

Argent St George, London and  
Continental Railways and Exel  
**King's Cross Central**  
Transport Assessment

April 2004

**Appendix 2**

# London Underground Limited Public Private Partnership



Final Assessment Report

7 February 2002



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## 12. What the PPP Delivers

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The PPP performance specification is based on LUL's own long term train and station plans. It also requires Infracos to recover the shortfall in the condition of the Underground's infrastructure. Restoring this to a state of good repair requires enormous investment in track, signalling, stations, earthworks, bridges and other structures. Tackling the backlog on a whole-life asset management basis is essential to ensuring that service improvements will be sustained. Completing the job is a very long-term undertaking.

The purpose of this chapter is to give an impression of the physical improvements which the PPP will deliver, based on the programmes of work set out in each bidder's final submissions.

### 12.1 OVERVIEW

The PPP enables an intensive programme of work on a scale never previously undertaken on the Underground. It delivers new projects in the order that delivers most benefit to customers. In summary:

- 12 new trains will be in service by 2008, a further 324 new trains by 2014, and an additional 42 trains by 2019.
- All rolling stock which is more than 10 years old now will be replaced by 2019.
- All lines will have modern signal and control systems by 2016. These will provide automatic train operation and automatic train protection which is key to improving reliability.
- These improvements will deliver extra capacity – by 22% on the Jubilee line, 15% on the Victoria line and 17% on the Metropolitan and Circle lines, all within 10 years.
- Ten of London's busiest stations will be modernised or refurbished by 2010 - Oxford Circus, King's Cross, Liverpool Street, Piccadilly Circus, Waterloo, Leicester Square, Tottenham Court Road, Charing Cross, Paddington and Victoria.
- In the same period, 60 more stations will be modernised and 139 will be refurbished, with stations refurbished again every 7½ years.
- 16 more stations will be accessible to mobility impaired customers by 2009, giving a network of 68 stations providing step-free access by 2012.
- Trains and station works will improve the travelling environment. Ambience scores will rise 10-15% across the network.
- Some 80% of the Underground's 400-plus kilometres of track will be replaced over the life of the contract.
- All infrastructure will be fully maintained and renewed to achieve a network-wide state of good repair by the end of the third review period.

## **12.2 INFRACO JNP**

Infraco JNP maintains 100 stations and 164km of track. The Jubilee line has the newest section of track on the network and covers a distance of some 53km, serving 35 stations between Stanmore and Stratford. The Northern line serves 39 stations from Edgware, Mill Hill East and High Barnet to Morden. The Piccadilly line runs across London from Uxbridge and Heathrow to Cockfosters serving a total of 37 stations.

The challenges which face JNP include the need to provide new signalling systems on the Northern and Jubilee lines which will unlock the additional capability of the existing modern trains. This is particularly important on the Jubilee line extension where demand is growing rapidly. The Piccadilly line requires new trains and signalling.

The line upgrades will deliver new transmission based signalling, 68km of track renewed - £180m-worth of replacement works with a further £73m spent on renewals. By 2014 all the line upgrades will be complete. These works result in marked improvements in journey times – 22% on the Jubilee Line, 20% on the Piccadilly Line and 18% on the Northern Line.

All lines will see significant station works. All stations will be modernised or refurbished and there will be stations accessible to mobility impaired customers. Lifts and escalators will also be refurbished or replaced to improve reliability, reduce delays and ease congestion.

An indication of the range of performance improvements to be delivered by Infraco JNP is given in Table 12.1.

## **12.3 INFRACO SSL**

Infraco SSL is responsible for the subsurface railway – the District, Circle, Metropolitan, East London and Hammersmith & City lines. These lines have approximately 150 km of track and 158 stations. They interconnect to form a network, and three sections of SSL's track interface with the National Rail Network. Stations present a similar picture. Of SSL's 97 stations, 43 provide interchanges between lines. SSL therefore faces the most technically complex challenges of any Infraco.

Within the first two review periods, capability upgrades, involving new trains, signalling, control systems and track works will be implemented on all lines. These will reduce journey time on the northern section of the network by 17% and on the southern section by 11%. An inter-operable fleet of 190 new trains will be provided delivering significant flexibility benefits and reliability will improve through the delivery of a centralised signalling control centre.

As with the deep-tube Infracos, the SSL network will undergo a programme of station refurbishments, modernisations and enhancements to provide customers with improved travelling environment, better station facilities and more step free access.

Table 12.2 shows the performance improvements which can be expected on SSL.

**Table 12.1: Infraco JNP Service improvements**

First Review Period	Second Review Period
<b>Jubilee</b>	
12 additional new trains Extra car on each of the 59 existing trains New signalling system 22% increase in capacity 15% reduction in delays due to train, signal and track faults 15% improvement in train ambience	
<b>Northern</b>	
25% reduction in delays due to train, signal and track faults 11% improvement in train ambience	New signalling system with enhanced control centre Two extra trains in peak service 18% increase capacity by 2010 10% increase in signal reliability 106 trains refurbished by 2015
<b>Piccadilly</b>	
32% reduction in delays due to train, signal and track faults 12% improvement in train ambience	92 new trains by 2013 New transmission-based signalling system with new control centre 20% increase in capacity 10% increase in train and signal reliability 4% improvement in train ambience
<b>Station upgrades</b>	
30 stations modernised 41 stations refurbished 65 lifts refurbished 10% reduction in station system faults 100% of communications systems replaced Deep cleans and interim refurbishments to improve ambience	3 further stations modernised 60 stations refurbished



**Table 12.2: Infraco SSL Service improvements**

First Review Period	Second Review Period
District	
All trains refurbished by 2005 42% improvement in train reliability 36% improvement in signal reliability 38% improvement in track reliability 19% improvement in train ambience by 2014 14% improvement in escalator track reliability 29% reduction in delays due to other station faults 12% improvement in station ambience	78 new trains by 2014 New signalling system by 2014 12% increase in capacity
Metropolitan, Circle, Hammersmith & City	
3% improvement in capacity 30% improvement in train reliability 38% improvement in signal reliability 37% improvement in track reliability 15% improvement in train ambience New crew facilities at 26 locations 7% reduction in delays due to lift and escalator faults 25% reduction in delays due to other station faults 12% improvement in station ambience	112 new trains by 2011 New signalling system by 2011 17% increase in capacity
Station upgrades	
14 stations modernised 70 stations refurbished	4 further stations modernised 80 stations refurbished

## **12.4 INFRACO BCV**

Infraco BCV is responsible for some of the busiest lines on the Underground Network - over 1,000,000 journeys are made on the Central and Victoria each weekday. Assets maintained by Infraco BCV include 125km of track and 76 stations with 145 escalators and 23 lifts. The future challenges facing Infraco BCV centre around the need to provide substantial improvements in reliability and journey time on each line.

On the Victoria line, a new fleet of 47 trains will be provided, together with a new signalling system and new, purpose built control centre. This will deliver a 15% improvement in passenger journey time over the first two review periods.

The Central line is the only Underground line not to receive a full upgrade under the PPP. This reflects the fact that its existing trains and signalling systems are currently less than 10 years old. However, capacity can still be improved. By 2003 journey times will have reduced by 5% through a combination of track works, completing existing signal works, and repairing and returning to service two trains which are not currently operable.

The Bakerloo line will be upgraded by 2019, replacing the existing fleet with 42 new trains. This will improve journey times by 15%. During the early years of the contract, capital expenditure on the Bakerloo line will include installing additional crew facilities, for example at Elephant & Castle and Harrow & Wealdstone.

In common with the other Infracos, BCV will undertake a substantial programme of station modernisation and refurbishment work targeted at relieving congestion and improving the travelling environment.

An indication of service improvements on BCV is given in Table 12.3.

**Table 12.3: Infraco BCV Service Improvements**

First Review Period	Second Review Period
<b>Bakerloo</b>	
33% improvement in train reliability 30% improvement in signal reliability 29% improvement in track reliability 22% improvement in train ambience An additional train in peak service	42 new trains New signalling system 15% increase in capacity
<b>Central</b>	
2 additional trains in service by 2003	
Signalling upgrade complete by 2005	
46% improvement in train reliability 33% improvement in signal reliability 29% improvement in track reliability 16% improvement in train ambience	
<b>Victoria</b>	
Trains in service increased to 39 (peak) and 30 (off peak) 5% increase in capacity by 2004 41% improvement in train reliability 26% improvement in signal reliability 32% improvement in track reliability 21% improvement in train ambience New crew facilities at Brixton and Seven Sisters	47 new trains and new signalling system by 2011 Further 11% increase in capacity 45% improvement in signal reliability New crew facilities at Walthamstow
<b>Waterloo and City</b>	
Signalling upgraded by 2004 12% increase in capacity 49% improvement in train reliability 28% improvement in signalling reliability 32% improvement in track reliability 16% improvement in train ambience	
<b>Station upgrades</b>	
21 stations modernised 43 stations refurbished 16% improvement in lift and escalator reliability 15% improvement in station ambience	17 further stations modernised 40 refurbishments