



GLOBAL INFRASTRUCTURE

# Success and failure in urban transport infrastructure projects

*A study by Glaister, Allport, Brown and Travers*

KPMG's Infrastructure Spotlight Report

KPMG INTERNATIONAL



## Contents

|                                                              |           |
|--------------------------------------------------------------|-----------|
| <b>Executive summary</b>                                     | <b>2</b>  |
| <b>Introduction</b>                                          | <b>4</b>  |
| <b>Method</b>                                                | <b>5</b>  |
| Evaluating success and its contributory factors              | 6         |
| The importance of political context                          | 8         |
| <b>Results—what drives success</b>                           | <b>9</b>  |
| Factors affecting success                                    | 9         |
| Measures of success                                          | 12        |
| <b>Conclusions—leading practices for successful projects</b> | <b>13</b> |

## Foreword

We are delighted to introduce this KPMG Infrastructure Spotlight Report exploring success and failure in urban transport infrastructure projects. The research team responsible for the study was led by Stephen Glaister (Imperial College London) and included Roger Allport (Imperial College London), Richard Brown (independent consultant) and Tony Travers (London School of Economics). We would like to thank them for the considerable insight we believe their work offers to the global infrastructure market.

The study confirms aspects of acknowledged leading practices, but also draws attention to how key factors contributing to project success can be elusive. Considerable understanding of the city, its social and political context and the impact of the project in question is necessary for a reliable and objective diagnosis. The main conclusion is that many elements need to be right to deliver a successful project, of which effective procurement and financing appeared to be the most important of the six success factors considered.

The major metropolitan areas around the globe are expected to experience significant growth over the longer term, especially those within developing nations. The existing transport infrastructure supporting these cities will come under increasing strain. Those of us who are involved in future infrastructure development will want to ensure that the lessons from previous projects around the globe are understood to enhance the chances of future success.

We hope that you will find this publication as insightful as we have, and that it will provoke thoughts on possible solutions to impending urban transport challenges.

### **Nick Chism**

Global Head of Infrastructure  
KPMG in the United Kingdom



## Executive summary

With large urban areas around the globe expected to experience significant growth over coming decades, it is more important than ever that the transport infrastructure underpinning them can be delivered successfully and sustainably. Yet past projects show that implementation is patchy—some projects become beacons of effective transport provision within their cities, while others become notorious examples of project failure.

KPMG International commissioned the present study to analyze the factors affecting the success of a range of international urban transport infrastructure projects, with a view to explaining why some are more (or less) successful than others.

The resulting report provides an invaluable insight into the factors that drive success. It considers six factors in particular:

- Project environment and turbulence
- Political control and sponsorship<sup>1</sup>
- Role of national government
- Effectiveness of planning
- Effectiveness of procurement and financing
- Organizing for operations

The report analyzes how these factors contribute to the success of projects by assessing their influence in 19 case studies. The studies span 13 different locations in 9 countries. They are mostly rail projects, but also include a bus transit system and a road tunnel. The research team analyzed how the factors listed above contributed to the success of the projects across three dimensions:

- Financial success
- Policy success
- Durability success

The research team was sensitive to the need to understand each city and the different social and political environments in which the projects were developed. They grouped projects according to their political context in order to assess how different environments were conducive to different types of approach. Practices that work in one place may not be so successful elsewhere.

<sup>1</sup> The term sponsorship is used for a public or private sector organization's role in promoting a particular infrastructure project.

The main conclusion is that many elements need to be right to deliver a successful project, of which effective procurement and financing appeared to be the most important of the six success factors identified.

From their in-depth analysis of the case studies, the research team was able to draw a number of important lessons for the delivery of large transport infrastructure projects:

- It is vital to have an effective procurement and financing strategy in place, but decisions about the procurement method should not be taken too early before a robust business case and/or feasibility study has been developed. There is one exception. That is, when a private concessionaire is contracted to carry out the project sponsor role, in which case an early decision on contract type and the upper limit for government contribution is usually necessary.
- Public authorities should set a long-term strategy and then work continuously towards it. When they do this, the prospects for delivery of successful transportation project outcomes increases substantially; but its absence may not preclude success.
- Within the context of the long-term strategy, project planning needs to be rigorous, and to combine technical expertise with political sensitivity and engagement with stakeholders.
- The political institutions that make decisions about urban transport infrastructure projects need to have the authority to drive them through.
- The government needs to provide clarity by defining the rules for approving projects and the disbursement of central funds as well as providing predictability for the scale of future funding.
- The focus in project development should be on achieving successful operations as well as the delivery of the infrastructure.
- It is vital that the public sector client has the specialist expertise and is effective when using delivery methods involving the private sector. There are ways in which the public authority and private sector can work together to achieve this.
- Projects require political legitimacy—unless a city's population understands what is being done and why, there is unlikely to be long-term political support, and the project may stall.



## CASE STUDY 1

**Bogotá Transmilenio***Environment: Category A<sup>2</sup>*

- This 84km bus rapid transit system based on the model used in Curitiba, Brazil, became fully operational in 2007 (first section opened in 2000)
- A new public agency Transmilenio SA implemented, manages and maintains the system while concessioned bus companies receive payment per bus-km operated
- Four contracted bus companies purchase, operate and replace buses within the system, while a separate company collects revenues and runs day-to-day operations
- There is no public operating subsidy for the overall system. The concessionaires receive a fixed percentage of the fare revenue collected

## Introduction

KPMG commissioned this study to analyze the factors affecting the success of large urban transport infrastructure projects, with a view to explaining why some are more (or less) successful than others.

The research team considered 19 case studies from around the globe. These projects were selected to provide a broad variety of project contexts, projects types and geographical areas. The projects were well known to the research team. In each case, the team carried out an in-depth and holistic assessment of the project development process, in particular assessing performance against the identified success factors. They then scored the project against six success factors that might have been expected to contribute to its success, and also rated how successful the project was from a financial, policy and durability perspective. By comparing each project's success factors with the measures of success, they were able to determine which success factors were most directly related to project success.

While the different contexts and particular circumstances of the projects make direct comparisons challenging, this approach enabled a number of general conclusions to be drawn about the factors that are most important in determining the success or otherwise of large urban transport infrastructure projects. The research team were mindful of the different contexts in which the projects were developed, and were able to analyze how different contexts favor or obstruct particular aspects of project delivery.

The following report summarizes the research method used, explains how projects were selected, outlines the key factors that the research team believed were likely to contribute to project success, defines what is meant by success, comments on the different institutional contexts of the projects and reports the findings of a statistical analysis of the success factors. The report finishes by setting out conclusions in the form of lessons learned for leading practices in delivering urban transport infrastructure projects.



<sup>2</sup> Please refer to Methodology for project category definition.

## CASE STUDY 2

## Bangkok BTS

*Environment: Category A*

- An elevated rail system running through Bangkok's Central Business District consisting of two linked routes with total length of 23.5km, opened in 1999
- Developed over a nine year period, undergoing many changes during this time
- Bangkok Metropolitan Administration had the powers, owned the land and specified a full Build-Operate-Transfer concession that required no public finance
- The ridership has been below the expectations at the time of the investment decision resulting in severe financial challenges

## Method

The research team selected 19 case studies to form the basis of their analysis. They then scored each against six proposed success factors and three measures of success. The scores were then analyzed to establish if there was a relationship between the two. The list of projects assessed included:

- Bogotá Transmilenio
- Bangkok BTS
- Bangkok Blue Line
- Manila MRT2
- Manila MRT3
- New York Subway
- Paris Metro
- Dublin Luas (light rail)
- Dublin Port Tunnel
- Manchester Metrolink Phase 1
- Manchester Metrolink Phase 2
- Birmingham Midlands Metro
- Nottingham Express Transit (NET)
- London Jubilee Line Extension (JLE)
- London Underground Limited Public Private Partnership (LUL PPP)
- London Dockland's Light Railway (DLR)
- London Croydon Tramlink
- Hong Kong Mass Transit Railway (MTR)
- Singapore North East Line (NEL)

## CASE STUDY 3

## Bangkok Blue Line

*Environment: Category A*

- A 20km underground radial distributor mass rail transit which began operation in 2004
- The Blue Line utilized the existing corridor and a large government land holding for a depot
- Implemented using government funded civil works and a 25 year equipment and operation/maintenance concession
- Project was greatly affected by the 1995 decision to route all new infrastructure projects through central Bangkok below ground



#### CASE STUDY 4

##### Manila MRT2

###### *Environment: Category A*

- An automated 14km radial metro line which was fully operational from 2004
- Originally conceived as a Build-Operate-Transfer project but initial procurement was unsuccessful
- The project was changed and became a traditional public sector led development, funded using Japanese Official Development Assistance
- The project took 14 years to progress from inception to operations

The majority of projects selected (or programmes of projects)<sup>3</sup> were rail projects, reflecting their importance in an urban setting, and the availability of case study evidence. The two exceptions were a bus transit system in Bogotá, Colombia, and a road tunnel in Dublin, Ireland. The primary driver in selecting the case studies was knowledge of the projects, as well as the extent to which the research team believed lessons learned from these projects could be applied to other urban transport infrastructure developments.

A number of the case studies were undertaken specifically for this report, whereas others were based on previous research carried out by the research team. As a result, the qualitative research methods used across the case studies varied in terms of the amount and type of data gathered and the way it was analyzed. The data used ranged from those available through existing literature to interviews with project stakeholders, and from project documentation to the personal involvement of the research team members.

#### Evaluating success and its contributory factors

The research team identified six factors that they used as hypotheses. These were likely to play a significant part in determining project successes based on their initial analysis of the case studies and their prior experience. These success factors were:

1. **Project environment and turbulence:** whether the project was planned and delivered in a turbulent project environment, with show-stopper events that were unexpected and disruptive to the project, as well as providing windows of opportunity where decisive action allowed the project to progress.
2. **Political control and sponsorship:** whether there was strong<sup>4</sup> political control or sponsorship, and clear objectives and leadership during the development and operation.
3. **Role of national government:** whether the national government provided strong guidance that was appropriate, strategic, and provided predictability.
4. **Effectiveness of planning:** whether there was good infrastructure planning and transport planning to provide a sound basis for the commitment or decision.
5. **Effectiveness of procurement and financing:**<sup>5</sup> whether good procurement and financing structures were in place at the appropriate time, including a performance contract that incentivizes effective delivery and good operations.
6. **Organizing for operations:** whether there was a strong operator contract that permitted proactive management of the operational business.

<sup>3</sup> This report, for simplicity, uses the term "project" to cover both individual projects and programmes of projects such as the Paris Metro.

<sup>4</sup> The terms 'strong' and 'good' are used in reference to factors that contribute towards project success. Whether a factor is deemed 'strong' or 'good' is a subjective judgement of the research team.

<sup>5</sup> The report defines 'funding' in terms of 'who pays?' The sole sources of funding are users, taxpayers (existing or future) and sometimes other beneficiaries (developers, employers etc). 'Financing' is the mechanism by which up-front finance is arranged that may be repaid later.

## CASE STUDY 5

## Manila Mass Rapid Transport 3 (Manila MRT3)

*Environment: Category A*

- A 17km fully-segregated tramway operating at ground level and elevated; fully operational in 2000
- The only one of three lines in Manila's network that is privately financed, MRT3 is a Build-Lease-Transfer concession where the government takes operating and revenue risk
- The concessionaire financed, constructed, will maintain the infrastructure for 25 years, and has the right to implement commercial developments for 50 years, sharing gains with the government

The research team defined three key measures of success, taking the perspective of the project sponsor.<sup>6</sup> The measures of success they considered were:

- **Financial success:** comparing actual outturn finances in terms of costs and revenues with forecasts of the same at the commitment stage. The project is said to be successful if they are broadly similar. This is largely a matter of fact.
- **Policy success:** comparing outturn policy impacts with intentions at the commitment stage, which may include economic, social, developmental and environmental impacts. The project is said to be successful if it delivered its desired policy impacts. This is partly a matter of fact, partly a judgement about what is expected to happen in the future (given that transport infrastructure projects have long economic lives), and partly judged by the satisfaction of those with a legitimate interest in the project, such as the local business community or the population it serves.
- **Durability success:** based on the ability of the public sector authority or the private sector service provider to maintain its service delivery over the medium and long-term, such that the policy goal behind the infrastructure is met in a sustainable way. The suitability of the project development process (e.g. the procurement method) as a model to be followed on future occasions was also considered. The project is said to be successful if it is able to maintain its policy delivery in the long-term, and uses sustainable project development methods that could be transferred to other projects. Again, this is partly a matter of fact, and partly a matter of judgement about the longer-term prospects for the project.

Each of the case studies was scored against the six success factors and three measures of success outlined above, using a scale of 1 (favorable) to 5 (unfavorable). The scores measure the extent to which these indicators were attained or were present, not their relative importance. The case studies and the underlying rationale for the scores are explained in detail in the research team's full report. Key features are highlighted in the case study text boxes in this report.

Subsequently, the scoring was exposed to a series of multiple regression analyses in order to detect any statistically significant patterns between scores for contributory factors and the measures of success.



<sup>6</sup> The project promoter can be the city level public authority or a private sector developer.



## CASE STUDY 6

## New York Subway

*Environment: Category B*

- In 1979, the Metropolitan Transportation Authority, the state-level agency responsible for the Subway, began a process of upgrading and extending the underground system
- The MTA put its 1982 capital programme to referendum and gained public approval; the initial programme has been followed by a series of others
- The authority is intending to mix innovative financing methods to enable it to progress with major projects such as the 2nd Avenue Subway, the Line 7 extension and Penn Station redevelopment
- The credit crunch has adversely impacted NYCT's finances. A 5-year agreement has been reached that puts financing on a predictable basis, requiring tariff increases, and increased motorists and employers' taxes

**The importance of political context**

Analysis of the factors affecting the success of projects needs to take account of the context in which they were developed. It is notoriously difficult to compare practices in one city with the arrangements in others. With few exceptions, urban transport infrastructure is generally promoted by governments or para-governmental agencies. However, governmental systems differ, as do approaches towards political authority and the way in which resources are controlled.

In order to understand the significance of the different political contexts in which projects were developed, the research team divided the cities into three categories. These were:

- **Category A:** Cities where there is very little control or planning on the part of the public authorities—Bogotá, Bangkok and Manila.
- **Category B:** Cities where authority is fragmented, but where successful project planning, though challenging, is achievable—Birmingham, Croydon, Dublin, London, Manchester, New York, Nottingham and Paris.
- **Category C:** Cities where the streamlined political and technocratic culture enables a high level of integrated authority—Hong Kong and Singapore.

The research team were mindful of this classification in analyzing the results of their study. It enabled them to see whether particular contexts favored or hampered particular aspects of project delivery, for example whether it was easier to provide effective project planning in particular political contexts.

## CASE STUDY 7

## Paris Metro

*Environment: Category B*

- Syndicat des Transports d'Ile de France (STIF), an autonomous public body, is responsible for public transport (coordinating operators and overseeing major investment policies) in the Ile de France (and therefore within the city of Paris)
- Régie Autonome des Transports Parisiens (RATP) is a state-owned transit operator responsible for majority of public transport (buses, light rail, metro, commuter rail) in Paris
- In 2001, a programme of metro extension projects was funded 50 percent by regional government, 30 percent by state government and 20 percent by RATP itself



## Results—what drives success

## Factors affecting success

Considerable understanding of the city, its social and political context and the impact of the project in question is necessary for a reliable and objective diagnosis. Many elements need to be right to deliver a successful project, of which effective procurement and financing appeared to be the most important of the six success factors identified. The **effectiveness of procurement and financing** is the strongest predictor of success on all three of the success measures indicated.<sup>7</sup>

When the context does not allow the public authority to develop a project itself, yet a project is a policy priority, it may contract a private entrepreneur to do this on its behalf. This can be risky, but in some cases it has provided projects that are a success and almost certainly in the public interest.

Other than in Singapore, the research team found that the **turbulence of the project environment** was an issue for all of the projects. This was especially the case in cities with little or no control or planning on the part of public authorities, with four out of the five projects in this category scoring the highest possible rating for turbulence (that is, the lowest possible rating for stability). The extent of turbulence in the project environment is likely to be attributable in part to the long lead times of many transport projects, with the consequent likelihood of demographic, political or policy changes during the lifetime of the project.

## CASE STUDY 8

## Dublin Luas

*Environment: Category B*

- Luas, a key project in the 1990s Dublin Transport Initiative, is a 25km two-line light-rail tramway system opened in 2004
- Dublin Transportation Office was established in 1995 to develop and coordinate the implementation of an integrated transport strategy
- The Railway Procurement Agency was established in 2001 to coordinate the delivery of new railway projects and monitor the Luas project
- Separate contracts were let for construction and operations, and financial risk for operations remains with the RPA

<sup>7</sup> Procurement and financing was the only statistically significant coefficient at the 95% confidence limit in each of the three regression analyses (for financial, policy and durability success), and its impact on the durability of the project was especially marked.

There was a correlation between the strength of the **political control and sponsorship** of projects and their eventual success. The UK government, for example, was decisive in committing to the DLR network and the French state has likewise had a strong role in defining the capital investment priorities of the Paris Metro. These are reflected in project success. Perhaps not surprisingly, political control and sponsorship was very high in those cities with a high level of integrated authority, and lowest in the cities with little central control and planning. However, it was possible for projects even in these environments to have reasonably strong political control or sponsorship by bringing in private sector entrepreneurs to promote and deliver the projects. For example, the Manila MRT3 and Bangkok BTS projects were promoted and delivered by private entrepreneurs who exercised strong sponsorship over them, and the projects were relatively successful.

In terms of **national government guidance**, analysis suggests that where authority was compromised (category A) generally there were few or no beneficial guidance documents made available. In Category B case studies, authority effectiveness varied. There is weak negative impact from government guidance on the durability of projects, suggesting that the content and consistency of the guidance documents are more important than its presence in the project. Manchester Metrolink Phase 2 serves as a possible example where the government's guidance to include developer funding may have detracted from the focus on the effectiveness of the network's transport function. Category C case studies witnessed effective national government guidance, (as well as political control and sponsorship), no doubt a factor in the policy success of these projects.

#### CASE STUDY 9

##### Dublin Port Tunnel

*Environment: Category B*

- A 4.5km dual-bore road tunnel designed to connect Dublin Port to the M50 orbital route to the north of the city, and to remove heavy goods traffic from the city centre
- The tunnel is free for heavy goods vehicles, which are now not permitted into Dublin city centre, but cars pay a toll
- Largely funded by the national government, the procuring authority was Dublin City Council due to its experience in the use of compulsory purchase orders
- The tunnel is operated, maintained and tolled by a private company on behalf of the National Roads Authority



## CASE STUDY 10

## Manchester Metrolink Phase I

*Environment: Category B*

- A 31km light-rail tramway running on-street and along former railway corridors; opened in 1992
- Following an initial approval, the government abolished the sponsor authority and deregulated the bus operations; after an appraisal case, the project was re-approved
- The project was undertaken as a design, build, operate and maintain (DBOM) concession for a 15-year term, with almost all the investment publicly funded



When it came to the **effectiveness of project planning**, the research team found that there was a wide variety of performance in apparently similar project environments. Some degree of effectiveness was possible even in cities with little or no control by public authorities. Indeed, the Bogotá Transmilenio was rated excellent for the effectiveness of project planning arising from having a series of technocratic mayors who were engaged with the detail of project planning and delivery, despite low levels of formal authority. In other environments with low levels of control, the success of project planning can be attributed to the involvement of private entrepreneurs (Bangkok BTS and Manila MRT3). However, some projects in this environment scored poorly for other reasons (Manila MRT2, where there were persistent procurement problems due to project planning issues, and Bangkok Blue Line, which was constrained by government's requirement that it be wholly underground and by their specification of route).

Where authority is fragmented, performance varied. On average, such projects performed better than where public authority control is limited and in some cases performed well (e.g. Manchester Metrolink Phase 1, Nottingham NET and London DLR). There were exceptions (e.g. Midland Metro and Manchester Metrolink Phase 2), which performed no better than projects where public authority was limited.

Similarly, there was a considerable range of performance in terms of how well projects were **organized for operations** across cities. This reflected inadequate focus on the operational phase during the development and implementation phases of projects together with a failure to provide conditions for financial predictability that operators need to manage their businesses effectively. In some cases this lack of focus on the operational phase extended into the operational phase itself.

## CASE STUDY 11

**Manchester Metrolink Phase II***Environment: Category B*

- A 6km spur light-rail tramway from Phase 1 aligned along a new transport corridor, fully operational in 2000
- The route was devised to maximize developer funding
- Phase 2 and Phase 1 were combined into a unified network. Phase 2 construction and the system operations were concessioned under a 17 year DBOM contract; with around two thirds of the required investment privately financed

**Measures of success**

There was a wide variety of performance in terms of financial success across the three different categories of political context. There were examples of projects that were successful financially in all three categories (Bangkok BTS, Manchester Metrolink Phase 1, Nottingham NET, London DLR and Singapore NEL). However, there were also examples of projects that scored unfavorably in terms of their financial outcomes in cities with little central control and planning (Manila MRT2) and those with fragmented authority (London JLE and the LUL PPP).

Projects were often judged more successful from a policy than a financial perspective, showing that even when they performed poorly financially, they could still be considered to have succeeded in terms of delivering some of their policy objectives (i.e. London JLE).

Durability was the least well scoring of the success measures across all categories, reflecting the challenge of achieving sustainable success. One particular challenge was to incentivize concessionaires to take a long-term view, when most contracts provided concessionaires with an early contract exit; this problem became acute when the public sector identified an extension project, and in order to avoid multiple operators, the whole operation (existing and new-build) is re-tendered.

## CASE STUDY 12

**Birmingham Midlands Metro***Environment: Category B*

- A 20km mostly segregated light-rail tramway utilizing a former railway corridor, opened in 1999
- Identified to maximize economic regeneration and facilitate implementation
- Procured using a 23 year DBOM concession, following the Manchester precedent
- The ridership has fallen short of predictions available at the time of project approval

## CASE STUDY 13

**Nottingham Express Transit (NET)***Environment: Category B*

- A 14km light rail transit, of which 4km runs on-street; opened in 2004
- Nottingham City Council and Nottingham County Council jointly procured a 27-year DBFO (design, build, finance and operate) concession, with full finance being raised by private sector
- About 70 percent of income is from government performance-related payments and 30 percent from cash receipts
- The operator is a joint venture between Nottingham City Transport and a private operator

## Conclusions—leading practices for successful projects

This section draws together some of the lessons that can be learnt for the successful delivery of urban transport infrastructure projects in the future.

As previously noted, it is important to bear in mind that it is impossible to make a direct read-across between projects in different political contexts. Just because a city in the Far East can deliver a project quickly and effectively, does not mean that following a similar path in Europe or the United States would produce the same results. Political systems vary significantly from country to country, as does the degree of authority within government. However, there are a number of general principles that show how large transport infrastructure projects might be delivered more successfully.

### Effective procurement and financing are crucial

As statistical analysis has revealed, effective procurement and financing are very important to success in urban transport infrastructure projects. The case studies also show that procurement decisions should not be taken too early. If such decisions are not based on a robust business case and/or feasibility study, projects often get into difficulties, and underperformance can often be traced back to the initial poor procurement decision. Therefore, *decisions about the procurement method should not be taken too early, but after the development of a robust business case and/or feasibility study.*





One special circumstance highlighted by the case studies was that in environments where there is little control or planning by public authorities, private developers take on the whole project development role. Here, government needs to state up front the contribution it is willing to make towards the project in order to catalyze private investments. This can be an efficient way for the project to proceed. Improved clarity over financial support from government could make successful projects such as Bangkok BTS and Manila MRT3 more replicable.

### Project planning matters

*Project planning needs to be rigorous, and should combine technical expertise with political sensitivity and engagement with stakeholders.* It is evident from the case studies that there are pervasive weaknesses in project planning, and that this has negative consequences for project delivery (e.g. Manila MRT2, Manchester Metrolink Phase 2, Midlands Metro). These weaknesses relate to operational and infrastructure planning along with forecasting project impacts and financing. However, the case studies also provide compelling evidence that these problems can be mitigated by involving the private sector in ‘reality checking’ the results of planning, in particular relating to the financing of projects. For example, in Croydon Tramlink and Nottingham NET, private ‘project development groups’ were contracted by the public sector to assess the project’s proposed implementation, bankability and contract structuring. These comprised a proposed bidding group that, if it were subsequently successful in winning the tender for the project, had its costs reimbursed.

#### CASE STUDY 14

#### London Jubilee Line Extension (JLE)

##### *Environment: Category B*

- A tunneled heavy-rail extension to the Jubilee Line of the London Underground network, opened in 1999
- In 1987, the Canary Wharf developer promoted a new railway as essential for the survival of the area. This tied in with plans to extend the Jubilee Line which had long been in existence
- The Jubilee Line extension was funded by a mixture of national government grants and developer contributions
- The services on the line are operated by London Underground

## CASE STUDY 15

## London Underground Limited Public Private Partnership (LUL PPP)

*Environment: Category B*

- Three 30-year PPP contracts were let in 2003 in order to rectify the maintenance backlog on the existing lines and increase their reliability and capacity
- The finance for the investment programme was raised privately with 95 percent of the debt being guaranteed by the public sector
- The operation of the services on the network remained with London Underground
- In 2007, the company holding two of the PPP contracts went into administration with Transport for London taking over the responsibilities

**Strategic consistency, not short-term opportunism**

*If authorities are to deliver the desired outcomes of transport projects, it is desirable that they set a long-term path and then work continuously towards it.*

Strategies and plans need to be fully worked through by the authorities that create them. There is a risk that documents with titles that include the word “strategy” will, in fact, be short-term statements of intent. Or alternatively, they are little more than aspirational wish-lists of projects that create false hopes and then undermine credibility when these are not fulfilled; they in fact undermine effective project development. The requirement is that plans and strategies are founded on realism of what is possible and that they are explicit about the justification for difficult choices that have had to be made.

This approach requires the institutions concerned to maintain a consistent strategy over a significant period and to abide by decisions taken, even by political opponents. However, as we have seen, projects often experience considerable turbulence in the political and policy-making environment. While Paris and Dublin have benefited from long-term strategies through the involvement of national governments in setting priorities, in the UK there have been constant changes in direction by the government that have made maintaining a strategy challenging. Even in this context, some governments do seem to have been able to develop plans and deliver long-term strategies, and as a result have delivered successful projects.

## CASE STUDY 16

## London Dockland's Light Railway (DLR)

## Environment: Category B

- Transport for London is responsible for managing the various contracts for the 31km long Docklands Light Railway system
- The first two lines were built under design and build contracts and were opened in 1987—five years after approval
- Passenger services were originally run by London Transport, but are now run by a private operator
- Subsequently there have been extensions to the network both under conventional and DBFM (design, build, finance and maintain) contracts, as well as capacity increases on existing lines

## Legitimacy counts

Once the objectives and strategy for a project have been determined, the city's population should be able to understand the steps that will be taken to implement them. *Unless local people understand what is being done and why, there is likely to be limited political legitimacy, and thus pressure, for a project.*

Without such legitimacy, politicians may be unable to sustain either the resources or the delivery mechanisms necessary to achieve the desired strategic outcomes. Implementation will often be fraught with difficulty and may not lead to successful outcomes. In addition, there should be reasonable transparency about the delivery process, otherwise, in any democracy, it is likely that urban infrastructure projects will become the object of opposition that will prevent their implementation or impact their success in the longer term.

## Transport projects require authority

*The political institutions that make decisions about urban transport infrastructure projects need to have the authority to drive them through.* It will be little use if decisions about projects are made by bodies that cannot command the powers to ensure they can be delivered. This may sound obvious, but the case studies have provided evidence that the desire of authorities to deliver transport projects sometimes exceeds their ability to deliver them. The complexity of major transport projects, in terms of procurement, planning, and financing, can make effective delivery extremely difficult.



## CASE STUDY 17

## London Croydon Tramlink

*Environment: Category B*

- A 28km light-rail tramway in south London using former tracks opened in 2000
- Passenger services are operated by a private concessionaire on behalf of Transport for London
- Procured under a 99-year DBFO concession, it was intended to become a permanent business
- The concession proved unsuccessful and was recently bought back by Transport for London to reduce uncertainty over future expenditures and secure maintenance and renewals

**Government should provide clarity and predictability**

National or local government funding is almost always necessary for rail transport projects (the exception being some Hong Kong examples). The case studies highlighted two key requirements for national government, which is typically responsible for providing overarching direction: *Firstly, national government needs to define rules for the disbursement of central funds that force accountability upon authorities. Secondly, it should provide some predictability about the required process to secure future funding, and its availability for projects that meet its criteria.*

The guidance provided by national government on how to progress projects can materially help, or hinder, their success. The UK practice of constantly changing detailed guidance for projects is not conducive to success, and this holds true of guidance about accessing finance. If there are no rules, or the rules change frequently, or if local populations are not required to co-fund the projects (e.g. through fares or local taxes), there is a danger of wasted effort, with local government competing for central funds that appear 'free' to local governments and populations. Strategic guidance relating to funding is necessary to help influence public sector authorities from inception, and it should not be subject to constant changes if investors' confidence is to be maintained.

### Public authority competence matters

Using delivery methods involving the private sector does not mean that public authorities can divest themselves of responsibility for the project. *Where private contractors and project managers are used, it is vital that the public sector authority is knowledgeable and effective, for example, in being able to specify the desired output from a particular process. The public sector can achieve this through specialist PPP units (this is done in the UK and Philippines); and the private sector can assist via 'project development groups'.* As public authorities in many countries have come to rely heavily on the private sector to deliver projects, there is a serious risk that expertise within the public sector has been weakened. Where this is the case, there is a danger that projects may not be specified well, and that contracts may not be drawn up and managed effectively.



#### CASE STUDY 18

#### Hong Kong MTR

##### *Environment: Category C*

- The MTR (Mass Transit Railway) recently expanded by the merger of two networks (MTRC and KCRC); part private, part government owned, the fare zones were integrated in late 2008
- MTRC had a 119 km network of heavy rail based metro including the Airport Express; and KCRC a 101km network of heavy rail, suburban and light rail. Having successfully integrated the two networks, the company is now focusing on expanding its network in Hong Kong as well as actively developing its international and China business
- An effective rail and property-based financing model was introduced to help assist the development of the rail network into the large network it is today, and may also be used in the future expansion of the current network

## CASE STUDY 19

## Singapore North-East Line (NEL)

*Environment: Category C*

- A 20km fully underground automated and driverless rapid transit line operational from 2003
- The Land Transport Authority gained approval for construction of the line in 1996
- The construction was fully government funded with the aim to foster development along the north east corridor of the island
- The North-East Line is operated under a 30 year operating licence, by SBS Transit; one of Singapore's two vertically integrated competing land transport operators
- The private sector operator, SBST, retains the revenue generated from fares as well as third party/commercial usage of the stations and pays to the Land Transport Authority a licensing fee
- While the rolling stock is initially provided to the private sector operator at no charge, it is expected that the private sector operator subsequently acquires the rolling stock from the Land Transport Authority at a pre-agreed price. The private sector operator is responsible for maintenance as well on-going asset renewal



**Project development should have a clear focus on its ultimate operation**

*Too often, the dominant focus of project development is the physical implementation of the project rather than successful operations.* This is a particular problem for the first projects that public sector authorities undertake. It is a fundamental problem, because by the time a project is operational, its success or otherwise has been largely determined since most of its operational costs and revenues have been fixed, at least through to the medium-term, by decisions already taken.

A core objective of most concession contracts was to enforce a long-term perspective by tying implementation to operations. However, the evidence showed that this was by no means automatic, and success is still variable. Procurement methods are still evolving, and new methods are required that can bring greater success in the future.

A major contributory factor hampering success in this area is the fact that most projects are part of a larger network under development, and there can be frequent turnover of operators as the network develops. When extensions to an original project or new lines are built, perhaps very soon after the opening of the original line, authorities sometimes take the view that it makes little sense to have multiple operators, and the original concession is usually re-let as a package with the new project. The original private concessionaire who has delivered the project may then find itself with no business. The prospect of being replaced undermines the concessionaire's longer-term focus on the operation of the project in favor of possible short-term exit strategies.

### Project Success Scored against Success Factors

| Project Name       |                              | Success factors                |                               |                              |                        |                                     |                           | Success achieved |        |            |
|--------------------|------------------------------|--------------------------------|-------------------------------|------------------------------|------------------------|-------------------------------------|---------------------------|------------------|--------|------------|
|                    |                              | Project environment turbulence | Political control/sponsorship | National government guidance | Planning effectiveness | Procurement/financing effectiveness | Organizing for operations | Financial        | Policy | Durability |
| Project Category A | Bogotá Transmilenio          | 3.5                            | 2                             | 3.5                          | 1                      | 3                                   | 1                         | 2                | 1.5    | 2.5        |
|                    | Bangkok BTS                  | 5                              | 3                             | 5                            | 3.5                    | 2                                   | 2                         | 1                | 1      | 2          |
|                    | Bangkok Blue Line            | 5                              | 4                             | 5                            | 4.5                    | 4                                   | 4                         | 2                | 3      | 4          |
|                    | Manila MRT2                  | 5                              | 5                             | 4                            | 5                      | 5                                   | 5                         | 5                | 2.5    | 5          |
|                    | Manila MRT3                  | 5                              | 2                             | 3                            | 2.5                    | 2                                   | 3.5                       | 2.5              | 1.5    | 2.5        |
| Project Category B | New York Subway              | 3                              | 2                             | 2                            | 2                      | 1                                   | 3                         | 2                | 1      | 3          |
|                    | Paris Metro                  | 2                              | 1                             | 2                            | 2                      | 2                                   | 3                         | 2                | 1      | 2          |
|                    | Dublin Luas                  | 3                              | 2                             | 3                            | 2                      | 2                                   | 1                         | 3                | 2      | 2          |
|                    | Dublin Port Tunnel           | 3                              | 2                             | 3                            | 2                      | 2                                   | 1                         | 3                | 2      | 2          |
|                    | Manchester Metrolink Phase 1 | 3                              | 2                             | 3                            | 1                      | 1                                   | 2                         | 1                | 1      | 1          |
|                    | Manchester Metrolink Phase 2 | 2                              | 2                             | 4                            | 4                      | 3                                   | 3                         | 2                | 3      | 3.5        |
|                    | Midland Metro                | 3                              | 3                             | 3                            | 5                      | 4                                   | 4.5                       | 3                | 3.5    | 5          |
|                    | Nottingham NET               | 3                              | 2                             | 2                            | 1                      | 1                                   | 1                         | 1                | 1      | 1.5        |
|                    | London JLE                   | 3                              | 2                             | 2                            | 3                      | 3                                   | 4                         | 5                | 3      | 4          |
|                    | London LUL PPP               | 3                              | 2                             | 1                            | 3                      | 5                                   | 4                         | 5                | 5      | 5          |
|                    | London DLR                   | 2                              | 1                             | 2                            | 1                      | 1                                   | 1                         | 1                | 1      | 1          |
|                    | Croydon Tramlink             | 3                              | 2                             | 2                            | 2.5                    | 2                                   | 3                         | 2                | 1      | 2          |
| Project Category C | Hong Kong MTR                | 3                              | 1                             | 1                            | 1                      | 1                                   | 1                         | 2                | 1      | 1.5        |
|                    | Singapore NEL                | 1                              | 1                             | 1                            | 2                      | 2                                   | 2                         | 1.5              | 1      | 2          |

Key: 1 = favorably, 5 = unfavorably



For further information regarding this Spotlight Report, please contact:

**Kai Rintala**

Head of Infrastructure Intelligence for Global Infrastructure  
KPMG in the United Kingdom  
+ 44 (0) 207 694 1893  
[kai.rintala@kpmg.co.uk](mailto:kai.rintala@kpmg.co.uk)

For information regarding how KPMG's Global Infrastructure practice can help your business, please e-Mail [infrastructure@kpmg.com](mailto:infrastructure@kpmg.com) or visit [www.kpmg.com/infrastructure](http://www.kpmg.com/infrastructure).

The information contained herein is of a general nature and is not intended to address the circumstances of any particular individual or entity. Although we endeavour to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. No one should act on such information without appropriate professional advice after a thorough examination of the particular situation.

The views and opinions expressed herein are those of the authors and do not necessarily represent the views and opinions of KPMG International or KPMG member firms.

© 2010 KPMG International Cooperative ("KPMG International"), a Swiss entity. Member firms of the KPMG network of independent firms are affiliated with KPMG International. KPMG International provides no client services. No member firm has any authority to obligate or bind KPMG International or any other member firm vis-à-vis third parties, nor does KPMG International have any such authority to obligate or bind any member firm. All rights reserved. 091205

KPMG and the KPMG logo are registered trademarks of KPMG International Cooperative ("KPMG International"), a Swiss entity.

