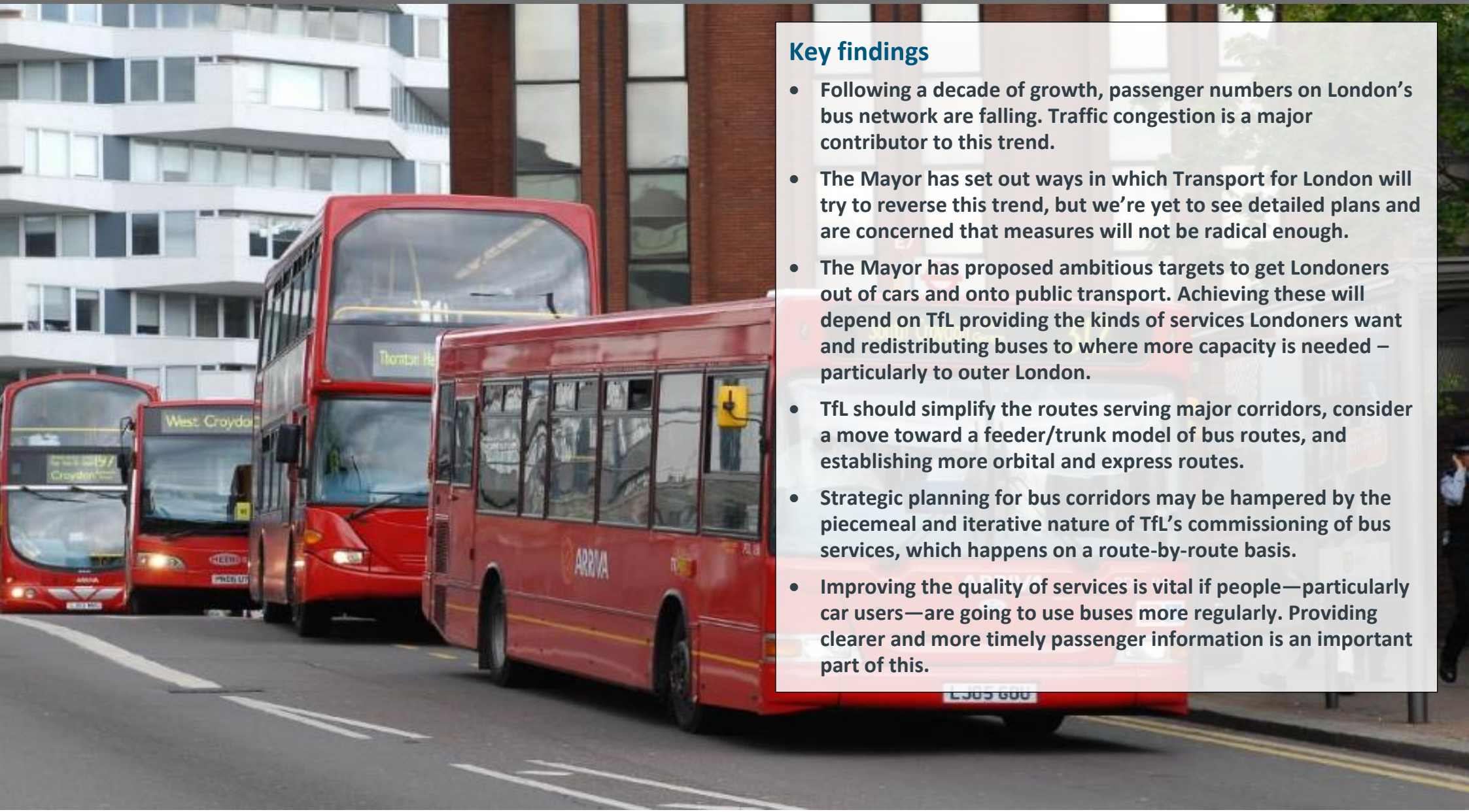
LONDONASSEMBLY

Transport Committee

Holding the Mayor to account and investigating issues that matter to Londoners

London's bus network

August 2017



Key findings

- Following a decade of growth, passenger numbers on London's bus network are falling. Traffic congestion is a major contributor to this trend.
- The Mayor has set out ways in which Transport for London will try to reverse this trend, but we're yet to see detailed plans and are concerned that measures will not be radical enough.
- The Mayor has proposed ambitious targets to get Londoners out of cars and onto public transport. Achieving these will depend on TfL providing the kinds of services Londoners want and redistributing buses to where more capacity is needed – particularly to outer London.
- TfL should simplify the routes serving major corridors, consider a move toward a feeder/trunk model of bus routes, and establishing more orbital and express routes.
- Strategic planning for bus corridors may be hampered by the piecemeal and iterative nature of TfL's commissioning of bus services, which happens on a route-by-route basis.
- Improving the quality of services is vital if people—particularly car users—are going to use buses more regularly. Providing clearer and more timely passenger information is an important part of this.

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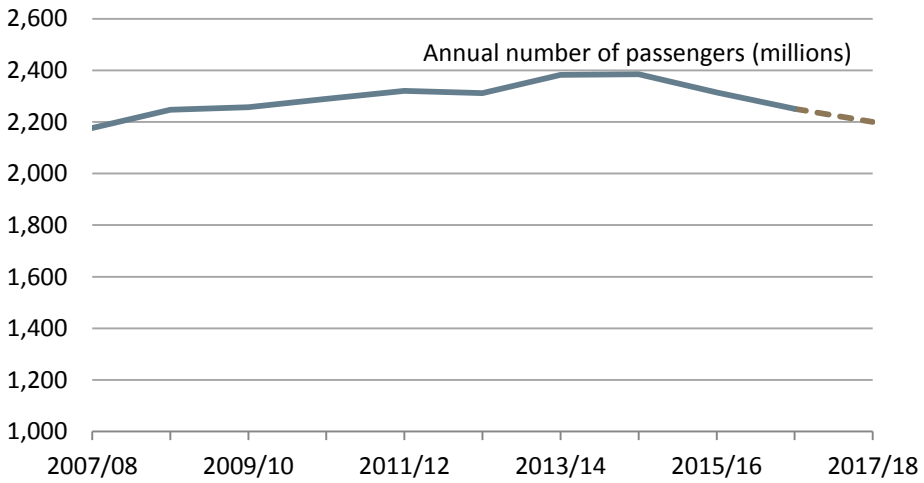
Bus passenger numbers are in decline

Buses are the busiest form of public transport in London. At over two billion passenger journeys a year, usage is around double that of the London Underground. The city has 675 bus routes, with around 9,000 buses in operation and over 19,000 bus stops.

Following a decade of strong growth, bus passenger numbers are now in decline. Between 2014-15 and 2016-17, the number of passenger journeys made on buses fell by six per cent.[1] In TfL's Business Plan, published in December 2016, TfL predicted a recovery in passenger numbers, projecting an 11 per cent increase in the next five years.[2]

Figure 1: Bus passenger numbers have fallen in recent years[3]



TfL has already had to revise this projection down. Figures published in March 2017 showed that passenger numbers for the past year were lower than expected, with the projection for 2017-18 revised down by about five per cent. This will lead to a fall in fare revenue, which has implications for TfL's ability to manage and invest in the network.

> The Business Plan forecast growth in bus demand of 1.4 per cent [in 2017-18] based on a recovery in speed as roadworks completed and new bus priority measures were introduced. Demand has not recovered to the anticipated levels and it is now forecast to decline by an average of 2.3 per cent, which will result in a £99m reduction in fares income compared to the Business Plan. **TfL Budget 2017-18**

There are a number of reasons why bus usage has fallen. Passengers may be switching to use other forms of public transport where these have become more attractive. The capacity of both the tube and the London Overground has increased and usage has continued to rise. The introduction of Elizabeth line services from 2018 is likely to lead to further mode shift from buses. The number of private hire vehicles on London's roads has also increased dramatically; some passengers may be switching to this mode from buses, particularly for journeys at night.

The primary reason for the fall in usage appears to be the rise in traffic congestion on London's roads. We investigated congestion in 2016-17 and found that, after a long period of stability, traffic congestion had been increasing for a number of years.[4] In central London in the morning peak, average traffic speed fell by 18 per cent from 2012-13 to

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2015-16, while the average vehicle delay (minutes per kilometre) increased by 50 per cent in this period.[5]

The causes of the rise in traffic congestion are complex. Ultimately, however, it is a result of traffic levels increasingly exceeding the amount of available capacity. There are two sides to this equation. On the one hand, traffic from sources such as delivery vans and private hire vehicles has gone up considerably. On the other, road space has been diverted from private motorised traffic as TfL and boroughs have introduced measures like public realm improvements, bus lanes and cycling infrastructure, such as segregated Cycle Superhighways.[6]

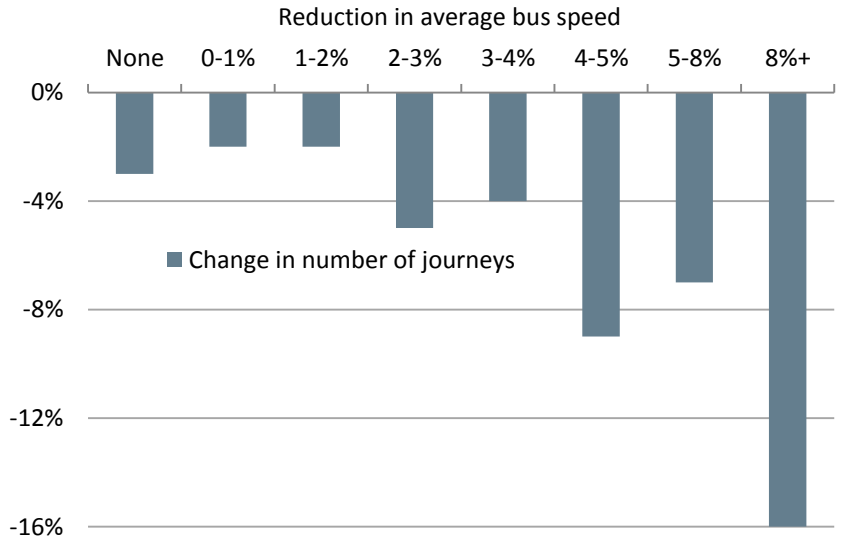
Congestion has led to deterioration in the performance of the bus network. There has been an increase in 'excess wait time' for bus passengers of 20 per cent in the three years to 2015-16.[7] TfL data also shows that bus passenger numbers have fallen most sharply on those routes where bus speeds have declined the most (see Figure 2).

TfL is investing in bus priority measures to help alleviate the effect of congestion on buses. These measures would include introducing new bus lanes, bus-only turns or slip roads. The Mayor's draft Transport Strategy proposes new measures such as extending the operating hours of existing bus lanes, for instance to the entire weekend.[9] TfL has allocated an average of £24 million per year over its five-year business plan, with 170 bus priority schemes planned in 2017-18.[10]

Transport Committee recommendations on tackling congestion

- Reform the Congestion Charge so it targets congestion more effectively
- Explore options for a wider road pricing scheme
- Encourage delivery consolidation centres and 'click and collect' at stations
- TfL piloting a ban on staff receiving personal deliveries at work
- Assess whether new regulation will reduce congestion from private hire
- More effective planning of road improvement schemes to avoid congestion

Figure 2: Usage has fallen faster on routes with bigger drops in speed[8]



While we welcome the money TfL is spending on bus priority measures, it is a relatively small amount and can only deal with the symptoms of congestion. Congestion is a wider problem that must be tackled as a whole. We will be pressing the Mayor to implement recommendations from our report on this topic.

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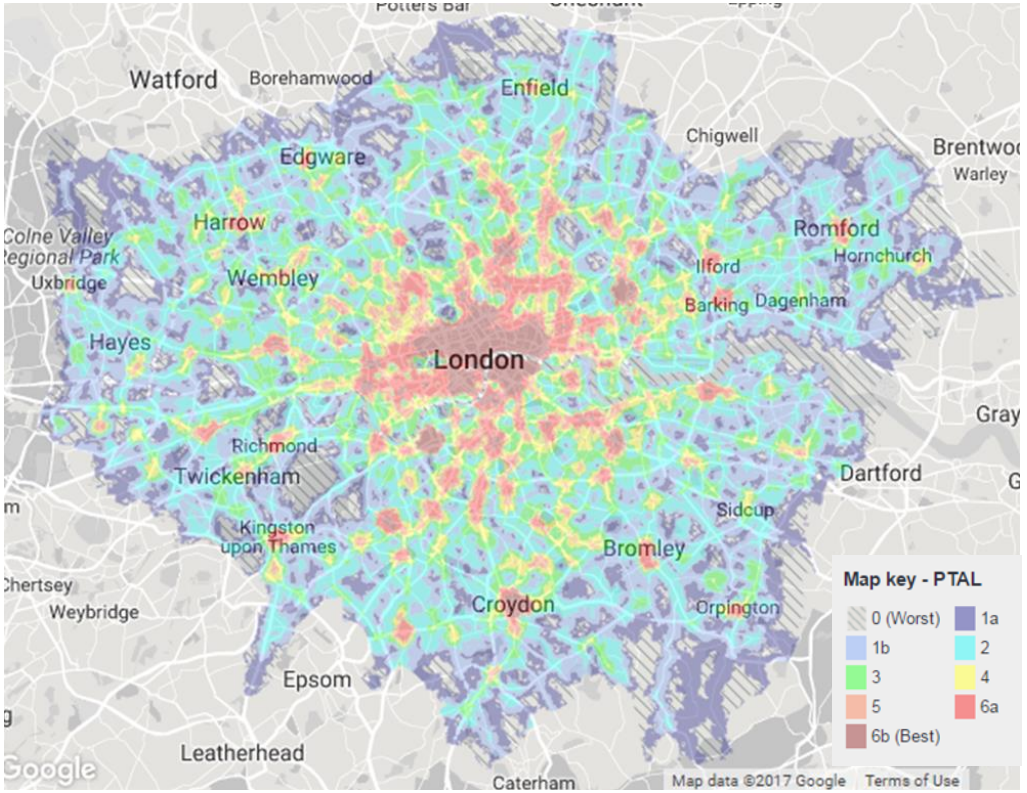
Putting buses where they are needed

London's bus network needs to change as the city grows and evolves. Transport infrastructure and travel patterns change – for instance, the opening of the Elizabeth line will likely reduce bus demand in certain places while increasing it in others. The network particularly needs to serve new housing developments and emerging employment centres, including the 38 Opportunity Areas specified in the London Plan.[11] Indeed, London Councils told us that planning for new bus services is crucial to the viability of some new developments.[12]

The area of London most in need of additional bus capacity is outer London. Much of London's growth will take place in outer boroughs, which already tend to have poorer transport connectivity. The map opposite displays Public Transport Accessibility Level (PTAL) scores for London, indicating how far locations are from frequent public transport locations.

Outer London should offer the most potential for mode shift from cars to public transport, as car use is significantly higher there.[13] On average, outer London residents make twice as many car journeys than inner London residents, and significantly fewer bus journeys.[14] Changing this would be vital to achieving the target the Mayor has set in his draft Transport Strategy to have 80 per cent of journeys in London made by sustainable modes.

Figure 3: Public transport accessibility is lower in outer London[15]



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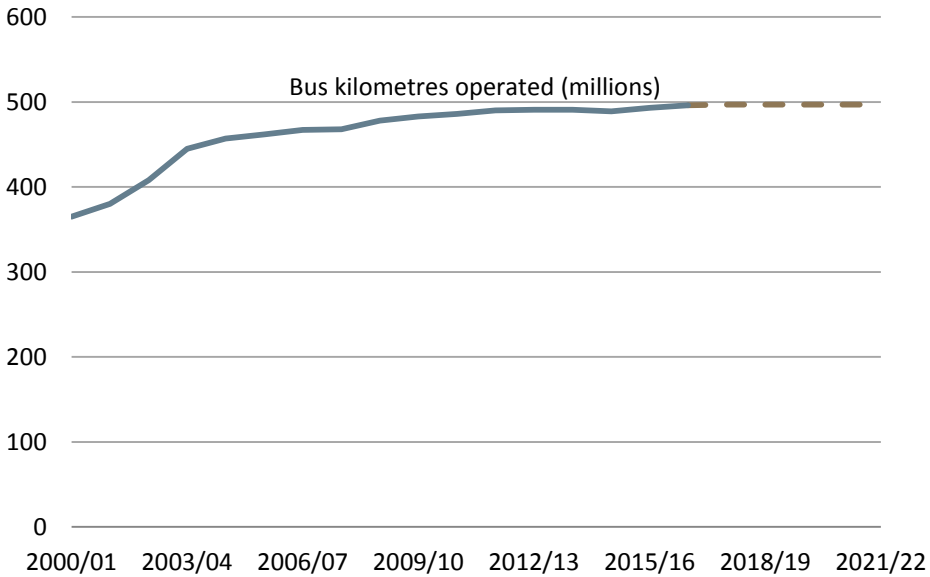
TfL is not planning to increase the overall capacity of London's bus network. If it wants to grow bus services in outer London it will have to redistribute buses currently operating in central or inner London. London's bus services have been expanding in recent years, but this period of expansion is now over. Between 2000-01 and 2015-16, the number of bus kilometres operated in London grew by 35 per cent to almost 500 million km per year, but no further growth is planned for the next five years, as shown in Figure 4. So, despite rising demand for public transport from a growing population, there will be no additional capacity on the bus network. TfL told us that there is no additional money available to increase service volume.[16]

Figure 4: Bus service expansion will be halted for at least five years[17]



There are currently too many buses in central London, so there is scope to redistribute buses to improve services elsewhere. There is a high degree of replication of bus routes, especially as they reach the city centre. Many major roads, therefore, are subject to significant bus-on-bus congestion, with buses that may be full in peak hours but not at other times. We heard from TfL Commissioner Mike Brown that TfL determines the number of buses it runs according to suburban demand levels. Arguably this can lead to over-provision in central London.

The Mayor and TfL accept the need to redistribute bus services to provide more capacity outside central London, but have not set out specific proposals to do this. The recent decision to reduce the number of buses along Oxford Street by diverting or curtailing routes serving the area was, in part, justified by the need to free up resources to deploy in other parts of London. The need to redistribute capacity was also discussed in the Mayor's draft Transport Strategy. However, the strategy did not set out any specific proposals on this, for instance details of how much capacity would be redistributed.

> Part of the mission there is to recycle that released bus capacity to areas of high demand elsewhere because we know there are areas of middle and outer London where we really do need that additional bus capacity… we will be moving some bus capacity from the centre into areas of high demand. **Deputy Mayor for Transport, Budget & Performance Committee, January 2017**

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New orbital bus routes are a particular priority for London. A number of boroughs and other stakeholders told us that London needs more orbital routes, connecting different parts of outer London.[18] Such routes may help to reduce passenger journey times and connect people to employment opportunities outside central London. TfL told us that it has 100 such routes (out of 675). However, the Mayor's draft Transport Strategy did not refer to orbital bus routes or discuss their possible expansion.

> Many orbital journeys are unnecessarily difficult, for example the old 347A route from Uxbridge to Hemel Hempstead. People are forced to travel via zone one when a direct bus route would be as quick and remove pressure on overcrowded rail routes.
> **Submission from Campaign for Better Transport**

Expanding bus services in outer London must be a key mayoral priority. Without doing this, it is very difficult to see how the Mayor will achieve his ambition of having 80 per cent of all journeys in London made by sustainable modes. With no overall increase in capacity planned, redistributing buses to under-served areas is the only way this can happen. While the Mayor's draft Transport Strategy recognises this in principle, it contains no clear indication of how and when this will happen. The final version should have more detail. There also needs to be a new objective to create orbital routes to link up parts of outer London much more comprehensively than at present.

Bus services in outer London could be expanded to encourage modal shift.

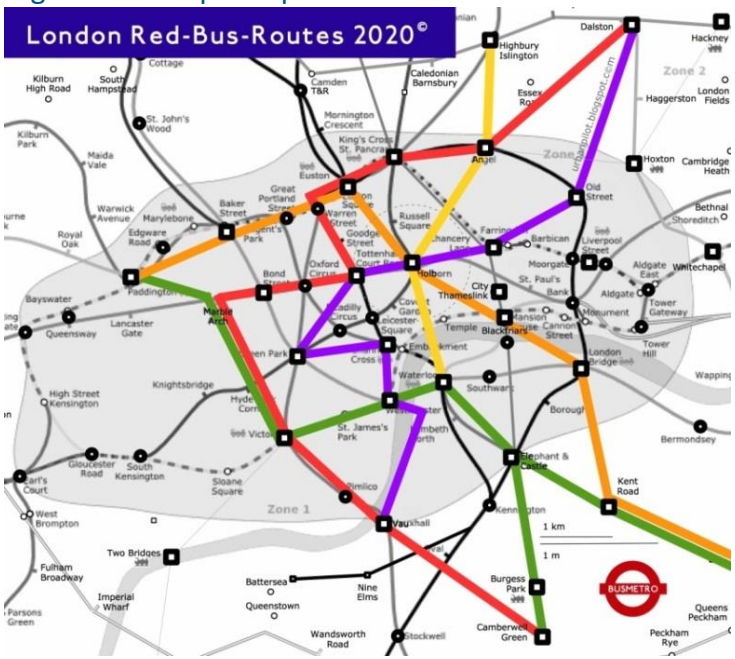
Smarter bus routes

Redesigning bus routes may allow TfL to offer a faster, more convenient service to passengers. One option is for TfL to make a clear distinction between local 'feeder' routes that take people relatively short distances to interchanges, and major 'trunk' routes offering faster, high-capacity services. Hong Kong is an example of a major city offering distinct feeder and trunk services.[19] This approach could also involve the creation of a more clearly defined central London bus network. Figure 5 displays an illustrative map for such a network, consisting of five trunk routes connecting major hubs, designed by Paul Lanydmore and Lars Christian.

> One design in the network that [TfL] could consider are different layers of different functions: the trunk roads serving the main corridor routes, perhaps long distance, more direct routes, [and] more local feeder types of bus services serving more local areas.
> **Dr Ronghui Liu, Transport Committee, January 2017**

TfL's fares system was previously a barrier to the feeder/trunk approach. Until September 2016, pay-as-you-go passengers had to pay a full single fare for each bus they travelled on. This made some passengers reliant on long bus routes that could take them to their destination without having to change. With the introduction of the 'hopper' ticket, people are now able to change buses within an hour without paying again. Although there may be other reasons why people prefer not to change buses—for instance the poor design of interchange locations[20]—they will no longer face a financial penalty. The hopper ticket has proven to be popular: 50 million hopper journeys were made within six months of its introduction.[21] At present, passengers can only change buses once without paying again, but TfL is planning to allow unlimited changes from 2018.

Figure 5: Example of potential central London bus network[22]



The map displays five colour-coded major trunk routes that would cross central London, stopping at hub locations.

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Stakeholders in outer London told us that the bus network needs more express routes.[23] These routes have limited stops, allowing faster travel between major centres. London has only eight express routes at present. The Mayor has said in his draft Transport Strategy that more express routes may be needed, but stopped short of including any specific proposal to introduce more of them.[24]

Articulated buses might be the best option for express routes. Also known as bendy buses, these were used from 2001 until 2011, and provided both a higher capacity and faster loading/unloading than standard double decker vehicles. They were withdrawn from the network following a manifesto pledge by the previous Mayor.

Articulated buses were used on 12 London bus routes between 2001 and 2011

Articulated buses may be appropriate for use on newly designed routes and offer passenger benefits, including more space, faster journeys, and enhanced accessibility for disabled passengers.[25]

Attempts to redesign London's bus network may be hampered by TfL's current approach to bus tendering. TfL commissions operators to run individual bus routes, with each tendered every 5-7 years. This approach means that a single bus corridor—generally, a major trunk road along which several bus routes will converge—can have multiple operators providing routes, with services tendered at different times. We heard about alternative approaches to tendering, in which TfL could award all routes on one corridor, or those radiating from one interchange, to a single operator.[26]

There is significant scope for TfL to consider whether its bus routes could be redesigned to make them more efficient. The availability of turn-around space may be a factor limiting radical change, but a move toward a feeder/trunk approach with more express routes and high-capacity services should be an ambition. A more strategic approach to tendering routes may help achieve this.

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Improving the passenger experience

TfL's ambition to increase bus passenger numbers will depend on its ability to make services more attractive. This may involve providing better information, making interchange easier and enhancing on-board facilities, such as Wi-Fi and air conditioning.[27] Wi-Fi has been introduced on bus services across a number of cities including Edinburgh, Cardiff, Manchester and Oxford, but not in London.[28] Wi-Fi may help attract new passengers to the network, particularly if provided on new express services for commuters who need to work on board.

The bus network is difficult to understand from a passenger perspective. In contrast to the tube, the sheer variety of routes, destination and interchange points can make the bus network confusing, and this can deter people from using it. Analysis carried out for our investigation by JRC Ltd suggested that bus routes serving particular corridors could be colour-coded like tube lines, helping people to understand the network and where they can interchange between corridors. TfL has recently launched a pilot programme of colour-coding buses running on seven routes in and around Barkingside, in the London Borough of Redbridge, to test out this approach.[29]

> Londoners have a high level of recognition of their individual bus routes rather than automatically knowing what the other services are along a variety of corridors or on nearby roads. This limits the general attractiveness of buses as a travel option, and in turn limits the scale of wider benefits that a better perceived and understood bus network might generate. Are there ways of aggregating bus service routes with corridor colours to make it easier for the average person to understand – so more like a tube map – and also how to interchange between bus corridors especially where there is no tube or main line?
> **JRC bus planning literature review**

TfL's pilot programme to colour-code bus routes in Barkingside.

Information provided at bus stops can be improved. A number of stakeholders have called for the number of countdown displays at bus stops to be increased.[30] These tell waiting passengers when upcoming buses will arrive. TfL has installed these at many stops, prioritising those with the most passengers in the busiest areas.

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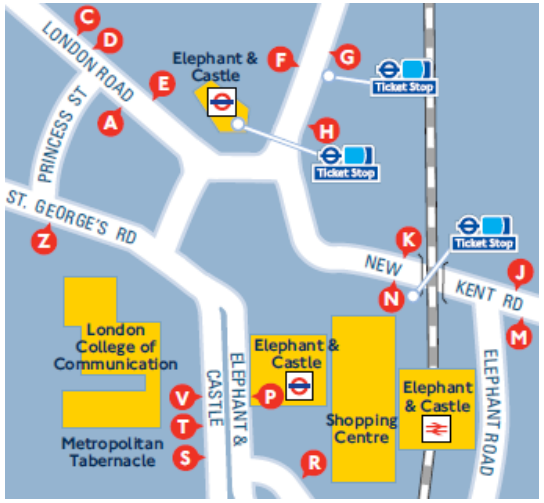
Arguably, these displays would be more valuable at stops where bus services are sparser, particularly in outer London, where good information might make the difference between a passenger opting for the bus or a private car. However, TfL has told us that there is no money available to install any additional countdown signs.[31]

Citymapper's on-board bus route display.

On-board passenger information also needs to be enhanced. TfL's iBus system allows for upcoming stops to be announced to passengers, which is particularly important for those with a sensory impairment. However, unlike on the tube, buses tend not to have on-board displays of the bus route and interchange points. Such displays could increase passenger understanding of the network. We have recently seen an innovation from the company Citymapper, which has been trialling a new type of bus service in London, with screens on board displaying exactly where the bus is on its journey, as shown here.

Being able to change buses easily and in comfort is also vital for the passenger experience. Unfortunately, in many places this is not the case. There can be large distances between bus stops, involving long walks between one bus and another, with little information and no waiting facilities.[32] This can particularly be the case at 'virtual bus stations', where many bus routes converge at a cluster of on-street stops, rather than a physical bus station. The map of bus stops at Elephant & Castle demonstrates how confusing this can be and how far some passengers may need to travel between stops. TfL admitted to us that interchange has deteriorated in some places recently, primarily in areas where there have been public realm improvements in town centres, with stops being moved further apart.

Figure 7: Elephant & Castle bus stops



> …for people who have not been using bus services before, what they want is better information - they need to know what services they can get and where to get them - and they want better interchange and bus stop facilities. **Dr Ronghui Liu, Transport Committee, January 2017**

Although bus passengers may be most interested in the frequency, capacity and reliability of the service, the quality of the experience matters. TfL needs to improve the information it provides online, at bus stops and on-board, and make it easier for people to change. It should also consider introducing Wi-Fi on buses as part of an enhanced service offer for passengers.

Conclusions

The Mayor's draft Transport Strategy and other recent announcements suggest the Mayor recognises the challenges facing the bus network. We have not yet seen, however, the fundamental review of bus services discussed by the Mayor's Office and TfL at the start of the Mayor's term. The strategy needs more ambitious and detailed measures on re-shaping the network. From our investigation, a clear five-point plan has emerged.

1. Tackle congestion to halt the decline in passenger numbers. There are several reasons for this decline, and the trend must be addressed in various ways. Primarily, however, the Mayor needs to take radical steps to reduce traffic congestion in London, which is deterring passengers from using buses. Bus priority measures are welcome, but they are only part of the solution. We have set out a series of wider measures to reduce congestion the Mayor can take and urge him to implement our recommendations.

2. Redistribute bus capacity to outer London. In order for Londoners to shift away from private cars toward sustainable transport modes, including buses, an increase in the capacity of the network is needed. There is most potential to do this in outer London, where more frequent services and new orbital routes would increase freedom and choice of travel modes for residents. In reality this change will require some redistribution of capacity from central London. New developments also need to be served by the network, so buses are a viable choice for residents and workers in those areas.

3. Move towards a more efficient network design based on the principles of the feeder/trunk model. While a wholesale and sudden redesign of the network is not feasible, TfL could move toward introducing new types of route, particularly using the feeder/trunk model. This would involve shorter, local bus routes connecting people to faster, high-capacity services on major corridors. With this approach, it would be appropriate for TfL to consider whether articulated buses could be reintroduced on major trunk routes.

4. Reform the bus service tendering process. The current system is a barrier to delivering a new approach to buses. Individual routes are awarded to specific operators every 5-7 years. TfL should consider reform, which could involve multi-route tenders covering all services on a particular corridor.

5. Improving the bus experience to attract new passengers. There are a number of ways to improve passenger information, including the colour-coding trial TfL has launched. At bus stops, more countdown displays are required; on-board, richer information about routes and interchanges should be provided. Wi-Fi on board buses should be part of an enhanced service offer. The physical experience of changing buses is also poor in some places, with long distances between stops and no waiting facilities. Where public realm improvements are made, for instance in a town centre, the effect on bus passengers must be considered.

Further information

As part of our investigation, the committee met with the following guests in January 2017:

Leon Daniels, TfL
Gareth Powell, TfL
Dr Ronghui Liu, Institute for Transport Studies, Leeds University
Katharina Winbeck, London Councils
Bob Scowen, Arriva London
Peter Batty, Arriva London
Tim Pharoah, Independent transport and urban planning consultant

Written submissions received by the committee and the independent analysis conducted by JRC Ltd are available via our website: www.london.gov.uk/assembly

For media enquiries contact Alison Bell on 020 7983 4228 or alison.bell@london.gov.uk

For any other information about this report please contact Richard Berry on 020 7983 4000 or transportcommittee@london.gov.uk.

To read our recent report on bus safety please visit: https://www.london.gov.uk/about-us/london-assembly/london-assembly-publications/driven-distraction-tackling-safety-londons

Notes

[1] Transport for London, Travel in London - Report 9 data, 2017
[2] Transport for London, Business Plan, 2016
[3] Transport for London, Travel in London - Report 9 data, 2017; Transport for London Budget 2017/18, 2017. The 2017/18 figure in the chart represents the number of passengers TfL is projecting this year.
[4] London Assembly, London stalling: Reducing traffic congestion in London, January 2017
[5] Transport for London, Travel in London - Report 9 data, 2017
[6] Objection from Caroline Russell AM: "Whilst it is not the position of the committee that the introduction of more cycle superhighways will exacerbate traffic congestion, Caroline Russell AM objects to the reference to cycle superhighways in this paragraph as it implies that they will. Transport for London's own monitoring (November 2016) states: *'In terms of total people movement, rather than the quantity of vehicles, initial findings into the road space efficiency of the east-west and north-south cycle superhighways suggest that at peak times, the new cycling infrastructure moves an average of 46 per cent of people along route at key congested locations, despite occupying only 30 per cent of the road space. Two weeks after opening, these corridors are moving five per cent more people per hour than they could without cycle lanes, a number that will increase as they attract more cyclists.'* Cycle superhighways are therefore proven to reduce rather than exacerbate traffic congestion. London currently has fewer than forty miles of segregated cycle superhighways." For TfL monitoring see: http://content.tfl.gov.uk/pic-161130-07-cycle-quietways.pdf
[7] 'Excess wait time' is the number of minutes that a passenger has had to wait in excess of the time that they should expect to wait if buses ran as scheduled.

Transport for London, *TfL's quarterly finance, investment and operational performance reports: Quarter 4, 2015/16*, 2016; *Operational and Financial Performance Report: Fourth Quarter*, 2012/13, 2013

[8] Written submission from Transport for London, January 2017

[9] Mayor of London, Mayor's Transport Strategy: Draft for public consultation, June 2017

[10] Information provided by Transport for London, March 2017; Transport for London, Mayor sets out bold plans to increase bus ridership across the capital, 21 March 2017

[11] JRC Ltd, Bus Planning Literature Review, February 2017. JRC was commissioned by the committee to carry out this review, and the full report is available on our website.

[12] Katharina Winbeck, London Councils, Transport Committee meeting, 11 January 2017

[13] Tim Pharoah, Transport Committee meeting, 11 January 2017

[14] Transport for London, Travel in London – Report 7 data, 2015. Car use combines journeys by car drivers and car passengers.

[15] Map published by Transport for London, May 2017, using WebCat planning tool

[16] Leon Daniels, TfL, Transport Committee meeting, 11 January 2017

[17] Transport for London, Travel in London - Report 9 data, 2017; Transport for London, Business Plan, 2016

[18] Written submissions from London Boroughs of Sutton; London Borough of Wandsworth; South London Partnership, February 2017. TfL told the committee that 100 of London's bus routes are orbital: Leon Daniels, Transport Committee meeting, 11 January 2017

[19] Dr Ronghui Liu, Leeds University, Transport Committee meeting, 11 January 2017

[20] Written submissions from London Borough of Sutton; London Forum of Amenity and Civic Societies, February 2017

[21] Greater London Authority, Mayor celebrates six months of the 'Hopper' fare, 13 March 2017

[22] © Urban Pilot. Paul Landymore & Lars Christian, 'Central London buses – towards 2030', Planning in London, Issue 95, September-December 2015

[23] Written submissions from Chartered Institute of Logistics and Transport; London Boroughs of Bromley; Redbridge; Richmond upon Thames; Sutton; Waltham Forest; Wandsworth; London Councils; London TravelWatch; Transport for All, February 2017

[24] Written submission from Transport for London, January 2017

[25] Paul Landymore & Lars Christian, 'Central London buses – towards 2030', Planning in London, Issue 95, September-December 2015. Higher levels of fare are evasion were also seen on articulated buses.

[26] JRC Ltd, Bus Planning Literature Review, February 2017

[27] Leon Daniels, TfL, Transport Committee meeting, 11 January 2017

[28] Department for Culture, Media and Sport, Millions of commuters now using Government's free Wi-Fi on public transport, 30 September 2015. TfL ran a trial providing Wi-Fi on two bus routes in 2014.

[29] Greater London Authority, Mayor trials new Tube-style colour approach to simplify the bus network, 2 May 2017

[30] Written submissions from Living Streets; London Boroughs of Hackney; Southwark, February 2017

[31] Leon Daniels, TfL, Transport Committee meeting, 11 January 2017

[32] JRC Ltd, Bus Planning Literature Review, February 2017

Photos: Front cover © Transport for London; 150 bus © Transport for London; West Croydon station © Peter Trimming; On-board display © Citymapper