Tube Lines - Then and Now

Steve McDonagh, April 20 2018
30 year contracts divided into 4 x 7 ½ year review periods

- London Underground Limited (LUL) opportunity to restate its need
- Infraco submit ‘bid’ with price for remainder of contract
- If can’t agree price – P3 Arbiter will set price

- Of the three Infracos, 2 were for deep tube lines
  - BCV (Bakerloo, Central, Victoria)
  - JNP (Jubilee, Northern, Piccadilly)
- $17.0 billion to be spent by the Infracos in the first 7 ½ years
- More than $6 million per day
Infraco’s Role

- Provide
- Maintain
- Renew
- Upgrade
- Not own
- Not operate

All assets/services
The P3 Contracts

Output based contracts that set out to achieve

• Upgrade of assets and increase in system capacity
• Improve asset performance and reliability
• No compromise to safety
• Focus on ‘whole life asset management’
• Optimization of Capex vs. Opex spends
• Adequate and commercially sensible risk transfer
• Value for money - economic and efficient
P3 Incentive Contracts

**Performance**
To incentivize Infraco performance for **Capacity, Availability, Ambience, Facilities and Fault Rectification** as well as Station Upgrade delivery
Remedies - mainly financial adjustments

**Residual Life Benchmarks**
To incentivize amount of life left in the assets at the end of the 30 year contracts
Remedies - failure to meet at expiry date, compensation determined by independent valuer

**Asset Condition Benchmarks**
To incentivize the upgrade and renewal of assets (making up the backlog that existed at transfer)
Remedies - LU may withhold amount equal to estimate of cost of achieving benchmark

**Standards**
To incentivize Safety, Corporate Identity, Customer Service Delivery, Consistency
Remedies - engineering notices, step-in to ultimately termination
Who is Tube Lines?

- Consortium set up between Amey, Bechtel and Jarvis
- Successfully won the contract for the Jubilee, Northern and Piccadilly Lines
- Contract start January 2003
Responsible for Maintaining and Renewing Jubilee, Northern and Piccadilly Lines

- Over 500 million journeys per year are made on these lines
- Although there are six other lines, these three account for 41% of the London Underground’s overall assets
Key Assets

- 255 passenger trains
- 241 miles of Track
- Signals: 110,192
- Bridges and Structures-4,314
- Deep Tube Tunnels–127 miles
- Earth Structures–51 miles
- Track Drainage Pipes–74 miles
- 100 Stations
- 340 Non-Station Properties
- 110 Elevators
- 231 Escalators
Key Challenges

- Taking over a part of a Public Sector Organization
- Direct labor employed for most of the key services
- Strong union influence resisting change
- Poor information on which to base decisions
- Expensive to run and performing poorly compared to external benchmarks
- Lack of flexibility of working
- Lack of motivation
- Performance communication poor

Culture change required
Amey’s Management Approach

• Twenty key personnel “seconded” from Amey to Tube Lines in critical leadership positions to lead the culture change
• Communications plan in place to inform all staff of our approach to the way forward in Tube Lines
  • Actual performance and targets clearly identified
• Change Management Program put in place
  • Diagnostic carried out for Asset Management maturity
  • Staff engagement at all levels
  • Processes made fit for purpose
  • New systems to be implemented to enable the new processes
• Competency improvement program implemented
What Did We Do - Rebrand
Welcome to the period 10 Interchange
This issue covers performance news from period 10 and up-to-date business news. Use it to brief your team and let us know what you think at interchange@tubelines.com.

IN A NUTSHELL
Could this be the best performance we’ve ever seen? The Northern had its best period ever, and the Jubilee and Picadilly both beat target too. The Safety lost time injury frequency rate went down again. Ambience beat target and Fault Rectification, Facilities and Engineering Overruns Service Points all beat target too. Projects achieved capital investment of £31.2 million, compared to a plan of £26.2 million.
Our Approach to Industrial Relations

• Sustainable relationships with Trade Union officers and local representatives
• Early notification of issues and timely consultation/negotiation (no surprises)
• Agreed process for wage negotiation
• **Outcome** – no strikes, reduced staffing levels, changed rosters
What Did We Do - Control Center

Old

New
Performance

In our first review period, we achieved:

• 55% reduction in delays
• 29% reduction in train control failures
• 81% reduction in track failures
• 336% improvement in mean distance between rolling stock failures

In our stations, we raised reliability and expectations alike:

• mean time between elevator failures down by 34%
• reliability of escalators up by 33%
• overall satisfaction with station ambience up by 5%
Moving into RP2

- TfL bought the shares of Tube Lines in June 2010
- Tube Lines remained as an independent company
- Secondment Agreement in place between Amey and Tube Lines
- Greater focus on Whole Life Asset Management
- We had the Olympics coming up – Jubilee Line performance critical
- Mayor’s challenge - 30% reliability improvements & 30% cost reduction
Building Blocks for Success: Business Transformation

Information Culture

Management
- Leadership
- Accountability
- Responsibility

Staff
- Motivation
- Competency
- Behaviors

Asset Management
- Processes
- System capability
- Outputs enabling decisions
Asset Management in Tube Lines

- Tube Lines
  - Invests in
  - Assets
    - maintained & renewed by

- Ameys Objectives
  - achieving
  - Decision Makers

- People
  - following

- Process
  - supported, enforced & optimised by

- Maximo (information systems)
  - capturing

- Data
  - enabling

- Reporting

- Information Technology
  - provides

Implementation/Improvement boundary
### Reporting to All Levels – Using Same Information

#### Compliance Reporting Process

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<th>Asset Managers/Maintenance Managers</th>
<th>Senior Management</th>
<th>Operations Pre Executive HSE/Assurance</th>
<th>Board</th>
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<td>- Part of Board Report</td>
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The Importance of Analytics

Organizations that lead in analytics outperform those that are just beginning to adopt analytics by 3 times.

Mobilization  Visualization  Intelligent Control and Command (FRC)

Optimized Planning, Delivery, Safety & Materials

RCM & Integration

Predictive Asset Optimization/
analytics

Asset Configuration Mgmt
Outcomes
Rolling Stock Performance

Amey delivered a **478% performance improvement** in Rolling Stock Mean Distance Between Failure (MDBF) in 10 years.
Rolling Stock - Example

Piccadilly versus Bakerloo rolling stock

No of Trains
- Piccadilly: 86
- Bakerloo: 36

No of Cars
- Piccadilly: 519
- Bakerloo: 252

Cost to maintain per car
- Piccadilly: $38k
- Bakerloo: $72k

Mean Distance Between Failure
- Piccadilly: 5 times higher than Bakerloo
Northern Line Performance

Northern Train MDBF with the Annual moving average indicated

Mean Distance Between Failures
Annualise MDBF

Door Bearings Mod Programme
Drivers Seats Mod Programme
Traction PIM Mod Programme

Introduction of 2007 Agreement Performance Measures aligned to PPP. Implementation of TRIP.
Contract renegotiation commences

Once known as the 'misery line'

Now one of the top 3 performing lines on the London Underground
Summary

• The Amey partnership seen as a success by London Underground

• Change management and whole life asset management essential part of Amey’s operational model

• Successful Delivery also part of Amey’s operational model
  • 26% more efficient than LU
  • 30% better reliability performance than LU
Thank You

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