1. INTRODUCTION

1.1 Transport for London

Transport for London (TfL) was created in 2000 as the integrated body responsible for the Capital’s transport system. The primary role of the organisation, which is a functional body of the Greater London Authority (the strategic citywide government for London), is to implement the Mayor of London’s Transport Strategy and manage transport services across the Capital.

Every day, about 30 million journeys are taken in Greater London:
- 6.3 million by bus
- 1 million by Tube
- 1.4 million by rail
- 150,000 on the DLR
- 11 million by car or motorcycle
- 7 million on foot
- 333,000 by bicycle

TfL is responsible for London’s buses, the Underground, the Docklands Light Railway (DLR), the management of Croydon Tramlink and London River Services and the operation of Victoria Coach Station. TfL also regulates all taxi and private hire trade in the city.
The most strategically important 580Km of road in the Capital is managed by TfL in addition to all of London's 4,600 traffic signals.

In February 2003 the organisation introduced the central congestion charging zone and has since managed and monitored the programme.

TfL champions walking and cycling initiatives in London, co-ordinates transport schemes for users with impaired mobility and, through the work of its Bus Priority Team, promotes journeys by bus in the Capital.

1.2 TfL’s Bus Priority Team

Bus Priority Team (BPT) was formed within TfL in August 2002. The team was composed of an amalgamation of the London Bus Initiative (launched in 2000 by the Traffic Director for London) and London Buses’ Bus Priority Unit.

BPT is responsible for developing and promoting bus priority strategy and for delivering schemes on the ground. The team facilitates the bus priority schemes of London Borough Councils through the funding of schemes outlined in the borough’s Local Implementation Plans\(^2\). BPT also works in partnership with directorates within TfL and with the London Bus Priority Network\(^3\) (LBPN) in order to deliver the highway infrastructure needed to support London’s existing and planned bus services.

The team is a centre of excellence on all aspects of bus priority interventions. Research and development provides intelligence that in turn is used to improve the effectiveness of these interventions. BPT publish and disseminate best practice, advice and design guidance.

1.3 London’s future growth

The bus network plays a vital role in the Capital’s transport system, providing access to jobs and town centres, the Underground and rail services. In order to encourage car users to switch to using public transport, people’s experience of travelling by bus must continue to be transformed: the chronic problems of unreliability and slow journeys have to be tackled.

With a predicted rise in London’s population levels from 7.4 million in 2004 to 8.3 million by 2025, it is imperative that the benefits of bus priority measures are locked in now to ensure protection for the future prosperity of London and its residents.

It is the predicted concentrated growth in employment and dispersed growth in population that, in the future, will inevitably place even greater demands on the capital’s transport system.

©Association for European Transport and contributors 2006
Figure 1 - Location of projected employment and population growth in Greater London

Concentrated job growth, in a central east-west corridor

Population growth dispersed across London

Employment change 2001 to 2025 (number of jobs)

- 4,000 to 60,000
- 2,000 to 4,000
- 500 to 2,000
- Up to 500

Population change 2001 to 2025 (number of people)

- 3,000 & above
- 2,000 to 3,000
- 1,000 to 2,000
- Up to 1000

T2025 paper (TfL) ‘06

1.4 Aim of the paper

The introduction of the central London congestion charging scheme (CCS) in February 2003 saw a 33% drop in car traffic entering the zone. However, the charge was not intended to be the miracle cure to the problem of traffic congestion in London and so was not introduced in isolation. Other transportation and traffic management projects were implemented in parallel to complement the CCS.

This paper discusses how congestion charging and complimentary improvements to the bus network must work together to ensure benefits realised by the charge’s introduction are locked-in for the long term prosperity of London.

This paper aims to demonstrate that bus priority is an essential transport intervention in central London’s congestion charging zone.
This paper is divided into four sections, each supporting the paper’s aim.

- The integral role of the bus network in London’s continued growth and development
- The benefits of the congestion charge realised by bus passengers and other users
- Case Study findings highlighting the benefits of bus priority measures within the congestion charging zone.
- How other users can benefit from bus priority in the capital.

2. THE INTEGRAL ROLE OF THE BUS NETWORK IN LONDON’S CONTINUED GROWTH AND DEVELOPMENT

2.1 London Buses, a Mayoral success story

London's bus network is one of the largest and most comprehensive urban transport systems in the world. Every weekday over 6,800 scheduled buses carry around six million passengers on over 700 different routes.

The network is also dynamic and responds to changes in London's growth and changing needs. Every year a fifth of the bus service is re-tendered, with around half of the network subject to some level of review.

London Buses are the largest public transport provider in the UK, carrying 1816 million passengers in 2005/06. Demand for bus travel has risen by 40% (520 million passengers) since 1999/00, generally increasing each year.

Figure 2 - Demand and service level – 1984/85 > 2005/06

©Association for European Transport and contributors 2006
Whilst demand and service levels have increased, so too has the level of quality of service delivered. Excess wait time\(^3\) (EWT), a measure of bus reliability on high-frequency routes, has steadily improved over the last 6 years, reaching 1.1 minutes in 2004/05 and 2005/06 – the best performance on record.

**Figure 3 - Excess Wait Time (mins) 1977 to 2005/06**

Bus priority measures, the enforcement of those measures, quality incentive contracts\(^4\) and the central London congestion charging scheme, have all contributed to the advances outlined above.

Increases in passenger demand were already being seen a number of years before the introduction of the charge in February 2003 and much of the 37% increase in bus passengers entering central London following congestion charging can be attributed to this background growth.

Significant improvements in the reliability of journey times (as seen in reductions in EWT) were also achieved prior to the introduction of central London congestion charging.

Bus lanes were a significant contributory factor to achieving these reductions and have been implemented in London since 1968; their introduction peaking in the years leading up to the introduction of the congestion charging scheme.

©Association for European Transport and contributors 2006
Figure 4 - Bus lane introduction in London since 1968.

BPT Research and Development Monitoring '06.

©Association for European Transport and contributors 2006
The London bus network has proved its adaptable and responsive nature by catering for the mass modal shift achieved by congestion charging whilst patronage on the underground and national rail networks remained fairly static.

2.2 The future of Bus Priority in London

By the year 2016, with London’s resident population set to soar by 700,000 and the creation of 634,000 more jobs, the historical challenges faced by those planning and operating London's transport network are set to become evermore demanding.

A physically restricted urban streetscape and the need for more sustainable travel in the form of journeys by public transport in the capital, mean that much of the predicted future demand will continue to be placed upon the bus network. Continued bus priority is a necessity in providing the right conditions to meet this growing demand for bus passenger transport.

The ever changing dynamics of London’s road network requires TfL’s Bus Priority Team to take a holistic approach to bus priority interventions. This can be seen with the Third Generation Bus Priority programme (3GBP) - a 10 year programme designed using the results from a pre-scoping study, which recommended that 36 of London’s busiest bus routes warrant end-to-end bus priority implementation. Delivered in partnership by the TfL’s Bus Priority Team and the London Bus Priority Network (LBPN), the ultimate aim of the programme is to deliver long term journey time and reliability savings through sustainable and efficient use of road space.

A precursor to the 3GBP programme; the Route 38 Corridor Management Pilot Study commenced in May 2003. The project’s central vision is to make radical improvements to the Route 38 corridor (Victoria – Clapton) through better management of the road network, providing for the needs of traffic, businesses and the community, while giving more priority to buses, pedestrians and cyclists. The corridor management proposals (as outlined in figure 5) are scheduled to be completed by 2008.

Extensive modelling using TRANSYT\textsuperscript{5}, VISSIM\textsuperscript{6} and VISUM\textsuperscript{7} predicts up to a 16% (10.57 min/secs) saving in northbound average journey times and a 25% (15.42 min/secs) saving in southbound average journey times. Consequential monetary savings will be gained as time-savings will result in the withdrawal of 6 buses each day. However, predicted further increases to patronage will see an additional 4 services introduced, leaving a net saving of 2 buses per day. This equates to almost £0.5 million saving in costs per annum and very large bus passenger benefits.
Figure 5 – Route 38 Proposals

Route 38 Proposals

**Rosebery Avenue Proposals**
- Modified bus lanes, junction improvements, and localized traffic management
- Overall increased speed and reduced delay for all vehicles
- Improved provision for pedestrians and cyclists
- Opportunity for regeneration

**Upper Street/Ilford High Street Proposals**
- Modified bus lanes and junction improvements
- Improved provision for cyclists and pedestrians
- Increased speed and reduced delay for all vehicles

**Central Hackney Proposals**
- Modified bus lanes including bus only zone between Ambleside Road and Graham Road
- Junction improvements
- Improved provision for cyclists and pedestrians
- Town centre regeneration and environmental improvements

**Lower Clapton Road Proposals**
- Modified bus lanes and junction improvements
- Overall increased speed and reduced delay for all vehicles
- Improved provision for pedestrians and cyclists
- Environmental improvements

**Theobalds Proposals**
- Modified bus lanes
- Junction redesign and safety improvements at Gray’s Inn Road
- Improved provision for cyclists

**Bloombury Way Proposals**
- Centre flow bus lanes on Bloombury Way
- Junction improvements at New Oxford Street and Drake Street
- Theobalds Road
- Improved safety and provision for pedestrians and cyclists

**Dalston/Kingsland Proposals**
- Modified bus lanes and improved bus stops
- Junction improvements at Dalston Junction and Dalston Lamington Road
- Increased speed and reduced delay for vehicles
- Improved provision for pedestrians and cyclists

**Essex Road Proposals**
- Modified bus lanes and junction improvements
- Overall increased speed and reduced delay for all vehicles
- Modified all day waiting and loading bays and protection to parked vehicles
- Improved provision for cyclists and safety for pedestrians

**Piscadilly and Shaftesbury Avenue Proposals**
- Building a bus lane on Piscadilly and a Centre flow lane on Piscadilly Circus
- Pedestrian improvements on at Piscadilly Circus and Shaftesbury Avenue

**TURN Proposals**
- New and modified bus lanes
- Improved provision for cyclists at Commerical Place

**Charing Cross Road/New Oxford Street Proposals**
- Bus, taxi, service vehicle and cycle lane areas on Charing Cross Road and New Oxford Street
- Improved provision and safety for pedestrians

Atkins Transport Planning '05.

©Association for European Transport and contributors 2006
Traffic signal bus priority has been operating in London for over 20 years. Recently BPT have worked with Siemens VDO Ltd. exploring the use of new Global Positioning Satellite (GPS) bus location systems in the application of Selective Vehicle Detection\(^8\) (SVD). The project is named SVD-iBUS.

SVD-iBUS works by software on-board the bus sending a signal to the transceiver in the signal controller as it passes a virtual detection point. This signal requests bus priority at the junction that the bus is approaching and also relays information back to a central location.

Priority at the approaching junction is secured for the bus whilst information sent to the central location can be used for performance monitoring purposes.

### 2.3 Social Inclusion

Over a third of London households do not own or have the use of a car and as such, rely heavily upon the public transport network.

The level of participation in the labour market in London is lower than the UK average (around 70% nationally), with even greater gaps in the employment rate of women and for black, Asian and minority ethnic (BAME) groups. If London’s employment rate were to increase to that of the UK as a whole, an additional 274,000 workers would be available. Achieving this requires the various barriers to increased labour participation to be broken down. One barrier is transport, so the transport system must cater for the different needs of various BAME groups.

National Economic Research Associates (NERA) found that buses in London make a significant contribution in achieving greater social inclusion and will continue to do so in the future.

Several factors explain why, including:

- buses’ suitability for short local journeys within and between neighbourhoods, and for maintaining social and community links to employment and services
- the bus network often offers more ‘connectivity’ than rail or tube through its relative richness of both orbital and radial links, with more 24 hour availability
- buses can be more acceptable than other public transport modes to people from minority ethnic groups, with more localised services they become a community asset
- the relative affordability of bus travel makes it highly accessible (and more so than other transport modes) to those who do not have the benefit of concessionary travel.
London Buses current objective to design bus routes to be within 5 minutes walk from most homes (subject to the layout of the road network) will enhance the network’s accessibility even more.

3. THE BENEFITS OF THE CONGESTION CHARGE REALISED BY BUS PASSENGERS AND OTHER USERS

3.1 Brief outline of Central London Congestion Charging

The central congestion charging scheme’s (CCS) purpose is to contribute directly to the achievement of four of the Mayor’s transport priorities:

- to reduce congestion;
- to deliver radical improvements to bus services;
- to improve journey time reliability for car users;
- to make the distribution of goods and services more efficient

Figure 6 - Location of CCS zone in Greater London

Impacts Monitoring Fourth Annual Report '06
3.2 Reductions in congestion and traffic volumes

Figure 7 – Traffic entering the charging zone during charging hours

Figure 7 above serves to demonstrate the huge reductions in vehicles entering central London gained by the introduction of CCS in February 2003.

Taking the available bi-monthly post-charging survey measurements, average post-charging reductions in congestion inside the charging zone compared with representative pre-charging conditions in 2002 were 30% during charging hours in 2003 and 2004.

After one year of operation, TfL observed that traffic entering the charging zone during charging hours had reduced by 18% (vehicles with four or more wheels). The total volume of traffic entering the charging zone during charging hours during 2004 was identical to 2003, still representing a reduction of 18% against 2002 pre-charging levels.

The ‘annualised’ reduction in the volume of traffic entering the charging zone during charging hours for 2005 of 3% against 2004, represents an overall reduction of 21% compared to pre-charging levels in 2002.

3.3 Creation of new conditions and the re-allocation of road space

Buses and bus passengers have benefited directly and indirectly from the introduction of the central London congestion. As planned, net revenues
generated from the charging scheme have been ring-fenced monies, largely spent on improved bus services in London.

In a physically restricted urban environment such as central London, road space is a scarce resource. The optimisation of that resource is a necessity for the future prosperity of the Capital.

A less congested road space with lower volumes of traffic facilitated by the introduction of the charge in central London, provided greater opportunity for public transport and other more sustainable modes to flourish through complimentary transport interventions. Put simply, the moving-motor-vehicle capacity of the network had been adjusted in favour of the people-moving capacity of the network.

In the first year of charging there was an increase of 37% in passenger numbers entering the zone by bus during charging hours. Around half of this was assessed to have been as a result of the scheme, the other half due to a background trend of growth. Improvements to the capacity and reliability of the bus network, necessitated by background growth in patronage and additional passengers resulting from post-charge modal shift, have been delivered across central London.

Articulated or “bendy” buses were first introduced in June 2002 and are now common place across London’s bus network. Articulated cashless buses are able to carry up to 140 people, at least 60 more than a double deck bus.

Cashless, single deck operation make the “bendy” bus a key tool in reducing the time that buses wait at stops whilst passengers board and alight.

Articulated buses offer an improved level of accessibility to the less ambulant user, who may be impaired by luggage, buggies or physical disability.

The new environment created by the impacts of the charge’s introduction also allowed for the implementation of bus priority at locations where previously such
measures were unviable due to their consequential impact on saturation flows of neighbouring junctions.

Measures to assist pedestrians and cyclists at junctions have been delivered in addition to improved capacity on the bus network. These include designated on-carriageway cycle lanes and the provision of all-pedestrian phases at traffic signal controlled junctions.

Weekly cycle journeys on Transport for London’s Road Network (TLRN) have risen from 59,000 in 2000, to 119,000 in 2005 – a 100% increase. The introduction of the charge has played a part in this increase in sustainable travel choices by making the urban environment safer.

Such complimentary interventions have been valuable and beneficial, either directly to selected users of the road or to the Capital more generally.

• Dramatic reductions in accident casualties have been seen as traffic control and road safety measures have impacted upon vehicle speeds
• Improved travel choice has been provided through improvements to the capacity and reliability of bus services
• Greater sustainability has been achieved as Londoners take more journeys by foot or cycle

3.4 The opportunity to “lock-in” benefits for future prosperity

Long-run trends in congestion observed in both central and inner London suggest gradual deterioration over the last 10-20 years. The introduction of congestion charging in 2003 interrupted this trend in central London, reducing congestion by 30% almost overnight. However, the observations for 2004 and 2005 imply that the long-term trend is reasserting itself, even if current levels of congestion are substantially lower than would otherwise have been the case.

The complimentary transport interventions in the form of pro pedestrian, cycle and bus measures may have contributed to this slight increase in congestion. Increased frequency of street works has also been identified as a possible contributing factor. It is for this reason that complimentary measures such as bus priority in the form of SVD and bus lane infrastructure continue to play an important complimentary role in the total management of central London’s transport network, to improve people movement and network efficiency.

The majority of road space in central London does not allow for designated cycle tracks, so cyclist require a continuation of the benefits they enjoy by using lanes if cycling is to be promoted further in the Capital. The role that bus lanes play in supporting the growth of an important sustainable mode in the Capital is detailed further in section 5 of this paper.
3.5 Key points arising

- Congestion charging in central London greatly reduced traffic volumes entering the zone and congestion levels therein.
- This provided improved opportunity for complimentary measures to thrive; increasing the capacity and improving the performance of public transport whilst promoting sustainable modes of travel.
- These flourishing modes remain vulnerable to possible absorption of the charge in light of future population growth and so require protection.

4. CASE STUDY FINDINGS HIGHLIGHTING THE BENEFITS OF BUS PRIORITY MEASURES WITHIN THE CONGESTION CHARGING ZONE

The introduction of Central London Congestion Charging in February 2003 has reduced volumes of traffic during the hours of operation. Buses and their passengers still require protection from delays and congestion at locations that have remained busy.

Two case studies outlined below demonstrate bus lanes achieving journey time savings for buses within the congestion charging zone during charging hours. The third and final case study (Haymarket; Coventry Street to Charles II Street) serves to illustrate the way in which bus lane implementation in the capital has been used to mitigate against other network issues.

Figure 8 – Case study locations.
4.1 Waterloo Bridge Bus Lanes

Bus lanes in both directions in Waterloo Bridge/Lancaster Place were implemented in June 2003 by Westminster City Council and the London Borough of Lambeth. Operating Monday to Saturday 7am-7pm, the lanes replaced mandatory cycle lanes, and taxis are also permitted to use both. The cumulative weekday peak hour frequency of the routes using the lanes in both directions are 128.5 buses per hour (bph) in the AM peak hour, and 124.5 bph in the PM peak hour.

Figures 9 & 10 – Location & photographs of Waterloo Bridge bus lanes

Queue length surveys undertaken for the northbound bus lane demonstrate that the maximum queue length exceeds the setback distance whilst still allowing buses access into the lane. Queue lengths southbound were recorded as not exceeding the termination point of the bus lane. The lane has operated to benefit bus movement during both weekdays and weekends.

The northbound bus lane will also provide protection for buses from increased queuing that may arise if a proposed controlled pedestrian crossing scheme in Lancaster Place is progressed.

It is predicted that the future planned partial signalisation of Waterloo Rd/York Rd/Stamford Rd roundabout, being delivered by the cycling and walking teams at
TfL may result in increased queue lengths. The existent bus lane will protect southbound bus services and their passengers from predicted increased queue lengths.

The future changes that look set to occur at this site, and the protection of buses against any detrimental impact, provides a very real example of current bus lane introduction 'locking-in' benefits for buses and their passengers where conditions are likely to alter in the future.

Traffic Enforcement Camera Operations (TECO) data was used to calculate bus journey times before and after the implementation of the lanes. This data showed the effect of the northbound bus lane was to reduce mean running times by 0.33 minutes (almost 20 seconds) per bus. The southbound mean running time was reduced by 0.18 minutes (11 second) per bus.

Improvements in running time reliability as measured by the standard deviation were recorded in both directions.

Reduced mean bus running times and the standard deviation of running times in both directions have benefited in excess of 38,000 passengers per weekday, 22,000 passengers on a Saturday and 15,000 passengers on a Sunday. Cyclists and taxi passengers will have also benefited from the implementation of the bus lanes.

4.2 Kingsway (Sardinia Street to Aldwych)

A southbound bus lane (145m) operating 7am-7pm was implemented in March 2003 between Sardinia Street and the approach to the junction with Aldwych. Similar to the Waterloo Bridge lanes, cyclists and taxis are allowed to use this bus lane. The cumulative weekday peak hour frequency of the routes using this lane is 67 buses per hour (bph) in the AM and PM peak hours.
Results of the general traffic queue length surveys show that they are contained within the length of carriageway parallel to the bus lane. At no point did queue length extend beyond the start of the bus lane and so buses were able to progress in the lane without undue delays.

TECO and Automatic Vehicle Location (AVL) data has been obtained and reviewed for the southbound route. The TECO data collected indicates that the bus lane has had a positive benefit for bus passengers in terms of the mean running time and standard deviation of running time.

The data suggests a running time saving of 0.36 minutes (22 seconds) per bus for passengers, and a reduction by 0.46 minutes (28 seconds) in the standard deviation of running times representing an improvement of 62% in running time reliability.

Route 188 (one of the bus routes using the lane). Figure 13 presents the available data both ‘before’ and ‘after’.

**Figure 13 - AVL Journey Time data for Route 188 – 7.00am-7.00pm**

<table>
<thead>
<tr>
<th>Survey dates</th>
<th>Sample size (no. of buses)</th>
<th>Mean journey time (mins)</th>
<th>Mean bus speed (km/hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td>7433</td>
<td>8.07</td>
<td>9.98</td>
</tr>
<tr>
<td>After</td>
<td>6959</td>
<td>7.92</td>
<td>10.14</td>
</tr>
</tbody>
</table>

(Where ‘Before’ observations are 01.05.02 to 31.01.03 and ‘After’ observations are 01.05.03 to 30.10.03)

TfL Bus Priority Team Monitoring ‘04.
The AVL data over the 1.3km section between beacons indicates that there has been a modest reduction in mean total journey times (this includes dwell time as well as running time) and as a result an increase in mean bus speeds between 7am-7pm in the southbound direction.

The distance between the beacons used to gather this AVL data is 1.215km, relative to the 145m length of the bus lane. The timing point of the AVL data includes the full length of the bus lane, and 3 major junctions at High Holborn, Kingsway/Aldwych, and Aldwych/Strand/Arundel Street. Consequently, the effects of changes in traffic flow elsewhere are likely to influence the results.

It should be noted that the AVL data shows total journey time; it is not split into running time and bus stop dwell time. Consequently, changes in dwell time due to variations in passengers’ boarding and alighting cannot be disaggregated from the results.

The AVL data supports the conclusions from the TECO data that the scheme is working effectively to assist buses.

4.3 Haymarket (Coventry Street to Charles II Street)

Haymarket’s southbound bus lane is 143m in length and operates 24 hours a day. 12 bus routes in Haymarket that provide a combined scheduled frequency of 132 buses per hour on a weekday in the AM peak period. Cyclists and taxis are allowed to use this bus lane. The implementation of the bus lane was completed April 2003.

Figures 14 & 15 – Location & photographs of Haymarket bus lane

©Bartholomew Ltd 2002

©Association for European Transport and contributors 2006
The key driver behind the scheme’s implementation was to improve road safety through a reduction in conflicting movements of vehicles as a result of weaving by the segregation of buses, cyclists and taxis from general traffic.

TECO data was collected for Routes 9, 12, and 159 for both before and after scenarios between Coventry Street and the junction with Charles II Street. A comparison of the summary results for the available data is presented in figure 16.

**Figure 16 - Route 9, 12 & 159 Journey Time Summary Statistics at Haymarket, from Coventry St to Charles II St (7am-7pm Weekday)**

<table>
<thead>
<tr>
<th></th>
<th>Before 7am-7pm</th>
<th>After 7am-7pm</th>
<th>Difference (minutes)</th>
<th>Percentage Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample size</td>
<td>398</td>
<td>23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean Run Time (Minutes)</td>
<td>2.37</td>
<td>2.76</td>
<td>0.39</td>
<td>16%</td>
</tr>
<tr>
<td>Standard Deviation of Run Time (Minutes)</td>
<td>1.50</td>
<td>1.30</td>
<td>-0.20</td>
<td>13%</td>
</tr>
</tbody>
</table>

TfL Bus Priority Team Monitoring ’04

The increase in running times shown above was thought to be due to the introduction of the pre-signals. The signal phasing has previously been reviewed and amended. Updated journey time surveys are yet to be undertaken but bus operators have since reported marked improvements to movement through the signals.

Conversely the TECO data does however indicate an improvement (i.e. reduction) in the standard deviation of bus running times of 13%, suggesting improved reliability.

Initial studies undertaken by the City of Westminster Council indicate that the scheme’s main objective has been met with a reduction in accidents in the region of 66% when compared with 2002 data.

A longer period for monitoring accidents is recommended, but this initial finding is very encouraging and suggests that the scheme is improving road safety and thus fulfilling one of its primary objectives.

The available Keypoints\(^{11}\) and Bus Origin Destination Surveys\(^{12}\) (BODS) passenger data indicates that there are at least 19,000 bus passengers between 7am-7pm using Haymarket who now benefit from a safer and more reliable journey, albeit with slightly longer journey times.

The bus lanes outlined in this section of the paper work in concert with congestion charging to deliver journey time, reliability and safety benefits to bus passengers in central London.
5. HOW OTHER USERS CAN BENEFIT FROM BUS PRIORITy IN THE CAPITAL

Bus lanes have an important part to play in supporting and furthering the huge increases in cycle journeys on what remain busy urban streets, as stated in the London Cycling Design Standards13.

“combined bus and cycle lanes are a valuable element in the provision of facilities for cyclists, enabling them to share in the time-saving benefits provided to buses, as well as providing safer conditions for cycling.” London Cycling Design Standards ’05.

It is widely accepted that cyclists prefer to use bus lanes for the reasons already outlined. Although no studies have been carried out in London to substantiate this premise as yet, TfL’s Customer Research department are set to undertake work on the topic with provisional report publication scheduled for late Autumn this year.

One such study has already been carried out in Belfast where, despite bus lanes being narrow and not particularly well enforced, they were viewed as a relatively popular facility.

350 questionnaires were distributed amongst cyclists in the city asking them to rate each facility against an ‘average road without any cycle facility’. The raw data, from the 188 completed questionnaires returned, is displayed in figure 17.

**Figure 17 – Belfast Cyclist Questionnaire**

<table>
<thead>
<tr>
<th>Cycle Facility</th>
<th>Much better</th>
<th>Better</th>
<th>No better or worse</th>
<th>Worse</th>
<th>Much worse</th>
<th>Not used the facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle lanes (on the road)</td>
<td>37</td>
<td>32</td>
<td>8</td>
<td>5</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>Bus lanes permitting cycles</td>
<td>32</td>
<td>44</td>
<td>11</td>
<td>2</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Cycle tracks (a dedicated cycle facility which runs parallel to the main road but is physically segregated from it)</td>
<td>62</td>
<td>12</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td>Shared-use footway (cycle-facility on the pavement shared with pedestrians)</td>
<td>23</td>
<td>34</td>
<td>13</td>
<td>4</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>Cycle paths (paths away from roads, through parks/on towpaths etc)</td>
<td>56</td>
<td>22</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>Traffic-calmed roads (e.g. roads with speed humps)</td>
<td>8</td>
<td>24</td>
<td>40</td>
<td>9</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>Signposted back streets</td>
<td>6</td>
<td>13</td>
<td>39</td>
<td>3</td>
<td>4</td>
<td>36</td>
</tr>
</tbody>
</table>


©Association for European Transport and contributors 2006
Consultation with cycling groups during the undertaking of the Cycle Route Implementation and Stakeholder Plan (CRISP) methodology in London has repeatedly shown cyclist preference for shared use of bus lanes.

TfL’s general policy is to allow taxis in all bus lanes except where specific safety or bus operational issues render this impractical. Taxi access to bus lanes reflects the recognition in the Mayor’s transport strategy that taxis are “a vital part of London’s integrated transport network, fulfilling demands that cannot be met by the bus, train or tube.”

The vehicles of London’s Metropolitan Police, Ambulance Service and Fire Brigade are able to benefit from the use of bus lanes when on emergency calls. This can allow operatives to avoid heavily congested approaches to junctions, providing faster and more reliable response times to emergency calls.

6. SUMMARY

Bus Priority has served as key transport intervention in keeping people moving in London, facilitating the city’s growth. The introduction of Congestion Charging brought about the opportunity to make step changes in the direction of London’s network; with a renewed emphasis on the movement of people rather than vehicles in the Capital.

Complimentary transport interventions through improvements to bus services and bus priority, increase the people moving capacity, safety and reliability necessary for London’s road network to flourish and for the city to grow in a more sustainable and efficient fashion.

Huge challenges lie ahead and no other mode is better equipped to deal with increased demand in the short and medium term than London’s bus network. It is now vital that the significant gains already achieved are not only maintained but improved upon by securing priority for buses long into London’s future.
Bibliography


Notes

1. Local Implementation Plans (LIPs) – Statutory transportation plans produced by London Boroughs, bringing together transport proposals to implement the Mayor’s Transport Strategy.

2. London Bus Priority Network (LBPN) – Originally an 865km cross boundary network of borough roads across London, it was developed in 1994 by the 33 boroughs and London Transport, in liaison with the Government Office for London (GOL) and the then Traffic Director for London.

3. Excess Wait Time (EWT) – Measurement of bus reliability calculated by subtracting scheduled waiting time from average waiting time as manually recorded on site.

4. “Quality Incentive” contracts – These were introduced in 2001 and mean that operators are penalised for poor performance and rewarded for excellent service. Contracts can also be withdrawn.

5. Traffic Network Study Tool (TRANSYT) – an algorithm for calculating network signal timings using historical data.

6. VISSIM – This is a microscopic, behaviour-based, multi-purpose traffic simulation program.

7. VISUM – simulated traffic modelling system that facilitates the analysis of single intersections to national traffic systems.

8. Selective Vehicle Detection (SVD) – A method of bus priority whereby a bus-installed transceiver sends a message through a roadside beacon to the traffic signal controller which in turn manages the sequence of the lights to assist the transit of the bus through the junction.

9. Traffic Enforcement Camera Operations (TECO) – A continuous video survey, data is recorded from bus-mounted cameras and can provide information on journey times in addition to bus lane and parking violations.

10. Automatic Vehicle Location (AVL) – A method of locating individual vehicles whereby a roadside unit (beacon) communicates with a vehicle mounted unit and provides positional information.

11. Key points – rolling survey programme undertaken on street at strategic locations across network.

12. Bus Origin Destination Surveys (BODS) – Detailed surveys undertaken on board buses, recording the responses of individual bus passengers to a variety of questions about their travel patterns. 6 years area-based rolling programme covers network. The survey database is managed by Transport for London/London Buses.

13. London Cycling Campaign Design Standards (LCDS) – Document that sets out the principles, guidance and standards for designing to reduce barriers to cycling in London. Produced by TfL’s Cycling Centre of Excellence.

14. Cycle Route Implementation and Stakeholder Plan (CRISP) – methodology provided by the Cycling Centre of Excellence at TfL. Its purpose is to review existing conditions for cyclists on a given corridor/link, identify problems and opportunities to improve facilities.