrow and Wealdstone. Collectively these areas have a significant impact across the region.

Since the west SRTP was published OAPFs have been produced for White City and Earls Court. Progress on these are set out on the following pages.

Transport work is also progressing to support an Area Action Plan for Harrow and Wealdstone.



5.5. Opportunity Areas: White City



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White City OAPF

The GLA and the London Borough of Hammersmith and Fulham are jointly working on a Planning Framework for the White City Opportunity Area in partnership with Transport for London.

The planning framework aims include supporting 10,000 new jobs and 4,500 new homes east of

Wood Lane, a mixed use commercial development, high quality public and private realm improvements including a major new strategic open space and links to nearby communities. Strategies to limit highway congestion, improve public transport walking and cycling.

Objectives

Building on the area's good network of strategic and local connections, including committed transport infrastructure improvements, so as to fully integrate new developments with surrounding communities.

Mitigating adverse impacts caused by additional traffic associated with development, especially congestion levels on the strategic and local highway network and minimising impacts on the environment.

Encouraging the design of development to maximise the number of public transport, walking and cycling trips and minimise car use by improving accessibility to the development sites by walking, cycling, public transport, as well as providing suitable facilities for taxis, private hire vehicles and goods vehicles.

Identifying measures that will encourage a shift towards sustainable forms of transport and which will reduce the impact of existing barriers to movement such as the Westway (A40), the West Cross Route (A3220), the West London Line, the Central line and the Hammersmith & City line.

Transport Measures to support development include:

Crossrail will support the development by releasing capacity on the Central Line.

Observed data for London Overground highlights that the line is operating close to capacity and train and platform lengthening will be required to support the development Step free access at White City station

Bus capacity increases including infrastructure (stops and stands) provision to support the development

New internal road constructed to serve the OA with limited new junctions with the existing road network

Improvements to mitigate delays at junctions including;

- Holland Park roundabout
- Shepherd's Bush Green
- A40/Old Oak Road,
- A40/Wood Lane,
- Du Cane Road/ Wood Lane,
- West Cross Route.

A minimum level of parking provision along with other measures to encourage walking, cycling and public transport use

Measures to minimise impacts of freight and delivery requirements of the development.

5.5. Opportunity Areas: Earl's Court & West Kensington

Supplementary Planning Document

The Earl's Court and West Kensington OA presents a significant opportunity for regeneration comprising housing and employment as well as exploring the potential for a strategic leisure, culture and visitor attraction. A joint Supplementary Planning Document (SPD) has been produced in

partnership by the London Borough of Hammersmith & Fulham, the Royal Borough of Kensington & Chelsea, Greater London Authority and Transport for London.

The development includes proposals to create a minimum of 7,000 jobs and 4,000 homes in the OA.

Transport and Connectivity objectives in the SPD

- Maximise the number of trips by walking and cycling, ensure excellent access to and increased capacity on public transport as well as managing the demand for freight and deliveries whilst minimising unessential motorised travel to mitigate traffic impacts and congestion on the road network
- Ensure interventions are put in place to

- accommodate increased travel demand from development and that these interventions do not have any unacceptable impact on the transport network or wider environment
- Ensure a holistic approach is taken to walking, cycling and public transport that delivers a high quality public realm and improves local connectivity.
- Design well proportioned streets that respond to those in surrounding area and encourage walking and cycling

Improved onward connections for cyclists into the streets surrounding the OA, increased levels of cycle parking and the extension of Cycle Hire scheme into the OA.

Additional bus services, routes and stops to accommodate new development trips

Capacity increases through eight car services on the West London Line accompanied by platform extensions to WLL stations

Development of a coherent pedestrian way-finding strategy in line with Legible London standards.

Car parking levels should be minimised in order to restrain car trips, except for parking for car club vehicles, which are encouraged in order to provide an alternative to private car ownership and use.

Provision of additional capacity at West Brompton and West Kensington stations, including enlarged gate lines, ticket halls and circulation space.

All three stations serving the Opportunity Area should provide step free access from the street to the platform

Delivery of new pedestrian crossings and improvements to existing crossings in order to significantly improve the pedestrian environment and access into and out of the OA.

All streets within the OA should be accessible to all with appropriate gradients where changes in level are experienced, generous footway widths and accessible crossing facilities.

Increased connectivity through the OA both east-west and north-south for pedestrians and cyclists

Provision of additional station capacity and environmental improvements to Earl's Court Station, including the reopening of the existing pedestrian tunnel beneath Warwick Road

5.6. Meeting the environmental challenge: air quality

Particulate Matter

Modelling suggests PM₁₀ annual and daily mean limit values are expected to be met from 2011 onwards. However, some sites face particular local issues, resulting in frequent exceedences of the daily limit value. The need to address sites such as this, along with the benefits to health of further reducing PM concentrations – and in the future, particularly PM_{2.5} – will mean continued efforts are made to reduce PM.

NO₂

Based on current trends, EU limit values for NO₂ are not forecast to be met within west London by 2015. Further action will be needed to reduce NO_x emissions.

Although road transport is the cause of 41 per cent of NO_x emissions across west London, there are other major sources that will also need to contribute to a reduction in emissions. Amongst the biggest contributors is domestic gas, which, along with commercial and industrial gas, could have NO_x emissions reduced through following best practice in new development, or through programmes such as RE:NEW and RE:FIT.

Schools Toolkit

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.

Bus SCR retrofit

TfL has secured £5million of funding from the DfT for the fitment of Selective Catalytic Reduction equipment to buses in order to meet the Euro IV standard for NO_x. With a further £5million provided by TfL, around 900 buses will be fitted with this equipment. In total, this programme will reduce NO_x emissions from the bus fleet by around 10 per cent.

The deployment of this equipment will be prioritised based on background conditions and consultation with the west London boroughs.

A package of local measures to tackle NO₂

Meeting the NO₂ limit value is challenging and the problem is much more widely spread across London than the remaining PM₁₀ hotspots. Many roadside locations in the west sub-region currently exceed the limit value, and are likely to do so in future years based on current trends.

The SRTPs identified 187 focus areas for NO₂ across London based on factors including baseline data on concentrations, levels of exposure, local characteristics, and predictions of future trends.

From these, a smaller number of priority sites for action on NO₂ have been agreed by TfL and the west London boroughs, as illustrated.

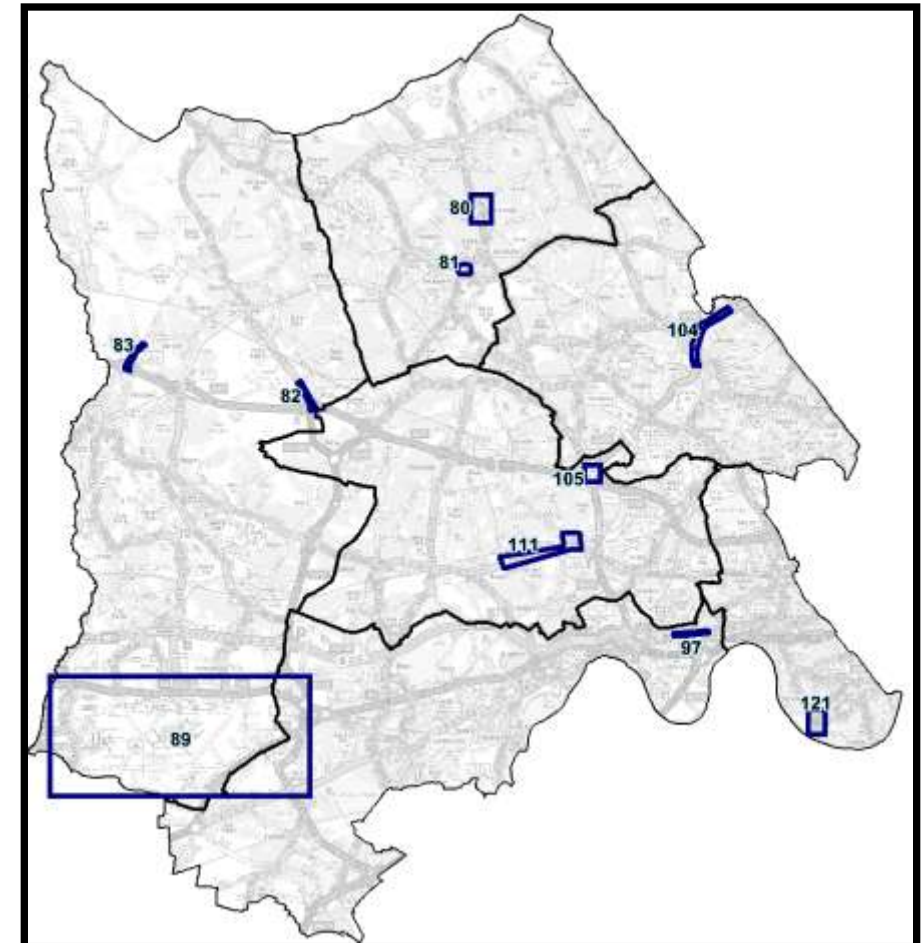
A package of local measures to address NO₂ is being developed by TfL and the west London boroughs. This package would build on schemes already being delivered by TfL, the GLA and west London boroughs.

Many of the priority focus areas identified will see development in the coming years. The air quality impact of these developments will be particularly important given the already high local concentrations of NO₂.

Measures could include:

- Further efforts to encourage mode shift locally
- Small scale traffic management schemes and other measures to smooth traffic flow
- Low Carbon Zones
- Incorporation of addressing idling engines into enforcement regime
- Trials of innovative technology and processes (e.g. photocatalytic surfaces).
- Incentives for less polluting vehicles, such as differential parking rates, that have resulted in a shift to less polluting vehicles
- Local freight consolidation schemes.
- Retrofitting schemes to reduce NO_x emissions from gas heating;
- Urban greening;
- School and business engagement campaigns (including local ‘air quality champions’).
- Promotion of accessible air quality information
- Local neighbourhood design schemes
- Influencing master planning and design to minimise the impact on air quality of developments

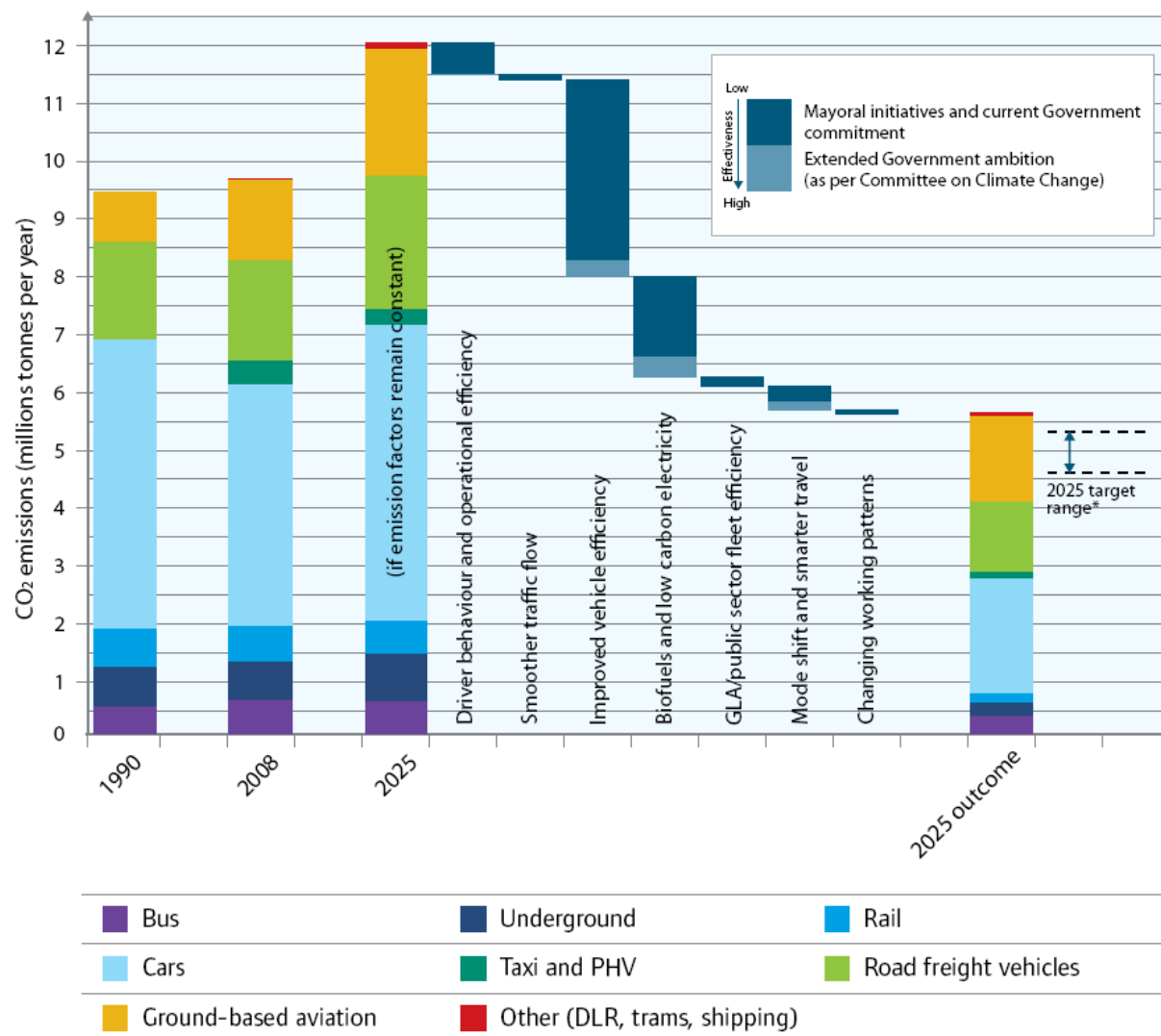
Priority focus areas for NO₂ in West London



No. 80 Harrow and Wealdstone St George Grange Way/Railway Approach	A4//M4 J4a/Bath Rd A4/Parkway/Staines Rd/ Stanwell Moor Road/Park Road
No. 81 Harrow-on-the-Hill College Road/Greenhill Way/Lowlands Road	No. 97 Chiswick High Road from Heathfield Terrace to Chiswick Lane
No. 82 Ruislip West End Road junction A40 Western Avenue Polish War Memorial	No. 104 Neasden Junction No. 105 Hanger Lane Twyford Abbey Road
No. 83 Ickenham/Hillingdon Swakeley's Roundabout/Swakeley's Road	No. 111 Ealing Broadway and Haven Green No. 121 Putney Bridge and jctn with Fulham Rd/New King's Rd/Fulham Palace Rd
No. 89 Heathrow Colnbrook	

5.6. Meeting the environmental challenge: CO₂

Mid-range estimate of CO₂ reduction impacts of transport policy areas by 2025



Source: Mayor's Transport Strategy, 2010

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

The Mayor's Climate Change Mitigation and Energy Strategy 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 as will operating vehicles more efficiently eg eco-driving. Technological change will also play a critical role in helping us to meet the CO₂ targets in London.

Hillingdon is currently developing an emissions database for the borough which will assess changes in emissions and fuel consumption of individual and combinations of measures for their LIP.

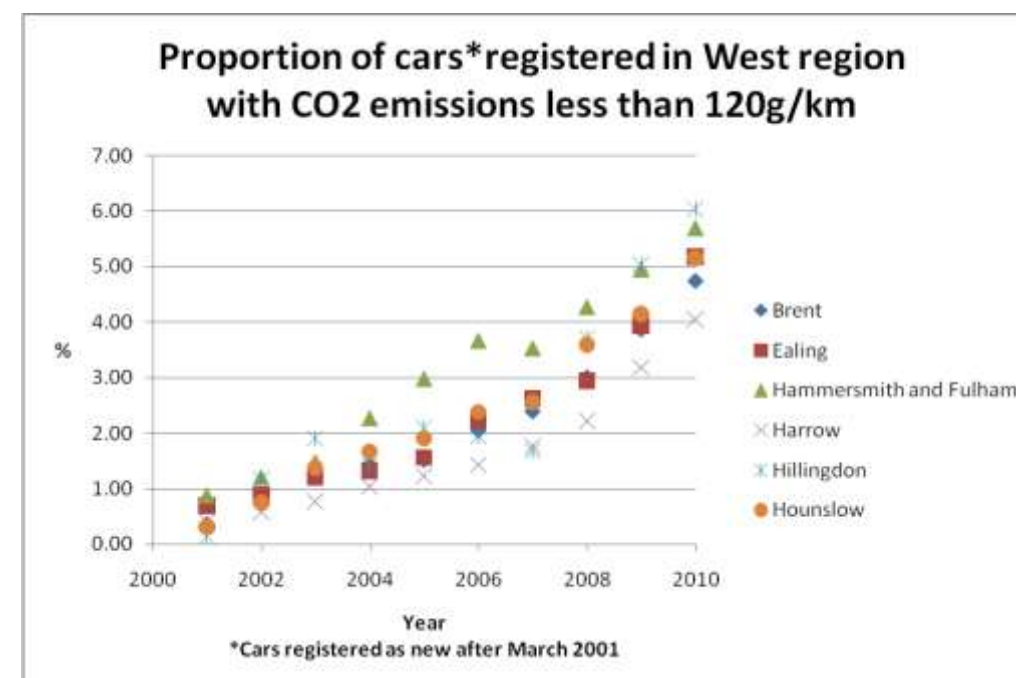


Electric vehicle rollout

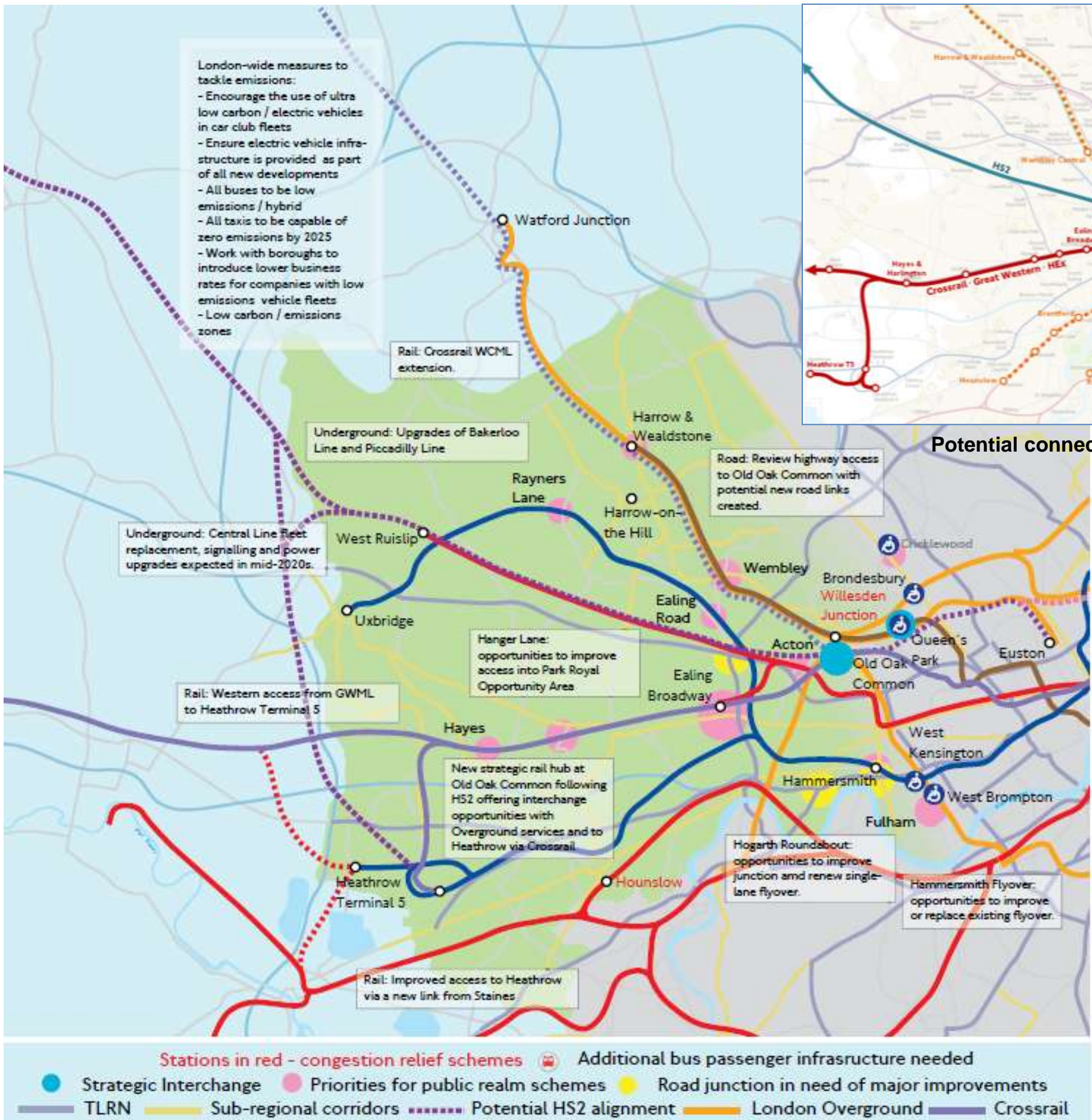
New charging infrastructure is being rolled out to support the introduction of 100,000 electric vehicles on London's streets. Source London was launched in May 2011. This is the UK's first citywide electric vehicle charging network and membership scheme.

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.



5.7. Proposed further initiatives



Potential connectivity at Old Oak Common

6. Funding and delivery

6. Scheme assessment, funding and implementation

Strategic assessment of proposals to deliver the sub-regional plan

TfL has developed a Strategic Assessment Framework (SAF) to help examine different project options and their contribution to the delivery of the 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. The gap between what is assumed to be funded and what is needed widens through the medium and long terms.

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 to look for opportunities to work in partnership with businesses etc. to secure additional local sources of funding. Whether this is with

local cycle shops for maintenance and training, or with larger businesses for the installation of electric vehicle charging points, as has been provided by the Ford Motor Company in Hillingdon.

The figure below 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.

The Implementation Plan reflects the current delivery priorities which include Local Implementation Plan funded schemes. The Mayor confirmed in April 2011 that LIP funding would be maintained at £148m for the next three years (2011/12 to 2013/14). This means that for 2013/14 there will be an increase in LIP funding of £15.8m in comparison with the previous £132m that was announced following SR10. Boroughs will be notified how the re-instated LIPs funding will be allocated once the results of the winter 2011/12 Principal Road Maintenance surveys have been completed, as these will in part inform the resources required for that programme.

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>
<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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

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

Potential sources of funding for 'core' business and extensions

7. Summary

7. Combined map



Key is on page 50

7. Combined map (key)

	Bakerloo line
	Circle line
	District line
	Northern line
	Jubilee line
	Victoria line
	Metropolitan line
	Piccadilly line
	Central line
	Hammersmith & City line
	London Overground
	South West Trains
	Crossrail
	Potential Crossrail extension
	Potential HS2 alignment
	Londonwide corridors
	Sub-regional corridors
	Barclays Cycle Superhighways
	Step-free access scheme
	Strategic Interchange
	Priorities for public realm schemes
	Walking, urban realm and streets scheme
	Road junction in need of major improvements
	Stations in red - congestion relief schemes
	Biking Boroughs

Committed schemes:

- Croxley Link extension of Metropolitan Line to Watford Junction, providing a new, direct access to Watford town centre.
- Roll-out of S-stock trains on Metropolitan Line to be complete by December 2013.
- Jubilee Line future timetable improvements to take full advantage of new technology.
- Enhance Harrow town centre as a retail and cultural destination by improving the public realm, creating a new town centre park and introducing pedestrian and vehicular wayfinding signs.
- Expanded North London Line / West London Line (WLL) from 4-car to 5-car and Expanded Southern services on WLL from 4-car to 8-car.
- Fulham Palace Road upgrade to facilitate bus movements into Hammersmith Bus Station.
- Great Western electrification and train lengthening to 8-car.
- Journey Planner update, enabling planning for whole of journey step-free access.
- By end of 2012, 300 diesel-electric hybrid buses in service. These are expected to yield savings of around 30% in fuel use, and hence emission levels, compared to standard diesels and a reduction in noise.
- Rail: Crossrail completed and operational in 2018.
- Rail: Crossrail completed and operational in 2018.
- Signalling upgrades on the Metropolitan line, Circle / H&C lines and District line, starting 2015 and completed by 2018, will deliver further uplifts in capacity of 24 per cent, 29 per cent and 14 per cent respectively.
- Barclays Cycle Superhighway opening in 2013: CS9 Hounslow to Hyde Park.
- Ruislip Manor public realm scheme, part of district centre improvement project.

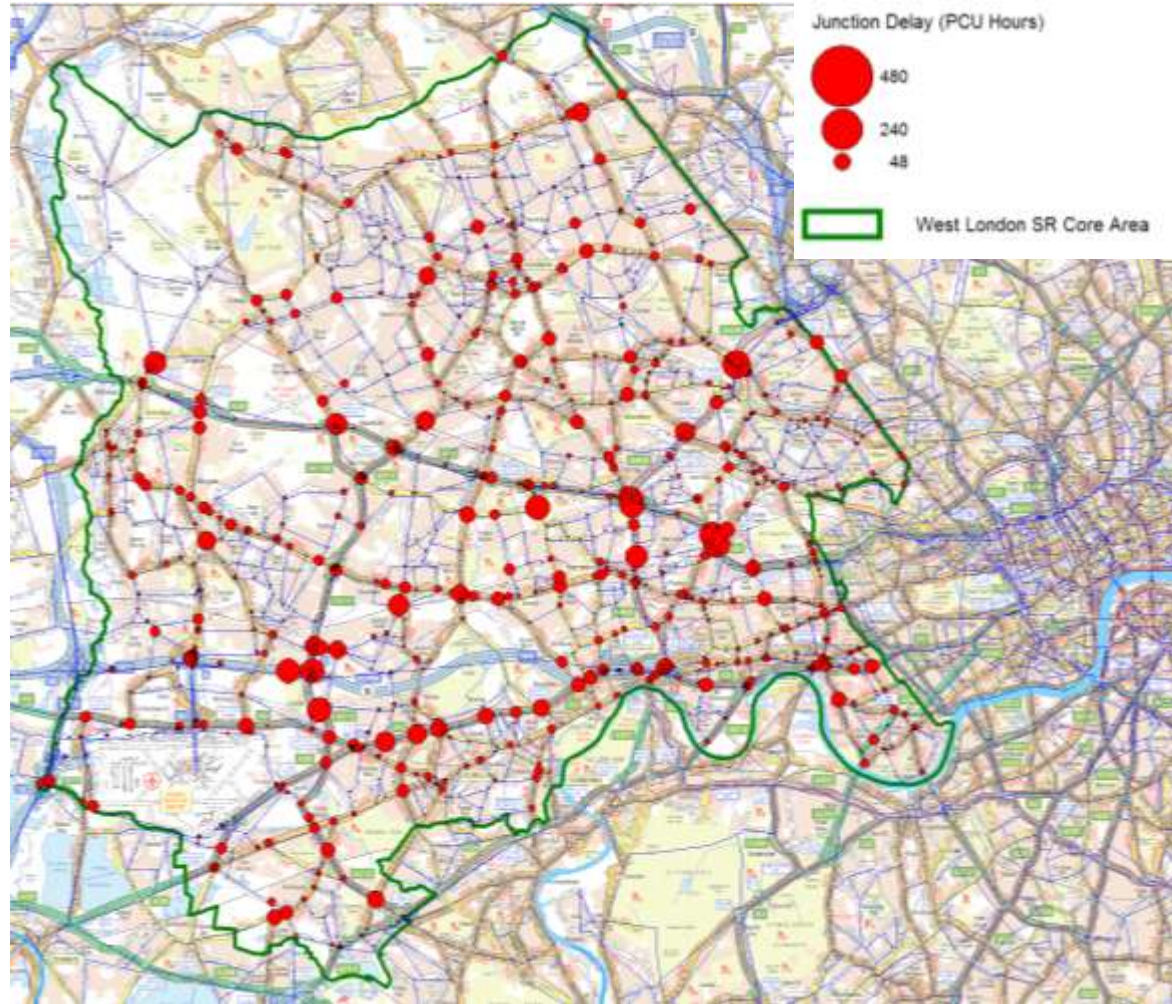
Potential initiatives beyond the Business Plan:

- Bakerloo Line upgrade.
- Piccadilly Line upgrade.
- New strategic rail hub at Old Oak Common following HS2 offering interchange opportunities with Overground services and to Heathrow via Crossrail.
- Central Line fleet replacement, signalling and power upgrades expected in mid-2020s.
- Crossrail WCML extension.
- Hanger Lane: opportunities to improve access into Park Royal Opportunity Area
- Review highway access to Old Oak Common with potential new road links created.
- Hogarth Roundabout: opportunities to improve junction and renew single-lane flyover.
- Hammersmith Flyover: opportunities to improve or replace existing flyover.
- Western access from GWML to Heathrow Terminal 5.
- Improved access to Heathrow via a new link from Staines.
- London-wide measures to tackle emissions:
 - Encourage the use of ultra low carbon / electric vehicles in car club fleets
 - Ensure electric vehicle infrastructure is provided as part of all new developments
 - All buses to be low emissions / hybrid
 - All taxis to be capable of zero emissions by 2025
 - Work with boroughs to introduce lower business rates for companies with low emissions vehicle fleets
 - Low carbon / emissions zones

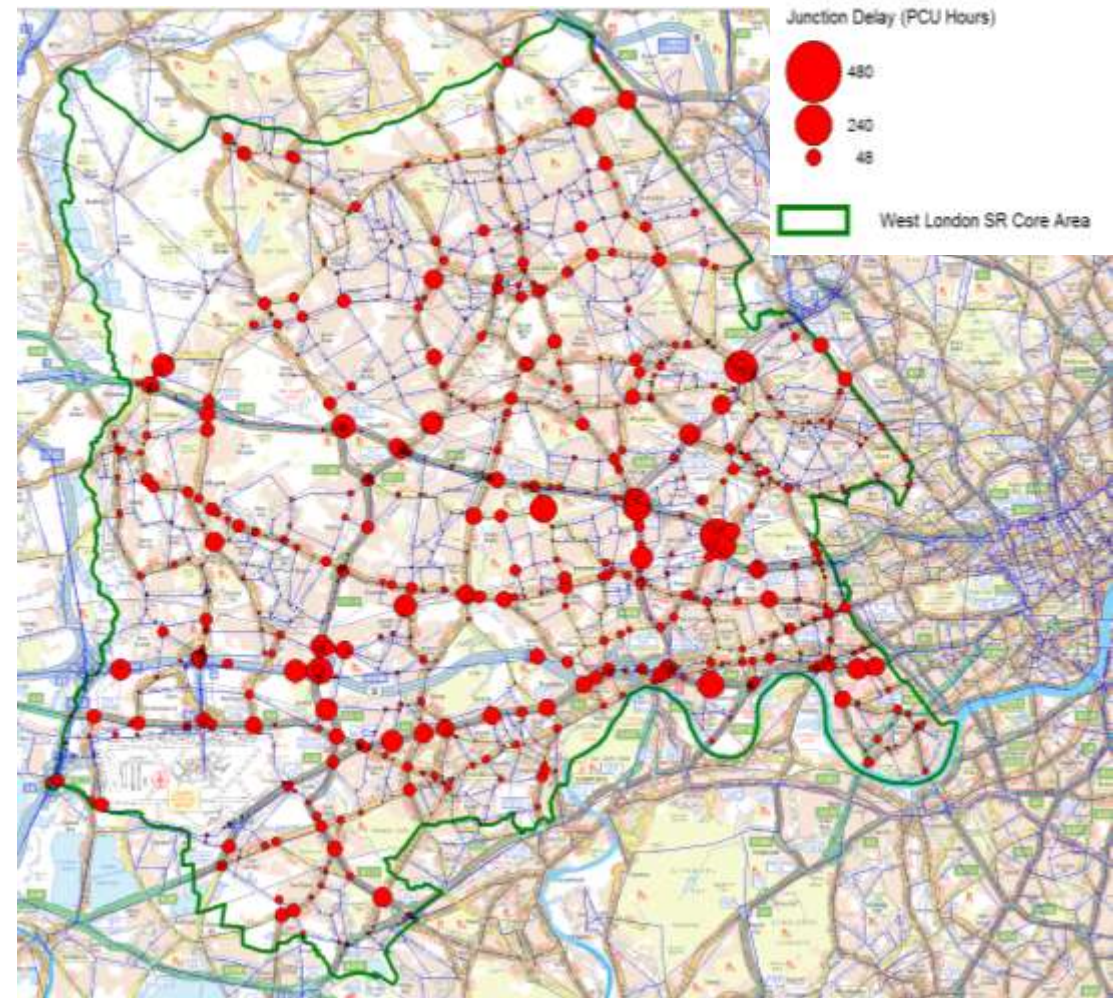
Appendices

Appendix A: Road junction delay in 2009 and 2031

Three hour AM peak road traffic delay at junctions in 2009



Three hour AM peak road traffic delay at junctions in 2031



Source: WelHAM

Appendix B: WestTrans Corridor Study – Corridors 2 & 4

The WestTrans Corridor Study set out the issues and opportunities faced along each broad corridor, and identified possible ‘concept solutions’ in the short, medium and long term. The timescales for these solutions are the same as those used in the 2010 West SRTP, though allowing for the short-term solutions to coincide with the borough LIPs timescales at the end of 2014.

The following pages provide some examples extracts from the corridor segmentation, relevant schemes and opportunities; and examples of possible solutions for each time period.

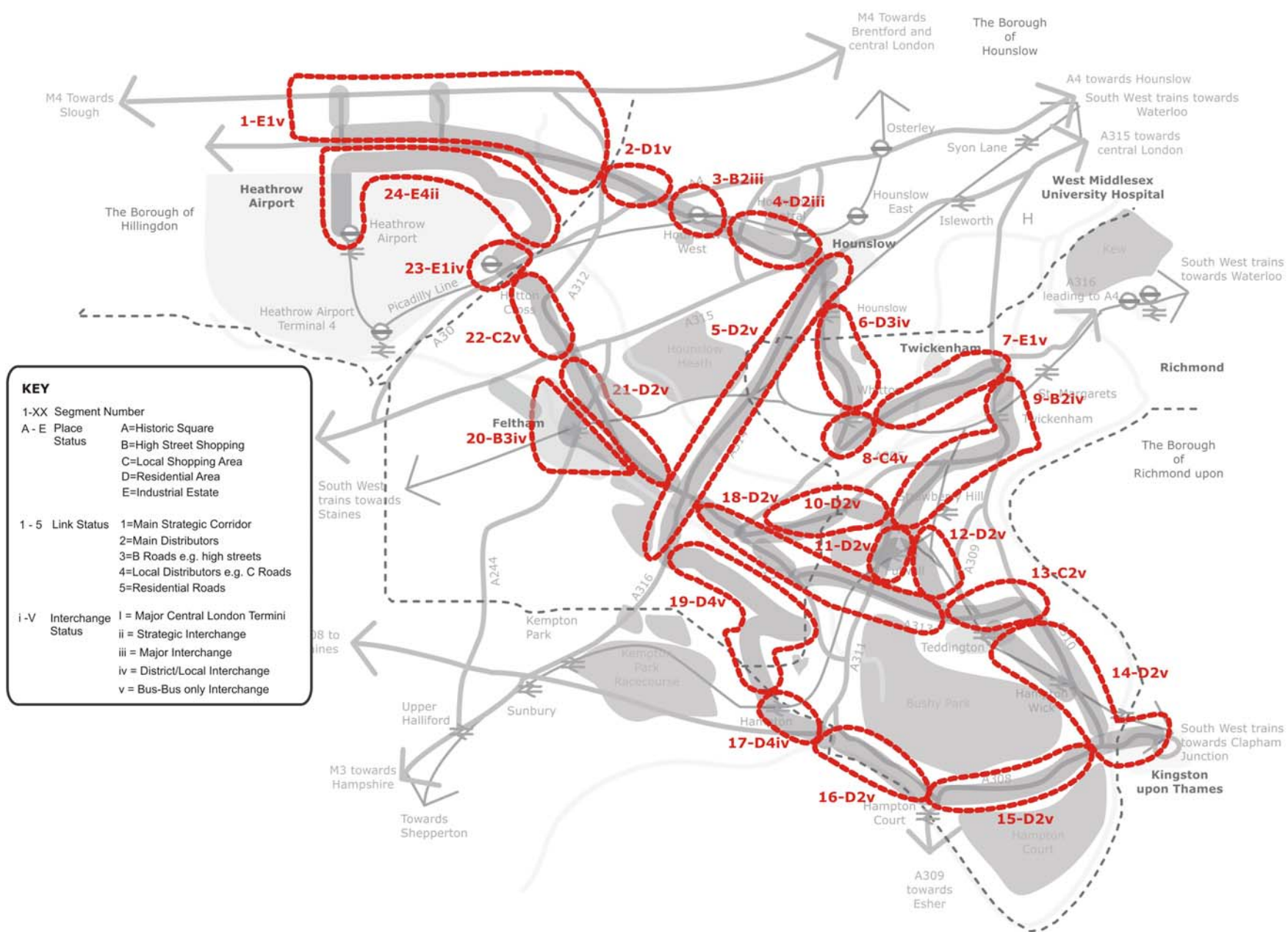


Figure 2.2 Corridor Link, Place and Interchange Segmentation Plan

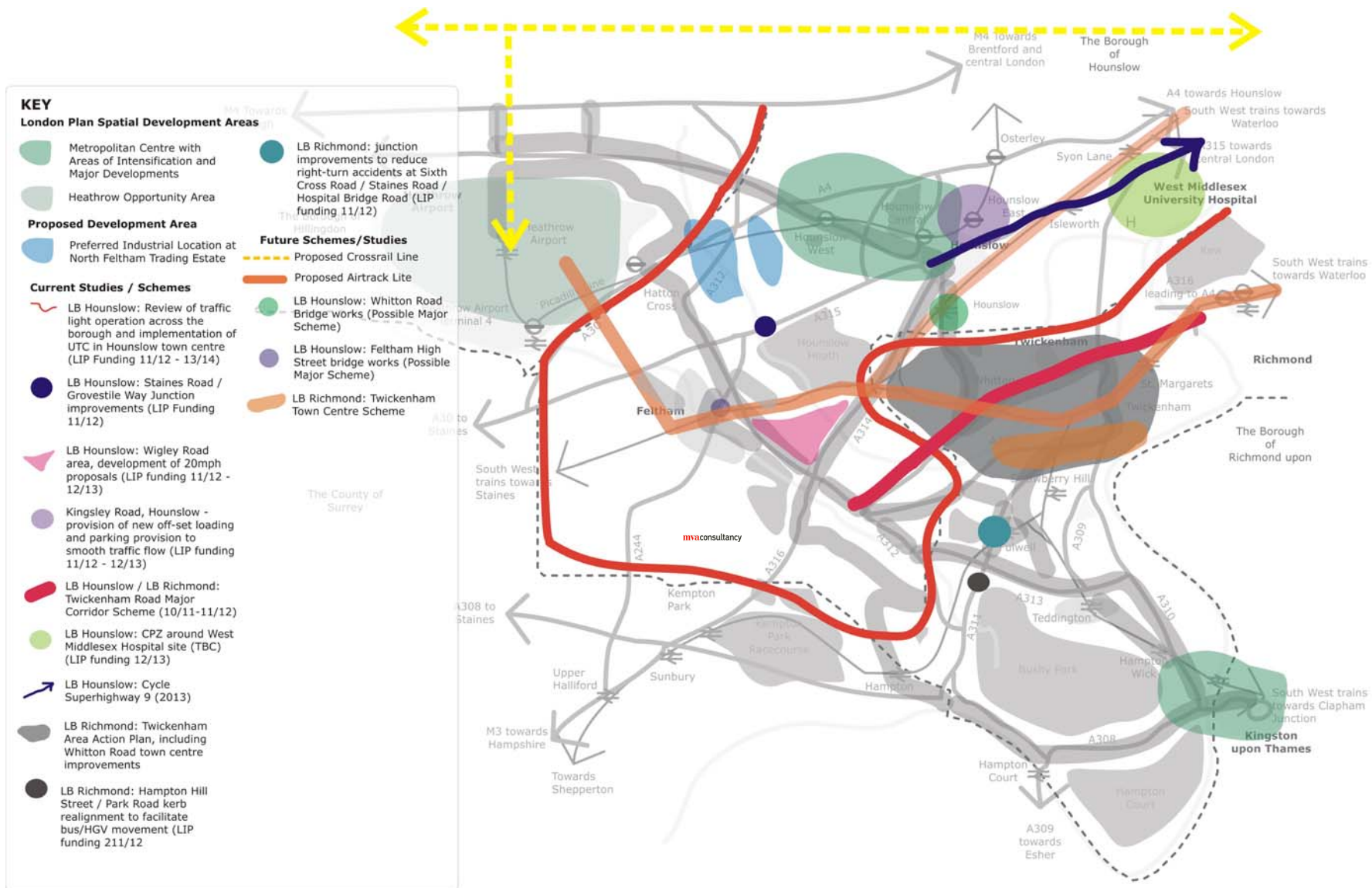


Figure 2.6 Relevant Schemes and Opportunities Plan

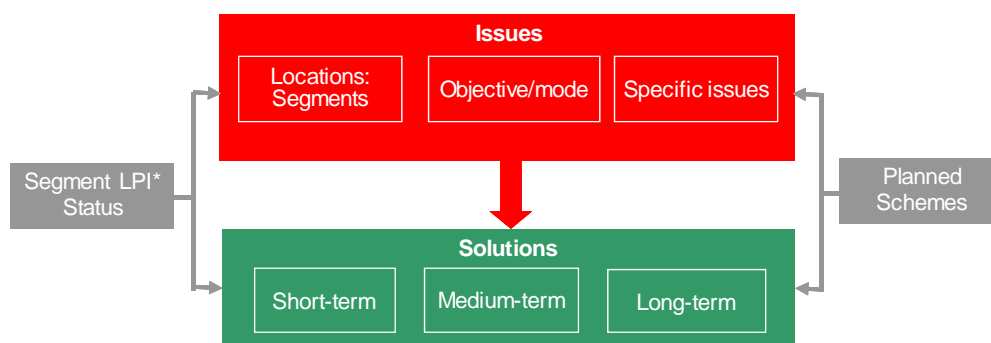
4 Solutions, Performance Impact and Delivery

4.1 Introduction

- 4.1.1 Based on a detailed appraisal of the identified issues, data analysis and stakeholder feedback, a series of concept solutions have been identified for Corridors 2 and 4. This chapter sets out the 'solutions strategy' applied to identify concept solutions, summarises the main proposed and planned schemes, and considers scheme performance, costs, risks and timescales.
- 4.1.2 **Appendix D** contains the Concept Solution Plans. **Appendix E** contains the solutions impact table, including costs, risks and timescales. **Appendix F** contains a Prioritised Scheme Programme.

4.2 Solutions Strategy

- 4.2.1 As shown in **Figure 4.1** a strategy was applied to identify suitable solutions that focus on addressing identified issues that are within certain segments, apply to certain objectives/modes or solutions which target specific issues.
- 4.2.2 The solutions have been developed to reflect the current (and in some case potential) segment Link, Place and Interchange status.
- 4.2.3 The **proposed solutions** also take into account **planned schemes**, as identified in the Borough LIPs and LDFs, London Plan, WLSRTP and other documents, and through discussions with stakeholders at the workshops. Notes from the second Workshop held in February 2012 are shown in Appendix A.
- 4.2.4 The solutions have been identified as short, medium or long-term measures: these timescales have been defined to tie in with those used in the WLSRTP.



*LPI = Link, Place, Interchange

Figure 4.1 Solutions Strategy

4.3 Proposed Concept Solutions

- 4.3.1 The following summary details the main solutions identified for the corridor as shown in the Appendix D plans and Appendix E table.

Location/Segment Solutions

Segment 3 – Hounslow West Station

- Improve station access at Hounslow West Station. Including provision of pedestrian crossing facilities on desire lines, Legible London signing, sheltered cycle parking facilities close to the station entrance, public realm improvements next to the station entrance and important pedestrian links to the station. Removal of street clutter and rationalisation of guardrailing.

Segment 6 – Hounslow Station / Whitton Road

- Bridge widening to provide DDA-compliant footways or introduce alternative footbridge for pedestrians and cyclists near Hounslow Station, Whitton Road (possible major scheme).
- Improve access to Hounslow Station through public realm, pedestrian crossing and signing improvements.
- Rationalise guard-railing and improve pedestrian crossing facilities at Hounslow Road / Warren Road junction.
- Review the southbound bus stop with the aim of relocating the southbound bus stop to improve interchange with Whitton Station. This will complement Richmond's Whitton Road transport scheme.

Segment 20 – Feltham Town Centre

- Improve station access at Feltham Station and connectivity with town centre through improved road layout, introduction of pedestrian crossings, signing, public realm improvements.
- Feltham High Street bridge works (possible major scheme) including bridge widening, pedestrian and cyclist crossings or provide an alternative pedestrian/cyclist footbridge.
- Rationalise street clutter including guardrailing in Feltham town centre and around Feltham Station.

Objective/Mode Solutions

Traffic Movement and Road Safety

- Review junction performance and layout to improve traffic flow, notably at the following junctions:
 - Wellington Road/Hampton Road;
 - Hampton Road/Stanley Road;
 - Harlington Road West/Hanworth Road/Uxbridge Road;
 - Harlington Road West/Hanworth Road/Uxbridge Road; and
 - Faggs Road / Staines Road junction.
- Measures may include the removal of signals and replacement with a roundabout, junction realignment and optimisation of signal timings.

Public Transport

- Fully accessible bus stops with up-to-date information.

Pedestrians and Cyclists

- Cycle Network Review for extent of Corridor. Introduce suitable cycle route facilities, signing and advanced stoplines.

Interchange

- Legible London signing near stations.
- Removal of confusing/unnecessary signs, lines and guardrailling.

Travel Information

- Continued liaison with schools and employees (individually and collectively) to encourage travel by sustainable modes through the renewal/introduction of travel plans.

4.4 Planned Schemes

4.4.1 For these corridors, planned schemes are largely those that have been identified by Boroughs and are to be implemented in the short to medium-term. The main schemes of relevance to the study area include:

- Whitton Road town centre improvements (LB Richmond upon Thames) which is likely to impact on Segment 6;
- Twickenham Road Major Corridor Scheme (LB Richmond upon Thames/LB Hounslow) which is likely to impact on Segment 7;
- Twickenham Town Centre Scheme (LB Richmond upon Thames) which is likely to impact on Segment 9;
- Twickenham Area Action Plan (LB Richmond upon Thames) which is likely to impact on Segment 9; and

4.4.2 Known **future development opportunities** which are also relevant to the study area include the Heathrow Airport Opportunity Area / BAA Transport Strategy and Hounslow Town Centre Intensification, which are likely to have a significant impact on the corridors, but at this stage this impact is unquantifiable and therefore not included in the scheme impact assessment as part of this study.

4.5 Scheme Impact, Costs, Risks and Timescales

4.5.1 **Appendix E** contains a Solutions Impact Matrix, which for each segment provides: a description of the solutions (both proposed by this study and those planned), evaluation of their impacts, funding, cost estimate, risk assessment and timescales.

- 4.5.2 The impact of the solutions for the study area are indicated by numbers, where 2 = a major positive impact, 1 = a minor impact, 0 = no change, -1 = a minor negative impact and -2 = a major negative impact on the study area. As discussed earlier, given the high level nature of the study, the assessment of impact is subjective and is based on professional judgement rather than on quantified performance outputs. The impact score is reflective of the relative importance of the objective/theme in terms of the segments Link, Place and Interchange status.
- 4.5.3 For some of the planned schemes we have used n/a to indicate that there is an insufficient level of scheme detail to be able to provide an impact score. However, to provide context and with the information on cost, risk, funding source and timescales it is beneficial to retain these schemes in the table.
- 4.5.4 We have identified whether the proposed or planned schemes are currently funded and also categorise the possible funding source: LIP; TfL TLRN TIP; Other Borough; Other TfL; Central Government; and Development led.
- 4.5.5 Scheme costs were categorised as follows: £0-£50k; £50k-£100k; £100k-£500k; £500k-£1m; £1m-£5m; and £5m+.
- 4.5.6 A red-amber-green (RAG) risk assessment was applied and outline risks identified with regards to the following: Programme; Financial; Approvals (internal); Approvals (external statutory); and Approvals (external third party).
- 4.5.7 Timescales are identified as: short-term (2012/13 – 2013/14); medium-term (2013/14 – 2020/2021); and long-term (2020/21 – 2030/31). As described earlier, the timescales tie in with those shown in the WLSRTP (albeit the short-term has been adjusted to account for the 2010 WLSRTP publication date and now ties in with the term of the Borough LIPs).
- 4.5.8 Overall, the schemes which will provide a major impact on the performance of Corridor 2 and 4 include:
- Segment 3 - Hounslow West Station Access Scheme (unfunded, estimated cost: £100k - £500k, medium risk).
 - Segment 6 – Station Access and bridge widening scheme at Hounslow Station (unfunded, possible major scheme, estimated cost: £5m+, high risk).
 - Segment 9 – Twickenham Town Centre Scheme (planned).
 - Segment 20 – Feltham Station and Town Centre Scheme and bridge widening measures (unfunded, possible major scheme, estimated cost: £5m+, high risk).
 - Segments 11, 18, 21, 22 - the combined impact of optimising signal timings and junction layouts along the A312 and A313 between Hatton Cross and Teddington.
- 4.5.9 However, scheme impact is only one of several considerations in determining the level of priority that it should be afforded. Consideration also needs to be given to cost, funding status, risk and timescales.
- 4.5.10 **Appendix F** contains a Scheme Programme, which has been prioritised based on these factors. It identifies a series of short, medium and longer-term solutions that can be implemented within Corridors 2 and 4.

- 4.5.11 A series of 'Quick Wins' which are relatively low risk and low cost have been identified that can be implemented in the short to medium term. Medium and longer-term schemes that require more risk management, costs and time to implement have also been identified. A summary of the main schemes is provided below.

'Quick Wins' Objective/Mode Proposed Concept Solutions

Public Transport

- Fully accessible bus stops with up-to-date information.

Pedestrians and Cyclists

- Cycle Network Review for extent of the Corridor to identify gaps in the cycle route network, establish new cycle routes, with the aim of introducing new on-street and off-road facilities, signing and advanced stoplines.
- Removal of confusing/unnecessary signs, lines and guardrailling.

Interchange

- Introduction of Legible London signing near stations.

Travel Information

- Continued liaison with schools and employees (individually and collectively) to encourage travel by sustainable modes through the renewal/introduction of travel plans.

- 4.5.12 Schemes that could be implemented in the medium-term, which would require some risk management, notably in terms of work programme, stakeholders/third-party engagement and funding arrangements could include the following location/segment specific solutions:

Interchange

- Improve station access at Hounslow West Station, Hounslow Station and Feltham Station including pedestrian crossing facilities, signing, cycle parking facilities, quality public realm and removal of street clutter (Segments 3, 6, 20).

Pedestrians and Cyclists

- Segment 5: widen segregated cycle path. Resurface footway and remove street clutter along Hounslow Road between Twickenham Road and Uxbridge Road.
- Segment 20: Rationalise street clutter in Feltham town centre and around Feltham Station.

Traffic Management and Road Safety

- Segments 11, 18, 21, 22: a review of junction performance and layout to optimise signal timings, reduce congestion and improve bus reliability, most notably at junctions along the A312 and A313 between Hatton Cross and Teddington.

Longer-term Proposed Concept Solutions

4.5.13 Schemes that could be implemented in the longer-term, which would require major risk management, notably in terms of financial, stakeholders/third-party engagement and work programme include:

- Segment 20: Feltham High Street bridge works (possible major scheme) including bridge widening, pedestrian and cyclist crossings or provide an alternative pedestrian/cyclist footbridge.
- Segment 6: Bridge widening to provide DDA-compliant footways or introduce alternative footbridge for pedestrians and cyclists near Hounslow Station, Whitton Road (possible major scheme).
- Segment 23: Improve pedestrian / cyclist links and crossings to Hatton Cross Station, in light of the emerging Heathrow Airport Opportunity Area and BAA's revised Transport Strategy.
- Segment 24: address traffic, road safety and air quality problems as part of the emerging Heathrow Opportunity Area Strategy and BAA's revised Transport Strategy.

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Rail (DfT/Network Rail/TOC led schemes)						
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.
13	Chiltern enhancements	Enhanced inner suburban service				Completed September 2011
24	Great Western enhancements	Train lengthening on long distance services				Train lengthening underway for short term. Electrification and new rolling stock will provide long term capacity increase
25	Great Western electrification	Electrification - initially Paddington to Oxford and Newbury via Reading, followed by further potential enhancements				Electrification (to Cardiff) is approved by DfT
32	Airtrack service to Heathrow	Link Southwest London railway network to Heathrow (partly BAA funded)				BAA withdrew the TWA application in early 2011 given insurmountable technical issues and the withdrawal of public sector funding
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
37	Crossrail 1 westerly extensions	Westerly extensions and/or increased frequency west of Paddington - potentially to Reading and/or to connect with West Coast Main Line, possibly with an interchange with HS2 at Old Oak Common				Under consideration - links with HS2 work
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
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.

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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
67	Piccadilly line upgrade	Piccadilly line upgrade to provide additional capacity and improve journey times				Under development as part of Deep Tube Programme
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.
69	Croxley Rail Link	Metropolitan line extension from Croxley to Watford Junction, led by Hertfordshire County Council				Scheme approved by DfT
70	Bakerloo line upgrade	Bakerloo line upgrade: Including new energy efficient and high capacity rolling stock and signalling				Under development as part of Deep Tube Programme
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
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						
Tramlink						
Bus						
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

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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

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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.
130	Potential gyratory and one-way system improvements, e.g. at Piccadilly	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				Piccadilly scheme completed
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
147	Congestion Charge Western Extension	Remove the Western Extension of the central London Congestion Charge and mitigate where possible				Completed
London river services and river crossings						
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

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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>
158	Richmond 2009 to 2012 Smarter Travel Programme	Complete the three-year programme of smarter travel initiatives in Richmond				Programme cancelled in 2011 due to reallocation of funding.
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 initiate Workplace Travel Plans as part of the development control process as set out in London Plan and on the new website http://www.lscop.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.
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.

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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
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.
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 it's 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.

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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)