

5.1 Introduction – a balanced and integrated approach

- ²³⁰ Chapter four outlines the strategic policies that are required to meet the objectives of the MTS. There are a number of tools available to implement these policies such as investing in the transport network to provide more capacity and better connectivity, managing and influencing the demand for travel, and the introduction of new technology to reduce emissions. As always, there are trade-offs which means a balanced approach must be taken.
- ²³¹ London's transport network is finite and there is often competition for this limited space, whether it is for road space or rail paths. In striking the right balance the proposals in this chapter recognise that all the varying needs of London need to be met – the needs for international links (as a global city), for national links (as a national capital), and more local links (London is a place where people live, visit and work). The proposals set out in this chapter cater for all of these needs.
- ²³² The specific transport proposals have to be considered in terms of effectiveness, acceptability and cost. There may be an obvious 'best mode for the task', for example, only rail-based modes can provide the sufficient capacity to cater for the very high volume 'same time, same place' demand that occurs twice a day during the week to, and from, central London. Similarly, regular high to medium volume demand over a short to medium distance, particularly in growing areas such as the London Thames Gateway can be best accommodated by bus, tram or light rail such as the DLR, whereas the more dispersed trips in Outer London tend to favour bus, bike (over a shorter distance) and car. Local short distance journeys present the best opportunity for walking and cycling.
- ²³³ As a consequence, different areas of London require different policy interventions. Proposals for central London will inevitably focus on tackling congestion, increasing the capacity of the rail network, encouraging walking and cycling, and managing demand. In Outer London, proposals need to acknowledge the role of the car, especially low emission cars. For Outer London town centres, measures to improve bus accessibility, public realm, walking and cycling will generally be prioritised. There may be places where a number of options are possible. In these cases further work will be required to assess the most effective solution, bearing in mind the cost of the scheme in construction and during operation. The need to recognise affordability and business case constraints will be paramount given the current financial environment, and this will inevitably preclude some schemes.
- ²³⁴ Due to the dispersed nature of trips in Outer London, the role of the car is acknowledged as sometimes necessary, particularly for medium to longer distance trips. The use of cleaner, low emission cars will be encouraged over others.
- ²³⁵ Most freight is moved by road. While a mode shift from road to rail and water is needed to achieve the goals of the strategy, for some

types of freight, and for many servicing trips, access by road will remain a requirement. The strategy therefore needs to ensure that the freight left on the roads (which will be the majority) is moved as efficiently as possible while contributing to goals of the strategy. This will require cleaner, better driven vehicles, better journey planning and the integration of freight and land use planning.

- 236 Interventions can also be temporal as well as spatial. The need to satisfy and cater for peak demand means there is spare capacity off-peak. Greater use of transport throughout the week can help cover the fixed costs of provision and make the best use of investment. The seven-day week, 365-days-a-year, diverse economy is something the London Plan seeks to encourage through policy support for tourism, retail, arts and entertainment and emerging

economic sectors, as well as more flexible working practices. This highlights the need for a transport strategy that is integrated with other broader policy areas such as land use planning, education and healthcare provision.

- 237 The proposals for each mode or policy area contained in the following chapter are derived from how they can best support the strategic transport policies set out in chapter four, with regard to the nature of the mode and policy objectives. They have also been developed using an integrated approach, taking account of wider strategies within London such as the London Plan, EDS, Air Quality and Housing strategies, as well as looking beyond the GLA boundary to the Greater South East region.



Proposals to manage and enhance the transport system

5.2 National Rail, Crossrail, Thameslink, London Overground, DLR and Tramlink

5.2.1 Introduction

²³⁸ London is more dependent on rail than any other city in the UK: 70 per cent of all rail travel (including Tube journeys) in the UK is to, from or within the Capital. London's success is bound up with the future of its rail network and services. It is vitally important, therefore, that Network Rail and the train operating companies better serve the city's needs, and that the Mayor has greater input and influence over planning and delivery of their services.

5.2.2 International and National Rail links and services

International rail passenger links

²³⁹ The strategy fully supports expansion of international rail services that improve London's connectivity with Europe and provide a viable alternative to air travel.

²⁴⁰ Eurostar services currently run non-stop or make only one intermediate stop between St Pancras International and the Channel Tunnel, with services calling at either Ebbsfleet International or Ashford International. Beyond 2010, EU policies will permit competition for international rail services, which may result in an increase in international high-speed rail services to/from London. This will provide an opportunity to encourage European destinations and to use Stratford International station to reduce congestion at St Pancras International, and provide better international connections to the Isle of Dogs and east London.

Proposal 1

The Mayor, through TfL, and working with the DfT, Network Rail, the operators of international rail services and other transport stakeholders, will encourage the provision of direct international rail services to a wider range of European destinations, with some of those new services serving Stratford International station.

International and national rail freight

- ²⁴¹ International and national movement of freight plays an important role in the success of London's economy. The Mayor will work with others to seek to deliver enhanced rail freight capacity through supporting new terminals to facilitate efficient movement of goods; and encourage transfer of freight from road to rail wherever possible.
- ²⁴² The new £1.5bn container port, known as London Gateway, near Tilbury, will provide substantial additional port capacity in the South East when it opens, generating new rail freight flows through London.
- ²⁴³ A rail connected freight transshipment facility at Howbury Park, near Slade Green, is being developed, and is expected to open in 2010, enabling the transfer of road freight to rail. A new rail freight hub is also proposed at Brent Cross/Cricklewood.
- ²⁴⁴ High Speed One (HS1) is an under-used facility for rail freight and has the unique benefits of the larger European gauge clearance for 'high-cube' containers and the possibility of express freight services carrying high value goods. To enable this, terminal facilities are required, with the London riverside area of the Thames Gateway being the identified site.

Proposal 2

The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, freight operating companies, London boroughs and other transport stakeholders, will support the development of more rail freight terminals in or near London, including connections to HS1 for international freight, in line with the London Plan policy to identify new sites for strategic rail freight interchanges.

- ²⁴⁵ A number of rail routes in London are used by freight services passing through the Capital, for example, on their way to the Midlands from Channel ports and from Europe via the Channel Tunnel. While the use of rail for these kinds of freight movements is supported, this 'through' traffic should have a minimal impact on the capacity of the passenger rail network and on local communities through noise.

Proposal 3

The Mayor, through TfL and working with the DfT, Network Rail, train operating companies, freight operating companies, London boroughs and other transport stakeholders, will support the development of National Rail routes that relieve London of freight without an origin or destination in the Capital.

Domestic high-speed rail

- 246** The introduction of the first domestic high-speed services in the UK on HS1 in 2009, has significantly reduced journey times from Kent and the Thames Gateway to central London. Elsewhere, domestic rail service journey times from London to the regions can be longer than passenger expectations, particularly when compared to European competitors who have invested in high-speed rail networks.
- 247** Capacity is critical on a number of main lines out of London, in particular the East Coast Main Line to Yorkshire, the northeast and Scotland, and the Great Western Main Line to the southwest and south Wales. The West Coast Main Line to the west Midlands, the northwest and Scotland has recently benefited from a £9bn upgrade allowing faster and more frequent services. However, according to Network Rail, by 2020, the main line from London to Birmingham and the northwest will be full, given projected growth.
- 248** Proposals for a second high-speed line to link the centre of London with Birmingham, in the first instance, as part of a possible wider domestic high-speed rail network, are currently being considered by the DfT. This is based on a detailed set of proposals developed by High Speed Two, the company set up by the DfT to investigate options for a new-high speed line from London to the West Midlands and potentially beyond. According to the DfT's High Speed Rail Command Paper, published in March 2010, such a new line could deliver well over £2 of benefits for every £1 spent on

building the line, in addition to journey times of 49 minutes from central Birmingham to central London. Were the line to be extended north from Birmingham, to Manchester and Leeds (in a Y-shaped network), it could offer journey times of around 75 minutes between both cities and London, as well as releasing significant capacity on the existing West Coast Main Line (and other routes) for more commuter and freight services. The current plans allow access to Heathrow via a connection with Crossrail in west London, providing the potential for improved connectivity between Heathrow airport and other parts of the UK by high-speed rail. However, further thorough research is required to determine the optimum location for such an interchange.

Proposal 4

The Mayor and TfL support the development of a national high-speed rail network and will work with the DfT, Network Rail, High Speed Two and other transport stakeholders to ensure that the main London terminal for any new high-speed line is centrally located, well-connected to the existing public transport network, and widely accessible to maximise access to jobs and London's population. It is currently considered that Euston best meets these criteria. Further evaluation will be made of this and other potential termini, in particular, in relation to links to Heathrow.

5.2.3 London and the South East rail links and services

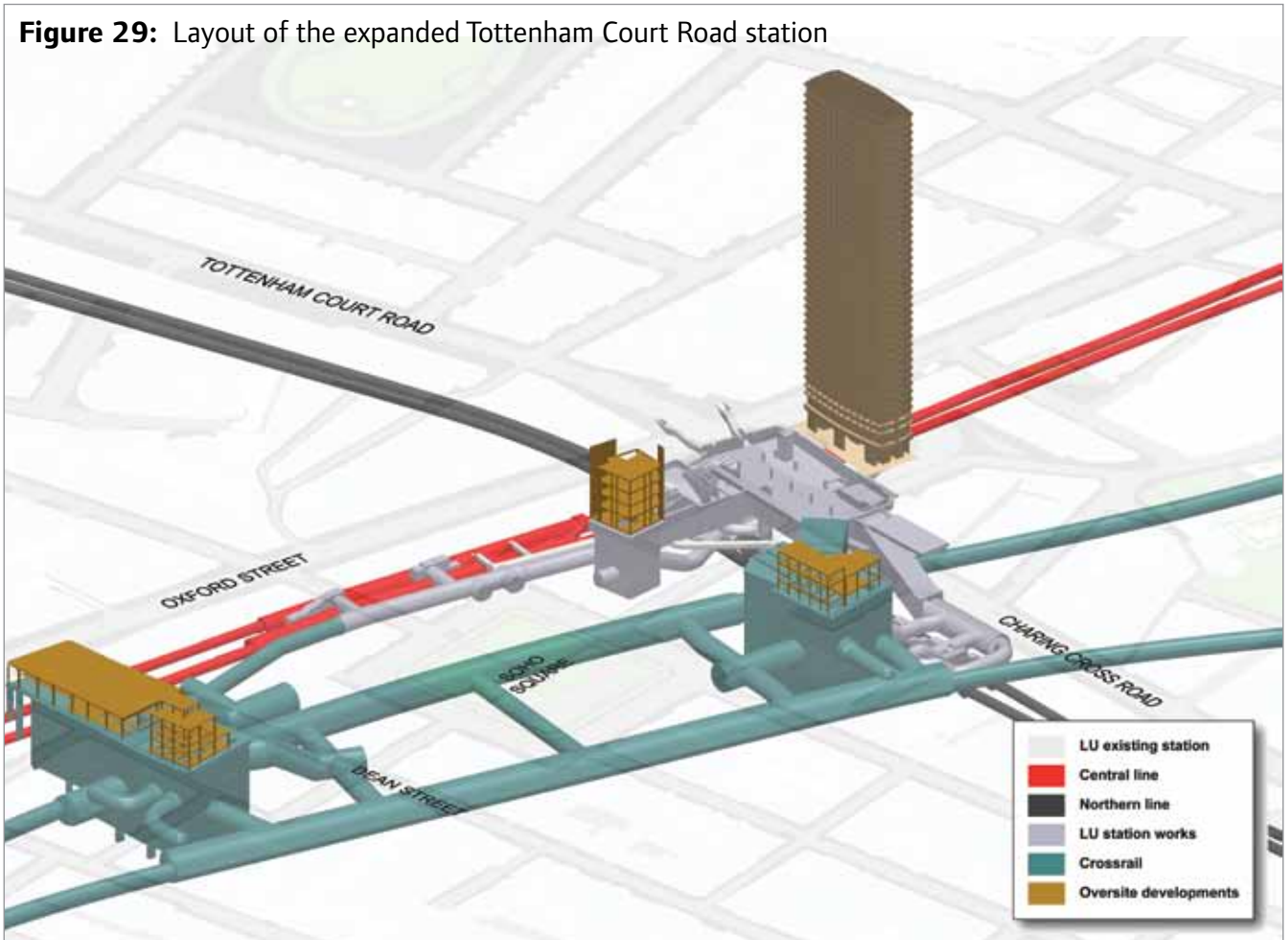
Accommodating growth on the National Rail network

- ²⁴⁹ Rail will continue to be the dominant mode in accessing central London, with three quarters of all trips from Outer London to central London made by National Rail, Tube and DLR. As the number of trips in London increases, inevitably the demand on the National Rail network will increase, by approximately 35 per cent by 2031.
- ²⁵⁰ BAA/Heathrow Airport Limited have recently applied to the Secretary of State for Transport as part of the Transport and Works Act 1992 process, to authorise construction of Airtrack, a new rail link connecting the existing rail line from Waterloo to Reading with Heathrow Terminal 5. More information about Airtrack is contained in the airports section of the MTS.
- ²⁵¹ The DfT has also announced its intention to electrify the Great Western Main Line from London Paddington to Oxford, Bristol and Swansea. The Mayor welcomes this project and is committed to working with the DfT to maximise the benefits to London, including the potential to extend Crossrail westwards to Reading. The Mayor also remains committed to seeing other rail electrification proposals taken forward, such as Gospel Oak to Barking (which will also contribute to improving air quality).

Crossrail

- ²⁵² Crossrail is the biggest transport project in Europe and a scheme of national importance that will provide a rail spine across London from east to west, as shown in Figure 30. It is needed to underpin the most rapid economic growth areas of London and will be a significant capacity addition to the transport network. Figure 29 illustrates the immense scale of the scheme with the example of the new station at Tottenham Court Road. This will transform access to this area of the West End from the current crowded and congested conditions to a spacious, high quality and attractive travel environment, capable of supporting local economic intensification.
- ²⁵³ When completed in 2017, Crossrail will enable the City and Canary Wharf to continue to maintain their leading business status in the world, support the continued development of the West End, help to lock-in the legacy benefits of the 2012 Games, and transform the Thames Gateway through links to northeast and southeast London and on into Essex.
- ²⁵⁴ Crossrail will facilitate easier, faster and for the first time, direct journeys by public transport from Heathrow to Canary Wharf, as well as better links to London's other central business areas, helping to improve London's international links. Crossrail is the only transport project that can deliver the capacity needed to support more jobs in central London and the Isle of Dogs, improve the east-west employment corridor and support development of new employment areas and new jobs in areas

Figure 29: Layout of the expanded Tottenham Court Road station

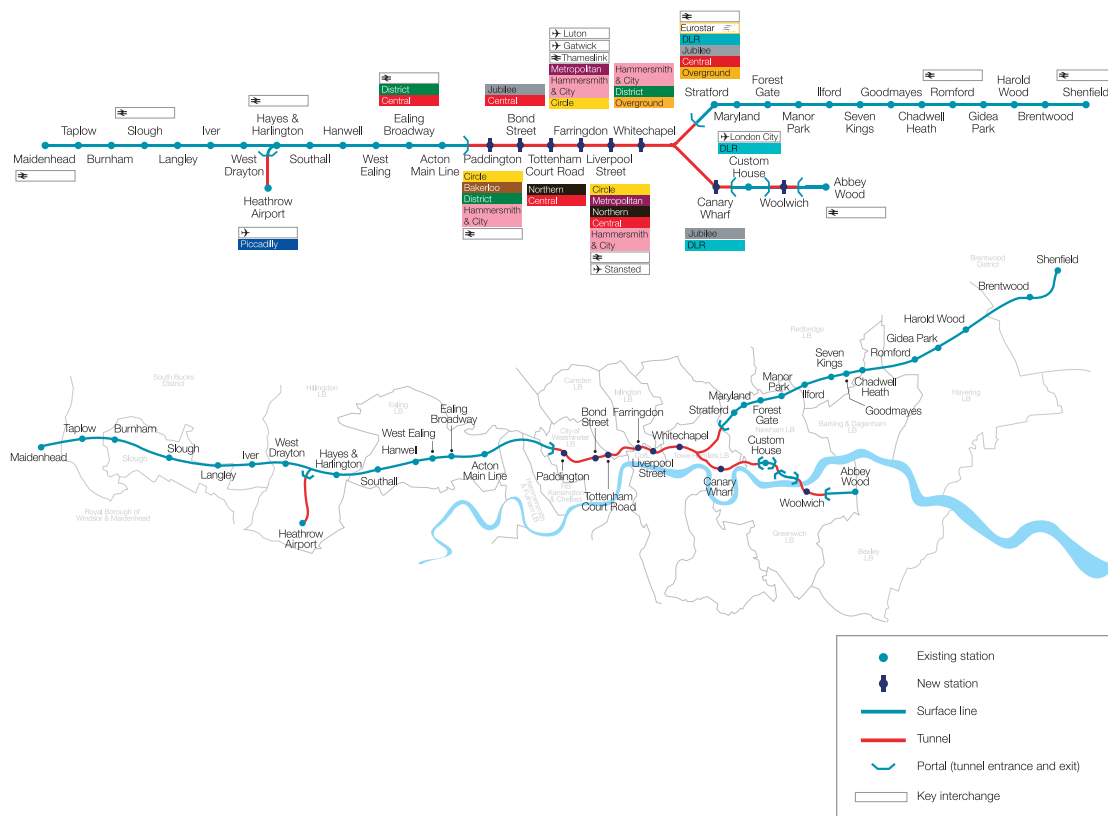


such as the Thames Gateway. Without Crossrail, London will be prevented from continuing the development of its second business centre at Canary Wharf, and maximising its contribution to the wider UK economy.

255 Crossrail provides the largest single increase in public transport capacity exactly where it is most needed. It will add 10 per cent to the overall capacity of London's rail network through the provision of 24 high-capacity, 10-coach trains an hour in each direction in the

central section during peak periods. According to forecasting work undertaken by TfL, an additional 5.8 million passenger kilometres are added to peak capacity and Crossrail will deliver significant crowding relief on the Tube (including the Central, Piccadilly, Metropolitan, Hammersmith & City, Circle and Jubilee lines) and the DLR.

256 As a project of national significance, Crossrail will bring transport improvements that will be felt across the country. The scheme will be a

Figure 30: Crossrail route connections and regional maps

catalyst for safeguarding a national economy inextricably linked with that of London (see spotlight on the wider economic benefits of Crossrail). The provision of high quality information to keep people informed about the construction programme, especially to minimise inconvenience to users of other transport services, local residents and businesses, will be a high priority for Crossrail. Overall the benefits of Crossrail are estimated to be worth at least £36bn in current prices to the national GDP over the next 60 years.

Proposal 5:

The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, freight operating companies, boroughs and other transport stakeholders, will seek to ensure that Crossrail is delivered by 2017, and that it is fully integrated with the rest of London's public transport system; that the impacts of construction on residents and businesses are minimised as far as possible; and that the future benefits Crossrail brings are monitored to ensure the rail link achieves its objectives.

Spotlight

The wider economic benefits of Crossrail

Crossrail will deliver significant benefits to the national economy, the wider southeast region as well as to London. In addition to the wide ranging transport benefits, such as reduced crowding, additional capacity, new direct links across the Capital and reduced journey times, Crossrail also delivers a range of direct economic benefits. It supports a development potential of more than 260,000 jobs and 70,000 people within the key Opportunity Areas alone (Isle of Dogs, City fringe, Lower Lea Valley, Paddington) and is expected to generate up to 30,000 extra jobs – through productivity improvements in central London by 2027.

The Crossrail project will employ up to 14,000 people at the peak of construction between 2013 and 2015, and will contribute to an ongoing pool of skilled workers through the new tunnelling academies being established by the Mayor. In the longer-term, Crossrail will generate an estimated 1,000 jobs when fully operational. Crossrail will also require the services of regionally-based manufacturers and other suppliers.

Crossrail will serve significant new residential areas, for example, parts of the Thames Gateway and beyond in the South East and East of England regions, where employment accessibility will be significantly enhanced, bringing an additional 1.5 million more people across London within an hour's travel of the West End, City and Docklands. However, it is not just central London and Docklands economies which benefit from Crossrail, Outer London gains considerable benefits too, as illustrated in Figure 30. Crossrail also links key Outer London metropolitan town centres, such as Romford, Ilford and Ealing, delivering further regeneration benefits.

It will be important that other public investment is coordinated to maximise these benefits. To this end, the LDA is developing a Crossrail Regeneration Investment Plan to identify and prioritise potential interventions that would bring further regeneration benefits to the areas around key Crossrail stations.



²⁵⁷ London is the centre of the Greater South East region of England, the fastest developing area of the country, with a number of nationally designated Growth Areas. Continued economic growth is mutually beneficial – much of London's workforce live beyond the GLA area. It is therefore important to look across regional boundaries. Future extensions of Crossrail, to the east and west, could help reduce congestion and improve connectivity and, together with longer trains, ensure maximum benefit is derived from the Crossrail infrastructure.

Proposal 6

The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies and other stakeholders, will consider future extensions of Crossrail that reduce congestion and improve connectivity on London commuter routes.

5.2.4 London-wide rail links and services

High Level Output Specification investment in rail capacity

²⁵⁸ In July 2007, the DfT presented the HLOS detailing the development of the National Rail network to 2014 (control period four). The HLOS was accompanied by a Statement of Funds Available (SoFA), which detailed proposals for funding arrangements for the railways in the same time period to deliver the proposals put forward in the HLOS. The SoFA has now been reviewed by the Office of Rail Regulation, agreed with the DfT and approval given to Network Rail's Delivery Plan

to implement HLOS. As such, HLOS is now a committed programme of National Rail funding from the DfT to 2014. The process is planned to be repeated for control period five, from 2014 to 2019.

²⁵⁹ The improvements to London's rail network to be achieved by 2014 through HLOS, forms a key element of the MTS and it is essential that Thameslink and the remainder of the committed HLOS1 programme are completed to their original planned specification. The improvements are shown in Figure 31, and include:

- Improvements to capacity on each of London's main radial rail corridors, including the Thameslink programme and 900 new carriages by 2014 (Thameslink by 2016)
- Improved reliability
- Acceptance of Oyster at all National Rail stations in London from January 2010
- Improving access at stations through the Access for All obstacle-free stations programme. Approximately 50 per cent of stations in the first phase are located in London or the South East
- Enhancements to the freight gauge and route capacity on the Felixstowe – Nuneaton line (providing a direct route avoiding London for freight trains, which releases capacity for more passenger trains in London)
- Gauge enhancements to the Gospel Oak – Barking line, which will provide a route for rail freight services from the east to the north of London

Spotlight

Thameslink

The Thameslink Programme is a £5.5bn project to deliver a high capacity, north-south rail spine through central London that complements the east-west Crossrail route. It is planned for completion in 2016 and will provide greater capacity, higher frequencies, new services and improved access to central London from a range of destinations within the Capital and across southeast England.

Major benefits from the works to expand the capacity and operating network that will use Thameslink, include a capacity increase in the core section between Farringdon and Blackfriars

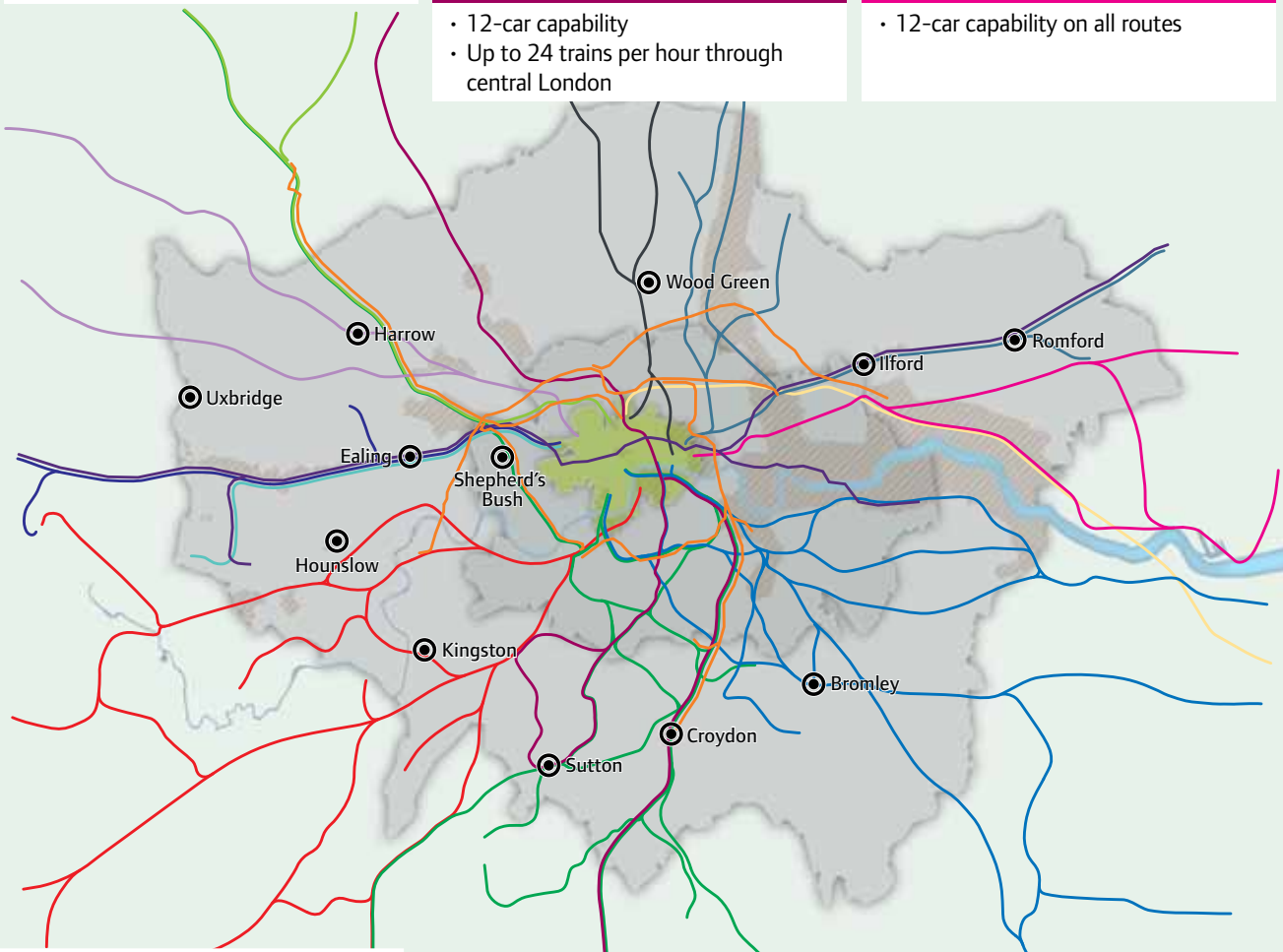
of 127 per cent by 2016. Large-scale works include the rebuilding of Blackfriars station, which will become the first station to span the Thames, providing direct access to both the north and south banks; Farringdon, will have 12-car platforms and become a major interchange between Thameslink and Crossrail; London Bridge will be significantly rebuilt to provide a major increase in capacity and better facilities for passengers. A new station will also be provided at Brent Cross/Cricklewood as part of the comprehensive redevelopment of this area.



An artist's impression of Blackfriars station courtesy of Network Rail

Figure 31: Committed enhancements to London's rail network¹

London Overground <ul style="list-style-type: none"> • New routes from: Dalston to New Cross, West Croydon and Crystal Palace • Connection between East London line and North London line at Dalston • Surrey Quays to Clapham Junction extension, completion of new orbital route 	Chiltern <ul style="list-style-type: none"> • Frequency improvements 	Great Northern <ul style="list-style-type: none"> • Frequency improvements
West Coast <ul style="list-style-type: none"> • Trains lengthened and frequency increased 	West Anglia <ul style="list-style-type: none"> • 12-car capability Stansted and Cambridge 	
Crossrail core scheme <ul style="list-style-type: none"> • New route from Maidenhead and Heathrow to Shenfield and Abbey Wood with 24 trains per hour through central London 	Great Western <ul style="list-style-type: none"> • Electrification • New Crossrail services 	Great Eastern <ul style="list-style-type: none"> • Additional services • New Crossrail service
	Thameslink <ul style="list-style-type: none"> • 12-car capability • Up to 24 trains per hour through central London 	Essex Thameside <ul style="list-style-type: none"> • 12-car capability on all routes



Key
 Opportunity or Intensification Area
 Outer London
 Inner London
 Central Activities Zone

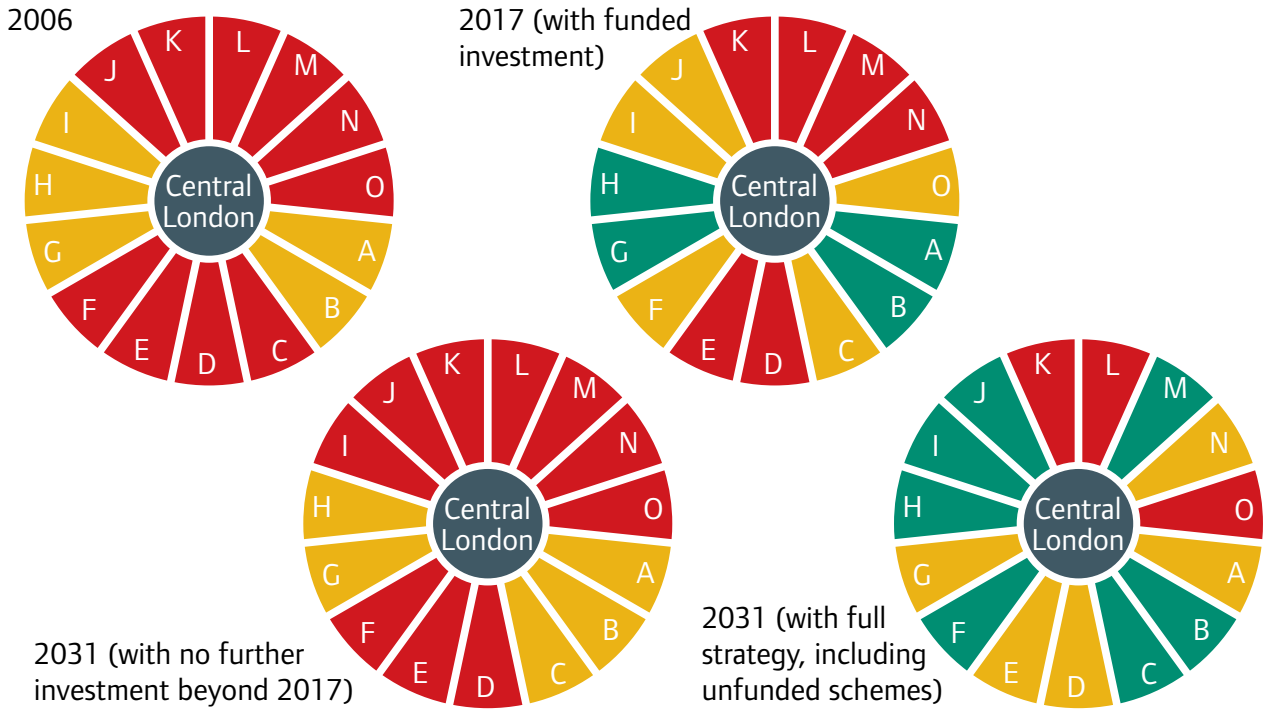
South Western <ul style="list-style-type: none"> • 10-car Windsor lines and inner suburban capability

South Central <ul style="list-style-type: none"> • 10-car inner capability
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South Eastern <ul style="list-style-type: none"> • 12-car inner suburban trains

¹ Committed in HLOS control period four

Figure 32: National Rail and Tube ‘stress’ on radial corridors into central London



Moderately ‘stressed’ corridor	On average residents in the corridor experience moderate levels of crowding on rail public transport on their way to central London during morning peak for some part or all of their journey
Highly ‘stressed’ corridor	On average residents in the corridor experience high levels of crowding on rail public transport on their way to central London during morning peak for some part or all of their journey
Severely ‘stressed’ corridor	On average residents in the corridor experience severe levels of crowding on rail public transport on their way to central London during morning peak for some part or all of their journey

Note: Corridor letters correspond to corridors in Figure 8

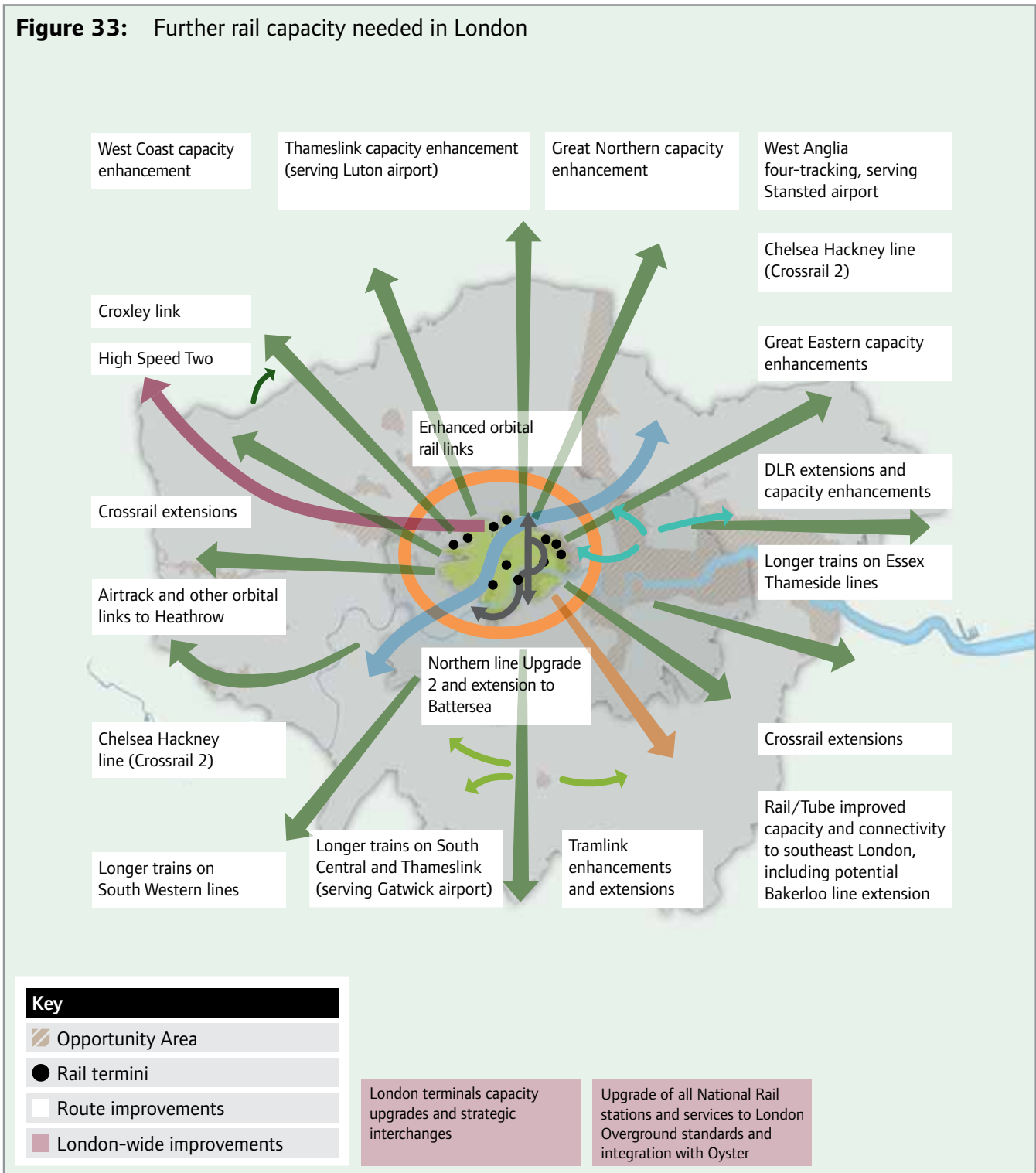
Proposal 7

The Mayor, through TfL, will seek to ensure that Network Rail and the train operating companies deliver the committed improvements to the rail network and services in London as set out by the DfT’s High Level Output Specification for the period 2009 to 2014.

Further rail investment beyond the current programme

260 Despite the significant investment in the National Rail network planned in the TfL Business Plan and HLOS, congestion will still be a significant issue on some radial rail corridors (Figure 32). Additional schemes and interventions, as set out by this strategy, will therefore be required to address specific capacity and connectivity problems in the longer-term. As most of these will need to

Figure 33: Further rail capacity needed in London



be delivered by Network Rail and the train operating companies through the franchising system, it is essential that TfL works closely with the DfT to influence the future HLOS and franchising process to deliver the improvements that are vital to London's growth. TfL will continue to press Network Rail to develop their route utilisation strategies as part of an on-going process to develop proposals for enhancing the National Rail network. In addition, TfL will work closely with Network Rail to inform franchise specifications, and inform the HLOS process.

- 261 Figure 33 illustrates a number of options to enhance the capacity provision on radial rail routes to central London to address the levels of crowding and congestion after the measures in the TfL Business Plan and HLOS have been implemented. The effectiveness of these schemes at reducing rail and Tube crowding, when combined with other capacity improvements on the Underground network, are shown in Figure 34.
- 262 In order to support Opportunity Areas set out in the London Plan, it may be appropriate to improve access to rail services by providing additional stations. The case for such new stations will be identified as part of the sub-regional planning and Opportunity Areas Planning Framework processes.

Proposal 8

The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, London boroughs and other transport stakeholders, will seek further rail capacity across London's rail network, beyond those schemes already committed.

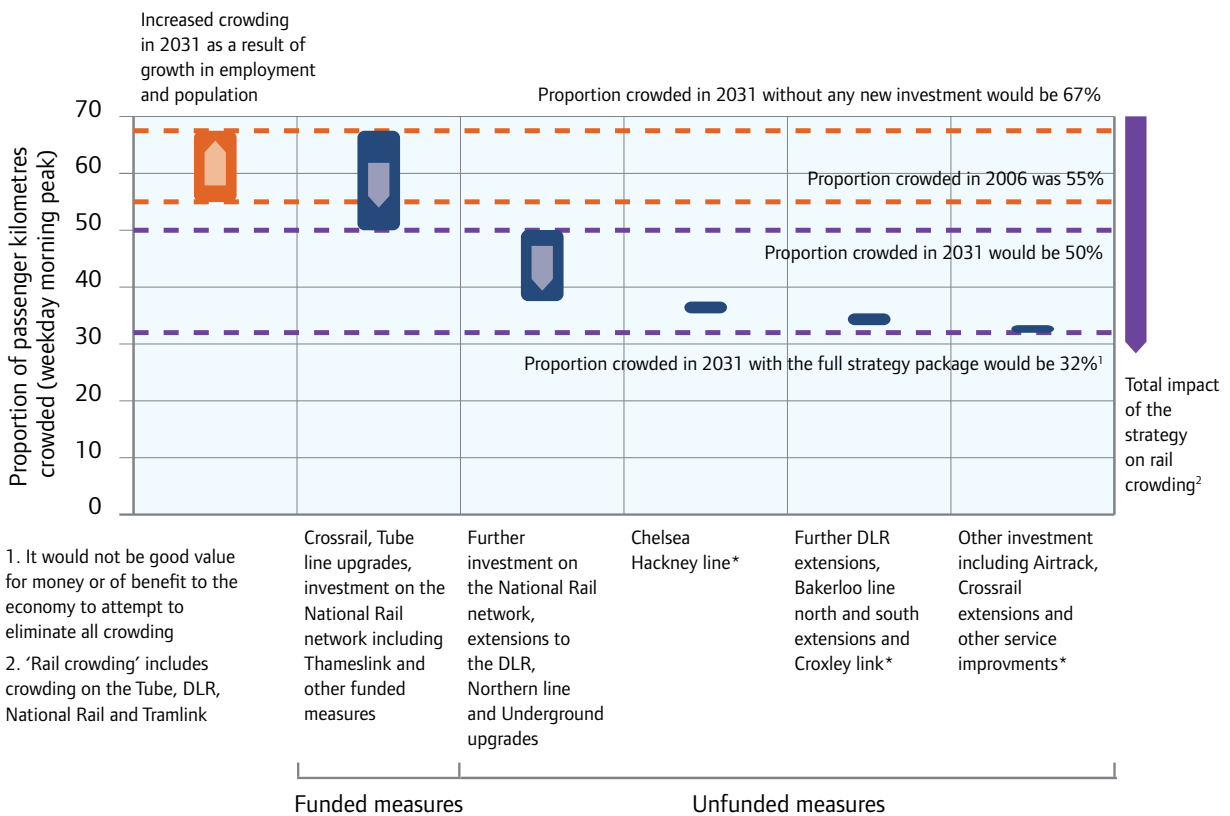
The highest priorities in the medium term are to further increase capacity on London Overground; on southwest routes; on West Anglia routes, including access to Stratford; on Great Northern services; and at congested stations.

In the longer term, further capacity solutions may be required on a number of rail corridors, such as the Brighton Main Line.

Chelsea Hackney line

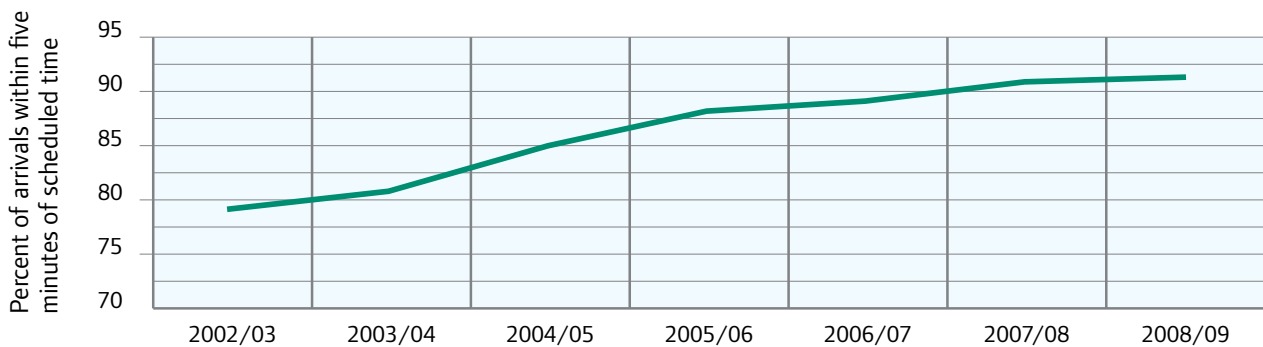
- 263 The Chelsea Hackney line (or Crossrail 2) provides significant new rail capacity on the northeast to southwest corridor and major congestion relief to existing rail and Tube lines. The route of the line is safeguarded by Government and it is essential that this safeguarding remains in place to protect this important new line. Forecast demand shows that crowding and congestion remains a significant issue in this corridor (Figure 32), 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.

Figure 34: The potential benefits from implementing measures beyond those in the TfL Business Plan and HLOS to reduce crowding on London's rail and Tube network



* Note: These schemes improve accessibility (connectivity more so than crowding)

Figure 35: National Rail punctuality (London and southeast operators total, including peak services)



- 264 It is important that the route of the Chelsea Hackney line is reviewed to ensure it is providing the maximum benefits and value for money.

Proposal 9

The Mayor will support new rail capacity in the broad southwest to northeast corridor, for example, new lines or services using the Chelsea Hackney line safeguarded alignment. TfL will undertake a review of the route to ensure it is providing the maximum benefits, including helping the onward dispersal of passengers from central London termini and value for money.

National Rail reliability

- 265 National Rail punctuality has improved considerably since 2002/03 as a result of the improved maintenance of infrastructure by Network Rail, investment in new trains and signalling, franchise reorganisation to better reflect rail network geography, franchise performance incentives and improved timetabling. However, despite these substantial achievements, there is still room for further improvement (see Figure 35).

Proposal 10

The Mayor, through TfL, will seek to ensure that the DfT, Network Rail and the train operating companies achieve the HLOS 'public performance measure' for reliability, as well as an overall reduction in significant lateness and cancellations for London and southeast services.

Station capacity enhancements

- 266 Many National Rail stations are congested, especially at peak times and enhancements to station capacity are required to improve customer service and to enable London's growth in rail demand to be accommodated. Schemes will be taken forward where they are shown to be value for money and affordable.

Proposal 11

The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies and London boroughs, will seek to deliver capacity enhancements at some of London's most congested stations. The highest priorities include:

- a) Central London termini station congestion relief and onward distribution enhancements (the potential of all onward modes will be considered)
- b) Clapham Junction station capacity enhancement (new improved links between platforms, additional entrances and more ticketing facilities)
- c) Improved capacity at National Rail stations with severe congestion, including Finsbury Park, Bromley South, Wimbledon, Vauxhall and Barking
- d) Improved capacity at National Rail stations with moderate congestion, including Willesden Junction, Balham, West Croydon, Putney, Norwood Junction and Surbiton

Improving customer standards across the National Rail network in London

²⁶⁷ Despite improvements in National Rail services being delivered by Network Rail, TfL and others over the next 10 years, rail passengers still do not always benefit from the level of service or frequencies that those who travel on the Tube enjoy, particularly outside peak hours. The Mayor is keen that London benefits from a full seven-day railway, supporting the Capital's diverse economy with regular, frequent services operating seven-days-a-week, without disruptions due to engineering works, except where absolutely necessary. The Mayor also believes that train operating companies should provide sufficient capacity in terms of train lengths, to sufficiently meet demand at all times. This includes weekends when acute crowding can occur due to shorter train formations.

²⁶⁸ The Mayor will promote a common service standard across the London rail network and believes that Overground service standards provide an evidenced template to follow. This has been adopted almost in full for the recent South Central refranchise with more than 40 stations and extensive patterns of routes. The specified minimum standards include:

- Staffing over the traffic day
- Oyster acceptance and retailing via ticket machines within Travelcard Zones 1 – 6
- Station facilities such as seating and shelters
- Multi-modal customer information at stations, through posters and electronic

means, on-system and off, scheduled and real time

- Security features such as lighting, CCTV and Help points
- Graffiti removal, litter removal and cleaning
- Train frequency of at least four trains per hour on each route where the infrastructure allows, up to 23:00
- First and last trains broadly aligned with the Underground's operating hours
- Cycle parking to basic standard and monitoring regime at every station within two years

²⁶⁹ This will require the influencing of the franchise process, but could be better achieved by the Mayor having greater powers over suburban passenger services. It will also require a reduction in disruption to passenger journeys at weekends, acknowledging that sometimes, the undertaking of maintenance works at these times will remain inevitable. Network Rail is already looking at how some engineering works could be undertaken through shorter overnight 'possessions' instead, possibly through undertaking more preparatory work off-site.

Spotlight

Central London rail termini

Increasing population and employment, plus the additional capacity on much of London's rail network through the current rail investment programme, means rail arrivals into central London termini are forecast to increase by about 25 per cent by 2031. This will result in increased strain on National Rail termini, and on the transport networks and services within central London.

Limited concourse space means that station crowding is a key issue. High levels of connectivity and very large volumes of interchange passengers add extra complexities to this crowding and movement. The main termini and interchanges, which are already at, or near, capacity during peak periods need to be reviewed to ensure they are safe and efficient into the future.

Congestion relief schemes such as those at King's Cross St. Pancras and the proposed scheme at Victoria can go a long way to relieving the problems. However, these schemes are expensive and disruptive, take time to deliver and ideally need to be linked with increases in onward dispersal capacity. Encouraging more onward trips by walking and cycling is a quick and cost-effective way to free-up capacity on the Underground and buses, and ensure that limited space on these services is used more effectively. Better streets, better information provision and better facilities for cyclists, for example, cycle parking will help. The strategic interchange concept, improving and encouraging interchange at stations away from the central London termini, would also help onward dispersal (see proposal 46).



Proposal 12

The Mayor, through TfL, and working with Network Rail, the train operating companies and other transport stakeholders, will encourage the achievement of a seven-day railway by better planning and management of necessary engineering and maintenance work on the railway.

Proposal 13

The Mayor, through TfL, and working with Network Rail, the train operating companies and other transport stakeholders, will encourage the provision of rail services in London that meet common service standards, including improved ambience, amenities and wayfinding at all stations, and staff availability at each station. It is intended these improvements will be rolled-out as franchises are renewed. However, they would be better achieved if the Mayor had more control over suburban rail services in the London area.

centre at New Cross Gate. The North London Railway, also part of London Overground, is to be increased in capacity by up to 50 per cent and will also provide more frequent services. A further phase now approved will see the completion of the Inner London orbital rail network between Surrey Quays and Clapham Junction. Completion of the London Overground network enhancements in 2012 will provide an orbital rail network in Inner London that will allow, either directly or with a single change of trains, journeys such as Clapham Junction to Dalston and Crystal Palace to West Hampstead. This network of Overground rail services is shown in Figure 36. The DLR extension to Stratford International in summer 2010 will also improve orbital frequency and capacity in east London.

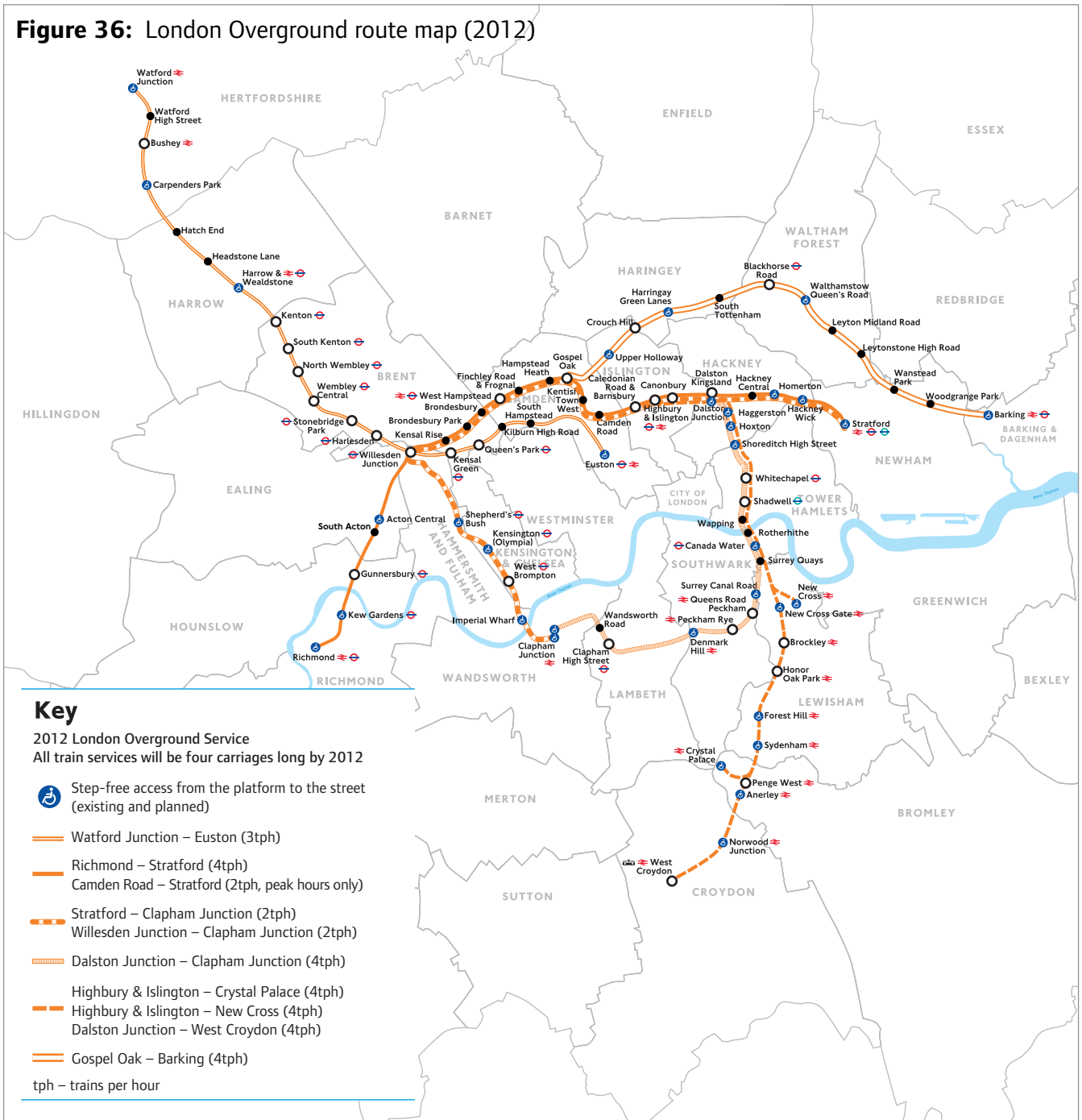
- 271 There are, however, significant further opportunities to improve orbital travel, such as by providing or improving interchange opportunities where radial and orbital lines cross. Forecasting shows that rapid demand growth can be expected over the next few years, which means that parts of the Overground could justify investment in longer five or six-car trains. TfL will also investigate where there may be additional routes that warrant extensions to the Overground, if found to be feasible.

5.2.5 Local and orbital rail links and services

London Overground

- 270 Work on London Overground includes reinstatement of disused National Rail routes to link the East London and North London lines at Dalston, modifying existing infrastructure to reach West Croydon and Crystal Palace (the East London line extension) and delivering a rolling stock maintenance and control

Figure 36: London Overground route map (2012)



Proposal 14

The Mayor, through TfL, working with the DfT and Network Rail, will deliver the committed investment in the Overground network, investigate the feasibility of providing further capacity to assist orbital movement, and will review potential benefits of extensions to the network of services.

5.2.6 Docklands Light Railway

272 Since opening in 1987, the DLR network has grown to become a vital part of London’s public transport system supporting growth and regeneration in the Thames Gateway (see London Docklands case study). Improvements to the DLR include a network extension to Stratford International and delivery of 55 new

carriages to enable three-car operation on most of the system by 2010 (with further station and infrastructure enhancements to follow). Delivering new rolling stock to maximise the benefits of full three-car operation across the network, double tracking between Bow Church and Stratford, installing a new signalling system and renewing and replacing the existing rolling stock will all contribute to ensuring that the DLR is fully able to support continued growth and regeneration in the Thames Gateway area.

- 273 An extension of the DLR to Dagenham Dock has been identified as a key component of the current housing plans for Barking Riverside. There is also further scope to extend the DLR network in the longer term to provide better links to Stratford, improved orbital links and connectivity in the Thames Gateway, and better integration with the central London transport system, for example, through a westwards extension from Bank to Victoria.

Proposal 15

The Mayor, through TfL, will support safeguarding the route of the DLR Dagenham Dock extension as part of the housing proposals for Barking Riverside, and will investigate the feasibility of further capacity and network expansion of the DLR including options south of Lewisham, west of Bank and north of Stratford International.

5.2.7 Tramlink

- 274 Tramlink has been a great success since opening in 2000, providing important orbital links into Croydon and connections to neighbouring Outer London town centres – and encouraging a shift from car to public transport. Improvements to Tramlink as part of a £54m investment in maintenance, renewals, upgrades and capacity enhancement, are taking place between now and 2015.

- 275 Beyond these initial improvements, consideration will be given to looking at further extensions of Tramlink, with a strong focus on a potential north-south axis, in order to accommodate Croydon's future growth needs, and potentially to improve east-west links to neighbouring Outer London town centres to support improved orbital connectivity. Both short extensions to provide better access from key centres to Tramlink, and longer extensions opening up completely new routes are being considered.

Proposal 16

The Mayor, through TfL, and working with the London boroughs and other transport stakeholders, will investigate the feasibility of providing extra capacity on the Tramlink network and will review potential benefits of extensions to the system.

5.3 London Underground

5.3.1 Introduction

- ²⁷⁶ Over the last decade, the Underground has experienced unprecedented growth in demand, with more than a billion passenger journeys a year now made by Tube. The Underground carries as many passengers as the entire National Rail network with up to four million journeys made each day, on 11 lines serving 270 stations. The Underground now provides a higher volume of service than ever before while achieving a record 79 out of 100 in terms of customer satisfaction.
- ²⁷⁷ The strategy for the Tube is based on understanding customer needs by combining a reliable train service with the highest standards of customer care. This means renewing the network's infrastructure (rolling stock, signalling, track, civil structures and stations) to allow train service capacity to keep up with rising levels of demand, and creating a welcoming and secure environment, offering personal service to customers, providing accurate and timely service information, and creating ease of access.
- ²⁷⁸ LU has embarked on its largest investment programme for 70 years, focusing on improving reliability, delivering faster journey times, along with increasing capacity across the network.

5.3.2 Renewal and repair of the network

- ²⁷⁹ The Tube is the oldest metro system in the world, with some infrastructure dating back to the 1860s. After decades of under-investment, the network is now undergoing a major transformation programme comprising asset renewal, rebuilding and refurbishment. The key elements of the programme are:
- Rolling stock – replacing the majority of train fleets, which if not renewed would have an average age of 50 years in 2031, 15 years beyond their design life. The new trains will allow quicker, more reliable journeys and have higher capacity. Where possible, innovative technologies and design solutions will be used, for example, regenerative braking and walk-through carriages
 - Signalling – existing trackside assets, which are more than 40-years-old in many cases, will be replaced with computer based systems which will reduce delays and increase network capacity by allowing for a higher frequency of service. New service control centres will enable better information provision to customers and allow staff to manage the train service more effectively, delivering improved journey time reliability and minimising service disruptions
 - Track – reduce the backlog of investment to reduce safety risks, and remove speed restrictions brought in to manage safety risks to increase capacity

- Civil structures – renew assets such as bridges, viaducts, embankments and drainage systems to maintain a safe service, reduce the risks of flooding, and the service effects of speed and weight restrictions
- Stations – modernise stations by replacing safety and service critical systems such as fire, public address, CCTV, lifts and escalators

²⁸⁰ Much of this work is brought together in a programme of line upgrades which will provide some of the capacity required to support the Capital's economy and meet the demands of the future. Without the line upgrades it would not be possible to maintain the service that is currently delivered. Work to upgrade each line is therefore the cornerstone of the strategy for the Tube. By the end of the current programme, the Tube network will provide up to an additional 30 per cent capacity. New trains and signalling systems will allow more trains to run, providing quicker and more comfortable journeys. Beyond this, the Tube will require investment to ensure that its asset condition remains in a state of good repair and does not fall to the levels seen through earlier decades of under-investment.

²⁸¹ The network faces the tremendous challenge of keeping London moving on a daily basis while simultaneously rebuilding the system. This massive task cannot be achieved without some disruption to services. In order to facilitate these works and carry out regular essential maintenance, some weekend closures are necessary. The high profile campaign advising customers to 'check before they travel' has proven highly successful and will continue,

employing many TfL Travel Tools to help customers plan their journeys.

²⁸² By 2012, this programme will deliver an upgrade of the Jubilee, Victoria and Northern lines. By 2020, upgrades will have been completed on the Piccadilly line, Sub-Surface Railway and the Bakerloo line, with a further upgrade on the Northern line. These are described in the Spotlights on pages 133, 137 and 138. The replacement of the Central line fleet will follow, delivered into service from 2020. Considerable benefits and efficiencies can be achieved by specifying lighter, more energy efficient and higher capacity trains for this and the Bakerloo line.

Proposal 17

The Mayor, through TfL, will seek to deliver upgrades to all Tube lines in a phased programme to provide a significant increase in network capacity. This will involve a combination of new rolling stock and/or signalling systems and other asset replacement. As part of this, continued investment to bring the network to a good state of repair and maintain it at that level will be supported.

5.3.3 Station refurbishments and accessibility

²⁸³ Between 2003 and 2009, 124 stations were refurbished and this programme will continue subject to availability of funding. This programme is delivering key system improvements (CCTV, public address, communications equipment and fire systems),

Spotlight

Transforming the Tube

Over the last decade, the number of journeys made on the Tube has risen to record levels of more than one billion journeys a year. To support this growth and correct historic under-funding, LU has embarked on its largest investment programme for 70 years.

The line upgrades, which will include new signalling and control systems, as well as the introduction of new trains on some lines, will focus on improving reliability. They will deliver faster journey times and increase capacity by up to 30 per cent across the network. By 2012, this programme will deliver an upgrade of the Jubilee, Victoria and Northern lines, each providing between 20 and 33 per cent more capacity into central London.

By 2020, upgrades will have been completed on the District, Circle, Hammersmith & City and Metropolitan lines (including air-conditioned trains) increasing capacity across the sub-surface network, while the Piccadilly line upgrade will provide a 24 per cent increase in line capacity. A second upgrade of the Northern line will ensure further service enhancements¹. The Bakerloo line will also be upgraded.

Other enhancements include: major station improvements at Victoria, Paddington (Hammersmith & City), Tottenham Court Road, Bond Street and Bank; cooling the Tube; power upgrades to cater for expanded services; and accessibility improvements.

¹ See Spotlight on Northern line Upgrades 1 and 2 on page 138



as well as improving customer service features. These include, passenger Help points, new electronic information displays in ticket halls and on platforms, improved seating and lighting, as well as improvements to accessibility features such as tactile strips and colour-contrasted handrails for visually impaired people.

- 284 TfL is committed to improving accessibility from street level to platform level on the Tube network. Over time, TfL will seek to increase the accessibility of the network, building upon the foundation of step-free stations already in place (see section 5.9).

Proposal 18

The Mayor, through TfL, will continue to deliver an ongoing programme of Tube station refurbishments and asset stabilisation to ensure stations are operable and deliver customer service requirements, and continue to improve station accessibility over the life of the strategy.

5.3.4 Station congestion relief

- 285 To relieve congestion experienced by Tube customers at key locations across the network, and to enable quicker journeys, some stations require more extensive improvements to ensure safe and efficient station operations while also enhancing passengers' journey experience. The delivery of capacity enhancements to strategic Underground stations and interchanges is critical to the functioning of the Tube as an integrated network to assist existing passenger flow, and cater for future increases in demand.

- 286 Congestion relief is required at the key central London interchanges of Victoria, Tottenham Court Road, Bond Street, Paddington (Hammersmith & City) and Bank. Capacity increases at these stations will optimise the benefits of investment from the line upgrades, Crossrail and other developments. They will also greatly improve central London step-free access.

- 287 Further station improvements at, for example, Vauxhall, Finsbury Park and Highbury & Islington, will improve strategic access to, or interchange across, the network (see section 5.10.2, Strategic interchanges).

Proposal 19

The Mayor, through TfL, and working with the London boroughs, private developers and other transport stakeholders, will develop and implement a prioritised programme to deliver station capacity and accessibility enhancements at London's most congested Underground stations, including:

- a) Congestion relief schemes to complement Tube line upgrades and/or integrate with Crossrail at the key central London interchanges of Victoria, Tottenham Court Road, Bond Street, Paddington (Hammersmith & City) and Bank
- b) Schemes at further strategic Tube interchanges that are critical to London's transport system (for example, Vauxhall, Finsbury Park, Highbury & Islington, Holborn, Camden Town, Oxford Circus, Edgware Road and Northern line City branch, in particular Old Street and Moorgate)

c) Major strategic multi-modal/National Rail interchanges on to the Underground network to disperse onward demand arising from National Rail proposals (HLOS2 and HS2 proposals), for example, London Bridge, Euston, Liverpool Street, Paddington, Elephant & Castle and Waterloo

5.3.5 Cooling the Tube

²⁸⁸ High tunnel temperatures during the summer months are one of the biggest challenges facing the Tube, particularly for the deep tunnelled sections of the Underground, such as the Victoria line. These are generally closed systems where the major proportion of the energy that enters (for example, train motors) is released as heat, which in turn raises temperatures in the tunnels and on the trains. As a result of increased train service capacity (primarily through higher train frequencies) and reduced journey times (mainly through quicker acceleration and faster maximum speeds), electricity use on the Underground is anticipated to increase by 2020, resulting in more heat being released in the tunnels. This will be exacerbated by increasing passenger numbers and possible increases in air temperature due to climate change. Therefore maintaining safe temperatures on deep tunnelled sections of the Tube will present an ever increasing challenge in future. Already the Tube has implemented a programme to tackle heat on the network, and this will continue over the duration of the strategy.

Proposal 20

The Mayor, through TfL, will implement the following measures to cool the Underground:

- a) New air-conditioned rolling stock across the sub-surface (Metropolitan, Circle, Hammersmith & City and District) lines, introduced progressively from 2010
- b) Improved ventilation shafts and replacement of out of service fans

5.3.6 Customer care

- ²⁸⁹ The core renewal programme is essential to deliver a safe and reliable service, but TfL aspires to the highest standards of customer care. Customers most value getting from A to B as quickly and reliably as possible, but valued almost as much are the different aspects of service experienced during the journey. Customers value personal security, a welcoming environment, accurate and timely information, and when they need assistance, they want high quality personal service from staff.
- ²⁹⁰ In 2008, for the third year running, the Underground carried more customers than ever before, in excess of one billion. At the same time, customer satisfaction with the service also reached a record high of 79 out of 100. Most people scored the overall service provided at nearly eight out of 10.
- ²⁹¹ Customer information and personal service from staff will be especially important as the renewal programme, which can disrupt service, is delivered over the next decade. TfL will continue to invest in customer-focused training

for Tube staff including disability awareness training, and in information systems to deliver the right information to customers when they want it, when planning or undertaking journeys on the network.

- ²⁹² Customers value the presence of staff especially when travelling at night. The Underground will continue to staff its stations and invest in systems which enhance the management of the station, such as CCTV, as well as ensuring stations are well-lit and visibly managed, all clean and graffiti free.
- ²⁹³ There is a rich heritage of art and design on the Tube. High quality, value for money design will continue to be a feature of the Investment Programme. Art on the Underground, LU's art programme, continues the Tube's long tradition of working with artists. Licensed busking and 'Poems on the Underground' bring music and poetry to the wide-ranging audience of customers on the network. These initiatives can delight customers and improve the travelling environment.

Proposal 21

The Mayor, through TfL, will continue to develop and implement measures to deliver the highest standards of customer care on the Underground, including the provision of high quality information about engineering works that affect regular Tube services, and improved information on the accessibility of the Tube network highlighting step-free and mostly step-free routes.

5.3.7 Further improvements and extensions to the network

- ²⁹⁴ Beyond the funded investment programme, even with the introduction of Crossrail and Thameslink, crowding will remain on the Tube network. This crowding is shown in Figure 20 and contributes to the corridor 'stress' shown in Figure 32.
- ²⁹⁵ There are opportunities for improvements to other aspects of the transport system, particularly the (national) rail network to relieve crowding on the Tube. Potential new lines, such as Chelsea Hackney, would also be designed in part to reduce Tube crowding where possible. These potential enhancements are described in section 5.2.
- ²⁹⁶ Over the lifetime of this strategy, there are also opportunities for further enhancements and extensions to the Tube network to improve journey times and provide additional capacity essential for the continued growth of London. Any potential schemes will be subject to a thorough value for money and feasibility analysis, and will be considered in the light of any future funding constraints. They will also be integrated with enhancements to other elements of the transport system, in particular the rail network.
- ²⁹⁷ Further enhancements (beyond the funded upgrades) to the Northern line are possible. With private sector funding, there is the potential to extend the line to Battersea to support developer-led growth in the Vauxhall/Nine Elms/Battersea Opportunity Area, an area

Spotlight

Sub-Surface Railway upgrade

The Sub-Surface Railway lines comprise the Circle, District, Hammersmith & City and Metropolitan lines, covering more than 300km of track and representing around 40 per cent of the Tube network. It is the part of the network in greatest need of renewal. The upgrade will be delivered progressively over the next decade and will provide the greatest capacity improvements across the entire network, helping to reduce congestion and accommodate predicted growth.

In July 2009, LU issued an invitation to tender for the resignalling of the sub-surface lines. This contract is the single Tube element of the Investment Programme.

From December 2009, a new service pattern was introduced on the Circle line, almost

doubling the frequency of trains on the Hammersmith branch. It also improved the reliability of the Circle line, with knock-on benefits for reliability across the whole of the Sub-Surface Railway. The new service pattern will be followed by the introduction of a new signalling system to allow higher train service frequencies.

From 2010, 199 new, larger trains will enter service. They will feature energy-saving regenerative braking, walk-through carriages, better accessibility, improved customer information (audio and visual) and enhanced security. The Circle and Hammersmith & City line trains will also have an additional carriage. Most significantly, the new trains will be the first to be air-conditioned on the Tube network.



Spotlight

Northern line Upgrades 1 and 2

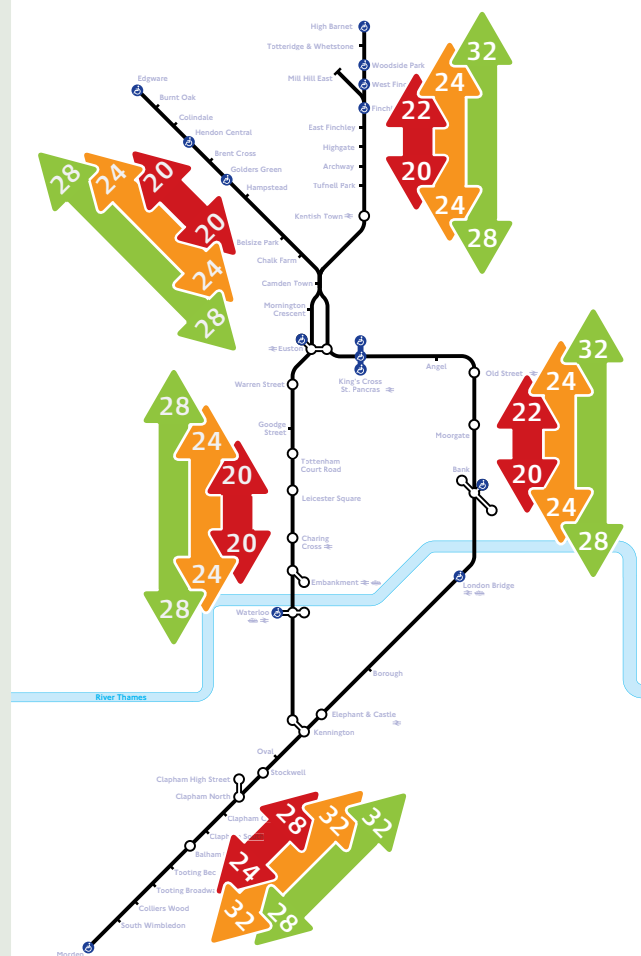
The Northern line will be upgraded in two phases, known as Upgrades 1 and 2. Work has commenced on the first upgrade which will introduce new computerised signalling and a new control centre to reduce journey times in the morning peak by 18 per cent and increase capacity by around 20 per cent.

However, even with the delivery of Upgrade 1, forecast growth in demand will continue to place severe pressure on London's north-south routes, particularly through the City, producing crowding levels similar to that experienced today. Hence there is a need for a further upgrade.

Upgrade 2 will recast and partially separate the services on each of the two central London branches of the line. This will reduce journey times, deliver an additional 33 per cent capacity on the City branch, a 17 per cent increase on the Charing Cross branch and consequently reduce crowding. The upgrade will comprise additional rolling stock alongside the existing fleet, additional train stabling facilities, power, improved signalling and tunnel cooling.

Together, the two upgrades will transform the Northern line. On the City branch, during the busiest parts of the morning peak, service frequencies could rise from the current 20 trains per hour (tph) to 24tph following the first upgrade, eventually reaching a potential 32tph in the northbound direction following partial separation.

Morning peak hour frequencies
(trains per hour per direction)



Key	
	Northern line
	Current peak morning frequency
	Peak morning frequency after Upgrade 1
	Peak morning frequency after Upgrade 2

identified as capable of accommodating 20,000 to 25,000 new jobs and 16,000 homes by 2031.

- 298 The Bakerloo line has an important role in London's transport geography, serving the strategic northwest-southeast corridor with its important regeneration zones including Harlesden, Paddington, Elephant & Castle and inner southeast London. A Bakerloo southern extension would allow the line to serve inner and outer southeast London. This would create a new southeast to northwest strategic route through the Capital, serving areas with poor transport accessibility and freeing up National Rail capacity at London Bridge for other service improvements.
- 299 The Croxley rail link, providing a new connection between Croxley station on the Watford branch of the Metropolitan line and the now closed Croxley Green branch line is a long standing proposal championed by Hertfordshire County Council. Although outside the GLA boundary, the link is supported by the Mayor as it improves the regional connectivity of northwest London by linking the Tube network to the important National Rail interchange at Watford Junction and the employment, retail, leisure and healthcare opportunities in Watford town centre.

Proposal 22

The Mayor, through TfL, and working with the DfT, Network Rail, train operating companies, London boroughs and other stakeholders, will seek longer-term enhancements and extensions to the Underground network, including:

- a) A privately funded extension of the Northern line to Battersea to support regeneration of the Vauxhall/Nine Elms/Battersea area
- b) A potential southern extension to the Bakerloo line will be reviewed further. This would utilise spare line capacity, improve connectivity and journey times, while providing relief to congested National Rail approaches to central London from the south/southeast, subject to resources and the results of further study
- c) A link at Croxley to join the Watford branch of the Metropolitan line to Watford Junction (funding to be secured by Hertfordshire County Council in conjunction with the DfT)

5.4 London's bus network

5.4.1 Introduction

³⁰⁰ The bus has become one of London's transport success stories over the last decade. The Capital's buses now carry 2.2 billion passengers each year – the highest level since 1962, with service levels also at their highest since 1957. Figure 37 shows the trend since 1971.

³⁰¹ Key achievements include:

- All buses are fitted with the iBus real time audio and visual Next Stop signs
- A highly accessible network, where more than 90 per cent of London residents are within 400 metres (approximately a five minute walk) of a bus stop and all buses (except heritage Routemasters) are wheelchair accessible
- Reliability is at the highest level ever recorded. This has been achieved through additional resources, incentivised contracts, improved bus priority, enforcement and central London Congestion Charging
- Measures to make the system easier to use, including straightforward service patterns, better information, improved bus stops and stations, simplified ticketing and improvements to driver training based on compulsory disability awareness training
- Vehicle enhancements such as CCTV coverage of the whole fleet, successful trials of both diesel-electric hybrid and hydrogen fuel cell engine technology

³⁰² As a result, customer satisfaction levels have increased substantially in recent years (see Figure 38).

³⁰³ Buses play a key role in providing access to jobs and services and are the most widely-used form of public transport across London. Buses are the predominant mode for public transport within the suburbs and Inner London. Outer London, in particular, relies on the bus network to provide access to, and between town centres. Buses also facilitate longer radial trips into London by feeding into railway stations and by enabling passengers to get to their final destinations in central London. An effective bus network also helps in reducing traffic volumes and overall CO₂ emissions.

³⁰⁴ These roles will remain essential as London develops. The bus network will need to respond to changing demands. Improvements in the quality of the experience offered to passengers will need to be consolidated and (where possible) enhanced to meet increasing expectations.

5.4.2 Bus network development

³⁰⁵ London's bus network is subject to a continuous development process, enabling it to respond to changing travel needs. This is passenger-led, based on research and consultation.

³⁰⁶ Compared to other major world cities, London's bus network performs either equally well, or better than average, on several key performance indicators, including accessibility. The cost efficiency of the bus network in

London is 20 per cent ahead of most major international cities. London currently has a comprehensive orbital bus network, enabling direct orbital journeys between neighbouring centres in Outer London, shown in Figure 39.

to change, including new homes, workplaces, shopping centres and leisure attractions.

307 Continued development of the network will be necessary so that it can carry on responding

308 Where major change or development is taking place in London, TfL will continue to work closely with the boroughs and developers to ensure the needs and demands on the bus network are fully understood, that plans for

Figure 37: London bus use since 1971

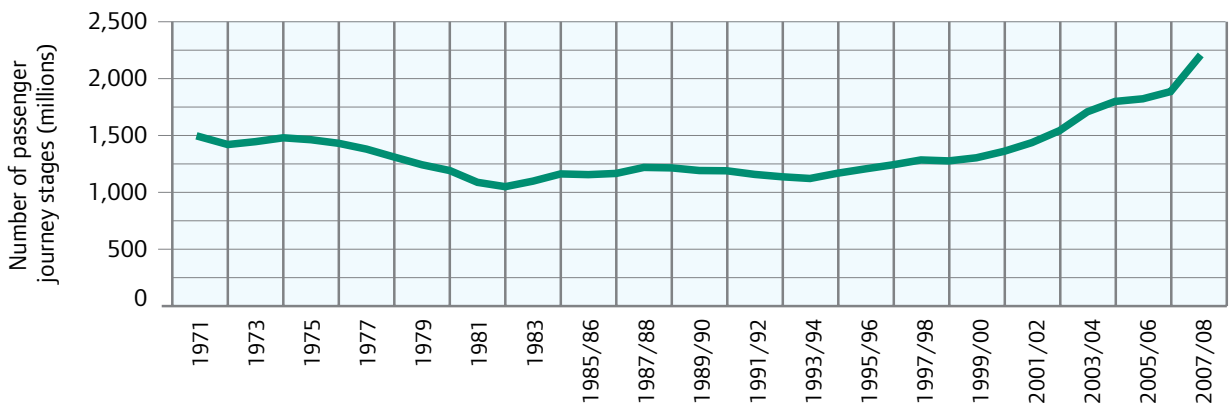


Figure 38: Improving bus journey experience

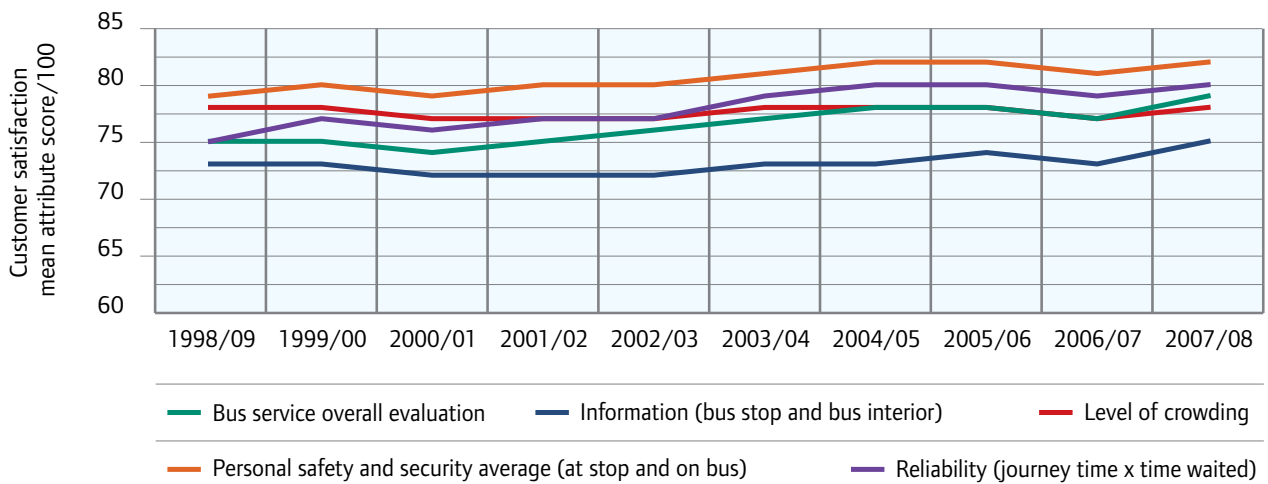
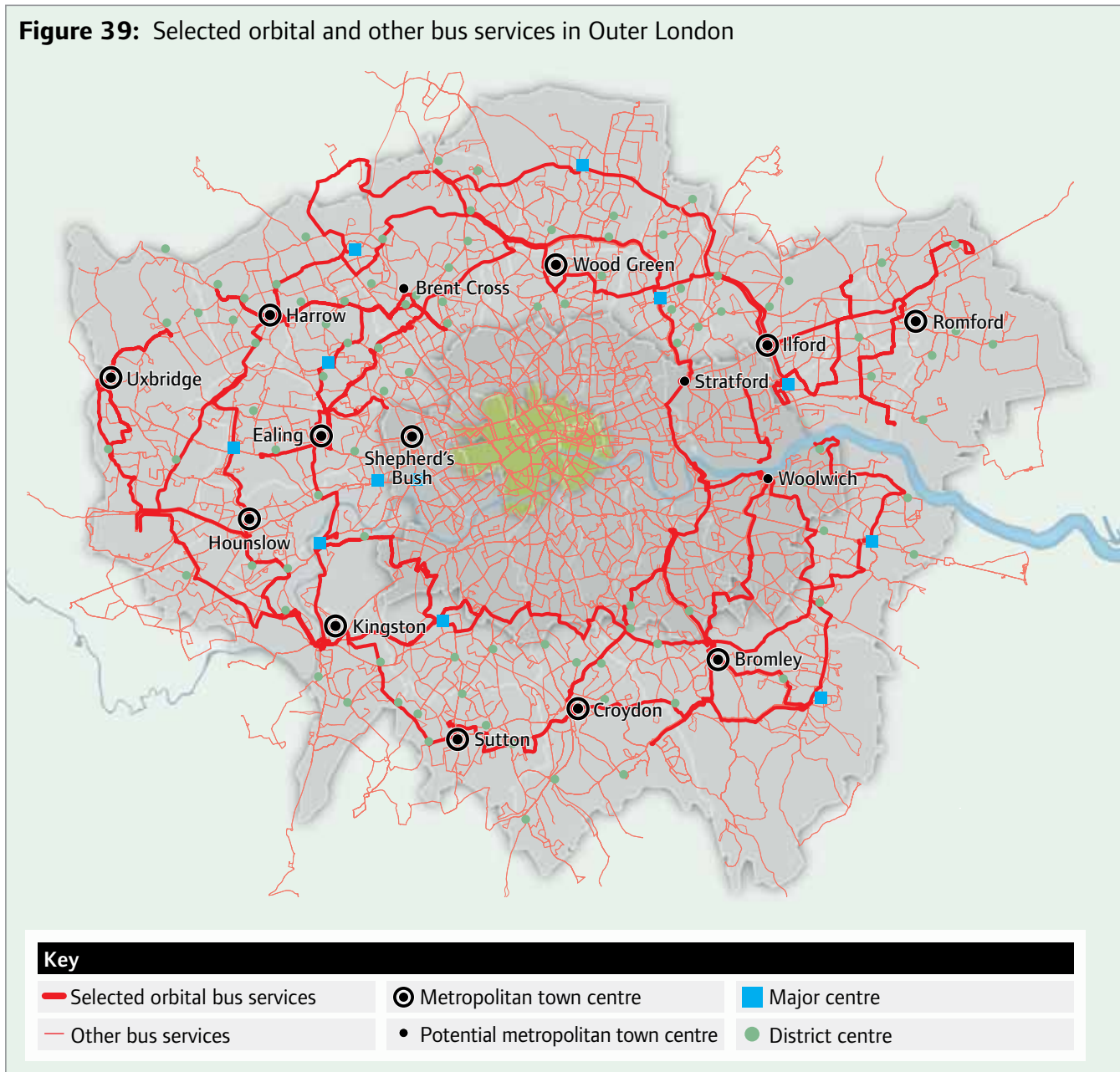


Figure 39: Selected orbital and other bus services in Outer London

any changes to the network are identified, and opportunities for funding are fully explored.

309 It is essential that the bus network continues to be developed in such a way to cater for the overall shape and scale of growth across London. TfL will undertake reviews of the strategic priorities underlying the process approximately every five years to ensure the bus network reflects the pace of development in London, responds to the challenges and opportunities of growth, and aligns with possible revisions of the London Plan.

310 The development of the bus network will need to support other transport investment, such as Crossrail and other railway improvements. In addition, there will be ongoing alterations to the nature and distribution of services and facilities provided by others, such as healthcare and education, which the bus network will need to reflect.

311 Keeping the bus network as accessible as it is today will also be essential as the fleet will continue to be the only city-wide accessible public



transport mode despite improved accessibility of the rail networks. Similarly, buses can operate 24-hours-a-day, supporting London's 24-hour economy, whereas rail services often cannot due to necessary maintenance constraints.

- 312 Network development will also consider the improvement and efficiencies that can be achieved at busy interchanges and major transport hubs, both existing and emerging.

Proposal 23

The Mayor, through TfL, and working with the London boroughs and other stakeholders, will keep the development of the bus network under regular review, including reviews of the strategic priorities underlying the process approximately every five years, to ensure it caters for growth in population and employment, while maintaining ease of use, attractive frequencies and adequate capacity, reliable services, good coverage and good interchange with other modes. All proposals for change will be appraised to ensure that they deliver good value for money and that the funds available are being invested in optimum service improvements.

Spotlight

A New Bus for London

The competition to design a New Bus for London was launched in July 2008. This attracted a large number of entrants, and in December 2008, the Mayor announced the winners.

The aim of the competition was to harvest a range of creative ideas for a bus fit for the 21st century. These winning designs and concepts have been passed on to bus manufacturers, for development into final design proposals.

The New Bus for London will meet London Buses' requirements for vehicles in public service in London, including high standards of accessibility, safety and emissions abatement. In addition, it will be more durable, more fuel efficient and better ventilated. The bus will incorporate a double-deck and a platform at the rear near-side corner, so passengers will be able to board and alight easily.

The first prototype of the new bus will be on London's streets by 2011.



5.4.3 Bus service quality

- 313 As London's economy grows, pressures on road space will mean a continued requirement to ensure that appropriate measures are taken to maintain an attractive and reliable service for bus users.
- 314 Bus priority measures such as bus-only roads, bus lanes and selective vehicle detection at traffic signals are essential tools in ensuring that the limited people-carrying capacity of the road network is being used most effectively. These measures help reduce bus journey times, improve bus reliability and increase the efficiency of the bus network, especially when they are considered as part of a whole route approach. Bus priority measures are systematically identified, appraised and delivered at key locations, including town centres and their approaches, at new development sites, and links where bus passengers represent a significant proportion of all road users.
- 315 Quality incentive contracts have been very successful in incentivising operators to maintain a high level of reliability, and the iBus system improves operators' ability to control services effectively.
- 316 Bus information has been transformed over the last 10 years. Improved 'spider' maps and timetables are in place throughout the network. iBus has provided Next Stop announcements (audio and video) on all buses, and has improved information on Countdown signs at bus stops. Further development will include delivery of real time information through mobile phones and the internet, as well as an expanded number of signs at stops.

Proposal 24

The Mayor, through TfL, and working with the London boroughs and other stakeholders, including developers, will improve bus passengers' journeys by measures, including:

- a) Incentivising bus operating contracts and expanding staff training in order to consolidate reliability improvements
- b) Introducing measures such as bus priority at critical locations
- c) Ensuring that the appropriate enforcement of bus priority is carried out
- d) Implementing the Countdown 2 project to deliver expanded access to real time information and develop further integration with digital communications to provide real time bus information

5.4.4 Bus fleet development

- ³¹⁷ The bus fleet has been progressively developed with incremental enhancements to passenger comfort and security, including upgraded seat designs, CCTV throughout each bus, air-cooling systems and outward-opening doors to provide more space in the busiest part of the vehicle. Emissions standards are ahead of legal requirements. Diesel-electric hybrid buses are in service on a trial basis, and all new buses entering service from 2012 will use hybrid technology.
- ³¹⁸ TfL is also seeking to develop an iconic bus design with its New Bus for London project.

Proposal 25

The Mayor, through TfL, will upgrade its bus fleet to meet increased emissions standards and will appoint bus manufacturers as part of the New Bus for London project. It is intended that the first prototype will enter service during 2011.

5.5 Taxis, private hire, coaches and community transport

5.5.1 Taxis

- ³¹⁹ London's 22,000 licensed taxis and 25,000 licensed taxi drivers provide about 200,000 trips a day to London's visitors, residents and businesses, with the majority of activity concentrated in central London. In a 2007 survey for the London Chamber of Commerce and Industry, 93 per cent of business leaders regarded a good taxi service as being important or very important to the London economy.
- ³²⁰ Although licensed taxi drivers can use most of London's bus lanes, they face much the same challenges as other road users in terms of the impacts of congestion. Measures outlined elsewhere in the strategy to smooth traffic flow will therefore be of significant benefit to taxi drivers and their passengers. The essence of an effective taxi service is the point-to-point service offered, however, it is important that measures to smooth traffic flow also take account of the need for kerbside activity at the start and end of journeys.
- ³²¹ London's taxi service is widely recognised as the best in the world. The world-renowned Knowledge of London that must be demonstrated before a taxi driver is licensed to ply for hire, means that these drivers have an unparalleled understanding of London's streets and points of interest, as well as pride in their profession. The Conditions of Fitness licence requirement means that only vehicles which are

suitable for taxi work – wheelchair accessible and highly manoeuvrable – can be used as taxis in London.

- 322 Taxis are also recognised as a safe and quick way of making door-to-door journeys, and are particularly valuable for disabled people and at times when other public transport is scarce. TfL is working in partnership with the taxi associations to reduce taxi vehicle emissions and introduce a new low emission taxi. This will enable them to play a role in improving air quality in London and in tackling climate change.

Proposal 26

The Mayor, through TfL, and working with the London boroughs and other stakeholders will support improvements to the taxi service through a number of measures, including:

- a) Continued highway priority for taxi services, for example, access to bus lanes
- b) Reduced taxi vehicle emissions and development of low emission taxis
- c) Provision of parking and waiting facilities, including rest facilities
- d) Provision of ranks and facilities at interchanges
- e) Taxi marshalling
- f) Action against touting and illegal cabs
- g) Improved driving behaviour, to be encouraged through the licensing procedure of taxi drivers

- h) Ensuring regulated taxi fares changes allow drivers and owners to continue to recover the costs of providing the taxi service and provide a sufficient incentive for taxi provision to meet demand, in particular at night
- i) Continuous process improvements to provide a modern and cost effective licensing service

5.5.2 Private hire

- 323 There are about 50,000 PHVs in London, operated by about 2,400 businesses, and providing employment for about 54,000 people. PHVs offer a range of valuable services across the Capital, making a similar number of trips in total to taxis. The PHV trade is very diverse, covering all vehicles¹ for up to eight passengers offered for hire with the driver. As well as the familiar minicabs and people-carriers, this includes chauffeur and executive cars, some patient transport and school support services and a wide range of specialised operators. Private hire also encompasses a number of niche limousine and other bespoke services for which little or no alternatives exist. PHV services are spread more evenly across London than taxi activity. Like taxis, PHVs are particularly important at night when other public transport is limited. For those travelling with mobility impairments, heavy luggage or seeking to reach a remote location, PHVs are a good quality, value for money solution.

¹ Except taxis

324 All PHV trips must be booked through a licensed operator before the start of the journey. This means that the customer has an opportunity to ensure they get an appropriate service at a fair price. The licensing standards therefore allow a wider range of vehicles than can be accepted as taxis, and drivers take a less demanding topographical knowledge test. Like taxis, all vehicles must be safe and suitable for passenger carrying, and drivers must be healthy, of good character, with an enhanced criminal records check.

325 Licensing of private hire in London is relatively new, with operators licensed in 2001, drivers from 2003 and vehicles from 2004. PHVs cannot drive in bus lanes, although like taxis they are exempt from the Congestion Charge and are allowed to stop to pick up or set down passengers on red routes. The successful PHV licensing process has seen an improvement in standards across the industry, and along with the Safer Travel at Night initiative, licensing has reduced the levels of taxi touting and illegal cab activity. As the licensed industry matures, there may be opportunities to review the contribution such services play and reappraise the restrictions in force.

Proposal 27

The Mayor, through TfL, and working with the London boroughs and other stakeholders, will support improvements to private hire services (especially minicabs) through the following:

a) Initiatives that deliver further the success of the Safer Travel at Night scheme

- b) Provision of facilities to pick up as well as drop off passengers where appropriate
- c) Action against plying for hire, touting, un-roadworthy vehicles and illegal cabs
- d) Continuous process improvements to provide a modern and cost effective licensing service
- e) Lower emissions from PHVs

5.5.3 Coaches

326 Coaches play an important part in London's overall transport system, operating broadly five types of service: UK short distance services, including commuter coaches; UK long-distance services; European services; private hire or charter services; and airport services. These services provide a range of benefits to London, including supporting the central London economy through commuter services, and charter services to theatres and other attractions. The majority of UK scheduled short and long distance services, including European scheduled coaches, serve Victoria Coach Station, which is directly managed by TfL. The organisation will work with coach operators to maximise the use of the existing facilities to increase capacity, given the anticipated growth in demand for coach travel.

327 The provision of a conveniently located coach terminal in London is important for both operators and passengers. In the longer term, the Mayor will work with all relevant partners to investigate the feasibility of developing a series of coach hubs or the potential for alternative

locations for coach station facilities to provide easier access to the coach network, while retaining good access to central London for coach operators.

- 328 Another challenge for coach operators, especially those who provide private hire or charter services, is the location and availability of pick-up and set down areas and, more importantly, parking where drivers can take

their legally required break from driving. Ensuring that adequate facilities are available is a key function of the London Coach Forum, which is coordinated by TfL, and provides a valuable engagement mechanism with the industry. TfL, working with the boroughs, will continue to develop facilities for coaches, balancing the needs of coaches with the needs of other road users. To support this, the Mayor will set out specific coach parking standards



to ensure parking at major visitor destinations such as hotels, stadia and exhibition venues is at appropriate levels to suit their individual demand, and help reduce congestion and improve visitor safety.

- 329 TfL also issues London Service Permits for local services within London that are not part of the London bus network. These include some local bus services, sight-seeing tours, and some commuter services. Such services can also provide useful links in Outer London with locations beyond the GLA boundary.

Proposal 28

The Mayor, through TfL, and working with the London boroughs, coach operators and other stakeholders, will seek to maximise the use of the existing facilities to increase capacity for coaches, given the anticipated growth in demand for their use and to develop parking standards for coaches. In the longer term, the Mayor will work with all relevant partners to investigate the feasibility of developing a series of coach hubs or the potential for alternative locations for coach station facilities to provide easier access to the coach network, while retaining good access to central London for coach operators.

5.5.4 Community transport

- 330 Community transport refers to a broad range of projects that provide an accessible transport service, often aimed at particular sectors, such as group travel and social car schemes.
- 331 The Mayor recognises the role that the community transport sector plays in London and will continue to engage with it through the Community Transport Association. TfL will continue to look at ways in which the transport facilities provided by the community transport sector can be closer coordinated with transport facilities provided by the organisation, for example, in terms of information provision.

Proposal 29

The Mayor, through TfL, and working with the London boroughs and other stakeholders, will encourage and support the community transport sector's contribution to the development and provision of transport services in London.

5.6 Managing the road network

5.6.1 Introduction

³³² London's road network serves a variety of purposes. It is, most obviously, the means by which people travel from A to B – by foot, cycle, motorcycle, taxi, car, bus – and by which the vast majority of freight is moved, accounting for over 80 per cent of all trips in London. The Mayor's focus on smoothing traffic flow applies to all of these user groups. But the road network also constitutes a very large proportion of London's public realm, where people can relax, socialise and enjoy the atmosphere of this world city (this role is discussed in detail in the 'better streets' section). There are conflicts between and within these two roles, and the Mayor, through TfL, and the boroughs will continue to seek to resolve these where possible, taking into account the specific function and circumstances of the part of the road network involved. However, the overriding objective is to maximise the efficient use of this scarce resource, and this section outlines the principal ways in which the Mayor proposes to achieve this.

³³³ Responsibility for managing London's road network is shared between the Highways Agency, TfL and the London boroughs:

- The Highways Agency manages the M25, M1, M11 and M4 motorways
- TfL is responsible for the Transport for London Road Network (TLRN), the busiest and most economically important radial and orbital arterial routes crossing the Capital, accounting for around five per cent of total

road length, but carrying more than 30 per cent of London's traffic (see Figure 40).

- The London boroughs are highways and traffic authorities for the remaining strategic and local roads in their individual borough

³³⁴ TfL manages traffic signals and traffic control systems on all roads throughout London and, under the Traffic Management Act, has a Network Management Duty to coordinate traffic management and other interventions on the highway, and to facilitate the overall movement of people and goods across the Capital.

5.6.2 Road congestion

³³⁵ Road congestion – manifesting itself in delay, poor reliability and low network resilience – is a major issue for London's transport system. Congestion costs an estimated £2bn in lost economic productivity, adversely affects Londoners' quality of life, causes frustration to road users, contributes to a deterioration of air quality and leads to higher CO₂ emissions.

³³⁶ Levels of delay, reliability and resilience are determined principally by the relationship between the supply and demand for road space. The supply (also known as the 'effective road capacity') is determined by the amount of physical road space available, junction capacity, speed limits, the condition of highway infrastructure including traffic signals, the volume and duration of road maintenance works, utilities works and the incidence of vehicle collisions and breakdowns. The demand placed upon the network capacity comprises

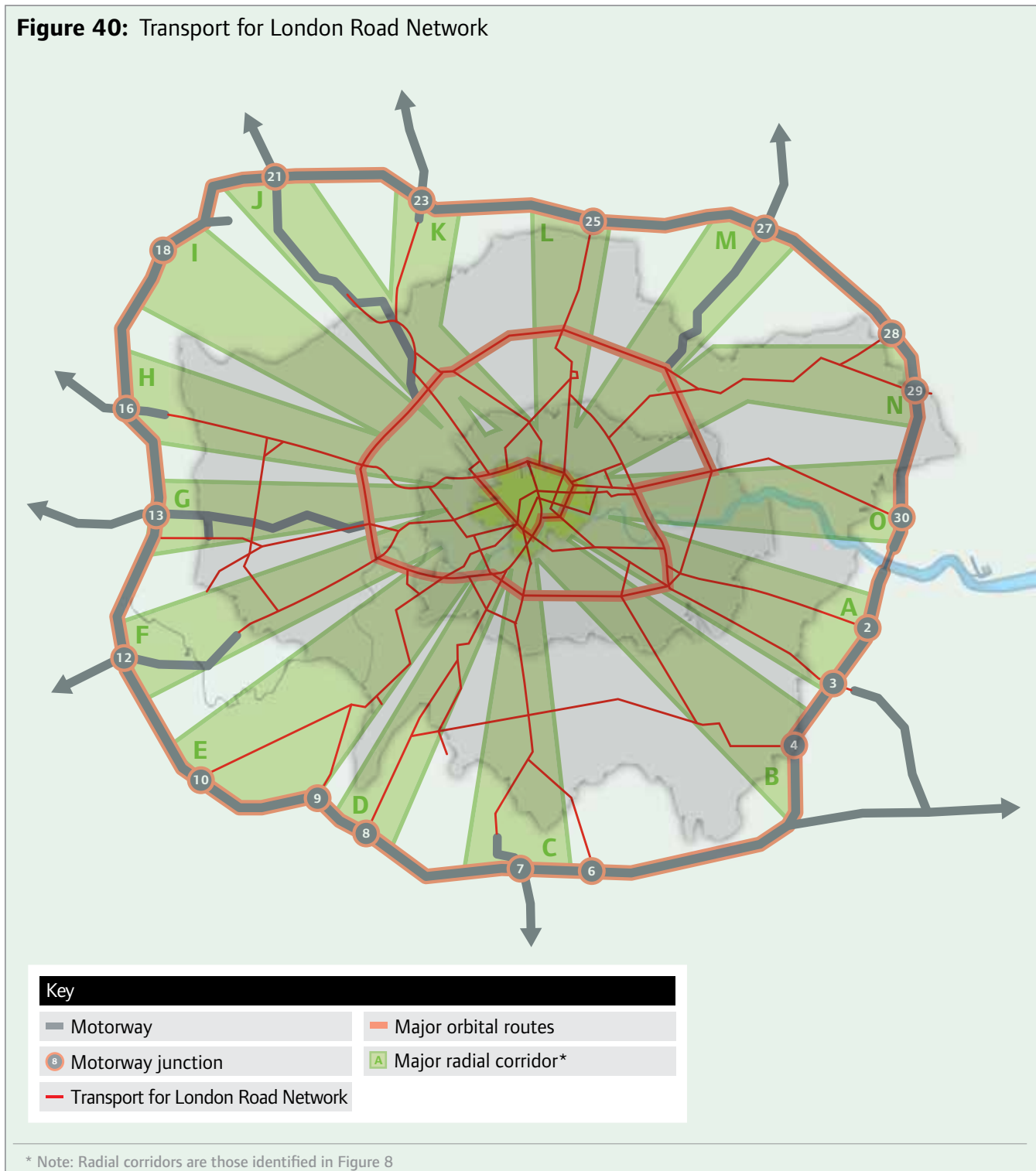
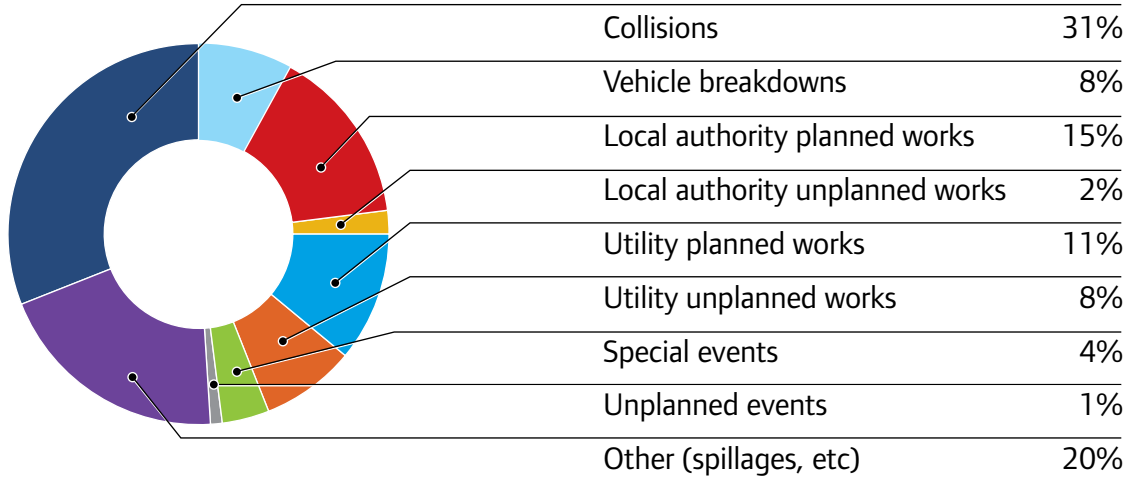
Figure 40: Transport for London Road Network

Figure 41: Causes of unusual congestion by proportion of duration



Note: Based on data gathered by the London Traffic Control Centre in 2008/09

moving vehicles, pedestrians, cyclists, parking and loading.

- 337 Generally speaking, on a largely saturated road network as in London, for a given capacity of road, as traffic volumes rise, speeds will reduce and congestion increases, leading to longer journey times, less reliable journeys and lower levels of customer satisfaction. In 2008, only 25 per cent of Londoners were satisfied with the levels of traffic congestion.
- 338 As population and economic activity increases, so will pressure on the road network, potentially leading to significantly more delay, less reliable journey times and reduced resilience of the network to planned or unplanned interventions. These congestion effects, in turn, are likely to reduce the productivity and competitiveness of the Capital as a whole, and particularly those areas where local economies depend on reliable road transport, for example, Outer London town centres.

- 339 Delay and journey time reliability vary according to route, direction and time of travel, seasonal factors, roadworks, traffic lights, planned and unplanned events, and traffic volume. Figure 41 shows the causes of 'unusual' severe congestion, which affect journey time reliability, by duration of delay, as recorded by the London Streets Traffic Control Centre. The chart shows that almost 40 per cent of 'unusual congestion' is caused by collisions and vehicle breakdowns, and over a third is caused by planned and unplanned road works.
- 340 Poor reliability and predictability of journey times means those who use the road network have to allow significantly longer for their journeys to ensure they reach their destination on time. Improving the reliability of journey times on the road network (even if average delays increase due to rising traffic volumes or other factors) is of significant benefit to motorists, freight operators and other users of the road network. It enables them to predict better how long a journey may take, allowing

for efficient and economic planning of social and commercial activities and to reduce the total amount of time they would otherwise need to allow to make their journey.

and smarter travel measures and the continued operation of the central London Congestion Charging scheme in the original area, provided for in chapter five)

5.6.3 Smoothing traffic flow

³⁴¹ 'Smoothing traffic flow' is the term used for the Mayor's broad approach to managing road congestion and, in particular, improving traffic journey time reliability and predictability. The aim of the smoothing traffic flow approach to managing the road network is to improve conditions for cyclists and pedestrians as well as vehicular traffic.

³⁴² Smoothing traffic flow has six components:

- Maximising the efficient and reliable operation of the existing road network
- Minimising the impact of planned interventions on the road network that have the potential to disrupt traffic flows
- Minimising the disruption caused by unplanned events (collisions, emergencies, etc) as they occur and returning the network to its planned steady state operation as soon as possible
- Maintaining road network assets in a good state of repair in the interests of safety and efficiency
- Where a net benefit under proposal 35 can be shown, developing the road network
- Achieving targeted modal shift from car journeys to more sustainable modes (supported by the improvements in public transport, walking and cycling conditions

³⁴³ As outlined in section 5.27, the Mayor proposes to remove the Western Extension of the Congestion Charging zone. The removal of the zone is part of the Mayor's broader transport strategy. This includes the proposals to better manage and smooth traffic flow, as set out below, to mitigate the potential effects of removal on congestion and emissions on the road network formerly covered by the charging zone.

5.6.4 Maximising the efficient and reliable operation of the road network

³⁴⁴ The poor reliability of journey times means those who need or wish to use the network have to plan for the 'worst case' scenario when predicting how long their journey may take. This makes for the inefficient and uneconomic use of time and energy in respect of ordinary day-to-day activities and can lead to journeys being predicted to last for longer than the actual average journey time. Increasing the reliability of journey times on the road network (even if average journey times are increased by increased traffic volume) can result in motorists having a better prediction of how long a journey may take that is closer to the actual average journey time.

³⁴⁵ The Mayor and TfL, working closely with the boroughs, will therefore manage, as far as is reasonably practical, the overall road network

and prioritise measures that improve the reliability of journey times.

Proposal 30

The Mayor, through TfL, and working with the London boroughs and other stakeholders, will introduce measures to smooth traffic flow to manage congestion (delay, reliability and network resilience) for all people and freight movements on the road network, and maximise the efficiency of the network. These measures will include:

- a) Further investment in intelligent traffic control systems (such as the urban traffic control system, SCOOT) and the infrastructure to support them
- b) Allowing motorcycles and scooters to use TLRN bus lanes subject to a trial period and evaluating its impact
- c) Upgrading, rationalising or removing traffic management equipment and optimising timings at signal controlled junctions to keep traffic moving
- d) Working with the DfT to pilot and develop the concept of pedestrian countdown at traffic signals to optimise the amount of 'green time' for both pedestrians and road traffic
- e) Planning and implementing a targeted programme of improvements to the existing road network, including junction upgrades to improve traffic flow on the most congested sections of the network, and to improve conditions for all road users

³⁴⁶ A key component in the future management of the road network is to increase the knowledge of how the network operates and to employ the most effective solutions and technological developments to ensure its efficient operation. To do this, TfL will continue to develop its state-of-the-art dynamic traffic control system ensuring that the system grows in capability as the next generation of technological advances allow it to do so cost-effectively. This will bring together real time operational data, historic analysis and predictive modelling to more effectively respond to planned and unplanned disruption, and to proactively manage the available road capacity in real time; for example, through increased on-street control and by providing real time information to drivers in a way that supports their journey decisions. This capability will be deployed more widely across the Capital, to better manage the road traffic effects of expected economic and population growth and to support the development of Outer London.

³⁴⁷ In the period of the strategy, consideration will be given to the increased use of real time communications from vehicle to vehicle, and between vehicles and on-street infrastructure and a central traffic management control system. The development of intelligent transportation systems (ITS) technology will allow the upgrading of London's traffic signal network. The aim is to create a state-of-the-art traffic signal control system for the 21st century capable of maximising the efficient use of road capacity in London.

Proposal 31

The Mayor, through TfL, and working with the London boroughs and other stakeholders, will utilise advances in ITS technology to better manage the road network, improve real time traffic management capability, lay the foundations for communication with in-vehicle systems and develop state-of-the-art traffic signal control systems.

5.6.5 Minimising the impact of planned interventions

³⁴⁸ Every year there are over half a million roadworks on London's road network that cause traffic disruption. Many of these are unplanned emergencies. A substantial proportion, however, are planned (for example, scheduled utility works, highway maintenance activities or special events). Customer surveys show a low level of satisfaction with how the works are managed and the time taken for their completion. Minimising disruption caused by these activities is a particular priority for the Mayor.

³⁴⁹ Under its Network Management Duty, TfL will facilitate cooperation between TfL, the boroughs and utility companies to minimise disruption to the existing road network for all road users in London. The Mayor's overall approach is twofold:

- To improve cooperation and communication between highways authorities and works promoters to improve the coordination of roadworks

- To develop incentives for works promoters to reduce (or eliminate) the time they spend digging up roads and disrupting traffic

³⁵⁰ As a first step towards more effective coordination, TfL has developed an information system known as 'LondonWorks' that shows the location of all works on its roads and the surrounding network. This will enable action to coordinate and effect the management by contractors of these roadworks thereby reducing their adverse impacts on traffic flows and journey times. In addition, the Mayor's Code of Conduct for Roadworks has brought together TfL and the main companies responsible for utility works on London's major roads, to improve cooperation and coordination. The Code of Conduct will be extended to other utility companies and boroughs with their agreement.

³⁵¹ A new roadworks permit scheme has been introduced that will ensure roadworks are planned in an efficient and integrated manner where possible, and are carried out quickly. The permit sets out when works can take place, the length of time allocated, days and times on which road space will be made available to contractors, as well as specifying penalties for not keeping within the agreed restrictions.

³⁵² The Mayor, through TfL, will work towards implementing a 'lane rental' scheme for works promoters wanting to dig up the most congested roads in the Capital. The rental charge would reflect the cost to the economy of taking temporary possession of road capacity. It would aim to incentivise works promoters to reduce the number and duration of roadworks, and quicken the development of

techniques to minimise disruption. The scheme would identify key junctions, times of the day and network links, where roadworks can cause significant traffic congestion. The lane rental scheme, together with penalties for delay, would help to ensure that any organisation wanting to dig up the city's roads would make every effort to cause as little disruption as possible.

Proposal 32

The Mayor, through TfL, and working with the London boroughs and utility companies, will seek to minimise the adverse impact of planned interventions on the road network on the movement of people and goods, by:

- a) Strengthening the Mayor's Code of Conduct for Roadworks to further improve coordination between different highway authorities and utilities across London
- b) Utilising 'LondonWorks' to improve roadworks planning, coordination and information availability
- c) Encouraging collaboration between utility companies and the use of innovative road engineering techniques such as minimum dig technology and temporary plating over roadworks
- d) Implementing the concept of 'lane rental' charges for utilities to reflect the value of their temporary possession of road capacity (in terms of cost of delay to the road user) and to incentivise reductions in the duration of roadworks

5.6.6 Minimising disruption from unplanned events

- 353 There will always be unplanned events and situations affecting the operation of the road network which cannot be planned for in advance, for example, emergencies, vehicle collisions, breakdowns and burst water mains.
- 354 The adverse impacts of these events can be minimised by highway authorities and other agencies involved in the management of the road network, by:
 - Developing physical capabilities and services to respond to events
 - Reducing and mitigating the impacts through effective real time traffic management
 - Taking appropriate remedial actions on the ground
 - Providing effective real time information
 - Developing pre-arranged plans to deal with events which can cause high risks to the safety of the public when they occur
- 355 How these unplanned interventions that adversely affect the normal operation of the road network are managed has a direct impact on the resulting levels of traffic disruption. Highway and traffic authorities, the police and utilities therefore have an important role in identifying the potential causes of unplanned events, minimising response and clear-up times, and effectively managing traffic around such incidents to minimise disruption.

³⁵⁶ Improving the accessibility and availability of customer information about when and how to travel, and how to avoid as far as practicable the impact of incidents and interventions on the network, can improve Londoners' ability to move around the city reliably. This can include better information about incidents before journeys begin (for example, through media available in homes, offices and shopping centres), once they are underway (for example, through improved radio announcements), and in the immediate vicinity of the event (for example, through the use of variable message signs).

Proposal 33

The Mayor, through TfL, and working with the London boroughs and other stakeholders, will improve the real time management of unplanned interventions and incidents on the road network, and improve communications to minimise the disruption and raise levels of public satisfaction with road network management.

5.6.7 Maintaining road network assets for safety and efficiency

³⁵⁷ London's roads, pavements, bridges, tunnels and traffic control systems represent billions of pounds worth of public assets. Maintaining them in a state of good repair is vital for the safe and efficient operation of the network and to achieve a good quality of life and economic productivity.

³⁵⁸ Customer satisfaction with the physical condition of roads and pavements in London is generally higher than that for the management of traffic

and roadworks, and has remained stable at 50 per cent in recent years. However, roads are vital public spaces which all of us use every day. The condition of roads and pavements is therefore fundamental to the quality of the urban environment.

Proposal 34

The Mayor, through TfL, and working with the London boroughs and other stakeholders, will work in collaboration to maintain cost-effectively London's road network assets in a good state of repair in order to maximise their operational safety and effectiveness, and to promote road user satisfaction. This will include:

- a) Conducting programmes for the maintenance of roads, pavements, bridges, tunnels and traffic systems so that the TLRN and borough road network is serviceable
- b) Ensuring highway structures are inspected regularly
- c) Developing a Tunnels Safety Enhancement Programme taking account of, among other matters, fire risks, lighting, communications and surveillance

5.6.8 Developing the road network

³⁵⁹ Due to limited space, the approach taken in London is generally 'to get more' from the existing road network rather than conducting a comprehensive road building or widening programme. However, the strategy recognises the potential need for local road capacity

enhancements in certain circumstances, such as river crossings (see section 5.8), where there can be demonstrated an overall net benefit against the criteria set out proposal 35, below. This approach is consistent with London Plan policy 6.12.

Proposal 35

The Mayor, through TfL, and working with the London boroughs and other stakeholders will give consideration to new road schemes where there is an overall net benefit when judged against the following criteria:

- a) The contribution to London's sustainable development/regeneration including improved connectivity
- b) The extent to which congestion (average vehicle delay, unreliable journey times and poor levels of network resilience) is reduced
- c) How net benefit to London's environment can be provided
- d) How conditions for pedestrians, cyclists, public transport users, freight transport and local residents can be improved
- e) How safety for all is improved

All proposals will demonstrate how any disbenefits will be mitigated.

5.6.9 Outcomes

³⁶⁰ The measures to smooth traffic flow described previously will directly tackle the causes of growth-induced congestion on London's road network. They are supported by measures elsewhere in the strategy to improve and

promote mode shift towards public transport, walking and cycling.

³⁶¹ However, the precise effectiveness of this complete package of measures over the 20 year period of the strategy is uncertain. The level and distribution of any such growth-induced delay and deterioration of journey time reliability by 2031 will be dependent upon future investment and travel patterns, neither of which are precisely known. In addition, during this period there is expected to be continuing technical and social change that will affect the pattern of demand for road space and the way in which the road network can be managed.

³⁶² Furthermore, people's behavioural responses and increased use of sustainable modes in the future may differ from their responses today. For example, as a result of reduced rate and/or free public transport fares, today's children and teenagers in London make greater use of public transport than their predecessors – and could continue this higher level of use into adulthood, inspired further by the behavioural legacy of the 2012 Games. As a result rates of car ownership and use may be lower than today's levels.

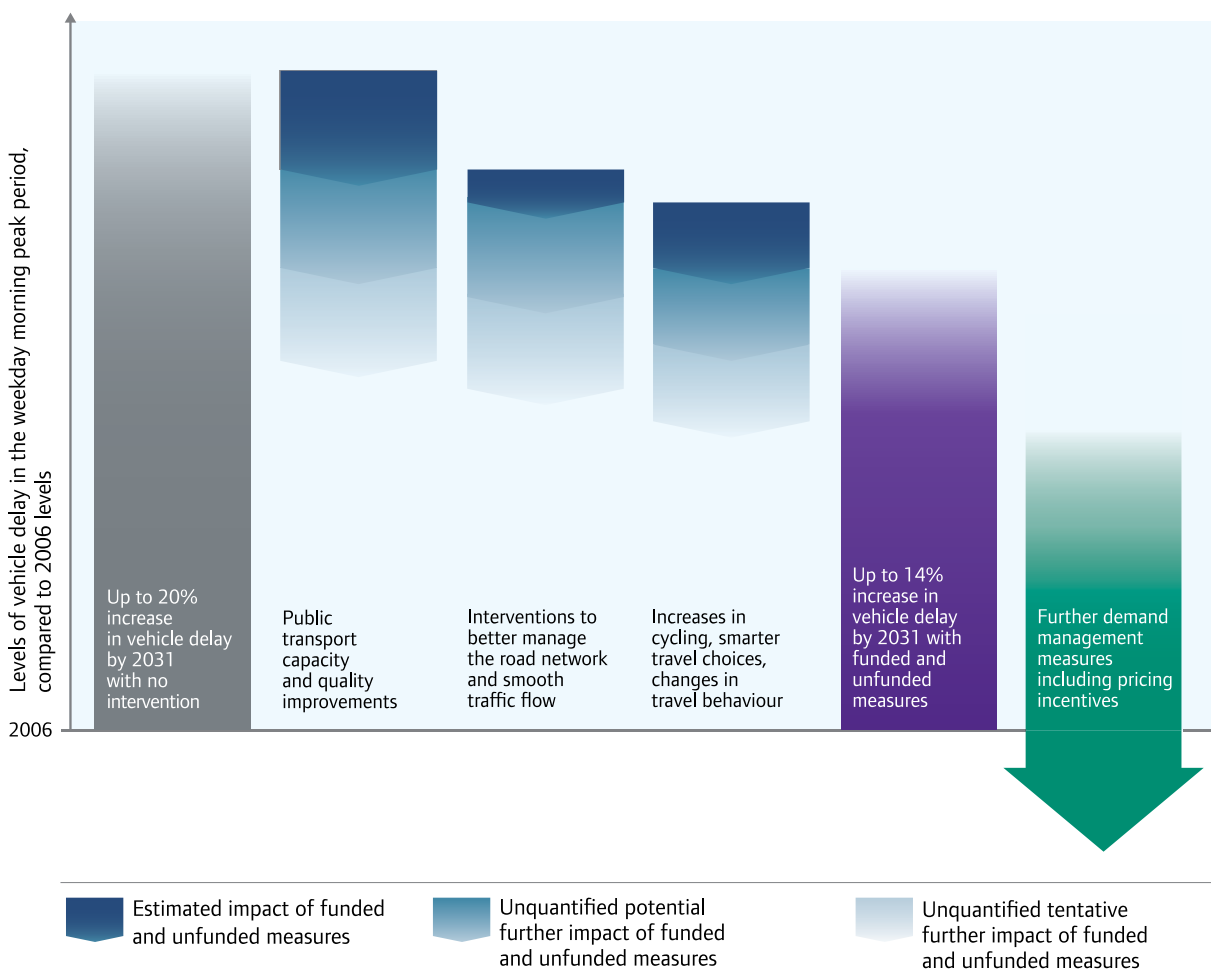
³⁶³ Because of these uncertainties, the effectiveness of the proposals in the strategy may be greater than can be quantified using conventional techniques.

³⁶⁴ Figure 42 illustrates the potential effectiveness of the transport strategy on reducing average vehicle delays on the road network, showing both the estimated level (in dark blue) and possible greater levels of effectiveness that might be achieved. Although a better

understanding of journey time reliability is being gained rapidly through TfL's traffic monitoring processes, still too little is known to usefully forecast levels of future reliability. Improvements to journey time reliability, while expected, are therefore not shown. If the

measures in the strategy achieve their maximum effectiveness then further interventions would not be required, however, with lower levels of effectiveness there would be a need for further interventions in the longer term.

Figure 42: Mitigation of increased road congestion (average vehicle delay)



The policy measures shown in this figure will also improve journey time reliability which is a priority for Londoners and is the strategic outcome measure for 'smoothing traffic flow'. The relative effectiveness of these interventions will also vary spatially, for example between the CAZ, Inner and Outer London

Spotlight

Managing roadworks

It is estimated there are around 500,000 holes dug in London's roads each year. Until recently there was limited ability to control the roadworks taking place in London. This imposed unacceptable costs in terms of congestion and damage to the road surface.

The London Permit Scheme began in January 2010, with the immediate support of TfL and 18 London boroughs, and expressions of interest from other boroughs have followed. The scheme aims to ensure that roadworks are undertaken in the least disruptive manner, are completed as quickly as possible, and are coordinated so all works required at a single location take place at the same time, wherever practical. In its first three months of operation, TfL approved around 12,000 applications to undertake works on the TLRN; 1,800 were refused. This alone will have reduced the overall number of roadworks occurring and

level of disruption being experienced on London's busiest main roads.

The Mayor wishes to introduce a targeted lane rental scheme. This scheme would apply charges to those undertaking roadworks at the busiest time of the day and on the most congested parts of the network. These charges could be avoided by works promoters if, for example, they undertook works at non traffic sensitive times or employed innovative working practices to allow the carriageway to return to traffic use at peak times.

The objective of the scheme would be to focus on the most congested roads in London and the most important pinch points on the TLRN and aim to reduce the volume and duration of roadworks. The scheme would incentivise works promoters by using charges that reflect the value of their temporary possession of road capacity (in terms of cost of delay to the road user).



5.7 The Blue Ribbon Network

5.7.1 Introduction

³⁶⁵ The Blue Ribbon Network encompasses the Thames, the canals, tributary rivers, streams, docks, reservoirs and lakes within London (as shown in Figure 43), a considerable proportion of which is navigable by passenger and freight vessels. Building on the policies in the London Plan, the strategy aims to maximise the network's potential for passenger and freight services, thereby relieving other congested and crowded modes.

5.7.2 Making better use of the Thames for passenger services

³⁶⁶ The Thames has been a strategic asset for London throughout its history, providing a vital link for people and goods. Currently, London's river traffic comprises a variety of freight and passenger services for commuters and tourists. At present, services operate from 22 piers between Putney and Woolwich, nine of which are under TfL management.

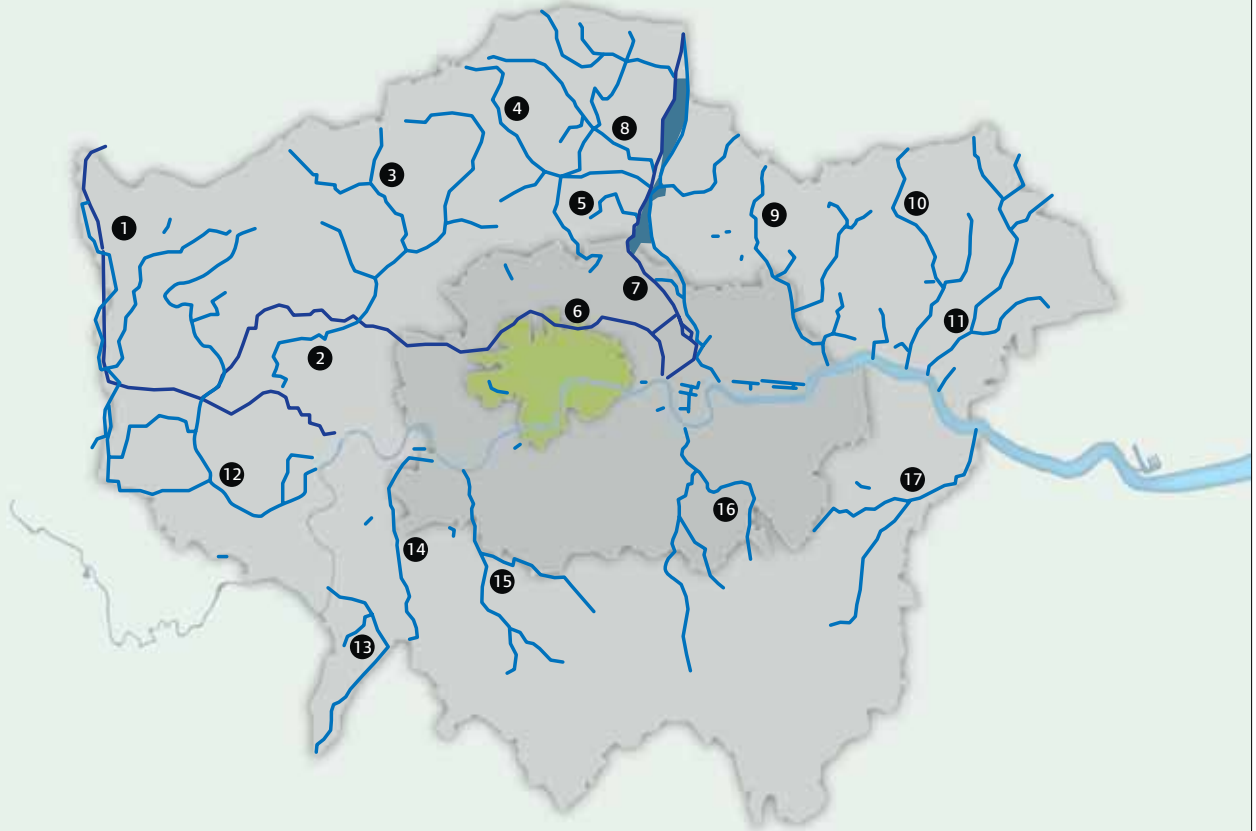
³⁶⁷ 'Riverbus' services provide a comfortable, accessible and occasionally faster alternative to other modes for those within the catchment zone of piers. In 2008/09 nearly 900,000 journeys were made by peak-time commuters on the river. Demand has increased by over 600,000 journeys since 2003/04, driven by riverside property development and commercial developments in the Docklands, as well as improvements to services part-funded by TfL, boroughs and developers. In comparison

with land-based public transport, scheduled commuter services may not be as cost-effective to provide, and can produce higher carbon emissions per passenger. However, if loadings increase, the per capita economic and environmental costs will fall. As further residential, commercial and leisure facilities develop in the Thames Gateway as well as west London, river services may become more popular, making better use of new and existing capacity. Including leisure trips, a total of five million passenger journeys are estimated to have been made on the Thames in London in 2009/10.

³⁶⁸ In order to maximise the potential of the river in the build-up to the 2012 Games and beyond, the Mayor has led the development of a 'River Concordat' between the Port of London Authority (PLA), British Waterways, ODA, boat operators, pier owners, riparian boroughs, TfL, the LDA and other organisations with an interest in improving passenger services on the Thames. The River Concordat Action Plan identifies six core workstreams:

- Providing an integrated and enhanced service for the 2012 Olympic Games
- Increasing pier provision
- Improving service quality
- Integrating ticketing with land transport
- Improving pier signage
- Improving passenger information

Figure 43: The London Blue Ribbon Network



Key	
	Larger tributary rivers
	Canals and river navigation
	Large lakes and docks
	River Thames

- | | | |
|-------------------------|-----------------------|------------------------|
| 1. Grand Union Canal | 8. Salmon's Brook | 15. River Wandle |
| 2. River Brent | 9. River Roding | 16. Ravensbourne River |
| 3. Silk Stream | 10. River Rom | 17. River Cray |
| 4. Pymmes Brook | 11. Ingrebourne River | |
| 5. Moselle Brook | 12. River Crane | |
| 6. Regents Canal | 13. Hogsmill River | |
| 7. River Lee Navigation | 14. Beverley Brook | |
- Note: Not all tributaries are shown

369 The following supporting areas are also being given consideration:

- Boat yard provision
- Skills
- More reliable management information
- Reducing the environmental impact of services

370 Early outcomes of the concordat include a new direct service between Canary Wharf and London Bridge and the extension of Oyster pay as you go ticketing on Thames Clippers'

services. Work is ongoing to further integrate ticketing and passenger information with other modes of transport. Lack of customer awareness of services on the river has been cited as one of the key barriers to greater use. Better signage at public transport interchanges and inclusion within the Legible London wayfinding system may encourage more people to use river services. Improved branding will help customers choose the most appropriate service for their needs.

371 Feasibility work undertaken by TfL has identified scope for additional passenger

services in east London, to complement public transport networks. Potential exists to connect new developments on either side of the river with each other, the Docklands and central London. These would improve cross-river connectivity, capacity and boost the local economy. In the short-term, this could include new services between North Greenwich (The O2) and East India pier, as well as enhancements to the Woolwich Ferry. There may also be demand for a new vehicle ferry service serving Gallions Reach. Further consideration to river crossings in east London is given in section 5.8.

- 372 Options for increasing passenger use of the river will be explored over the period of this strategy through the sub-regional planning process, development planning, as well as through the on-going work of the concordat. Proposals for new services from developers, operators, local and central Government and other agencies, will be welcomed by the Mayor. Sustained commitment will be required from these partners to ensure services remain viable over the course of the MTS.

Proposal 36

The Mayor, through TfL, and working with the Port of London Authority, ODA, boat operators, pier owners, riparian boroughs and other interested parties, will continue by means of the River Concordat to work to enable the development of London's river services to reach their full potential and to better integrate river services into the land-based public transport network.

- 373 Additionally, there may be scope for a new passenger cruise terminal on the Thames where there is capacity to accommodate large vessels, which is supported by London Plan policy 7.26. A new terminal could also support London's tourism and aid local regeneration schemes, although the location would have to be considered in light of other proposals, such as new river crossings.

5.7.3 Pier capacity and supporting infrastructure

- 374 A Pier Plan, commissioned by the LDA, has reviewed the current status of piers from Putney to the Thames Gateway region and made recommendations for where additional pier capacity should be located.
- 375 The most pressing need for more pier capacity is in central London where demand is highest, and competition for space between leisure and commuter services is the greatest. TfL will extend Tower Millennium Pier and the concordat's pier capacity workstream is developing low-cost solutions to enable the expansion of other central London piers.
- 376 Outside central London, TfL will undertake feasibility work to identify if there is a need to build new piers at North Greenwich and Canary Wharf to relieve existing facilities. Further opportunities for new piers will be explored by the pier capacity workstream in line with the Pier Plan and in conjunction with developers, pier owners and other stakeholders; funding will be sought from a range of sources.

- 377 The concordat's pier capacity workstream is also developing pier amenity standards to help ensure more consistent levels of service across the network.
- 378 New river traffic management facilities may also help optimise pier use and reduce conflicts between different passenger services. However, this may entail alterations to the current regulatory framework and would require the full participation of partners in the River Concordat and Government.
- 379 The Mayor also recognises the need for sufficient supporting infrastructure for waterborne transport – both passenger and freight. In particular the need for boat yards to inspect, service and repair vessels. A report conducted by the GLA in 2007 identified the lack of suitable facilities in London and recommended that at least one additional facility be developed to cater for the larger vessels operating on the Thames.

Proposal 37

The Mayor, through TfL, and working with the London boroughs and other stakeholders, will encourage the provision of more pier capacity, particularly in central London and will seek financial support for new piers when considering development proposals in the vicinity of the Thames. The Mayor, through TfL, will also work with the Port of London Authority, boroughs and operators to identify and promote suitable boat yard facilities in London.

5.7.4 Making better use of other rivers and canals for passenger services

- 380 Current infrastructure investment in the waterways surrounding the Olympic Park site, together with increased marketing and promotion is intended to leave a legacy of increased recreational use. Opportunities to provide leisure cruises around the park following the 2012 Games are currently being explored.
- 381 Concordat partners including British Waterways, the ODA and boroughs can help identify opportunities to increase use of other waterways in London such as the River Lee Navigation and Grand Union Canal. Where passenger services on these waterways are viable they will likely be for leisure use, as journey times are generally slow. New or expanded service provision will be dependent on potential demand and local environmental impacts.
- 382 There are also opportunities to improve pedestrian and cycle access to the Blue Ribbon Network and improve the quality of towpaths for a range of leisure and non-leisure trips.

5.7.5 Making better use of rivers and canals for waterborne freight

- 383 The Mayor recognises that transporting freight (including waste) by water is a less damaging option environmentally and can help ease the impacts of congestion on the road network. The shift from road freight to waterborne freight and increasing goods transported (by tonnage) from the current 1.84m tonnes per year is an important element in reducing

Case study

Improving passenger services on the Thames

The Thames is a great highway through central London but has been under-utilised for regular passenger travel for a number of decades. The Mayor has instigated, through 'By the river'¹, a concerted effort by TfL, the boroughs, operators and encourages third party investment to change this by: increasing the number of piers and improving them, operating new services at higher frequencies, introducing new, faster boats and providing better information. The two main operators, Thames Clippers and TEC, now run a number of regular services, from Woolwich in the east to Putney in the west.

As a result, more and more people are discovering the river as a viable, attractive alternative to often congested Tube services, buses and roads for travelling to work and for

leisure opportunities in central London, the Isle of Dogs and North Greenwich. Since 2003/04, river commuting has tripled from under 300,000 trips to nearly 900,000 in 2008/09.

Through participation in the River Concordat, Thames Clippers accepted Oyster pay as you go on its services in November 2009, allowing further integration with other public transport modes in London. The operator has recently launched new direct services to the Docklands from London Bridge pier and service patterns are designed around the needs of rail passengers interchanging from the mainline station. Therefore fast ferry services now provide a feasible alternative to the Jubilee line for Docklands workers, operating high frequency departures every 10 minutes in the peak.

¹ 'By the river', launched by the Mayor in 2009, introduces the River Concordat and other riparian initiatives



vehicle emissions and improving the quality of life in London. The Port of London within the Greater London boundary remains a significant port facility, handling a range of goods.

- 384 Water transport is particularly suited to bulk movements of relatively low value cargoes for which speed is less critical, aggregates and waste/recyclates are prime examples. Within London there are also other cargoes such as sugar, vehicle parts, metals, timber, foodstuffs, fuel, oil and other bulk liquids. Water transport is also well-suited to construction and demolition activities connected with building development. In the Olympic Park at Stratford, waterways have been upgraded so construction material can be transported by water rather than road. The new Three Mills Lock in Bromley by Bow can accommodate barges weighing up to 350 tonnes (equivalent to 17 average HGV loads).
- 385 Future potential for such movements include major construction projects such as Crossrail and the Thames Tideway Sewers. A range of Government grants are available to operators to offset both capital and operational costs.
- 386 Increasing waterborne freight will also depend on the availability of wharf facilities to transfer cargo between land and water. The Mayor has safeguarded 50 such wharves on the Thames and tidal tributaries and London Plan policy will ensure that these sites are maintained and used for waterborne freight (including waste) transport.

- 387 This strategy supports the retention of these wharves. Furthermore, the Mayor believes that there is potential for additional transfer from road to water, particularly for deliveries to central and west London. This will necessitate the reactivation of some of the safeguarded wharves that are not currently in use, and may require the addition of further wharves in appropriate locations to serve this demand. Road access will also be a consideration at these sites.
- 388 TfL has researched the opportunities for freight transport on London's canal network and, along with British Waterways will promote these opportunities further. This will involve the consideration of whether to safeguard a number of wharves on the canal network.

Proposal 38

The Mayor, through TfL, and working with the Port of London Authority, London boroughs and operators, will seek to ensure that existing safeguarded wharves are fully utilised for waterborne freight (including waste), and will examine the potential to increase the use of the Thames and London's canal network for waterborne freight transport.

5.8 River crossings

³⁸⁹ Historically, there have been fewer river crossings in east London than in the west, due to the width of the river, the types of existing land use and the extent of shipping activity east of Tower Bridge. This has resulted in limited interaction between the residential population and businesses on either side of the river, and is one of the factors contributing to lower land values.

³⁹⁰ As the economy of east London has changed, developments such as Canary Wharf, ExCel and The O2 have increased the demand for travel across the river significantly. Many of the large new economic drivers for London are located in east London, with the majority of these lying north of the river, such as the Olympic Park and adjacent Stratford City development, Canary Wharf, ExCel and City airport. Access to these growing destinations from southeast London can be difficult due to the barrier effect of the Thames.

³⁹¹ Over the last 20 years progress has been made on rail and passenger ferry crossings. The DLR extensions to Lewisham and Woolwich Arsenal and the Jubilee line extension have created new river crossings and proved very successful in improving cross-river connectivity. These will be followed by the upgraded East London line in 2010 and Crossrail in 2017.

³⁹² The Mayor supports improving the opportunities for pedestrians and cyclists to cross the Thames in east London, currently limited to the Greenwich and Woolwich foot tunnels and the Woolwich Ferry. In the shorter term, there is the potential

to make greater use of existing passenger ferries, but the potential for new fixed links will be explored whether for pedestrians and cycles only, or in conjunction with other modes. Schemes could include provision of new and enhanced passenger/cycle ferries, new fixed links, or innovative solutions such as cable cars, where these could be appropriate. These crossings would provide alternatives for local journeys on existing crossings and free-up capacity for longer distance travel on the Tube and DLR routes.

³⁹³ In addition, the Mayor is committed to ensuring that where new or improved cross-river pedestrian, cycle and public transport links exist, car drivers, who could switch their journeys to more sustainable modes, are encouraged to do so to reduce the number of car trips at congested crossings. Freight journeys can be timed to avoid peak hours through improved journey planning and supply chain interventions such as DSPs. Other measures, such as consolidation centres and modal shift to rail and water, proposed elsewhere in this strategy (see sections 5.2, 5.7 and 5.24) will also reduce freight traffic in peak hours.

³⁹⁴ However, there will continue to be a need for some journeys to be undertaken by vehicle, in particular commercial traffic and the movement of goods and the provision of services to support a growing economy in east London. Drivers are heavily dependent on the congested Blackwall and Rotherhithe tunnels, each of which have restrictions on the size of vehicle which can use them, and the Woolwich Ferry. Beyond London, the Dartford crossing, forming part of the M25 orbital motorway, also regularly operates at, or

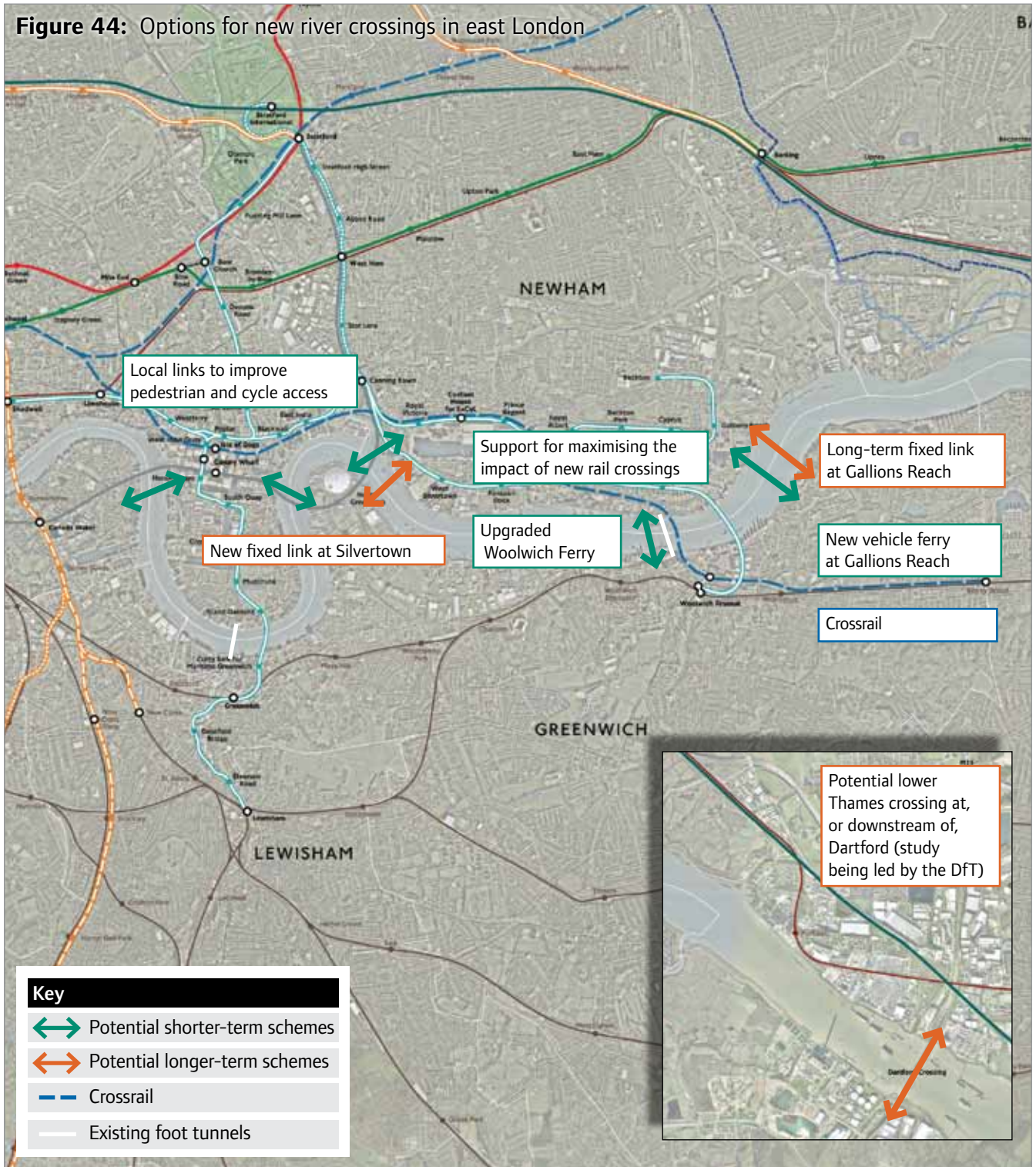
close to, capacity. There is little resilience in the event of an incident at one of these crossings, and local businesses, particularly in southeast London, suffer from this unreliability. The projected increases in jobs and population in the Thames Gateway will increase the problem of highway congestion and road network resilience at river crossings further. The Mayor is therefore supportive of additional road-based river crossings in east London as part of a package of transport improvements.

- 395 The Woolwich Ferry has a lower capacity than a fixed road crossing, but nevertheless provides an essential cross-river link for some road users, particularly HGVs and commercial traffic crossing the river due to vehicle restrictions at the Blackwall and Rotherhithe tunnels and at Tower Bridge. The vessels and landing stages are coming towards the end of their life, and there is an opportunity to replace the existing equipment with more efficient modern vessels.
- 396 The recent TfL review of potential river crossing sites and options identified several areas where more investigation and work is warranted. The package of river crossings will have regard to the needs of all potential users, including vehicles, freight, public transport, walking and cycling. The package of new river crossings in east London is shown in Figure 44.
- 397 A range of funding options are available for crossings. For example, tolling on highway crossings (section 5.27, see proposal 130 and chapter eight) could both help to finance the construction of schemes, as well as providing a means of managing traffic demand.

Proposal 39

The Mayor, through TfL, and working with the London boroughs and other stakeholders, will take forward a package of river crossings in east London, including:

- a) A new fixed link at Silvertown to provide congestion relief to the Blackwall Tunnel and provide local links for vehicle traffic
- b) An upgraded Woolwich Ferry and consideration of a new vehicle ferry at Gallions Reach to improve connectivity
- c) Local links to improve connections for pedestrians and cyclists
- d) Consideration of a longer-term fixed link at Gallions Reach to improve connectivity for local traffic, buses, cyclists and to support economic development in this area
- e) The encouragement of modal shift from private cars to public transport, using new rail links including High Speed One domestic services, Crossrail and the DLR extension to Woolwich, reducing road demand, and so road congestion at river crossings, where possible
- f) Support for Government proposals to reduce congestion at the Dartford crossing



5.9 A more accessible transport system

5.9.1 Enhancing the physical accessibility of the transport system

- ³⁹⁸ This section, together with section 7.2 (Accessibility Implementation Plan), constitutes the Mayor's proposals for the provision of transport which is accessible to persons with mobility problems as required by the GLA Act 1999.
- ³⁹⁹ London's transport system is one of the oldest in the world. The legacy is a large, comprehensive system, but also, in places, notably the Tube and rail networks, one which does not fully meet the accessibility needs of Londoners, particularly mobility or sensory impaired people.
- ⁴⁰⁰ Much is being done to address this issue (see spotlight on transport accessibility). TfL's Business Plan sets out transport projects that are committed to be delivered before 2020, many of which will improve the physical accessibility of London's transport system. In particular, Crossrail will revolutionise the accessibility of central London with step-free interchanges at key stations such as Bond Street and Tottenham Court Road. In addition, accessibility improvements will be delivered as part of the Tube upgrades (for example, addressing platform-train interface and installing platform humps at key locations) as well as step-free access at key 2012 Games Underground stations and through major interchange schemes for example, Bank and Victoria – all building on the foundation of step-free stations already in place. Major redevelopment proposals such as Elephant & Castle and Brent Cross/Cricklewood will also provide an opportunity for further improvements in station accessibility.
- ⁴⁰¹ The DfT's Access for All programme, augmented by Crossrail and other committed investment, will increase coverage of step-free access (from street to platform) to 46 per cent of rail stations in London by 2017. This equates to 160 step-free stations in 2017, compared to 101 (31 per cent) in 2010. The process allows for TfL to influence the DfT's draft suggestions, which has successfully been done for each 'tranche' announced to date. The East London line extension and North London line enhancements will provide a number of new and upgraded step-free stations on the London Overground network.
- ⁴⁰² As the Tube network is renewed, it will be made more accessible. New trains to be introduced on most Underground lines will comply with Rail Vehicle Accessibility Regulations (RVAR), and Underground station refurbishments will provide or include, for example:
- Audible and visual information on all platforms and in all ticket halls
 - Improved handrails to ensure appropriate heights and designs and provide a visual contrast with the wall
 - Improved steps and stairs to provide a visual contrast at the leading edge of each riser and tread

Spotlight

Transport accessibility for all

Progress has been achieved in recent years in terms of the accessibility of transport services. Currently, all buses in London are low-floor, about 20 per cent of Tube stations and a third of National Rail/London Overground stations are step-free from street to platform, and all DLR and Tramlink stations and vehicles are fully accessible.

The DfT's Access for All programme, alongside Crossrail and enhancements to the London Overground network, will provide step-free access coverage at 46 per cent of rail stations in London, by 2017.

As the Tube network is renewed, it will be made more accessible: new trains will comply with RVAR and capacity enhancements at the busiest stations on the network will provide accessibility improvements. All Tube stations will be refurbished with tactile markings and colour-contrasted handrails.

However, there is even more to do to make London's transport system fully accessible for all. The strategy will deliver further improvements, to:

- Journey planning and information (for example, real time bus information via mobile phone or the internet)
- Streets and town centre areas (for example, balanced streets)
- Better bus stop accessibility (for example, removal of street clutter around bus stops)
- Public transport staff and passenger helpfulness, behaviour and attitude (for example, wider availability of staff to assist passengers)
- Further station and train accessibility improvement (for example, new trains, Crossrail)
- Door-to-door services (for example, new vehicles for Dial-a-Ride)



- Removing, modifying or highlighting obstructions
- Providing a visual contrast between Help and Information points and the surrounding walls
- Installing induction loops at every Help and Information point and providing 'listening points' for hearing aid users at some bigger stations
- Improving lighting and public address systems
- Improving signs and wayfinding to help people navigate around stations and trains, including expanding use of pictograms
- Installing tactile warning surfaces on every platform and on all staircases
- Increasing the amount of seating in ticket halls, on platforms and in long corridors and walkways
- Providing more priority seating on trains, at stations, in ticket halls and on platforms
- Further improving the safety and security of stations by increasing the coverage and quality of CCTV, providing safer waiting areas at specific stations with Help and Information points in every ticket hall and corridor and on every platform
- Providing accessible unisex toilets at all step-free stations where toilets already exist

403 In addition, trials of platform humps have been successfully completed, and are being rolled-out across the Tube system as new rolling stock is introduced, as well as using other infrastructure changes to provide level access on to trains.

- 404 Improvements to the accessibility of the street environment are important to complement station access enhancements and are crucial to the whole journey approach. With limited resources available, a joined-up approach will be required.
- 405 The increasing numbers of mobility scooters used by mobility impaired people for trips in London should continue to be supported through an accessible street environment and targeted enhancements with regard to the safety of all road and pavement users.

Proposal 40

The Mayor, through TfL, and working with the DfT, Network Rail, the London boroughs and others will improve the physical accessibility of the transport system by prioritising step-free access at strategic interchanges, improving street accessibility in town centres and around accessible stations and maximising the accessibility benefits of new transport schemes, such as Crossrail. In doing so, the Mayor will seek to maximise the benefits of investment by ensuring that resources are focused on improving accessibility for the maximum number of people, while ensuring an equitable balance across London.

- 406 In particular, it will be important to maximise the benefits of the accessible bus fleet as this is a relatively quick and cost effective way of enhancing physical accessibility to the transport system throughout London.
- 407 The Mayor recognises that the Blue Badge parking scheme has contributed significantly

to expanding travel opportunities for those with severe mobility difficulties. He supports the provision of priority parking places for Blue Badge holders, particularly in town centre locations, at public services and stations, and a 100 per cent discount from the Congestion Charge scheme.

- 408 Further details of the approach to improving the physical accessibility of London's transport network will be provided in TfL's Disability Equality Scheme (DES). This is 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.

5.9.2 Enhancing information provision

- 409 Information is a critical enabler to making the right choice about travel options and needs to be timely and accessible. Disabled people identify improvements in this area as being a key factor in their ability to travel independently and with a feeling of confidence and personal safety. Enhancing pre-trip and in-trip journey information and improving the legibility of interchanges and facilities, will bring benefits to all Londoners, and will go some way to removing barriers to travel.

Proposal 41

The Mayor, through TfL, and working with the London boroughs and other stakeholders, will improve the availability, quality, quantity and timeliness of information about the transport system to remove barriers to travel.

5.9.3 Improving staff service and the attitudes of customers

- 410 It is recognised that the approach of some staff and the attitude of some customers needs to reflect a more considerate approach to the needs of all users of public transport. This can be achieved through raising customer service standards, improved customer relations programmes and disability awareness campaigns, so that those passengers who require additional assistance receive it as a matter of course.

Proposal 42

The Mayor, through TfL, and working with the London boroughs and other stakeholders, will improve attitudes of transport staff and travellers towards each other to ensure excellence in customer service and a courteous, safe and friendly travelling environment that does not present a barrier to travel.

- 411 Some people with mobility difficulties may need to build up confidence before using the public transport system independently. The Mayor will support travel-mentoring initiatives that help mobility impaired people to become accustomed to using the accessibility features on London's public transport system.
- 412 Staff that are available throughout service hours to provide assistance, information and reassurance to all customers are particularly valued by disabled people. All bus stations, Tube and London Overground stations will

continue to be staffed from first to last service. However, there remains the need for greater consistency in availability and the training of staff across the transport network.

Proposal 43

The Mayor, through TfL, will work to ensure a greater staff availability to provide direct assistance to customers and continue to improve customer experience, by enhancing staff training to ensure that the access needs of disabled passengers are understood by all frontline staff.

5.9.4 Door-to-door transport

- ⁴¹³ Door-to-door transport takes people all the way from the origin of their trip to their final destination. Unlike mainstream public transport, where people generally have to access the system at predetermined stops, door-to-door transport can, in most cases, pick up and drop off passengers anywhere. The general aim of schemes such as Dial-a-Ride, Capital Call and Taxicard is to provide transport options for people for whom the mainstream transport network remains inaccessible.
- ⁴¹⁴ Dial-a-Ride is a free door-to-door transport service for disabled people who can't use buses, trains or the Tube. It can be used for many types of journeys, making it easier for disabled people or people with lower levels of mobility to go shopping and visit friends. Eligibility for Dial-a-Ride membership includes those people who have a permanent or long-term disability which means they are unable, or virtually

unable, to use mainstream public transport services some or all of the time.

- ⁴¹⁵ Dial-a-Ride is a very successful and popular service, currently catering for around 1.3 million trips a year. Customer satisfaction rating is also running at more than 90 per cent.
- ⁴¹⁶ Funding of door-to-door services has significantly increased over the past few years, delivering a number of enhancements. Improvements to Dial-a-Ride have included extending eligibility, scrapping fares and making improvements to the call centre and booking system. TfL continues to jointly fund Taxicard with the London boroughs and fully fund Capital Call, both of which provide subsidised transport to people who have mobility impairment and difficulty using public transport. Demand continues to outstrip the supply for door-to-door services and discussions between TfL and London Councils are ongoing to explore the best use of resources in maintaining and improving these services.

Proposal 44

The Mayor, through TfL, will support door-to-door services for people with mobility problems who require this form of transport service.

5.9.5 Accessibility Implementation Plan

- ⁴¹⁷ An accessibility implementation plan, as required by the GLA Act, is set out in section 7.2 of this strategy.

5.10 Integrating London's transport system and services

5.10.1 Improving interchange

⁴¹⁸ Interchanges, whether local or major transport hubs, vastly expand the level of accessibility to opportunities and services offered by London's transport system by enabling multi-modal journeys, and those involving more than one public transport service. The convenience, comfort, information provision, safety and reliability experienced at interchanges are

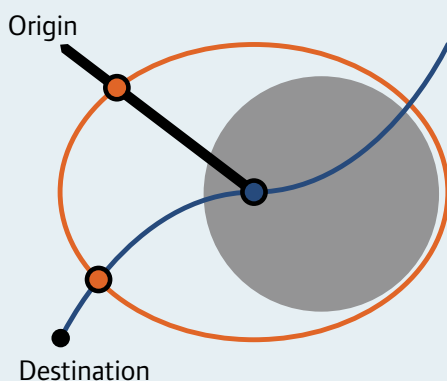
important determining factors in Londoners' perceptions of the quality and attractiveness of the transport system. Interchanges have a crucial role to play in improving the efficiency of London's transport system, as well as the relative attractiveness of public transport to the car and tackling car dependency.

⁴¹⁹ Interchanges not only enable travel choices, but also provide opportunities to create better places to live and work as well as support population and employment growth in highly accessible and sustainable locations. Improved

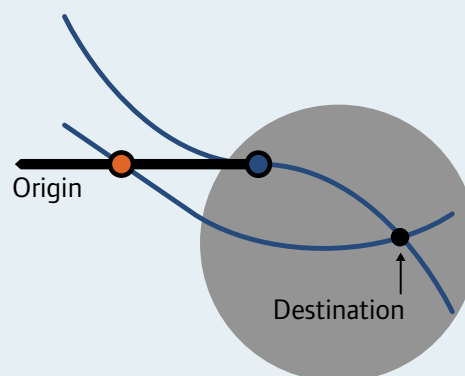
Figure 45: Strategic interchange concepts

Strategic interchanges will help to relieve passenger dispersal pressures at central London rail termini through two primary means:

1) Enable interchange to orbital public transport services to avoid the need to enter central London



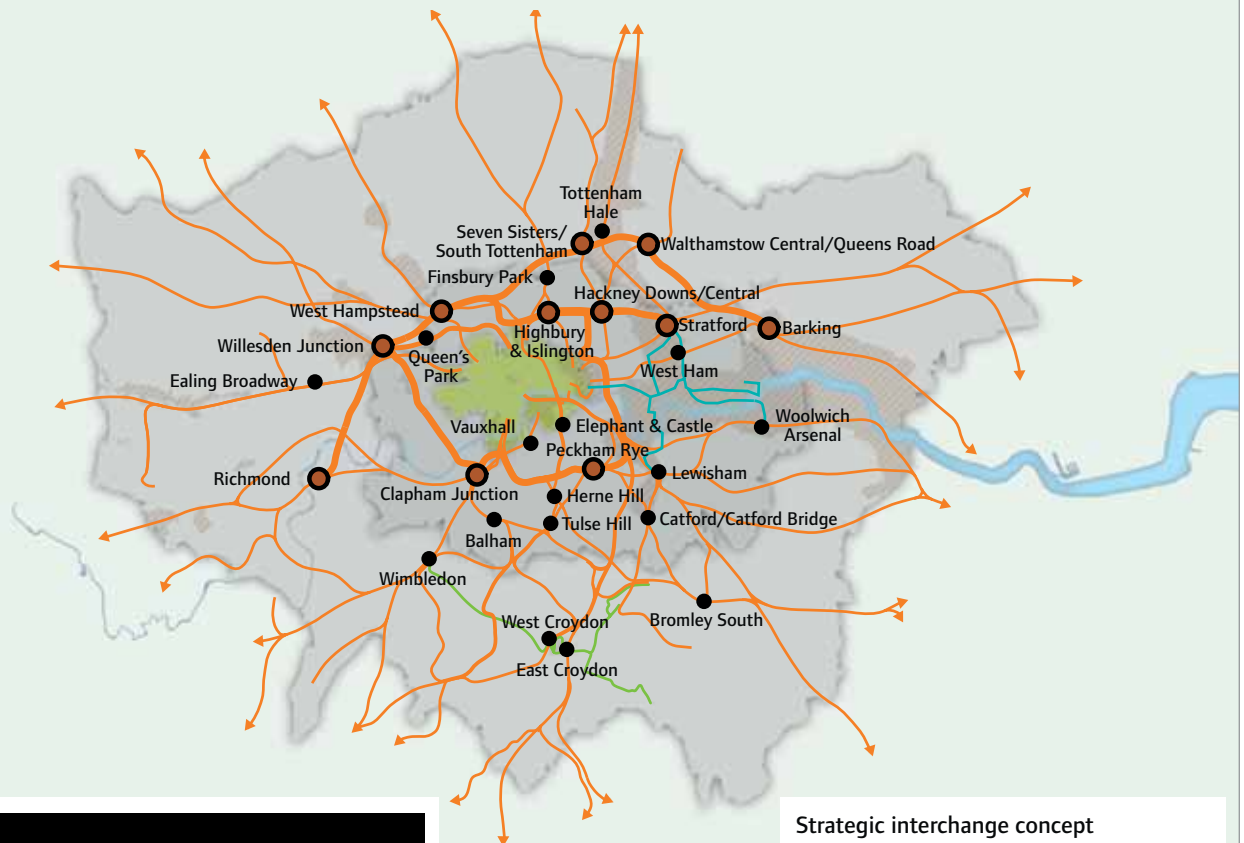
2) Enable interchange between National Rail and Underground/bus services at a point prior to the rail termini, thereby reducing pressure at overcrowded rail termini interchanges



interchanges can support the alleviation of crowding and congestion, maximise access to business and employment markets (on a London-wide, national and international scale), improve connectivity, improve passenger

journey experiences, and help address key environmental and quality of life concerns, such as air quality, health and noise pollution. In collaboration with partners and stakeholders, TfL has published Interchange Best Practice

Figure 46: Examples of strategic interchange locations outside central London

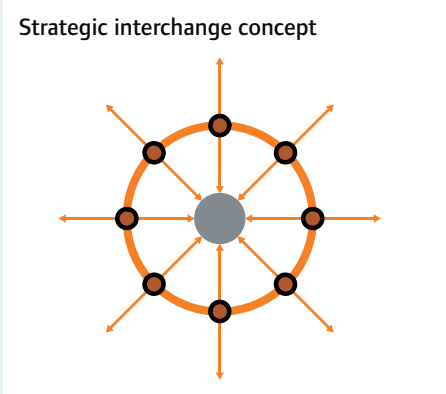


Key

- Radial rail routes
- London Overground orbital routes
- Docklands Light Railway
- Tramlink

Interchanges between radial rail routes and:

- London Overground orbital routes
- Other lines



Guidelines that provide advice and guidance to those involved in planning, improving and operating high quality effective interchanges.

Proposal 45

The Mayor, through TfL, and working with Network Rail, the train operating companies, London boroughs and other stakeholders, will improve the customer experience and physical accessibility at interchanges across London through the application of the principles set out by the TfL Interchange Best Practice Guidelines of 'efficiency', 'useability', 'understanding' and 'quality' to all interchange schemes in London. Such measures include:

- a) Provision of consistent and enhanced travel information
- b) Improved walking and cycling facilities at, and on routes to, public transport stations and stops
- c) Improved integration of public transport services in London, both in terms of service planning and physical location
- d) Improved efficiency, effectiveness and quality of interchanges across London to further integrate London's transport system
- e) Provision of consistent customer service delivery standards
- f) Assurance that interchange facilities have sufficient capacity to meet travel demand

5.10.2 Strategic interchanges

⁴²⁰ Strategic interchanges are primarily radial to orbital rail interchanges. They have the potential to reduce travel times and relieve crowding in central London, including interchange capacity pressures at London's rail termini. Connectivity and central London crowding relief benefits are offered by new and enhanced orbital public transport services, see Figure 45. Some also offer significant development potential, due to their enhanced public transport accessibility and connectivity. Figure 46 shows potential key strategic interchanges outside central London.

Proposal 46

The Mayor, through TfL, and working with Network Rail, the train operating companies, London boroughs and other stakeholders, will prioritise improvements to strategic interchanges, that will:

- a) Provide opportunities for orbital public transport services
- b) Provide interchange opportunities before arriving in central London, in order to reduce interchange capacity pressure at London's rail termini
- c) Provide opportunities to accommodate population and employment growth, with developer contributions towards the interchange improvements sought in appropriate circumstances

Spotlight

Woolwich Arsenal strategic interchange

The new DLR station at Woolwich Arsenal in Greenwich has created a strategic interchange in Outer London. The interchange enables passengers travelling on radial National Rail services into central London to interchange at Woolwich and make orbital journeys north, across the Thames, towards important destinations such as Stratford – home of the Olympic Park – London City airport and Canary Wharf.

The interchange is heavily used by passengers changing from orbital bus services travelling into Woolwich from areas such as Plumstead. More than 50 per cent of arrivals for DLR services from Woolwich have interchanged from bus or National Rail services. Cycle parking outside the station is also heavily used.

The Woolwich Arsenal strategic interchange will be further enhanced when the planned Crossrail station opens in 2017.

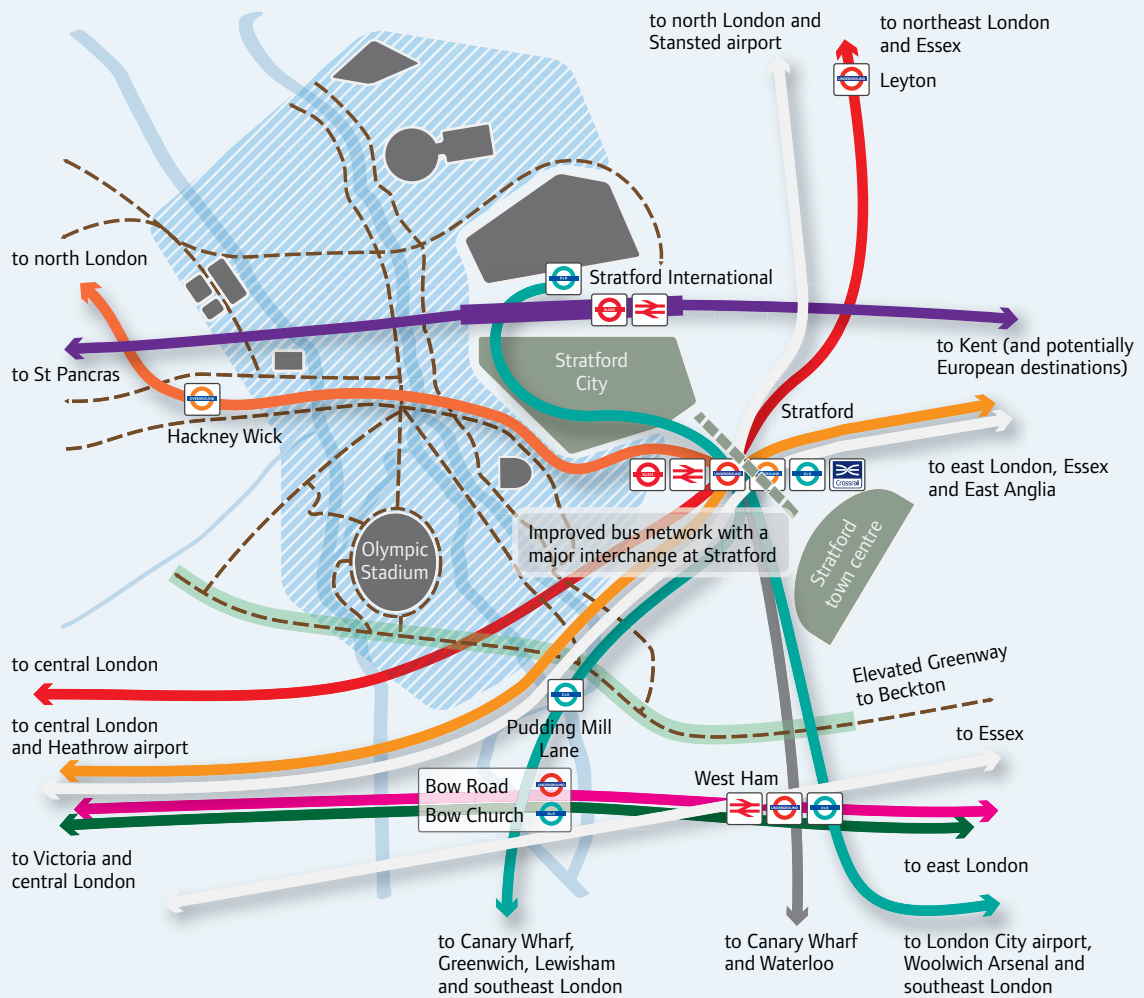


5.11 London 2012 Olympic and Paralympic Games

5.11.1 The 2012 Games legacy

- ⁴²¹ As highlighted in chapter four, the Games provides London with a unique opportunity to change people's behaviour and encourage a lower carbon, healthier life style by increasing the awareness and use of walking, cycling and public transport. This is particularly important in Stratford, where the Olympic Park will be fully accessible by public transport, as well as walking and cycling routes. The level of accessibility can be seen in Figure 47.
- ⁴²² Transport can support the wider legacy benefits of the 2012 Games in two key ways:
- Firstly, new transport infrastructure being delivered for the Games will improve accessibility to jobs and services for local people and offer a wider choice of travel modes, for example, walking and cycling routes and access to new DLR stations. This will also contribute towards reducing car dependency and road congestion, and reduce carbon and other emissions
 - Secondly, promotion of more active modes of travel following the Games, building on the inspiration of the athletic performances through targeted awareness programmes. These include smarter travel to support improvements in health and the local environment
- ⁴²³ The London 2012 'Active Travel Programme' will use the Games as a catalyst to encourage spectators and the public to walk and cycle more before, during and after the Games. The programme will help to raise awareness about the benefits of walking and cycling as a mode of transport nationwide, and help increase the number of such journeys across London and the UK.
- ⁴²⁴ To promote healthy and environmentally sustainable lifestyles beyond the Games, initiatives are being developed to encourage walking and cycling in the five Olympic boroughs of Tower Hamlets, Hackney, Greenwich, Newham and Waltham Forrest; and within the area of the Olympic Park.
- ⁴²⁵ TfL is also providing extra funding for boroughs in advance of the 2012 Games for public realm improvement schemes at sites that will attract significant visitor numbers during the Games. These will transform the quality of the environment and urban realm in line with the principles of 'better streets' and provide a lasting legacy in the local area. Further interventions may be appropriate.
- ⁴²⁶ Additional complementary transport infrastructure investments may also be required to realise the local benefits of the Olympic Park that will be transformed through the Olympic Legacy Masterplan.

Figure 47: Olympic Park legacy international, national, regional and local connections



Key

2012 Olympic Park area	Elevated Greenway	High-speed rail
2012 Olympic buildings	Crossrail	Central line
Pedestrian bridge	London Overground	District line
Off-highway cycling and walking routes	DLR	Hammersmith & City line
	National Rail	Jubilee line

Highway network not shown

Subject to potential review by the Olympic Legacy Transport Plan process

- 427 The 2012 Paralympic Games will also provide specific legacy benefits for Londoners that will need to be embedded with further initiatives after the Games. New infrastructure for the Games, such as the DLR extension to Stratford International, the upgrade of Stratford station and step-free access at key Underground stations such as Green Park, all contribute towards more accessible public transport services. The Paralympic Games will also do much to promote the awareness of disability among transport operators and the general public.
- 428 In order to better understand the additional interventions that may be required to ensure maximum synergy with other intervention programmes, to maximise benefits of transport investment and ensure transport fully supports the principle of convergence outlined in chapter four, the Mayor proposes to develop a Transport Legacy Action Plan with key partners. The plan will be embedded in the sub-regional transport plan process and delivered through the TfL Business Plan and the boroughs' LIPs.

Proposal 47

The Mayor in partnership with the London boroughs, TfL and Olympic Park Legacy Company, will develop a Transport Legacy Action Plan and monitoring programme to ensure the benefits of the legacy of the 2012 Games are maximised and that transport interventions support convergence as set out in the five Olympic Boroughs Strategic Regeneration Framework. The plan will be monitored for 10 years after the Games, and will define:

- Partners and their responsibilities
- The monitoring area within the five Olympic boroughs
- Key indicators and targets within the monitoring area and London-wide
- Actions and interventions required to meet the targets
- Annual review of targets

5.12 London's airports

⁴²⁹ This section focuses on airport capacity and surface access to airports. The Mayor's approach to broader aviation issues is outlined in section 4.2.2.1 'Supporting and developing London's international, national and inter-regional transport connectivity' and in draft replacement London Plan policy 6.6. Measures to improve the carbon efficiency of air transport are set out in section 5.22 'Reducing carbon dioxide emissions' of this strategy, including proposal 101.

5.12.1 Airport capacity

⁴³⁰ Demand for air travel will continue to pose a major challenge for London. The number of passengers travelling through London area airports amounted to almost 140 million in 2008, making this area the busiest in the world. Unconstrained, demand is expected to rise to 290 million passengers each year by 2031. Current airport capacity in the South East will, however, limit trips to 180 million passengers a year. This could have the effect of limiting London's economic growth and putting its competitive position at risk.

⁴³¹ Committed capacity enhancements, principally Crossrail and the Piccadilly line upgrade, are designed to accommodate demand based on projected growth to existing permitted levels of airport use.

⁴³² A third runway at Heathrow would increase capacity ultimately to 702,000 air traffic movements per year. This would significantly

increase passenger demand for surface rail and road access on already congested networks. However, the DfT has stated that a detailed surface access strategy is not a 'prerequisite for a policy decision' regarding a third runway. Current forecasts suggest that by 2030, with a third runway, non-transfer passenger numbers could more than double, to 91 million per year. This would reduce resilience and increase crowding, congestion and delays elsewhere along rail and road corridors serving Heathrow and across west London as a whole. Public transport would become less attractive for users, especially at peak times. Airport expansion would further threaten to reduce the quality of life of many London residents.

⁴³³ Noise pollution currently affects a large number of residents underneath the Heathrow flight paths. DfT modelling estimated that in 2008 over 250,000 people were within the Leq (used as the national airport noise exposure index) noise contour of 57 decibels or above. Measures to reduce noise pollution from aircraft are outlined in proposal 89.

⁴³⁴ Air quality is also a serious issue at Heathrow. The airport is at risk of failing to meet EU NO₂ maximum limit values in 2015. Surface access trips further compromise air quality: an extra three million car trips per year are forecast between 2010 and 2015. Measures to improve air quality are outlined in section 5.21 and policy 3 of the draft Mayor's Air Quality Strategy.

⁴³⁵ Nevertheless, the Mayor recognises that adequate airport capacity is critical to the

continued competitiveness of London's economy. For this reason, the Mayor will consider whether optimum use is being made of existing airport infrastructure (though mixed mode operation is not favoured at Heathrow).

- ⁴³⁶ Stansted, Gatwick and Luton airports have important roles serving London as well as the South East. The Mayor will continue to work with partners in neighbouring regions through the Advisory Forum on Regional Planning for London, the South East and East of England to ensure that existing aviation infrastructure is used to its fullest extent before other options are considered for providing further airport capacity (this is set out in the aviation section, chapter six, London Plan).
- ⁴³⁷ Solutions are, however, not limited to additional airport capacity. There is potential to increase transfer from short-haul domestic and European flights to rail journeys through existing and possible future high-speed rail services, thus freeing up take-off and landing 'slots' for long-haul capacity.

Proposal 48

The Mayor recognises that the provision of adequate airport capacity serving the South East is critical to the competitive position of London in a global economy, but will oppose any further increases in runway capacity at Heathrow.

5.12.2 Surface access to airports

- ⁴³⁸ London's four main airports will continue to be the gateway to the city for the majority of overseas visitors, so high quality, efficient surface access is vital to promote London and the UK as a place to visit and do business. Completion of Crossrail and the Thameslink upgrade will improve the public transport capacity and connectivity of Heathrow and Gatwick. The West Anglia National Rail upgrades (including the four-tracking project mentioned elsewhere in this section) will also enhance the capacity of rail services to Stansted. However, further improvements are required, in particular to access Heathrow.
- ⁴³⁹ The Mayor supports the principle of Airtrack (being promoted by BAA/Heathrow Airport Limited), subject to clarification of its impact on existing services to Waterloo, its impact on level crossings, and the scheme having a robust business case. If implemented, Airtrack would deliver a new rail link connecting the existing rail line from Waterloo to Reading with Heathrow Terminal 5. This project would cost around £650–£700m, and could be delivered by 2014. Airtrack has the potential to significantly improve connectivity to Heathrow by enhancing public transport access from southwest London, and support its role as a major transport and employment hub.
- ⁴⁴⁰ Government has approved expansion at Stansted, which will increase the airport's capacity from 25 to 35 million passengers per year. A package of measures has been developed to support this expansion. This

includes widening the M11 between junctions 6 and 8 (between the M25 and Stansted) and the provision of further rail capacity (including a new fleet of Stansted Express trains ordered in 2009).

- 441 BAA has submitted proposals to provide an additional runway at Stansted, which could see the number of passengers using the airport rise from 35 million to 68 million by 2030. The Mayor has concerns about the impact this expansion will have on public transport services into London and believes that essential improvements to Tottenham Hale Underground station and along the West Anglia main line need to be funded before planning permission is granted.

Proposal 49

The Mayor believes the aviation industry should meet its full environmental and external costs and supports the position of 'The Future of Air Transport' White Paper published in 2003. This states that airport operators should be responsible for paying the costs of upgrading or enhancing road, rail or other transport networks or services where these are needed to accommodate additional passengers travelling to, and from, expanded or growing airports.

- 442 London City airport was granted planning permission in 2009 to accommodate 120,000 flights per year. The opening of the DLR extension to the airport means that, at more than 50 per cent, it currently has the highest public transport surface access mode share of

any airport serving London. DLR infrastructure to support this growth is in place, though further rail vehicles are required to provide the required service capacity.

- 443 TfL has worked with airport operators through their airport transport forums to help improve surface access to airports. Continued close engagement with airport operators and local boroughs will be essential to serve the increasing numbers of air passengers and encourage a shift from private car to reduce congestion and improve surrounding air quality.

Proposal 50

The Mayor, through TfL, and working with the London boroughs, DfT, airport operators, Network Rail, train operating companies and other stakeholders, will seek to improve access to London's airports for passengers and staff by public transport, particularly from those parts of London which do not currently have good access by rail or bus; and for goods through better management of the road network, development of consolidation/break-bulk centres and encouragement of access by rail and waterway.