



North London Sub-regional Transport Plan 2012 Update

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I. Introduction

Publication of the sub-regional transport plans in November 2010 reflected significant collaboration and joint work between TfL boroughs, sub-regional partnerships 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 in 2011. 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 north sub-region eg through borough LIPs 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. Ensuring there are adequate connections to HS2 to the north sub-region will be essential if businesses and residents in the region are to fully benefit from this.

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

TfL has continued to work with the boroughs to keep the bus network up to date and improve reliability. 150 hybrid buses were introduced in 2011 and there will be 300 in service by the end of 2012. A new innovative real time countdown system has now been rolled out across the network, providing timings via the internet, it is the largest service of its kind anywhere in the world. TfL has also now introduced a new bus for London, further adding to a bus service which is of the highest quality since records began.

The financial context remains

constrained, but it remains vital that we look beyond the current 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 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 is also incorporated. All this has allowed us to update our understanding of the outstanding transport challenges facing the north sub-region and to refresh our view as to how to these could best be met.

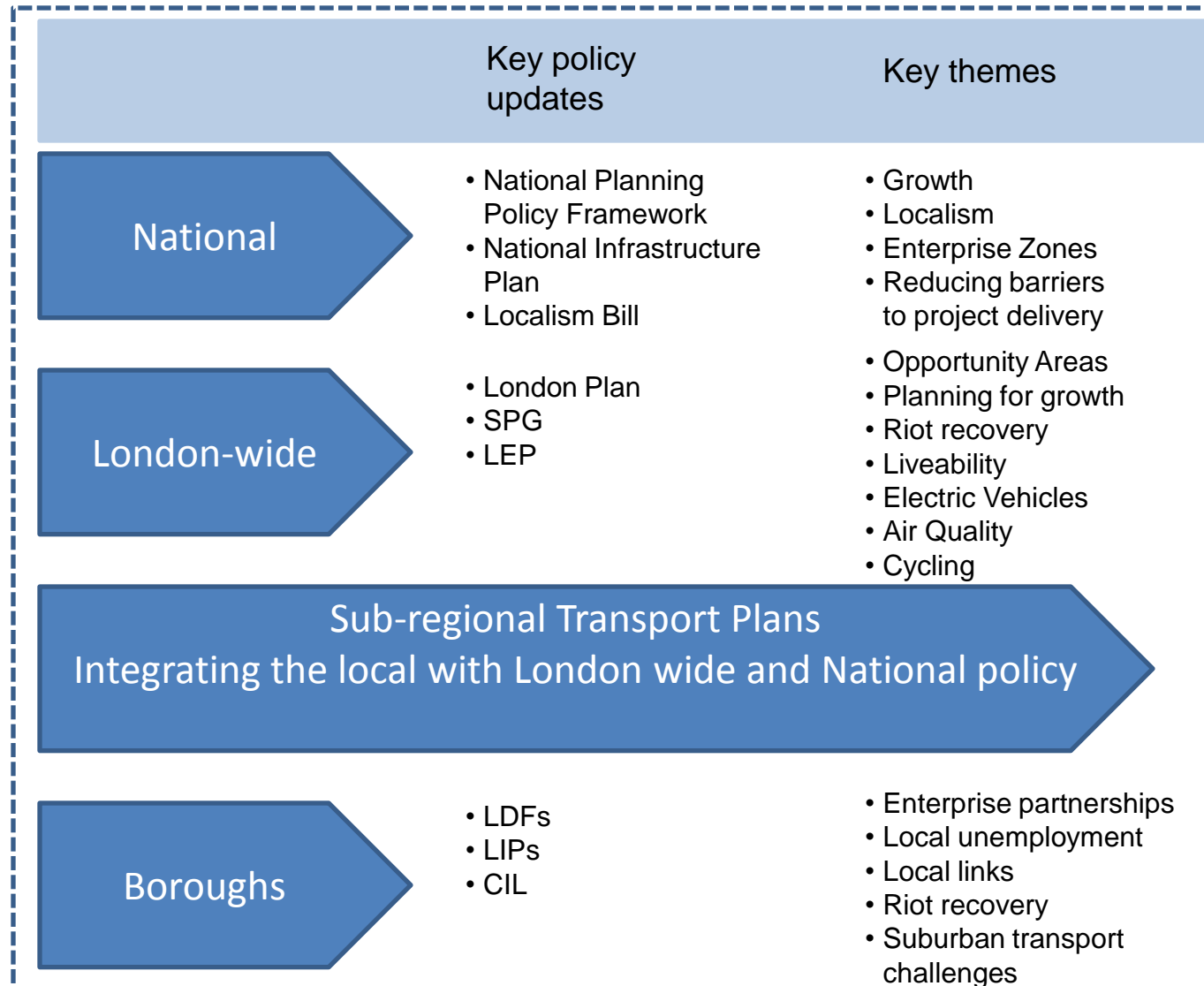
It is for the sub-regional Panel, formed of the participants of the North London Transport Forum to discuss this draft update and agree the next steps. I would welcome engagement and comments on the content and process so that together we can continue to plan this great city and ensure that the north sub-region fulfils its potential.



*Peter Hendy CBE
Feb 2012*

2. Context

2. Context



National level

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

The Chancellor has published a National Infrastructure Plan 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 is intended to shift power from central government back into the hands of individuals, communities and councils.

London wide 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 north London these are the Upper Lee Valley, Colindale/Burnt Oak and Brent Cross/Cricklewood. Other Mayoral strategies, including Supplementary Planning Guidance documents 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.

The Mayor is setting up a London-wide Community Infrastructure Levy (CIL). CIL will be paid by most new development in Greater London to help capture value of developments for schemes to address growth impacts.

There is also an aspiration to rebalance the national economy away from a perceived overreliance on the financial services sector.

Sub-regional level

A key driver of this addendum is the issue of how we plan for growth across London...and the particular challenges in north London in this regard. The scale of the growth we need to accommodate is clear from the London Plan and boroughs’

aspirations in their LDFs and added impetus has been provided with the NPPF and the National Infrastructure Plan. North 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 that growth is not constrained by inadequate transport supply and that we can support more sustainable travel options – is one of the principal objectives of the ongoing work in the sub-region.

Borough level

The context of the Local Development Frameworks and Local Implementation Plans published by the north London boroughs is also critical. A significant achievement since publication of the SRTPs has been the submission and approval of north London borough LIPs. This is an important milestone. Boroughs also have the opportunity to introduce borough CILs to meet local needs.

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.

3. Progress report

3 Progress report: The year in review

The Panels

The north London sub-regional Panel met five times in 2011, with full representation from the 'core' north London boroughs in addition to boroughs with an interest in this sub-region such as Hackney, Islington, Camden and Brent. TfL representatives and the sub-regional partnership, the North London Transport Forum (NLTF) also attended.

The Panel, chaired by the north London sub-regional Ambassador has been very productive in progressing some of the joint sub-regional priorities and strategic issues identified in the Sub-regional Transport Plan (SRTP). Regular updates on the sub-regional reference case work generated lively and constructive contributions, which have helped inform this updated Plan. There was also interesting debate on some of the key transport issues facing north London.

These included:

- Upper Lee Valley Opportunity Area's Transport Study
- HLOS2 priorities and the South East Route Utilisation Strategy
- Crossrail 2
- Accessibility Implementation Plan
- Analysis of LIPs and their alignment with the SRTP
- Cycling safety
- Bus review
- Sub-regional highway corridors and managing the road network. The Panel agreed to focus on the A5 and A10/A1010 corridors.

2012 will see a continuation of this work and there are already many topics to discuss, building on the work done and relationships formed during 2011.

Progress in 2011

Over the past year there has been important progress with the implementation of schemes featured in the initial SRTPs. Those of particular significance to the north 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 that will help improve the sustainability of the transport system. These include schemes to encourage walking and cycling, other improvements to the public realm, the implementation of Phases 3 and 4 of the Low Emissions Zone and a New Bus for London. The introduction of an all new train fleet on the Victoria Line and the introduction of new rolling stock on the Metropolitan line have boosted capacity on TfL rail systems, with significant benefits in the north sub-region.

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.

The improvements in the physical accessibility of the transport system also cover various modes, including step-free access at Green Park station, improving access to central London for people from North London.

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, e.g. ibus and Countdown, and the introduction of newer, cleaner buses.

	1999/2000	2010/2011	
EXCESS WAITING TIME (minutes)	EWT	EWT	Change
London Borough Of Barnet	2.1	0.9	-56%
London Borough Of Enfield	2.0	0.9	-54%
London Borough Of Haringey	2.1	1.0	-54%
London Borough Of Waltham Forest	1.8	1.1	-37%

Over half of the 19,500 stops now meet all three of the accessibility criteria, including protection from parking/loading obstructions. Good progress has been made with shelter provision.

Accessible bus stops in north London sub-region

	Overall	
Borough	Total Audited Stops	Total Compliant
All London	17476	10759
Barnet	816	274
Enfield	556	236
Haringey	394	260
Waltham Forest	501	264

Service enhancements in the last 18 months included increased frequencies on route 149 and their conversion to double-deck operation. Diversions of routes 182 and 186 have also taken place in Harrow to fit with the council's highway and environment scheme.

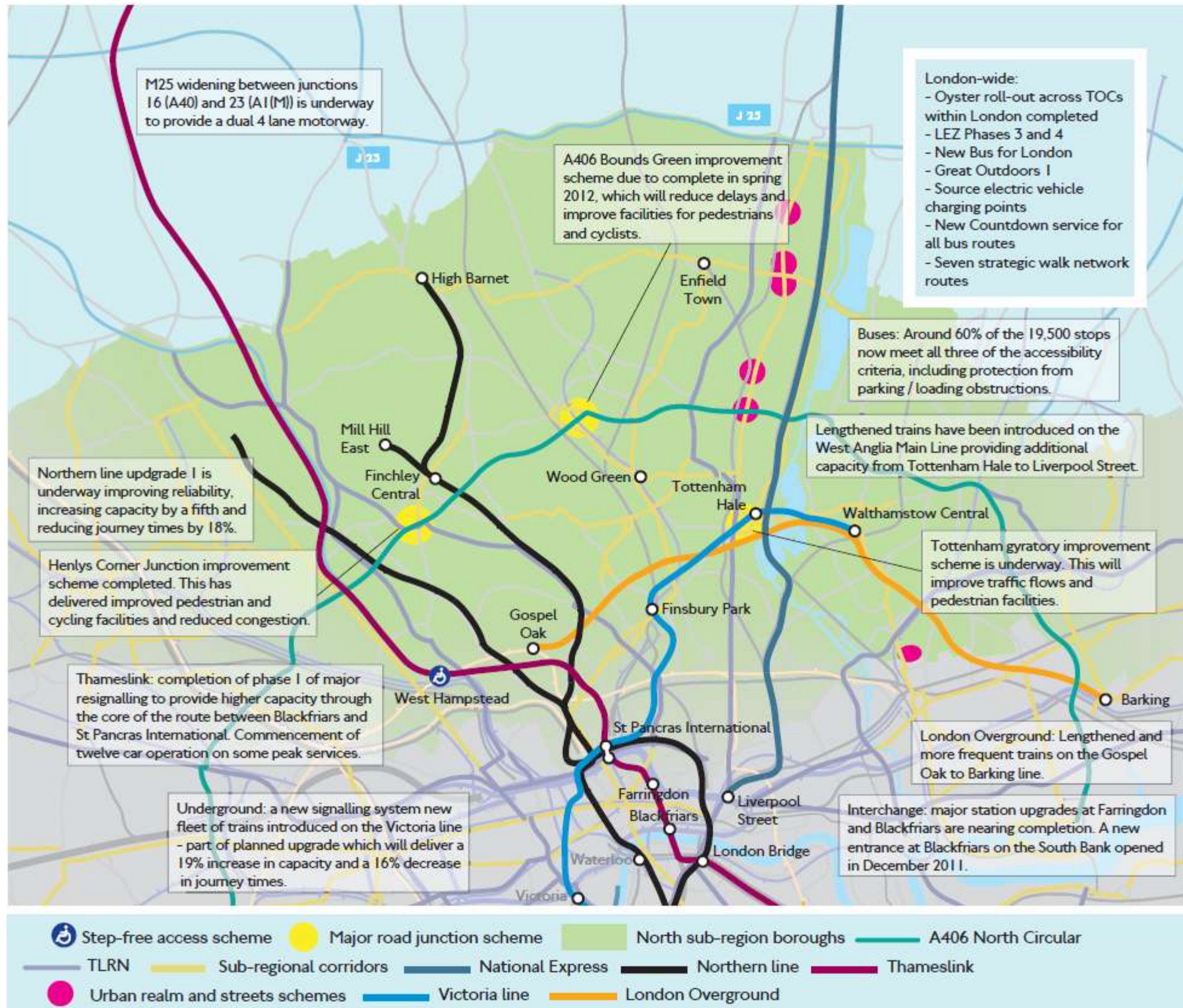
Some capacity and link enhancements at Colindale/Grahame Park have already been introduced in conjunction with the new housing developments in the area e.g. Route 324.

The Low Emissions Zone (LEZ) entered stage 3 in January 2012 to include most vans and other commercial vehicles. Standards have become more robust for vehicles already covered by LEZ.

A number of urban realm/Better Streets schemes have been completed in the sub-region in 2011, including Wood Street and Parkland Walk. A number of others, including at North Finchley, Cricklewood, Blackhorse Lane and Green Lanes will be funded by the Outer London Fund.

Following discussion at the sub-regional panel meetings, working sessions were held to review challenges and opportunities for improving the A10, A1010, A1055 and A5. The output from these workshops is included in this Sub-regional Transport Plan Addendum and the work will continue throughout the course of 2012.

3 Since the initial SRTP...



3 Committed schemes - summary

London Underground

- *Victoria Line* - new timetable to be introduced in 2013 - route core will have 33trains per hour (tph) capability.
- *Northern Line* - Upgrade is on schedule for 2014 completion. New cab based signalling - core sections will have the capability to run 24tph, an increase of 20%.
- *Piccadilly line* – Programme is under review. Could present an opportunity to introduce new walk through rolling stock.
- *London Overground* – New, longer trains Northern line phase 2 and Piccadilly line programme are currently unfunded.
- *Leyton Station* – increased capacity agreed.

National Rail schemes

- *Thameslink* - Three contracts for London Bridge for the track, signalling and station redevelopment at London Bridge have been awarded. A 1200 carriage fleet of Siemens trains is being procured for Thameslink which will facilitate commencement of metro style services in 2018.

Buses

Over half of the 19,500 stops now meet all three of the accessibility criteria, including protection from parking/loading obstructions. Good progress has been made with shelter provision. By the end of 2012 there will be 300 diesel-electric hybrid buses in service. These are expected to yield savings of around 30% in fuel use, and emission levels, compared to standard diesels and a reduction in noise.

Cycling

Excellent progress has 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. TfL and Network Rail recently launched a joint £1.3m fund for station parking at stations managed by Train Operating Companies over two years. Locally led initiatives to deliver a step-change in cycle travel will continue in Biking Boroughs, including Haringey. 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.
- Improving the cycling experience, 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.

Three new cycle superhighways are planned to open in the sub-region:

- CSH11: West Hampstead to Marylebone- 2013
- CSH12: Muswell Hill to Angel - 2013
- CSH1: Tottenham to the City by 2015

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 Key Walking Routes (KWR), including one in the north sub-region at Ruckholt Road.
- *Legible London* - Major implementations are planned for Enfield (Enfield Town and Edmonton Green) and Wood Green in Haringey, the latter as part of a Major Scheme. 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 TOCS to install Legible London maps across London's suburban rail stations. Legible London signposting is also planned as part of TfL-funded Major Scheme implementation at Wood Street and Leytonstone Town Centre in 2011 as well as part of the Leyton Links' project (funded by multiple partners including the DCLG, ODA and TfL).

- *Walk London network (Strategic Walk*

Network) - TfL funding with borough support has delivered this network of seven walk routes with the London LOOP, Lea Valley Walk and Capital Ring all passing through the region.

A key delivery priority for walking beyond 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.

Urban Realm

There is a raft of urban realm schemes across the region that are set to improve public space: the River Lea towpath; Wood Green town centre; Leytonstone; Leyton Links and the Dollis Valley green walk. The Outer London fund is part of a major package of investment which aims to boost local high streets, deliver growth, new jobs and improve lives, and will be funding a number of successful bids in the sub-region including Wood Street.

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.

Committed step free station stations*:

- Edmonton green 2014
- Finsbury park 2014
- Gospel Oak 2012
- Hampstead heath 2014

- South Tottenham 2014
 - Tottenham Hale 2012
 - West Hampstead 2014
 - Blackhorse Road Overground station S.106 funding is also secured for step free access to Mill Hill East station, if viable.
- *Illustrated overleaf . Step-free symbols (specifically on the Victoria line) may refer to the national rail/Overground elements of the station.**

But despite the major levels of investment, a number of challenges remain for north London specifically and across the sub-regions overall. It is therefore important – despite current financial constraints – to 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.

Olympic & Paralympic Legacy Plan

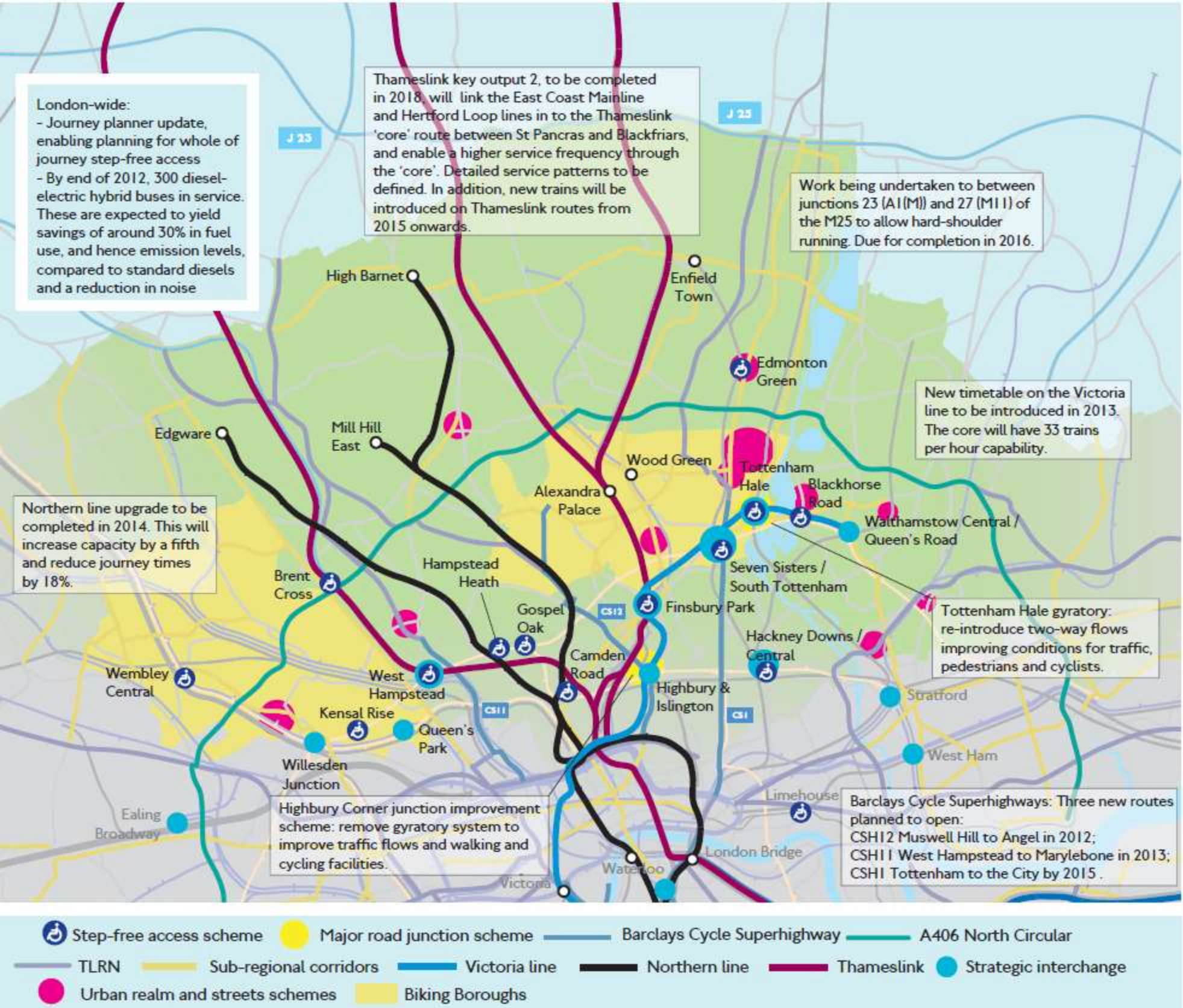
The Olympic and Paralympic Transport Legacy Plan highlights the need for rail improvements along the West Anglia Corridor to provide more capacity and direct services to Stratford with improvements to key stations including provision of a new station at Lea Bridge. It also details the long term priority (2020-2031) of improving rail connections between Walthamstow and Stratford, possibly through the extension of the DLR. Further studies will be necessary along this corridor to identify the most appropriate interventions.

Roads

Henlys corner - The junction improvement scheme at Henlys Corner was completed in December 2011. Major works to significantly improve traffic flow, introduce safe pedestrian crossings, and cut street clutter have transformed this busy and vital road junction on the A406, improving conditions for cyclists and pedestrians and journey time for the 94,000 vehicles passing through the junction every day by approximately four minutes during the morning peak and 2.5 minutes in the evening peak.

Schemes at Tottenham Hale and Bounds Green also feature later in the document.

3 Committed schemes* - summary



*Schemes which are currently committed, although not necessarily funded

4. Update on the transport challenges

4. Reviewing North London's transport challenges

The transport challenges

-  **Challenge 1: Facilitating and responding to growth, especially in Brent Cross/Cricklewood and the Upper Lea Valley**
-  **Challenge 2: Relieving crowding on the public transport network**
-  **Challenge 3: Managing highway congestion and making more efficient use of the road network**
-  **Challenge 4: Enhancing connectivity and the attractiveness of orbital public transport**
-  **Challenge 5: Improving access to key locations and jobs and services**

London wide challenges

-  **Transforming the role of cycling and walking in the sub-region**
-  **Meeting CO2 targets**
-  **Improving air quality to meet and exceed legal requirements and ensure health benefits for Londoners**

Growth – the underlying challenge
 London is set to experience significant growth in both population and employment over the coming years, and north London will be accommodating the second largest growth, as a proportion of existing population and employment, after the east sub-region.

The latest London Plan forecasts show that north London is set to receive 6% of all 2007-2031 employment growth in London, and 14% of population growth, with focal points around Brent Cross, Tottenham Hale and Central Leaside. This equates to around 40,000 jobs and 180,000 people respectively, which represents employment growth of around 11% within the north sub-region and population growth of 17%. Growth of this scale inevitably implies increased pressure on the transport network.

Even with planned investment crowding problems remain on the Victoria, Northern and Piccadilly lines – with crowding between Finsbury Park and the West End some of the worst in London. Furthermore, despite significant improvements severe crowding on suburban rail services in the sub-region is projected.

The year-on-year rate of growth in bus passenger journeys continued to grow at around 0.5 – 0.7% per quarter in 2011. Buses are able to respond to crowding issues through incremental changes to the bus network. The outlook is for no net increase in bus kms despite the fact that demand is expected to continue to increase.

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 capacity delivered by the 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 north sub-region remain of critical importance and central to this plan.

In addition, the London-wide challenges of improving air quality, reducing emissions of 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 eight key 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, as well as the sub-regions, 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 north London's transport challenges has been considerable.

further analysis and review of progress against MTS challenges set out in Travel in London 4 have highlighted growing pressures. A need for further action is therefore identified in the medium-longer term across a number of London-wide challenges.

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

4. North London's transport challenges: key points

Facilitating and responding to growth, especially in Brent Cross/Cricklewood and the Upper Lea Valley

Brent Cross/Cricklewood is forecast to accommodate up to 20,000 new jobs and 10,000 new homes. In the Upper Lea Valley, population is projected to increase by 24% by 2031, and employment by 20%. Without further enhancements to the network, this would lead to increasing congestion in the area. Enhancements are planned, but more is required to cater for growth in a sustainable manner and prevent deteriorating outcomes against MTS some of the MTS indicators and sub-regional challenges



Reducing public transport crowding

Between 2007 and 2031, there are committed increases in public transport capacity in the sub-region of 70% (compared with 36% across London as a whole). This reflects major investment in public transport capacity in the sub-region that will be delivered by 2021. Beyond 2031 joint work will continue to seek further funding for continued improvements.

Increased passenger demand will result in rising pressures on the public transport network. Crowding on the Tube remains a problem on the Victoria, Piccadilly and Northern lines (Barnet branch). On the rail network, projections show significant crowding on services to Moorgate, the Gospel Oak to Barking line, Thameslink towards King's Cross (including future branches through Alexandra Palace) and the North London line.

The north sub-region has the third highest Bus Excess Wait Time (EWT), but if targets are achieved slightly below the London average. Waltham Forest currently has the highest EWT in north London and Enfield the lowest.

Buses play a key role in north London – they account for 14% of all trips originating in the sub-region made by London residents (2006/9, 7 day week) while seven of every 10 public transport trips in the sub-region are made by bus.



Managing highway congestion and making more efficient use of the road network

Total highway travel is forecast to increase by 119,120 kms per year between 2009 and 2031, or 11 per cent. Over the same period average speeds are forecast to decrease from 24.99 kph to 24.04 kph, or 4 per cent.

Analysis of the north sub-region highway model indicates a number of congestion 'hotspots' around Tottenham Hale, Bullsmoor Lane and along the A5 at Cricklewood and Kilburn and Brent Cross on the A406. Increases in traffic delay can be seen in the Brent Cross Area (A1, A41) and the A406, and the Tottenham area and Walthamstow.

By 2031, the projected end to end journey time on the A10 is 33 minutes, up from 31.7 in 2009. The projected end to end journey time on the A5 is 36.6 up from 33.6 minutes.



Enhancing connectivity and the attractiveness of orbital public transport

Despite the transformation of services on the orbital London Overground network, orbital public transport is not as readily available or as quick as radial routes. This is especially the case in outer areas of the sub-region that are not served by the London Overground. As a result orbital trips are dominated by car. The north circular and M25 are key orbital road routes, however both suffer from congestion and contribute significantly to pollution in outer areas of north London. The Lee Valley constrains orbital movement due to the limited number of crossings.



Improving access to key locations and jobs and services

Accessibility to Wood Green, Brent Cross and South Waltham Forest improve with the planned enhancements to the network. Although the Upper Lea Valley gains train capacity, accessibility is not improved. Marginal improvements are seen elsewhere in the sub-region.

Planned investment in step free access will bring a dramatic and widespread improvement in accessibility using step free modes across the sub-region. Almost every zone within the sub-region offers a step free journey of +40% of average journey time using all modes.



4. North London's transport challenges: key points

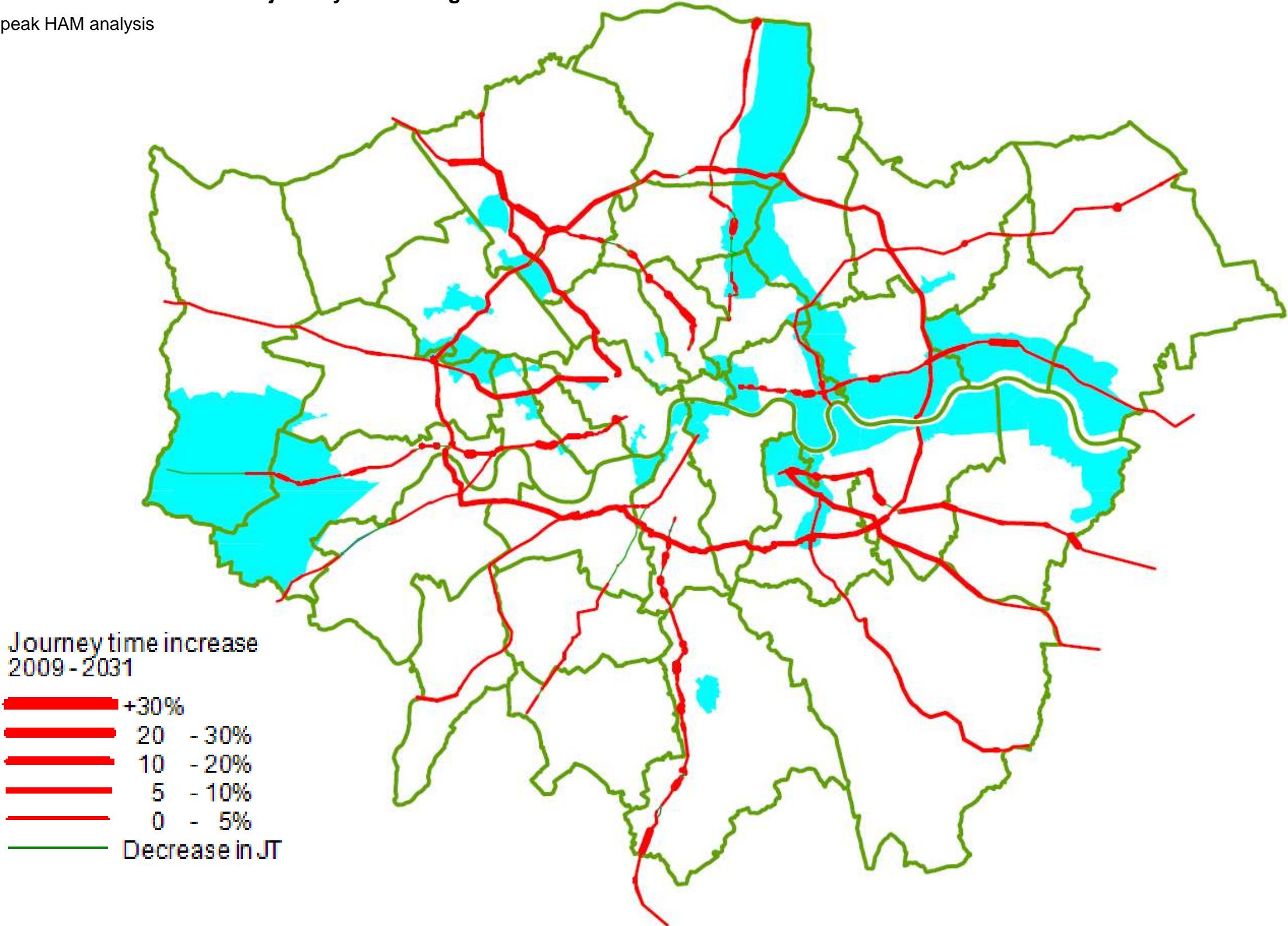
Rail and Underground crowding in 2031, with currently committed investment



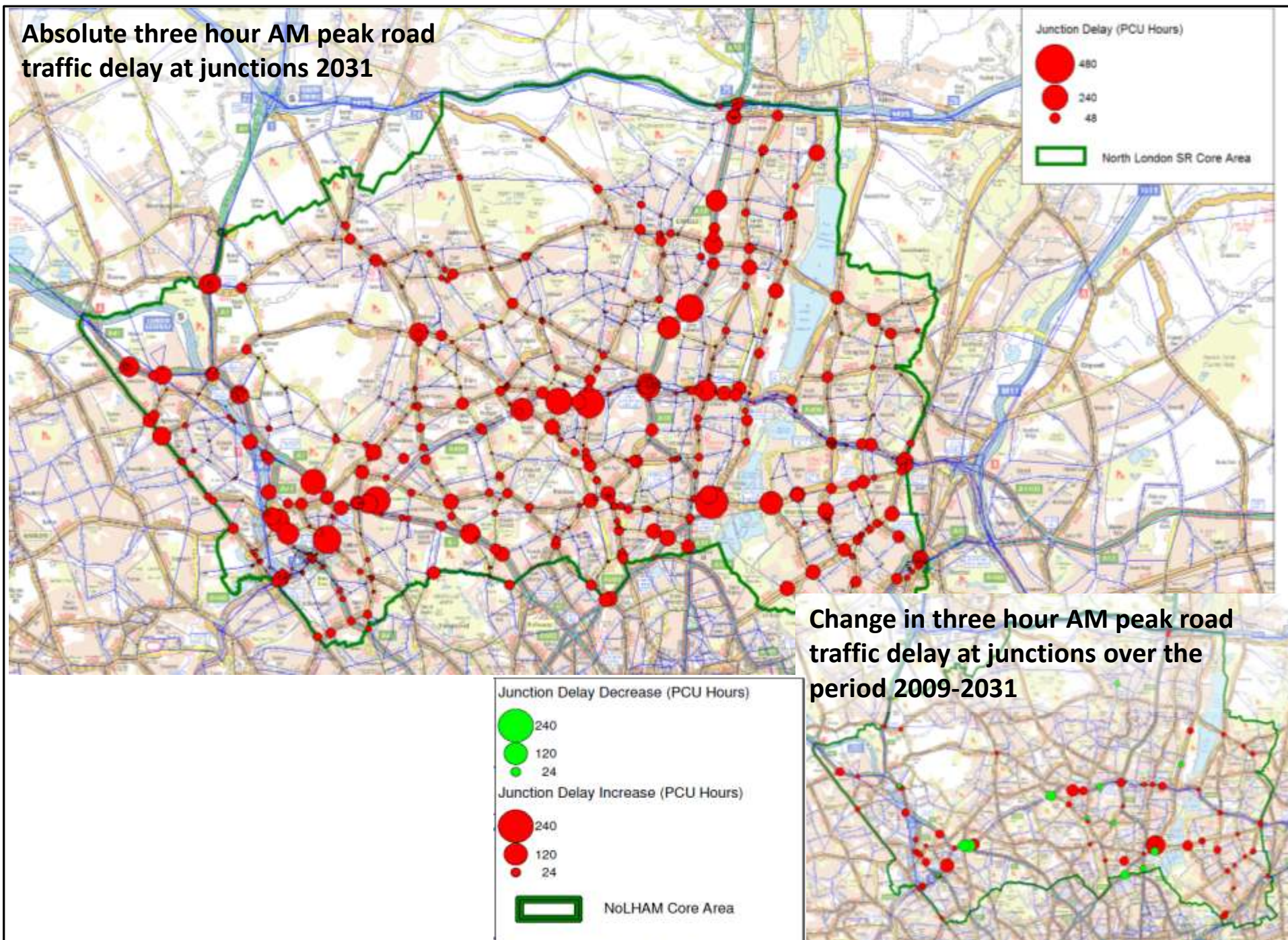
4. North London's transport challenges: key points

London-wide route – inbound journey time changes

AM peak HAM analysis



4. North London's transport challenges: key points cont



The A406 north circular is a major orbital route carrying significant levels of traffic passing through the sub-region. Many junctions on the A406 currently operate at capacity. It is, therefore, not surprising that congestion on this route generally increases, despite the respite achieved at some junctions through improvement works.

The road network, as with the rest of the transport network, in north London is constrained by the Lea Valley. The limited number of crossing opportunities results in congestion on either side, with a particularly worsening situation at the crossing near Tottenham Hale. The midland mainline railway in Barnet also presents a barrier to orbital movement in that part of the sub-region.

The M1, A41 and A1 are trunk roads of regional and national significance. They deliver longer distance traffic on to the A406 and local road network in north London. The nature of these roads change as they pass through north London from inter-urban trunk routes to high streets. A number of complex junctions exist on these routes in a relatively small geographical area near Brent Cross. The road network in this area operates at or near capacity and worsening congestion as a result of increased demand is inevitable without schemes to increase junction capacity.

Use of models

TfL's suite of multi-modal models have been successfully used to help understand transport issues at a number of locations in the north sub-region. Over the last three years, the models have been used to assess options for bus priority in Wood Green, analyse development planning documents for Barnet and Waltham Forest, model the improvements at Henlys Corner and inform a number of studies examining options to improve transport outcomes on a corridor basis.

Change in traffic demand and average speed

Total distance driven by vehicles on the road network in the core boroughs of the north sub-region is expected to increase by around 12%, or around 100,000 km, in the AM peak hour by 2031. In percentage terms this is the second largest increase in vehicle kilometres of all sub-regions, behind east London.

This is expected to result in a reduction in average speed of 1 kilometre per hour (kph), from around 27 kph to 26kph, or about 4%. North and south London experience the smallest reduction in average road vehicle traffic speed, albeit with little variation in this measure across London.

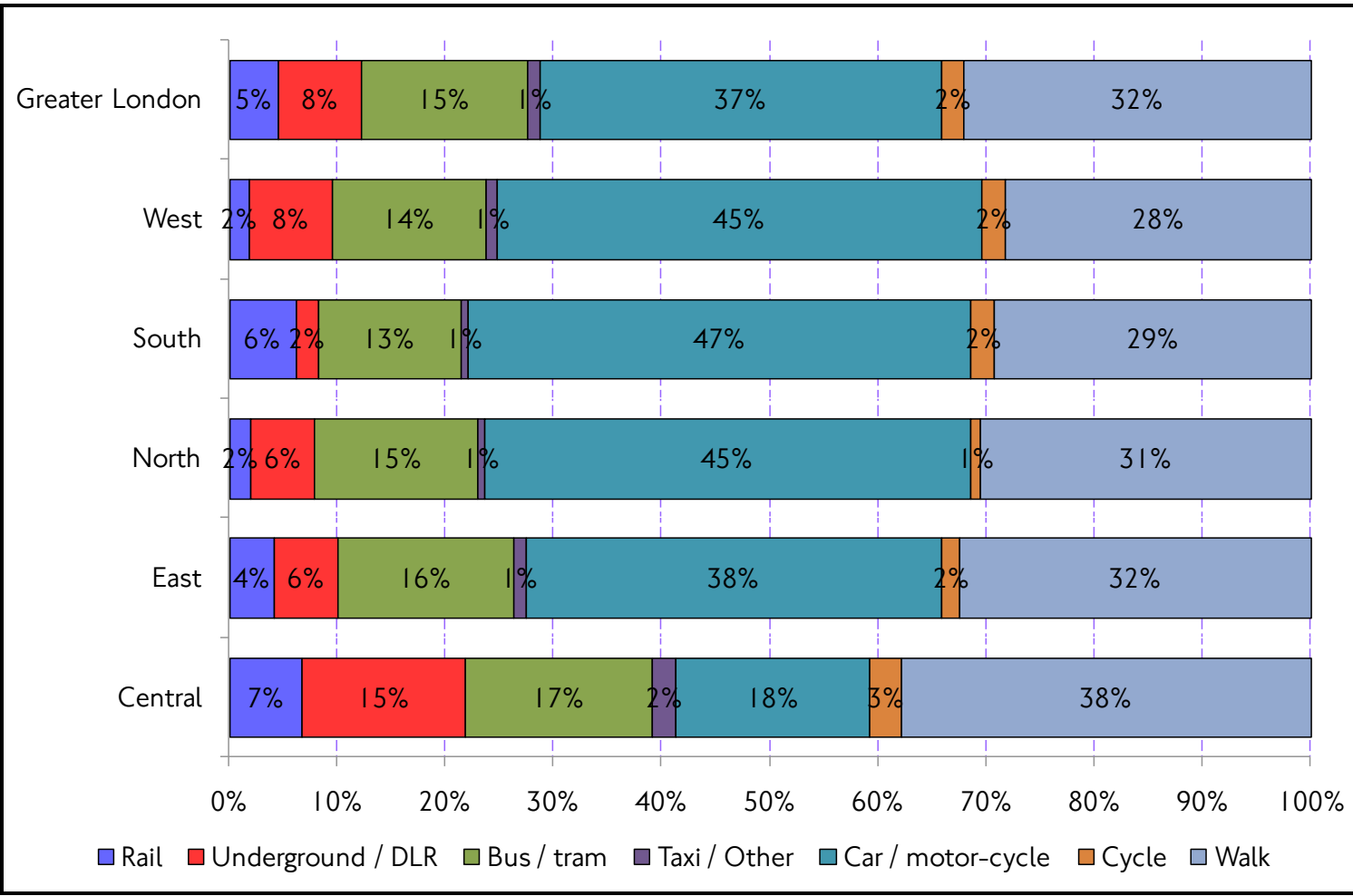
Latest modelling of 2010/11 journey time

reliability on sub-regional corridors shows poorest reliability on the A1 corridor.

Traffic congestion hotspots

The above map illustrates a general worsening of congestion at key junctions in the period to 2031, with the exception of some junctions where works are delivering improvements.

4. North London's transport challenges: key points cont



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 twelve months, but further investment and initiatives are required to meet a 3% cycle mode share target by 2031 and to ensure that as many journeys as possible are undertaken on foot. 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.

Ensuring that the proportion of new trips which are made by active modes is greater than the current average is likely to be a key means of delivering change. 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.

Increased active travel will bring a wide range of benefits

- to London:
- help reduce congestion on the road network and crowding on public transport;
 - cycling is a cheap, fast, inclusive and flexible way to get around, offering benefits for journey time reliability & experience;
 - increased activity levels improve health and well being;
 - zero emissions, bringing benefits to air quality and the battle to tackle climate change; and
 - help create more liveable streets & a thriving local economy and quality of life.

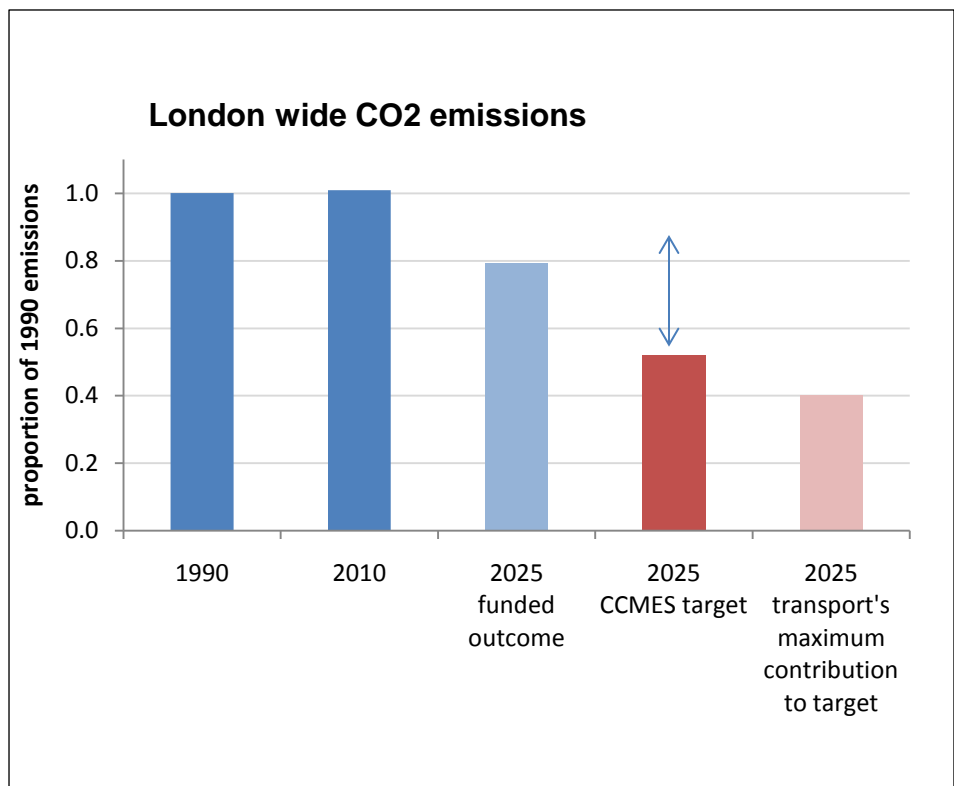
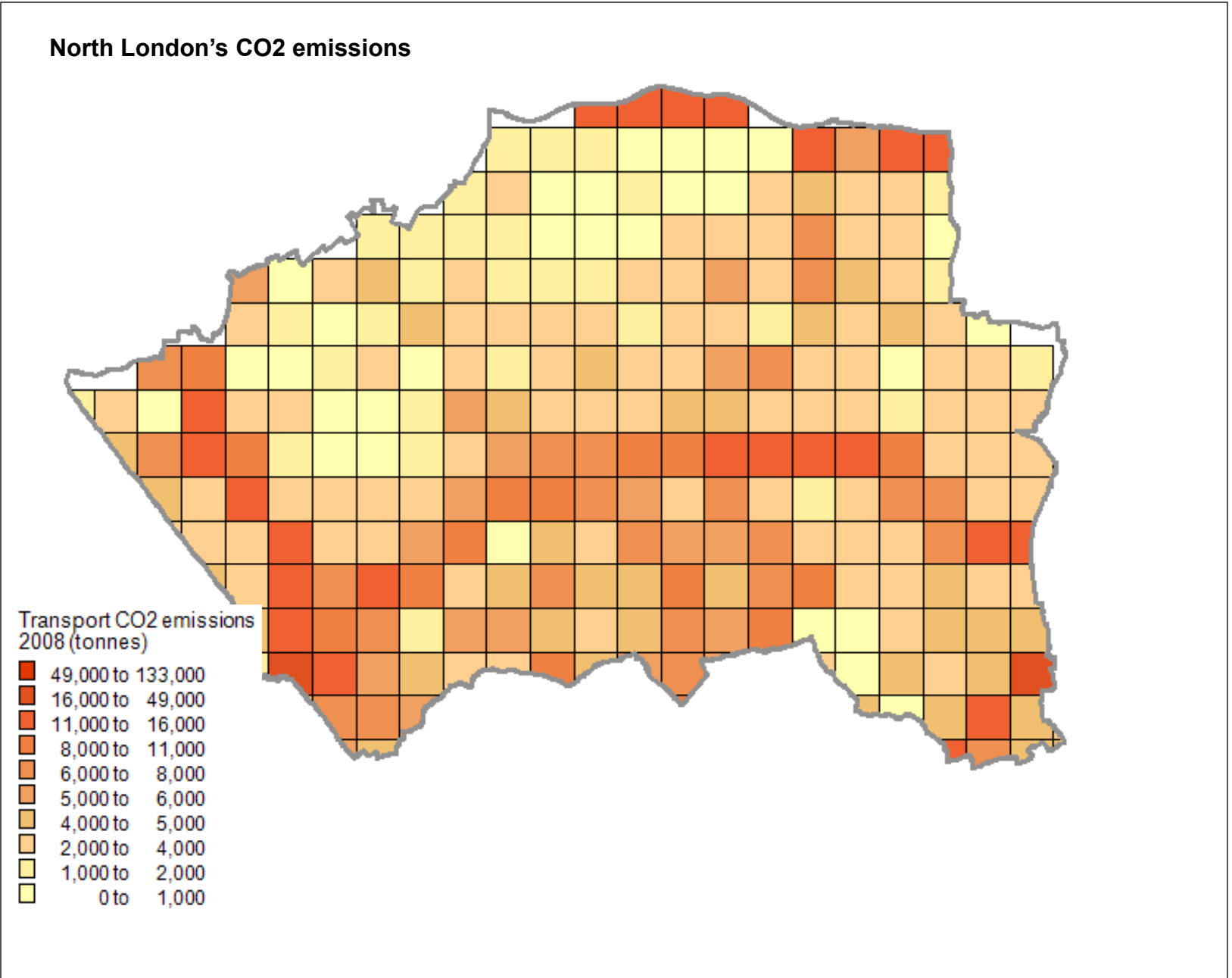
After the central sub-region, the north sub-region has the highest walking mode share within London, although more remains to be done, with north London realising the least of its walk potential, with 69% of walkable trips actually being walked. Waltham Forest has the highest walking mode share and target within the north sub-region and Enfield the lowest.

Given the respective mode shares, the 1% target mode share increase for walking will involve more trips than the 2% cycling increase sought.

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.



4. North London's transport challenges: key points cont



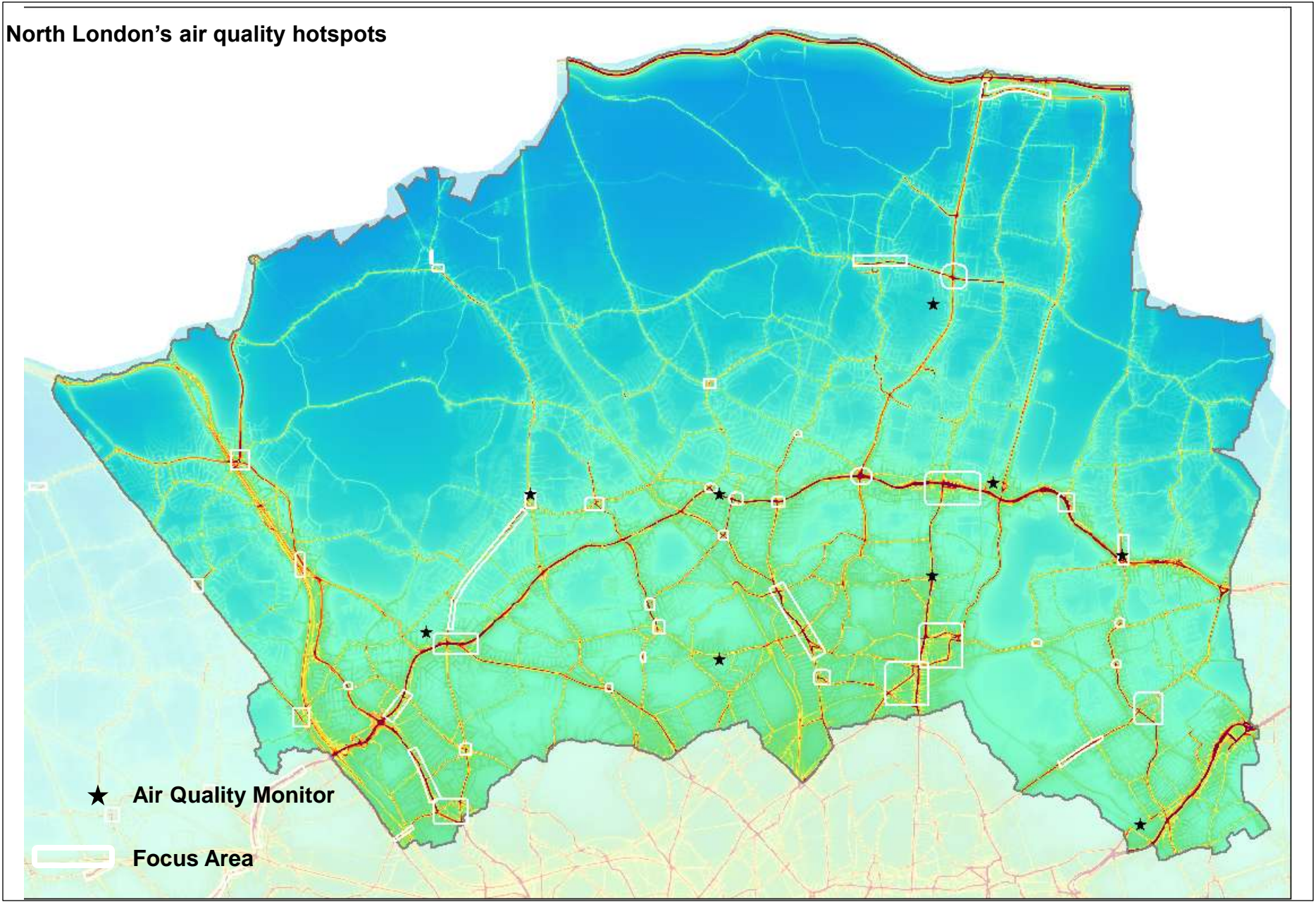
Meeting CO2 targets

The Mayor, through TfL and working with other agencies has committed to deliver the required contribution from ground-based transport to achieve a 60% 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.

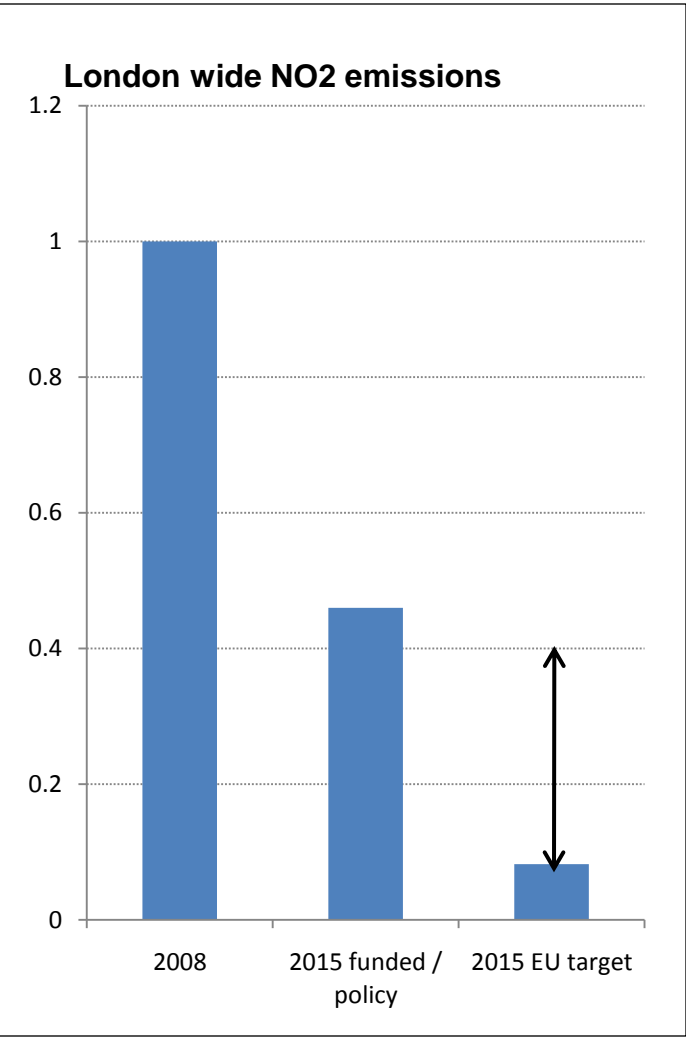
The north sub-region has the second highest ground based transport CO2 emissions in London. Within the north sub-region, Barnet has the highest ground based transport CO2 emissions and Haringey the lowest.



4. North London's transport challenges: key points cont



Further action will be needed to bridge the gap to meet the 2015 target



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

Improving air quality to meet and exceed legal requirements and ensure health benefits for Londoners
 Air quality in the north London sub-region is expected to improve by 2015, through changes to the vehicle fleet and other, non transport, changes. Some problem areas remain though, at Wood Green, Tottenham and the A406.

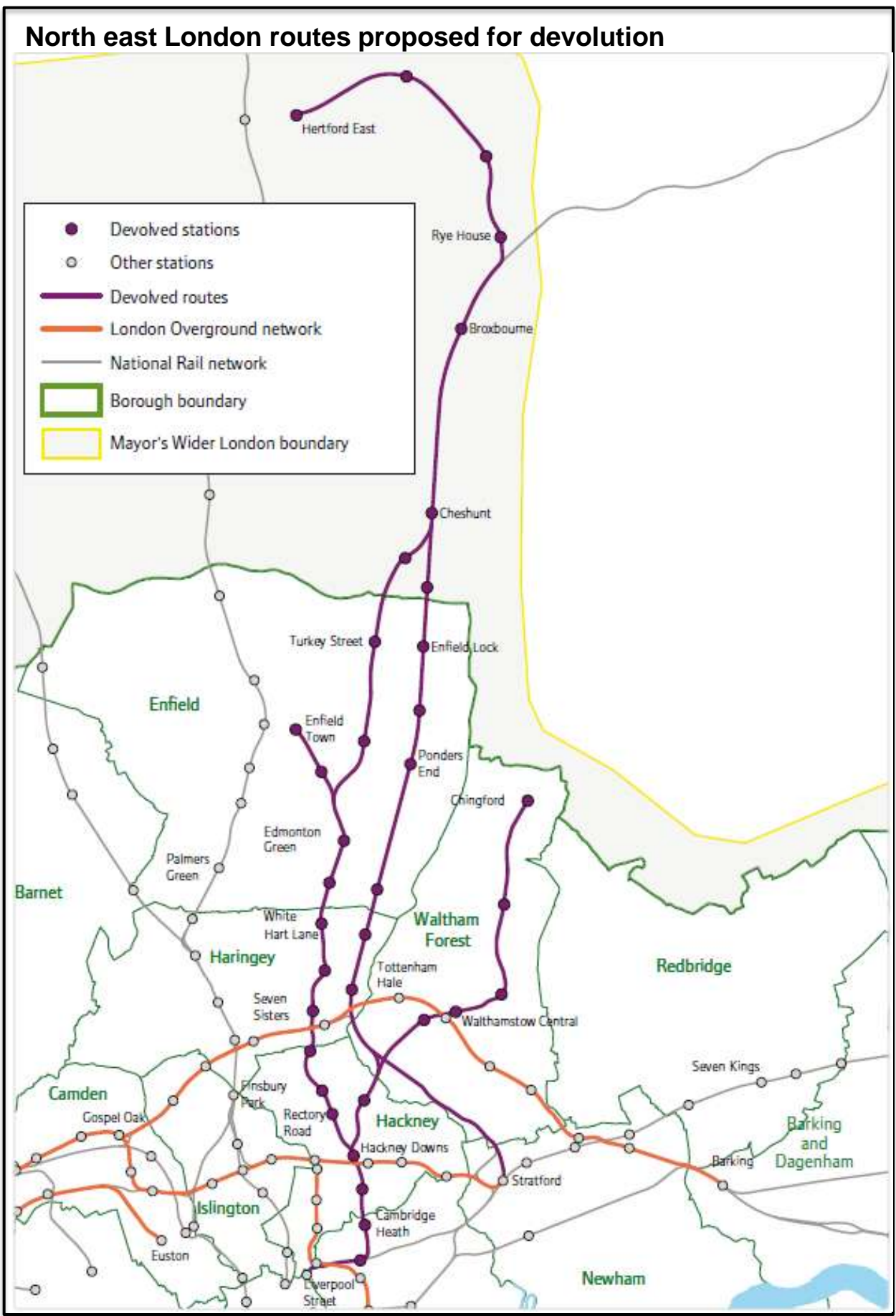
concentrations of NO₂, levels of public exposure, any relevant local characteristics, and predicted air pollution trends for the future. The areas identified have been cross-checked with boroughs and Local Air Quality management areas. A package of local measures to address NO₂ will be developed and delivered by TfL, the GLA and boroughs at a selection of these sites.



The NO₂ focus areas have been developed by TfL, taking into account current

5. Responding to the challenges

5.1 Rail: Making the most of existing networks



National rail network

West Anglia Line
Capacity on the West Anglia Main Line is growing by 40%, although the constrained stopping pattern of services still restricts local access onto these. Investment in additional infrastructure to improve connectivity and reliability is being sought in the short term.

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.

As demonstrated by the highly successful integration of the London Overground in to 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.

Station accessibility

TfL has recommended further 26 stations to be provided with step free access from platform to street. The total package has a capital cost of £40m and a benefit: cost ratio of 2:1.

There are seven stations in north London with committed step free improvements (see page 9).

Service quality recommendations

Other recommendations were made in line with MTS policies are the operation of more

routes with 'turn up and go' frequencies, better information and security measures for passengers, cycle parking and gating.

Capacity schemes

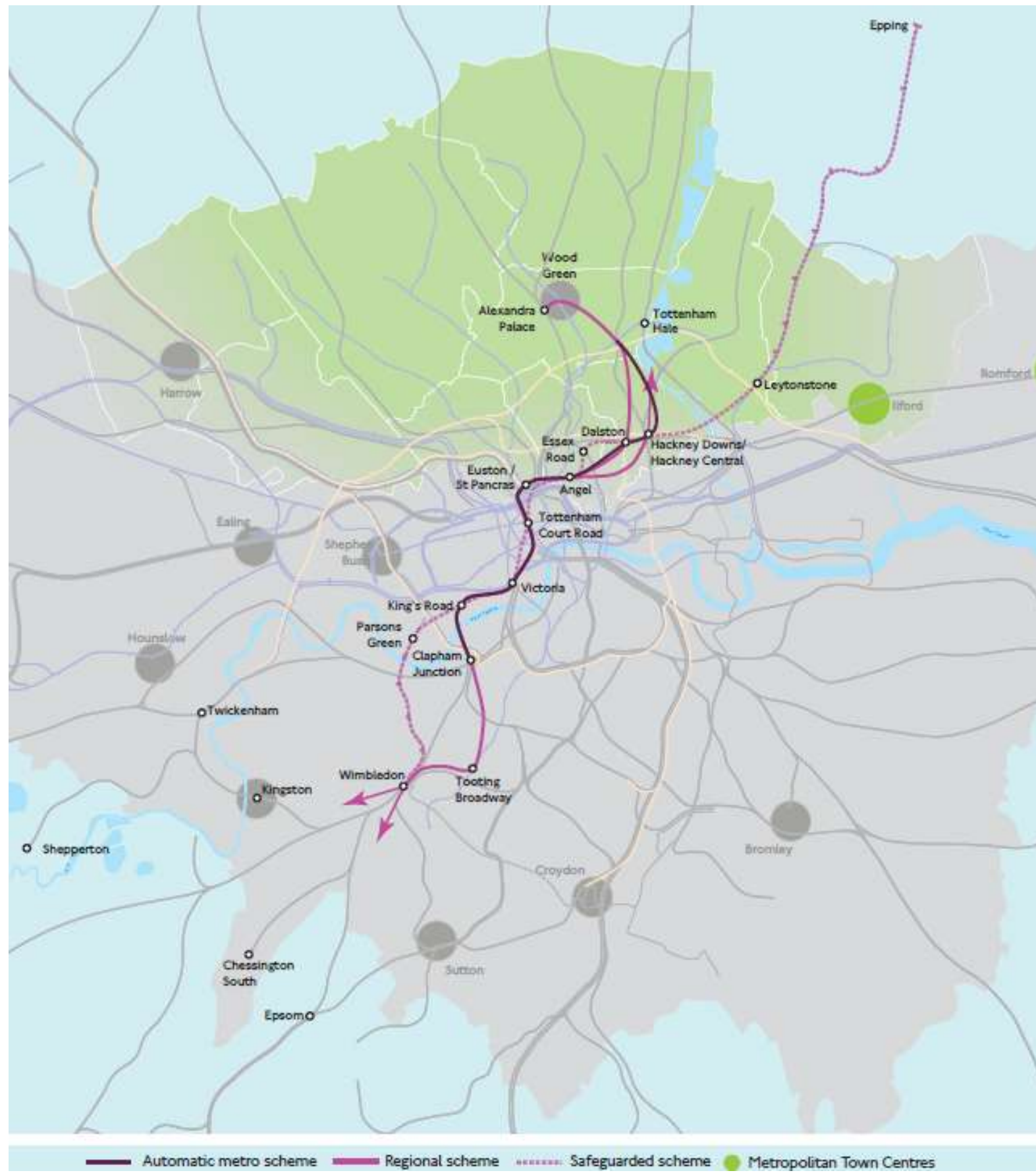
TfL's submitted a preferred package of solutions to Network Rail in August 2011. This included a significant number of proposals to enhance the orbital Overground network. These include longer 5-car trains on the North London Line, longer 8 car trains operated by the Southern franchise on the West London Line and train lengthening on the Gospel Oak to Barking line of the Overground.

Underground upgrades

On the Northern Line, a second upgrade could provide additional rolling stock and further new capacity by allowing next generation EVO trains to be introduced. These are formed of shorter, lightweight articulated vehicles, which passengers can walk through and have double doorways throughout. They are energy efficient and air conditioned, reducing the need for costly power supply and tunnel cooling infrastructure. A means of accomplishing this before replacement of the current fleet is due could be to create two completely separate lines, one of which would retain existing rolling stock.

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

5.1 Rail: Enhancing capacity -Crossrail 2



Crossrail 2 provides significant new rail capacity on the northeast to southwest corridor and major congestion relief to existing rail and Tube lines. Forecast demand shows that crowding and congestion remains a significant issue in this corridor, even with new investments such as Crossrail and Thameslink in place. This new line is needed in the longer term to reduce crowding on existing routes, but also to provide the capacity that is required to meet London's growth and provide connections to the National Rail network, including dispersal of people across London from the main line termini. The introduction of HS2 will increase this need considerably.

In response to a request from the DfT, TfL has undertaken a review of route options for a second Crossrail line. This has allowed a shortlist of optimised alignments to be identified that appear able to meet the objectives set for the project. In particular, we have assessed an automated metro (Option A), which would operate on a new tunnelled alignment between Clapham Junction & Seven Sisters, and a regional metro (Option B) which would link existing national rail routes in the south west and north east by means of a new tunnelled alignment.

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

considerably less costly than B, it would provide fewer benefits and to some extent be less satisfactory operationally. While it would provide relief to the Victoria and Piccadilly lines it would not offer significant relief to the national rail network. It would generate very high interchange demand at Clapham Junction which would require significant modifications or a rebuild of the station.

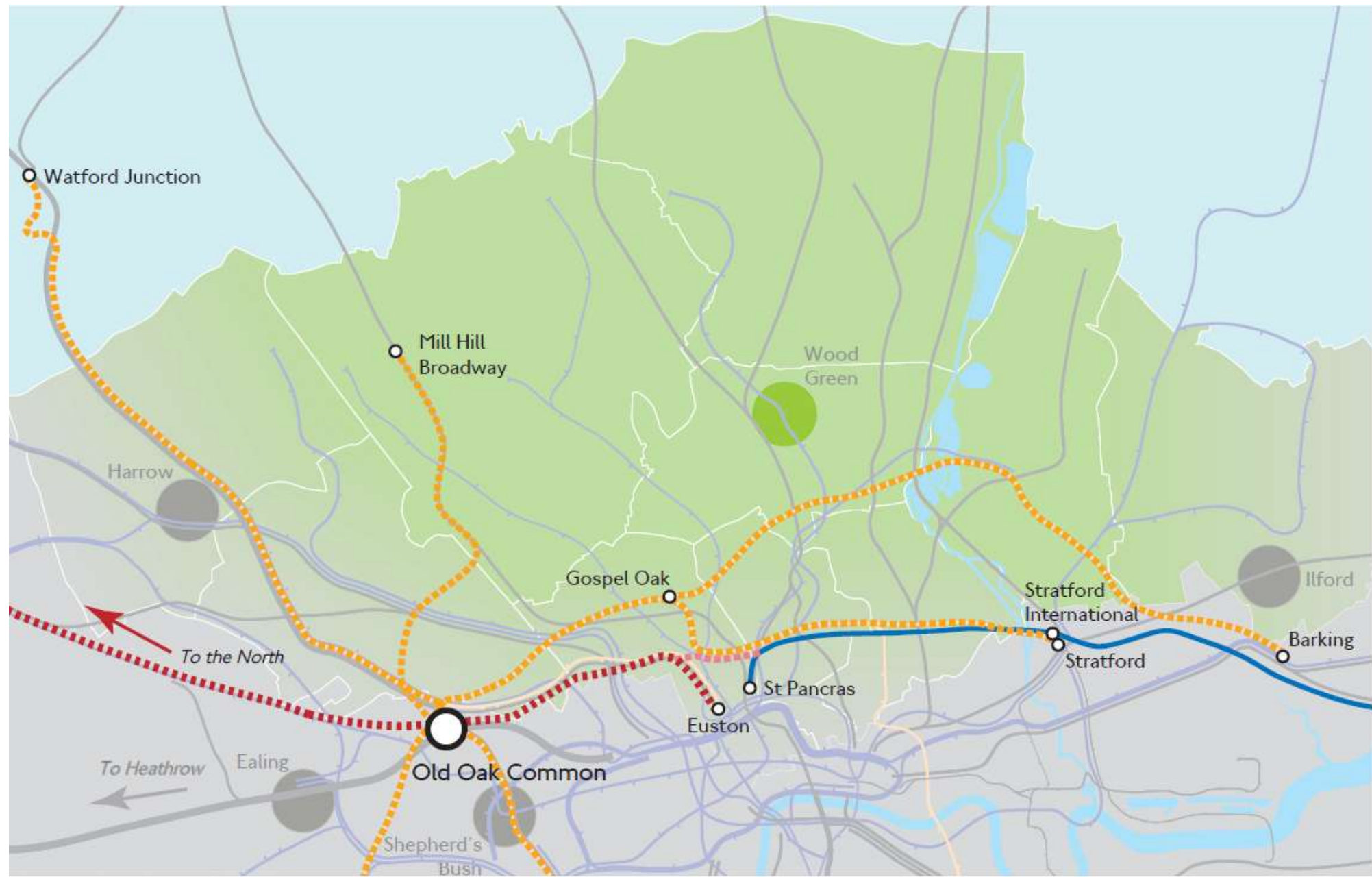
Option B would be considerably more expensive, but would deliver substantial capacity and enhanced connectivity and crowding benefits to the SW Main Line allowing many more locations in the sub-region to be directly connected to the core route as the map above shows.

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

Next steps
 A programme of stakeholder engagement has been established, including:

- briefing on recent developments to London Councils Rail Group in Jan 2012;
- continued and on-going briefings to Sub Regional Panel meetings
- further briefing to London Councils Rail Group again in summer of 2012, to update on progress, ahead of reporting back to the Mayor in autumn
- specific quarterly meetings with north London boroughs steering group.

5.1 Rail: Enhancing capacity -Connections to HS2



Over the past year or so TfL has been assessing HS2 impacts on London and its transport system. Through its response to the Government's consultation on HS2, the Mayor set out a number of changes that would be required in order to support the project, including the impact on North London Line.

A well connected interchange at Old Oak Common, including London Overground services, could offer direct connections to key centres in north London, including Brent Cross and Mill Hill.

Of more interest to north London boroughs may be the connection between HS2 and HS1. The proposed link would use the existing North London Line tracks and, as proposed, would impact on London

Overground capacity and performance. TfL has requested that alternative options are considered which would include more dedicated infrastructure for HS2 services but would be more expensive. High Speed Two Limited accept this and are working with Network Rail to provide a more robust solution. The impact on freight services will also need to be considered.

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

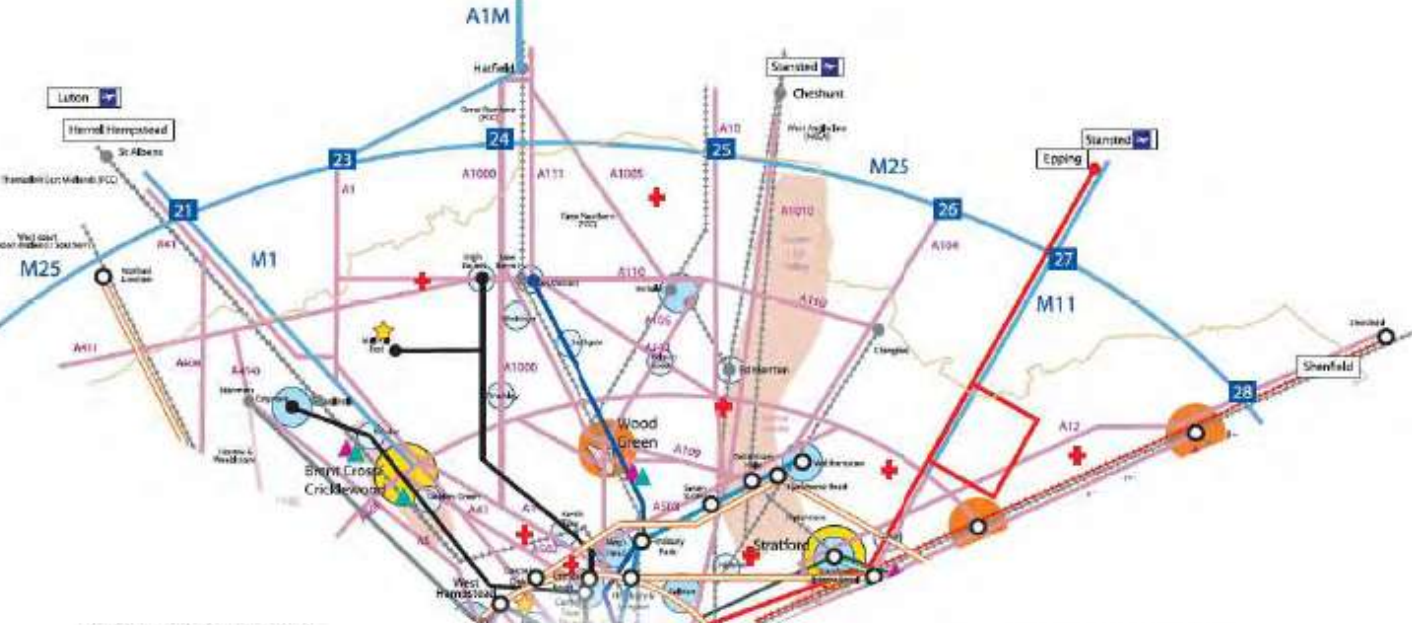
Next steps

The Secretary of State has outlined a timetable for progressing the first phase of HS2 (London to Birmingham) based on the following key dates:

- Phase 2 detailed design released – March 2012;
- Submit Hybrid Bill for Phase 1 – October 2013; and
- Government announces preferred route for Phase 2 – late 2014
- Phase 1 Bill passed – late 2015
- Phase 1 construction begins – early 2016.

TfL will work very closely with High Speed Two Limited to fully understand the impacts of the scheme on London and to progress plans for necessary mitigation.

5.2 Improving interchange: Enhancing capacity



- Origins and destinations**
- Orange circle: London Plan metropolitan centres
 - Blue circle: Major centres
 - Light blue circle: Key places as determined by sub-regional partnerships
 - Yellow circle: Potential metropolitan centres
 - Pink shaded area: London Plan Opportunity Areas
 - Pink triangle: Major employment hubs
 - Green triangle: Major shopping centres
 - Red cross: Hospitals
 - Green square: Universities
 - Blue square: Other
 - Yellow star: Areas for intensification
- Transport infrastructure and administrative boundary**
- Yellow line: GLA boundary
 - Black circle: Interchanges
 - Black line: Jubilee line
 - Red line: Central line
 - Red dashed line: Crossrail
 - Green line: Tramlink
 - Teal line: District line
 - Brown line: Bakerloo line
 - Black dashed line: Strategic rail routes
 - Orange line: London Overground
 - Pink line: Strategic road routes
 - Light blue line: Docklands Light Railway
 - Black line: Northern line
 - Blue line: Piccadilly line
 - Light blue line: Victoria line
 - Purple line: Metropolitan line

Some locations in north London 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, High Speed 2 and station upgrade works. Also important to look at smaller interchanges which nevertheless play an important sub-regional role.

West Hampstead occupies a strategic location on London's rail network. Lifts to provide step-free access between street and platform have recently been installed at the Thameslink station. Funding is committed for the provision of step-free access at the London Overground station to be completed in 2014 and s.106 funding has been secured to improve the public realm around the station and provide a new station entrance. In the long term it is an aspiration to secure funding to provide step-free access at the London Underground station,

thereby creating a fully accessible interchange.

Currently, not all Thameslink services currently stop at West Hampstead. A case could be made for stopping additional Thameslink services at West Hampstead, especially if the interchange opportunities were to be enhanced through some of the aforementioned possibilities.

West Hampstead is identified as an area for intensification in the London Plan. Development in the vicinity of the station may offer the opportunity to secure funds towards some of the identified potential interchange enhancements.

Tottenham Hale acts as a public transport gateway to the Upper Lee Valley Opportunity Area, identified in the London Plan, and national London to Cambridge growth corridor. Furthermore, Tottenham Hale is a key access point to Stansted Airport.

The Tube station currently offers step-free access and works will be completed in 2014 to deliver step-free access to the London bound rail platforms, thus completing step-free access across the interchange. Works to remove the Tottenham Hale gyratory and improve the public realm will enable enhancement of the bus station at Tottenham Hale. As yet unfunded plans to improve the local stopping services on the West Anglia mainline will also improve the level of service at Tottenham Hale, potentially significantly improving links to Stratford and cementing Tottenham Hale as a key gateway to the stations in Upper Lee Valley that are situated to the north.

Finsbury Park is a very busy rail and bus interchange. Finsbury Park was the first location to pilot a new integrated station management approach to improve collaboration between operators of different parts of the interchange. Station capacity, especially accessing the Underground platforms is currently lacking during peak hours and at Arsenal home matches. A currently unfunded scheme exists to increase capacity to access the Tube platforms from the street and other parts of the interchange.

Walthamstow Central / Queen's Road stations together with the adjacently located bus station forms the key public transport access to Walthamstow town centre. Construction of a new, more direct, footpath linking the two stations through a new entrance to the Queen's Road station is committed, thereby vastly improving interchange between radial and orbital rail services. Walthamstow Central station, in particular the Tube station, is operating near capacity. Plans to increase vertical capacity, i.e. install an additional escalator, exist but currently remain unfunded.

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. It would also be desirable to improve links with south and west London. TfL will lobby for the integration of the London Overground network into plans for the Old Oak Common interchange as planning for HS2 progresses.

Other strategic interchange in the sub-region, such as **Seven Sisters / South Tottenham, Highbury & Islington and Hackney Downs / Central** share similarities to the above examples in that the potential exists to either improve links between radial and orbital rail services, or certain parts of the stations suffer from congestion and currently unfunded capacity enhancement works may be required to cater for continuing growth in demand.

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



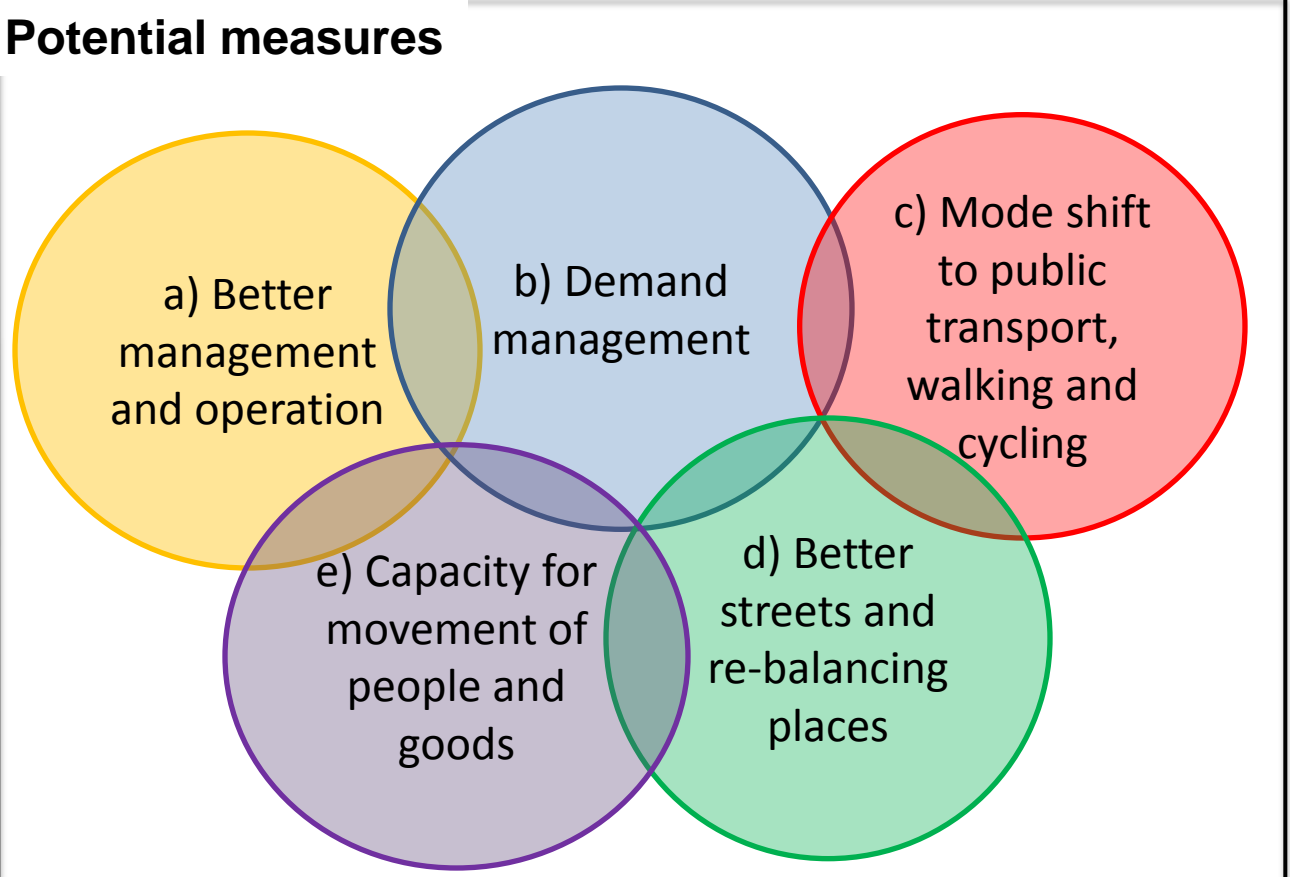
Road safety



Access to and within key places
– by different modes



The quality and sense of place

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 north London – 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.

Synergies and tensions
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.

We are 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. 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 a number of criteria. 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 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.

5.4a Making the most of existing networks: Road schemes in progress

Bounds Green

Bounds Green will create a predominantly two-lane dual carriageway with improved flow at junctions, greatly improved pedestrian crossing facilities, new bus lanes and dedicated cycleway. This will help cut out rat-running (cut-through) traffic in residential streets, increase safety and benefit the local environment for everyone. Other benefits include improved journey time reliability, reduced congestion, better facilities for cyclists, and traffic encouraged back onto the main carriageway, away from residential roads.

The main construction is underway and due to be completed in spring 2012. The A406 North Circular Road will remain open to traffic in both directions throughout the construction period.



Tottenham Hale Gyratory

Upgraded footpaths and lighting and trees planted along the A10 High Road were completed in summer 2011. Restoring two way traffic on the gyratory (with improved pedestrian and cycle facilities), improved interchange and building the new public square will take place from autumn 2012. Full scheme to be completed by summer 2014.

The scheme aims to make the area more pleasant, and create a safer environment for passengers, pedestrians, cyclists, road users and the local community.

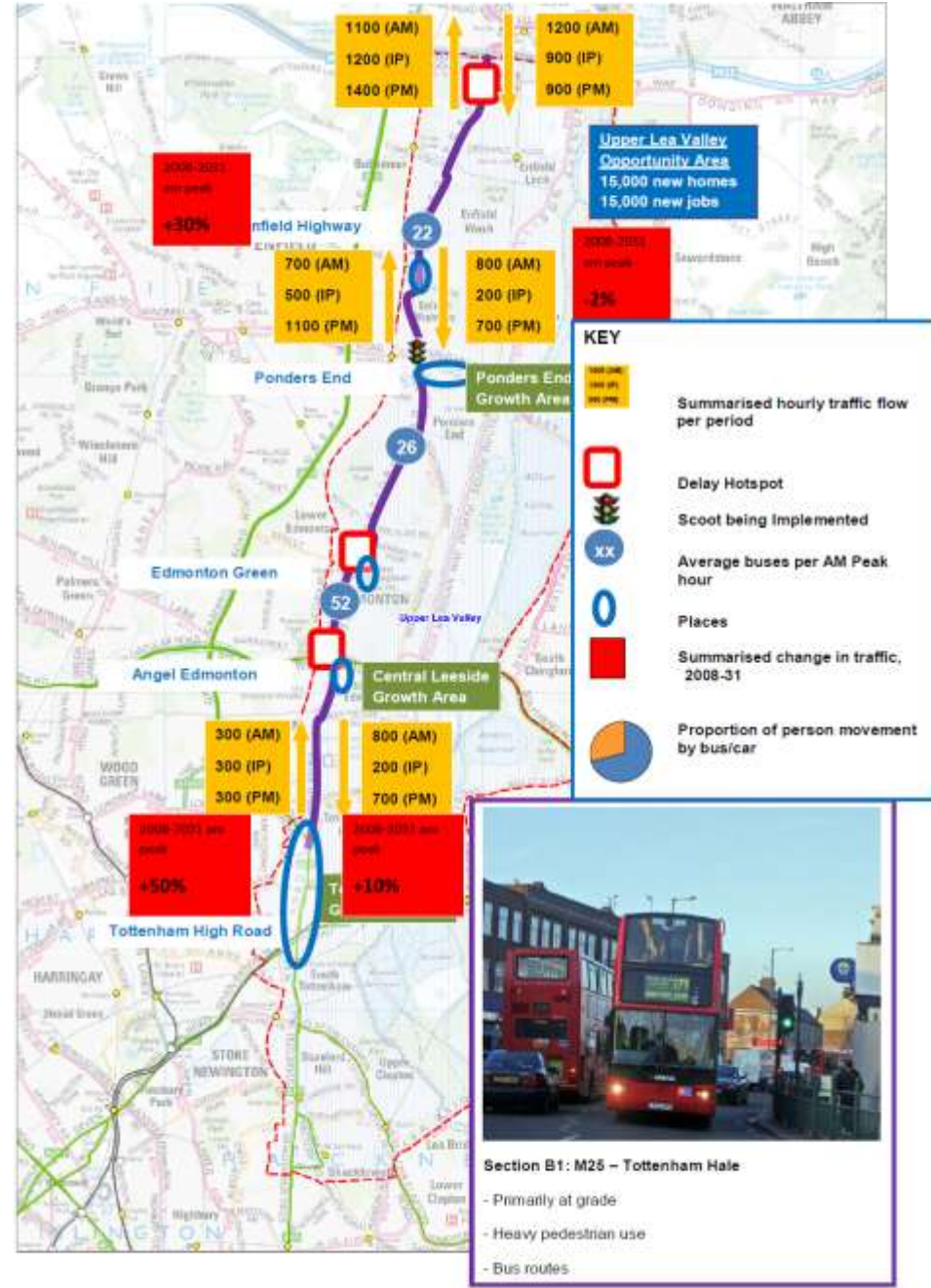


Benefits include:

- New, larger bus station at Tottenham Hale station, and more convenient bus stops
- New public square at Tottenham Hale station, and improved footways on the road
- The new bus station and public square will be at the heart of the proposed new urban centre for Tottenham Hale
- Reduced traffic volumes on Broad Lane
- Increased traffic capacity on the two-way traffic system with no significant change in journey times for road users
- Improved access for residents and businesses
- Improved interchange between different public transport systems at Tottenham Hale and Seven Sisters stations
- DDA standard design features including tactile paving to support visually impaired users and audible signals to aid the hearing impaired
- Removal of unnecessary street furniture and upgraded lighting and CCTV in the area

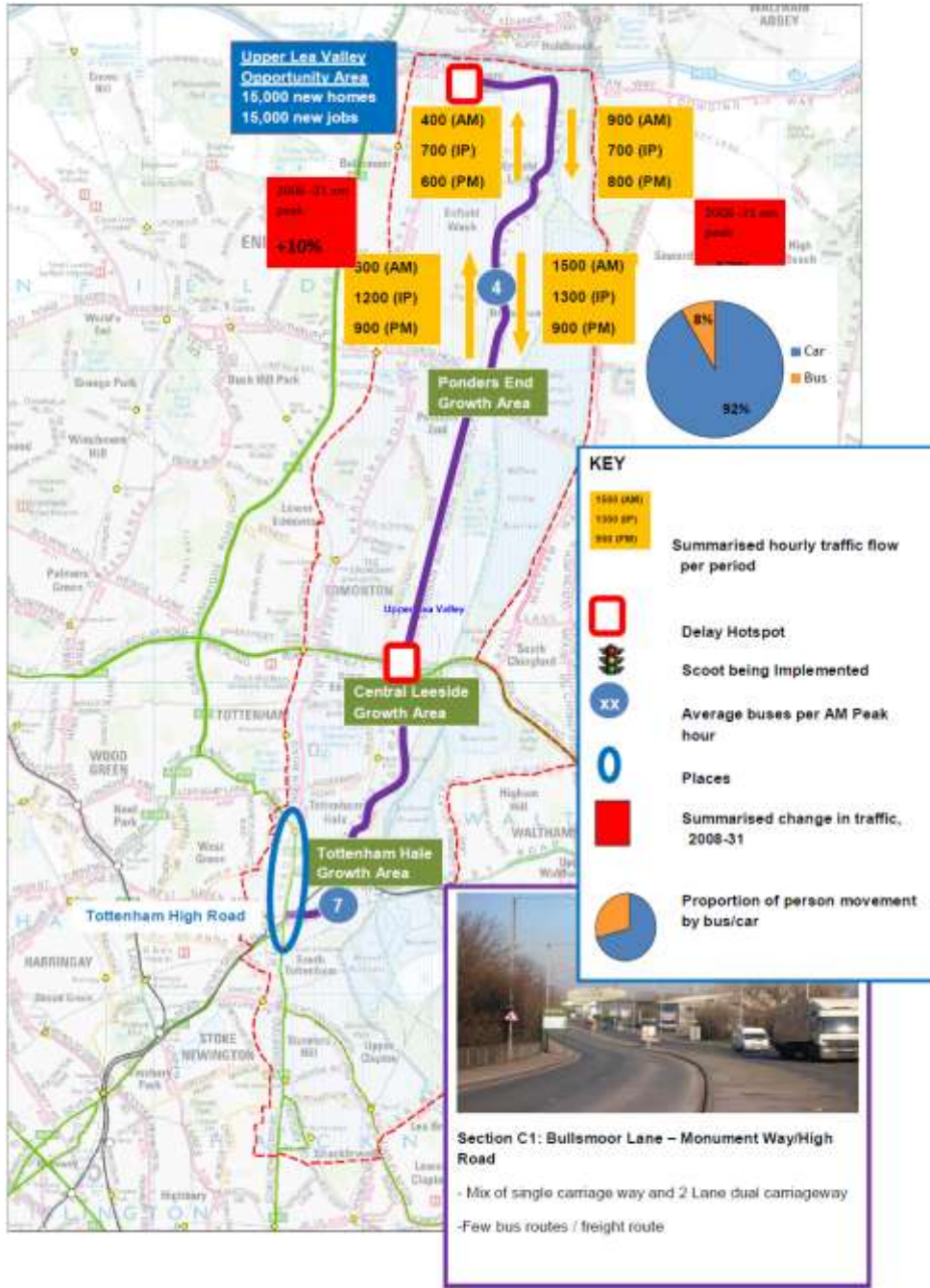
As part of the Tottenham Hale scheme, urban realm improvements are planned for the high road historic corridor. The project is to create a succession of linked spaces along the old main road from London to Cambridge. The two priority areas are Tottenham Green, which is divided by the High Road and Bruce Grove, a grand avenue that leads to the castle. The project is on plan to be delivered by 2012.

5.4a Making the most of the existing network: Corridor studies



A1010
 The parallel A1010 (Hertford Road) is a more heavily bussed route that passes through a series of places. The traffic volumes are also significantly less particularly at the northern extremity (M25 area) relative to the A10. Bus numbers on the southbound route increase during the AM peak. Bus mode share has grown to the extent that buses now carry greater mode share than car in the southern section of the corridor.

The A1010 passes through a series of ‘places’ – Enfield Highway; Ponders End; Edmonton Green; Angel Edmonton; Tottenham High Road. There are junction congestion hotspots at a few locations along the corridor - A1010/Bullsmoor Lane; A1010/Church Street; A1010/A406.



A1055
 The parallel A1055 is largely a route (part dual carriageway) that runs through industrial areas. With the exception of the northern and southern extremities, the route is not congested and there is little conflict between road users. It could therefore be suited to the distributor/traffic moving role. It passes through no ‘places’, however in the future the emerging Central Leaside could become a place of significance. There is also the issue of environmental impact of traffic at Bullsmoor Lane at Northern end. The junction of A1055/A406 is another congestion hot spot.

Objectives for the A10/A1010 & A1055
 Growth in the Upper Lee Valley Opportunity Area, and wider London and Home Counties context potentially adds to congestion in this corridor (A10/A1010/A1055) areas, so that journey times along these routes increase in the order of 5% to 2031.

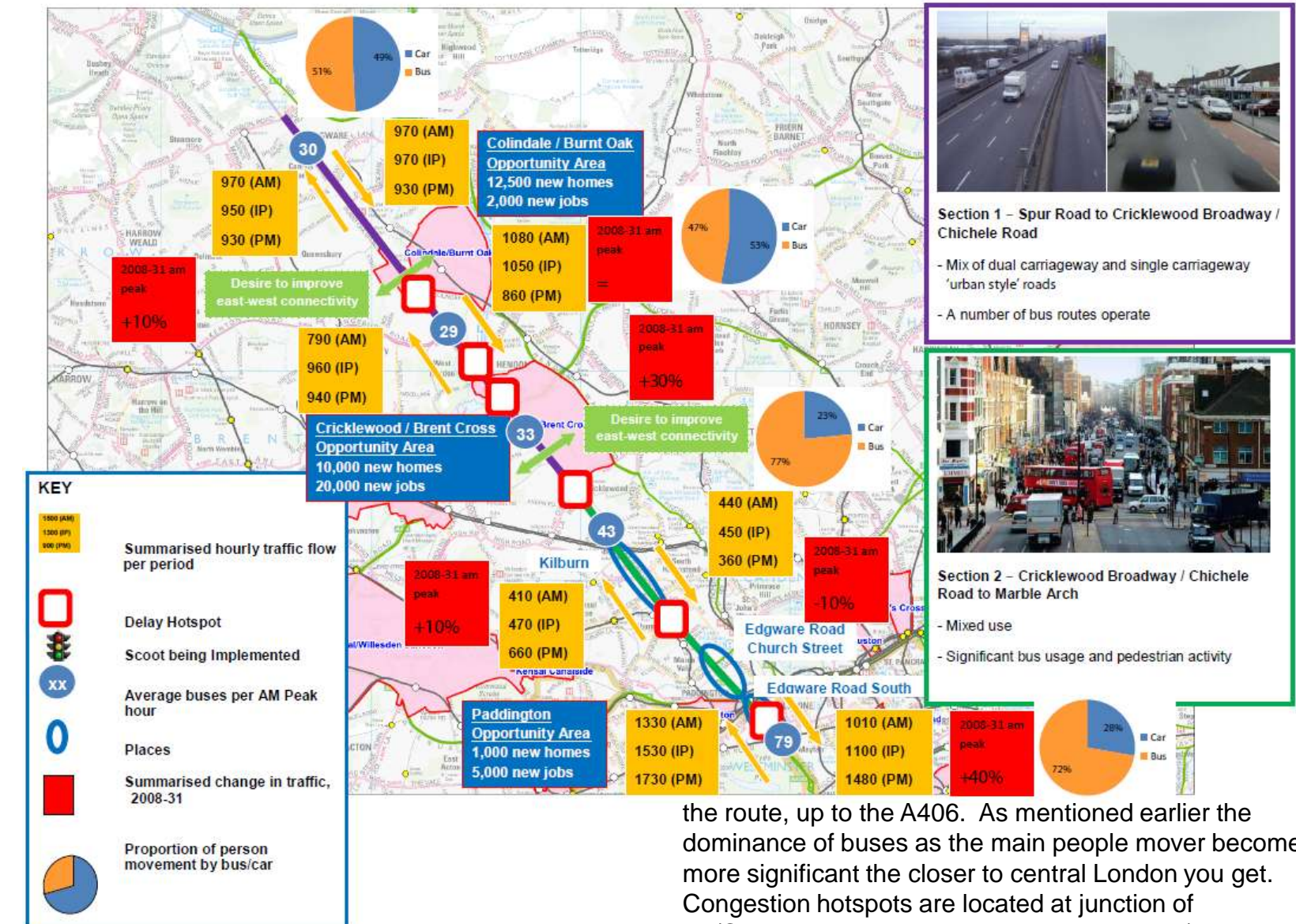
An important consideration in the work is how each of these parallel three routes interacts and how interventions on one will impact on the others. Any objectives developed along the corridors will need to take account of this.

Draft objectives for the corridor can therefore be summarised as follows:

- To enhance socio-economic opportunities through ‘Place-Making’ along the corridor by improving the public realm for pedestrian activities without undue reductions in journey speed for other road users
- To pursue a ‘balanced flow’ strategy to the A10 north of Tottenham High Road (& A1010) combined whereby any traffic displaced from the corridor by the ‘Place-making’ activities can be attracted to the northern section of the A10 (or A1055) with nil/an acceptable level of detriment to journey time
- To promote a modal shift through improved public transport and softer mode facilities/measures
- To maintain/improve the level of bus performance (journey times & reliability)
- To pursue a range of measures to reduce congestion at key points along the A10/1010 and improve air quality.
- To promote measures /facilities for freight movement and deliveries

These objectives are still subject to review but have been developed in conjunction with North London Borough officers.

5.4a Making the most of the existing network: Corridor studies



Overarching objectives

- To improve socio-economic opportunities through 'Place-Making' at selected locations along the A5 corridor by improving the public realm for pedestrian activities without undue increases in journey times for other road users
- To pursue increases to capacity on the A5 corridor and parallel routes to enable it to cater for growth and support regeneration without undue impact on journey times
- To promote a modal shift to public transport and softer mode facilities/measures
- To continue to pursue measures to smooth traffic and to maintain/ or improve reliability for all highway modes
- To minimise through movements by freight and promote measures to facilitate access and delivery of goods
- To promote better vehicular and pedestrian east-west connectivity at selected locations
- To pursue a range of measures to improve air quality along the A5 corridor

Northern objectives

- To encourage longer distance traffic to exit the A5 at appropriate points;
- To minimise the impact of developments on the performance of the A5 corridor;
- To further improve highway performance by tackling issues at identified delay hotspots;
- To protect the status of local and district centres through environmental, public realm and active mode initiatives
- To encourage greater use of public transport from local neighbourhoods to facilities along the A5
- To accommodate longer distance freight and facilitate deliveries and servicing whilst minimising its impact on residents, congestion and air quality

Southern objectives

- To effectively manage the different demands for footway, kerbside and carriageway space along this corridor due to its diverse mix of retail, entertainment and residential uses, as well as its function as an arterial route into the heart of London
- To discourage through traffic from using A5 south of Cricklewood
- To improve the pedestrian experience through enhancements to the public realm, without undue impacts on congestion and air quality
- To encourage modal shift for shorter journeys through improved facilities and safety for pedestrians and cyclists
- Befitting its status as a high frequency public transport corridor, to improve, or at least maintain, access to public transport, bus journey time reliability and passenger experience along the A5
- To facilitate deliveries and servicing whilst minimising its impact on residents, congestion and air quality

A5
The A5 characteristics and issues are akin to those of the A10. It is a route that largely operates in two halves. From Marble Arch to Kilburn, it passes through a series of places where movement is dominated by activities within the place rather than through it. There are heavy bus and pedestrian flows, and generally lower vehicular flows.

North of Kilburn, it passes through a few significant places, mixed environments and is of variable capacity. Again, although a single designated route, no vehicles travel it end to end. Indeed the Kilburn divide is almost equally applicable to traffic use; almost no traffic from the Marble Arch area makes it north beyond Kilburn on the A5, and nothing from Edgware makes it south beyond Kilburn on the A5.

Very high traffic flows are observed along Edgware Road around Marble Arch (over 1000pcus/hr in all time periods). Flows are also relatively high along the northern section of

the route, up to the A406. As mentioned earlier the dominance of buses as the main people mover becomes more significant the closer to central London you get. Congestion hotspots are located at junction of A5/Colindeep Lane; West Hendon Broadway/A5; A5/A406; A5/A407 (Cricklewood Lane); Edgware Road/A40 junction area. There are currently no SCOOT proposals/studies underway in respect to improve junctions. This is a summary of issues and does not purport to show everything. Please refer to the congestion map in the previous section for more detail on congestion hotspots.

Objectives for the A5

Considerable growth is predicted from Brent Cross/Cricklewood, elsewhere in Barnet, and in neighbouring areas such as Wembley. Barnet and Brent are concerned that highway capacity exists to cater for this growth. Future journey times along the A5 are predicted to increase by about 7% to 2031. The emerging approach in terms of objectives is similar to the A10, in that objectives need to be flexible enough to cater for the two distinct sections of the corridor. Draft objectives for the corridor can therefore be summarised as follows:

5.4a Maximising efficiency through mode shift: Supporting efficient freight and servicing



Shared loading space with footway in Leytonstone

Responding to the current and future freight & servicing challenges will require a flexible and innovative approach to meet the specific demands across north London., such as the heavy freight through traffic on the north circular road.

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.

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 north 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 to freight behavioural change for different sectors and areas:

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

The roll-out of existing freight and servicing measures, 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 Offices 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 north sub-region should include:

- Influencing public sector procurement practices to encourage use of consolidation principles (e.g. 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 north 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 north sub-region which would be willing to participate in a case study exploring this would be welcomed.

The role of freight will also be considered as part of the corridor studies on the A5 and A10 corridors going forward.

5.4 b and c Making the most of existing networks: Car clubs

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, e.g. via different models of car ownership, such as car clubs.

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

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 and 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.

Market segmentation analysis has identified those groups most likely to be a member of a car club now and most amenable to becoming a member in future. They include 'Cultural leaders' and 'New Urban Colonists', both of which are strongly represented in north London (shown as the red clusters on the maps). However, by developing the service to most closely fit the needs of people and services in each borough, it may also be possible to target new market segments.

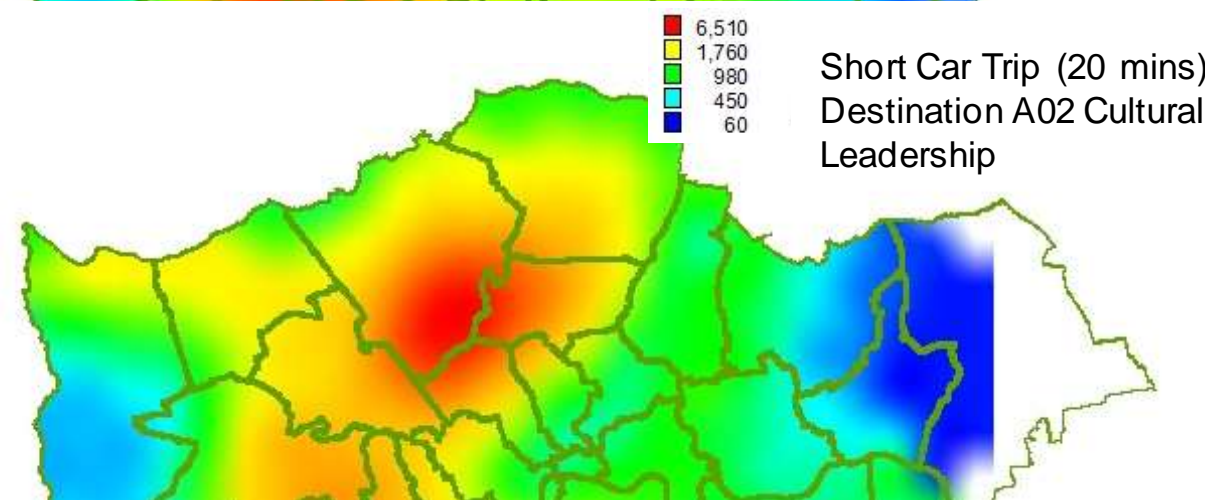
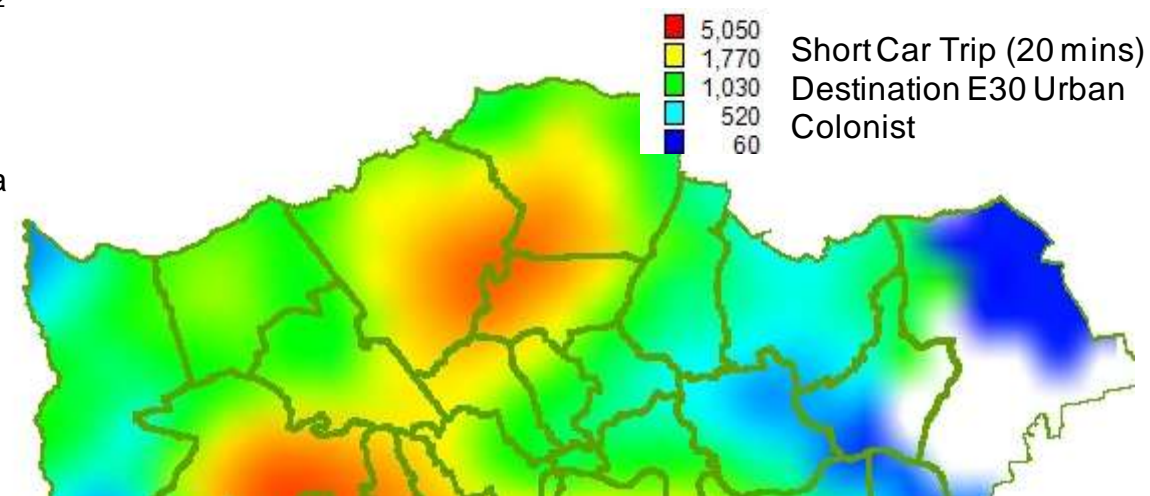
33% of car trips under 20 minutes are made by people in the groups with the greatest propensity to be car club members.

Number of car club bays in north London

Barnet	8
Haringey	90
Enfield	8
Waltham Forest	35

North London boroughs will continue to undertake work to look at the role car clubs can most helpfully fulfil in their areas, including looking at the role of s.106 funding and new development.

The GLA have proposed to expand the London Development Database, to which all boroughs provide data, to capture the number of electric vehicle charge points provided at new developments in London. If at least 22 boroughs agree, the number of charge points included in all new permissions will be recorded from April 2012 onwards.



5.4c Maximising efficiency through mode shift: Ensuring an effective bus network



The TfL bus network is subject to a continuous review process which examines groups of routes in an area and involves:

- Engagement with stakeholders, e.g. through the sub-regional panels.
- Collection and analysis of data on usage trends, loadings and reliability.

This enables the pattern of services to respond to changes in population and employment and to the public transport network generally. It is important that supporting infrastructure is planned to support new bus services e.g. garage capacity, bus stands and facilities for drivers. The boroughs have a key role to play in supporting this.

In north London the main challenges include:

- Keeping the network generally up to date, in the context of the aspirations and projects of the boroughs and other stakeholders.

- Maintaining bus reliability and speeds and improving speeds wherever feasible in the face of increasing congestion.
- Minimising the impact on buses of disruption to the road network.
- Providing adequate terminal capacity, attractive stops and interchanges.
- Maintaining and improving customer service levels.
- Retaining good bus access to town centres.

The north sub-region has the third highest Bus Excess Wait Time, but if the targets are achieved it will be slightly below the pan London average. Waltham Forest currently has the highest EWT in the north sub-region and Enfield the lowest.

TfL will continue to work collaboratively with the boroughs to ensure these challenges are overcome.

The following potential solutions will be explored:

- Additional bus priority in order to protect the busiest bus routes from increasing traffic congestion in order to maintain or improve people movement (the data provided by iBus will be used to help determine where additional bus priority or enforcement is required).
- Planning infrastructure needed to meet future bus demand – particularly in town centres and to support new developments.
- Continued focus on minimising disruption to buses as a result of roadworks.
- Integrated planning of buses and other modes – to maximise efficiency of road network – particularly where current / future conflicts and major capacity constraints
- Environmental performance - TfL will continue to push for improvements in order to meet statutory targets and contribute to the improvement of environmentally-sensitive areas including town centres.
- Developing the network of centre-to-centre services.
- Bus services to exploit some of the opportunities for faster, more direct links created by selective additions to the road network.
- Improvements in bus access at existing car-orientated development.

In the longer term further changes to bus services related to rail service development may be needed. Running as many services as possible at the “turn up and go” threshold of every 12 minutes is desirable. (Where passengers don’t need to know the specific times but rely on a high frequency.

In designing the network for frequency, there are trade-offs with network density and the proportion of point-to-point links which the network can provide without interchange.

Pilot project: Route 191 in Enfield

Efficient: Joint approach between Borough and TfL

- TfL in-house feasibility = min. cost, min. paperwork, efficient relationships
- Borough LIP funding targeted at producing real improvements

Targeted: TfL and Borough agree which bus route(s) to be investigated

- Based on Borough LIP2 and Bus Priority Strategy data

Holistic approach: all aspects of bus route to be investigated: Hard measures (infrastructure, BSA, junctions, signal timings

- Soft measures (STPs, behaviour of school children)

Joined up: Joint route inspection meeting (JIM) Peak and inter-peak periods

- Borough, TfL and Bus Operator attendance
- View and discuss all stakeholder issues, concerns and comments

Evidence-based: Data and intelligence gathering

- BSA, BODs, iBus Journey Time data

Next steps: TfL to work with other boroughs about whether they would like to roll out the programme in their boroughs.

5.4c Maximising efficiency through mode shift: Ensuring an effective bus network

Place-type	Locations in the sub-region	Pressures include:	Measures to support bus use	Examples where undertaken
Major hubs	Walthamstow town centre, Wood Green, Edgware, Enfield, Brent Cross, Golders Green	Population growth creating pressure on roads space 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. Brent Cross/Cricklewood?
Other significant hubs	Southgate, Tottenham, Edmonton, Muswell Hill, Finchley			Opportunity to simplify bus services and provide a new bus station with the removal of the Tottenham gyratory
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 	Grahame Park/Colindale Mill Hill East
Commercial sites	Industrial, office, retail and leisure sites throughout the area.			Upper Lea Valley Brent Cross/Cricklewood Wembley City Haringey Heartlands
Social facilities	Healthcare and education sites throughout the area.			Healthcare reorganisation schemes including the Barnet-Enfield-Haringey Clinical Strategy, eg. use HSTAT to efficiently plan health services to reduce transport impact

Strategy

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

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

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

Short Term

Short term changes in demand from new developments, particularly housing , will be accommodated through adjustments of existing services or extra services where funding is available. Improvements to reliability will be possible through planning using additional data, eg ibus, and through better management of projects affecting the highway, including roadworks.

The major road network changes at Tottenham provide an opportunity to take advantage of the new two-way road network, including a new bus station at Tottenham Hale. Further capacity may be required in conjunction with housing developments in the area and to the north.

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.

Whilst the opening of Crossrail towards the end of the decade will significantly change the capacity needs in many of the sub-regions, the main challenge in the north is to cope with intensification of existing usage. This will include:

- Maintaining bus journey speeds
- Retaining good bus access to town centres
- Seeking improvement in bus access at existing car-orientated development, such as along the Upper Lea Valley

- Developing the network of centre-to-centre services to strengthen links

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.

Outline bus network revisions have been drawn up for the Brent Cross/Cricklewood area – including the relocation and expansion of the existing Brent Cross bus station. This is to ensure sufficient bus capacity for the development and to create new links to/from the new rail station as well as from areas to the south of the North Circular. Capacity changes are expected at Colindale/Grahame Park.

Long Term

All of the challenges of the medium term will carry through to the longer term beyond 2020. There may be opportunity to improve strategic corridors as well as exploit selective additions to the road network where justified by intensification at new developments and in Opportunity Areas. In these locations the case for bus priority should always be considered from

the earliest stage of design. Potential rail schemes, such as Crossrail 2, would require consideration of complementary bus changes in the north sub-region.

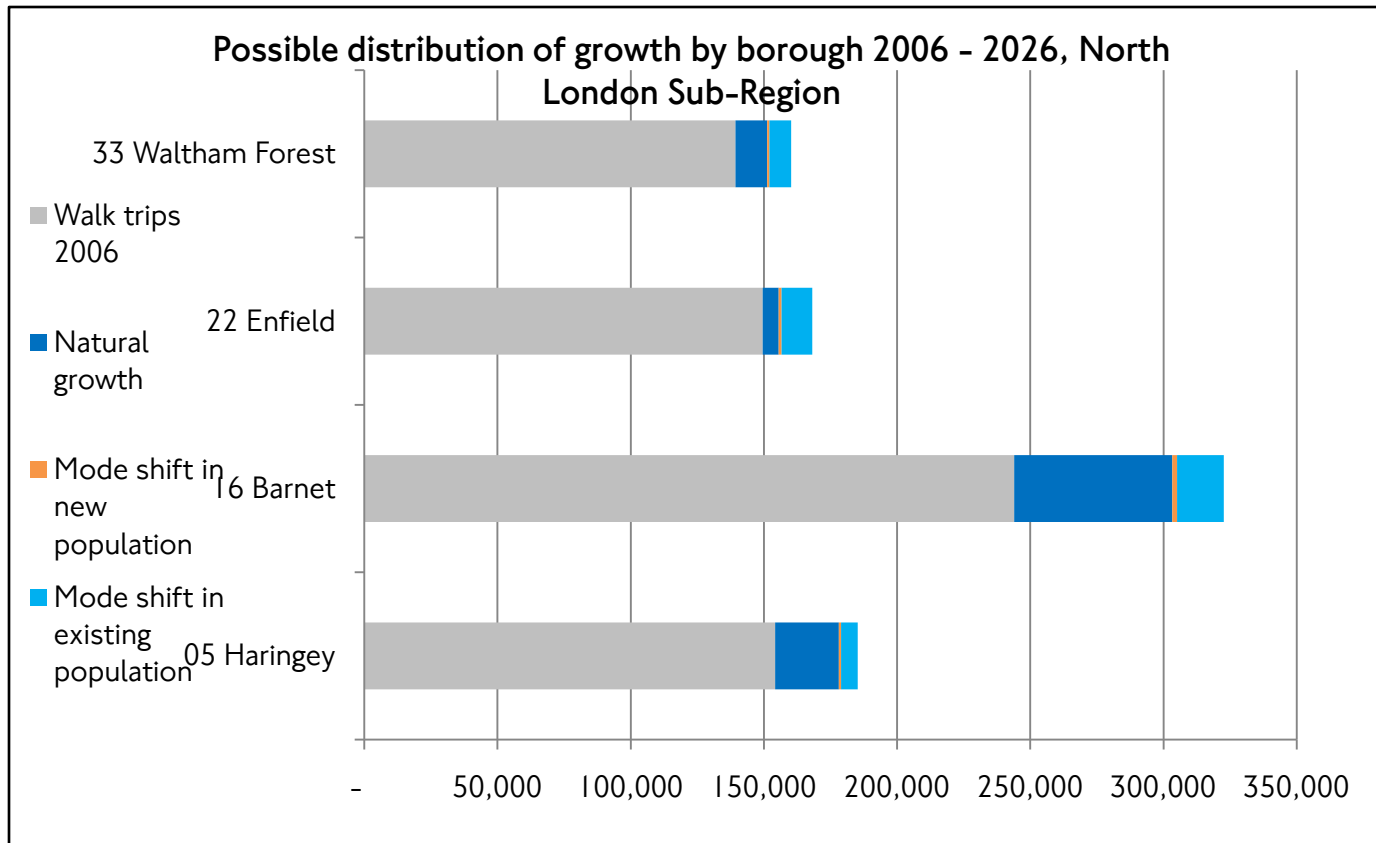
Supporting growth

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 above 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.

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.

5.4c Maximising efficiency through mode shift: Increasing 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 3% (to 28%) since 2009.

Those who walk to town centres spend the most per head per month (£373) – substantially higher than any other mode (buses are next closest on £282). Pedestrians also spend more per month in every type of town centre than any other mode; average monthly spend in town centres by pedestrians has increased from £360 in 2009 to £373 in 2011.

The north sub-region has realised the least of its total walk potential, with 69 per cent of trips that could be walked actually being walked.

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.

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 (Ruckholt Road, Waltham Forest) in the north sub-region.

Legible London

Legible London is a comprehensive and consistent pedestrian wayfinding information system for London. The Legible London base map of Greater London was completed in December 2011. This now allows TfL to provide Legible London mapping for boroughs, developers, landowners and companies.

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 Enfield (Enfield Town and Edmonton Green) and Wood Green in Haringey, the latter as part of a Major Scheme. 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 TOCS to install Legible London maps across London's suburban rail stations.

Walk London network (Strategic Walk Network)

The Walk London Walk Network was delivered in February 2012, in time for the 2012 Games. It consists of seven walking routes (645km in total) that span London, with the newest route, the Jubilee Greenway, which runs through central London commemorating the Queen's Diamond Jubilee celebrations. Over 90% of Londoners live within 10 minutes of the network, which attracted over 7.5 million walkers in 2010/11, an increase of 4.5 million walkers in the year (47%) from 3 million walkers in 2004/05.

TfL data highlights that leisure walking opportunities support people to consequently undertake more utility (everyday) walking over time. TfL aims to work with the boroughs through LIP to support and maintain usage of this network now that physical improvements to the routes are complete, with the London LOOP, Lea Valley Walk and Capital Ring all passing through the region.

Pedestrian safety

A key delivery priority for walking is to

reduce the number of pedestrians killed and seriously injured across London, using targeted projects at collision hotspots.

5,391 of the 28,889 total London road casualties in 2010 involved pedestrians, this represents 19 percent of all London casualties.

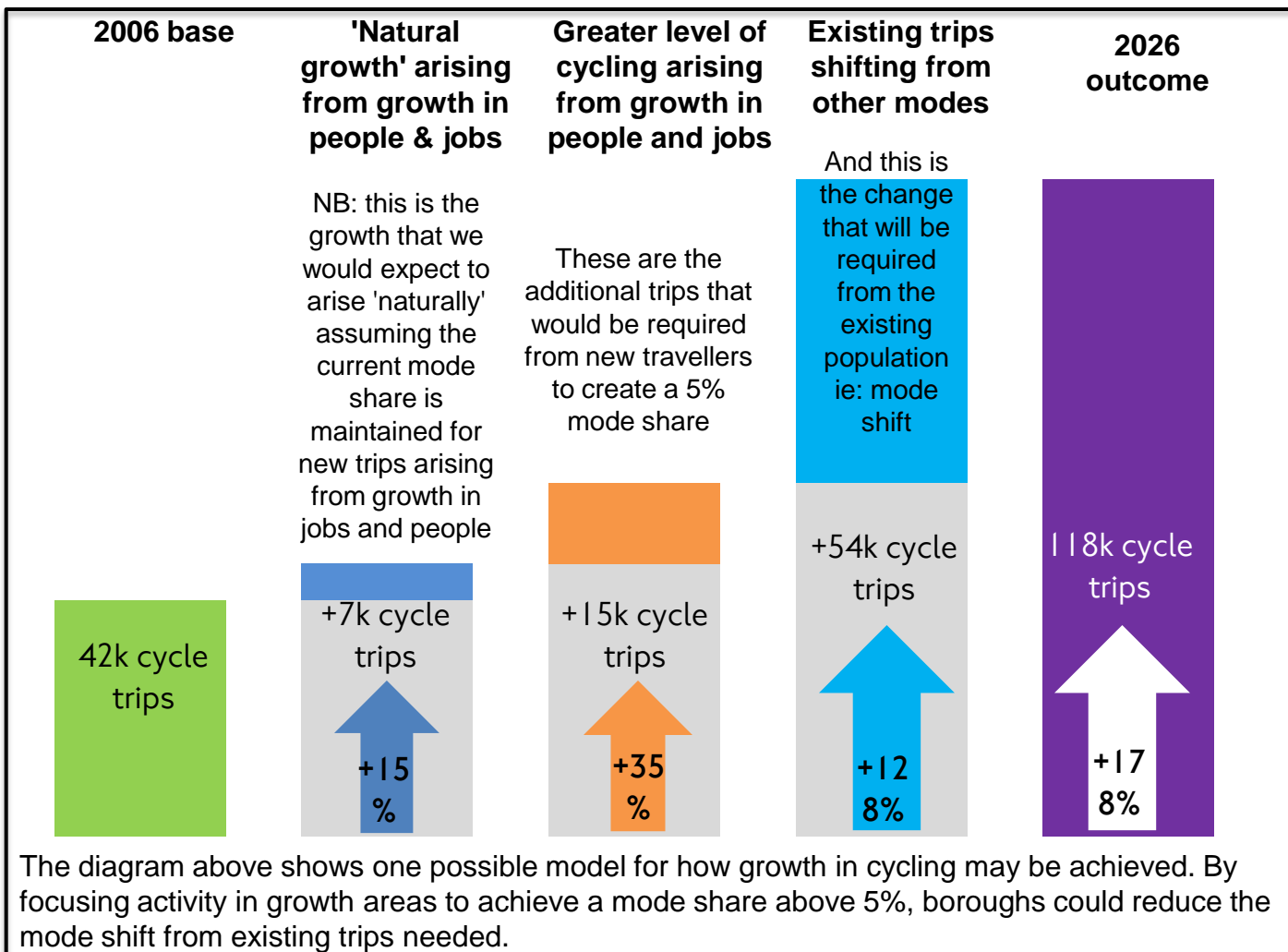
Approximately 913 of the 5,391 pedestrian casualties are classed as KSI (killed or seriously injured). Pedestrian KSIs comprise 32 percent of all London 2010 KSIs in London in 2010.

There were a total of 58 pedestrian fatalities in London in 2010. Of these, 20 (34 percent) were aged 65 years or over, suggesting that older people are a particularly vulnerable subset of pedestrians in relation to KSIs.

The perception that walking is not safe is a frequently cited reason in TfL's annual 'Attitudes to Walking' surveys (along with traffic fumes, dirty streets and poor signage) given by potential pedestrians to explain why they don't walk more.

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

5.4c Maximising efficiency through mode shift: Increasing cycling



There are high densities of potentially cyclable trips in inner London and in the outer London town centres. North London has significant cycling potential that is concentrated in the large urban centres such as Enfield, Wood Green, Finchley and Camden Town. 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 could help capitalise on significant potential – learning from success stories such as Haringey to create a bespoke package tailored to the needs of inner London boroughs (focus on residential bike parking and security,

permeability, maximising use of bus infrastructure etc).

Alongside this, TfL could work with all outer London boroughs to roll-out the types of activities from existing Biking Boroughs to ensure consistently high levels of cycling provision. On the strategic road network, there needs to be enhanced focus on improving the cycling environment – starting with the review of key TLRN junctions.

A focus on new development and, for example, embedding cycling even more strongly within OAPFs and masterplanning such as the current plans for Wood Green will be key to delivering the step change required.

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

Key building blocks for growing cycling in north London include:

Cycle Safety

- The estimated KSI casualty rate on the Transport for London Road Network decreased by 7% between 2008 and 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
- Review of a number of key TLRN junctions (see p.36) and future design
- Reducing conflicts between cyclists and other vehicles through a joined up approach of education campaigns, more enforcement and improvements to road space
- Working with the freight industry: innovations in technology/vehicle design

Cycle Security

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

Helping people make the change

There are many people who are 'just like' cyclists but do not currently cycle, offering a substantial 'near market'. Measures designed to encourage leisure travel as a 'first step' e.g. events, training and quiet or off-road cycle routes

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

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

Integration into places

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

5.4c Example of best practice - Cycling demonstration in Haringey & Wood Green Town Centre

Haringey has a history of successfully implementing innovative cycling measures. It gained Biking Borough status and funding in 2009, and a recent TfL study found that Haringey realises more of the potentially cyclable journeys than many other boroughs. Haringey has made considerable efforts to co-ordinate different smarter travel schemes to maximise the benefits from different funding streams. It also has strong ambitions to further improve cycling in north London in partnership with other key stakeholders.

Haringey Borough:

Recent progress made

- Network of current greenways and LCN+
- 600+ cycle parking spaces installed across the borough
- Partnership working to create Haringey and Enfield Smarter Travel Strategy
- Group cycle training sessions in Haringey's parks
- Secure estate parking piloted at four locations in Tottenham and Muswell Hill
- Bike maintenance sessions and training plus Dr Bike
- The two year Turnpike Lane/Langham Road DIY streets scheme that has improved many aspects of the neighbourhood through the involvement of the local community.

Haringey has future ambitions for the following schemes:

- A bike recycle scheme that would sell second hand bikes as well as giving bike maintenance advice
- The creation of a cycle hub in Wood Green that would be centred around new cycle infrastructure such as secure cycle parking.

Borough-wide opportunities

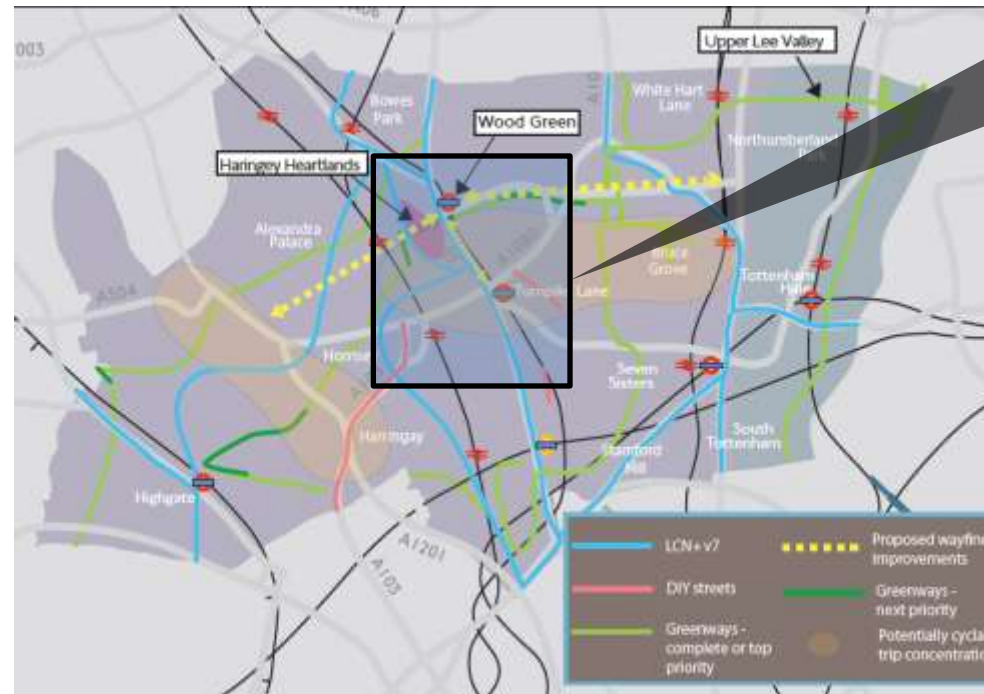
- Improved east-west cycle connectivity – linking the central corridor with the Upper Lee Valley Opportunity Area and White Hart Lane to the east and Highgate /Hampstead Heath to the west
- Build on the collaboration with Enfield to improve North-South links across the borough such as the Meridian Way (Stratford to Broxbourne) through the Upper Lee Valley
- Improve cycle links between Wood Green and the Haringey Heartlands Regeneration Area
- Create a cycle friendly zone for the town centre.
- Utilise the natural cycling territory of Alexandra Park
- Residential cycle parking – both public/private housing

The approach outlined below is an initial demonstration of the level of investment and type of measures likely to be necessary to transform cycling in Haringey, and more widely across London. The Wood Green Major Scheme will deliver significant improvements to the town centre by its completion in 2014, and many of the measures outlined here are likely to form part of this.

Although no extra funding is currently identified for the measures suggested in the case-study, this work will help

shape discussions in TfL's next business planning process.

TfL are keen to work with other boroughs in the north sub region to identify the cycling priorities within each area. TfL would also encourage boroughs to prioritise cycling measures in LIP funding, and for boroughs and TfL to maximise leverage for third party contributions possibly via development and sponsorship.



Below is a potential package of measures to increase cycling in LB Haringey and Wood Green town centre. Many of the measures discussed below are included in the borough LIP and the Wood Green master plan. An integrated approach is encouraged, as it has been found that infrastructure investment needs to be supported by training and promotional measures if it is to be successful.

Wood Green Town Centre Potential Package of Measures

Wood Green Cycle Hub

Creating a multipurpose cycle hub facility in Wood Green Town Centre would considerably raise the profile of cycling in Haringey. This would provide secure cycle parking as well as other facilities such as repair and maintenance. In addition to a dedicated centre, the cycle hub would also consist of improvements focused throughout the metropolitan area, particularly at Turnpike Lane and Alexandra Park stations. All new developments should be encouraged to include high quality secure cycle parking.

Improved cycle routes

Wood Green has a fair coverage of cycle paths, but joining these into a coherent cycle network would increase cycling appeal.

Better cycle signage

Especially to key destinations such as Alexandra Park and to

secure parking facilities at stations would complement this.

Family cycling initiatives

The high proportion of young couples and families in the area are a key cycling potential group, and targeting cycle initiatives at this group may give greater success. Potential for Smarter Travel events to include cycle training.

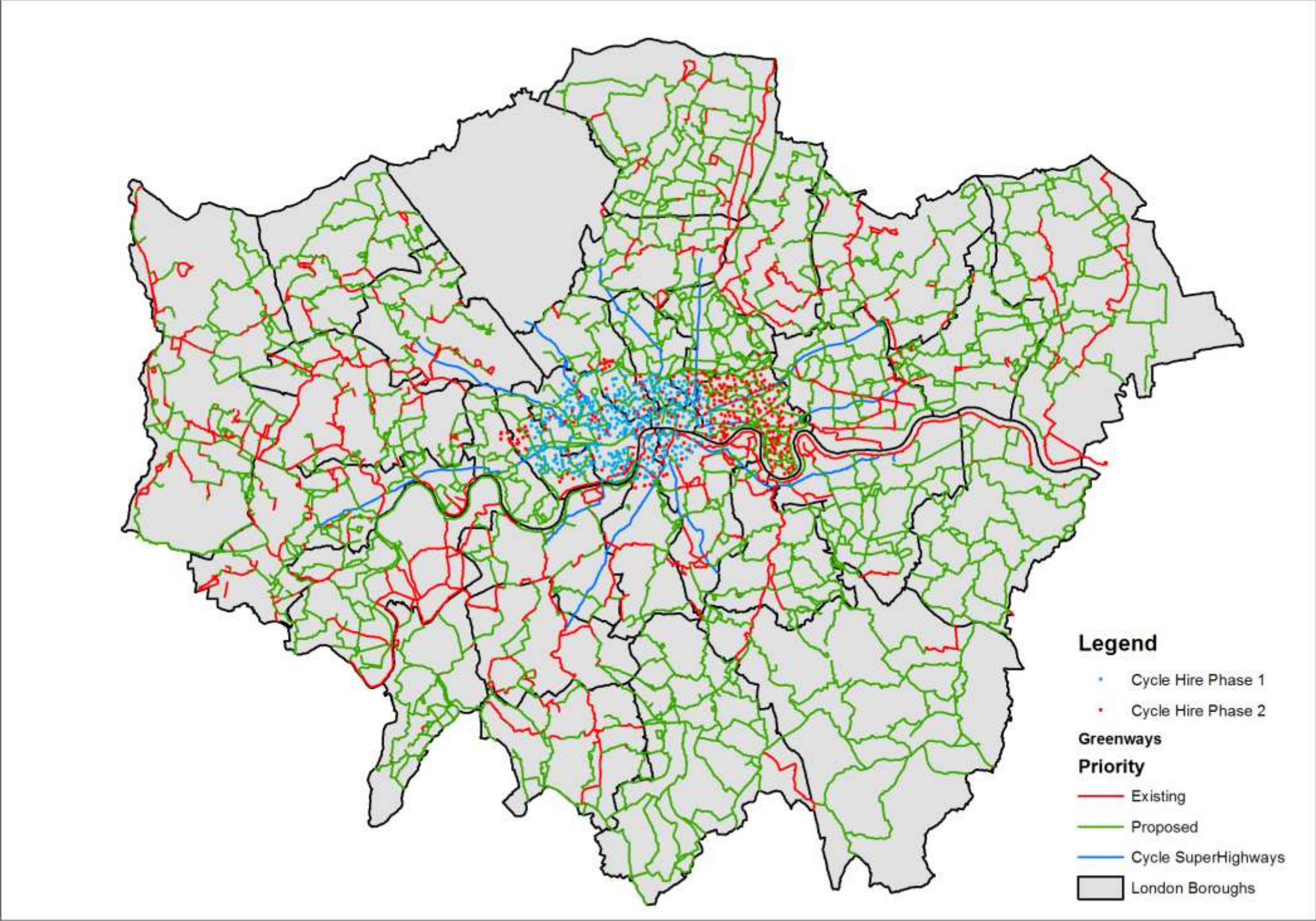
Urban Realm Improvements

Explore further urban realm measures to complement those already planned in the Wood Green major scheme.

Mobile cycle unit

Due to the severance in the borough caused by the railway track, a mobile cycle unit that visits businesses and schools providing comprehensive advice, repairs and promotions may be an efficient way of promoting cycling. This could combine aspects of currently successful schemes in Haringey such as Dr Bike and cycle maintenance.

5.4c Maximising efficiency through mode shift: Map of current and proposed Greenways



Harnessing excitement about the Olympics to get people cycling

An Olympic legacy for cycling: London Greenways is a collection of projects that seek to create a network of attractive and functional routes for walkers and

cyclists, and aims to improve access to and through green space across the capital. The Olympic legacy plans also include a walking and cycling incentives scheme; a cycle-friendly Olympic park; school clubs and recreational cycling; 'Catch up with the Bicycle'

campaign and a large-scale active travel programme for the Games and beyond.

5.4d Delivering better streets and re-balancing places

Examples of better streets and successful place shaping / resolution of place conflicts

With the continuing increase in population, innovative means of de-coupling regeneration and economic / social activity from car ownership and use - as far as practicable - will be increasingly important ('car-lite' growth).



TfL has developed a **Valuing Urban Realm (VUR) Toolkit** to provide monetary values for upgrades to the urban realm to help inform business case development. The tool was launched in early 2012. It was developed by TfL with a range of public and private sector partners to provide an evidence base for future investment in the urban realm.

Academically rigorous, the research lasted seven years and incorporated over 1,000 case studies. It has been well regarded in the UK and overseas for its thoroughness and applicability.

The VUR Toolkit allows planners and urban designers to evaluate the key scheme benefits of public urban realm investment. It produces outputs of how monetary value has been added.

It uses and builds upon the Pedestrian Environment Review System (PERS), a walking audit tool developed by TRL and LB Bromley to monetise pre-and post-implementation urban realm quality.

We need to put pedestrians and cyclists at the heart of places and improve the experience of walking and cycling in north London alongside a range of improvements to enhance the 'attractiveness' of key places to live, work and visit.

With the forecast increases in population and employment in the sub region it will be necessary to seek improvements in the efficiency of people movement along certain corridors – ensuring good access to key centres and employment hubs.

There are significant opportunities for modal shift to walking, and there must be an emphasis on delivering a step change in conditions for walking, particularly in inner London neighbourhoods and town centres across the region.

'Rebalancing' in many areas can achieve significant win-wins, in other areas choices will need to be made about which objectives to prioritise.

Measures to promote this include:

- high quality interchange: walking / cycling / PT
- 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
- ensuring that all new development inspires people to walk and cycle and includes high quality urban realm and cycle parking facilities
- making the most of mass participation events to inspire people to walk and cycle and see places in a different light
- new ways of thinking about costs and incentives – creating financial incentives to walk/cycle and encouraging people to shop locally and reduce short car journeys
- 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
- Making the most of available highway space by appointing taxi ranks that only operate at certain times, or at night, to a loading bay which is operational during the day time.

Urban realm improvement schemes in north London for 2012 - 14 include:

- Redesign of **Leytonstone town centre and station area**, including a shared space scheme.
- Upgrading of the **River Lea**

Towpath - Upgrading of a section of towpath to provide a missing link in the network of Greenway routes through to the Olympic Park.

• **Wood Green Town Centre** - Design funding: Accessibility improvements to transport interchanges, better facilities for pedestrians, cyclists and bus users and a substantial enhancement of the attractiveness and safety of the town centre.

• **Dollis Valley Green walk** - A £0.4 million grant to: clear overgrown scrub to open up views and help people feel safer; install lighting at key points; improve footpaths and signage; install new play facilities at Windsor Open Space and Brent Park.

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

Funding

In February 2011, the Mayor announced that he intended to keep LIP funding at £147.8m 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.

5.4d Delivering better streets and re-balancing places : 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 sub region e.g. Parkland Walk

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 Transport Strategy, 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.



Parkland Walk, Haringey

Camden High Street, Camden



Walthamstow Wetlands project

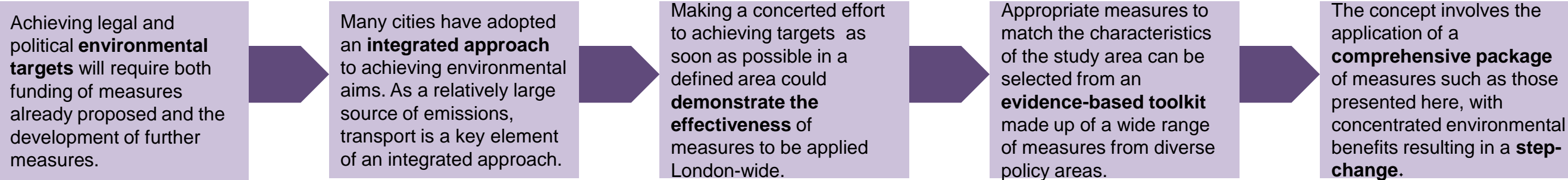
Waltham Forest Council in partnership with Thames Water is developing a project which will result in the opening up of Walthamstow Reservoirs to wider public access.

A partnership has been formed to deliver the project which includes the neighbouring Boroughs of Hackney and Haringey and several agencies including Natural England, Lee Valley Regional Park Authority, Environment Agency and British Waterways.



The project will see the 180 hectare site transformed into a distinctive urban nature reserve and wetland centre. The multi-agency project has a medium to long term focus but offers significant potential for east-west greenway movement in the sub-region and improved walking and cycling possibilities between key areas including Tottenham Hale, Walthamstow and Blackhorse Lane and the Olympic Park area.

5.4d Delivering better streets and re-balancing places: Applying an integrated approach to transport and environmental policy in Wood Green



The London Plan identifies Haringey Heartlands / Wood Green as an Intensification Area. The area has capacity for 2,000 new jobs and 1,000 new homes. New developments represent an opportunity to influence travel behaviour in the area. Section 106 funding for transport and public space improvements will support mode shift away from private car use. While this mitigates the impact on congestion, it can also bring a range of other benefits including improved health through increased active travel, and a greater sense of community.

AMBIENCE	HEALTH	EMISSIONS	COST: M	TIME: M
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Understanding delivery movements in the area at a household level would provide an opportunity to improve efficiency through measures such as community drop-off centres.

TIME SAVED	EMISSIONS	NOISE
COST: L	TIME: S/M	

Many of the wards surrounding Wood Green town centre are amongst the 20 per cent most deprived in London – areas where health is below average. Evidence suggests that those with the lowest incomes are also more likely to be influenced by incentives for active travel, and a scheme to reward walking could improve health amongst residents.

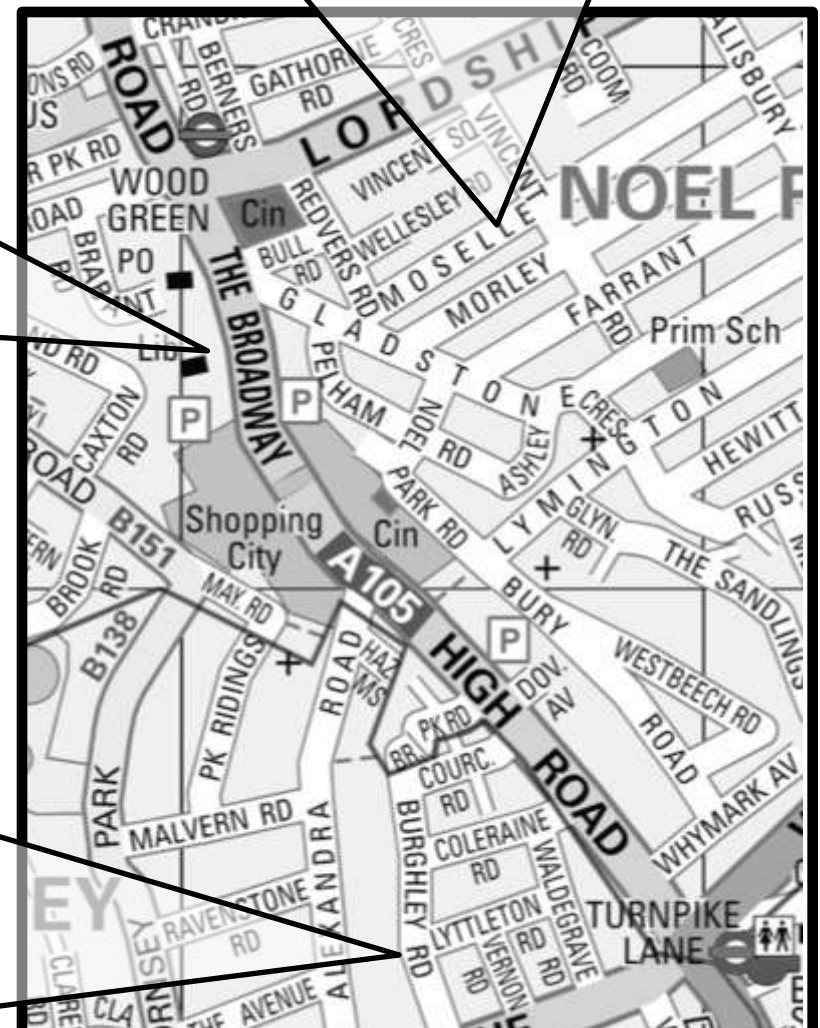
AMBIENCE	HEALTH	COST: L	TIME: L
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Congestion is greatest in the PM peak, when delays of around 2.5mins/km occur in the town centre. Measures to manage demand at peak times could reduce emissions as well as bringing economic benefits

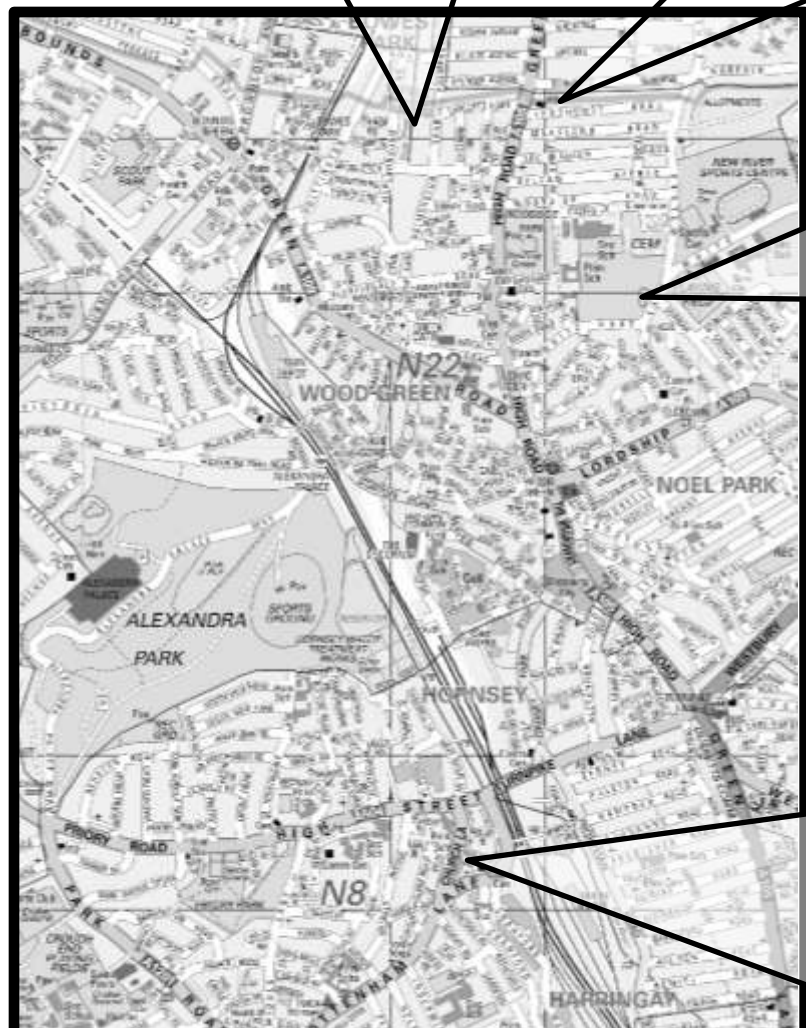
EMISSIONS	TIME SAVED
COST: S/M	TIME: S/M

Around two-thirds of visitors to Wood Green are satisfied or very satisfied with the level of parking provision, but only 9 per cent of visitors access the town centre by car. Using this space for e.g. provision of secure cycle parking could increase the cycle mode share of visitors to the town centre from the current 2 per cent toward the London-wide aspiration of 5 per cent as set out in the Mayor's Transport Strategy.

HEALTH	EMISSIONS
TIME SAVED	
COST: M	TIME: S/M



Measures in the town centre



Measures in the wider area

Designing residential streets to discourage fast car movement through e.g. 20mph limits and home zones can improve the ambience and sense of community.

SAFETY	AMBIENCE
COST: L	TIME: M

Alexandra Park is the closest large green space to Wood Green town centre. While the park is only around 500m away, access from the town centre and surrounding residential areas is restricted by severance caused by the rail line. Raising awareness of and improving access to the limited number of crossings of the rail line could increase rates of leisure walking and cycling, resulting in health benefits. Encouraging more activity in the local area can also improve the sense of community and boost the local economy.

AMBIENCE	HEALTH
COST: L/M	TIME: S/M

5.5 Maximising efficiency through mode shift: making the roads safer



London has achieved substantial reductions in casualties and collisions over the last decade, including the great success in reducing the numbers killed and seriously injured and the numbers of reported slight injuries. Compared to the 1994-8 baseline, the number of people killed or seriously injured in road traffic collisions in the Capital has fallen by 57%, and the number of reported slight injuries by 33%. 3,798 fewer people were killed or seriously injured on London's roads; and 12,994 fewer slight injuries were reported in 2010 compared to the baseline years.

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

The initiatives designed to reduce road casualties can be divided into two broad categories. The first are those activities that are applied London-wide, with the aim of achieving overall reductions in casualties.

The second category are those targeted activities designed to tackle particular issues or the casualties affecting specific road user groups.

We need to pay particular attention to the types of travel and traveller who are over-represented in the casualty figures:

- Walking accounts for 21% of daily journeys, but 32% of KSI casualties in London;
- Powered two-wheelers account for 1% of daily journeys, but 21% of KSI casualties in London;
- Pedal cycles account for 2% of daily journeys, but 16% of KSI casualties in London.

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

London-wide

London-wide programmes help reduce road casualties in a variety of ways, including:

Changing the physical environment - using highway engineering to deliver safer streets and public spaces;

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

Enforcement – action by 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.

Targeted initiatives

Besides these London-wide programmes, achieving change depends on the combined actions of many organisations. This collaboration is a central tenet of the proposed approach to achieve progress in the future. In addition, improved information and analysis, and insights from research will assist in targeting specific issues and user groups helps reduce road casualties.

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

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

Cycle safety – junction reviews

Towards the end of 2011 a number of cyclists were killed on London's roads. As a result, 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. Tottenham High Road/West Green Road is among those proposed as priorities for review by the summer. Junctions were prioritised using a range of criteria including cycle collision statistics. Other TLRN junctions in the north sub-region under review include:

- The Hale / Broad Lane
- Tottenham High Road / Monument Way
- Tottenham High Road / Philip Lane
- Tottenham High Road / Seven Sisters Road
- Tottenham High Road / Town Hall Approach Road

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.



Cyclists and HGVs

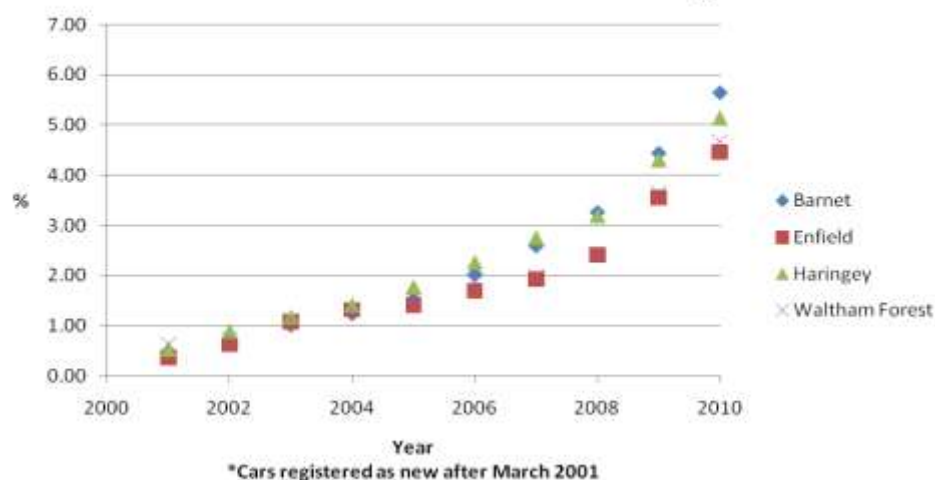
Most cyclist and Heavy Goods Vehicle (HGV) collisions happen when vehicles turn left at traffic lights or other junctions.

What TfL are doing:

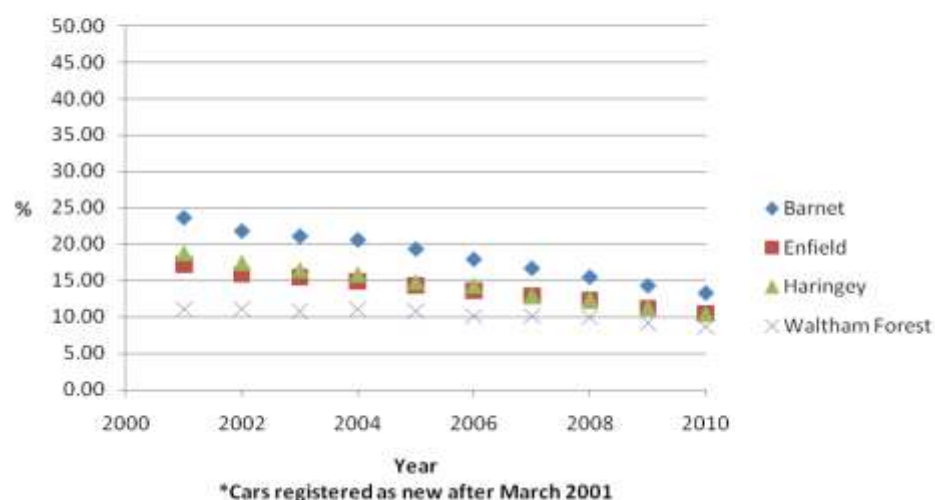
- Transport for London's (TfL) freight unit giving away FRESNEL lenses to operators
- The Olympic Delivery Authority (ODA) distributed 5,000 FRESNEL lenses for vehicles working on the Olympic site
- FORS distributes stickers which warn cyclists of the dangers of undertaking on the left of an HGV
- Free or low cost cycling training funded by TfL is available in all London boroughs
- TfL has produced a training film to help cyclists and lorry drivers navigate London's busy roads - and each other – safely
- Junction reviews
- Trixie mirrors

5.5 Meeting the environmental challenge: Promoting technological change

Proportion of cars* registered in North region with CO2 emissions less than 120g/km



Proportion of cars* registered in North region with CO2 emissions above 226g/km



London's CO₂ reduction target is to reduce emissions by 60% from 1990 levels by 2025. Currently funded transport schemes achieve only a 20% reduction compared to 1990 levels.

The Climate Change Mitigation and Energy Strategy (CCMES) was published in October 2011, setting out a range of transport and other measures to tackle climate change. While CO₂ reduction is a London-wide

- and indeed global task – action must also be taken at a sub-regional and local level.

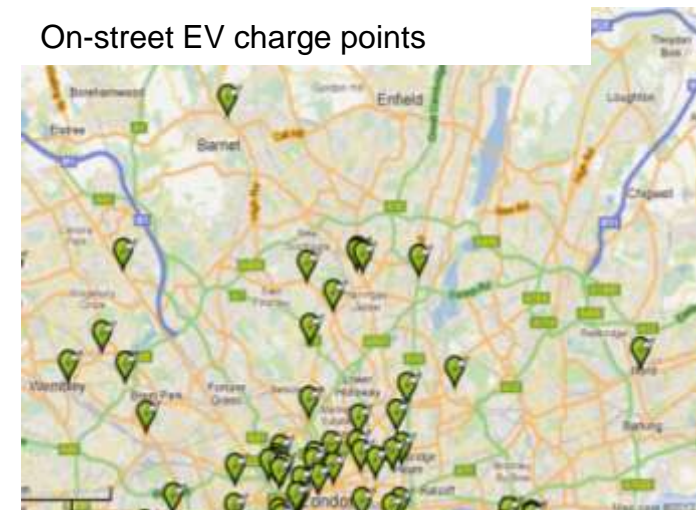
Measures to support people in making a switch to more sustainable modes and changing their behaviour will play a key role in reducing the environmental impacts of growth. Technological change will also play a critical role in helping us to meet the CO₂ targets in London.

Possible London wide solutions

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. It will be important to invest in EV infrastructure in Opportunity Areas to encourage uptake by new residents. There will also be continued efforts to embed EV charging infrastructure at off-street sites e.g. in new developments.

On-street EV charge points



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.



Moving to more carbon-efficient modes of transport

Supporting travel by public transport, unprecedented levels of walking and cycling investment, and energy efficiency measures on the London Underground. There is an opportunity to embed new transport behaviours into those moving into Opportunity Area, designing in environments and infrastructure to support sustainable choices.



5.5 Meeting the environmental challenge: CO2 initiatives

Short term

- Electric Vehicles: delivering 1,300 publicly accessible charge points by 2013, proposing minimum levels of charge points in new developments
- Delivering the Hydrogen Action Plan, including the 50 hydrogen-powered vehicles
- 300 hybrid buses by the end of 2012
- Working with manufacturers to ensure all new taxis available by 2015 have 60% better fuel economy than vehicles produced in 2010
- Supporting pricing differentials, based on emissions, for resident parking permits and parking charges
- Encouraging the use of low emission vehicles within car clubs, including working with car clubs and boroughs to deliver charge points for car club electric vehicles.

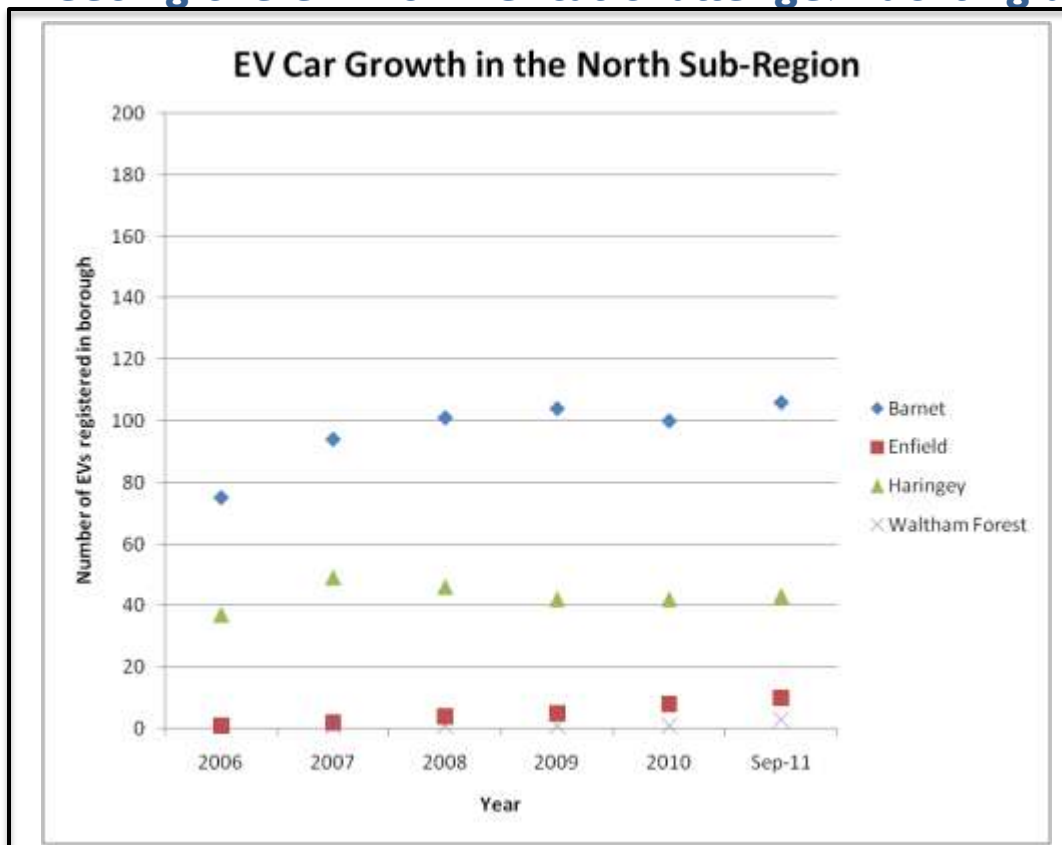
Medium term

- Develop a partnership approach with energy companies and local authorities to increase networks of publicly accessible charging points to 10,000
- Move towards new residential development parking spaces to be EV charging point enabled
- Discounted Low Emission Vehicle adverts on TfL network
- Collaborating with the taxi manufacturing industry to develop an affordable taxi capable of zero emission operation by 2020
- By 2020 all cars in car clubs to be low carbon vehicles maximum of 90 CO₂g/km
- Working with boroughs to introduce lower business rates for companies with low emission vehicle fleets

Long term

- Working in a partnership approach with energy companies and local authorities so that every residential parking space (on and off street) by 2031 has an electric charging point
- Move towards all new development parking spaces to have EV charging points
- All buses to be low emission/hybrid by 2021
- Introducing a LEZ for all vehicles for CO₂ targets in the 2020s
- All taxis to be capable of zero emission by 2025
- All cars in car clubs to be maximum of 50 CO₂g/km by 2025

5.5 Meeting the environmental challenge: Tackling air quality hotspots



- PM₁₀ annual and daily mean limit values expected to be met by 2011.

- Highest concentrations predicted to be closest to roads, although locally some sources (such as industrial sources) may cause elevations.

- Many roadside locations in the north sub-region currently exceed NO₂ limit values, and are likely to do so in future years based on current trends information.

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

As well as support for a shift to more sustainable modes outlined in the previous sections, there are also some specific measures that could help improve air quality.

The Mayor's Air Quality Strategy proposes that the London Low Emission Zone be

extended to place standards on NO_x emissions as well as PM₁₀. A Euro IV standard for heavy vehicles is planned for 2015 but implementation requires assistance from central Government.

Taxis

To reduce harmful emissions from taxis and PHVs and help improve air quality in London the Mayor's Air Quality Strategy includes a number of taxi and PHV initiatives, including maximum age limits.

The main initiatives are that from:

- 1 January 2012 taxis that are 15 years old or older will no longer be licensed
- 1 January 2012 PHVs that are 10 years old or older will no longer be licensed
- 1 April 2012 any new PHV that is more than 5 years old will not be licensed
- 1 April 2012 any new taxi will, as a minimum, have to satisfy Euro 5 emission standards
- 1 April 2012 any new private hire vehicle will, as a minimum, have to satisfy Euro 4 emission standards.

These initiatives will apply to taxis and PHVs across the capital and so will help contribute to improving air quality in the north sub-region.

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.

Schools Toolkit

There are 11 primary schools located within NO₂ focus areas in north London. There has recently been much research into the impact of air quality on young people, particularly with regards to lung function and the onset of asthma.

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

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

Clean Air Fund 2

Building on the success of the current Clean Air Fund (CAF), TfL is working with the GLA to produce a 'template' of local measures that can be applied at both PM₁₀ priority locations and NO₂ focus areas more widely across London and included in Air Quality Action Plans and LIPs.

In early 2012, a new trial of dust suppressants at industrial locations under CAF is commencing.

GLA and TfL are seeking to secure some funding to progress additional measures and also enable communities and boroughs to bid for innovative schemes. There would thus be a mixture of GLA Group-led initiatives and borough/community-led initiatives.

Examples of possible GLA Group measures include:

- urban greening;
- retrofitting schemes to reduce NO_x emissions from gas heating;
- trials of innovative technology and processes (eg. photocatalytic surfaces).
- local freight consolidation schemes.
- small-scale traffic management schemes

Local communities at priority locations would be encouraged to develop their own air quality schemes, such as:

- school and business engagement campaigns (including local 'air quality champions').
- promotion of accessible air quality information
- local neighbourhood design schemes
- discourage engine idling

Bus Retrofit

Retrofitting a Euro III bus with Selective Catalytic Reduction (SCR) reduces NO_x emissions by around 70%. DfT has awarded TfL £5m which TfL will match fund which will enable c900 buses to be retrofitted.

Across the NO₂ focus areas, buses contribute on average 36% of NO_x emitted by road transport, and at 32 sites the contribution of buses is over 50%. Further improving bus emissions represents an opportunity to reduce levels of NO₂ by targeting routes that pass through focus areas.

Engine idling campaigns

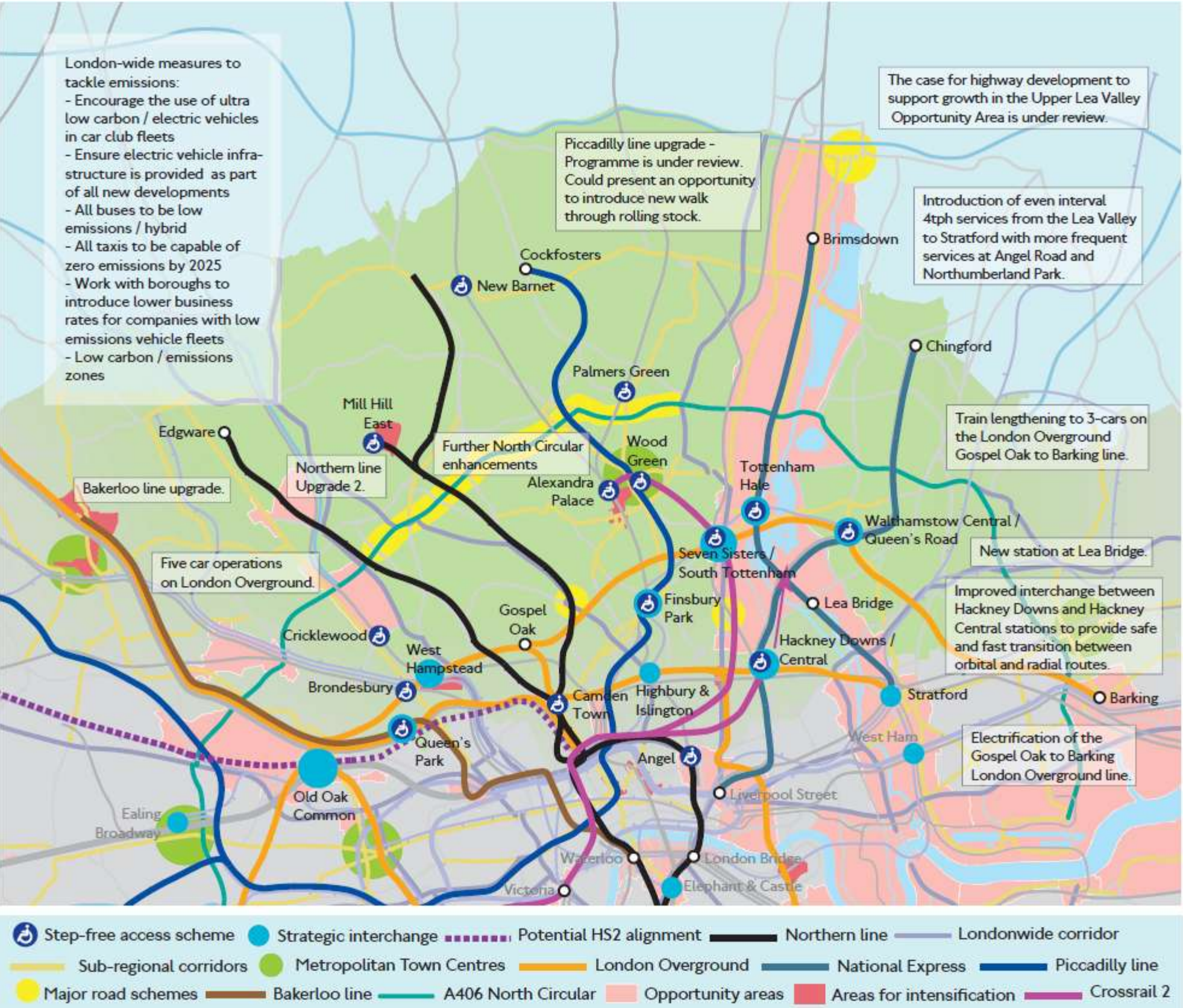
TfL and boroughs are working to stop engine idling through public awareness campaigns.

Rail electrification

Barking to Gospel Oak electrification is also proposed as part of HLOS2.

See appendix for list of NO₂ focus areas in the sub-region and the criteria for determining them.

5.6 Summary of proposed further initiatives



n.b. Opportunity Area schemes are described on the following pages

5.6 Opportunity Areas and Areas of Intensification



Background

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

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

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

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

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

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

Opportunity Area Planning Frameworks

TfL works with the GLA and Boroughs to develop transport strategies for these areas as part of Opportunity Area Planning Frameworks (OAPF). 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 are 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

Progress on OAs and AIs in the North Sub Region

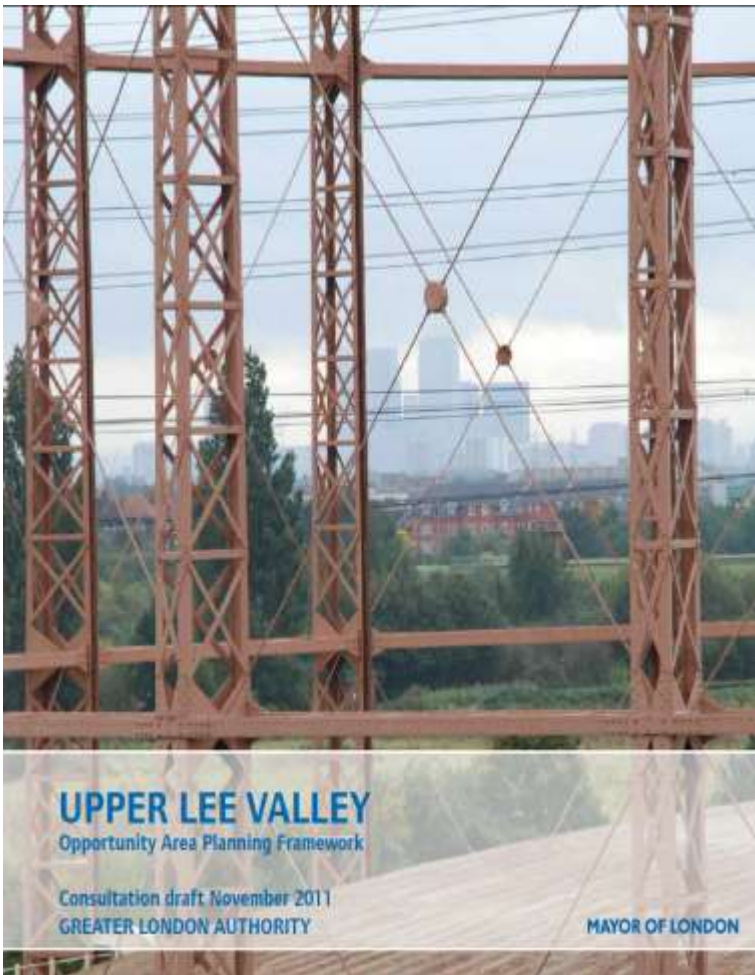
The London Plan identifies opportunity areas at Upper Lee Valley, Colindale/Burnt Oak and Brent Cross/Cricklewood. Collectively these areas have a significant impact across the region

Since the North Sub Regional Plan was published an Opportunity Area Planning Framework has been produced for Upper Lee Valley by GLA working with the London Boroughs of Enfield, Haringey, Waltham Forest and Hackney as well as the London Strategic Alliance, TfL and the Lee Valley Regional Park Authority, Progress on this area is set out on the next page.

5.6 Opportunity areas - Upper Lea Valley

The Upper Lee Valley extends approximately 14kms from the M25 in the North to the Lea Bridge Road in the south. It is centred on large expanses of open space adjacent to reservoirs, but also has significant housing and industrial areas, especially clustered around proposed areas of growth at Tottenham Hale, Blackhorse Lane, Central Leaside, and Ponders End. The vision is of significant growth and integration of the area, and transport is key to helping achieve both of these.

A draft Upper Lee Valley Opportunity Area Planning Framework was produced by the GLA, with TfL assistance, and placed out to public consultation until 13th January.



Existing transport infrastructure consists predominantly of fast radial connections to and from Central London in the south, and linking to Stansted Airport and Cambridge in the north. To the south, the Victoria Line provides a link into central London. The Barking – Gospel Oak Overground line provides an orbital service towards southern part of the ULV. However crowding and a need for greater capacity for services on these routes remains. The bus network provides connections to neighbouring town centres, although the industrial and low density nature of some areas means that demand is low. The River Lea, reservoirs and rail line can restrict orbital movement in some places, particularly for pedestrians and cyclists.

The A10 is the major north/south highway just to the west of the area (supplemented by the A1010 and A1055), although its capacity as it gets further south becomes more constrained. The A406 (North Circular) provides a major east/west artery, and further east/west movement is constrained by the reservoirs to only three other crossings of the area. Congestion affects a number of junctions across the area, and these factors combine to have the effect of disconnecting the ULV from surrounding growth areas at Stratford and in the Lower Lea Valley.

There is a slightly higher car modal trip share in and around the ULV than across London as a whole, with a significantly lower proportion of public transport trips. The proportion of walking trips is, however, much higher in the ULV than in London as a whole.

Planning the future

A series of model tests looked at the implications of growth on planned transport improvements (shown on the following page) and tested further sets of assumptions about additional measures that might be required to alleviate pressures caused by growth.

- By 2021, with no further improvement (beyond those already planned), crowding on mainline rail is significantly reduced and Victoria line crowding marginally reduced (compared to 2007), with little change to highway flows or congestion.
- By 2031, despite enhancements, crowding will return and could be severe south of Tottenham Hale. Victoria line crowding would increase to levels above 2007 and conditions on the roads would noticeably worsen with 7% overall increase in traffic and 4% reduction in journey speed.

Additional three tracking of the West Anglia Mainline has been tested with a 4tph stopping service between Brimsdown and Stratford, along with substantial bus improvements and further improvements to Victoria line frequencies. The modelling also assumes walk cycle mode share stretch target of 33% in 2021 and a stretch target of 36% in 2031.

- By 2021, these changes provide marginal relief – although it does provide improved connectivity. However, Victoria line frequency increases appear to simply attract more users.
- By 2031, the 4tph train service removes crowding that would otherwise have returned and assumptions about incremental mode shift as well as public transport improvements lead to a slight reduction in highway traffic and an increase in average network speed. Victoria line remains crowded south of Finsbury Park.

A variant of Crossrail 2 was tested as a possible means to alleviate the persistently crowded Victoria line. It would provide significant crowding relief, as well as other benefits across its route, although Victoria line crowding does not completely go away.

A final test of a higher stretch 38% mode share for walking and cycling was conducted for 2031, and together with the package of interventions outlined above, this would result in noticeable improvements to highway performance: traffic would reduce by 2.5%, average network speed increase by 8.5%.

5.6 Upper Lee Valley Opportunity Area – planned and proposed interventions

Increases in population of 24% and in employment of 20% between 2007 and 2031 would, without network enhancements, lead to increasing congestion in the area. Planned interventions, including substantial radial rail capacity enhancements will help accommodate this growth.

Creating the 'web of connections' could make this area one of the most walk and cycle friendly areas in London; this can be delivered through relatively simple interventions, many of which can come forward on the back of planning proposals. The Upper Lee Valley could become an exemplar of green transport development.

Tottenham Hale Gyrotory will be subject to removal by 2014, with work starting this year. This will improve traffic flows, allow for improvements to the interchange, and create opportunities for further redevelopment of the area.

Measures which encourage cycling to enhance the legibility and quality of cycle routes will help to overcome the barriers. The completion of the Tottenham to City Cycle Superhighway 1 in 2015 will improve north-south linkages and provide incentives for people to choose to cycle into and from central London. This will be particularly effective if the delivery of other cycling facilities and initiatives are supported, helping to establish a culture of cycling within the Upper Lee Valley.



Capacity on the West Anglia Main Line is growing by 40%, although the constrained stopping pattern of services still restricts local access. Three or four tracking of the current two track railway is being sought by TfL and local boroughs.

Crowding at Tottenham Hale station is also an issue, A scheme exists for station improvements, and the Victoria line is subject to a 21% capacity uplift as new trains and a new timetable come on stream this year.

Ensure that freight journeys are rationalised to reduce number of trips and to avoid critical times on the road network.

The River Lee offers the opportunity to exploit water based transport where appropriate, and similarly there may be potential to divert some existing road trips onto the West Anglia Main Line within capacity limitations and the high passenger service demand.

Bus network improvements to services and infrastructure are needed to support development and will need to be planned in conjunction with development proposals

6. Funding and delivery

6. Combined map - Committed schemes and proposed further initiatives



6. Combined map: Key

-  Bakerloo line
-  Northern line
-  Piccadilly line
-  Victoria line
-  London Overground
-  National Express
-  Thameslink
-  Crossrail 2
-  Potential HS2 alignment
-  A406 North Circular
-  Londonwide corridors
-  Sub-region corridors
-  Barclays Cycle Superhighways
-  Step-free access scheme
-  Strategic Interchange
-  Metropolitan town centre
-  Walking, urban realm and streets scheme
-  Highway development scheme
-  Biking Boroughs

Committed schemes:

- Northern line to be completed in 2014. This will increase capacity by a fifth and reduce journey times by 18%.
- New timetable on the Victoria line to be introduced in 2013. The core will have 33 trains per hour capability.
- Thameslink key output 2, to be completed in 2018, will link the East Coast Mainline and Hertford Loop lines in to the Thameslink 'core' route between St Pancras and Blackfriars, and enable a higher service frequency through the 'core'. Detailed service patterns to be defined. In addition, new trains will be introduced on Thameslink routes from 2015 onwards.
- Work being undertaken to between junctions 23 (A1(M)) and 27 (M11) of the M25 to allow hard-shoulder running. Due for completion in 2016.
- Highbury Corner junction improvement scheme: remove gyratory system to improve traffic flows and walking and cycling facilities.
- Tottenham Hale gyratory: re-introduce two-way flows improving conditions for traffic, pedestrians and cyclists.
- Three new Barclays Cycle Superhighways routes planned to open:
 - CSH12 Muswell Hill to Angel in 2012;
 - CSH11 West Hampstead to Marylebone in 2013;
 - CSH1 Tottenham to the City by 2015.
- 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

Potential initiatives beyond the Business Plan:

- Five car operations on London Overground.
- The case for highway development to support growth in the Upper Lea Valley Opportunity Area is under review.
- Introduction of even interval 4tph services from the Lea Valley to Stratford with more frequent services at Angel Road and Northumberland Park.
- New station at Lea Bridge.
- Improved interchange between Hackney Downs and Hackney Central stations to provide safe and fast transition between orbital and radial routes.
- Electrification of the Gospel Oak to Barking London Overground line.
- Train lengthening to 3-cars on the London Overground Gospel Oak to Barking line.
- Further North Circular enhancements
- Northern line Upgrade 2.
- Bakerloo line upgrade.
- Piccadilly line upgrade - Programme is under review. Could present an opportunity to introduce new walk through rolling stock.
- 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

6. Scheme assessment, funding and implementation

Strategic assessment of proposals to deliver the sub-regional plan

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

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

In addition to this boroughs and other stakeholders should continue work with partners to secure additional local sources of funding. Whether this is with

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.

local cycle shops for maintenance and training, or with larger businesses for the installation of electric vehicle charging points.

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.

delivery:

- Short term: The period up to and including 2014
- Medium term: From 2013 up to and including 2020
- Long term: From 2021 up to and including 2031

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

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

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

Implementation Plan

Appendix A sets out the schemes planned for implementation in the north 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

Maintain & Renew	Enhance	Expand
Traditional funding sources <i>(Government grant, fares, efficiencies and savings)</i>		Innovative funding sources <i>(eg CIL, business rates, tolls, EU)</i>
Renewal of life-expired infrastructure Replacement rolling stock, signalling, escalators etc Replacement highway infrastructure Infrastructure maintenance Core service provision Improvement in air quality and a reduction in CO2	Additional rolling stock Increased track capacity Better streets & highway development Operational enhancements Station and interchange schemes Bus service capacity enhancement	•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

Potential sources of funding for 'core' business and extensions

6. Delivery – Local Implementation Plans (LIPs)

The Sub-Regional Transport Strategies (SRTPs) were written to provide a bridge between the Mayors Transport Strategy (MTS) and the Local Implementation Plans (LIP). For this round of LIP (2010/11 – 2012/13) boroughs had the SRTP Challenges and Opportunities Paper, rather than the full SRTP to align their LIP against.

Currently, three out of four LIPs in the north region have been approved. In addition, 26 other LIPs have been approved.

Boroughs have yet to fully align their priorities to the SRTPs; however there is already a considerable degree of overlap. Issues which are picked up in both LIPs and SRTPs are:

- Facilitating and responding to growth, particularly in Brent Cross / Cricklewood and the Upper Lea Valley*
- All boroughs and the SRTP anticipate significant growth and are aware of the issues this will cause for all the transport objectives.
 - Some of the big infrastructure improvement projects, such as the West Anglia main line upgrade and CHL do not have any funding attached to them. Intermediate measures should therefore be picked up in both the SRTP and the LIPs.

- Relieving crowding on the public transport network*
Managing highway congestion and making more efficient use of the road network
Enhancing connectivity and the attractiveness of orbital public transport
- The issue of orbital PT and connectivity of different town centres within a borough are generally well documented in the SRTPs and LIPs. PT provision to central London is usually good but travelling within a borough on PT will take longer than doing the same journey by car.

- Improving access to key locations and to jobs and services*
- Severance of major road and some PT infrastructure are well documented in the LIPs and the SRTP.

- Others*
- The link between health and more active forms of travel is well documented in the SRTP and the LIPs.
 - The link between fear of crime and barriers to some form of transport are well documented in the SRTP and LIPs.
 - The results and potential adaptation issues to climate change are picked up in the SRTP and LIPs.

Major schemes and integrated transport schemes >£500k corresponding to the SRTP challenges

<u>SRTP Challenge</u>	<u>Major Schemes</u>	<u>Integrated Transport Schemes</u>
1) Facilitating and responding to growth, particularly in Brent Cross / Cricklewood and the Upper Lea Valley	<ul style="list-style-type: none"> • Wood Green TC - £3.856m, 2011/12 – 2013/14 (Haringey) • Leytonstone TC and station area – LIP funding of £1.239m, 2011/12 – 2013/14 (Waltham Forest) 	<ul style="list-style-type: none"> • Colindale regeneration – S106 funding of £1.235m, 2011/12 – 2013/14 (Barnet)
2) Reducing crowding on the public transport network		<ul style="list-style-type: none"> • Improvement works in the vicinity of LU and national rail stations – LIP funding of £1m, 2011/12 – 2013/14 (Barnet)
3) Managing highway congestion and making more efficient use of the road network		<ul style="list-style-type: none"> • Corridor studies – Upper Lea Valley growth area, Central Leaside, NCR area to SW Enfield and Junction – LIP/S106/Council funding of £804k, 2011/12 – 2013/14 (Enfield) • A1010 corridor study with particular emphasis on bus delays - £530k (Enfield) • A1003-(A598)-A504 corridor improvements – LIP/S106 funding of £609k, 2011/12 – 2013/14 (Barnet) • Secondary, Distributor and Residential road improvement programme – LIP funding of £3m, 2012/13 – 2013/14 (Barnet) • School travel schemes – LIP funding of £700k, 2011/12 – 2013/14 (Barnet) • Work travel planning – LIP/S106 funding of £787k, 2011/12 – 2013/14 (Barnet) • Henlys Corner improvements to signalling, public realm and pedestrian and cycling crossings – TfL funding of £8m, 2011/12 (Barnet)
4) Enhancing connectivity and the attractiveness of orbital public transport		<ul style="list-style-type: none"> • Wood Green Corridor, Haringey and St Ann's Neighbourhood - TfL/LIP funding of £1.266m, 2011/12 – 2013/14 (Haringey) • Tottenham Hale Gyrotory (TfL scheme) to be completed by 2014 with complimentary measures from Haringey • Improvements to bus routes in residential areas – LIP funding of £610k, 2011/12 – 2013/14 (Waltham Forest) • High Road Leytonstone corridor E11 – LIP funding of £2m, 2011/12 – 2012/13 (Waltham Forest) • Whipps Cross Road and Roundabout, E11 – LIP funding of £570k, 2012/13 – 2013/14 (Waltham Forest) • Lea Bridge Road E10 – LIP funding of £570k, 2012/13 – 2013/14 (Waltham Forest)
5) Improving access to key locations and to jobs and services	<ul style="list-style-type: none"> • Silver Street Station – TfL/S106 funding of £335k, completion date 2012 (Enfield) 	<ul style="list-style-type: none"> • North Tottenham corridor and neighbourhood scheme - TfL/LIP funding of £1.106m, 2011/12 – 2013/14 (related to Spurs football ground redevelopment (Haringey) • Edmonton Green Bus Station Access – TfL/S106/Council/Other funding of £1.350m, 2011/12 – 2012/13 (Enfield)

7. Appendix – NO₂ focus areas and criteria

Barnet	Apex Corner near Mill Hill M1/A41/A5109
Barnet	Fiveways Corner M1 Junction 2 and A1 Barnet Bypass
Barnet	Hendon Central A41/Queens Road
Barnet	A406 North Circular Brent Cross to Golders Green Road A502
Barnet	A406 Henleys Corner
Barnet	Finchley A598 Ballards Road between Henleys Corner and Woodhouse A1003
Barnet	North Finchley Junction w Woodhouse Rd/Ballards Lane/North Finchley High Road
Barnet	Barnet A1000 Barnet Hill
Barnet	Barnet High Street
Barnet	Cricklewood Junction A407 Cricklewood Lane/A5 Broadway
Barnet	Childs Hill Junction A407 Cricklewood/A41 Hendon Way/A598 Finchley Rd
Barnet	Golders Greens Junction A504/A598
Barnet	Friern Barnet A1003 Woodhouse Road junction with Colney Hatch Lane
Barnet	Cricklewood A41 Hendon Way
Barnet	Hendon M1 and A5
Enfield	A406 North Circular Edmonton A1010 and Fore Street A1010
Enfield	A406 North Circular and Bowe Road A1110 Junction nr Arnos Grove
Enfield	A406 North Circular junction with Brownlow Road nr Bowes Park
Enfield	A406 North Circular Clockhouse Junction with Green Lanes A105
Enfield	Enfield Great Cambridge Road A10 jntn Southbury Road A110
Enfield	A406 North Circular Great Cambridge Junction
Enfield	Bullsmoor Lane A1055 near Jctn 25 M25
Enfield	Southgate Circus A111/A1004
Enfield	Palmers Green junction Green Lane A105/Edge Lane A111
Enfield	Enfield Town Church Street/Southbury Road/London Road
Haringey	Highgate A1 Archway Junction Alymer Road
Haringey	Muswell Hill north of Highgate Wood
Haringey	Muswell Hill Colney Hatch Lane junction with Alexandra Park Road
Haringey	Muswell Hill Fortis Green Road and Muswell Hill
Haringey	Bounds Green A109 junction with Durnsford/Brownlow Road B106
Haringey	Wood Green High Road and Turnpike Lane
Haringey	Haringay Green Lanes
Haringey	Seven Sisters junction Seven Sisters Rd/High Road A10
Haringey	Tottenham Hale Gyratory and A10 High Road
Waltham Forest	A406 North Circular at Hall Lane
Waltham Forest	Walthamstow The Bell jctn Hoe Street A112/Forest St A503
Waltham Forest	Walthamstow Central
Waltham Forest	Leyton Leyton High Street/Green Road/Lea Bridge Road
Waltham Forest	Blackhorse Road jctn Blackhorse Lane/Blackhorse Road/Forest Road
Waltham Forest	Walthamstow Crooked Billet Junction and Chingford Road
Waltham Forest	Leyton Lea Bridge Road from Orient Way to Avondale Road
Harrow	Burnt Oak A5 Broadway/Watling Avenue

2011 Baseline Air Quality

- MAQS 2011 Baseline Air Quality pollution concentrations maps for NO₂ and PM₁₀
- 20m grid square resolution across London

Analyse Air Quality Concentrations

- Identify locations exceeding 40 µg/m³ annual mean NO₂, and those above 31.5 µg/m³ annual mean PM₁₀ (roughly equivalent to daily mean PM₁₀ limit value)
- Excludes locations within the road carriageway, but includes kerbside locations

Check for Exposure

- Use google street view, satellite photography, sites visits and local knowledge to determine if there is human exposure
- Considers residential properties, shopping areas with high potential for pedestrians.
- Does not include activities, number of properties or statistical population assessment.
- Check for local geography and topography including street canyons, walls and barriers, tunnels, elevated or depressed road sections which may affect dispersion locally but not necessarily reflected by dispersion models

Considers potential local characteristics

- Consider local sources such as bus routes and stations, major junctions and transport interchanges
- Determine if location is on or near the London Freight Network
- Generally excludes local characteristics, particularly temporary traffic patterns caused by local circumstances such as around schools
- Determine if any specific areas have been highlighted for concern by Boroughs within the LAQM (Local Air Quality Management) review process
- Other local circumstances are unlikely to be reflected by modelling techniques
- Includes consideration of LAQN air quality monitoring network in order to ensure findings are consistent
- Excludes local diffusion tube monitoring

Cross-check with Boroughs LAQM findings

Consider Future Predicted Air Pollution Trends

- Assess if the potential air quality focus area is likely to remain at risk of exceeding EU Limit Values in 2015
- Considers MAQS 2015 Baseline as first stage
- Considers concentrations with MAQS Strategy 2015 as second stage
- Use local monitoring data (where available) to highlight any additional local trends

Define Air Quality Focus Areas

Reference Number	Scheme	Description	Completion 2010-2012*	Completion 2013-2020†	Completion Post 2020	Status update
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.
4	Thameslink phase 1	Phase 1: 12-car capability on most of mainline and 16 trains per hour through core				Capability provided Dec 2011
5	Thameslink phase 2	Phase 2: 24 trains per hour through core, expanded network				Anticipated for completion in 2018
6	Thameslink - potential further enhancements	Lengthening more shoulder peak services to 12 cars				Proposals subject to future development, current focus is on delivery of Thameslink programme.
7	West Anglia enhancements	More trains lengthened to eight cars on inner services and Twelve-car capability (outers) to Stansted and Cambridge				Completed December 2011
8	West Anglia enhancements	Lea Valley four-tracking - potential for enhanced frequency (4tph to local stations) and journey time improvements for longer distance services.				HLOS 2 proposals for partial four-tracking submitted to DfT and are currently being considered.
9	West Anglia enhancements	Potential scheme to provide rail access from Chingford to Stratford via Hall Farm Curve, requiring increased platform capacity at Stratford				Not being progressed due to capacity constraints at Stratford regional station.
10	West Anglia enhancements	Provision of Seven Sisters to Enfield/Cheshunt shuttle service				Due to recent capacity enhancements this scheme is not being progressed but it remains a longer term option for increasing the frequency of services via Seven Sisters.
26	Great Northern enhancements	Platform and train lengthening to 12 cars on outers				Completed
27	Great Northern enhancements	Additional inner suburban services (delivered by timetable re-structure and limited infrastructure works)				Proposals subject to future development
28	Great Northern enhancements	Further capacity increases (including potential transferring some Great Northern inner services onto Thameslink, instead of only outer services, as part of Thameslink programme)				Anticipated to be implemented with Thameslink in 2018
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)						
39	London Overground enhancements	Completion of extension to Clapham Junction. 4tph to rural Dalston Junction - Clapham Junction				Due end 2012
40	London Overground enhancements	Lengthen East London Line services and platforms to 5 cars				Included in TfL's HLOS 2 proposals to DfT
41	London Overground enhancements	Further train lengthening				Included in TfL's HLOS 2 proposals to DfT
42	London Overground enhancements	Diversion of Watford Junction services to Stratford (instead of Euston) to release capacity for High Speed 2 at Euston				Under consideration - links with HS2 work
43	London Overground enhancements	Barking to Gospel Oak line – electrification and train lengthening				Included in TfL's HLOS 2 proposals to DfT

Reference Number	Scheme	Description	Completion 2010–2012*	Completion 2013–2020†	Completion Post 2020	Status update
44	London Overground enhancements	Extension to Highbury and Islington. 8 trains per hour will run beyond Dalston Junction				Completed
45	Crossrail 2	Enhanced southwest – northeast London capacity and connectivity. All new infrastructure will be fully accessible.				Safeguarding under review - report to the Mayor (to inform DfT discussions) due before end 2012.
Stations and interchanges						
47	Further Tube station congestion relief schemes	Targeted station capacity expansion programme				Vauxhall station and Finsbury Park schemes have been approved and funded. Prioritisation study for further schemes is underway
48	Tube station refurbishment/modernisation programme	Continuing programme of refurbishment/ modernisation of stations				166 Tube stations have been refurbished since 2008
50	Develop strategic interchanges	Programme of schemes under development including increasing frequency on orbital London Overground routes, stopping more trains at strategic interchanges, and improving pedestrian routes				Revised design developed for proposed link between Hackney Central and Hackney Downs stations. Overground service upgrades introduced May 2011. ELLX Phase 2 to open to public in December 2012.
51	Rail station refurbishment/modernisation programme	Delivery of National Station Improvement Programme (NSIP) in London, and other service standards as agreed in rail franchises (Station facilities, notably availability and quality of CCTV, help points, shelter, lighting, passenger information, cleanliness, cycling facilities such as parking and availability and quality of ticket retailing)				NSIP works nearing completion at Norbury and Balham. New Greater Anglia franchise will deliver station deep cleans and extra cycle parking facilities by 2013. Lobbying continues for enhancements on other routes.
58	Improved surface-rail interchange	Improvements including enhanced bus services, interchange and urban realm at selected Crossrail and/or Thameslink stations				Rolling programme of master plans being developed with local authorities at all Crossrail locations, initial work reviewing bus needs underway.
59	Brent Cross/Cricklewood Opportunity Area interchange improvements	Subject to timing of development and release of S106 funds – deliver transport improvements to accommodate planned growth				Await development being taken forward.
61	New Station at Brent Cross	Developer funded station on Thameslink Midlands Main Line to support Brent Cross development as part of planning consent				New station dependant on new office development.
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
63	Northern line upgrade phase 1	Phase 1: Northern line upgrade to provide additional capacity and improve journey times				Signalling upgrade underway. To be completed 2014
64	Northern line upgrade phase 2	Phase 2: Northern line Upgrade 2 to deliver a further 33 per cent increase in peak capacity through the simplification and recasting of service patterns				Options under consideration.
66	Victoria line upgrade	Victoria line upgrade including new rolling stock and signalling to provide additional capacity and improve journey times				Largely complete - new trains and signalling in place - new timetable to be introduced 2013
67	Piccadilly line upgrade	Piccadilly line upgrade to provide additional capacity and improve journey times				Under development as part of Deep Tube Programme
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

Reference Number	Scheme	Description	Completion 2010–2012*	Completion 2013–2020†	Completion Post 2020	Status update
74	Energy-saving initiatives	Initially, a programme of trials to include low energy lighting, smart electricity metering at stations and low loss conductor rails				A detailed study has been prepared looking at factors such as inverter substations, extra low loss conductor rail, coasting, sectionalisation and changes to voltage and current settings. A trial is being planned for an inverter substation on the Victoria line and key energy saving initiatives are being considered as part of the base case for the deep tube programme. These include full use of extra low loss composite conductor rail in tunnels, higher voltages (750 v) and higher regenerative braking currents (4,500A). Additional measures such as inverter substations, amended sectionalisation and permanent magnet motors are under current review and will be incorporated into the base case if determined desirable.
75	Regenerative braking and automatic train control	To be implemented as an integral part of the Tube upgrade programme				Ongoing
	DLR					
	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
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

Reference Number	Scheme	Description	Completion 2010–2012*	Completion 2013–2020†	Completion Post 2020	Status update
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 Superhighway 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
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.
124	A406 Bounds Green safety and environment improvements	Safety and environmental improvements: creates a two lane dual carriageway, improves facilities for pedestrians and cyclists				On site
125	A406 Henlys Corner junction improvement works	Smooths traffic flow and provides signal controlled pedestrian and cyclist crossings on all arms of the junction.				Completed

Reference Number	Scheme	Description	Completion 2010–2012*	Completion 2013–2020†	Completion Post 2020	Status update
127	Removal of Tottenham Hale gyratory	Existing one-way system to be converted to two-way, new bus station and public square created at Tottenham Hale, improved environment and urban design, underpins local housing growth and regeneration				Invitation to tender has been issued with construction to commence post Olympics.
128	Potential gyratory and one-way system improvements, e.g. at Highbury Corner	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				Highbury scheme under development
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 transport				Mayor's Climate Change Mitigation and Energy Strategy published, setting out approach to reducing CO2 emissions
146	Promote emission-based parking charges	Boroughs and car park operators to be encouraged to expand coverage of parking charges to vary by duration of stay and vehicle emissions				Parking review undertaken for Outer London Commission
London river services and river crossings						
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				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. For the 2012 Games improvements are being made to the Journey Planner accessibility information to enable better planning of level access routes. 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.
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.

Reference Number	Scheme	Description	Completion 2010–2012*	Completion 2013–2020†	Completion Post 2020	Status update
160	Increased use of travel plans	Increased use and power of travel plans for workplaces, schools and individuals				TfL funding for voluntary Workplace Travel Plans stopped in 2010, however employers are still requested to initiative Workplace Travel Plans as part of the development control process as set out in London Plan and on the new website http://www.lscp.org.uk/newwaytoplan/ and boroughs can still take forward e.g. the north London boroughs have jointly funded Work Place Travel Plan Coordinators. 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/
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				A closely-monitored trial of a DSP at a TfL building has seen the number of overall deliveries reduced by 20%. 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. Planning policy (Replacement London Plan published July 2011) is supportive of the principle of privately financed consolidation centres.
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.
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						
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.

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

Reference Number	Scheme	Description	Completion 2010–2012*	Completion 2013–2020†	Completion Post 2020	Status update
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)