



The Jubilee Line Extension. An MPA Seminar held at The Institution of Civil Engineers, 1 Great George Street, London 17 November 2000.

MPA events are confidential. They provide a forum where someone involved in a major project can tell it the way it was. This summary is available to both members and non-members, and care has been taken to ensure that its contents do not breach confidentiality. This account cannot, therefore, do full justice to the event, so members please read the full proceedings when you receive them. Best of all, members, come to the events. Non-members, think about joining!

Participants

More than 70 participants attended the seminar and the following organizations were represented:

Alcatel Canada Inc, BAA Plc, Baker & McKenzie, Bechtel Ltd, Bovis Lend Lease, British Telecom, British Energy, Brown & Root, Canary Wharf Group, CMS Cameron McKenna, Costain Group Plc, David Sharpe Consultancy Ltd, Dawson Horrell Associates, Defence Procurement Agency, Denton Wilde Sapte, Department Environment, Transport to the Regions, Freshfields Bruckhaus Deringer, Halcrow, HM Railway Inspectorate, Imperial College, John Self Associates Ltd, Jubilee Line Extension, Lockheed Martin UK Integrated Systems, London Underground, Michael Manser & Partners, Ministry of Defence, Mott MacDonald, Mouchel, MTR Corporation, National Grid Company, Ove Arup, PA Consulting Group, Rail Link Engineering, Shadow Strategic Rail Authority, Thames Water Utilities Ltd, The Nichols Group Ltd, UKAEA, Union Railways.

The Jubilee Line Extension (JLE) was the UK's last major transport project of the 20th century. How did it measure up?

The task was harder than that of its predecessors. JLE's tunnels had to be squeezed in among the existing underground infrastructure. The station architects faced similar space constraints and rose to the challenge with memorable station architecture.

The project had to be open in time to provide an underground transport link to the Millennium Dome. With the suspension of tunnelling due to the use of the controversial NATM technique, this posed a real challenge. Could the project be completed in time? And how far should JLE adopt new technology? Might that endanger the opening date?

Hindsight offers the opportunity to capture the lessons learned.

On management

Projects are about people, and the positive leadership on JLE ensured its eventual success:

- sympathetic leadership from the client. London Underground set the goals for the project on safety, size, fitness for the purpose and reliability, which were all attained.
- where problems were experienced, the Chief Executive acted as a "pain sponge", absorbing the pain and grief of the project and allowing others to get on with the job.
- strong project management. This was lacking at first, but the new project management team in 1998 brought a fresh approach.
- distinctive architectural vision to provide a world-class metro line. An experienced architect-in-charge, the use of youthful practices for many of the stations and a brief for clear, practical, unfussy design have led to a series of striking stations.

About the project culture

This was too adversarial and inflexible (as were the contracts used).

On advanced technology

On balance, plans for new technology were probably over-ambitious but much was achieved:

- platform-edge doors installed in eight of the eleven JLE

stations to reduce draught air speeds on platforms and increase passenger safety

- systems control from a single service control centre at Neasden
- ticketing: new narrow gates, with paddles operating in either direction, to increase passenger flow
- test track and train cab simulator were valuable tools for testing and mitigating risk (more such devices would have been even better)
- a word of advice on the introduction of new technologies: they should represent no more than a 20 per cent advance on existing systems
- and don't be afraid to descope: if project delivery is jeopardized by an ambitious technology, descopeing may be essential, even if costly. On JLE, plans for moving-block signalling had to be postponed—a painful but realistic decision.

On project problems...

JLE had its fair share of problems:

- tunnelling interrupted because it was using the New Austrian tunnelling method involved in the collapse at Heathrow
- a large linear project, involving many parties and numerous systems: the grip on all this complexity was not firm enough
- a fixed opening date, which was threatened by volatile industrial relations (IR) with the electricians and commissioning difficulties.

...and overcoming them

- although the 18 months lost could not be made up, JLE made the millennium opening date
- fresh and experienced project management brought a firm hand to the tiller and steered the project to eventual success
- an IR policy was put in place, with strategic deployment of the most productive workers
- original plans to commission JLE in a single big bang were abandoned in favour of phased opening
- and advice on the delivery of transport projects: incremental delivery is now recognized as industry best practice.

And the outcome?

- a world-class metro line, providing high-quality transport links and allowing London's natural growth to continue
- sound civil engineering that will last 200 years
- stunning architecture
- good rolling-stock
- a new standard for London Underground, public transport and the construction industry as a whole.

The Jubilee Line Extension: Facts and Figures

- Actual project cost: £3.6 billion (£1.5 billion over budget)
- Construction programme in practice: 53 months (18 months overrun)
- Length of JLE: 10 miles (16km)
- Journey times: Canary Wharf to London Bridge, 7 mins; Canary Wharf to Waterloo 11 mins
- Rolling-stock: 59 new six-car trains built by Alstom, equipped with automatic train control and had a maximum speed of 60mph (97km/h)

