Buses in the Putney area

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London’s Buses - Key Facts

- 6.5 million passengers per day
- 675+ routes – over 100 operate 24/7
- 8,700 buses
- 24,500 drivers
- 19,000 bus stops
- 30 bus stations
Mayor’s Transport Strategy

Support economic development and population growth

Enhance the quality of life for all

Improve transport opportunities for all

Improve safety and security for all

Support delivery of the 2012 Games, and legacy

Reduce transport’s contribution to climate change, and improve its resilience
Bus Use Returns to Levels of 50 Years Ago
Proportion of Public Transport Provided

Buses account for around half public transport use by London residents

- National Rail: 18.0%
- Underground/DLR: 27.6%
- Bus/tram: 54.4%
Better Customer Service

• Nationally-certified ‘BTEC’ qualification for bus drivers, including disability-awareness.

• The ‘Big Red Book’, a handbook for drivers setting out expectations and advice on dealing with difficult situations.
Real-Time Information

- ‘Countdown’ at 2,500 stops.
- ‘Next Stop’ announcements inside all buses.
- ‘Live Bus Arrivals’ by web and text, since 2011.

- For times when the network is disrupted:
  - @TfLBusAlerts
  - Targeted messages.
Accessibility

In LB Wandsworth 97% of residents are within 400 metres of the network (London: 96%).

All buses are accessible to wheelchair users. Currently around 91% of stops in the borough meet the TfL/Boroughs accessibility standards.
New Routemaster

- 800 to be introduced to London by 2016
- More than 400 rolled out to date
- Cleanest Euro V hybrid in fleet, emitting a quarter of the NOx
- Fuel consumption almost 50% better than earlier buses on routes
- Three door, two staircase, design, for fast boarding and alighting
Service Reliability

‘Excess Waiting Time’ for routes serving LB Wandsworth is now 1.1 minutes. In 1999 it was 2.3 minutes – a 1.2 minute improvement. This mirrors the trend across the network:
Developing the Network

Major change the bus network needs to respond to includes:

• Growing number of residents and workers: e.g. VNEB, Wandsworth Riverside Quarter, Springfield Hospital

• Impact of new railways: e.g. Crossrail, HS2

• Changes in education, healthcare:

• Supporting improvements on the roads generally: e.g. Wandsworth Gyratory, Balham High Road, Trinity Road/Burntwood Lane, A24 Tooting Broadway, improvements for cyclists.
What Do Passengers Want?

Time taken continues to be the main driver of overall satisfaction followed by personal safety, driver behaviour, crowding, cleanliness and comfort.

SOURCE : CSS Key Driver Analysis – Bus Services CSS P1-P8 2014/15
NOTE: Figures may not add up to 100 due to rounding
Network Design

Responding to passenger priorities requires:

**Comprehensive service**
Serving all areas, through the week.

**A simple network**
Routes should be as simple as possible.

**Frequent services**
“Turn up and go”, wherever it can be justified.

**Excellent Reliability**
Predictable journey times.
Challenges

Maintain quality

- Line graph showing customer satisfaction score from 1997/98 to 2014/15, with an overall upward trend.
Challenges

Maintain reliability of bus network

Support growth as London’s population rises from 8.4 million to 10 million

Provide access for all as London continues to change
Pollution in Putney

Polluted Putney: fumes breach limit for the year... in January
- 'London's most polluted street' smashed annual limits ten days into new year
- Fumes so bad shopkeepers advised to keep doors shut
- Putney High street pollution 'off the scale,' say campaigners

Air pollution in Putney and Brixton up to three times higher than EU limits
Source Apportionment for NOx on Putney High St

Table 11: Overview of NOx and PM emissions by vehicle type.

<table>
<thead>
<tr>
<th></th>
<th>Car</th>
<th>Taxi</th>
<th>LGV</th>
<th>HGV</th>
<th>Buses</th>
<th>Coaches</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of movements</td>
<td>67%</td>
<td>7%</td>
<td>14%</td>
<td>2%</td>
<td>19%</td>
<td>0%</td>
</tr>
<tr>
<td>% of NOx emissions</td>
<td>14%</td>
<td>5%</td>
<td>6%</td>
<td>7%</td>
<td>68%</td>
<td>0.30%</td>
</tr>
<tr>
<td>% of PM emissions</td>
<td>35%</td>
<td>14%</td>
<td>23%</td>
<td>7%</td>
<td>21%</td>
<td>0.27%</td>
</tr>
</tbody>
</table>

Figure 11: Percentage of NOx emissions by vehicle type.
£10 million funding (DfT/TfL) to retrofit approx 1000 Euro III buses with SCR

1015 buses now fitted to 3 types of Euro III bus

NOx reacts with ammonia over the catalyst and reduces it to nitrogen and water

(NO and NO₂) + NH₃ → N₂ + H₂O
  N₂O + NH₃ (Secondary Emissions)

95 out of 220 buses that use Putney High Street were retrofitted with SCR

This made Putney the ideal location for monitoring the effectiveness of SCR programme
NOx Reduction operating on Putney High Street
Monitoring Scheme Effectiveness – Putney High St

“a sustained decrease in ambient NO2 concentrations of 16% (during normalised meteorological conditions) at the façade is an encouraging result”

“there were 42% and 71% fewer exceedences at the kerb and façade respectively in the second half of 2013 when compared to the second half of 2010 to 2012”
## Putney High St NO2 Monitor Trends

<table>
<thead>
<tr>
<th>Year</th>
<th>Pollutant</th>
<th>Objective</th>
<th>Achieved?</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>Nitrogen Dioxide</td>
<td>200 ug/m³ as a 1 hour mean, not to be exceeded more than 18 times a year</td>
<td>NO</td>
<td>2480</td>
</tr>
<tr>
<td>2011</td>
<td>Nitrogen Dioxide</td>
<td>200 ug as above</td>
<td>NO</td>
<td>2768</td>
</tr>
<tr>
<td>2011</td>
<td>Nitrogen Dioxide</td>
<td>40 ug/m³ as an annual mean</td>
<td>NO</td>
<td>154</td>
</tr>
<tr>
<td>2012</td>
<td>Nitrogen Dioxide</td>
<td>200 ug as above</td>
<td>NO</td>
<td>2740</td>
</tr>
<tr>
<td>2012</td>
<td>Nitrogen Dioxide</td>
<td>40 ug as above</td>
<td>NO</td>
<td>155</td>
</tr>
<tr>
<td>2013</td>
<td>Nitrogen Dioxide</td>
<td>200 ug as above</td>
<td>NO</td>
<td>1580</td>
</tr>
<tr>
<td>2013</td>
<td>Nitrogen Dioxide</td>
<td>40 ug as above</td>
<td>NO</td>
<td>124</td>
</tr>
<tr>
<td>2014 to 1st June</td>
<td>Nitrogen Dioxide</td>
<td>200 ug as above</td>
<td>NO</td>
<td>482 (1157 annualised)</td>
</tr>
<tr>
<td>2014 to 1st June</td>
<td>Nitrogen Dioxide</td>
<td>40 ug as above</td>
<td>NO</td>
<td>109</td>
</tr>
</tbody>
</table>
Environmental Targets & Strategy

Increase number of hybrid buses to 1,700 by 2016 and then >3,300 by 2020

All buses to meet Euro IV standard for PM and NOx by 2015 through retrofit of Selective Catalytic Reduction (SCR) and accelerated uptake of Euro VI

Technology trials of pure-electric and induction-charging of diesel hybrids

Continuation and expansion of hydrogen bus operation until 2019/20

Ultra Low Emission Zone proposed for central London by 2020

All double deck buses operating in central London to be hybrid by 2020 –3,300 vehicles

All single deck to be ‘zero tailpipe emission’ (electric or hydrogen) by 2020 –300 buses
Route Renewal Dates & Vehicles Envisaged

<table>
<thead>
<tr>
<th>Routes</th>
<th>Contract End Date</th>
<th>Potential 2 year extension</th>
<th>Current</th>
<th>Mid 2020 prediction</th>
</tr>
</thead>
<tbody>
<tr>
<td>14/N14</td>
<td>18/11/2016</td>
<td>No</td>
<td>2005 built Euro III, SCRT fitted</td>
<td>Euro VI hybrid</td>
</tr>
<tr>
<td>22/N22</td>
<td>20/10/2017</td>
<td>Yes</td>
<td>Split of 2012-built Euro V diesel and Euro V hybrids.</td>
<td>Euro VI and Euro V hybrid</td>
</tr>
<tr>
<td>37/N37</td>
<td>01/06/2018</td>
<td>Yes</td>
<td>2006 built Euro IV diesel</td>
<td>Euro IV or Euro VI diesel</td>
</tr>
<tr>
<td>39</td>
<td>18/11/2016</td>
<td>No</td>
<td>2002 built Euro III, due to be SCRT fitted in early 2015</td>
<td>Euro VI diesel</td>
</tr>
<tr>
<td>74/N74</td>
<td>18/11/2016</td>
<td>No</td>
<td>2002 - 2005 built Euro III, SCRT fitted</td>
<td>Euro VI hybrid</td>
</tr>
<tr>
<td>85/N85</td>
<td>01/07/2016</td>
<td>No</td>
<td>2002 built Euro III, SCRT fitted</td>
<td>Euro VI diesel</td>
</tr>
<tr>
<td>93/N93</td>
<td>04/12/2015</td>
<td>No</td>
<td>2008/9 built Euro IV diesel</td>
<td>Euro IV or Euro VI diesel</td>
</tr>
<tr>
<td>220/N22</td>
<td>20/10/2017</td>
<td>Yes</td>
<td>2012 built Euro V diesel, with temporary use of 4 Euro III</td>
<td>Euro V or Euro VI diesel</td>
</tr>
<tr>
<td>265</td>
<td>01/07/2016</td>
<td>No</td>
<td>2002 built Euro III, due to be SCRT fitted in early 2015</td>
<td>Euro VI diesel</td>
</tr>
<tr>
<td>270</td>
<td>01/06/2018</td>
<td>Yes</td>
<td>2005 built Euro III diesel, to be replaced or retrofitted with SCRT by end of 2015</td>
<td>Euro VI diesel</td>
</tr>
<tr>
<td>337</td>
<td>27/05/2016</td>
<td>Yes</td>
<td>2011 built Euro V diesel</td>
<td>Euro V or Euro VI diesel</td>
</tr>
<tr>
<td>424</td>
<td>06/04/2018</td>
<td>Yes</td>
<td>2006 built Euro III, due to be SCRT fitted in early 2015</td>
<td>Euro VI diesel</td>
</tr>
<tr>
<td>430</td>
<td>18/11/2016</td>
<td>No</td>
<td>2005 built Euro III, SCRT fitted</td>
<td>Euro VI diesel</td>
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<tr>
<td>485</td>
<td>04/05/2018</td>
<td>Yes</td>
<td>2006 built Euro III, due to be SCRT fitted in early 2015</td>
<td>Euro VI diesel</td>
</tr>
</tbody>
</table>

- **Ultra Low Emission Zone**: Putney High Street will benefit from more hybrids as routes 14, 22 and 74 all go into the ULEZ

- **A number of routes** have vehicles in their second contract term which will get replaced with newer buses
Summary and Conclusions

- The SCR Retrofit Programme has been successful in reducing NO2 concentrations on Putney High Street.
- The Roll-out of Euro VI buses will reduce emissions further.
Questions?