



CENTRAL LONDON BUS NETWORK REVIEW

Central London Forward

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1. INTRODUCTION

Central London Forward (CLF) and Transport for London (TfL) have been in discussions about the future shape of the bus network within central London. CLF has called for a review of the bus network within central London to address a range of issues and it has been suggested that CLF set out its principal issues to help TfL better understand the context and scope of this request.

Accordingly this paper outlines :-

- some background information on the recent and historic growth in bus provision;
- a review of the service planning guidance applied by TfL;
- discusses the principal interactions and impacts of the bus network on the traffic and public realm management issues facing the boroughs;
- explores some of the measures that could be adopted by TfL in a review of the central London network to address the CLF concerns; and
- some initial conclusions.

The paper is intended to stimulate debate between the parties and to help establish a way forward.

2. CENTRAL LONDON BUS NETWORK

This section considers the changes that have, and are likely to, occur with the bus network.

2.1 System-wide Overview

The London bus network has experienced rapid and substantial change in the past 8 years. Throughout the 1990's the bus network was catering for an average of 4.2Bn passenger kilometres of travel annually; by 2007/8 this had grown to 7.7Bn, an 80% increase in usage.

What has driven this growth? There are a number of factors that have contributed to this significant growth, including :-

- **population growth** – between 1996 and 2007 London's population grew by nearly 600,000, with a high proportion of this growth concentrated in Inner London where bus usage is highest;
- **increased provision** – the Mayor actively sought to increase bus provision to address a range of policy initiatives and the bus kilometres operated rose by 40% between 1996/7 and 2006/7, with the bulk of the increase concentrated in the period 2000/1 to 2004/5;
- **fares policy** – a deliberate strand of policy has been to progressively allow the average fare on the bus system to decline relative to earnings, inflation and in comparison to the Underground network. At the same time concessions for sectors of the population have been widened so that around 40% of bus journeys are free or at a discounted rate. According to research by TfL 60% of Londoners who have increased their bus usage in the last three years indicated that "buses are cheaper than alternatives";
- **qualitative improvements** – the expansion of the system has coincided with investment in many other areas of the service, including the age of vehicles, the frequency of service, reliability, bus priority measures, real-time information, and so on;
- **crowding on LU and rail services** – the Mayor's policy was in part to address population growth against a backdrop of limited improvements in LU and rail capacity during the late 90's. As crowding worsened on the LU and rail system there was encouragement to switch to bus services where the alternative was available; and
- **congestion charging** – within the central area, the introduction of the congestion charging scheme in 2003 coincided with both a focused expansion of services to cope with the anticipated shift in travel demands and the impact of congestion charging on existing motorists.

Looking to the future, the factors that have fuelled the growth in the network are generally stabilising or, in fact, reversing. For example :-

- **population growth** – is expected to continue to persist and will help sustain growth;
- **increased provision** – TfL plans for the network are for the maintenance of comparable levels of bus-kilometres until at least 2017/18. Current provision of 485m bus-kms is expected to decline slightly to 478m;
- **fares policy** – pressure on revenue due to the recession has already prompted an increase in fares. The revised TfL Business Plan indicates continued growth in bus revenue;
- **qualitative improvements** – there is much less scope to improve the service as the bulk of the opportunities have already been implemented. Furthermore, the revised TfL Business Plan has indicated that the bus network costs are expected to be reduced over the period to 2017/18 by £1,552m and so the funding for measures will be more constrained;
- **crowding on LU and rail services** – whilst the bus network capacity growth is expected to stabilise the Underground and rail networks are being significantly enhanced now and in the coming decade or so. The improvements are likely to partly reverse the modal shift to bus services that occurred in the last decade; and
- **congestion charging** – the scheme's impact has been incorporated into travel patterns and future changes are likely to be modest.

It therefore appears that the bus network is entering a new phase of development; one focused on the refinement of the system and service rather than expansion and significant upheaval.

2.2 Central London

London is a diverse operating environment with quite different characteristics in central, Inner and Outer London. It is therefore appropriate to briefly examine the changes that have occurred within the central area during the period of bus expansion. Isolating particular effects is complicated by the differing reporting standards applied across data sources, but nonetheless useful pointers can be gleaned.

A critical measure of the performance of the bus network for the central area is the demand carried into the CAZ during the morning peak period (0700-1000). It is acknowledged that the buses crossing the cordon may not be at the peak loading points and that the network also caters for many short hop journeys within the cordon.

The bus network through the 1990's typically carried 60-70,000 passengers into the central area in the peak, representing a stable 6% of the total travel demand. As the network was significantly expanded from the turn of the century, and with the introduction of congestion charging, bus usage rose sharply to reach 116,000 by 2004. This 60% increase in bus patronage in the peak increased the mode share of buses to around 10%.

However, growth peaked in 2004 and demand has since fallen slightly against a backdrop of a 10% growth in overall travel demand; which has predominantly been loaded onto the LU and rail system.

As noted earlier, a significant revision of services was undertaken to respond to the anticipated impacts of the congestion charging scheme. For example, there were 53 frequency enhancements, 10 routes were switched to larger vehicles, 15 were restructured or extended, and a further 7 routes were added to the network. The upshot of these (and other) changes was to increase peak hour bus capacity into the cordon area by some 28,000 passengers or around 400 buses.

Evidence on bus loadings in the central area is not consistently reported. There is, however, some data reported in several of the Congestion Charging Annual Monitoring Reports, which provides a flavour of the performance of the bus network. The First Annual Report – reporting data for 2002 and 2003 – included average bus loadings entering/exiting the charging zone in Autumn 2002 as well as some sample counts within the zone. This data reveals that :-

- average loadings varied significantly between route corridors. For example, inbound peak vehicle loadings ranged from 45-50 passengers per bus from Great Dover Street, Elephant & Castle and Kennington Road down to 15-20 passengers on buses in the John Islip Street and King's Cross corridors;
- naturally the loadings varied greatly over the day. The average loading on inbound double-decker services were found to be 18 passengers before 0700, 32 passengers between 0700 and 1000, and less than 20 passengers between the peaks;
- the comparable loadings for two-way movements were 13 passengers before 0700, 21 in the morning peak period, 17 between the peaks and 29 during the evening peak; and
- the survey at sites within the cordon area found loadings were generally similar than at the cordon itself, although in this instance the counts were of 12 passengers before 0700, 23 in the peak, 16 between the peaks and 27 in the evening peak.

Accordingly, typical loadings were for buses in the peak period in the central area to be operating at around 25% of their absolute capacity and approximately half of the planning capacity which takes account of differences in loadings and ensures that passengers are able to board the first bus. Outside of the peaks the loadings are even lower.

There is evidence that the average bus loading is declining across all time periods. This is also reflected in the data for the network as a whole which shows that the average bus loading falling from 16.3 passengers in 2006/07 to 15.9 in 2007/08 (and expected to show a further reduction recently due to the recession).

3. SERVICE PLANNING CRITERIA

This section examines the service planning criteria adopted by TfL when planning its routes. As we have not had sight of the Guidelines for Planning Bus Services produced by TfL, we have had to rely on the summary of the factors outlined in the KPMG Strategic Bus Review published in 2009.

3.1 Approach and Factors

TfL plans its routes and services on the basis of four principles as follow :-

- **comprehensive** – the network should cater for peoples' needs by ensuring access to local amenities, centres and interchanges;
- **frequent** – most people should be able to “turn-up-and-go” and allow people to board the first bus to arrive;
- **simple** – the network should avoid unnecessary complexity and be readily understandable; and
- **reliable** – planned to be operationally reliable and robust.

These laudable principles are expanded into a series of factors to be considered when planning services. Table 1 summarises the key factors.

Principle	Standard or Objective
Comprehensive	<p>In residential areas, routes should be designed to run within 5 minutes walk of most homes.</p> <p>In town centres, passengers should be taken as close as possible to places they want to get to – shopping centres, rail stations, etc. However, complicated or indirect service routeings should be avoided.</p> <p>Wherever possible, each service will run from early morning to late at night.</p> <p>Effective interchange is essential to achieving a comprehensive network, as there will not be a direct bus link for every journey. Interchange opportunities will be taken into account in service design.</p>
Frequent	<p>Research shows that if buses run reliably every 12 minutes (or better) then most passengers will treat the service as “turn-up-and-go”. Therefore the structure of the network should permit as many routes as possible to run every 12 minutes or better.</p> <p>So that passengers can board the first bus to arrive, services will be planned on the basis that the average load per bus in the busiest hour does not exceed 70-80% of total capacity of the buses on that route.</p> <p>There are exceptionally busy stops (for example, outside mainline rail terminals) where this will not be achievable. In these cases, service frequency will be planned so that passengers can expect to wait no more than ten minutes before boarding a bus.</p> <p>The importance attached to a frequent network means that routes operating at low frequency will be regularly reviewed to see whether higher frequencies are worthwhile.</p>
Simple	<p>Services should generally run between the same terminals throughout the week, including evenings and Sundays.</p> <p>Where a number of services run together along sections of road, then wherever possible their timetables will be co-ordinated.</p> <p>If there is not 24-hour coverage then the last bus should run at the same time on all days of the week. First buses should run at the same time Mondays to Saturdays, but a later start on Sundays may be acceptable.</p> <p>At rail interchanges there will be connections with the first and last train wherever this is appropriate.</p>
Reliability	<p>The time allocated to run along each route is based on an up-to-date knowledge of traffic conditions and passenger demand.</p> <p>The delays encountered by buses vary, from day-to-day and hour-to-hour. There therefore needs to be an allocation of “recovery” time at the terminals of each route, subject to the space being available. This will help absorb some of the effects of variable delays.</p> <p>Buses on longer routes will pass through more areas with variable traffic congestion. Therefore buses running on the shorter routes may be better able to recover from disruption.</p>

Table 1 – Summary of TfL Bus Service Planning Guidelines and Standards

3.2 Review

It is evident that the service planning guidelines are focused on the operational aspects from TfL's perspective. The focus is on devising a network that offers "best value to passengers from the resources which fares revenue and subsidy can purchase".

What is noticeable is that the guidelines do not appear to include any factors that consider the external impact of the bus services on other parties, including other road users such as pedestrians.

Furthermore, the planning to utilise capacity to at maximum 70-80% of available capacity in the peak hour inevitably leads to significant spare capacity for the bulk of the time across most locations. Whilst it is inherently difficult to balance demand and supply accurately within any transport system, such a target utilisation seems conservative and is likely to have a potentially substantial "knock-on" effect.

4. INTERACTIONS AND IMPACTS

This section of the paper considers some of the impacts that growth in bus provision has had on the central area and which have led to the calls for a review of the system.

4.1 Traffic Impact

To get some sense of the impact of buses on the traffic system – and by inference the pedestrians using and crossing the streets – data has been extracted from the congestion charging annual monitoring reports. Whilst this represents only a small section of the whole of the central area, the general lessons are likely to apply to the wider area also.

Table 2 summarises the composition of traffic leaving the congestion charging area within the charging hours of 0700 to 1800 in 2007. The data is shown both in absolute terms but also as equivalent passenger car units (PCUs) which attempts to standardise the influence of each vehicle type (i.e. larger vehicles have a greater impact compared to smaller ones).

Vehicle Type	Vehicles	% of Vehicles	PCUs	% of PCUs
Cars and Minicabs	105,000	37.6	105,000	33.5
Vans	50,000	17.9	75,000	23.9
Lorries	15,000	5.4	34,000	10.8
Taxis	55,000	19.7	55,000	17.5
Buses/Coaches	17,000	6.1	34,000	10.8
Powered 2-Wheelers	20,000	7.2	8,000	2.5
Pedal Cycles	17,000	6.1	3,000	1.0
Total	279,000	100.0	314,000	100.0

Table 2 – Composition of Traffic leaving the Central London Congestion Charging Zone

This shows that :-

- buses and coaches represent around 6% of the traffic within the congestion charging zone on a typical day; and
- their equivalent impact on road users is estimated as being around 11% once the scale of the vehicles are taken into account.

Obviously other categories of traffic are significant contributors and also warrant attention in terms of their bearing on conditions in the central area. In particular the influence of taxis (and minicabs) should be noted which account for nearly 20% of traffic.

It could be argued that the perception of the impact of buses on the central area is even greater because :-

- bus movements are concentrated on a subset of the central area roads whereas general traffic is more widely dispersed across the highway system. This is also likely to be the case for taxis which are concentrated in particular corridors and around certain nodes;
- pedestrian movements are likely to be concentrated along the corridors most heavily served by buses. Consequently peoples' experience of walking through the area is likely to entail greater interaction with buses than is represented by the average across the central area as a whole; and
- bus movements are likely to remain fairly consistent across the day whereas other movements will involve some peak. With pedestrians moving through the public realm in and between the peak periods their experience may be more effected by buses than implied.

The most obvious example of these types of impact are found in Oxford Street where the concentration of bus activity allied to the exclusion of most other types of vehicles combines with high pedestrian demands to make the conflicts most apparent.

4.2 Kerbspace

Buses make extensive calls on available kerbspace for bus stops and layover facilities. This is particularly the case where there is a concentration of terminating services and can have a significant impact on public realm at such locations.

4.3 Footways

Bus stop infrastructure – and bus passengers waiting at the stops – can have a substantial impact on pedestrian movement within the street. This is perhaps most acutely felt around rail termini where interchanging passengers close to the terminal contribute to congestion for passengers dispersing on foot.

4.4 Air Quality

Buses are a contributor to poor air quality despite the improvements in the fleet that have occurred already. Further improvements are envisaged. Nonetheless, in locations such as Oxford Street, where large numbers of buses are moving slowly amongst dense pedestrian crowds, the buses are a significant factor in the environment experienced by people.

4.5 Visual Intrusion

Whilst no vehicles are an attractive backcloth for Londoners, it remains the case that the scale (and colour) of buses means that their impact on the visual quality of London's streets is high.

4.6 Accident Risk and Perceived Risk

It is unclear whether buses pose a greater risk to pedestrians and cyclists in the central area, although the scale of the vehicles and the difficulties in driving in crowded areas with high levels of informal crossing activity, suggests that risks may be greater. Furthermore, pedestrians are likely to feel more unsafe moving between large vehicles, such as buses, which contributes to a less positive experience in streets where bus activity is high.

5. APPROACH

This section considers some ways in which the broad issues outlined thus far can be distilled into a focused review of the central London bus network. It is understood that the around 20% of the network is reviewed annually as part of the on-going tendering process. However, CLF is seeking a more comprehensive review process; one that takes wider issues into account as well as the usual service planning criteria.

5.1 Corridor and Node Review

It is the case that certain corridors and nodes are especially sensitive to the presence of large numbers of buses. Whilst Oxford Street is an oft-quoted example, there are other locations where similar issues persist. CLF is seeking to maintain an effective, attractive and efficient bus network as is no doubt the

case with TfL, but it appears that the balance between bus planning and wider issues of public realm and traffic management are not aligned in all cases.

It is considered that the central area network should be examined to identify corridors and nodes where there are specific issues regarding the concentration of bus activity having an undue impact on adjacent land uses, pedestrians, the public realm, and so on. It is likely that relatively few locations will emerge as being areas of concern and this will provide a rapid means of focusing the review. One key measure will be the absolute volume of buses but this can be tempered by other measures such as the proportion of vehicles which are buses, pedestrian flows, and so on.

5.2 Route Rationale

At the locations identified in stage one of the review, the various routes using the location would be critically examined to establish the strength of the need for them to be operating through the node and at the levels currently operated. Whilst it is considered likely that in most cases there is an existing strong rationale for the current provision, it is also the case that the network has grown rapidly and some inefficiencies may exist that can be identified through this process.

5.3 Route Structure

There will be instances where the structure of the network in an area is a product of historic factors or simply for operational reasons. The concentration of activity could be relieved by relatively simple measures that would potentially also have wider benefits, such as lengthening or shortening routes to alter termination points (subject, of course, to the availability of suitable alternative layover facilities).

For example, pressure on roadspace around Victoria is in part a result of the concentration of route termination points at the bus station and surrounding streets. In the meantime, there have been concerns about the relatively disconnected nature of the Victoria Coach Station (VCS) which forces significant numbers of coach passengers to walk from VCS to the Victoria Interchange for onward connections. Short extensions of some of the routes crossing central London and terminating at Victoria to connect to nodes like VCS would disperse the pressure at Victoria whilst serving wider objectives.

5.4 Routeing

In other instances there may be opportunities to re-route some existing services to avoid sensitive corridors or nodes. It is recognised that there are in many areas relatively few suitable bus corridors, although there may be scope to improve some corridors that are not currently served which will help disperse pressure.

For example, there may be scope to develop Wigmore Street as a parallel route to Oxford Street with improved pedestrian links to the main focus of shopping and visitor activity. It should be borne in mind that proximity to passenger destinations is a goal, albeit one that should not materially compromise the quality of the experience at the destination. Research for the ORB (Oxford, Regent, Bond Street) Action Plan identified that “many ... visitors say that the number of buses and taxis on the roads made their shopping experience unpleasant”.

5.5 Capacity Adjustments

It is evident from the summary of bus loadings that the typical loading is comparatively low relative to capacity, especially across the hours when pedestrian demands are highest. Where bus efficiency is low the opportunities may exist to combine services in certain corridors to reduce buses without effecting capacity to cater for the demands. This may entail terminating some higher frequency services short of the route end so better balancing the loads on services.

6. SUMMARY

This paper is designed to stimulate debate regarding the opportunities to review the central London bus network to respond to growing concerns about the influence and impact of buses on the public realm and other road users.

The rapid and substantial growth in the bus network has now stopped, and it is expected that if anything the service provision will decline slightly. The main factors supporting the growth in bus demand – particularly in the central area – have largely run their course, and there are grounds to suggest that bus usage will exhibit only minor growth going forward.

Despite the significant growth in usage, typical bus loadings remain relatively low, contributing to the perception of “empty buses” using Oxford Street.

Examination of the criteria used by TfL when planning the bus network reveals that the guidance is focused on operational and internal issues, with little or no consideration of the external impact of the network planning process. In a sense the review process proposed by CLF is a request to incorporate these wider factors into the planning of the network.

Data from the Congestion Charging Annual Monitoring Reports indicates that buses represent around 11% of traffic in the charging zone once weighted for their impact on the highway. As they run in relatively few corridors (and ones where pedestrian activity is generally concentrated), it is therefore the case that buses are potentially perceived as having an even greater impact on the environment in central London.

The bus system also has other impacts on kerbspace, footway capacity, air quality, visual quality and perceived accident risk.

To focus the review process, CLF recommends that the approach is based on identifying the corridors and nodes where problems may well exist in terms of the environmental or highway capacity to absorb and accommodate bus movements. Once this has been done then the bus movements can be critically interrogated to establish the scope to reduce impacts by :-

- revalidating route requirements;
- examining termination points;
- developing alternative routeings; and
- reviewing opportunities to deliver capacity in less intrusive ways.

CLF remains committed to the provision of a comprehensive, attractive and efficient bus network in central London. However, it also wishes to balance the needs of the bus system with those of other users of the central area. Accordingly it wishes to work constructively with TfL to help shape the bus system for its role in the coming years.