Major Projects Association

Crossrail. An MPA seminar held at the Institution of Civil Engineers, One Great George Street, London on 25 April 2002.

MPA events are confidential, although this summary has been compiled so as not to breach confidentiality. Full proceedings and entry to MPA events are available only to members.

Participants

More than 80 participants attended the seminar and the following organizations were represented:

Abbey National, Arup, BAA Plc, Balfour Beatty Major Projects, Bank of America, Bechtel Ltd, Bovis Lend Lease Consulting, British Energy, CMS Cameron McKenna, Costain Plc, Crossrail, CSE International Ltd, Denton Wilde Sapte, DTLR, Franklin & Andrews, Freshfields Bruckhaus Deringer, Gardiner & Theobald, Herbert Smith, High-Point Rendel, Imperial College London, Kellogg Brown & Root, Lockheed Martin UK Ltd, Morgan Capital Projects, Morgan Est Plc, Mott MacDonald, Northcroft, Osprey PMI, PA Consulting, PricewaterhouseCoopers, Railtrack, Risk Solutions, Scott Wilson Railways, Sir Robert McAlpine, Thames Water Utilities, Trade Partners UK, Transport for London, UKAEA, Union Railways, University of Birmingham, Washington Group International, Willis Ltd, WS Atkins, WSP Group

Lessons from JLE

JLE offered lessons to Crossrail:

- an ethos of partnering should be created as early as possible
- the greater the number of interfaces, the greater the risk
- the impact of new infrastructure on the local and wider economy should be measured—an attempt to measure the impact of JLE is being made.

Unusually, for MPA, with Crossrail, the seminar was looking forwards and not backwards. Crossrail—a new railway running east–west through London—had been put forward in the late 1980s but had failed to go ahead, in spite of promising to deliver huge transport and social benefits. At that time the Underground was grossly over crowded with 800 million passengers a year. Now that had risen to 1 billion, the need for extra capacity was even greater. Although London Underground Ltd (LUL) had managed to increase capacity by upgrading stations and tracks on the existing lines, this alone would not produce sufficient extra capacity to cope with the ever-increasing number of passengers. The Greater London Authority is forecasting an increase in population of 700,000 people (a city the size of Leeds) by 2015, with 600,000 more jobs, with at least half of them in the financial services sector.

Ownership

Crossrail is 50:50 joint venture of the Strategic Rail Authority (SRA) and Transport for London (TfL).

Objectives

The three main objectives of Crossrail, agreed by the Mayor of London and the Chairman of the SRA, are to:

- support London's role as Europe's main financial and business centre;
- tackle the lack of capacity and congestion on the existing network;
- be the catalyst for regeneration and renewal in a number of strategically important areas, including:
  - Crossrail line 1—Paddington, Park Royal, the lower Lea Valley and the Thames Gateway;
  - Crossrail line 2—the upper Lea Valley, Hackney and south-west London.

It is a multipurpose project and has grown in scope from the original project, which had a narrower remit.

Route options for the new rail lines

- Line 1: in the west to go out to Reading or to Heathrow and to Aylesbury or Watford; in the east to go out to Dartford or Ebbsfleet (Kent) via the Royal Docks or Charlton and to Shenfield (Essex). There will be a main interchange station at Ealing Broadway and a 15–17km tunnel through Central London.
- Line 2: Clapham to Hackney or further out of London in each direction.

Feasibility

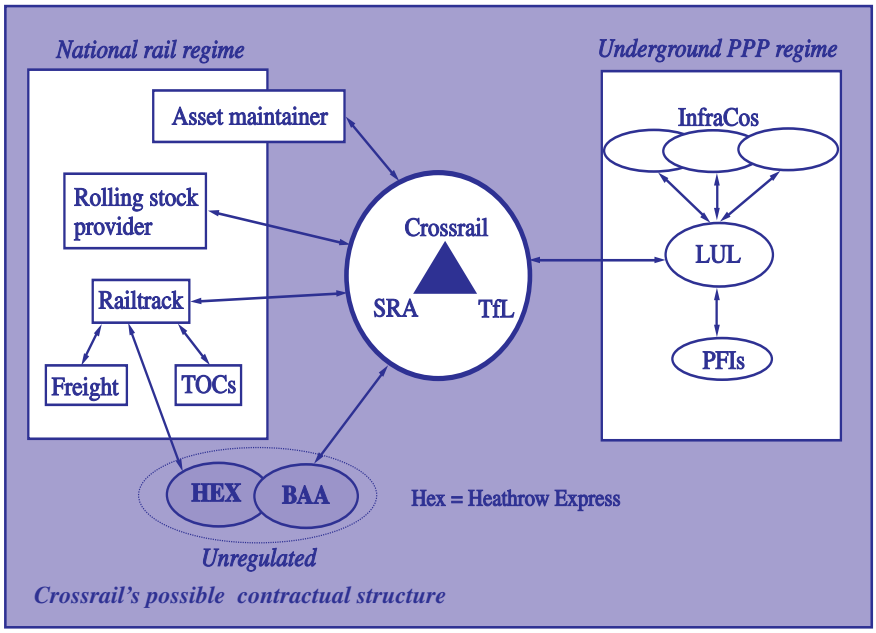
Cross London Rail Links Ltd (CLRL Ltd) was established for the purpose of undertaking project definition. It has been funded by government to the tune of £154 million to obtain the necessary powers, with a strict timetable to meet bill deposition by November 2003. CLRL Ltd has to ascertain how far Crossrail will meet the main objectives. It will not be built unless the government is convinced that the project will meet its goals.

Design

Design work assists the decision-making on the scope of the project and the route options. The design management team and its consultants will determine property

take needed and how the effects of settlement, noise and vibration will be mitigated. Designs will be a mixture of new and inherited designs, from the earlier attempt. Only tried and tested technology is to be used, with the aim of producing a reliable, safe railway, with seamless travel, i.e. integrated with other lines and modes of transport.

Trains are likely to be made up of 12 cars and will be powered by overhead lines. Station platforms of up to 300m are envisaged, with some stations having ticket halls at each end to widen the area from which passengers are drawn. Platforms may have platform-edged doors.



Crossrail's possible contractual structure

Structures and interfaces

The human and contractual relationships will be key to achieving the objectives.

During design and construction possessions have to be obtained from LUL and the existing train operating companies (TOCs). If the line 1 goes out to Reading or Aylesbury, power will have to migrate from LUL's fourth rail system to overhead operation. Existing infrastructure will need to be protected during construction. Crossrail aims to have as few infrastructure controllers as possible. For likely contractual structure, see figure above right.

Risk

The prime risk is failing to reach the main objectives. Other risks include failure to attract funding, failure of the project to be affordable, failure to find an operator and user numbers being lower than forecast.

What risks could be laid off? Some could be laid off completely: political and exchange risks, and usage. And others could be partially, like construction and finding a suitable operator. Other risks could not such as failure to get powers. Then there was the question of whether it is "good" to lay off all possible risks. Might it be better to manage some extra risk in-house?

Funding

There is no clear consensus on the best way of funding Crossrail. The estimated capital cost is £6–8 billion. The likely revenue is about £200 million per year which would support £2.5–3 billion of debt, which leaves a significant funding gap of £4–5 billion to be filled by public subsidy.

Project structure

CLRL Ltd is concentrating on four models: DBFOM (design, build, finance, operate and maintain); DBFM (design, build, finance, maintain); DBFT (design, build, finance, transfer) and that of a public sector project, like the Jubilee Line.

Many questions had yet to be answered. Much had to be done.

One lesson Crossrail could take from other projects was not to underestimate the importance of total systems and systems integration.

Key projects decisions yet to be taken on Crossrail

1. Degree of autonomy desired for Crossrail infrastructure and services, and extent of reliance on Network Rail
2. Degree and duration of private sector involvement desired in infrastructure development, maintenance and operations.
3. Philosophy on risk transfer and public sector balance sheet issues.
4. Optimal or regulated fares?
5. Role of Cross London Rail Links: level and form of shareholder contributions to Crossrail capital and/or operations.
6. Framework for project evaluation: public sector comparator/value for money methodology.