

Success and failure in urban transport infrastructure projects

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NOTE: This report considers project success from the viewpoint of the public sector sponsor or authority.

PART A OBJECTIVES AND APPROACH

Objectives

This report is a response to a commission from KPMG for an evidence-based study on “how to define success of transport projects, and how important to success is having good funding and procurement strategies in place at an early stage”. We draw on our joint experiences, which lead us to concentrate on urban transport infrastructure projects, and in particular urban rail projects.

The commission invites answers to the following three questions:

What is success – how to define it?

We have answered this question – encompassing financial, policy and durability measures of success.

How important to success is procurement and financing?

Our analysis based on case study evidence is that this is the one factor out of several that appears strongly correlated with success (in all respects). We have then investigated why this is.

How important is early decision-making to success?

We have drawn conclusions based upon the evidence.

KPMG noted that the catalyst for this commission was their observation that transport is increasingly viewed as well as evaluated as an integrated programme of projects as opposed to individual projects. We agree that no doubt this should happen, and in more successful environments it does. But there are many differing environments worldwide and in many cases this does not yet happen. One of our aims is to draw this out.

Transport - A British Problem?

Transport is essential to all our lives. The economy depends upon our capacity to get to and from work. Freight must be moved around the country. People increasingly demand access to leisure travel. Countries’ competitiveness is often judged using the quality of transport systems as a criterion. Britain is often found wanting in such benchmarking exercises. Rightly or wrongly, road and railway systems in the United Kingdom are seen as less effective than those in competitor nations.

The impression that Britain has transport problems is well established. First, difficulties may derive from the relatively high density of the population, particularly in England. Roads and railways appear to be crowded and cannot expand capacity in line with demand.

Competing demands for land make new facilities very hard to deliver. Second, there are also problems because of irregular funding and inappropriate financing mechanisms¹. Successive governments have adopted a 'stop-go' approach to tax-funded transport developments. Financing mechanisms are highly centralised, allowing for very little decision-making outside the core of Whitehall.

Third, there is a perception that major transport projects are difficult to manage in Britain. Major over-runs on the Channel Tunnel, the Jubilee Line Extension and the West Coast Main Line redevelopment are seen as the rule, rather than the exception. Fourthly, the country's planning system is notoriously slow and inefficient. The present government has published a number of documents about the potential damage inflicted by the painful amount of time taken, for example, to allow Heathrow Terminal 5 to go ahead.

Finally, governance arrangements in Britain are highly centralised by international standards. All major projects are subject to approval in the Treasury, which means that the decision about every rail investment, tramway, guided bus, bridge, tunnel or by-pass will pass across a desk in SW1.

The conclusion that flows from this is that, while transport is certainly not solely a British problem, Britain's approach and experience often differs markedly from that of other countries.

Our Approach

The factors contributing to success are complex and often context-dependent. No simple set of best practices is likely to exist. But some factors are essential and some important. We seek to reveal these.

We have approached this commission by compiling and analysing a series of case studies, from the UK and overseas. In each case, we have examined the success of individual projects from three viewpoints – financial success, policy success and durability success – and have undertaken an assessment of the factors that led to success or failure, focusing on six factors that, based upon our experience we hypothesise are particularly important. Some of these case studies have considerable depth, and all are based on our understanding of the local situation.

Variations in Governance

This study draws together examples of projects in Britain and overseas with a view to showing the strengths and weaknesses of different aspects of urban transport project

¹ We have defined '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.

delivery. It is notoriously difficult to compare practice in one country with the arrangements in others. With few exceptions, major transport infrastructure projects are promoted by government or para-governmental agencies. But governmental systems differ, as do approaches towards political authority and the way in which resources are controlled. However, it is these very differences that may provide clues as to why some countries and cities find it easier than others to provide new transport infrastructure.

All countries have different systems of government. Within each system, there will be devolved arrangements for regional and/or local government. These arrangements have generally evolved over centuries, though in some cases countries (e.g. Spain) have been able to re-start their constitution relatively recently. Britain has a system of government that has evolved over at least 1000 years. Institutions and powers are used today in ways that have evolved through centuries of legislation, custom and practice. Thus, while the UK is one of the world's leading contemporary economies, its system of government and administration dates back over a long period.

Britain developed a 'unitary' system of government with no constitution to determine the limits of Parliamentary power. Indeed, the UK Parliament is sovereign and can thus confer very significant power on government. In practice, many checks and balances have evolved to limit the use of power, including an upper house of Parliament, local government, the media and the rights of individuals and corporations to protect themselves using the courts.

Virtually all other nations have a written constitution. Often a constitution will offer protection to subsidiary tiers of government. Tax-raising powers may also be available and protected. But even where there are such constitutional arrangements in theory, the practice may be different. Traditions in some countries allow the State to act without significant hindrance across all aspects of public (and sometimes private) life.

Britain is thus unusual in having a highly centralised form of government with few formal checks on its action. However, in practice there are many limits on a British government's freedom. Some of these are outlined below. What is certain is that the British government arrangements, like those elsewhere, were not designed with the needs of transport projects in mind. In most countries, public expenditure on transport is a small share of GDP. Moreover, the private sector is responsible for a large share of all movement. The State and subsidiary governments regulate as well as deliver transport services.

The purpose of the study is not to make simplistic comparisons between projects delivered in, say, the Far East as compared to ones in Britain. It is clear that the government system in Singapore is more likely to be able to deliver streamlined and effective projects than one in a country such as the United States with many different States, jurisdictions and no centralised planning system. But there will be implications to be drawn from projects in

countries when compared with each other. It is these implications and their message for institutions in the UK that we hope to unravel.

Many countries, regions and cities can provide examples of transport infrastructure projects that have gone wrong. Britain is certainly not alone in developing roads to nowhere, underperforming railways, collapsing tunnels and wobbly bridges. If governments are to be able to learn from experience they need to face independent scrutiny of their performance and a capacity to deliver transport projects. For political reasons, government institutions often find such scrutiny threatening. But if there is no capacity to find out what worked and what did not succeed, there is the certainty that mistakes will be made over and over again.

There is no 'correct' way of governing a country, or determining the demand for transport, or comparing possible solutions, or procurement. But there is clear evidence of what is more or less likely to provide robust outcomes. Until and unless countries such as Britain find a way of understanding the reason it remains difficult to develop projects effectively and quickly, their transport systems will continue to suffer.

The projects considered in this document will, therefore, take account of the governance arrangements that delivered them. The extent to which government provides consistent and effective structures for transport projects (which are generally relatively large and almost always require public intervention) is an important element in whether or not they are successfully and quickly delivered.

Broadly, within our range of case studies, we can identify three categories of environment:

- Category A comprises projects with weak or absent public authorities, and very limited planning on the part of those authorities. For our case studies, this applies to the situation in Bogotá, Bangkok and Manila.
- Category B comprises the majority of project environments, including those in the UK, New York, Dublin and Paris. These are environments within which authority is fragmented, but where successful project planning, though difficult, is achievable.
- Category C consists of Hong Kong and Singapore, where the autocratic political culture enables a high level of integrated authority.

Towards the end of the report, we attempt to summarise the implications of the different project environments for project development.

The Process of Major Project Development

Major transport projects have a long history from concept to operations usually of between 10 and 20 years. During this period a wide range of stakeholders influence the final outcome. The process of project development follows an often difficult and sometimes

rather chaotic path. Often tasks are undertaken and decisions taken only to be thrown by 'show-stopper events'. Sometimes exogenous impacts stop projects in their tracks. Other times they open up windows-of-opportunity. We thus see the project development process as one of dynamic change in which the sponsor seeks to set a robust strategy, and adapt to events as best he can. It follows that assessing project success – the outcome of this process – depends upon some understanding of project history. This is the approach we have adopted in the case studies.

Drawing upon these we now summarise our main conclusions relating to this process as currently applied, and the essence of the required approach. There has been substantive research into the requirements for major project success. This reveals many layers of requirements, ranging from the more to less important, and some context dependent. What then are the essentials?

First is the recognition that projects are commonly developed dysfunctionally. In simple terms there is a 'planning' stage that takes the project to the stage of commitment; followed by 'implementation' and 'operations'. These stages are usually discontinuous, involve different parties and different skill-sets. The result is an absence of continuity in thinking or personnel, and little attention to the needs of the project development process as a whole. The failure to focus upon the operational phase is one consequence of this approach.

There is the need for 'context' for major project development. This concerns the land use and transport system of which the project is to be part. Predictability here has huge implications for project success; conversely a vacuum here may fatally undermine success (for example when a planned new town fails to materialise or competing project takes expected demand). City authorities commonly develop city plans, transport strategies and the like, but too often these do not influence what happens, and indeed may be counter-productive engendering a false sense of security.

Such plans should also confront affordability. It is a truism that we can implement only what we can afford (i.e. what can be funded). While financing arranged can improve affordability today it does not increase funding – it simply postpones repayment until tomorrow. The approach to affordability usually combines public sector funding with private sector financing; but rarely do transport plans do this with any rigour. In short the necessary context for project development is often flawed. These issues do not go away, they remain as a future source of risk.

Such plans should consider the strategic importance of the project to the city's objectives and business plan, and they should consider alternative technological solutions including lower-cost solutions especially in the case of metros. At some stage a decision is required and then the objective needs to change, from 'what is the best project' to 'how to deliver the best project'.

Major projects happen as a result of *people* and *management processes* in a *turbulent environment*. The key people - 'champions' provide the necessary sense of purpose, energy, continuity and competence that allows such control to be exercised; several champions are needed and together they constitute '*the guiding hand*' that major projects require. The business case and risk management provide the central processes that are the means to achieve this.

When there is a leadership vacuum, or major discontinuities arising from the turbulent environment, or when management is unable to maintain control then 'scope creep' takes place or there is a loss of stakeholder support. Projects can then quickly lose focus and become derailed - thwarting implementation or transforming a potentially successful project into one that is inappropriate or less successful. Because success is a matter of perception as well as fact it is necessary not only to manage the project technically, but also manage stakeholder expectations.

The *business case* should be the central document that provides clarity as to the project's purpose, scope, risks, impacts and intended outcomes. It facilitates consultation with key stakeholders (by avoiding ambiguity) and so far as possible needs to be agreed by them. The *risk management process* provides the means for management to maintain control. It guards against unrealistic reliance on individual leaders' abilities and allows the impact of events to be managed, their impact on the business case defined and the impact of remaining risks to be assessed.

Efficient project development requires projects to be 'shaped' in response to the mix of stakeholder objectives and support, technical opportunities, finance and other constraints and risks. This argues for *measured incremental development*, involving strategising, adding value, analysing and managing risk, reviewing stakeholder support, and iterating against sponsor strategic objectives. The business case should be developed from the earliest stage of project development and modified continuously.

Incremental development requires timely and incremental decision-making. Early commitment of any form (to a specific project or to a procurement model) may prove counter-productive, constraining future action. Conversely, sound, balanced technical support is required for decisions that may be prompted by windows-of-opportunity. Decision-makers need to be ready to be responsive in this turbulent environment.

Metros are costly, and almost always require large public funding. Efficient project development requires *funding and financing realism* and *financing accountability*. A lack of realism leads to wasted effort and time; the cost can be very high – of unrealised alternative actions while unrealistic plans are promoted. A lack of accountability for public financing allows 'easy decisions' when such decisions should be very difficult and made only after facing up to the project's opportunity cost. Accountability needs to face all of: central

government bureaucrats and politicians (who provide most funding); the sponsor authority; and their advisers. The task of central government oversight agencies is to provide the right incentives for sponsor and adviser accountability.

Champions operate through *small, multidisciplinary teams of individuals* who arrange for *technical support*. The core team needs to comprise the 'right' individuals – well motivated with the required sector expertise and technical skills. Managing technical support requires strong direction and effective interaction with advisers – ensuring they serve the project requirements, and are enabled to maximise their value-added.

This concept of a managed project development process therefore requires:

Champions providing leadership and continuity (the 'guiding hand'), working with teams of individuals, working with effective technical support.

An incremental approach 'shaping' the project in a turbulent environment, strategising continuously to add value, manage risk and manage stakeholder support, and incremental decision-making, with the business case the central document (insofar as possible supported by key stakeholders), risk analysis and management the central process, and realism over public funding/ financing, and accountability for it.

The Case Study Projects

Table 1 summarises characteristics of the 22 case study projects.

Table 1 CASE STUDY PROJECTS

City	Project	Description	Procurement	Open
Bogotá	Transmilenio BRT system			
Bangkok	BTS ('Skytrain')	23km 3-leg network. Fully elevated first-world metro above radial highways	Full BOT concession	1999
	Blue Line			
Manila	MRT3	17km segregated tramway system down major corridor	Build Lease Transfer (BLT) concession	2000
	MRT2	14 km mainly elev. 'first world' metro above radial highway	Gov't ODA from Japan	2004
New York	Subway			
Paris	RATP			
Dublin	LUAS			
	Port Tunnel			
Manchester	Metrolink Phase 1	31km 2-leg network linked through City Centre. LRT mostly on former rail right-of-way	DBOM concession	1992
	Metrolink Phase 2	6km spur line from Phase 1. Combined street and segregated LRT running.	DBOM concession	2000
	TIF Bid			
Birmingham	Midland Metro	20km mostly segregated LRT along former rail route	DBOM concession	1999
London	JLE			
	PPP			
	Crossrail			
	DLR			
	Thames Gateway Br.			
	Croydon Tramlink	28km 3-leg network Combined street-running and segregated tramway	PFI concession	2000
UK Nottingham	Nottingham Express Transit (NET)	14km radial line through City Centre, with spur line. Street and segregated LRT running.	PFI concession	2004
Hong Kong	MTR			
Singapore	North-East Line (NEL)	20km automated first-world metro under major highway	Government	2003

“Success” and its Assessment

Our method

Our sources of information derive from 22 case studies from round the world. All but three (Manchester TIF Bid, Thames Gateway Bridge and London Crossrail) are operational, and hence we know much about their objectives, project development history and degrees of success achieved.

We wrote a number of these case studies for this report. Some others appear elsewhere and we draw freely on them. The two on Bogotá were published by a different author. Some are based on strong evidence and much quantification, whilst others are more qualitative, and based on understanding, meeting key stakeholders and forming judgements. We define the sources in each case.

We have defined “success” from the point of view of the public authority promoting the projects and based on experience have hypothesised that there are six factors that contribute towards success, though we argue that their importance may vary depending upon the competencies of the governing bodies.

The full narrative and analysis of each case study is contained in Appendix 2 to this report. For each study, we have also constructed a descriptive summary table (Table 3 below) summarising the impact of each contributory factor and assessing the degree of success obtained. On the basis of this assessment, we have constructed a table which allocates, for each case, a score on a five-point-scale for each contributory factor and for each dimension of success². We then carried out a simple statistical analysis to highlight patterns between scores for contributory factors and our assessment of success. This appears in Appendix 1.

Our conclusions derive from the totality of the evidence assembled, both qualitative and quantitative.

Defining ‘success’

We evaluate success of a scheme from the viewpoint of the promoter of the scheme (generally a public authority). We do not consider whether the project was the best that could have been identified, but solely whether it is considered successful against its objectives, assessed from both objective evidence and stakeholder perceptions. We consider 3 measures of success:

² We cannot score the “success” of the 3 projects yet to be delivered, but we do score the respective factors that we expect to contribute to their ultimate success.

Financial success

This compares outturn finances with forecasts made at commitment. To the extent they compare well the project is said to be successful. This is largely a matter of fact.

Policy success

This compares outturn policy impacts with intentions held at commitment (that *inter alia* require financial success). These can include economic, social, development and environmental impacts. These are partly a matter of fact, partly of what is expected to happen in the future (major projects have long economic lives) and partly of the satisfaction of those with a legitimate interest.

Durability success

This additionally identifies the durability of the overall approach. It concerns the ability of the project or business to maintain its service delivery over the medium and long-term - such that policy success is maintained. It also relates to the suitability of the project development process (e.g. the procurement form) as a model to be followed on future occasions.

Success factors

We wish to draw conclusions about the importance to success of the project funding and procurement strategy. This requires us to understand the factors that influence success, so that funding and procurement can be put in context. Based on our experience, we have identified *six factors* that we consider likely to influence success:

- (1) The project environment, and its turbulence evidenced by show-stopper events and 'windows of opportunity'.
- (2) Strong political control or sponsorship – clear objectives, leadership – during implementation; then during operations.
- (3) Strong guidance from central government – appropriate, strategic and providing predictability.
- (4) Good infrastructure planning and transport planning – providing a sound basis for the commitment decision.
- (5) Good procurement and funding structure in place at the appropriate time – a strong financial structure (providing survivability), a contract that incentivises effective delivery and good operations, realistic risk allocation and competition.
- (6) Strong operator contract that permits proactive management of the operational business.

These do not encompass all possible factors, but they are in our judgement the more important³. We now consider each in turn.

1. Project environment and turbulence

It is a fact of life that ‘turbulence’ impacts upon major projects and decision-making. Indeed this appears to be increasing and is expected to increase further. Its sources derive from a range of factors – such as natural disasters, global epidemics, macroeconomic events, domestic politics and politicians, changing policy including procurement policy, changing guidance and procedures from central government. This creates a hugely challenging environment in which to develop long-lived major projects; and it imposes strong demands on the sponsor authority. The more competent the authority the more manageable and predictable this environment becomes, and the greater the prospects of success.

The project environment strongly influences what happens. There are many situations where a theoretically desirable process does not happen: e.g. when implementation is frustrated by the system, or when ‘planning’ is seen to have failed. The London Docklands Development Corporation ‘Enterprise Zone’ approach was a response to this: the Government wanted to make something happen, but would let the market decide.

Different project environments dictate different approaches to planning and delivering transport projects. For example, in many developing cities the void resulting from weak government is implicitly recognised, and the private sector is allowed partly to fill it; often with impressive results. In this environment citywide objectives are far more difficult to achieve. Here the focus needs to be on individual projects or area projects. Then the level of durable development achievable is lower than otherwise.

Project environments therefore materially affect the level of ambition achievable. Turbulence in these project environments depends upon:

The stability of societal and city context, reflected in the political system, its degree of openness.

The relationships between politics, policy and technical advice.

The approach to formulating policy, and its predictability.

³ For example we have *not* formally included ‘implementation’ – after procurement/ financing decisions are taken. This impacts upon the issue ‘Organising for operations’ but it also encompasses the effectiveness with which the contractor/ supplier implement to time/ cost and specification. If it was to be included we would be asking: How effective were the contractual arrangements (e.g. Metronet vs. Tubelines approaches)? How effectively were risks managed? How effective was government in support of implementation? How were stakeholder concerns managed during implementation?

In very turbulent environments it is desirable to develop different projects in different ways from conditions where turbulence is more limited. Projects (even apparently inflexible megaprojects) need to be developed far more responsively to the project environment to take advantage of windows-of-opportunity. This is difficult for 'traditional' public procurement, but may not be so difficult for private initiative given a responsive project development and decision-making process.

'Show-stopper' events – which upset or overturn existing planning assumptions and approaches – can arise for exogenous reasons (a function of the political system, the state of the economy), policy changes (transport, procurement, appraisal), or be a consequence of poor planning. The recent UK switch to the Transport Innovation Fund appears to have desirable characteristics, and it also represents a major change to the project development process for light rapid transport (LRT) projects. It is not yet clear whether its objectives will be realised.

2. Political control and sponsorship

Good transport projects need the right institutional, professional and political backing to make them work. This requires strong political control, clear objectives, ability to procure strong advice, the authority to take decisions, effective stakeholder engagement, leadership, and institutional effectiveness during implementation and then operations. Good sponsorship has several aspects:

The authority to make things happen – the project sponsors have access to the powers, finance and land needed for the project.

The people to make things happen – the project sponsors have the political support and technical expertise needed to provide certainty and well-grounded planning.

The necessary sponsor competences – ownership, evaluation, relational, coalitions, durability

Where institutional effectiveness is less than good, as is often the case, it may be that different approaches are required, with lower levels of ambition. This issue is revisited in the conclusions.

3. Central government's role

Sometimes central government will be the project sponsor or joint sponsor (e. g. Crossrail and many developing cities). But, even where that is not the case, most rail projects and many major highways require major central government public funding. Some early guidance is necessary for successful project development. A huge waste of resources happens when a lack of clarity about the availability or terms of public funding leads to a lot of work being put into developing 'good' projects that cannot then be funded. This has been

the recent UK LRT experience: at one time 40 projects were being developed every year, while only one per year was being approved.

The other major role for central government is to set criteria for accessing funding and agreeing projects. These criteria have a major influence on the procurement route (though the decision on procurement should not be taken too early – see below). The impact of this guidance is high. It may be stable or change constantly. It may be well informed or it may not. It may be detailed or limited to strategic guidance. The nature and constancy of central guidance has a major impact upon project success, not least in creating room for sponsors to develop projects well, or undermining their ability to do so.

Therefore, there are two aspects to central government's role that can be assessed:

The existence of strategic (as opposed to detailed) guidance that provides some degree of predictability.

Early and credible advice regarding the scale and terms of public funding.

4. Effectiveness of planning

Project development requires planning and forecasts many years ahead, grounded in clear strategies for the development of a particular city or region. Such planning needs to confront considerable uncertainty, if sound decisions are to be made.

Project development also needs to consider the role of the private sector. The benefits of private sector involvement may include reality checking the implementability and bankability of projects (in effect plugging major weaknesses of public sector planning), and facilitating early implementation of projects justified as beneficial and fundable in the long term but unfeasible without up-front financing. Ideally, additionally, a mechanism would be found for accessing such skills early in project development, perhaps fundamentally changing the choice of project specification.

Identifying potentially 'good' projects that are capable of being implemented, funded and financed requires:

Strong strategic planning and management of risk.

Good infrastructure and transport planning, based on clear objectives and providing a sound basis for the commitment decision.

5. Effectiveness of procurement and financing

Most governments have a broad policy stance on procurement and financing for transport megaprojects – increasingly in favour of Public Private Partnerships (PPP). This stance has a major impact on stakeholders in terms of their gearing up to become involved in the sector.

But decisions about procurement form should in principle *not* be taken early; but after the development of a robust business case. The exception may be developing city environments where government states its bottom line, with the purpose of catalysing private interests to fill a public sector planning void. This can be an efficient way forward.

Where procurement decisions are taken too early, not based upon a business case, serious trouble usually ensues. Lack of success can often be traced back to this decision.

Key aspects of procurement include the following:

The procurement approach should be based on a clear business case, evaluation of the strength of the market (and its ability to offer effective competition) and clarity about the promoting authority's ability to act as a strong client.

The contract form (including concessionaire form) should focus upon securing successful operations.

Bid financing should be based on clear principles to build in durability (in the context of the degree of turbulence in the environment).

Procurement decisions need to be based upon a robust business case

Financing structure should provide for durability

6. Operator contract

This permits proactive management of the operational business.

The concession form should maintain strong incentives for effective operations, maintain accountability and quality, and enable periodic re-tendering to ensure that arrangements remain competitive.

Framework for Analysis

Table 2 summarises the framework for analysis. This comprises 22 projects in 12 cities and 9 countries. Of these 5 are in project environment 'A' (a weak Authority, maybe no Authority planning), 15 in category 'B' and 2 in category 'C' (excellent Authority capacity).

Table 2 FRAMEWORK FOR ANALYSIS

	Success Factors						Success criteria		
	1	2	3	4	5	6	Financial	Policy	Durability
PROJECT ENV'T 'A'									
Bogotá Transmilenio									
Bangkok BTS									
Bangkok Blue Line									
Manila MRT2									
Manila MRT3									
PROJECT ENV'T 'B'									
New York subway									
Paris RATP									
Dublin LUAS									
Dublin Port Tunnel									
Manchester Phase 1									
Manchester Phase 2									
Manchester TIF Bid									
Midland Metro									
Nottingham NET									
London JLE									
London PPP									
London Crossrail									
London DLR									
Thames Gateway Br.									
Croydon Tramlink									
PROJECT ENV'T 'C'									
Hong Kong MTR									
Singapore NEL									

PART B CASE STUDY EVIDENCE

The case studies are presented in Appendix 2. We have adopted a broadly similar format where possible, in each case drawing out the key insights relevant to this commission..

Summary Assessment of Success

Table 3 is a summary *qualitative* assessment of our case studies against the list of six factors we hypothesise as contributing towards success; together with an assessment of the degree of success achieved on the three measures.

Table 3 CASE STUDIES - SUMMARY ASSESSMENT OF SUCCESS

Case study	Success factors						Success achieved		
	Project env't turbulence	Political control/ Sponsorship	Central gov't guidance	Planning effectiveness	Procurement/ financing effectiveness	Organising for Operations	Financial	Policy	Durability/stakeholder
Manila MRT3 17km metro, open 2000	Very turbulent. Reinforced by anti-PPP attitudes.	Achieved by personalities/ champions. Sponsor's technical role reactive.	Broad guidance existed. Oversight agencies applied this professionally; but were not decisive.	Realistic planning by pvt. concess'aire. Good route. Public interest not fully protected.	Complete realism led to Build-Lease-Transfer concession. Decided early. Sovereign guarantees. Limited compet'n. Robust structure	Maintenance / operations separated. Concerns over institutions.	Good for concess'aire. Unexpectedly poor for gov't - revenue shortfall	Very considerable success.	Probably replicable. Main problem financing of operations.
Manila MRT2 14km metro, open 2004	Very turbulent. [reinforced by poor planning].	Achieved by bureaucratic intent to extend LRT, with ODA financing		Planning ineffective – changes to route, poor route, poor demand forecasts.	ODA financing (full sovereign guarantees) dependent on Gov't of Japan. Competition but failure in governance/ transparency/ purposefulness.	No planning for operations, so existing LRT operator had to operate MRT2. Concerns over institutions.	Very poor for gov't. Large cost overrun. Major revenue shortfall.	Modest success only. (but key stakeholders satisfied!)	An unsustainable approach that requires major changes..
Bangkok BTS 23km metro, open 1999	Very turbulent - major institutional difficulties + Asian economic crisis.	Strong control, strong champions, always depended on full BOT. No assistance from other gov't dep'ts	No guidance. Oversight agencies professional but had limited influence.	Planning entirely by private concess'aire. Excellent project identified. Poor demand forecasts	Fully committed concess'aire committed to full BOT. Strong compet'n for imp'n. Strong debt financing structure in place	Operations were planned, but late and not customer-facing. Subsequently became very effective.	Very good for gov't. Disastrous for concess'aire – cost as expected but major revenue shortfall.	Major success	Full BOT shown to be impossible. Excellent in most respects.
Bangkok Blue Line 20km ugd metro, open 2004		Central gov't sponsor bureaucratic, not		Identified very rapidly with narrow	Constrained by 1995 decision on concession form.	Concession form led to serious	OK for gov't. Imp'd to time/ budget (gov't		

Case study	Success factors						Success achieved		
	Project env't turbulence	Political control/ Sponsorship	Central gov't guidance	Planning effectiveness	Procurement/ financing effectiveness	Organising for Operations	Financial	Policy	Durability/stakeholder
		always supportive. Limited assistance from other gov't dep'ts.		objectives. Physical infra planning separate from eqp't/ ops.	Infra subject to standard gov't procurement. Concession won after limited competition.	problems. Concessionaire was purposeful, but faced little cooperation.	risk). Ridership < 2/3 forecast (concessionaire risk).	MRT network	A bureaucratic process that could be much improved.
Bogotá Transmilenio BRT System 84 kms in 2007	Turbulent but surprising stability provided by 4 successive technocratic mayors	City mayors have considerable powers and applied them to good purpose	Probably little guidance. Not an issue	Excellent project identified, that proved to be implementable and fundable	Proc't competitive. Transparent. But concession / financing model had some problems.	Strong focus on operations throughout	Imp'd to time and probably budget. Operations not known other than fares higher than expected.	Huge success on almost – but not all counts	Implemented in stages. But some questions about the model unless problems are tackled.
Hong Kong MTR	Gov't has controlled otherwise large turbulence	Strong, effective sponsorship	Government requirements are explicit and predictable.	Major effort deployed effectively. Decisions then follow.	Strong capability to secure strong competition, until recently with no public funding.	Operations is a major focus throughout project development	Generally excellent. 2 major projects have had revenue shortfalls	Excellent	Excellent in almost all respects
LUL PPP	Very controversial	Weakened because of transfer to an unwilling sponsor	Very firm and determined policy	Not an effective way to achieve desired result	Expensive finance and procurement failed in 2/3 of project	Operation of PPP problematic	A financial disaster	Policy not delivered. Nobody happy	Unwise to continue or replicate
London Crossrail	Several false starts over almost 20 years	Moderate; split between Govt and LT.	Govt. Unclear and changed policy on funding several times	Much effort and expense wasted. Project not yet started	n/a	n/a	n/a	n/a	n/a
London JLE	Confusion over ownership and value of scheme	After initial hesitation Govt took strong sponsorship.	Strong	Planning was over-ridden by political pressures	Poor. Confusion and changes led to cost overrun	Not explicitly considered. Conventional op. assumed but in event	Dramatic cost over-run	Eventually delivered Govt. & private sector's	Poor transport planning and poor procurement

Case study	Success factors						Success achieved		
	Project env't turbulence	Political control/ Sponsorship	Central gov't guidance	Planning effectiveness	Procurement/ financing effectiveness	Organising for Operations	Financial	Policy	Durability/stakeholder
						became part of PPP		objectives, after prolonged start-up problems	
Croydon Tramlink 28km LRT, open 2000	Turbulent	Together (LT/Boro') had strong power. Professional, measured approach. Sponsors managed env't with skill.	Strong, but changing guidance, that was influential	Effective. Innovative and successful project identified. Forecasts poor.	DBFO concession decided after business case. Assistance by private dev't group. Strong competition. Robust structure during imp'n, but not operations.	Operations a strong part of concess'aire bid. But as imp'd did not fulfil promise (dysfunctional concess'aire).	Good for sponsor. Disastrous for concess'aire – large cost overrun absorbed + revenue shortfall.	Major success	Approach good in most respects. But critically operations not sustainable.
Midland Metro 20km LRT, open 1999	Turbulent -	Weak power (PTA). Major political problems throughout.		Poor. Focus was easy imp'n. Poor project identified. Forecasts poor.	DBOM concession assumed early. Competition not fully effective. Robust structure during imp'n, not op'ns.	Little + late interest by dysfunctional concess'aire. Eqp't problems. Operations to some extent problematic.	Disastrous for concess'aire – cost overrun absorbed + major revenue shortfall. Future prospects poor for sponsor.	Modest only - success depends upon securing future Extensions	Many serious problems, arising from a poor first project. Operations not sustainable.
Manchester Phase 1 31km LRT, open 1992	Turbulent	GMCC had strong power, exercised strong leadership. Approach professional, realistic, inclusive. Managed env't	Initially no process. This rapidly developed and was very influential.	Very effective. Innovative application of LRT that was a great success.	DBOM concession imposed mid project dev't. Strong competition.	The operation was established purposefully. Operations were initially effective.	Excellent. Outturn as forecast + windfall surplus on rebid.	Major success.	Excellent in almost all respects. Replicable.

Case study	Success factors						Success achieved		
	Project env't turbulence	Political control/ Sponsorship	Central gov't guidance	Planning effectiveness	Procurement/ financing effectiveness	Organising for Operations	Financial	Policy	Durability/stakeholder
		with skill.							
Manchester Phase 2 (with rebid Phase 1) 6km LRT, 2000	Quite turbulent	PTA had power and determined to develop a second project.	Very influential and misleading	Project not good, identified because of poor CG guidance	DBOM assumed early – bid with Phase 1. Strong competition. Robust structure during imp'n, but not operations.	Operational problems led to PTA re-bidding the operating concession.	Cost overrun absorbed by concessionaire + revenue shortfall.	Modest success only.	Given Phase 1, surprisingly modest success only. Requires change.
Manchester TIF	Promoter has been consistent and single-minded	Good, given the limitations of governance arrangements	Govt. has announced clear policy and guidance	Clear statement of planning objectives and plausible plan to deliver.	n/a	n/a	n/a	n/a	n/a
Nottingham NET 14km LRT, open 2004	Turbulent	City/ County had strong power, exercised strong leadership. Professional, measured, inclusive approach. Managed env't with skill.	Process existed, was changed, and was very influential	Effective. Innovative and successful project identified.	PFI concession (after DBOM) - decided mid project after business case . Assistance by private dev't group. Strong competition. No problems.	Strong operational focus. The operation was established purposefully and is effective.	Cost overrun absorbed by concessionaire Operational finances OK/ could exceed forecasts.	Major success	Excellent in most respects. Some concern for overall cost. Replicable
Dublin Luas	Political stability, institutional change, population growth faster than anticipated	Strong control from central Government	Consistent plan and objectives	Effective procurement, with minimal risk transfer	Effective integrated contract system	Construction significantly over budget. Operational revenues beyond forecasts	Ridership higher than anticipated	Perceived as success within Dublin	
Dublin Port Tunnel	As above, though relocation of			Ongoing claims raise questions about overall	Operational arrangements dogged by systems problems	Scope creep before contracts.	Throughput lower than anticipated,	Seen as instrumental in securing	

Case study	Success factors						Success achieved		
	Project env't turbulence	Political control/ Sponsorship	Central gov't guidance	Planning effectiveness	Procurement/ financing effectiveness	Organising for Operations	Financial	Policy	Durability/stakeholder
	docks would be major show-stopper			procurement		Outstanding claims	reduced congestion in city centre	commitment to future tunnelled projects.	
Thames Gateway DLR	Stable environment following initial teething problems. Franchisee re-appointed	Rapid government decision making and string support. Negotiations on PFI more problematic	Extensive option testing, and incremental delivery	Generally highly effective, both in design and build, and PFI phases	Well-structured contract incentivises performance	Good, completions on time and budget	Highly successful in incremental delivery matching growth	Initial phases seen as successful in boosting image and development of Docklands	
Thames Gateway Bridge	Spasmodic progress with changing policy objectives	Variable policy objectives and slow progress through planning	Shifting planning basis has delayed delivery	N/a	N/a	Lack of delivery, but extensive expenditure on planning			
New York subway									
Paris RATP									
Singapore NEL 20km metro, open 2003	Modest turbulence	Very strong control, effective sponsorship. Strategic risks managed to create surprisingly stable env't.	Yes well developed and influential	Effective, very good project identified. Demand forecasts optimistic	Public sector imp'n, private operating concession decided very late. Strong compet'n for imp'n. Ops concession compet'n not fully effective.	Strong operational focus; but concessioning decision late. Thereafter purposeful planning.. Severe problems after revenue shortfall.	Cost within budget, but revenue shortfall – and fails gov't financing req't.	Major success	In most respects good/ replicable. Concession form questionable.

Analysis of Success

We have developed 22 case studies. These are written up and are reproduced in Appendix 2⁴.

Table 4 PROJECT SUCCESS SCORED

	Success Factors						Success criteria		
	1	2	3	4	5	6	Financial	Policy	Durability
PROJECT ENVIRONMENT '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 ENVIRONMENT 'B'									
New York subway	3	2	2	2	1	3	2	1	3
Paris RATP	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	3	3	4	3	3
Manchester Phase 1	3	2	3	1	1	2	1	1	1
Manchester Phase 2	2	2	4	4	3	3	2	3	3.5
Manchester TIF Bid	1	2	1	1	n/a	n/a	n/a	n/a	n/a
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 PPP	3	2	1	3	5	4	5	5	5
London Crossrail	5	3	4	4	4	n/a	n/a	n/a	n/a
London DLR	2	1	2	1	1	1	1	1	1
Thames Gateway Br.	4	4	4	5	2	n/a	n/a	n/a	n/a
Croydon Tramlink	3	2	2	2.5	2	3	2	1	2
PROJECT ENVIRONMENT '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

Assessment

The qualitative assessment has been converted to a score on a scale of 1 (favourable to success) to 5 (unfavourable). Table 4 summarises our judgements about degrees of success

⁴ 17 of these are written up for this report. The source for the remainder is Allport R.J. 'Improving Decision-making for Major Urban Rail Projects. PhD thesis. Imperial College London, 2008.

achieved under the identified success criteria This indicates which factors led to what degree of success, but not their relative importance. It is to this that we now turn.

Our data are essentially subjective and qualitative. To read too much definitive “cause and effect” into them is to risk being misleading. However, having derived the table of scores we thought it would be interesting to see if we could detect statistically significant patterns.

We ran multiple regressions to see if the scores on the six factors of influence could explain (a) the score for financial success, (b) the score for policy success and (c) the score for durability. The analysis is shown in Appendix 1.

Procurement and financing effectiveness was the only statistically significant coefficient. There is some indication (not statistically significant) that planning effectiveness and organisation for operations both have beneficial effects, but that strong central government guidance reduces the chances of a durable project.

Interpretation of Case Study Results

Importance of Success Factors

Here we summarise some of the overall patterns emerging from our qualitative analysis and statistical comparison of the projects. We consider the significance of the six success factors we hypothesised were important in explaining degrees of success.

- (1) ***Turbulence of the project environment:*** Other than Hong Kong and Singapore, all project environments are turbulent or very turbulent, reflecting the long lead times of many major transport projects and the likelihood of demographic, political or policy changes during that period. This is particularly so when there is a weak authority (Category A) that is unable to create a degree of predictability.
- (2) ***Political control and sponsorship:*** There is a correlation between the success achieved and the strength of political control; yet it is possible for projects to be successful even when handicapped by a weak authority (Bangkok BTS, Manila MRT3). These were projects promoted and delivered by private entrepreneurs.
- (3) ***Central government guidance:*** Where authority was weak there was little good guidance; while for Category B case studies its effectiveness varied.
- (4) ***Planning effectiveness:*** Despite everything some degree of effectiveness was possible for some Category A projects – as a result of private entrepreneurs. Category B projects sometimes fared no better (Midland Metro, Manchester Phase 2), but on average they did – and in some cases planning could be excellent (Manchester Phase 1, Nottingham NET, Thames Gateway DLR). There is

therefore a considerable spread of planning effectiveness in apparently similar project environments.

- (5) ***Procurement and financing effectiveness:*** this was sometimes notably important in the difficult Category A projects. There was again a wide variation in performance for Category B, with a close link to sponsor effectiveness. Most metro projects are concessions and these have a wide range of success. So do the public sector projects.
- (6) ***Organising for Operations:*** this is probably not relevant for road projects, apart from those (like the Dublin Port Tunnel) that are operated as a tolled concession. We see a considerable range of performance, in both Category A and B projects. This no doubt reflects a widespread lack of interest in operations during project implementation, and even afterwards in some cases. It is still early days and this is changing in the light of experience.

Degrees of Success

We are considering performance from the public viewpoint. Megaprojects have a large opportunity cost, and may even undermine policy and sustainable urban development. Megaproject development should secure sponsor policy objectives (that includes achieving financial expectations) and ideally provide a sustainable template that can be replicated.

We find:

No general picture - and a wide variety of performance. Some projects are successful under all criteria in all project categories (Bangkok BTS, Croydon Tramlink, Manchester Phase 1, Nottingham NET, Singapore NEL)

Some projects achieve better policy performance than financial performance (for example the Jubilee Line Extension, and the Dublin, New York and Paris schemes).

Durability is always a challenge and many approaches are not sustainable in the sense of being both desirable and replicable. This requires private sector players to be willing to bid for concessions – and initial experiences often caused them difficulties.

Key Success Factor

Statistical analysis indicates (see Appendix 1) that procurement and financing effectiveness is by far the strongest predictor of project success, on all three of the measures indicated. In the next section, we further probe this conclusion with more substantive qualitative findings, to identify some generic conclusions, and their implications for practice in a variety of different situations.

The Procurement and Financing Decisions

The question we are addressing is: “how important are good procurement and financing decisions early to success?”

The section is confined to an assessment of MRT projects recently researched⁵, all but one metros or LRT, in the UK and Asian countries. They are Bogotá Transmilenio Busway, Bangkok BTS, Bangkok Blue Line, Manila MRT3, Manila MRT2, Manchester Phase 1, Manchester Phase 2, Midland Metro, Nottingham, Croydon Tramlink, Singapore North-East Line and Hong Kong MRT System. For each of these cases Appendix 2 contains a summary on these issues ahead of the respective main case study.

Having concluded that, based on a statistical analysis of the case studies, procurement and financing are indeed very important to success, the question arises of how important decisions about good procurement and financing strategies are *early in the long development period of these projects*? Our analysis leads to the following conclusions:

Requirements on Central Government

Central government funding is always likely to be necessary for MRT projects⁶. This leads to two requirements by central government. First, central government needs to define rules for the disbursement of central funds that force accountability upon bidders. Second they should provide some predictability for future available funding. If there are no such rules (or frequently changing rules), or if bidders are not forced to bear some risk, there is a danger of wasted effort with sponsors competing for ‘free’ central funds. Strategic guidance is necessary to influence sponsors ‘from day 1’.

Focusing Project Development on Operations

Operations are the strategic purpose of metro investments. It has proved problematic to focus project development activities on this end goal in most case studies, and in particular for ‘first projects’. Whatever approach is taken this issue should be addressed early and consistently throughout the process of project development. The evidence is that where concessions that involve implementation and operations are let the achievement of operational objectives is by no means automatic. The recent use of PFI appears to have improved success, but success is then not automatic. New concession forms are being developed that may bring greater success still.

⁵ Allport R.J. (2008 op. cit.)

⁶ The sole known exceptions to this rule are Hong Kong MTR until recently; but now its former property-based financing model requires public funding too; and Bangkok BTS that was a full BOT, that almost bankrupted its shareholders and caused grief for its bankers: this model is not replicable.

Impact of the Sponsor and Project Environment

We concluded that the sponsor/ project environments should have a major impact upon project development. Three generic categories were defined. Our conclusions in respect to each of these are as follows:

Where there is a weak authority and perhaps no effective Authority planning (category 'A'), MRT project development is inevitably risky. We have seen two models: private sector leadership/ project development/ financing (as in Manila MRT3 and Bangkok BTS) and public sector leadership/ project development / financing (Manila MRT2 with ODA financing). The Bangkok Blue Line is a combination of approaches – public sector leadership/ project development followed by a private concession.

Private Sector Leadership/ Project Development

The evidence however is that – and maybe particularly - in these demanding circumstances, private developers can perform effectively by 'filling the Authority planning void', and delivering projects that are successful in policy terms. They do this when they have the freedom to strategise and take decisions unencumbered by public sector procurement constraints.

But this important conclusion requires early decisions about procurement/ financing form applied to a project concept. Without this developers will not commit to the large effort required to get the project to the stage of irreversibility. Moreover attempts to change the ground rules in these important respects mid-development would undermine private developer confidence and be unacceptable. The consequence is that not only must decisions be taken early in this generic project environment, but the right concession form needs to be selected early.

This raises issues of its own: when private sector innovation is sought to remedy public sector planning failure, then government needs to make known its early decision, and define the basis for its engagement with the private sector. This will – by definition - be without detailed study. What government could do in these circumstances is define the type of project it wants (optional), the support it can provide - rough scale of funding, land, tax breaks, risks carried etc. (these are essential), and the form of concession it is prepared to contemplate (optional). Land may be particularly critical, as such projects require a large land area, located adjacent to the alignment, for a depot; and such land is usually scarce in major cities. Without government commitment to provide land unencumbered progress may be difficult.

Public Sector Leadership/ Project Development

Category A – weak Authority and poor planning capacity. The case studies identify ODA financing in the case of Manila MRT2. The conclusion for environments in this category (of weak Authority and capability) where major project development is undertaken by public sponsors is that this is very risky, and should be considered very carefully. There should be no early commitment decision, but rather a measured approach with decisions based upon a robust business case. A common problem is that such an environment is accompanied by weak planning and no sound decision basis.

Category B - shared Authority and planning whilst being difficult is achievable. The key procurement/ financing decisions should not be taken early; but rather based on a robust business case. In several case studies changes to procurement/ financing method were taken mid-project development. These were seen as major setbacks. The evidence however is that when the right routes were selected they contributed strongly to success. The involvement of private Project Development Groups (PDG's) and the switch to PFI concession forms are examples of this.

Category C - excellent Authority capacity. The same conclusion applies. What differentiates it is the likelihood that public sector procurement could provide better value –for-money than private sector financing. Even here it may be that an operating concession provides the best delivery mechanism.

Specific Issues

Some practices materially improve the success of procurement and financing, in particular:

There is evidence that *the nature of guidance provided by central government* can materially help – or hinder project success. The UK model of detail and constant change over strategic guidance is not obviously well suited to successful outcomes.

There is strong evidence that there are pervasive *weaknesses in the project planning function* that has downstream consequences. These can be allayed by involving the private sector to participate in 'reality checking' the results of planning, notably to prove implementability and financability. The use of a Project Development Group is one such approach, and Peer Reviews are another.

Most MRT projects suffer from the (probable) eventuality of *projects being extended* and maybe new lines built that affect the commercial viability of the chosen project. This is a considerable deterrent *per se*, and to the objective of focusing project development on the operations phase. There are examples of good practice but this issue remains problematic.

The Treatment of Integration

Policy

The motivation for investing in metros is usually founded on considerations of city sustainability; its impacts are so profound - upon the future city structure, its productivity, and the quality of life it offers. But this does not happen automatically, it requires planned integration (metros have no captive passengers - every passenger needs to be attracted from an existing mode or new traffic developed).

There are many types of 'integration', for example between modes; between infrastructure, management, information and pricing; transport and land use; with other policy areas (e.g. health, education); and between local jurisdictions in a city. Without planned integration there may well be unintended consequences and much lower ridership, revenues and benefits.

Integration is not simply a useful add-on; it is increasingly being seen as a prerequisite to acceptability and implementability. Integration can reduce barriers to implementation by: (1) identifying policies that make the strategy as a whole financially feasible – e.g. by generating revenues for new infrastructure;(2) packaging measures to provide overall benefits (that alone are unpalatable); and (3) making the overall package politically acceptable (by compensating losers).

To some extent integration can be retrofitted to major projects. Ticketing systems have been added in London. Better bus integration and park-and-ride car parks have sometimes been added later (Midland Metro have done the latter).

Practice

We see a very large range of integration effectiveness in practice. For example plans for integration at metro stations and interchanges vary. In Manila (both systems) and Bangkok little effort was made; while in others there are huge efforts – Singapore's NEL being a beacon. Some sponsors have introduced complementary measures to maximise metro benefits – city centre parking controls, wider demand management (in Singapore), park-and-ride (Nottingham in particular) and remodelling of the City Centre – in Nottingham, Manchester Phase 1 (and Eccles redevelopment in Phase 2), and to a lesser extent Croydon.

What we see is not amenable to simple explanation, for there is a range of factors.

Culture

In France street-running trams are conceived as part of a holistic urban design and environmental improvement package. The French do not labour trying to justify their approach; they instinctively feel it is necessary at all levels in society. Many UK authority sponsors think ambitiously but more narrowly – in terms of city centre reorganisation,

pedestrianisation and traffic calming. This does not appear to be instinctive and our technocratic culture demands proof.

Overseas technocratic cultures have been allowed to blossom and deliver impressive levels of integration. Hong Kong has developed an effective form of integration focused upon public transport reorganisation and large property developments at stations. Singapore has built upon this and extended its ambition to develop integrated development or transport corridors; its ambition has grown with its experience.

Sponsor powers and motivation

London has made huge progress delivering an integrated transport strategy in recent years. Increasingly transport projects need to be delivered as packages, and these can be much more readily delivered when the city authorities have power to make decisions and do this. Transport for London has widespread powers across all modes. This has without doubt facilitated its considerable success.

It might be thought that sponsors would do what they can to bring this about. Some do, but some do not. In Manila little integration of the metro projects with buses or jeepneys was expected and little happened; but in Bangkok some integration was expected but nothing happened.

Central government policy and guidance

The UK approach is determined substantially by central government which provides most funding and sets the rules by which cities compete for it. It creates an enabling environment. Increasingly transport projects have been considered in the round, in terms of their broader integration impacts within and external to the transport sector; and the required form of appraisal has adapted to this broader framework.

Recently central government has sought to enforce policy integration through the Transport Innovation Fund (TIF) process. City authorities bid for TIF funds by developing packages of measures that will tackle congestion. Critically the 2006 guidance makes it clear they must include a hard demand management element. It is not yet clear what impact this approach will have.

Private developer motivations

Asia's private sponsors have shown little interest in transport integration above trying – usually unsuccessfully – to influence government to make this happen. They do try and leverage property gain on metro development, usually without short-term or any success (mainly for timing problems). But Bangkok BTS has developed an effective form of integrating its viaduct alignment into adjacent developments over time.

Tentative Conclusion

Integration appears to be a function of culture, sponsor powers and motivation, central government policy and guidance and private developer motivations. There is little evidence from the case studies that integration is increasing over time, other than rhetoric. The UK TIF approach may represent progress but it is early days.

We see different types of integration: holistic urban design/transport, city centre reorganisation/ transit, policy integration (congestion charging/ transit), physical development / transit.

There is a major problem when assumed integration does not happen. Bangkok BTS ridership forecasts assumed there would be some integration with the buses. This required a change in policy by the government bus company that required action to bring about; and when nothing happened the forecast level of patronage was not realised. The concessionaire described the impact of BTS succinctly: "It was just like the metro had been helicoptered in and dropped from the sky. Nothing changed. Not a bus route, or bus frequencies, or the bus stops. Even the bus stop outside the depot remained a hundred metres from metro station."

PART C CONCLUSIONS AND IMPLICATIONS

This report has analysed a number of major transport projects in different countries with a view to explaining why some are more (or less) successful in a number of different ways. The text of the case studies makes clear that issues such as governance, planning, funding and project management each play a part in determining whether or not a particular project is likely to be successful in the objectives originally determined for it.

It is important to stress that different political cultures in countries and cities will make any attempt at a direct read-across impossible. Just because a country in the Far East can deliver a project quickly and effectively does not mean that following a similar path in, say, Britain or the United States would produce the same results. On the other hand, there are a number of general principles to be derived from our work that provide evidence of how any country or city might more effectively deliver transport infrastructure.

In what follows, we set out the general principles and findings that have emerged, the implications these have for different project environments and finally some specific implications for UK practice.

General Principles and Findings

Integration is an ideal, not a common practice

It is conventional wisdom that integration is critically important to securing policy objectives and value-for-money from major infrastructure projects. In discussions of transport policy “integration” is a commonly used but rarely well-defined term. If it means considering one physical scheme in the context of other existing or planned schemes then one would expect good integration to show up a tendency towards policy and financial success. The case studies reveal different types of integration: holistic urban design and transport, city centre reorganisation and transit, policy integration (congestion charging/ transit), physical development and transit.

Integration appears to be a function of culture, sponsor powers and motivation, central government policy and guidance and private developer motivations. There is little evidence from the case studies that integration is increasing over time, other than in rhetoric. The UK TIF approach may represent progress but it is early days.

There is a major problem when assumed integration does not happen, as illustrated with Bangkok BTS .

And the future? This may change as people’s eyes are increasingly opened by visiting successful examples overseas. It would be surprising if it did not. This is increasingly the

way that projects are being viewed by public authorities - in their broader context. Private sponsors are also finding ways of leveraging advantage from integration. So there is progress but surprisingly slow progress.

Strategic consistency, not short-term opportunism

In carrying out this commission we have come to realise that the most important concept is “long term strategy”. ‘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 shorter-term statements of intent. If governments and other authorities are fully to deliver transport outcomes, they need to set a long-term path and then work continuously towards it.

Such an approach would require the institutions concerned to keep to a ‘strategy’ over a significant period and to abide by decisions taken, even by political opponents. While Paris and Dublin have benefited from long-term strategies, in Britain there has been a constant zig-zagging by central government that makes any notion of a strategy impossible. The chequered history of the Thames Gateway Bridge project is one of many that have been affected by this vacillation.

Some administrations do appear to have and to deliver long term strategies, with great success and benefit. In Britain we may be getting better at “integrated” policies (as in Manchester, Nottingham and London) but, at the level of both national and local policy there is not delivery of a secure, long term strategy.

In the British case this is partly a consequence of our extreme centralism. Both local and national transport spending levels and strategies are under strict control of central government and, in turn, greatly influenced by Treasury. But transport is a minor topic in the context of the many topics that concern central government. Changes in government, vagaries of international economic affairs and the macroeconomy conspire to undermine any long term strategic context for transport projects. Government is forever changing its mind towards understanding what sustainability means and then backing off when faced with opposition. So even if British authorities are reasonably good at thinking in “integrated” terms they cannot deliver integrated transport strategies.

This problem afflicts national policy—witnesses the absence of a plausible strategy for the national road network beyond 2015. And local government cannot insulate itself, even if it wants to, because it does not have the legal competencies (with the exception of the Greater London Authority) and it depends so heavily of the centre for funding.

Project planning matters

Within the context of wider strategies, project planning needs to be rigorous, and to combine technical expertise with political sensitivity and engagement. Essentially, project

development processes are core functions of sponsoring authorities, and cannot easily be remitted to other parties. Having said this, where the city authorities are unable to undertake this function effectively, we have seen surprisingly impressive performance of private developers in identifying and delivering metro concessions (in one case notably more impressive than for a parallel project planned by the authorities).

But a gulf is evident between theory and practice, and there is strong evidence that there are pervasive weaknesses in the project planning function that has downstream consequences. These concern both infrastructure and operational planning, and forecasting project impacts and finances. However the case studies have provided compelling evidence that these can be allayed by involving the private sector to participate in 'reality checking' the results of planning, notably to provide the capacity to implement and finance projects.

Transport projects require authority

The political institutions that make decisions about transport projects also need to have the authority to drive them through. It will be little use if decisions about major projects are made by bodies that cannot command the powers to ensure they can be delivered. This may sound obvious, but there is a risk – on the basis of the evidence we have accumulated – that the desire to deliver transport projects exceeds the authority of some levels of government to deliver them. In London, the complex preparations for Crossrail, and the disconnects between funding, powers and delivery, demonstrate the problem. The need to use complex procurement processes, planning mechanisms and uncertain financing arrangements can all contribute to the result that it will be impossible to deliver even good projects.

Disconnecting funding decisions from project promotion is dysfunctional

The power to make decisions about whether to proceed with a project should, as far as possible, be taken at the same level of government as decisions about funding. This is the case in New York, where the New York State has authority for transport projects and for funding them, and in France, where both transport projects and transport funding resides in the same authorities.

If the two processes are disconnected (as they are in the UK), there is a risk that politicians and officials at one level of government (usually a regional or local one) will promote schemes that they would not themselves be willing to fund. Projects will be developed so as to 'bid' for resources from upper levels of government. Because there is no cost (apart from the bidding process) to the promoting authority, it is easy – and often politically beneficial – for lower levels of government to propose unrealistic or uneconomic projects. At base the problem is that local electors are put in the position of asking for things to benefit their parochial interests at the expense of the national taxpayer and not their own expense.

On the other hand, if project and funding decision-making are undertaken at the same level of government, there is less chance that politicians will proceed with unrealistic project concepts.

Government must give clarity and predictability

If project promotion is not co-existent with funding authority, the minimum requirement is that central government gives clarity. We have seen that central or local government funding is always necessary for MRT projects. This leads to two requirements on central government. First, central government needs to define rules for the disbursement of central funds that force accountability upon local authorities. Second they should provide some predictability for future available funding.

There is also evidence that the nature of guidance provided by central government can materially help – or hinder, project success. The UK model of detail and constant change over strategic guidance is not obviously well suited to successful outcomes.

If there are no such rules, or frequently changing rules, or if local populations are not forced to bear some risk, there is a danger of wasted effort with sponsors competing for ‘free’ central funds. Strategic guidance is necessary to influence sponsors ‘from day 1’.

Project development must have a clear operational focus

We have seen that too often the dominant focus of major project development is implementation of the physical project, not achieving successful operations. This has been a particular problem for ‘first projects’. It is a fundamental problem, for by the time a project opens its success is largely committed; that is to say most of its costs and revenues have been fixed, at least through to the medium-term, by decisions or non-decisions already taken.

It was thought that concessions involving both implementation and operations would provide such an operational focus, but the evidence is that this is by no means automatic. The recent use of PFI may have improved success, but success remains variable, though new concession forms are being developed that may bring greater success still.

A major contributory factor is that most MRT projects are part of a network that is under development. Extensions to the original projects or new lines may be built, perhaps very soon after opening of the original line. As it makes little sense to have multiple operators, in practice the original concession is usually re-let as a package with the new project. The original private concessionaire who has moved might and main to deliver the project may then find himself with no business. In any case it undermines his desired focus on long-term operations, towards possible short-term exit strategies. There are examples of good practice, but the issue remains problematic.

Timing of the procurement and financing decisions is crucial

We have concluded, based on analysis of the case studies, that procurement and financing is indeed very important to success. The question arises of how early important decisions about procurement and financing strategies are in the long development period of these projects.

The evidence of project development, borne out by the case studies, is that where procurement decisions are taken too early, not based upon a business case, serious trouble usually ensues. Lack of success can often be traced back to this decision. Decisions about procurement form should in principle *not* be taken early; but after the development of a robust business case.

The exception appears to be developing city environments where government capacity is weak (our category 'A') and private developers take on the whole project development role. In this case government needs to state its bottom line, with the purpose of catalysing private interests. This can be an efficient way forward.

Client competence matters

Using private sector delivery methods does not mean that the public authority can relax. Where private contractors and project managers are used, it is vital that the 'client' side within the public sector is expert and effective. Because public authorities have in many countries come to rely heavily on the private sector to deliver projects, there is a serious risk that expertise within the public sector has been fundamentally weakened. Where this is the case, there is a risk that projects will be badly specified and that contracts will be ineffective. In London, the Tube PPP that was imposed by HM Treasury on London's new Mayor has proved a bonanza for lawyers and other intermediaries, but has not yielded the planned results.

Legitimacy counts

Once a particular strategy or objective is determined, the steps taken to implement it need to be understood by the city's citizens. Unless people understand what is being done and why, there is unlikely to be any political legitimacy for a policy. Without such legitimacy, politicians may be unable to sustain either the resources or delivery mechanisms necessary to achieve the desired strategic outcomes; or more commonly implementation will be fraught and be at the cost of promised success. Moreover, there will need to be reasonable transparency concerning the processes of delivery. Otherwise, in any democracy, it is likely that major projects will become the object of opposition that will, in the longer term, damage their success or prevent their implementation.

Incremental projects can offer adaptive solutions

Some of the most successful projects that we have analysed are those that began with relatively modest and easily deliverable ambitions, and then grew to respond to changing circumstances. Such projects include the London Docklands and Dublin light rail systems.

Similarly, Bogotá and Curitiba have eschewed expensive and long-term metro projects, and instead focused on bus rapid transit systems, which are relatively cheap (for passengers and government) and quickly delivered - once the technical and acceptability wherewithal for this exists.

Metros are inherently less flexible. Planning the physical and operational infrastructure is a major challenge. The requirement is to develop a project that is ready (but not too ready) and adaptable to take advantage of windows-of-opportunity that open, and to ride the probable environmental turbulence that will be encountered, without losing the project's core relevance. In some technical respects metros are inherently inflexible (stations and platform lengths, vertical alignment and tunnel size), but thereafter forward planning can create a degree of flexibility - allowing capacity to be expanded, accessibility to be added, providing the requirements for effective marketing and permitting quality to be upgraded as customer expectations rise.

Timing of the Procurement and Financing Decisions and the Project Environment

We have concluded that the sponsor and project environments should have a major impact upon project development. Three generic categories were defined. Predictable environments can be partly created by a technocratic culture providing this is allowed to inform the political process, while in turbulent environments project development needs to be far more responsive to external events, stakeholders and government policies. Our conclusions in respect of each of these are as follows.

Where there is a weak Authority and perhaps no effective Authority planning (category A)

MRT project development is inevitably risky. We have seen two models; of private sector leadership, project development and financing (Manila MRT3 and Bangkok BTS), and public sector leadership, project development and financing (Manila MRT2 with ODA financing). The Bangkok Blue Line was a combination of approaches, of public sector leadership and project development followed by a private concession.

The evidence however is that – and maybe particularly - in these demanding circumstances, private developers can perform effectively by 'filling the Authority planning void', and delivering projects that are successful in policy terms. They do this because they then have the freedom to strategise and take decisions unencumbered by most government bureaucracy.

But this important conclusion requires early decisions about the procurement and financing form to be applied to a project concept. Without this developers will not commit the large resources required to get the project to the stage of irreversibility. Moreover attempts to change the ground rules in these important respects mid-development would undermine private developer confidence and be unacceptable. The consequence is that not only must decisions be taken early in this generic project environment, but the right concession form needs to be selected early.

This raises issues of its own: when private sector innovation is sought to remedy public sector planning failure, then government needs to make known its early decision, and define the basis for its engagement with the private sector. This will – by definition - be without detailed study. What government could do in these circumstances is to define the type of project it wants (optional), its financial bottom-line (the support it can provide, rough scale of funding, land, tax breaks, risks carried etc - this is essential.), and what form of concession it is prepared to contemplate (optional).

Land may be particularly critical, as such projects require a large depot land area located adjacent to the alignment; and such land is usually scarce in major cities. Without government commitment to procure such land unencumbered progress may be difficult.

The conclusion for environments in this category (of weak Authority and capability) where major project development is undertaken by public sponsors is that this is very risky, and should be considered very carefully. This requires no early commitment decision, but rather a measured approach and decisions based upon a robust business case; however the problem often is that such an environment is accompanied by weak planning that provides no such sound basis for decision-making.

Where there is shared Authority, and planning whilst being difficult is achievable (category B)

The strong evidence is that the key procurement and financing decisions should *not* be taken early; but rather based on a robust business case. In several case studies changes to procurement and financing method were taken mid-project development. These were seen as major setbacks. The evidence however is that when the right routes were selected they contributed strongly to success. The involvement of private Project Development Groups (PDG's) and the switch to PFI concession forms are examples of this.

Where there is excellent Authority capacity (category C),

The same conclusion applies. What differentiates it is the likelihood that public sector procurement could provide better value –for-money than private sector financing. Even here it may be that an operating concession provides the best delivery mechanism.

Implications for UK practice

UK central government defines the basis for approval of its funding. The method of public funding and the procurement method for such projects, as follows:

The Department for Transport defines appraisal criteria that are modified from time to time. Since 1989 Section 56 grants have been made to secure the quantifiable non-user benefits of MRT projects; with local sponsor authorities required to provide defined matching finance. Inter alia such funding requires: no operating subsidies, full costs to be exceeded by revenues plus non-user benefits, and non-user benefits to exceed the grant. In practice central government has placed considerable importance on attracting local funding from developers or other beneficiaries or from other sources.

Approval is given in stages (programme entry, conditional, full) that define the project development process. All sponsors are government authorities.

Latterly guidance has recognised the importance of transport packages in targeting objectives. Approval of at least one MRT project (Midland Metro) has been predicated on its inclusion in a city transport package that includes car demand management measures. This is a requirement for funding approval under the new Transport Innovation Fund (TIF) for which £200 million pa has been earmarked throughout the next decade.

The Treasury defines the public funding method. Originally this was up-front Section 56 grants with borrowing consents to local authorities. Then PFI credits became the mechanism, with annual payments over the concession period that are performance-based. Recently TIF funds are likely to be used for funding at least some such projects.

The Office of Government commerce defines the procurement method. Since the late 1980's there has been a presumption that private sector participation is preferable to the public sector route. The early contracts were DBOM concessions, with PFI contracts being used recently. These have been justified on the basis of a value-for-money appraisal against a public sector alternative.

This process is not without problems for project sponsors. The guidance is detailed and regularly changed, as is policy more widely. Then when a project 'passes all the hurdles', there is no guarantee that funding will be available. Historically the scale of project planning activity, while sometimes being in scale with transport policy pronouncements, has been out of scale with funding availability. Sometimes the guidance has distorted, indeed undermined project success, for example the dominant focus on securing property developer contributions.

We then draw the following tentative conclusions:

Strategic guidance, not detail, is necessary to allow sponsors to strategise and develop projects in response to the project environment, stakeholder interests and policy changes.

Some change in guidance is inevitable, as this is a fast changing policy area. Our evidence is that changes towards a better procurement and financing regime are usually in retrospect found to have contributed materially to success. But frequent 'meddling' without a strategic purpose is disruptive to project development, and counter-productive to success.

APPENDIX 1 A SIMPLE STATISTICAL ANALYSIS

Our data are essentially subjective and qualitative. To read too much definitive “cause and effect” into them is to risk being misleading.

However, having derived the scores in Table 4 we thought it would be interesting to see if we could detect and statistically significant patterns.

We ran multiple regressions to see if the scores on the six factors of influence could explain (a) the score for financial success, (b) the score for policy success and (c) the score for durability.

In all the regressions we have 19 observations and 12 degrees of freedom. We display the estimated coefficient together with the *t* statistic and the 95% confidence limit about that coefficient. This is the range within which the true coefficient lies with 95% confidence. If this interval does not include zero then we can reject the hypothesis that the coefficient is zero with 95% confidence: i.e. there is evidence of a statistically significant relationship between the respective explanatory factor and the variable being explained. This happens when the *t* statistic is a little above 2 in absolute value.

Explaining financial success.

In the regression explaining the score for financial success the adjusted R² is 0.6, suggesting that we have explained 60% of the variation – which is good for this type of exercise.

	<i>Coefficients</i>	<i>t Stat</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	0.67	0.92	-0.92	2.27
Project env't turbulence	0.21	0.65	-0.49	0.91
Political control/ Sponsorship	0.03	0.06	-1.06	1.12
Central gov't guidance	-0.40	-1.33	-1.06	0.25
Planning effective-ness	-0.32	-0.82	-1.19	0.54
Proc't/ financing effect'ness	0.79	2.95	0.21	1.37
Organising for Operations	0.38	1.13	-0.35	1.11

The only coefficient that is significantly different from zero is the one for procurement and financing effectiveness. That is markedly so. The central estimate suggests that as the score for this factor increases by 1 the score for financial success increases by about 0.8, with a range from 0.2 to 1.4.

There is some indication (not statistically significant at 95%) that good organisation for operations has a beneficial effect but that clear central government guidance makes things worse.

Explaining policy effectiveness

Here the adjusted R² is 0.7 so 70% of the variance is explained.

	<i>Coefficients</i>	<i>t Stat</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	0.30	0.52	-0.95	1.55
Project env't turbulence	0.03	0.11	-0.52	0.58
Political control/ Sponsorship	-0.45	-1.13	-1.30	0.41
Central gov't guidance	0.00	-0.01	-0.52	0.51
Planning effective-ness	0.08	0.27	-0.59	0.76
Proc't/ financing effect'ness	0.87	4.17	0.42	1.33
Organising for Operations	0.06	0.22	-0.52	0.63

Again procurement and financing effectiveness is the only significant coefficient, with a central value of nearly 0.9 but with a more tightly defined confidence interval. This is the largest coefficient.

There is some indication (not statistically significant at 95%) that strong political control or sponsorship has a negative effect on policy effectiveness.

Explaining durability

Here the adjusted R² is 0.87 so nearly 90% of the variance is explained, which is high for this type of analysis.

	<i>Coefficients</i>	<i>t Stat</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	0.48	1.18	-0.40	1.36
Project env't turbulence	0.00	0.03	-0.38	0.39
Political control/ Sponsorship	0.09	0.33	-0.51	0.70
Central gov't guidance	-0.21	-1.24	-0.57	0.16
Planning effectiveness	0.24	1.09	-0.24	0.72
Proc't/ financing effect'ness	0.57	3.83	0.24	0.89
Organising for Operations	0.23	1.24	-0.17	0.64

Once again the procurement and financing effectiveness is the only significant coefficient, with a central value of 0.57. Again, this is the largest coefficient.

There is some indication (not statistically significant at 95%) that planning effectiveness and organisation for operations both have beneficial effects, but that strong central government guidance reduces the chances of a durable project.

Further analysis

As shown in Table 4 we categorised our case studies according to whether the projects were in a context of (A) weak or no authority planning, (B) shared authority with planning difficult but achievable and (C) excellent authority capacity. We investigated whether this

categorisation would add further to the statistical explanation we already had, but found that it did not.

We are conscious that we have applied ordinal scores as if they were cardinal variables in a linear relationship. The particular numerical values of the scores were arbitrary and different values might produce different results. So we also tried an analysis of variance. In this each of the scores was reduced to a zero ("good") or one ("bad", if the score is greater than or equal to 3).

The qualitative results of the analysis of variance were not different from those we have reported.

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INTRODUCTION

This Appendix comprises 22 case studies that provide much of the empirical body of evidence on which we have drawn. They are presented for three generic sponsor and project environments, as follows:

PROJECT ENVIRONMENT 'A': <i>weak Authority and perhaps no effective Authority planning</i>
Bogotá – Governance and Bus Rapid Transit 'Transmilenio'
Bangkok – BTS and Blue Line metros
Manila - MRT2 and MRT3 metros
PROJECT ENVIRONMENT 'B': <i>Where there is shared Authority, and planning whilst being difficult is achievable</i>
New York subway
Paris and the Ile de France - RATP
Dublin LUAS (light rail) and Port tunnel
Manchester Phase 1
Manchester Phase 2
Greater Manchester's Transport Innovation Fund (TIF) Bid
Midland Metro
Nottingham NET
London the Jubilee Line Extension
The London Underground PPP
London Crossrail
London Docklands Light Railway and Thames Gateway Bridge
Croydon Tramlink
PROJECT ENVIRONMENT 'C': <i>Where there is excellent Authority capacity</i>
Hong Kong Mass Transit Railway
Singapore North-East Line

BOGOTÁ TRANSMILIENO BUSWAY: SUMMARY

This is our only busway case study. It is widely considered an exemplar, to be replicated throughout the world. There is little doubt that, while there are problems, this is an apt assessment of its performance.

An extraordinarily ambitious project was identified to be implemented in phases. Its major innovation concerned its procurement and financing approach, against a backcloth of bus operator opposition that had thwarted a previous scheme. The system was based on the following concept:

- Bus operations would not be subsidised.
- Operating concessions would be let to a small number of companies. They would receive an agreed payment per bus-km operated. They would purchase, operate and replace buses. They would operate feeder and busway services. They would buy up a fixed number of superseded old buses, for scrapping by the sponsor.
- The sponsor authority would implement, manage and maintain the busway system. This would be available only to concessioned bus companies.
- A private company would be concessioned to collect all fares, and be paid an agreed percentage of the revenue collected.

The result was an excellent busway system, along which 4 concession companies operate buses (their own or their sub-contractors), used by very large numbers of passengers who benefited enormously. The initial cost was low. There was no operating subsidy, but some concern that profits may be high. The fares collection concession appears less successful. And there are a number of looming problems. But they should not undermine the very considerable success achieved.

There were many difficulties in devising this concept and implementing it, not least opposition by existing bus operators and the ever-present danger that the attractions of a metro could divert attention away. The approach developed as a result of purposeful work, building on the previous Curitiba experience, and strong political leadership. A replicable model was developed, that is being extended, that is affordable, and that mobilises dominantly private sector finance and operations skills.

BOGOTA

Bogotá is often held out as an exemplar of city governance and public transit development worldwide. This case study confirms this judgement, identifies what lessons can be learned, and reveals the complexities of coming to judgement, and in particular in applying Bogotá's lessons more widely.

The case study is based upon two references by A. Gilbert, who has undertaken in-depth research⁷.

This case study therefore considers in turn Bogotá's governance, and the development of its innovative bus rapid transit system known as *Transmilenio*.

Bogotá's governance – towards best practices?

Alan Gilbert has carried out substantive funded research, including extensive interviews that enable conclusions to be drawn about this much quoted exemplar of good governance. He starts: "Few cities in Latin America provide much evidence of good governance. However during the last 15 years Bogotá has been transformed in certain respects and now qualifies in certain respects as an exemplar of 'good practice.'"

Fiscal responsibility

City government *income* rose from <2% of city GDP in 1992 to >4% in 2004. City expenditure rose in real terms by 4 times from 1990 to 1999 and has remained about this high level

- Investment has increased (as opposed to operations) by 6 fold from 1991 to 2000 (<1% to 6%)
- The City credit rating reached AAA in 2004

Fiscal responsibility improved because:

- A genuine attempt was made to increase the city's income.
- *1991 Constitutional Reform* – Cities would receive a fixed % of national gov't current income – 14% in 1993 rising to 22% in 2002.
- The *1993 Organic Statute* allowed the mayor to raise taxes (general valorisation tax, improve procedure for re-rating properties, *levy on gasoline*, new taxes, better tax collection

⁷ Gilbert, A. *Good Urban Governance: Evidence from a Model City?* in *Bulletin of Latin American Research*, Vol. 25, No. 3, pp392-419. 2006

Gilbert, A. *Bus Rapid Transit: Is Transmilenio a Miracle Cure?* in *Transport Reviews*. Forthcoming.

This basis is reinforced by Roger Allport's working experience of Bogotá's transport sector, and by several other authoritative assessment of Transmilenio.

Public services

Wide-ranging improvements have taken place in a short time:

- Transmilenio BRT system – expanding
- Fine new libraries
- Mains electricity now everywhere
- Access to water/ sewerage has improved dramatically
- Urban upgrading programmes
- Better policing

Gilbert then says that many of these improvements have generally benefited the poor, and concludes: *“If Curitiba was the obvious intellectual source of the project, Bogotá may well have improved on the original.”* Opinion surveys reveal people in all social groups happy with the service quality they now receive.

Public behaviour

The homicide rate divided by 4 between 1993 and 2005. This resulted from a holistic strategy to target the core problems.

Public Honesty in City Government

Several signs of significant improvement. Why?

- The corrupt Police Dept closed down in 1993 – 2000 officers fired
- Public sanitation service closed down in 1995
- Corruption increasingly leads to jail – 3 councillors jailed in 2003
- Public contracts are openly bid
- Mayor is required to make an annual statement of achievements

Civic Pride

Surveys show a continuous increase in civic pride. Why?

- Until recently everyone described Bogotá contemptuously
- Until 1990 most inhabitants were migrants to the city and kept an allegiance to their home city

Pride in the city is at variance with a lack of pride in the country.

But – Serious Problems Remain - The Economy

- 1996-2001 GDP/capita fell every year but one: the population growth rate of 3.%pa outstripping economic growth.

- Unemployment is high and peaked at 21% in 2001
- In 2001 55% of the population was living below the poverty line. – higher than in 1997

Gilbert posits that this may *not* mainly be the responsibility of the City Government:

- Economic policy is a national responsibility, and the mayor can have little influence.
- The implication is that governance achievements may have been higher in a more benign economic climate.

Gilbert concludes: “The irony of Bogotá, therefore, is that despite the major achievements in local governance, at least two-fifths of the population still live in poverty. And, while the appearance of the city has greatly improved, there seem to be far more beggars and homeless on the streets than was the case ten years ago.”

Possible Explanations for the Transformation In Governance

International Funding Institution mantras

The traditional prescription advocated by IFI’s comprises: greater democracy/ public participation, reduced centralisation/ dependence on the central government, and privatisation. Gilbert states: “Bogotá has certainly gained to some extent from each of these elements, but... it is difficult to believe that any of them has been a major element in the transformation of the city.”

Rise of Democracy

The 1991 constitution sets the context for modern democracy. The Bogotá electorate has elected a series of excellent mayors; but these are not a recent phenomenon; and indeed only one other city in Colombia – Medellín has benefited to the same extent. Nor is it evident that the democratic election of mayors has improved municipal honesty. And democracy has not – as many argue – resolved problems of poverty and inequality. Though “recent mayors have put a lot of money into low-income areas and the evidence suggests that they have spent relatively more in deprived areas than those of the wealthy.”

Decentralisation

The impact on Bogotá is also questionable:

- Bogotá received transfers from the centre under the 1991 Constitution – these were 31% of city income in 2003, mainly for health and education. But Bogotá contributes a large tax share to the centre as a wealthy city. So - the overall tax on Bogotá’s people has risen.
- The cost of decentralisation was large and contributed directly to the economic recession of the late 1990’s.

Privatisation

A major aim is to roll back the state, reduce the fiscal deficit and maintain economic stability. Privatisation has been a prominent part of national public policy since 1990. But in Bogotá its impact has been rather limited:

- 1993 – The street cleaning and rubbish collection company was closed. Collection of taxes was privatised also + responsibility for vehicle taxation, and inspections of vehicles.
- 1997 – Electricity company part privatised – new electricity utility companies now operate according to commercial principles. Concessions were given to run new colleges, and in the health sector. But after long debate water and telephone services were not privatised.
- Transmilenio was established in part to control the excesses of the private bus companies

But generally services are now provided to the city adopting commercial principles.

The Real Causes of Change

The End of Co-Administration and Clientism

1993 *Organic Statute* – this was critical in shifting power drastically to the mayor and from the city council. The result: “Until recently the councillors were the bosses of the city. That has now changed completely.”

Good Mayors

Bogotá’s people have consistently voted for independent candidates who stood against the traditional political system, and were competent and honest.

Technocratic government

“Bogotá changed because technocratic elites governed it. Supported by a popular mandate, the last five mayors have identified certain priorities, appointed their own teams and pushed through their programmes as best they could.”

The mayors appointed technically competent directors to the chief city agencies. They have been increasingly well paid.

The heads of decentralised service agencies have been given more independence from the boards.

National legislation protected part of the administration from political interference.

“In general the quality of public administration has improved and public opinion is generally in favour of the shift to technocratic government”

Continuity in Administration

Democracy has not brought instability. Mayors have normally stayed in office for their full 4 year term. Policy changes have not been a major problem, and certain types of projects have been rolled over from one administration to the next. Agencies in charge of 'major projects' have since the 1960's been protected from political interference.

Such autonomy has been necessary to attract loans necessary to expand capacity.

"In 2000, the Chamber of Commerce asserted that continuity was the 'key factor' in explaining the improvements that had occurred in Bogotá since the 1990's. Certainly, major projects have continued unaffected by the change of mayor."

More Resources

Bogotá's mayors have been responsible and brave and been able to increase the city's income and sometimes raise taxes. But the city debt has risen – by 60% since 1999 to US\$0.25bn in 2004.

"In sum, therefore, the finances have been put on a much more sustainable basis but unless taxes rise Bogotá is going to rely increasingly on the nation, debt and extraordinary incomes such as decapitalisation, to fund its programmes."

In summary

"The causes of the change in Bogotá were numerous. Democracy, decentralisation and privatisation were necessary contributors to change but they were by no means sufficient, indeed they were arguably much less important than several other processes. Some of these processes were not sudden but were premised on a technical culture that was long standing. Bogotanos had long admired professional behaviour; the problem was that they found it difficult to be fully professional in the public sector. Once the Organic Statute had changed the rules of the game, professionalism began to hold much greater sway over 'political' behaviour. By luck or judgement Bogotanos noted in good mayors. The mayors were able to increase the resources available to the city and spend the money on generally admirable projects. The level of honesty and transparency rose. But none of this was simple or automatic and international agency lessons are dangerously oversimplified. As Bloomberg (2003) argues – these kinds of political process do not follow any simple causal logic."

The future – can the miracle survive?

The main questions:

- The state of the economy – improvement is essential if poverty is to be tackled
- Migration from elsewhere – this is a result of violence elsewhere in the country. The result is that migrants are extremely poor – quite different from the migrants of the past who coped relatively well in the city.

- Can the 'technocratic' approach continue?
- Will god mayors continue to be voted into office?
- Will most voters vote – just two-fifths did in the last 3 local elections
- While poverty again seems to be falling, inequality is not
- The independence of Bogotá's mayors poses a political problem!
- The populous argues for decentralisation... yet this has so far proved to be anything but successful.

Bogotá is spreading beyond its administrative boundary. Efforts are being made to coordinate actions in the wider Region, but this has not proved hugely successful.

The Positive Lessons From Bogota

While it is difficult the quality of administration can be improved relatively quickly.

However... the long list of causes of Bogotá's improvement shows that there is no simple 'best practice' that can be used to turn other cities around.

IFI's 'simplistic' prescriptions – of democracy, decentralisation and privatisation – hold some promise, but only when used with a combination of other policies.

What appears to be *essential* is that the local elite (however defined) is capable of addressing the dangers that face their city and can marshal the political power to provide the conditions for improvement.

Bogotá also shows that improvements do not come cheaply; and Bogotanos have had to pay more taxes, contribute to the cost of service expansion through higher charges, and find innovative ways of increasing the income of the city.

A degree of technocratic management is *essential*. So far Bogotá has combined clean and fair elections with technocratic management. The city has achieved a 'virtuous circle' of politics without politicking, of management with democratic control.

Many mayors have also been technocratic – and been willing to take difficult and unpopular decisions. They all challenged powerful interest groups; and gained public respect in retrospect for so doing.

"Perhaps the most fascinating lesson from Bogotá is that after overcoming each political crisis, every mayor's reputation and image improved".

BOGOTA'S BUS RAPID TRANSIT - TRANSMILENIO

Overview

The beginning: "Successful mass transit solutions are rare in poor cities. When they appear they are lauded across the globe and too often copied uncritically. The latest exemplar of best practice is the Transmilenio rapid bus system in Bogotá..... The paper ... applauds the improvements that it has already brought to urban transport in Bogotá.....The jewel of Bogotá has come under surprisingly strong local criticism over its cost, its ownership structure, its decreasing effectiveness, and fundamentally, because it has failed to solve the transport chaos of Bogotá. There is a real danger that Transmilenio will stagnate as its popularity declines and as demands for a metro increase".

Questions to be answered

1. Who uses the system, and how does it impact upon the needs of the poor?
2. Does the system provide a 'flexible framework within which the less poor as well as the very poor can use PT with confidence and comfort?
3. Does Bogotá's experience support the World Bank's argument that: 'Giving priority to PT in the use of road space makes public transport faster and more reliable?'
4. What does Transmilenio reveal about the need for complementary policies?

Context

The bus system – problems never fully rectified

Bogotá's key feature is that historically the bus 'companies' that have secured the route licence to operate *have not owned most of the buses operated*; the buses belong to small operators and individual drivers. Usually the company obtains the license, and then finds operators to work for them – for a boundary fee per day: thereafter the driver keeps the revenue. This critical role of the route license was accompanied by corruption. Too many buses were the result, all operating through the centre. On road competition was fierce, as was poor maintenance and dangerous driving.

This basic defect of the system has never been rectified. The companies finance political campaigns, companies have power to call strikes that they exert. Ex-major Mockus described the system thus: "PT in Bogotá is a chaos that works."

A metro always in the background

In the event the political imperative to 'do something' came with the economic crisis of about 2000, and BRT went ahead at much lower cost than a metro – that was not affordable at that time.

Origins

Curitiba was the antecedent to Transmilenio. Penalosa's great achievement was to build the system in 3 years effectively from scratch, almost to budget. This transformed public transport in Bogotá. Initially the traditional bus owners approved of the system.

Transmilenio characteristics

- A very ambitious bus rapid transit (BRT) *system*: 84 kms in 2007, with a network of 387 kms
- Infrastructure 2x2 lanes, with parallel roads. Funded by the public sector.
- Operated by a new public agency Transmilenio SA. A separate private company collects all fares revenue – it receives a fixed proportion to fund its costs – this has increased from 3% to 7%. There is no operating subsidy.
- Services provided by 4 private companies who win licenses. They operate busway and feeder services with large articulated buses capacity 160. They may own the buses or sub-contract to small operators.
- These companies sign concessions with the city. They fund bus purchase and renewal and operating costs; and are paid a fixed amount per bus-km operated.
- Fares are fixed and set by the city. They are at a premium to the parallel old buses with which they compete. Fares have increased regularly.
- Passengers board at stations with pre-paid travel cards. There is no payment on feeders to the busway services, but only on boarding at the busway station.

Its Impact

In August 2007 it carried 1.3mn passengers/working day.

It has been widely acclaimed: received the Stockholm Partnership prize in 2002 and 'has become one of the favourite transport projects of the World Bank' – who are financing clones in 4 other Colombian cities.

Criticisms

Initially Transmilenio was a great success. Criticisms were few (teething problems) but when Phase 2 began in 2004 they became loud, and are louder still leading up to the 2007 mayoral elections. Their basis was:

1. Decay of the road surface down the corridors
2. Overcrowding that began in 2004, and rapidly became severe (89% of interviewees saw this as its main weakness in 2007),
3. Pick-pockets: in a recent poll only 27% thought it safe – even though 500 police cadets + 100 officers have been fielded.

4. Concern about the competence of the new agency Transmilenio SA – its technical competence appears to have declined, its income has risen and it has become bureaucratic.

The result is reduced ratings for the system, but in 2007 despite this 72% of users thought Transmilenio had improved public transport. The following underlying issues arise in assessing its impact:

Concentration of ownership

The system was intended to create a new kind of professional operator who would own/maintain buses and not just sub-contract. But experience demonstrated the necessity for local bus companies to participate if implementation was to happen. These operators were, given the financial drive to operate without subsidy, reluctant. They did not have the capital to buy new articulated buses, were wary of the centralized fare collection system, and of the need to renew buses periodically. The outcome was that implementation was not thwarted but at a cost - large investors and bus *companies* were favoured and they decided whether and how to involve the *owners*. Today the question is how to involve more owners or drivers in the ownership structure.

Construction cost and subsidy

The concept was that the private operators would (after construction) operate without subsidy and Transmilenio S.A would cover its costs from its allocation of fares. In fact there is a degree of indirect subsidy – in the provision of police security, and cheap diesel; while the public agency's share of fare revenues more than doubled to cover its costs.

The initial cost of Transmilenio is reported variously as US\$5million/km (Ardila, 2004) and US\$6.9million/km (Mayor Penalosa). For Phase II estimates are higher – US\$13million/km, with one corridor double this. These costs are undoubtedly much lower than those of a metro, but appear to be increasing.

Excess profits

Four companies were set up to run services, and expected to earn a 15%pa return, adequate to convince the companies and old bus operators to establish modern enterprises. Little published information on bus company profitability exists but there is considerable suspicion that excess profits are being made, and with fares higher than they should be.

Impact on the city structure

Some criticise Transmilenio for consolidating Bogotá's existing shape and structure, rather than catalysing new centres; but this appears unfair. Mayor Penalosa argued that Bogotá must remain a densely populated city and that urban sprawl was a real danger.

Social impact

Transmilenio was designed to help the poor. How did it perform in this respect? The evidence is that it does indeed help the poor, but that the system is used most by those who are neither rich nor poor. This In 2006 86% of riders were from the poorest three social groups, yet the usage per person was higher for the middle classes and 3% of riders were from the richest social group. Transmilenio is clearly having a beneficial impact for the poor, whilst being attractive to others too, a considerable achievement.

The system helps the poor in two direct ways: (1) Fares are fixed (irrespective of distance) and journeys by the poor are longer, and (2) Fares on the feeder bus services are free, and these are routed mainly through poor neighbourhoods. Moreover as the Transmilenio network develops it will have an increasingly large impact on the poor, many of whom live in outer and more remote areas of the city.

But there are problems: (1)The Transmilenio fare has increased rapidly and the gap with single journeys on the competing old buses has widened; and (2) overcrowding has become serious slowing down the system. This no doubt helps explain why Transmilenio ridership appears to have stabilised, as passengers have moved back to the competing, cheaper old buses.

Reducing the number of old buses

One objective for Transmilenio was to reduce the number of old polluting buses that contributed substantially to congestion. This was to be achieved by a formal requirement for the new companies to buy a fixed number of old buses, for scrapping, for each new bus fielded. Initially this was successful, but over time as targets were increased problems developed and faced with the power of the bus owners hoped for improvements were undermined.

Danger Ahead?

For the first time there is a question about the future of Transmilenio. While negotiations for extensions to two further corridors are in hand, one of the candidates for mayor has raised the prospect again of a metro. This is because Transmilenio's image has become a little tarnished following fares rises, problems with overcrowding, unfair illegal competition from old buses and rising petty crime.

Conclusion

Each of the last four mayors has taken major risks to reform Bogotá's bus system. Each has taken on formidable opponents, because of their view that 'transport is probably the most important and controversial issue that the major has to deal with.'

There is no doubt that Transmilenio represents the 'jewel in the crown' of recent transport reforms. It is a well-designed system that is rightly being copied by many other cities. It has

speeded up journeys and cut congestion and pollution along the main corridors. It has also improved the experience of travelling on buses, although rush hour travel is difficult.

What is less certain is how far it has helped the poor. Routes do not yet reach large areas of poor settlements; and fares charged are higher than those of the competing old buses (where there is illegal competition). This requires a political deal to be struck with the small-scale owner-drivers.

The immediate imperative is to confront the power of the transport lobby, and in particular illegal buses. Unless this is done there is a danger of a 'downward spiral' of declining passengers and rising fares.

Procurement has been notably competitive and transparent, but the concession structure has not kept bus profits within reasonable bounds.

Looking ahead the metro may be resuscitated, and this could divert attention from continuing the purposeful development of Transmilenio. No doubt such development requires 'more of the same' difficult decisions faced by purposeful leadership using a technocratic approach. This is very much the evidence from Bogotá's mentor - Curitiba.

Finally Gilbert provides some balance to criticisms Transmilenio's undoubted achievements, by pointing out that it alone cannot resolve all of the city's transport problems. Complementary actions are needed to control illegal buses, and car use, and vehicle emissions – the World Bank estimate that Bogotá was the third most polluted city in Latin America. He concludes:

“Compared with the transport situation in many other major Latin American cities, Bogotá has done well and unlike the situation in terms of employment, health or even justice, transport management is ahead of the game. Unfortunately, because of the expanding number of private cars and the continued power and influence of the transport lobby, progress is being delayed and future change threatened.

Transmilenio may be a minor miracle but Bogotá's transport problems need something more than that. Perhaps this is the major lesson that bother cities planning to invest in busways should learn. Currently Transmilenio's image has been so tarnished that its future expansion is in genuine doubt. Much will depend upon who wins the next election. But whoever it is, the new mayor will have to tackle the real barriers hampering Transmilenio's future success.”

This case study, of Bogotá's governance and the development of its impressive BRT system gives pause for thought. The causes of its considerable success in governance are many and complex. The common IFI's mantras are shown to have merit but probably are not the main explanators for what happened. There may be no causal, predictable logic to what happened. We should be wary of taking 'lessons of best practice' and assuming they can be transferred to a very different city context.

Transmilenio is hugely ambitious and much has been achieved. This has been difficult requiring strong political will, and facing off vested interests. But today all is not well, and more of the same – in terms of political will and making difficult decisions is necessary. This too has been the lesson of Curitiba, that success is achievable but unless transport sector management is purposeful and ever-vigilant, then success may fade and new projects become out of fashion. The metro has loomed its head again, and could threaten to divert attention from what is clearly necessary: that is further developing and implementing the BRT concept to build on its past success and ensure this becomes much more widely experienced, by all sectors of society.

Bankok: Summary

Bangkok BTS

The essential context was Bangkok's chronic congestion and booming economy, central government's new and major BOT policy thrust and its persistent failure to develop Bangkok's first metro. A window-of-opportunity was opened when a 6-month interim technocratic government was formed following political unrest. Bangkok's Mayor took the initiative, developed an MRT concept that depended wholly upon his powers, land and support. He (in hope) invited BOT bids that explicitly laid almost all risk with private bidders; with no public sector funding. Somewhat surprisingly private bidders responded and BTS was the result.

Its success depended upon an impressive project developer, decisions to bid out the major contracts and a strong financing package.

Procurement: The concession was awarded after a brief bidding. But after this award there was a complete change to the project (routes, technology, and capacity). The winning project developer built on his HK experience of major projects and took a long-term and whole-life view, continually strategising to overcome problems and add value.

Contracting: He decided to bid out the implementation contract for works and equipment (rather than award them in-house). This procurement produced 4 bids. But he took the view that only one combination of constructor and supplier could undertake the works in Bangkok's difficult environment and attract the necessary financing. He therefore overrode the bidding and negotiated directly with this Joint Venture (Ital-Thai and Siemens).

Financing: This was structured by the IFC leading a consortium including KfW (German) and local banks. It was explicitly based on conservative principles. KfW had strong links with Siemens.

The success of this overall strategy was demonstrated when the project survived the Asian economic crisis, and since then other political problems, while many such projects have not.

Bangkok BTS was an example of a project whose whole concept depended upon the up-front assumption that a full BOT concession was essential. Everyone understood this. In the event a hugely successful project resulted.

The lesson was that a strong project developer, and procurement strategy, and financing structure contributed directly to what is an undoubted policy success. This was possible within a private sector context. Had the project been undertaken by the public sector, it is most probable that a much less good project would have been developed, that procurement rules would not have allowed the 'dream team' to be appointed, and that the banks would have had less influence over the financing strategy.

But this approach is not replicable in this form – the concessionaire lost almost everything and the banks much of their financing.

Bangkok Blue Line

This project also had its genesis in the ‘window of opportunity’ afforded by Thailand’s brief technocratic government in 1992. Professor Tony Ridley was appointed by the Thai Cabinet to identify a project (in broad terms) and delivery mechanism for implementation by central government. The result was the Blue Line project and a central government Authority (MRTA) that became the project sponsor.

The Authority developed the project and decisions were taken by Cabinet that profoundly changed it. First it was wholly under-grounded (a general policy applying to central Bangkok). Then the procurement decision was taken for a PPP with government responsible for financing infrastructure, and a BOT concession being let for equipment supply, operations and maintenance. The basis for this decision is unknown, but it is unlikely to have been based upon a robust business case.

Procurement This was the first BOT under a new PPP Act, and metro finances were unknown in Bangkok at that time. The embryonic public sector Authority had little understanding of this delivery mechanism. Bidding for the infrastructure comprised 5 packages; they were bid competitively as for any public procurement. The bidding for the concession produced just two bids, from which the winner was selected.

There is no reason why this form of concession should not be financially viable. In fact it proved not to be the case, and this early decision about concession form has created a long legacy of problems for the project and concessionaire: who faces possible bankruptcy.

Delivery Implementing the infrastructure and the equipment concession caused great problems in timing and coordination for the future railway. There was little involvement of an operator, and interface problems were not managed.

Metros are complex projects, and private concessioning is a demanding process to secure value-for-money. The Blue Line contrasts with Bangkok BTS’s experiences at the same time, led by project developers with major projects and financing expertise. The Blue Line, where government (Cabinet and a new, inexperienced Authority) had neither experience of metros or concessioning such projects. Their early decision about concession form had long-lasting and adverse consequences that compromised the success of the project.

Success would always, because of the alignment have been moderate. But the lack of a strong leader or sponsor combined with the early choice of concession model and financing contributed materially to the poor implementation record and the subsequent operational problems.

BANGKOK⁸

City Environment

Bangkok is Thailand’s primate capital, a rapidly developing megacity of close to 10 million people. By 1990 it was renowned for its chronic traffic congestion. Bangkok has a powerful city government – the Bangkok Metropolitan Administration (BMA) that covers much of the built-up area. In 2000 its formal population was 5.7mn, and there was an additional estimated 3.2 mn unregistered – so maybe 9mn in BMA, with more in the surrounding metropolitan area. Vehicle ownership had increased by 113% over the decade 1990-2000 to 4.5mn vehicles; and there were an estimated 18.5mn trips/day, almost exactly half by private and half by public transport.

Table 1 summarises key characteristics of the project development environment.

TABLE 1 PROJECT DEVELOPMENT ENVIRONMENTS

CHARACTERISTIC	BANGKOK
Politics/ Leadership/ Style	Democracy, politicised leadership, increasing policy stability. Increasingly proactive/ effective.
Role of Gov’t and Private sector	Historically substantial reliance on PSP and the private sector
Structure and Coordination of Government	National government dominates, coordination is problematic, and most decisions are taken by Cabinet. However BMA instigated the BTS concession
Experience of Infrastructure PSP	Extensive, early leader – in the power, expressways, and water sectors.
Transport Strategy	Strategies are developed, not always implemented or effective

⁸ This case study is based principally upon two references:

- “A Tale of Three Cities: Urban Rail Concessions in Bangkok, Kuala Lumpur and Manila”. Paper for East Asia and Pacific Infrastructure Review, by Halcrow for World Bank, December 2004.[http://lnweb18.worldbank.org/eap/eap.nsf/Attachments/background+13/\\$File/threecities.pdf](http://lnweb18.worldbank.org/eap/eap.nsf/Attachments/background+13/$File/threecities.pdf)
- “Improving Decision-making for Major Urban Rail Projects”. PhD by RJ Allport. Imperial College London. 2008.

Resources	Bangkok transport has a high political profile – public sector affordability is increasing. Deep local capital markets + an entrepreneurial/ effective workforce
Physical characteristics	Low-lying with high water table, difficult tunnelling

Government Development and Transport Policy

Government policy-making in the field of urban development and transport infrastructure was and is weak. SPURT set the context for the Seventh Plan 1991-1996. The rapid burgeoning of megaprojects from about 1989 as a matter of government policy caused huge problems that took many years to sort-of resolve. This is not surprising – Thailand was one of the first countries worldwide to take this path to project development. Government organisations entered relationships (frequently with no transparency – BMA was different as we shall see) with so-called BOT concessionaires⁹. In 1995 a first MRT master plan was produced providing little or no clarity (because it was little more than the summation of everyone’s wish-lists).

Planning and Development Process for MRT Projects

At the time that BTS started there was no process¹⁰. It was enough that a government agency found a concessionaire and contracted a concession with him. No feasibility study was necessary. Was it necessary to consult NESDB as representative of central government to get approval? Not according to law, but practically it was wise to build a broad support base – which is what happened.

In 1992 this changed on paper, when the 1992 Concession Law produced a process. Projects with a cost greater than baht1bn¹¹ must have a feasibility study, and for those greater than 5bn baht the feasibility study must be carried out by a reputable consultant. In practice to this day, this does not work. What a feasibility study constitutes has varied interpretations, and often the feasibility study adds up to little that is substantive.

⁹ The Bangkok Post of 11 Aug 2003 stated on its front page: “Mr Chai-anan said capital sources for politics that came from corruption and bankers were depleting because of the economic situation and the reduction in the number of mega-projects”.

¹⁰ In practice this remains the case today

¹¹ There have been typically 40-55 baht to 1US\$ through the 1990’s

History of MRT Development in Bangkok

Since the first MRT study in 1979, there had been efforts to secure an MRT project. The main focus had been on Skytrain and Lavalin's attempt to secure financing. This was overtaken by Hopewell, and in the end the Lavalin concession was terminated by the Anand government (in 1992). It was very much this failure, against a backcloth of worsening transport problems that led to the BTS opportunity being recognised by then BMA Governor Maj. Gen Chamlong about 1990. The context was the technocratic Anand government which resulted from demonstrations and public unrest and military intervention. It was determined to restore some economic credibility to Thailand after the unrest. Thus it was that this government terminated the Lavalin concession, hired Prof T. M. Ridley to identify a Government project, created MRTA, and approved BTS.

The MRT projects

There had been strenuous efforts for many years to develop an MRT project, but repeated setbacks. Against this backcloth and worsening transport problems the BTS opportunity was recognised by then BMA Governor Maj. Gen Chamlong. At that time there was a technocratic government and it was determined to restore economic credibility to Thailand after unrest. It terminated the Lavalin concession, identified the Blue Line, created the Mass Rapid Transit Authority of Thailand, and on its last night in office approved BTS.

BTS Concession

At that time there was no formal project development process. It was enough that a government agency found a concessionaire and contracted a concession with him. No feasibility study was necessary. BTS was originally to be a Central Area people mover with a capacity of just 10,000 pass/hr/direction, with its technology undefined. It was developed at a time of some frustration that central government had failed to deliver on promised BOT MRT projects. In three respects it was to be a straightforward project: there was one government sponsor – Bangkok Metropolitan Administration (BMA), it was only to use land owned by the BMA, and no public finance was available. It was to fit into a full metro network comprising other then committed concessions - Skytrain (on what became the Blue Line alignment) and Hopewell. The project was to serve the main corridors of commerce in the Central area - Silom and Sukhumvit. However as the project developed the concept changed completely to a full-scale metro, serving the same corridors, but needing to extend outwards substantially to the north to locate a depot site.

Blue Line Concession

The project was developed to take advantage of a window of opportunity provided by the technocratic Anand Government. Unusually an MRT expert (Professor Ridley¹²) was contracted to identify the project within a 3-month period. This proved possible because

¹² now Professor Emeritus at Imperial College London, formerly Managing Director of the Hong Kong MTRC, London Underground and UK Tyne and Wear Metro

Government owned a large land holding that could be used for the depot. This, together with the ‘committed’ Hopewell concession effectively committed the Blue Line to its existing corridor. Government’s subsequent 1995 decision to underground all MRT development in central Bangkok had a major impact on the project (it alone of all projects was affected). The Blue Line is the first underground metro in Thailand.

Bangkok is Thailand’s primate capital city, known back in 1990 as the congestion capital of Asia. Traffic congestion was the number one issue on people’s minds, and every politician announced plans to ‘do something’: this was the essential context to metro development in Bangkok.

Table 2 summarises the key characteristics of these two very different metro projects:

TABLE 2 BANGKOK’S TWO METRO CONCESSIONS

	BTS (‘Skytrain’)	Blue Line
Sponsor	BMA - Metropolitan gov’t	MRT Authority – Central gov’t
Concessionaire	BTSC	BMCL
- major shareholder	Tanayong (Thai property co)	CH Karnchang (Thai infra contractor)
MRT Function	Full metro	Full metro
Alignment	2 linked routes thro’ CBD, elevated. 23.5kms	1 underground radial/ distributor route. 20kms
Technology	First world metro	First world metro
Concession form	Civil works BTO + Equipment/ ops BOT	Equipment/ ops BOT Civil works JBIC ODA loan
Cost US\$bn	1.4	3.1 (of which concession 0.6)
Financing		
Govt	0%	80% (land/civil works)
Equity	33%	6%
Foreign debt	45%	5%
Domestic debt	22%	9%

Ridership '000s pass/ave.day		
Year 1	160 (in 2000)	Year 1 is 2004-5
2004	350	(120)
2008 (latest)	400?	2009
Farebox ratio		
Revenue/ opcosts	2.1 [2004]	1.0 [2008]

Complementary measures

There was no integration with the buses whatsoever, no park-and-ride. It was if BTS had been 'helicoptered in', everything else staying the same.

Project development process

The elevated BTS was developed over a 9-year period 1990-1999, and the underground Blue Line 12 years 1992-2004.

BTS – the major phases in project development were:

Developing the concept + awarding concession	1.5 (say) yrs (16%)
Design, procurement of turnkey contractor	3.25yrs (35%)
Delay till instruction to commence construction	1.25 yrs (14%)
Implementation, leading to operations	3.25 yrs (35%)
Total	9.25 yrs (100%)

Blue Line

The proposed Lavalin concession took many years to be terminated. Thereafter the Blue Line was identified and implemented in a period of approx. 12 years:

1991?	Proposed Lavalin Skytrain concession failed
1992	Professor Ridley contracted by Anand Government to identify a project for the Government to promote - the Blue Line. Project go-ahead Mass Rapid Transit Authority (MRTA) created
1994	Government announce that all MRT in CBD to be

	underground
1995	Cabinet go-ahead for revised project on PPP basis
1996	Government award first civil engineering contract
1997	ToR for concession bidding issued, bidding Asian economic crisis
1998	Negotiations for the concession commence
2000	Cabinet approve award of concession to BMCL, contract signed
2002	BMCL sign a supply contract with Siemens Financial close
2004	System opens to revenue service Government announce they intend to buy back the concession

Stakeholders

BTS

BMA	The metropolitan government had the powers, owned the land and defined a concession form that required no public finance. Led by the Governor, they had effective technocrats
Anand Central Gov't	This technocratic Government provided a 'window of opportunity' that BMA took. It approved the project.
BTSC Chairman and Tanayong	They were totally committed from the beginning. They attracted ex-HK technocrats who provided much energy, technical and commercial acumen
Environmental opposition	In Government and outside. Forced delay, and pushed the project into the Asian economic crisis
Siemens and ItalThai	The winning turnkey contractor. They provided strong support in often difficult times, and knew how to deal

	with the local situation
Lenders	IFC and KfW influential in structuring the finances, and providing a robust structure that was to be tested to the limit

Blue Line

Anand Central Gov't	This technocratic government provided a 'window of opportunity' that was used to identify the Blue Line It approved the project and established MRTA.
MRTA	Sponsor for its first metro project. Responsible for contracting the civil works and letting the concession
CH Karnchang	Major Thai contractor who determined to take a strategic role in the development of the MRT system
Siemens	The winning turnkey supplier. They provided strong support and delivered cars in record time
Lenders	Thai banks - Krung Thai Bank, Thai Military Bank, Bank of Ayudhaya, Siam City Bank JBIC who provided ODA loans for the civil works

Procurement and Financing

The two projects demonstrate similarities and differences. Critical were the early decisions about concession form. BTS was always to be a full BOT concession as its sponsor BMA was unable to provide financing, and its strategy was to implement something without central government assistance. The Blue Line adopted a different strategy: central government would fund the civil works, and a concession was let for the equipment, and operations/maintenance. The *assumption* that these concession forms could somehow be made to work, without preparation of a sound business case, permeated the development of both projects.

BTS- The concession was awarded after a very short bidding period for the low capacity people-mover concept with an undefined technology. After award, the project changed completely.

The three main banks (KfW, IFC and Siam Commercial Bank) defined four principles in structuring the project finances:

The completion of construction to be protected from any mishap that may befall any principal sponsor during the construction period.

A major portion of the loans to come from local banks to safeguard the project from political interference and reduce foreign exchange risk.

The construction consortium to share the risks of the initial operation to ensure completion on time and to high quality.

The financing package, including support loans, to be adapted to the expected cash flow to allow for weakness during the start-up period.

These stood the test of the Asian Economic Crisis. BTSC raised US\$1.2bn with a conservative debt: equity ratio of 2:1.

Blue Line - The project was the first to be bid under the new PPP Act. Five groups bought the invitation documents, and 2 strong groups submitted proposals. Almost immediately the Asian economic crisis hit Thailand. Negotiations lasted 2 years.

The civil works were financed under conventional ODA (by OECF/ JBIC); but financing the concession proved far more problematic. A major Thai contractor CH Karnchang was the driving force behind the bid. Financial close was not achieved until February 2002, four years after the start of negotiations. A consortium of 4 Thai banks provided the debt. BMCL raised US\$0.6bn of private financing.

Implementation

BTS – this faced several serious problems:

Depot	The failure to be able to locate the depot in Lumpini Park changed the project fundamentally, from a small Central area system of 14.5 route kms. to a strategic 23.5 km system that is the backbone of Bangkok’s future MRT system
Environmental opposition	Started over the Lumpini depot proposal. Extended to the impact of structures generally. Cabinet decided to underground all city centre infrastructure that caused a major crisis. Eventually BTS exempted.
Asian Economic Crisis	Delays due to the above pushed the project into this crisis, increasing both cost and borrowings (due to the foreign exchange exposure), weakening revenues and causing a fundamental financial crisis.

Blue Line implementation problems

Equipment procurement	BMCL close to concluding contract with Mitsubishi/ Alstom. In the event Siemens (also BTS supplier) selected
Interactions between civil eng'g and concession	There was a major mismatch in timing with 4 years between the award of the first civil works engineering contract and Cabinet approval of the equipment BOT concession
Asian Economic Crisis	Exacerbated the problems, increasing the cost of borrowings, weakening the revenues, and questioning the viability of the concession form

Operations

BTS - The major problem has been an almost total failure by government to integrate BTS with the existing system. No changes to the buses took place. No provision for park-and-ride was incorporated. BTSC was somewhat slow to develop a marketing strategy, but now has an effective strategy. It is considered a markedly efficient organisation. It carries an average 400,000 passengers/day; more than double that in its first year of operations (2000). In part this represents Bangkokians growing familiarity with BTS, as they find how it can benefit their daily routine.

BMCL have learned from the initial problems of BTSC. Integration while not good is far better than for BTS, notably in the design at stations, and provision of feeder bus services by BMTA.

The Blue Line opened for revenue service in July 2004. BMCL is thus an embryonic operator. To date it has been proactive in its marketing. Initial ridership with an introductory 10 baht (US 25 cents) fare was about 200,000/ day. This reduced substantially when the first year full fare was introduced, but has since grown to about 190,000 ppd. BMCL has fast developed into an effective MRT development company.

Success?

BTS is from the users/ city residents and government's viewpoint an excellent project. Its cost is modest (for a metro - close to the median of benchmarked systems); its ridership is high and growing rapidly – leading to short-term capacity problems. It has become the centre-piece of Bangkok's future MRT strategy, and of the mega city's future sustainable development; and government has borne no significant cost.

The **Blue Line** is less good. Its cost is very high – close to the top of the benchmarked systems (government required its under-grounding for environmental reasons); its ridership is only modest (currently about 190,000/day) as its route is less good than BTS. However it complements BTS and will form an important part of the future MRT strategy. Government has announced that it will embark on the integration of the public transport system and the rapid expansion of the MRT network as the cornerstone to its future strategy; but actions have yet to follow.

Financial success?

How did outturn finances compare with forecasts at the time of commitment? For BTS the final route, technology and depot all changed completely from that at concession award. Thereafter the project was developed purposefully, and in the event BTS opened 1 month early and its cost was as expected. But its ridership was one-quarter of that forecast, and this has been its major challenge. In fact its management has developed an excellent marketing strategy and, despite very little assistance from government, has grown ridership to the stage that it is now healthy (more than double that at opening), albeit lower than forecast. The Blue Line has also suffered from ridership lower than forecast at the time of commitment.

Neither concession is therefore a financial success. BTS has been a disaster for its shareholders, and the banks have suffered too – its finances have recently been restructured. Meanwhile the Blue Line concession finances are fraught.

Policy success?

Table 3 assesses the projects from a public policy viewpoint:

TABLE 3 POLICY SUCCESS?

	BTS	Blue Line
Concession	BOT	BOT on E&M eqp't only
Route	Excellent, elevated through CBD	Radial/ distributor 100% underground
Appropriate?	Fully	Yes if under-grounding justified
Capital cost US\$m/n/ km	59	155
- benchmark	30-75	60-180
Operations	Excellent	(Excellent)

Ridership '000s/day		
- Year 1	160 (2000)	Just open 120?
- 2004	350	
- 2008	400?	190
- 2008/ station	17	9.5
System congested?	Yes	No
Dev't Impact		
- stations/ depot	Yes – many dev'ts linked	No (underground)
- city structure	Yes – enables CBD to densify	Too early to tell
City strategy	Core of sustainable strategy. Gov't to integrate/ expand	Complements BTS, a key part of the future network
Environmental impact	Elevated, some 'canyon' effects. Attractive design	All underground
Impact on Poverty	Premium fares	Premium fares
CONCLUSION	Definitely successful	Too early to tell

Durability success?

A sustainable metro development approach should be expected to have the following characteristics; an absence of such durability may undermine the previous policy assessment:

The metro would be 'appropriate' to its environment and required function
Its impact upon stakeholders would not be such as to undermine the overall approach.

The project would be assessed value-for-money.

Durable institutions would be created (these may be of great importance)
The project development/ concessioning approach would be sustainable.

Table 4 assesses the performance of these projects in these terms:

TABLE 4 DURABILITY SUCCESS

	BTS	Blue Line
MRT appropriate?	Fully	Question about its 100% under-grounding.
Impact on stakeholders	BTS a great success for BMA, passengers and other road users. But a disaster for BTSC and banks	Blue Line a modest success for MRTA, passengers and other road users. But a major problem for BMCL and the banks.
Value-for-money	In all probability. Benchmarked cost is modest, ridership is high and growing strongly	Questionable. Cost not low, and ridership is modest and not growing strongly. Probably Depends upon extensions.
Sustainable institutions	BTSC has become an excellent. Passenger-facing operator.	BMCL is becoming a very good passenger-facing operator
Replicable approach?	No – the BOT concept failed.	No?
CONCLUSION	Full BOT shown impossible. Otherwise excellent in most respects.	Equipment BOT questionable. Rationale probably depends upon the extension of the system and development of a major MRT network that is government strategy.

Factors contributing to success

The project environment – its turbulence

The degree of success achieved, considerable in the case of BTS, was despite the very turbulent project environment. In Bangkok politics and personalities dominate and institutional coordination is problematic. BMA adopted its approach specifically to manage this environment: it asked (via an open BOT bid) whether a project could be developed, using BMA land, without any public funding. BTS was the result.

In the event the turbulence was compounded considerably by the Asian economic Crisis that tested the project financial structure to the limit.

Political control and sponsorship

BMA proved to be a good sponsor, and BTSC a very effective concessionaire. MRTA proved to be more bureaucratic and BMCL more constrained.

Effective guidance by central government

The national government unusually provides no effective guidance for major project development. Central government oversight agencies had limited influence over BTS (that sought no public funding), but considerable influence over the Blue Line (that depended upon public financing for land and civil works).

Planning effectiveness

BMA had no significant influence on identifying BTS; rather this was undertaken by the concessionaire, and undertaken well. The root of the failure of the concession was poor ridership forecasts.

MRTA identified the Blue Line (initially advised by Professor Ridley to identify a project that central government could practically implement). Project identification was less effective, and again ridership forecasts proved optimistic.

Procurement/ financing effectiveness

Both projects fell down here. The assumption/ assessment by BTSC *de novo* in the case of BTS that a full BOT concession could be viable shaped everything that followed, and was shown to be wholly unrealistic. For the Blue Line the simplistic assumption that the concession could finance equipment costs, operations/ maintenance costs and asset replacement costs from mainly farebox revenues was almost certainly unrealistic. Again once this assumption/ assessment was made it coloured everything that followed.

Organising for operations

BTSC took operations very seriously, planned for and secured good operations from day 1. In the event they found that operations were not customer-facing, and under pressure to grow ridership, took steps to implement a marketing strategy that has proved very successful. As a result BTSC has become an excellent operator.

BMCL also took purposeful steps to establish good operations from day 1 and have succeeded in this. It is developing its marketing strategy, and has become an effective operator.

MANILLA: SUMMARY

Manila MRT3

The essential context was government's major BOT policy thrust. This was the core policy of the President. Quick wins were sought, and MRT3 was one such project. Government had developed an MRT strategy, but this was little more than a wish list, had not been subject to realistic planning effort, and did not set meaningful priorities.

The new BOT law provided opportunities for a new project concept, not previously planned by government, to go ahead provided substantial financing resulted and the project met a proven need; government required a large equity stake to demonstrate commitment. There was also a provision after agreement, for a Swiss challenge under which competitive bids for the agreed project were invited; but the timescale was such that this was not realistic.

The opportunity created by the BOT Law nevertheless had daunting challenges. It required the private developer to invest a large amount to develop the concept and secure agreement over about 6 years; during which time a strong sponsor was essential with the ear of the president.

MRT3 had such a sponsor, who from the earliest days recognised the realities of life: that the project would need to be low cost, and that he could only bear risks that he could control. He identified a hugely innovative project, combining low-cost Czech technology with an alignment down the middle of the city's premier artery. Its cost was indeed low, there was no significant land acquisition problem, but implementation was a serious challenge.

He developed and obtained agreement for a concession form that capped his risk whilst also being acceptable to government. This was done early. He took the up-front financing and construction time and cost risk, for which he was guaranteed a fixed payment schedule and a rate of return on his investment. Government took all other risks, including operational and revenue risk.

Financing required a large equity investment. It was 100% private.

The final piece of the jigsaw was to engineer a very strong contract with a turnkey contractor with financial strength, expertise and commitment to take the large implementation risk. This was Sumitomo, backed by the parent company.

This is a story of a project developer who understood how to make things happen in Manila, and developed a project that met his and government's agenda. Early identification of financing/ procurement realities, and securing 'in principle' government agreement were essential for the private developer, who invested substantial sums over a prolonged period in making the project a reality. A realistic concession form and strong implementation

contract put the final pieces in place for future substantial success from both sponsor and developers' viewpoint.

The concession transferred large risks and the concessionaire had the freedom to strategise and manage risk, in project identification, by contracting and then securing finance. It may be questioned whether a government entity could have done this.

This approach is considered to be replicable albeit difficult; indeed the same developer is proceeding with a major second project along similar lines.

Manila MRT2

This line had a history going back to 1976. A first LRT line had been built and proved successful, opening in 1984. By the early 1990's the LRT authority with its sponsor agency sought to extend the network to Line 2; albeit that no serious (implementable and fundable) planning work had been undertaken.

The innovative concept of a BOT project was developed: for an equipment, operations and maintenance concession, with the operating Line 1 surplus funding government's investment in the Line 2 infrastructure; and private financing raised for the equipment costs. A serious bidding took place but at the time of political coups; and just one bid was compliant. The tender had to be aborted under public procurement rules.

In 1993 a different approach was pursued. The Philippines historically receives large overseas development assistance (ODA) funding from the Government of Japan (GoJ). Each year government submits a list of its priorities, and GoJ agrees which it will support. Initially grants are given for studies and designs, and these are routinely followed by approval for major project loans on soft terms. The GoJ development bank (OECF/ JBIC) involved has proved interested primarily in ensuring disbursement rather than the quality of its impacts.

Line 2 was approved by GoJ for support and a series of grants and then loans followed. The project received a particularly important loan from the new Obuchi Fund that had been established in 1995 to provide quick disbursement for megaprojects – such as metros. Line 2 was developed to the stage to receive such a loan. This required rapid action and this suited the main participants, whose involvement was continued.

The government sponsor LRTA proved to be less than competent or transparent. The project planning was poor, and procurement and management of implementation could be faulted on many grounds. The result was the wrong project implemented at great cost, with questionable operational benefits.

Government initially made a strong effort to implement MRT2 through a BOT equip, operate and maintain concession. This probably could have been done had the timing been

better (although see the Bangkok Blue Line below concerning the concession form proposed). Had this happened the story of this project might have been a much happier one.

Instead the basis for the project was the assumption that financing would be from the Government of Japan (or no-one); and that procurement would follow their guidelines that were, unlike those of multilateral banks such as the World Bank and ADB, less than rigorous in critical respects.

In fact the project faced a litany of problems that could be traced back to poor planning, less than transparent procurement and financing that provided no imperative for discipline.

This ODA form of financing in the event provided no incentive to financial discipline, because further financing was always available when money was needed (from the same source). The form of procurement while in principle competitive was not executed transparently.

MRT2 is an example of government overseas development administration sourced from government banks that are not established to ensure the quality of disbursement, through a government agency that proved ineffective and had poor governance.

Early commitment to a financing and procurement route here proved disastrous. This is an example of a single commitment decision taken far too early, on an ill-informed basis. This approach should not be replicable but unfortunately could be.

MANILA¹³

Sector Context

This is a case study of two very different metro projects developed at the same time in the same city, delivering very different outcomes. MRT2 followed the public sector route with Japanese overseas development assistance (ODA) financing; while MRT3 was an innovative build-lease-transfer (BLT) concession. The case study provides background and then contrasts the project development histories and degrees of success, before drawing conclusions.

Context

Manila is a rapidly expanding megacity with a current population of approximately 11 million, expanding by 200,000 per year. It is situated at the confluence of the Pasig River and coast, and is mostly low-lying, and in part flood-prone. Its road network comprises a few major arteries, and a little developed secondary road network. Car ownership and congestion are high, and most Filipinos use public transport. This has for many years been manifest in very large (20,000 pass/hr/direction) flows of bus/ jeepney passengers down the major corridors. In 1984 Manila's first fully elevated LRT system opened and was an immediate success. Since then ambitions for network development have not been matched by the state of the public finances.

Following the end of the Marcos regime in the early 1980's democracy flourished. The 1990's saw a strong government under President Ramos, promoting an open policy, deregulation of markets, re-engineering the government bureaucracy and strong support to PSP in infrastructure; and the BOT Law was enacted 1990/91. The Asian economic crisis followed in 1997 and some loss of policy focus that perpetuates to the current time. This environment has not been conducive to effective project development. Latterly there have been challenges to BOT signed contracts and confidence within the private sector has been low. There is today a prospective economic crisis that government is addressing, and that will constrain public sector affordability.

Manila's MRT history started with a Japanese financed metro study for a first line that recommended a subway in the early 1970's. This was considered unaffordable and a subsequent major study recommended a lower cost LRT Line 1. This was bid out as a Government financed project, opened in December 1984, and has been a substantial success (its operating finances were for many years amongst the best in the world).

¹³ This case study is taken mainly from the following references. Data quoted refer to 2003-4:

"A Tale of Three Cities: Urban Rail Concessions in Bangkok, Kuala Lumpur and Manila" - Paper for East Asia and Pacific Infrastructure Review. Halcrow Group Ltd for The World Bank, December 2004.

[http://lnweb18.worldbank.org/eap/eap.nsf/Attachments/background+13/\\$File/threecities.pdf](http://lnweb18.worldbank.org/eap/eap.nsf/Attachments/background+13/$File/threecities.pdf)

Allport RJ, 'Improving Decision-making for Major Urban Rail Projects'. PhD. Imperial College London. 2008.

With the advent of government's major BOT policy thrust in the early 1990's, and privatisation of the former US forces bases at Clark and Fort Bonifacio, came a wave of private sector projects. Today many projects are still current, and there are new proposals as well. There has been a strong support for MRT development, with few opponents, throughout the last 20 years.

Transport system and urban rail

There are vibrant bus and jeepney (paratransit) industries, and a marginal commuter rail system that is problematic.

The MRT system comprises three lines totalling 46 Kms. These are:

Line 1 open end 1984 – 15kms elevated Belgian LRT cars

MRT3 – 17kms at-grade/ elevated, Czech streetcars. Opened mid 2000 - BLT concession

MRT2 – 14kms elevated modern metro JBIC financed. Opened 2004.

All lines are under public operation except for the MRT3 maintenance that is part of the BLT concession.

Rail Ridership:

LRT1 – currently reduced to <300K/day due to an inability to field trains

MRT2 – 95K/ day (but very early days)

MRT3 – 375K/day

Thus total ridership is about 750K/day

Institutions, Funding and Strategy

Governance

People, politics and national government dominate what happens in Manila. Government institutions are not strong; and the metropolitan government is not yet effective.

Institutional coordination and regulation are problematic. Procurement is not always fully transparent.

Planning

There is no effective planning function that has a material influence over what happens. Everything tends to be a priority, and what happens arises rather chaotically. Faced with an absence of clear priorities government responds to bids by various groups for ODA or PPP financing. There is no sound basis for judging value-for-money

Transport Policies that influenced MRT

Mass transit has been supported widely since the 1980's, fitting a range of agendas. There has been strong support for 'BOT' since 1989, and it has often been the central thrust of central government policy. Tariffs have become increasingly politicised.

The Environment for Project Development

Government institutions have not proved effective at identifying and developing major infrastructure projects; neither has government provided effective support to projects as they are developed or during operations.

Funding and Private Sector Participation

There has been something of a crisis in the public finances that has reinforced strong support for 'BOT' projects. The politicisation of fares (in particular) has worsened the finances of LRTA (that operates Lines 1 and 2). The MRT3 concession has required unexpectedly large public financing that has caused serious problems. And the hiatus over Manila Airport BOT (that remains in the courts several years after completion of the project) has undermined confidence in such concessions.

Major infrastructure projects in Manila's transport sector follow one of two routes:

- Proposals for ODA financing – where government identifies the project. MRT2 is such a project; or
- Proposals for JV's with gov't corporations or unsolicited bids under the BOT Law – where the private sector leads and identifies the project. MRT3 is such a project.

Development of the Mrt System

MRT2

This is a first-world fully-elevated metro down a radial corridor in Manila. About 1989 Government decided to bundle the Line 1 operations with a new Line 2, and to bid out this package as a BOT contract. The bidding failed, and after many years delay, it was decided to implement Line 2 as a stand-alone line, with Government of Japan (GoJ) ODA finance.

Its origins were government's a long-standing arrangement between the governments of the Philippines and Japan. Each year the government proposes projects for Japanese ODA Yen loans. Nominated projects are checked against GoJ objectives; and large projects such as metros are recipients of such aid. LRTA (an agency of the transport ministry, in practice operating semi-independently) secured the agreement of the government bureaucracy that MRT2 should be proposed, and this was accepted.

Unlike MRT3 it did not result from strong leadership. But opposition proved to be strong, and the failure of earlier government planning became apparent. Twice depot sites could not be secured and the whole project was changed. There was opposition from those directly

affected, compounded by changes in the compensation law. The highways department insisted its future plans were protected, causing under-grounding at one location. These problems were compounded by procurement and procedural problems. This is the story of ineffective planning and decision-making, and of its costly consequences. It is also a story of poor procurement and ODA financing repeatedly increased as costs escalated.

MRT3

This was to be an early demonstration project of Government's BOT policy effectiveness. The project concept was by a project developer who had recognised the success of BOT in the power sector¹⁴ and recognised the potential of this model, providing the cost could be kept within acceptable bounds. The project is a fully segregated MRT mostly at-grade or elevated, using Eastern European streetcar technology, in the median of Manila's main thoroughfare. The need was obvious, having been identified in earlier studies and Government owned the entire right-of-way.

MRT3 is a Build-Lease-Transfer (BLT) concession. The concessionaire MRTC finances, constructs and maintains¹⁵ the project for 25 years and implements commercial developments for 50 years, in return for which it receives a fixed revenue stream and annual rental payments (for property). In effect he takes construction (cost and delay) and maintenance risk in return for a guaranteed return with property upside. Operations are by Government, who take the commercial risk and a share in the property upside.

Planning

MRT2 - as noted planning was ineffective. In practice a poor project was eventually developed together with unrealistic expectations for its success.

MRT3 - in practice the concessionaire did all the planning after agreement with government to the basis corridor and provision of land for a depot site. The concessionaire employed international consultants, bankers and lawyers, and the project was professionally developed. Ridership forecasts were also prepared by the concessionaire and these were used by government, who prepared no independent forecasts despite carrying the full operational risk.

Project Development Process

There is a formal infrastructure project development process in the Philippines with approvals by government's oversight agencies/ committees. There was also a formal BOT process, but this was still in its infancy at the time of MRT3.

¹⁴ Manila had had a major electrical power crisis in the early 1990's and had gained considerable experience of BOT power concessions.

¹⁵ Maintenance is financed by government

MRT2 was not developed effectively. Sponsor leadership was poor and the project was plagued by indecision and motivations that undermined effective project development. The project was developed from first concept to full operations in 14 years.

MRT3 by contrast was developed effectively, under the leadership of an entrepreneur/ project developer, and then concessionaire. This project was developed from first concept to full operations in just 9 years. Once financing was in place it took less than 3 years.

Procurement

MRT2: the project was developed in accordance with JBIC procedures. A general consultant prepared 4 contract packages that were bid competitively. But there were problems linked to transparency and the procurement was less than straightforward.

MRT3 the concession was bid out under the unsolicited bid provision of the BOT Law, whereby matching bids were invited within a period of just 2 months. In practice there was no effective competition for this innovative project concept that MRTC had developed. The concessionaire raised all financing for implementation, and took the financing and implementation (cost/ duration) risk. The government took all operations risks. It also took the foreign exchange risk and provided a sovereign guarantee on all debt. The concessionaire was guaranteed a 15% return on equity on the basis of the lease payments for the railway.

Financing

MRT2 - the project was financed by yen-denominated loans from JBIC and MRT2. The subsequent peso depreciation had a major adverse impact for the public finances.

MRT3 - this comprised 25-30% equity (a condition of government's oversight agencies) - mainly from the 4 Filipino developers; and debt from a combination of JEXIM, Czech suppliers' credit and local banks.

Implementation

The project was implemented effectively by Sumitomo (the turnkey contractor). Mitsubishi and CKD Tatra (Czech rolling stock) had major sub-contracts. The main problems encountered were the following:

Problem	Cause
Government processing the concession	The concession was pre the BOT Law's Implementing Rules and Regulations; this led to delay.
Squatter relocation	This was on the critical path and caused minor delay.

Asian Economic Crisis	This was not a major problem for the concessionaire. Government guaranteed the loans and took foreign exchange and commercial risk. The prospects for property gain were down-graded.
Station locations	Stations were located as the project was implemented under the design/ construct contract. These did not always match need.
Integration	No effective integration with the bus/ jeepney system, LRT1 and MRT 2 (under construction) was planned. This was not a problem for MRTC (who took no revenue risk).

Operations

MRT2: operations were not proactively planned. There was no operational strategy, or new organisation for operations and maintenance. Operations however commenced satisfactorily.

MRT3: Maintenance was subcontracted to a new government agency. But again there was no strategy and maintenance rapidly proved problematic, leading to service incidents and interruptions. Operations are now understood to be satisfactory, with overloading and capacity constraints the major problems.

Success Achieved

Appropriateness of the solution

The projects provide striking contrasts. *MRT2* is a first-world technology, fully elevated metro that is aesthetically pleasing but costly; and that carries only a modest ridership; arguably it is not the priority project it was when first identified 30 years ago. *MRT3* is an affordable but low-tech adapted tram system, that is not particularly attractive, and carries a very high ridership mostly at-grade or elevated down Manila's premier thoroughfare at modest cost. On the face of it the projects would appear more appropriate in each others' corridors!

There are thus reservations about whether *MRT2* is appropriate to its corridor; while *MRT3* does indeed appear appropriate to Filipinos affordability. It certainly has a compelling strategic purpose; and the main concern today is future capacity: it has become a victim of its success.

Financial success

MRT2: Its costs are much higher than forecast, its implementation time much longer, and its ridership/ revenues much lower than forecast. It is a financial failure.

MRT3: is in many ways a considerable success. MRT3 was implemented efficiently (at close to the estimated cost and at a cost that compares well with international comparators). It operates well and today carries a very high ridership of over 375,000 passengers/ day.

There is a prospective problem brought about by Government's inability to pay the concessionaire; who has a sub-contract to maintain the system but is in turn not carrying out the necessary maintenance of the system. This problem arises from Government's unexpected revenue shortfall arising from the lower than forecast revenues.

Policy success

Economic efficiency: No post-evaluation studies exist. But the performance of the systems would almost certainly be judged good for MRT3 and poor for MRT2.

Impact on development: Developers have belatedly recognised the importance of MRT. MRT3 is allowing increasing densification in its catchment area. There are some signs of development along MRT2 too.

Impact on the environment: MRT2 has a fully elevated alignment down a corridor that is not always wide. However the viaduct is designed to a high aesthetic standard and the technology is the latest, creating an attractive transit system.

MRT3 is aligned along the centre of Manila's premier thoroughfare that is by no means attractive. The design is basic and on the whole not particularly attractive. But the system fits in with its environment and is very popular.

Durability success

MRT2: There is little about MRT2 that should be replicated, and much that should change. There is particular concern that the operations do not have a strong contractual basis, and it is difficult to be confident about the quality of future service provided.

MRT3: the procurement and financing approach should be judged a considerable success in a very demanding environment. This is replicable, albeit with difficulty, and indeed the project developer is developing a further project along broadly similar lines. What needs to change is what government is responsible for, and that is the planning and organisation for operations.

Winners and Losers

MRT2: Manila's residents who ride MRT2 are the winners, together with its government sponsor (who succeeded in accumulating power), probably the contractors/ suppliers and JBIC too. The tax payers are very significant losers.

MRT3: Manila's residents who ride MRT3 and benefit from it, together with the concessionaire MRTC, its contractors and (probably) its bankers are the main winners. Government (i.e. tax payers) appear to be the sole loser.

CONCLUSIONS

General

The Manila case study is a study of two contrasting philosophies. One project followed the traditional public procurement approach, the other the new private concessioning approach. The latter was and still is subject to considerable criticism for the profits secured by the participating private companies.

But the evidence starkly contradicts the public scepticism of private concessioning. First an implementable, financable and operable railway was implemented in the most difficult corridor in Manila that was a hugely impressive achievement. Then in international terms its costs compare well with comparators and its ridership particularly well.

Implementation was broadly to time and cost. Ridership was much lower than forecasts, on the basis of forecasts prepared by the concessionaire for the government (who took the risk but carried out no due diligence). The problem was of government sponsorship and poor forecasts not low ridership.

By contrast MRT2 is a poor project that may be criticised on several grounds for its appropriateness. It was developed poorly, and procured poorly. Its financing imposed no financial discipline on its sponsor. Its operations were not planned and may cause future problems.

Importance of Early Decisions on Procurement/ Financing

The case study includes two projects that follow the two procurement/ financing routes available for major infrastructure projects in the Philippines.

For the traditional public sector procurement/ financing route many questions have been raised, particularly when there is not an effective government sponsor, and particularly when ODA financing imposes no discipline on him. It is clearly dangerous for early decisions to be made without purposeful planning work that is reality tested for its implementability and financability.

This in turn raises questions about the project development procedures used by some bilateral donors.

For the private concession route in difficult environments like Manila, early guidance/ decisions are essential if a private developer is to embark on the long, costly and risky path

of project development. One may question the form this should take, but it must give comfort to the developer that government support will be forthcoming for a suitably identified project.

New York

Background

New York City, in common with other major cities, relies heavily on infrastructure. As in London and Paris, the existing water, sewage, road, rail and metro systems are old and in need of consistent re-investment. Both New York and Paris have, in the recent past, undertaken major programmes designed to upgrade their underground railways. In both cases, this programme followed decades of under-investment. London, haltingly, is now attempting to do the same thing.

New York had, in the 1960s and 1970s seen a sharp reduction in its population¹⁶. Many urban commentators predicted the long-term decline of cities. State and city governments had allowed the city's Subway (and much other infrastructure) to fall into a seriously dilapidated condition¹⁷. Indeed, the threatening environment of the New York Subway, particularly its graffiti-covered trains, became a powerful and damaging part of the city's image.

In 1979, the Metropolitan Transportation Authority (MTA), the State-level agency responsible for New York's Subway, commuter rail and bus systems started a process of renewal and improvement. In the intervening years, the Subway has been massively renewed and improved. Today, New York is starting a programme of system and station expansion to accommodate a growing population and the continuing regeneration of the city.

A brief history of the Subway and New York's infrastructure

The first segment of the New York Subway opened in 1904 and was then expanded by the Interborough Rapid Transit Company into a small network running through sections of Manhattan, Brooklyn and the Bronx¹⁸. The system was the first in the world to have four tracks, with express and local tracks in each direction. Three separate companies – two privately owned and the third belonging to the City – expanded the Subway throughout four of New York's five boroughs. In 1940, the City's Board of Transportation bought the two – now bankrupt – private companies. In 1953, the city's Subways and buses were brought together in the New York City Transit Authority. This process closely matches the events that had led to the creation of the London Passenger Transport Board in 1933 and its subsequent take-over by the British government in 1948.

¹⁶ US Bureau of the Census, *Census of Population*, 1960, 1970, 1980 and 1990

¹⁷ Jackson, Kenneth T (1995) *The Encyclopaedia of New York City*, New Haven and London: Yale University Press, p 1139

¹⁸ Jackson, Kenneth T (1995) *The Encyclopaedia of New York City*, New Haven and London: Yale University Press, p 1137

In 1968, the MTA took over the Transit Authority and has subsequently been responsible for the Subway. It is the MTA's policies, underpinned by particular funding mechanisms, that have led to the renewal of the subway system and the possibility of wider action on transport in the city.

The Subway is by no means the only element in New York's transport system. Nor is it the only infrastructure that had, during the post-1945 period, suffered under-investment. Successive State and City governments have attempted to regenerate New York and the assets that underpin its daily operation. The need for renewal has been re-emphasised by the decline of New York's traditional port and manufacturing functions through out the decades since 1945. The city's residents and employees now occupy many different properties and neighbourhoods from those that were in use in the recent past. As a result, demands on transport and other infrastructure have changed.

The paragraphs below examine the process of decision-making and financing that allowed the New York Subway to come back from the (near) dead. This section will also consider the ways in which fiscal and other instruments have been used more generally to fund improvements to transport and related assets.

The need to rebuild (and then extend) the Subway

Much has been written about the decline of the New York Subway between the 1940s and 1970. In the words of Robert Caro, author of a major study of planner Robert Moses: "When Robert Moses came to power in New York in 1934, the city's mass transportation system was probably the best in the world. When he left power in 1968, it was quite possibly the worst"¹⁹.

During the 1950s and 1960s, capital investment within New York was concentrated on road building. Public transport was allowed to decline as policy-makers in charge of infrastructure systems shifted government action towards a major pro-roads programme. The Subway, by contrast, enjoyed little investment. Trains were thirty to forty years old. By 1965, 20 per cent of New York's subway cars had been in use for more than half a century. Because there was no air-conditioning, they were appallingly hot in summer. In about 1956, a policy of 'deferred maintenance' was adopted, whereby brakes and signals were inspected less frequently, supplies of replacement assets such as signal bulbs were run down to zero, the replacement of electrical relays, which should have been replaced every five years, were expected to last 30 years.

Breakdowns, fires and accidents became the norm. Overcrowding was severe as trains had to be taken out of service or lines suspended. "The floors of New York's subways were filthy, and the grime was mixed with the scattered pages of newspapers, candy and gum

¹⁹ Robert A Caro (1975) *Robert Moses and the Fall of New York*, New York: Vintage Books, p933

wrappers and, for emphasis, the occasional blob or spittle or smear of vomit than no one had yet wiped up. Subway walls were covered with verbal filth.....”²⁰

In the 1970s and early 1980s “a graffiti-scarred subway car was the nationally recognised symbol of transportation in New York”²¹ At one time, there was graffiti on nearly all the 7,000 cars on the system²². The system was in steep decline. Ridership, which had exceeded 2,000 million in 1930, fell below 1,000 million by the end of the 1970s.

The creation of the MTA meant it became possible, for the first time, for policy-makers to think about the city’s public transport system as a whole. Moreover, the new institution was a State-level body, which potentially made it more politically powerful, albeit with the need to accommodate interests outside the city itself. From 1979 onwards, the MTA started the renewal and improvement of the New York Subway. In more recent years, new, detailed, plans have been developed to extend the Subway.

Renewal: plans and financing

The MTA’s first *Capital Program* was published in 1982. The MTA used innovative funding arrangements to deliver the finance needed to improve the Subway. So great were the sums needed that the MTA had to convince legislators and the public that the proposed spending on the public transport system was value-for-money. Moreover, there was great caution about public finance in New York in the early 1980s because of the fiscal crisis that had overtaken the city during the 1970s. The city had found itself borrowing money – by issuing bonds – to finance day-to-day expenditure²³. There was little appetite for unsecured loans to fund complex and expensive public transport investment.

As a result, the MTA put forward its *Capital Program* in 1982, which has subsequently been followed by a series of others. This programme explained what was needed to renew and improve the Subway and the costs of delivering each element of the improvements. Funding was to be provided by the issuance of bonds that would be tied to the delivery of new assets and the achievement of particular objectives. The quality of project planning was intended to be sufficiently rigorous that the bonds issued would hold the MTA to achieving particular objectives. Funding to repay the bond-holders would come from improved revenues resulting from better performance, though also from dedicated tax streams. The decision as to whether or not to go ahead with the programme, the bond issue and funding arrangements was subjected to a referendum.

²⁰ Robert A Caro (1975) *Robert Moses and the Fall of New York*, New York: Vintage Books, p933

²¹ Metropolitan Transportation Authority (1994) *1994 Progress Report to Investors*, New York: MTA, p5

²² Jackson, Kenneth T (1995) *The Encyclopaedia of New York City*, New Haven and London: Yale University Press, p 495

²³ Cannato, Vincent J (2001) *The Ungovernable City John Lindsay and his Struggle to Save New York*, New York: Basic Books, p101

The voters approved and, with additional State-wide referendums about subsequent capital programmes, have generally continued to do so ever since. Crucially, the decision to create the *Capital Program* and the funding of the resulting Subway improvements were made at a relatively local level.

As the state of the New York public transport system has improved, so – doubtless for related reasons – has the condition of the city itself. The population has increased by about one million from its low-point around 1980. As parts of the city have been revitalised, so demand has grown for new subway lines and/or extensions to existing ones. Demands have also grown for the redevelopment of major transit centres such as Grand Central Station and Penn Station. Following the destruction of the World Trade Center in 2001, there is a project to redevelop and improve Fulton Street station in Lower Manhattan. The approaches to funding three of these projects will now be considered.

It is proposed to extend Subway **Line 7**, from Times Square west to 10th Avenue and then down the West Side of Manhattan. Such an extension would connect a large area of under-developed land and ex-dockyards, the Jacob K Javits Convention Centre and the redeveloped Penn Station at 33rd Street to Times Square, Grand Central and Queens. New York City has developed this project with the intention of borrowing the resources to pay for the extension against the tax income that would flow from large-scale redevelopment of the Hudson Yards along the West Side. This form of funding closely resembles the Tax Increment Finance arrangements regularly used in American cities to allow infrastructure to be constructed so as to stimulate regeneration.

Another major project now under way is the much-discussed Second Avenue Subway which has been under consideration since at least 1929. This project will run a new four-track line down the East Side to Lower Manhattan. The first phase is now under way, though there will need to be three further phases – each subject to further decision-making – before the project is complete. Planning has been under way for a significant period. Unlike earlier subway lines, the Second Avenue project will involve deep tubes rather than the cut-and-cover method normally associated with the system.

Unlike the Line 7 extension, the **Second Avenue Subway** will be funded from a number of sources. Resources for the \$3.8 billion first phase consists of a combination of Federal Transit Administration grants and local funds provided by the New York State Transportation Bond Act and the MTA *Capital Program*. Specifically, the 2000-2004 *Capital Program* included \$1.05 billion, the 2005-2009 *Capital Program* another \$650 million, \$1.3 billion is expected from the federal government and approximately \$875 million will be needed in the 2010 *Capital Program*.

The new subway line will be a major addition to the New York system. The gestation period of the project, its scale and the difficulty of getting politicians to give it the go-ahead provide many parallels with London's Crossrail scheme. In each case, the scale and importance of

the line is such that two levels of government are involved in the decision to move ahead. Interestingly, the New York project involves a major federal/central government grant, coupled with State-level funding that required a Transportation Bond Act (ie borrowing) to facilitate construction of the first phase. The *Rebuild and Renew Transportation Bond Act* was passed in a referendum at the end of 2005. Crossrail has a relatively similar finance package, albeit one that involves Whitehall and London (as opposed to regional or state-level) government.

Thus, the Second Avenue line is a more conventional public infrastructure project of the kind found in many other cities. Nevertheless, the State's contribution was subject to the New York State "Rebuild and Renew Transportation Bond Act", approved by State voters in the November 8, 2005 election by a fair margin.

Finally, the **Penn Station** redevelopment is different from the three projects outlined above. This recently-completed plan will involve a massive (\$14 billion) redevelopment of the existing station, which is the most heavily-used in the United States . Not only will the station be rebuilt, but the surrounding area will be fully regenerated. Madison Square Garden will be moved. The vast Hotel Pennsylvania will be replaced. To pay for the re-creation of an imposing edifice for the railway hub, two new towers will be constructed, one of which will be taller than the Empire State Building. The whole area above and around the station will be changed.

This project will use a major redevelopment of a city district and the air rights above it to pay for a new station. The plan is being promoted by private developers and is the latest in a series of proposals to renew the area. As yet, it is far from a done deal. There are many institutions involved in any decision to go ahead, including the State of New York, the Mayor and City Council, the City Planning Commission, the Port Authority of New York and New Jersey, Amtrak, New Jersey Transit, the Long Island Rail Road and the Metropolitan Transportation Authority. Beyond governmental bodies, a number of good government institutions such as the regional Plan Association (a not-for-profit planning body), the New York Landmarks Conservancy and the Partnership for New York City (a business representative agency) which have influence. Finally, land owners will have to be convinced that the project delivers improvements for them. Significant amounts of work would need to be completed under ground.

New York City has a highly-articulate population to match its powerful developers. A project such as Penn Station will only be undertaken if and when many interests can be aligned. Although State and City governments are now working with the developers on the project, the process of bringing together the land, permissions and resources to deliver such a major intervention could take many months or years.

Politics and decision-making

New York State is the primary legislative body for the City of New York. The Mayor and City Council must operate within laws passed in Albany, the state capital. Although the Mayor has significant tax-raising powers, these are determined by State legislation and subject to oversight from the upper level. Major projects are unlikely to go ahead without the agreement of – and often funding provided by – the Governor.

The Mayor of New York is an immensely powerful figure, but with major infrastructure projects, can generally only proceed when resources have been made available by the State and/or federal government. Moreover, the Mayor does not control the New York City Subway or other public transport in the city. As outlined above, transit has been a State government responsibility (run by the Metropolitan Transportation Authority) since 1968.

The MTA, as a State-appointed body, can influence the policies and funding arrangements used for the Subway. Although there have been political issues as a result of the fact that New York City makes up only a minority of the State and its population, there has nevertheless been a capacity for a relatively local institution – the State government – to determine policy and funding. The Mayor of New York appoints a minority of the MTA board and is also influential. Federal government may (rarely) offer finance for projects, but has no other role in determining the policies or priorities of transport in New York.

Delivery and achievements

In the years since the MTA's first *Capital Program* in 1982, about £25 billion has been invested in replacing subway cars, train cars and buses. There have also been major programmes to repair and renew track, signals, power supplies and other pieces of infrastructure. From 1982 to 1991, 70 per cent of all capital expenditure on the Subway was devoted to returning components of the system to a state of good repair. In the 2005-09 *Capital Program*, only 27 per cent of funds will be used for this purpose²⁴.

The improvements made to the Subway have allowed policy-makers to consider a number of major new projects as the New York has regained its economic dynamism during the 1990s and 2000s. The successful programme of re-investment for the Subway has generated confidence in the possibility of delivering new lines such as the Line 7 extension and the Second Avenue line. The Bloomberg administration has evolved a policy of expansion beyond the traditional Midtown and Downtown areas of Manhattan. Line 7 and the Penn Station projects are explicitly designed to develop the city and its tax-base in the years ahead, as well as allowing New York to expand its economy and population.

²⁴ MTA Newsroom (2005) "MTA Board Approves New 5-Year Capital Program", <http://www.mta.info/mta/news/newsroom/capitalprogram.htm>

Conclusion

The recent history of New York's Subway and transport system more generally is one that demonstrates the (relative) flexibility of the city's planning and financing arrangements. As in London, there are powerful interests and political impediments to development. But there also appears to be a greater capacity for the State and city to evolve different funding packages and techniques that, to a degree, can allow a city with a growing economy to exploit its own success.

The recently-published *PlaNYC*, Mayor Bloomberg's long-term strategy for New York, includes proposals to use the city's growing tax base to provide the revenue stream to finance repayments on investments in the city's infrastructure. The ability to use referendum-backed bond issues, tax increment finance and developer contributions gives the city government some capacity to direct its own destiny.

New York Transit

New York is a story of considerable success achieved by local action, in a political system where the federal government does not intrude. This was made possible by strategising well and adopting flexible planning and financing arrangements, mandated by political referenda. Success beget success, creating confidence in the federal government who latterly committed to large grants for major extensions; and success impacted strongly on quality of life and the economy, catalysing growth and success. Most improvements have been possible without federal government involvement.

The key factors in this story appear to be:

Creation of the State MTA in 1979, post the financial crash in the 1970's, and the development of its Capital Program as part of its overall PT mandate. It applied the concept of bond financing in return for delivery and outcome targets. It appears that its efforts were effective.

The development of major new projects, after making strong progress upgrading the system, all in a relatively short time and at modest cost (less than the London PPP 30 years and at over £1.5 billion pa average).

Strategising in recent times to extend the geographical area and in so doing catalyse redevelopment, creating new revenue streams to help fund the extensions.

It is notoriously difficult to secure stakeholder approval for major projects in the US, and easy to stop them dead. The MTA with the Mayor have clearly succeeded by generating confidence from past success, planning sensitively and putting major effort into stakeholder engagement.

Paris and the Ile de France

Comparisons with London

London and Paris share obvious similarities. One is the capital city of the world's fourth largest economy, the other the capital of its fifth. In broad terms, their populations are comparable: the population of the extended urban sprawl of Paris is around 9 million, larger than London's but not appreciably so.

Historically, Paris and London share a great deal too. Both had become substantial settlements before the Romans thought them worthy enough to conquer. Both recovered after the fall of Rome to become thriving medieval capitals, whose traces can still be seen in both cities.

But just as the political history of France was revolutionary while Britain's was evolutionary, so the history of the capitals differed. Although the mid-nineteenth century saw both cities respond to population growth by creating the infrastructure necessary for the functioning of a large city, Paris was subject to much more radically planned change.

Napoleon had wanted to transform his capital, and succeeded in bringing about some lasting changes, notably the building of bridges across the Seine. But it was his nephew, Napoleon III, who transformed the face of Paris. Through his architect-planner, Baron Haussmann, he created the orderly grid that is the familiar city plan of Paris. He destroyed 20,000 houses in the centre of the city and through the planning that created the 40,000 which replaced them, he established the basic infrastructure, including that of transport, on which modern Paris is built.

The difference with London in how to handle growing population carried on into the 20th century. Whereas London dealt with its growing population (growing at its fastest between 1850 and 1925) by creating a green belt beyond the suburbs and developing new towns beyond it, Paris expanded into all the adjacent land around it. Furthermore, its own period of maximum population growth was in the 1950s, which led to the building in the 1960s of five new suburban towns attached to the centre. These differences had implications for the development of transport.

Both cities were required to develop rail networks in the mid-nineteenth century. Paris inaugurated its first, linking the suburbs to the centre, in 1837. Most were built between 1850 and 1870, with the state closely involved in the planning of routes. The first metro (underground) was built in 1898, rather later than in London, partly because of planning disagreements. The national government wanted an underground extension of regional railway lines, while the city wanted its own independent narrow gauge network.

The city's victory explains the obvious differences between the metro and the London Underground today. While the London Tube extends into the suburbs, the metro is confined

within the boundaries of the city centre of Paris, contained within the boulevard perepherique. Its stations are much closer together, making it seem, in the words of a disdainful London transport official, much more like an underground tramway than an underground railway.

But this difference reflects a much more fundamental contrast between London and Paris. And that is in the density of living in the centre of Paris. Two million people live within the inner city (an area of only 105 square kilometres), making for a greater density of living than in any other major European city. An underground system that does not extend beyond the inner city but which has many lines and stops within it, is just what such a dense population needs.

The development of the five suburban towns attached to Paris in the 1960s created the need, however, for the sort of transport system connecting the suburbs to the centre which in London had long been provided by the underground system in the north and the overland commuter rail services in the south. In Paris, this was achieved by the creation in the 1970s of the Reseau Express Regional (RER), which not only took over and modernised much of the existing railway lines, but also built new sections, tunnels and interchanges. The difference with London is that the RER provides a fast service, not only from suburbs to the centre, but across the centre. As yet, only Thameslink (awaiting its upgrade to Thameslink 2000 since the early 1990s) serves as a cross-London rail service.

The 1970s too saw an expansion of the metro. Twenty one separate extensions since then, along with an entire new line, mean that the system is now 25% larger than in 1970.

It is because of this development of Paris's urban transport system since 1970, both in the RER and the metro, that it now seems more modern than London's.

Governance issues

France is a unitary state in which government operates in a hierarchy of four levels. At the top is national government (known as the state). Below it a system of 26 elected regional governments (within mainland France), within each of which there is a representative of national government, the prefect. Within each region, there are departments, 100 in all, and within each of which there is also a national prefect. And within the departments there are communes, of which there are 38,000 throughout France.

France has long had a reputation as a highly centralised state, although in the last twenty years there has been significant devolution of power from the state to the regions.

In Paris, however, the state continues to wield decisive power. Paris's own structure of government is different from that of the rest of France. The city of Paris itself, the inner city, or ville, of two million people bounded by the boulevard perepherique, is at once a department in its own right and a single commune. Within the department of Paris there is

therefore no further breakdown into communes, although the city is divided into 20 arrondissements. These, however, exercise very little power.

Since 1975, the city of Paris has been allowed to elect its own mayor, a position held for a long time by Jacques Chirac.

The city of Paris is one department among eight within the regional government of the area, the Ile de France. The three departments immediately surrounding the city are known as the petite couronne, the four beyond them, the grande couronne.

The population of the Ile de France is around 11 million, much larger than London, but significantly less than the south-east of England (18 million). Around 2 million people within the Ile de France region could not be said to live within greater Paris, were such a term to exist, as it does in London. The Ile de France is governed by an elected regional council, in which members serve for six years and from among whom a president is elected.

Running transport

Despite the devolution of power to region and department, when it comes to transport in Paris, the state continues to exercise dominant power.

Public transport in the Ile de France (and therefore within the city of Paris) is organised by the Syndicat des Transports d'Ile de France (STIF). This public body was set up in 1959. Or, to be more precise, its predecessor body, the Syndicat des Transports Parisiens (STP) was set up then. It is only since 2000 that the transformation of the STP into STIF has accommodated the involvement of the elected regional council of the Ile de France. But the state retains a majority vote within STIF.

STIF's responsibilities include: coordinating the activities of the transport operators; determining routes, timetables, modes of transport, operating conditions, fares, and budgets; and managing the channelling of operating subsidies to operators. It also oversees the implementation of major investment policies.

The main operators with whom STIF works are themselves state owned. The most significant (in relation to Paris) is the Regie Autonome des Transports Parisiens (RATP), founded in 1948, which carries about 75% of passenger traffic. Its board consists of representatives of the state, of locally elected officials, RATP employees, passenger representatives, and a transport specialist. Its managing director is appointed by the French Prime Minister.

Its responsibilities include running the metro, buses within the central part of the city, and a part of the RER lines.

The second major operator with which STIF deals is the French nationalised railway, the Societe Nationale des Chemins de Fer Francais (SNCF), founded in 1938. This carries 17% of

passenger traffic in Paris and is run directly under the French Ministry of Transport. Its responsibilities within Paris include the rest of the RER system (i.e. that part not under the RATP), and the regional rail network.

STIF's further responsibilities involve the supervision of the 91 private bus companies which operate within the suburbs and which are linked by association within the Organisation Professionnelle des Transports d'Ile de France (OPTILE). These private bus companies cater for 8% of passenger traffic.

Funding arrangements

Before looking at the funding arrangements for public transport in Paris, it is worth making a few more general points about the financing of local government: points which contrast with the state of affairs in London.

Local government in the Paris region has far greater freedom over levels of local taxation than those in London and the South East. Furthermore, local authorities in the Paris region have potential access to around ten different local tax sources, compared with the one source available in the local region.

Most importantly, perhaps, the city of Paris is able to retain the yield from its local taxes without losing central government grant as a consequence. This is because the arrangements pertaining in France to equalise effective expenditure between local authorities are not as thoroughgoing as in Britain, with the result that areas with very large tax bases and/or lower spending needs do not have their grants taken from them *pro rata*. Thus rich places, such as the centre of Paris, can enjoy relatively high levels of expenditure and relatively low tax rates. (Conversely, of course, poorer areas, such as some Paris suburbs suffer from constrained expenditure or higher tax rates.)

STIF's own income comes from two sources: government (at the three levels of state, region and department), and a hypothecated transport tax, the *Versement Transport* (VT). The VT is a hypothecated payroll tax imposed on all employers with nine or more employees. The rate varies between 1% and 2.5%, and averages at 2.2% of the payroll bill. Table 6 shows the contributions to STIF's income from these sources in 2000.

Table 6. Sources of funds for STIF in 2000 (million Euros)

State	610	(18%)
Ile de France	213	(6%)
Departments	352	(11%)

<i>Versement Transport</i>	2134	(64%)
Total	3309	(100%)

STIF's income is used largely to subsidise the operating losses of the transport operators, although it also contributes to the modernisation of existing assets. It also contributes indirectly to new investment, insofar as that investment is partly financed by the operators which STIF subsidises (see below).

New arrangements to govern STIF's subsidising of operating losses came into effect in 2000. Up to that point, operators would draw up a budget, and any subsequent operating shortfalls would then attract automatic subsidy. Since 2000, STIF has made contractual agreements with the operators which include customer service indicators, and STIF uses its financial position to run an incentive and penalty regime to ensure the indicators are achieved.

The private bus companies operating through OPTILE in the suburbs receive subsidy not only from STIF but also directly from local authorities in their area.

All the operators also generate income from passenger charges. In 2000, the income from 'usagers' amounted to 2,256 million euros. On the metro, this fare income constituted 60% of operating costs.

Investment

Regarding investment, arrangements should be considered in three types: extensions to the system, new rolling stock and modernisation of existing assets.

Extensions to the system are agreed within a development plan put together by the state and the region through STIF. The two together provide the bulk of the finance, with the region supplying the lion's share. The rest is financed by the relevant operator, either RATP or SNCF.

In 2001, RATP extensions were financed 50% by the region, 30% by the state and 20% by RATP. SNCF extensions were financed 60% by the region, 30% by the state and 10% by SNCF.

New rolling stock is financed wholly by the operators, RATP and SNCF. The private bus companies within OPTILE have their new buses financed directly by the region.

The metro has its own Renewal Plan, involving the modernisation of nearly 200 stations. Five of its lines were extended between 2005 and 2007, adding 10 km of line to the system.

STIF makes direct contributions to the modernisation and upkeep of existing assets. Track infrastructure on SNCF lines is the independent responsibility of the Réseau Ferre de France (RFF), funded directly by SNCF.

Throughout the 1990s, the annual total investment in Paris transport varied between a low of 1,140 million euros (2000) and 1,790 million euros (1993). This variability can be explained simply in terms of a burst of expenditure on network extensions in the earlier period (with a corresponding increase in spending on new rolling stock). But the spending on modernisation remained relatively stable throughout the period, and was always at a level which equalled or exceeded the spending on extensions.

It should perhaps be pointed out that this continuing high level of upkeep and modernisation of existing assets, together with the ability of the operators to contribute to the financing of new extensions (despite their operating losses) are made possible by the constant flow of money made to them through STIF from the hypothecated tax, the VT. It could be argued that this single feature of the system contributes most to its high standards.

Recent trends

In 1996 a law was passed concerning emissions and the rational use of energy resources. The consequence of this law is that towns and cities with more than 100,000 inhabitants have had to draw up urban transport plans (plans de déplacement urbains, or PDUs). The Ile de France has its own PDU covering Paris.

Among its targets is the reduction of car traffic within the whole region by 3% in five years, and by 5% within the city of Paris.

As a result of this plan, public transport use, which was flat or declining in the early 1990s, is now starting to rise. 81% of Parisians travel to work via public transport, while 19% use private transport. (36% use the metro, 39% use rail and 6% use the bus.)

To encourage this greater use of public transport, the RER has undergone a major programme of renewal in many of its suburban stations, and the creation of new interchange stations in the centre.

There is a programme (the Mobilien Program) in place to increase the number of bus lanes within the city centre.

There has also been a revival of the tram system, which grew up between 1900 and 1914, but which fell into disuse between the wars. Two new tram systems, functioning as part of the orbital transport network, have been put in place.

The result has been a growing and appreciated system of public transport in Paris.

Comparisons with the London system

Comparisons with the London system should be treated with some care since the two systems are not the same. The London Underground system could be regarded as a single system which operates as a compromise between the two systems in Paris: the metro, which functions only in the centre, and the RER, which links the suburbs and the centre, and crosses the city. It therefore lacks some of the benefits of parts of the Paris system, but equally avoids their disadvantages.

For example, within the centre of the city the Paris metro is almost certainly superior to the Underground, because the system is more extensive, the stations are closer to hand and the trains are more frequent. But conversely, in the suburbs, the London system may be superior, in that Tube frequency is higher than in the RER.

The modernisation of the Paris system since 1970 may lead people to expect a more modern feeling than in the London system. In the case of rail services that is true. The average age of rolling stock on RER services is just under 14 years, whereas on commuter trains in London it is just over 18 years. But on the metro/underground, the figures give the opposite picture: an average age of 26 years in Paris, and 19.3 years in London, reflecting the fact of the upgrading of some rolling stock on the Tube in recent years.

The punctuality of trains (this refers to RER/London commuter services) is 93% of trains arriving within five minutes of the scheduled time in Paris, and 75% in London in 2001.

Within the Paris system as a whole, the average distance between stations is 650 metres, compared with 1,300 metres in London. Within the central areas of the system, those figures reduce to 500 metres for Paris and 800 metres in London. That makes the metro more attractive as the preferred mode of transport than the Tube is in London. Furthermore, waiting times add to the appeal of the metro. Within central Paris, waiting times for the metro range between 1'35" and 4'00". In central London they range between 2'30" and 8'00".

The disadvantage, however, of this ready access to the metro is that its speed is slower than the Tube: an average of 24 km/h in Paris, compared with 33 km/h in London. This difference, however, is exaggerated by the higher speeds the Tube is able to reach between more spaced out stations at the ends of lines. Within the city centre, the speed difference is less.

One striking difference between the two cities lies in the speed with which people can get to work. A study published in 1997 showed that the average journey time to work for a Parisian is 83.9% of the time needed by a London worker. The study calculated how many workers living within a radius of 50 kilometres from the centre of the two cities could reach work within certain periods of time. It showed that within 45 minutes, 0.9 million people could get to work in London, while the figure in Paris was 1.2 million. Within 60 minutes, the figure in London was 1.6 million and in Paris 2.6 million. And within 75 minutes, the London figure was 2.3 million and in Paris 3.7 million.

The average speed of public transport as a whole (in km/h) is 28 in London and 32 in Paris.

Bus speeds averaged 13km/h in Paris and 12km/h in London. The maximum peak bus service frequency per hour was 17 in Paris and 30 in London. However, this inferior figure for Paris reflects the lower dependency on buses in the city, than in London. And that is because of the better metro service within the city centre.

The relative attractiveness of the metro explains the lower dependency on buses in central Paris than in London.

It should be added, however, that greater efficiency in the public transport system may account for only some of this difference. Probably a more significant cause is the greater density of living within the centre of Paris.

Perhaps the final word should be given to the passengers. Satisfaction indices show high and generally rising levels as shown in Table 7.

Table 7. Passenger satisfaction indices (%)

	1998	2002
Paris Metro	85.9	88.6
Paris RER	82.7	77.4
Paris bus in centre	88.9	88.2
London Underground		75
London buses		76
London Rail		70

Success factors:

Paris has upgraded its system since the 1970's. It appears to have a successful procurement method. What is this?

The VT provides a robust source of funding. The political system does not redistribute as in UK, and wealthy cities keep substantial funding.

The 1996 Law led to a new form of Urban Transport Plan, that appears to have been influential in improving PT modal share and facilitating major project development. In other words the Plan appears to result in implementation. What do we know about why this approach is effective?

The recent publicity about the velib cycle system and other sustainable policies by the Mayor suggests there may be interesting parallels with London. How important is the Mayor in determining what happens?

Dublin

Background

Dublin, Ireland's capital city, has seen phenomenal growth over the past twenty years.

The population of Greater Dublin²⁵ was 1.35 million in 1991, 1.46 million in 1999, and is expected to reach 1.75 million by 2016. This projected 30 per cent increase in population is accompanied by a 95 per cent increase in job numbers and a 260 per cent growth in GDP. This growth is concentrated in the outlying areas of Greater Dublin, and is therefore leading to an intensified impact on commuting patterns. By 2016, morning peak journeys are expected to amount to nearly 500,000 per hour, an increase of 280 per cent over 25 years²⁶.

The Dublin Transport Initiative

In the mid-1980s, the Dublin Transport Initiative (DTI) began to prepare an integrated and long-term transport strategy for the capital. Its report recommended new light and heavy rail schemes, implementation of 'Quality Bus Corridors' (QBCs), better orbital roads around Dublin and the establishment of a new body to co-ordinate strategy and delivery.

During the late 1990s, however, Dublin's growth rapidly outstripped the rates anticipated by the DTI (for example, the Greater Dublin population projected for 2001 was reached in 1997, and the number of people in employment projected for 2011 was exceeded in 1996²⁷). The impact of the resultant increase in congestion levels was accentuated by slippage in some of the key projects set out in the DTI (including the QBCs, Luas light rail system and Port Tunnel), and significant cost over-runs in the case of QBCs²⁸.

The Dublin Transportation Office and a Platform for Change

The Dublin Transportation Office (DTO), recommended by the DTI, was established in 1995 to develop, and co-ordinate the implementation of, an integrated transport strategy for Greater Dublin by agencies including national government, Irish Rail and the Rail Procurement Agency, bus companies and local authorities. It initially published a short-term action plan covering 1998-2000, with a focus on reducing the number of car trips in the light of Dublin's rapid growth.

²⁵ 'Greater Dublin' refers to the City of Dublin and surrounding counties (Dun Laoghaire-Rathdown, Fingal, Kildare, Meath, South Dublin)

²⁶ *A Platform for Change: an integrated transportation study for the Greater Dublin area 2000-16*, Dublin Transportation Office, 2001

²⁷ *A Platform for Change: an integrated transportation study for the Greater Dublin area 2000-16*, Dublin Transportation Office, 2001

²⁸ *Annual Report of the Auditor General 2000*, The Stationery Office, Dublin, 2000

The DTO published its full strategy – *A Platform for Change* – in 2001²⁹. Recognising the faster than anticipated rates of growth and the delayed implementation of DTI projects, *Platform for Change* set transport plans in the context of an urban vision for Dublin’s development as a sustainable, European, city with a dynamic economy and a good quality of life for citizens.

The strategy proposed:

- extensions to the on-street light rail (Luas) already under development in 2001,
- an improved DART suburban rail service with 8-car running;
- a high capacity segregated light rail service (Metro) with a radial line running from central Dublin to the airport and an orbital line running from the airport to Tallaght;
- further enhancements to the bus network including QBCs;
- road improvements including the upgrading and completion of the orbital motorway (M50, port tunnel and eastern by-pass), and up-grades to arterial routes outside the M50; and
- enhanced traffic management, and ancillary measures like improved cycle networks.

The total capital cost of the programme to 2016 was estimated at 21.8 billion euros, and operating costs were expected to require an annual subvention of 140 million euros (all 2001 prices). The expected impact of the strategy was assessed in terms of economic benefits, environmental and quality of life impacts, and modal split: the strategy was expected to result in a 63 per cent public transport share for morning peak trips within Greater Dublin, compared to 35 per cent on a ‘do-nothing’ basis.

Institutional changes

The publication of *Platform for Change* co-incided with institutional reform. The Railway Procurement Agency (RPA) was established in 2001 to take on the delivery of new railway projects from the state-owned corporation Córas Iompair Éireann (CIE), and specifically to deliver the LUAS and Metro schemes, and at the same time the Government began a consultation on establishing a new Dublin Transport Authority (DTA), to replace the DTO’s advisory approach with a more directive structure.

A report commissioned in 2005 made further recommendations on the proposed structure and remit of the DTA, recommending a strong body with powers of direction over agencies operating within Greater Dublin, a remit to fund and procure new infrastructure, to regulate fares and to inform the development of land-use planning policy. In doing so, the new

²⁹ *A Platform for Change – Final Report – An Integrated Transport Strategy for the Greater Dublin Area 2000-2016*, Dublin Transport Office, 2001

Agency would absorb the RPA as well as the DTO³⁰. Legislation to establish the DTA has yet to be introduced, as the details of the new agency's accountability, and assumptions of existing agencies' remits, continue to be discussed within Government.

Transport 21

In 2005, the Government launched *Transport 21*, a national capital investment programme running from 2006-2015³¹. This included many of the *Platform for Change* projects, including the Metro schemes and new Luas lines, as well as the completion of the M50 ring road and the delivery of the a new tunnelled railway system linking Dublin's railways stations and Docklands. The total value of the investment programme, which includes projects outside Dublin, is 34 billion euros, of which 8 billion euros are to be raised through public private partnerships. Detailed breakdowns of these figures, beyond an annual profile, do not appear to have been published.

Luas

The Luas (the name derives from the Irish word for 'speed') is a partially on-street light rail service. It was designed to provide an intermediate mode of transport, offering capacity greater than buses, but less than Dublin's existing DART/suburban rail service, or the fully-segregated Metro service (currently under construction between central Dublin and the Airport). *Platform for Change* set a capital budget of 2.1 billion euros for the Luas between 2001 and 2016, of which 1.3 billion euros were for the period up to 2006.

The DTI proposed a three-line package lines, with a total cost of around 300 million euros (1994 prices). During the 1990s, the plans were subject to significant changes (including the decision not to link the east-west and north-south lines (owing to concerns about the impact on road and bridge space in central Dublin)). The Irish Government gave the go ahead for the initial lines in 2000, and construction contracts were let in 2001, at which time the newly-formed RPA took the project over from CIE.

The first two lines were the 14-kilometre Red Line running north-east from Tallaght to Connolly Station and connecting with Heuston Railway Station, and the 9-kilometre Green Line running from St Stephens Green to Sandyford. These two lines currently terminate in the city centre, on opposite banks of the River Liffey, with a 15-minute walk between the closest stations. The two lines opened in 2004 (around a year behind schedule), and cost a total of more than 750 million euros: while this is much more than the original estimate, the changes to the scheme design that took place following 1994 makes direct comparison difficult.

³⁰ *Report to the Minister for Transport*, Dublin Transport Authority Establishment Team, March 2006

³¹ www.transport21.ie

The RPA chose not to bundle construction works with operation during procurement, as they did not believe the market was mature enough to offer competition for such contracts. Separate contracts were let for utilities diversions, for construction, for supply of rolling stock and for maintenance. Construction contracts were awarded on a traditional fixed price basis for the Red Line, and on a Design and Build basis for the Green Line (for which plans were less well-advanced)³².

The trams themselves were supplied by Alstom, and Veolia Transport (formerly Connex Transport Ireland) operates services and maintains both lines and vehicles (the contracts for vehicle maintenance was transferred to Veolia from Alstom to ensure unified accountability). The Veolia contract, which is on a rolling five-year basis, includes targets for quality of service and ridership levels, though fares are remitted to the RPA, who take on the revenue risk.

This turned out to be a good decision. Passenger numbers have risen higher and faster than expected (though precise targets were not set), and 28 million trips took place in 2007. While the RPA expected state subsidies to be required for the first few years' operation, the Luas was breaking even in operational terms by the end of 2005, and recorded a surplus of 5.6 million euros in 2006 (though this should be set against 25 million euros of depreciation)³³.

The Transport 21 programme proposes construction of several new Luas schemes, including a new line linking Lucan in the west to central Dublin, a spur to Citywest from the Red Line, an extension of the Red Line to Docklands, and extension of the existing line Green Line to both north and south. These extensions will enable interchange both between Luas lines, and between them and new Metro lines.

While the Red and Green Lines were funded through Irish national and EU funding some of the new lines are being part-funded by developers: in the case of the southern extension of the Green Line, using Section 49 payments (which levy a fixed tariff on developers on the basis of site area). In the case of the shorter Citywest extension, the developers are providing some land and infrastructure, and paying 39 million euros towards construction costs.

The Government's most recent progress report on Transport 21 showed slippage on several key projects including the Citywest extension, the city centre link between the existing lines, and the Docklands extension, the latter two of which were originally scheduled to be completed in 2008. Despite these delays, and concerns about the impact of several

³² Telephone interview with Michael Sheedy, Light Rail Project Director, 14 March 2008

³³ Rail Procurement Agency, Annual Reports, 2005 and 2006

concurrent major infrastructure projects on Dublin City Centre³⁴, the Government maintained that the full programme would still be completed by 2015³⁵.

Dublin Port Tunnel

The Dublin Port Tunnel was proposed in *Platform for Change* as part of an integrated series of road improvements, intended to improve orbital movement and connections to the rest of Ireland. The 4.5-kilometre Tunnel connects Dublin Port to the N50 orbital route to the north of the city (near Dublin Airport), and was designed to remove heavy freight movements (and the attendant environmental degradation and road traffic accidents) from Dublin's congested roads. A further extension to the south has been proposed, which would complete Dublin's eastern by pass, but press reports indicate that plans are on hold owing to lack of funds and the controversial nature of the scheme³⁶.

The project was largely funded by the Irish taxpayer (EU funding was limited to some project development cost), through the National Roads Authority (NRA). The client for construction was Dublin City Council (which had more experience in use of compulsory purchase orders, which were also felt to be more appropriately made by a democratic body). After completion the project was handed back to NRA (the only agency with the power to operate toll roads).

As the tunnel scheme was developed during the 1990s, the scope of works changed and project budget increased: the tunnel was changed from a single-bore to a dual-bore tunnel on safety grounds, and community concerns led to the tunnel's northern exit being a mile north of that originally planned.

Design and build contracts were let to a consortium comprising Nishimatsu, Mowlem, and Irishenco (NMI) in December 2000. Other procurement options (including Design Build Finance and Operate contracts) were considered, but felt to be inappropriate, as the market for these was not developed and there were concerns that any concessionaire would be motivated by revenue maximisation rather than traffic management priorities.

The tender price was 448 million euros (against an anticipated cost of 353 million euros). This increase (largely triggered by particularly heavy contract inflation in late 2000) gave the project promoter pause for thought, but they decided to proceed with the project in the light of the costs of congestion and delays on Dublin's roads (estimated to be more than 50 million euros per year).

Together with 304 million euros for client-side costs, this cost gave an overall project envelope of 752 million euros, and out-turn costs have been within this envelope, though

³⁴ *Gridlock fears force transport re-think*, Pat Leahy, Sunday Business Post, 9 March 2008

³⁵ *Transport 21 – second annual progress report to the Government – 2007*, Transport 21 Monitoring Group, 2008.

³⁶ *Dublin's Eastern By-pass Scheme at Dead End*, Richard Oakley, Sunday Times, 2 March 2008.

this may change as outstanding claims between NMI and Dublin City Council are settled. The Tunnel's opening in December 2006 was more than a year behind schedule. The contractor attributed this delay to problems with tunnel boring machine operations and restricted working hours.

Transit is toll-free for lorries and buses, but cars and smaller vans pay a toll of between 3 and 12 euros (depending on the time of travel). This reflects the intended function of the tunnel as a facility for freight, rather than commuter, movements.

The Tunnel is managed by Transroute Tunnels Operations Limited on behalf of the NRA. Transroute operate under an NEC contract that gives a fixed fee each month for operations and maintenance (with a price list for extraordinary items). Transroute collect tolls, but pass revenues directly to NRA (revenue maximisation is not an objective).

The Tunnel was initially expected to carry around 6,300 buses and lorries per day³⁷. In February 2007, Dublin City Council introduced a daytime ban on the largest (five-axle) heavy goods vehicles within central Dublin, with special permits (and route restrictions) for deliveries and vehicles unable to use the Port Tunnel. In late summer 2007, Dublin City Council reports indicate that the Tunnel was used by a total of around 7,000 HGVs per day (up from around 4,500 in 2006), of which 5,200 had five or more axles. Vehicle counts at roads around the Port indicate a reduction of up to 94 per cent in lorry movements³⁸. Around 5,000 tolled vehicles also use the tunnel each day, which is creating revenues in excess of expectations. Hauliers, however, complain that, without the completion of the eastern by-pass, they are forced to travel northwards and then round the city on the congested M50, even if their destination is to the south³⁹.

At the same time as the tunnel opened, long-term plans for relocating Dublin's port to Balbriggan (32km north of the city) emerged, and appeared to be endorsed by Taoiseach Bertie Ahern⁴⁰. While these would destroy the rationale for the Tunnel, plans are highly speculative, and unlikely to be implemented in the near future.

Factors contributing to success

The project environment, and its turbulence

While the political context for the development and delivery of Dublin's has been relatively stable (Bertie Ahern has led the Government since 1997), there have been changes of minister and in the political formation of the ruling coalition. In particular, the addition of the Green Party to the coalition in 2007 may be expected to sharpen a focus on public transport, as opposed to road projects like the completion of the eastern by-pass.

³⁷ *National Development Plan press notice*, 20 December 2006

³⁸ *Heavy Goods Vehicle Management Strategy: 6 month review*, Dublin City Council, November 2007

³⁹ *City centre to benefit further from lorry ban*, Nicola Cooke, Sunday Business Post, 17 February 2008.

⁴⁰ *Ahern backs PDs' plans in moving port to north Dublin*, Paul Melia, Independent, 21 October 2006.

Institutionally, however, the past ten years have been marked by uncertainty and change, with the establishment of new bodies (DTO and RPA) being swiftly followed by proposals for their replacement.

The most turbulent element in Dublin's transport planning environment has been the continuing growth in the city's population and economy, which has surpassed the expectations of planners. While transport projects have necessarily lagged behind this, an integrated plan has been put into place, and the announcement of the *Transport 21* programme helped to resolve tensions between the need to support existing growth in Dublin, and the National Spatial Strategy's emphasis on building up and improving connections between other growth points (Galway, Limerick/Shannon, Cork and Waterford)⁴¹.

Moving Dublin's port functions out of the Docklands would clearly make a nonsense of its rationale, and in fact would deliver the outcome that the tolling mechanism was put in place to avoid – enhanced ease of long-distance commuting into central Dublin by private car. That said, as set out above, any plans for port relocation are at best speculative at this time.

Strong political control and sponsorship

The objectives for Dublin's transport strategy have explicitly been defined in terms of a vision for the city's future. Procurement and operations has generally been managed through traditional contracting approaches (the main exceptions have been toll roads outside the capital), retaining strong political control.

Dublin dominates Ireland's current and future growth – Greater Dublin accounted for 39 per cent of the Republic's population in 2002, and this proportion is forecast to rise to 41 per cent by 2021⁴² - so a strong focus on the capital's transport system is to be expected.

Without an integrated metropolitan government for Greater Dublin, central government has done more than give guidance. It has played a crucial role in *leading* the development and delivery of Dublin's transport strategy. The proposed establishment of a Dublin Transport Authority reflects an ambition to move to a stronger metropolitan planning and delivery mechanism, but the delays in introducing legislation reflect concerns about the accountability of such an organisation (without a London-style metropolitan government), as well as about the absorption of existing agencies (like the RPA).

Good procurement/ funding structure in place early

The procurement approach for the Luas scheme was designed to maximise competition, without significant transfer of construction or operating risk. While there were some delays

⁴¹ *National Spatial Strategy*, Department of the Environment and Local Government, 2002.

⁴² *Regional Population Projections*, Central Statistical Office, May 2005

in securing local authority consents for detailed design, the projects proceeded reasonably smoothly once the Government had given its go-ahead.

The design and build approach for the Dublin Port Tunnel was used to transfer risk relating to ground conditions as far as possible, though the allocation of this risk is one of the issues currently being debated between client and contractor. Operations are contracted out on a simple 'fixed fee' basis, as the intention of the tolling mechanism is to manage demand, not to create a revenue stream.

Strong strategic planning and management of risk

While there have been institutional changes, the overall plan and vision underpinning Dublin's transport strategy has remained consistent. In terms of risk management, the public sector has retained control of higher risk projects, though delays and over-runs have been commonplace. There have also been criticisms of 'over-optimistic' assumptions underpinning planning of schemes like the Metro, and the risks that these place on taxpayers⁴³.

Good infrastructure/transport planning.

Both the Luas and the Port Tunnel were the subject of extensive project development and review, for around five years in each case, which led to significant changes to the original project proposals. There is also an explicit emphasis – both in *Platform* and in the proposals for the DTA – on making stronger links between transport and land use planning. These projects have, however, been criticised for the lack of *ex post* cost-benefit analyses⁴⁴, as have many elements of the *Transport 21* programme.

Strong operator contract

The operating contract for the Luas is written to create incentives for performance, while being for a relatively short period of time (thereby allowing termination or renewal). The RPA describe their relationship with Veolia as a 'partnership'. {details of DPT operations to follow}

Success?

Outcome objectives (in terms of modal split and trips) have been set for the *Platform* strategy as whole, though these have not been attributed to individual projects, and the criticisms of the lack of an established 'evaluation culture' has already been noted. The Luas's performance is reported, but there is not publicly available information on targets set in advance, so it is hard to evaluate the system's success in context.

⁴³ *Evaluating Transport 21 – some economic aspects*, Sean D Barrett, Quarterly Economic Commentary, Winter 2006.

⁴⁴ Barrett, op cit.

The Dublin Port Tunnel is within striking distance of its forecast throughput of vehicles, though the operation of the tunnel is dogged by frequent breakdowns of the operating system (a matter currently being addressed through discussion with the contractors), and consequent closures. Its impact in diverting HGVs from central Dublin has also been seen as a success. An overall impact study will be completed following the final settlement of outstanding claims with the contractor.

Financial success

The final capital cost of the Luas Red and Green Lines (750 million euros) is undoubtedly in excess of the 300 million euros estimate, even allowing for runaway construction inflation and land value inflation during the 1990s. That said, the proposal for this first phase of the project had changed so much by 2000 that comparisons are difficult to make. In terms of operations, as mentioned above, the operating deficit became a surplus in advance of RPA's forecasts.

Costs for the Dublin Port Tunnel rose considerably as the scope expanded during project development, and the tender price was considerably higher again (which has been attributed to a one-off hike in Irish construction inflation in late 2000), though cost control has been relatively tight since then.

Indeed, it is hard to make informed judgements about the success and failure of individual projects on account of the extremely limited public information on the *Transport 21* programme. The main published source of information appears to be the Transport 21 website⁴⁵: this gives an annualised expenditure profile (without any breakdown by project or even project heading and target completion dates for key projects. Monthly reports on progress are published, but these do not make any reference to a programme to establish whether work is proceeding ahead-of-schedule, behind-schedule or on-schedule.

Policy success

Both the Luas and the Port Tunnel are widely regarded as a success in Dublin. The elegant design of the Luas rolling stock, and their successful integration within Dublin's streetscape, have made them popular with passengers, and a symbol of modern Dublin for visitors. The Port Tunnel has also been well-received, and regarded as having a tangible impact on congestion on Dublin's roads, though the haulage industry remains concerned about the city centre lorry ban and teething problems with the operating system continue to be a matter of dispute with the contractors.

In addition, those involved with the Port Tunnel identify a wider strategic significance: the Tunnel's relatively successful delivery (i.e., without loss of political support or runaway

⁴⁵ See www.transport21.ie

delays or cost overruns) has demonstrated that tunnelled projects can work in Ireland's capital, thereby setting the stage for the Metro construction currently underway.

Manchester Phase 1

This was the world's first MRT concession, opening in 1997. No-one – central government, sponsoring authorities, potential concessionaires or banks – had experience of this new form of contract. It was fortunate that the Manchester authorities proved quick learners and competent.

But it started in the 1980's in the days before private concessioning, with the project to be funded under Section 56 of the 1968 Transport Act. Then, after the project was identified government abolished the sponsor authority, deregulated the buses; then after the appraisal case was re-approved, government decided that procurement should be through the private financing route, and grant approval was given subject to a DBOM concession being the delivery mechanism with a 15-year term.

Under the contract the concessionaire took all cost and revenue risks. Specific provisions were made for reimbursement for concessionary fares, minimum service level and capacity to be provided, and arrangements in the event of network extensions.

Procurement: The sponsor Authority executed a 2-stage competitive procurement process with competence and a concessionaire was selected.

Financing: £5mn private financing of the total £150mn cost was raised – in other words 97% was public funding.

Summary

This first attempt at introducing private sector financing to avoid the perceived weaknesses of public sector project development, proved effective. The project has been a great success, probably mainly due to the skilled and purposeful sponsor authority and its ability to identify an excellent project.

The sponsors tackled the challenge posed by the late decision to impose a DBOM contract form with considerable skill. A good concessionaire was selected albeit mistakes were made (it was very early days). The Authority ensured that a focus on operations was maintained. This was one of the few MRT projects that outturned ridership and revenues ahead of expectations, although operating costs exceeded forecasts.

The Section 56/ DBOM procurement approach was imposed late, strongly against the views of the sponsor. Yet this is a story of considerable achievement despite considerable turbulence in the project development history

Manchester Phase 2

Following the Phase 1 success, Phase 2 was surprisingly not successful. Its lack of success appears to have resulted from a combination of the sponsor's imperative to extend its

network and central government's guidance that required developer funding as a condition of its funding approval. The resulting project was identified to secure this, but failed to serve its essential transport function effectively.

Phase 2 was combined with a rebid Phase 1 to provide for a single operator. The procurement/ financing model was assumed to be as for Phase 1, and this is what happened – a 17 year DBOM concession. There was strong competition, and the shareholders implemented the Phase 2 project. In the event the operational phase was not satisfactory, and the PTE bought back the concession in the expectation that Phase 3 was about to go ahead. The financing resulted in 67% of the £160mn cost being raised privately.

Summary

This case study highlights the demanding nature of MRT project development. After a very successful Phase 1, everyone expected a successful Phase 2, but this was not to be. The problems of this project can be traced back to government guidance and the need to rebid the original concession faced with network extension. This was not a matter of timing, but of the content of that guidance.

Greater Manchester's Transport Innovation Fund Bid

In the Transport White Paper of July 2004 the government confirmed pre-existing spending plans for transport but announced a new and additional budget called the Transport Innovation Fund (TIF).

Local authorities were invited to bid for monies from the TIF. The White Paper and subsequent guidance made it clear that a portion was earmarked for proposals intended to achieve significant local road traffic reductions through some form of road user charging. It was suggested that about £200 million a year for seven years might be available for this kind of proposal, though this was a provisional indication that could be increased. It subsequently emerged in the policy discussion document of October 2007 that the government had "cooled" on its commitment to introduce national road user charging pending experience gained with local TIF-funded schemes.

Several local authorities successfully bid for relatively small amounts of money to fund the research leading to a possible full-scale TIF bid. By the end of 2007 the only authority to have actually worked up and submitted a bid was Manchester City Council under the leadership of its Chief Executive, Sir Howard Bernstein.

This is an all-embracing and coherent piece of work that seems typical of the identity and the civic pride that the Manchester community has always taken in its city and region. The key to this approach has been the Association of Greater Manchester Authorities (AGMA). This is a non-statutory body comprising elected members from the ten Districts in the Metropolitan Area. These Districts are the Highway Authorities that have the powers under current legislation to introduce road pricing but it is recognised that it would be almost impractical for any one of them to do this on its own—any scheme would need to cover a large proportion of the AGMA area. The Passenger Transport Authority does span a relevant area but, under current legislation, it has few powers.

The Manchester TIF bid faces up squarely to the problem of the current inadequacy of the governance arrangements for its purpose. The AGMA proposes to transform itself into The Manchester Executive Board, with District leaders as members, below which will sit seven Strategic Commissions, one of which will be a Transport Commission. The Executive Board will sit alongside a Business Leadership Council which will have a majority private sector membership. AGMA has agreed that "Regional governance for the 10 authorities in Greater Manchester should work together in order to achieve the promotion or improvement of the economic well being of the Manchester City Region, its people and businesses, through measures and joint actions which member authorities may determine from time to time." At the same time the "sovereign bodies are to remain to 10 local authorities and the new subregional arrangements will only be based on those policy areas and functions which they agree unless individual authorities freely and independently decide they wish to be carried

out at a sub regional level.” This is to be achieved under the basis of existing legislation, though the Transport Bill in Parliament in early 2008 may assist.

Recognising from the beginning that any TIF bid with proposals for road pricing would be controversial and that it would be hard to secure a common agreement amongst the ten districts, AGMA agreed four fundamental tests that any proposal would have to pass before any bid were submitted and it set up an “AGMA Test Review Group”, an independent group of elected members, business representatives, consultants and academics to advise on whether the proposal passed the four tests.

The objectives for a scheme were clearly articulated.

“AGMA has a clear vision for Greater Manchester to be one of Europe’s premier city regions at the heart of a thriving North West and at the forefront of the knowledge economy with outstanding commercial, cultural and creative activities. ... One of the most significant potential constraints... is the growing level of traffic congestion. ... Our strategy enshrined in the TIF bid targets four economic success criteria:

The principal economic outcome ... is to provide existing and new businesses across the City Region with a labour market that broadens and deepens over time and that keeps pace with Greater Manchester’s growth potential

Secondly, our strategy targets net improvements in overall business transport costs...

Thirdly, the strategy seeks and enhanced business environment, targeting public realm and other quality of life dimensions that define the attractiveness of Greater Manchester as a business location.

Furthermore, our strategy is designed to deliver sustained reductions in the costs of growth, by ensuring that there is adequate transport network capacity to cater for growth, and that users are appropriately incentivised to minimise the costs they impose on others in taking their decision on when and how to travel.”

This is to be achieved with due regard for social inclusion, safety and environmental outcomes.

It is significant that in general these explicitly stated objectives are framed in terms of what is to be achieved for the economy, rather than in terms of what is to be achieved for traffic or congestion: in terms of high level “ends” rather than intermediate level “means”.

The bid consists of a holistic pricing and investment plan for transport in the area of a kind that has been absent in the past. It is supported by modelling to document the claim that the proposal would meet the objectives. This provides a basis for estimating costs and

revenues—and hence the gross funding required, a total of about £3 billion of which over £1 billion would be funded by the TIF grant

The proposal makes the clear distinction between funding and financing. The capital not met by direct grant from the TIF would be borrowed from the Public Works Loan Board and be financed using the net revenues from congestion charging and the public transport schemes within the package over a period of 30 years.

Recognising that implementing the TIF proposal would mean a substantially increased role for the Greater Manchester Passenger Transport Executive—both in terms of the quantity of procurement and increased administration—the Authority is “rapidly driving cultural change and the transformation of its skill base to equip it to face the challenges ahead”. In turn “the approach set out in this bid depends critically on our ability to effectively influence and co-ordinate, if not control the bus, rail and Highways Agency networks to ensure that the decisions affecting these are complementary to our overall approach ... a detailed Partnership Prospectus has been developed ... and agreed by the Greater Manchester Bus Operators Association. This explicitly recognises a new leading role for GMPTE in facilitating the development of an integrated network and the need for a new performance-driven framework, which is output driven and articulated at a corridor level”.

AGMA is acutely aware of the difficulties they face in obtaining and keeping the support of the public, local business and the ten Districts. They face the inevitable difficulty of conveying the benefits of an overall package when most of their audience only perceive a “congestion charge” when there was none before.

Factors contributing to success

This project differs from most of those we have considered because it is not complete, but an early-stage bid for funds. This does not prevent us from applying our criteria.

The project environment, and its turbulence

The road pricing component of this proposal is highly controversial. The danger of failing to secure sufficient political support was recognised from the beginning and both governance reforms and public consultations were designed to help with this. There are already indications that some of the Districts might withdraw support. The business community remains to be convinced. Strong opposition from either source could be a show stopper, as, of course, would be failure to negotiate a TIF with the DfT on terms acceptable to Manchester

Strong political control/ sponsorship

Very clear objectives and leadership are evident in the process so far. Strong and appropriate reforms of governance have been proposed, but a major problem may prove to be that the governance arrangements under current legislation are incapable of exercising

sufficient political control or supporting the considerable political leadership necessary to deliver such a controversial project to a sceptical local public.

Strong strategic guidance from central government

Central government has provided clear strategic guidance through the TIF scheme and associated guidance documents. Government is being asked to provide about one third of a very substantial scheme cost. There is an explicit negotiation continuing between the sponsors and government about what the government might agree to. Agreement will be reached only if central government is satisfied. If it is reached then predictability should be good.

Good procurement and funding structure in place early

Funding will be clear but the details of financing arrangements and procurement are yet to be determined—though the general outlines are clear enough. Provision is being made to ensure there is sufficient resource to manage financing and procurement.

Strong strategic planning and management of risk

Strategic planning is strong. It is too early to tell whether risk will be successfully managed.

Good infrastructure and transport planning – providing a sound basis for the commitment decision.

This is unquestioned. The process of assembling the TIF bid has stimulated the writing of a holistic transport plan for the Greater Manchester area in a way that has been unthinkable under the arrangements that have been in place for decades.

Strong operator contract.

This remains to be seen, but there is a clear recognition of the need for this.

Success?

It is too early to say. There would be winners and losers, and the Greater Manchester area would benefit from a substantial grant from the national taxpayer. But the bid makes a strong case to central government and to local community that the whole reason for the bid is to facilitate economic development and well-being in the area.

Central government is plainly taking a strong interest in ensuring that cost and revenue estimates are realistic and that risks would be handled prudently.

Perhaps the most severe difficulty facing the promoters of the Manchester TIF bid scheme is that of convincing the general public and local businesses that the road pricing components of the package would be to their advantage. At the same time the scheme would deliver important item—such as extensions to the tram system—that would be popular. The

negotiators with the DfT are clear that that package stands or falls as a whole: otherwise it would not be possible to carry public opinion.

The competitive process at the heart of TIF appears to be having been potentially hugely beneficial – without this Manchester would not have strategised as it clearly has done. This was Michael Heseltine’s conclusion many years ago – cities do not plan strategically when central government is dominant; instead their departments focus on their equivalent central government departments.

Midland Metro

Midland Metro was developed in the 1980's. The context was an abortive attempt to develop a line that was good in patronage terms, but this collapsed in the face of abolition of the sponsor authority and frontagers' opposition. The new authority (PTA) decided that above all the first line must be implementable and an 'easy' undeveloped alignment was adopted that had inherently low ridership.

The authority developed the project, and for central government funding under the then Section 56 guidelines. A DBOM concession was assumed after the Manchester precedent, in the event for a 23-year period. Government gave staged approval, with final approval only after bids had been received confirming forecast expectations. But economic recession held back government funding approval for two years. Unusually procurement went ahead in advance of final funding approval.

Procurement: The DBOM concession contract dictated by central government was onerous in placing almost all risk on the concessionaire; whilst the concessionaires were new to this form of procurement. Bidding was advertised in the EU journal. It is not known how strong the competition was: one major contractor pulled out on the last day and was replaced by another immediately on identical terms – who was the preferred bidder.

Financing: private sector financing amounted to £11mn of the £145mn cost, or 8% of the total.

Summary

Government gave initial funding approval, on the basis of which procurement proceeded, and a preferred bidder was selected in 1993. But delays in funding resulted in 'final funding' approval in 1995, after which the concession contract was finally signed.

This was a poor project, despite the plethora of central government guidance that has left a very difficult legacy: little can be done to increase ridership, and it is problematic to justify extensions to it. Meanwhile the concessionaire is to all intents bankrupt.

This project highlights the influence of central government guidance, and its limitations as practiced in this case study.

Nottingham NET

This is the most recent of the MRT case studies, and applies government's latest approach, that of a PFI concession contract, both reducing government's requirement to fund a lump sum up-front, and providing strong incentives to the concessionaire to deliver performance targets that were the basis for annual payments through the concession term.

This is an excellent, innovative project, developed purposefully by joint sponsors Nottingham City and County. It suffered setbacks during development. First government switched its funding approach mid-project from Section 56 up-front payments and a DBOM concession that had been the basis of bidding, to PFI. The result was that one of the three bidders withdrew, weakening competition. Then it imposed a Project Development Group (as for Croydon); and finally there was a considerable delay (of more than two years) before funding was finally approved. Under this concession form 100% of financing was raised by the private sector, for repayment by government over 30 years.

Summary

The procurement route and availability of funding lengthened project development considerably. It led to less competition than would be desirable. But the result is a successful project on all counts, and a sponsor keen to extend the system. The Nottingham approach is an example of good practice. The procurement and financing approach would desirably have been defined earlier; but the change in approach was understandable as it resulted in a desirable change of focus to operational success.

London: the Jubilee Line Extension

The history of the delivery of the Jubilee Line Extension (JLE) in London is a fine example of muddle and its consequences. It was never clear whether the JLE project was a private project promoted by a property developer (Olympia and York, O&Y), one promoted by the local transport planning executive (London Regional Transport, LRT), or one sponsored by national government. The JLE, which was eventually built, did not meet the stated objectives of either of the two public bodies. The two major new lines to which they aspired were never built. There was a stage (or stages) when each of the three seemed to be taking the lead in making the crucial decisions.

Background and objectives

LRT was created in 1984 as a Nationalised Industry, answerable to ministers in national government and with executive responsibilities for transport provision in the London area. London local government was abolished in 1986 (and effectively from 1984 in respect of transport). Transport strategy and funding decisions fell to national government.

Central London Rail Study

After deregulation of financial services in 1986 London enjoyed a boom with the consequence that crowding on the central London rail system became a major issue. In March 1988 the Secretary of State for Transport set up the Central London Rail Study (CLRS), a joint exercise between the Department of Transport, LRT and British Rail, another nationalised industry responsible for the London commuter railway. The terms of reference specified "particular reference to passenger congestion in the area bounded by the major rail termini and their approaches".

The solution offered by the CLRS on publication in January 1989 was upgrading of the existing system and two major new Underground rail lines, East-West Crossrail and a Hackney-Chelsea Line. Government clearly felt that this met their objectives because they quickly accepted the recommendations and publicly announced a "go-ahead" for the two new rail schemes. The CLRS briefly mentions proposals for extension of the Jubilee Line to Docklands but notes that it is incidental to the main problem and refers the proposal on to a separate East London Rail Study.

It is reasonable to conclude that the first priority for both the Department of Transport and LRT was the delivery of the CLRS schemes. Government as a whole was developing a broader policy of privatisation and deregulation of many of the activities that had been taken into government over the last half century. In particular, it was keen to promote private funding of public infrastructure projects.

Previous plans to serve Docklands

For an understanding of how O&Y's initial proposals were treated it is important to note that there were long-standing plans which were already part-executed.

The British Transport Commission London Plan Working Party Report, 1949 made proposals for a new Underground line to serve south east London. The London Transport *Annual Report, 1975* (p8) displays a map of the "Fleet Line & River Line Schemes". Fleet Line Stage 1 was nearing completion and ran from Baker Street to Charring Cross—and was renamed the Jubilee Line in 1977. Stage 2 was to have carried on, north of the Thames to Fenchurch Street. Then the River Line would have carried on through Wapping, Surrey Docks, Milwall (now known as Canary Wharf), North Greenwich, Custom House and on to Thamesmead. It would have achieved four crossings of the Thames and would have been much the same as the Jubilee Line Extension as we know it today except that it would not have served Waterloo, London Bridge or Stratford.

The Annual Report (p18) states that "London Transport and the Greater London Council continue to press for Government financial support for Stage 2 of the Fleet Line.... The Department of the Environment stated that the justification... would probably rest substantially on their potential role in encouraging and supporting the redevelopment of Docklands. They added that when decisions on the whole Docklands plan were taken in 1976, decisions would also be needed on the River Line and on Fleet Line Stage 2, including their priorities by comparison with the rest of the proposed transport infrastructure for the area".

Thus, both London Transport and central government were developing firm plans for redeveloping Docklands and they had a firm proposal for a Tube line to serve it. Indeed, the nearly—completed works for Stage 1 of the Fleet Line took the running tunnels on from Charring Cross due east as far as Aldwych in anticipation. As usual the obstacle was a lack of sufficient conviction on the part of central government for them to commit the necessary national Exchequer funds.

Regeneration through the private sector

The regeneration of London Docklands, the creation of a new city from nothing that is Canary Wharf, and the transport infrastructure to serve them were progeny of a remarkable *laissez-faire* policy of Mrs Thatcher's Conservative government. In 1982 The area was designated as an Enterprise Zone which offered considerable special tax advantages to developers and exempted them from many of the normal planning regulations. The notion was that private sector enterprise would regenerate where the public sector had failed.

Meanwhile a relaxation of financial regulation precipitated "big bang" in London's financial sector. The Corporation of London was slow to relax its own restrictive planning regulations and in 1985 three American banks in search of space and under the leadership of G. Wear

Travelstead proposed a ten million square feet development at Canary Wharf. But he was unable to finance the project and it was bought by Olympia and York (O&Y). This was a private Canadian company owned and run by the Reichmann brothers. A master building agreement between the London Docklands Development Corporation and O&Y for 12.2 million square feet was signed in July 1987.

A problem for a developer and their solution

O&Y quickly realised that they had a potentially fatal problem. They had committed to a massive office development on a site surrounded on three sides by water. The development would fail unless the thousands of proposed occupants could reach it. Road access was never going to meet the need and the new Docklands Light Railway would not have adequate capacity. A new heavy, underground railway was essential for survival of the development and it was urgently required.

O&Y's solution was simple: they would build their own shuttle service between Waterloo and Canary Wharf. Initially the Reichmans offered "to pay most, and potentially all, costs of the new line."⁴⁶ They obtained "firm quotes" from 5 supplier consortia for a capital cost of about £460 million (one eighth of the cost of the eventual scheme). They would deposit their own Bill in Parliament for the requisite powers, start construction in July 1989 and start operation in 1992.

The public sector is drawn back in

This schedule might have been feasible in North America but it was utterly unrealistic under the UK system. The need to obtain an Act in the national Parliament—an anomaly pertaining only to rail infrastructure—gave every national and local interest a voice, which, after all, is the intended purpose of this parliamentary process.

O&Y accepted the advice that the only practical way of depositing a Bill in November 1988 would be for the "proper" transport authority, LRT to do it.

The O&Y proposal would fulfil part, but only a part of the long-standing wish of both government and London Transport for a new underground line joining central London with south east London. Further, O&Y quickly revised its offer to one that would require £144m of Government grant and £81m equity investment by LRT and BR in new joint-venture company. Any cost overruns would be made up by private and public sectors in the ratio of their original contributions. The idea that government might take an equity share in a joint venture with a private sector partner was far ahead of its time for a British government and it was not heard of again in connection with the JLE.

⁴⁶ Michael Schabas, "Paying for Crossrail: the Business Case", *Economic Affairs* 25 (1), 12-19 (2005).

Request for grant sucks in government

The request for grant brought full engagement of Government. A 1988 Bill was infeasible. In January 1989 the Government had announced an East London Rail Study, carried out jointly with London Regional Transport which reported in summary in July. This included (para. 25–27):

“[The new line] could be physically independent of the LUL network, allowing in a new operator bringing new operational and management practices... An independent railway could also allow innovation in design standards and the introduction of larger and more comfortable trains which might be considered attractive.

There would, however, be major disbenefits from an independent railway: ...capital costs would be increased... it would not be possible to use existing depot facilities... there would be passenger disbenefits as a result of the introduction of an additional interchange... it would considerably complicate the institutional issues which need to be resolved prior to lodging a Bill.

Our overall judgement is therefore that the line should be a running extension of the Jubilee Line.”

An outline appraisal in September 1989 shows passenger and road user benefits of through running (rather than ending at Waterloo) considerably higher than the incremental costs.

In view of the history it is, perhaps, not surprising that the agencies responsible for planning transport in London were not eager to miss what they probably saw as an opportunity to fund and build the long-planned extension to the existing system with the benefit of a major contribution from the private sector.

The ELRS now estimated the cost at £0.9-1.1 billion with a funding gap £600m. LRT would promote the Bill which would be deposited in November 1989, hoping for Royal Assent in 1992. Earliest opening would be the end of 1995.

This was an altogether more unwieldy proposition than O&Y's original one. It seems likely that the original plan was hopelessly optimistic in terms of cost and timetable simply because they underestimated the implication of the need under the British system to obtain parliamentary powers. By intent this process allows everybody with an interest to attempt to influence the project: to insist that extra stations be included to serve local communities; to insist it be “integrated” with existing public infrastructure; to insist that fares charged be a part of the existing public transport fares regime; to insist on consistency of technical and safety standards. And once Exchequer grant was involved national government would become concerned about value for money and other issues of national policy and politics. In July 1989, Junior Minister Michael Portillo had said “we are keen to encourage private sector

investment not only in terms of funding for infrastructure projects, but for the innovation, enterprise and management efficiency they can bring"⁴⁷.

Value for money was a problem. The Central London Rail Study, published in 1989, had recommended the two other, major new lines: Hackney-Chelsea and Crossrail. The government had quickly given the "go-ahead" for both, although shortages of funding and worries about the capacity to execute them both together precipitated a debate with London Regional Transport about which should be done first. Both were thought to cost of the order of £1. and the appraisals showed both having a modest excess of benefit above cost: as it later transpired, too modest to convince HM Treasury that either of them was justified. It was only in 2007 that funding for Crossrail was committed. But they were better than the JLE for which benefits were assessed at only 93% of the costs.

The Prime Minister imposes a solution

At that point a fierce negotiation started. Government would only give approval if the private sector filled the funding gap of over £600m and even then it would be minded to put Crossrail ahead of the JLE.

But O&Y brought the considerable weight of their lobbying to bear. They took offices in Great George Street, round the corner from Parliament Square. In these they displayed a magnificent scale model of the whole of east London. They distributed a sticker showing the stops on the proposed JLE in a format and scale that exactly matched the line diagram inside the existing Jubilee Line cars so that one could simply extend the line diagram (if not the line itself!) by affixing the sticker. Most importantly, the principals of O&Y lobbied the Prime Minister in person, making the argument that if the JLE was not delivered quickly then the jewel in the crown of her policy of developing Docklands through the forces of free enterprise would become a conspicuous commercial failure.

A deal was done and announced to Parliament by Secretary of State Cecil Parkinson on 16 November 1989. Government would direct LRT to deposit a Bill for the JLE ahead of both Crossrail and Hackney-Chelsea lines (neither of which has yet been built). He said that "The Jubilee extension will cost about £1 billion in today's prices to which developers will over time be making a cash contribution of over £400m. I warmly welcome this contribution, which is of an unprecedented scale. This is a further example of public and private sector cooperation to the mutual benefit of both. The net cost to Government is approximately [£430 million 1990-1993 which will be] made available from the Public Expenditure Reserve..."

Sourcing the funding from the Reserve indicates that a rapid and unanticipated commitment had been made. A casual reader might be misled into thinking that O&Y were contributing 40% of the cost and this is what the press reported. However the word "cash" is significant:

⁴⁷ Speech at the LSE, 11 July 1989

the actual offer was £40 million in March 1992, £60 million in March 1993 and then a total of twenty four annual payments starting on the first anniversary of the opening of the extension. After discounting and allowance for an assumed inflation rate the real value of the contribution was of the order of £160 million. Severe penalties were also payable should LUL fail to meet promised dates. (Since these dates were indeed missed it is not known how much O&Y did actually pay in the event.) This is an interesting reversal of PFI and PPP deals which evolved in the 1990s in which a financial performance regime is used by a public sector client to incentivise good performance from a private sector provider!

Procurement starts

A Bill was duly deposited and a procurement started but LRT were uneasy. This was partly because the JLE was being promoted at the expense of schemes that were much more important to its core plans. As an internal document said “JLE case rests largely on this contribution to the development of Docklands. It does not have a very high priority as a transport investment. Nevertheless it is acceptable to LRT on condition that additional funding either from developer contributions and/or grant, is provided to meet the capital cost and progressing this scheme did not impair the progress of more urgent public transport projects.”

Failure and rescue of the private sponsor

But another worry was that the funding depended on securing the promised, substantial contributions from an unknown quantity. O&Y was a family-owned, unquoted firm with its major assets—mainly property—located in north America. Little was known about the financial state of the company and it was not willing to disclose it. Sure enough, property markets ran into difficulty and when the first payment was due O&Y failed, going into administration in April 1992.

In Autumn 1993 O&Y was rescued from administration and the Government gave a final “go-ahead” for the JLE with expected completion Autumn 1998. But the intervening delay had important implications. The government insisted that the contractors keep to the terms they had offered two years previously even though these had expired and there had been inflation. Trading conditions were poor, they wanted the work and they agreed. Allegedly, government exerted other pressures to reduce the specifications and to encourage the bid costs to be as low as possible presumably to make the demands on the public finances look as affordable as possible at a difficult time for the public finances. So much for O&Y’s original concept of an unusually high quality service for their development and for Mr Portillo’s “innovation, enterprise and management efficiency” the private sector might bring. Further, “The initial budget prepared in 1990 for Project approval was for construction only. It did not contain adequate contingency for change and allowance for the

risk to the introduction of bespoke high technology. It also did not include the foreseeable cost for commissioning the Project and turning it into an operating Railway”⁴⁸.

Delivery: not to time or budget

There is much mythology concerning the cost overruns and delays to the delivery of the Jubilee Line extension. Fortunately the Department of Environment, Transport and the Regions appointed the Ove Arup Partnership Ltd. as “Secretary of State’s Agent” to provide “impartial and expert advice on the construction phase of the Project and make objective reviews of the Jubilee Line Extension Project meeting its cost and programme targets.” Its *End-of-Commission Report* (July 2000) gives an independent and authoritative view of the real story:

“When the go-ahead for construction was given, [the] targets were for completion in 53 months and within an approved budget of £2.1 bn. When the works were completed in December 1999, it had taken 74 months (40 percent more), and the final forecast cost had risen to £3.5 bn. (67 percent more).” This included some items not included in the “go-ahead” budget.

“Early problems faced included, in particular the New Austrian Tunnelling Method collapse on the Heathrow Express in October 1994. This caused similar tunnelling work on the JLE to be halted [for a period]... Nonetheless... in November 1995... management up to that time had been good... and the estimate of final Project cost was still within budget.”

Reasons for the cost overrun

It was during the fitting out process from early 1996 that the difficulties began to multiply. Then “In 1997, Government had approved the building of the Millennium Dome on the Greenwich Peninsula ... This placed a “book end” of time to complete the Project” because it had to be operational for December 31st 1999. Fitting out and delivering a working railway that would satisfy the safety authorities against this absolute deadline exposed weaknesses in LUL’s initial budgeting, time planning and project management. This is when the bulk of the cost over-run occurred.

The Secretary of State’s Agent was not able to identify any one factor that caused overrun of both time and budget, but important factors included: the decision to proceed on the basis of incomplete design packages; the decision to include untried and unproven high-technology bespoke control systems (a legacy of the original O&Y concept); that the initial budget was for construction only and did not include the cost of commissioning and it did not contain an adequate level of contingency for claims; the Heathrow Express tunnel collapse; the

⁴⁸ ARUP, “End-of-Commission Report”, July 2000

decision on the Dome; new legislation in 1994 tightening and widening the process for safety approvals.

Success?

The JLE is a sorry tale. The private sector did not achieve its urgent wish for a high capacity, high quality link in a timely manner to serve its development at Canary Wharf. London Transport would much rather have had one or both of the new lines proposed in the Central London Rail Study to deal with crowding in central London – it is still waiting. The government ended up with a scheme that was a much greater call on the taxpayer and it only managed to collect a small financial contribution from the private sector – which is now benefiting enormously from the much delayed project.

The transport planning body had one set of objectives; central government, the paymaster, had another; the private sector had yet another and succeeded in channelling a great deal of public money to serve its special interests—but too late to save it from financial failure.

The private sector was unrealistic in their view of the extent to which they could expedite normal public process, and also in their ability to undercut public sector construction costs and their faith in untried new railway technologies. Government was willing to understate likely costs in order to get the project through the public spending process and London Regional Transport seemed willing to proceed on the basis of incomplete designs and budgets.

The JLE as we know it today is, of course, a valuable asset to London. As many commentators have pointed out it has facilitated large increases in land values and its stations are highly regarded as architecture. However, it has never met its specification in terms of train frequency and its reliability has left much to be desired – factor that continues to exercise Tubelines, the company now liable under the Public Private Partnership of 2003.

Conclusion

Government and LRT objectives in this matter were originally clear and set out in the CLRS. Throughout the economic appraisals of the various proposals were thorough and to a good standard—some published and some not. The problem was that their message was ignored by ministers.

Had government kept to its delegation of planning responsibilities to LRT and had it not been for the intrusion caused by the requirement to obtain powers in parliament then O&Y might well have built its own facility at its own expense whilst LRT successfully promoted its preferred scheme, Crossrail. London would have been better served today.

A planning system such as we have in Britain in respect of railways creates a diffusion of responsibilities. Whatever a competent public or private authority may decide, the

parliamentary process can open the argument to anybody who has a legitimate interest. Manoeuvres can be used to distort schemes for the benefit of sectional interests.

Throughout this case there is a noticeable tendency to be *knowingly* optimistic about likely costs—probably, in most cases, in order to improve the chances of getting the project started.

It is ironic that, whilst the higher policy objective of securing financial contributions from private interests to public projects led to a major distortion of transport decision making in London, in the event the financial contribution actually secured was a small part of the enormous cost of a project that did not relate to government's primary transport objective.

It is doubly ironic that the time and cost overruns on the JLE, an almost inevitable consequence of the lack of clarity about objectives, accountability and government interference, later came to be cited by the Labour government as the exemplar to demonstrate that engineering work on the London Underground could not be entrusted to a public body. The seeds of the Underground Public Private Partnership were sown.

The London Underground Public Private Partnership (PPP) ⁴⁹

The problem to be solved

When the new Labour government took office in 1997 there were four problems to be solved in relation to the London Underground:

For decades the average rate of investment in asset replacement had been inadequate. The track, structures, signalling and vehicles were each becoming unreliable and the overall reliability of the service was generally accepted as unacceptable. Between £1,000 million and £2,000 million was needed to make good past failures adequately to maintain and renew the physical assets

Such government funding as had been provided—inadequate on the average—was spectacularly erratic from year to year. This made procurement of the work inefficient and wasteful.

A Monopolies and Mergers Commission Report of 1991 had confirmed the generally held view that LU was inefficient in both its operations and its capital works. In other words less public money could produce the same outputs under better management (or a management less constrained by industrial relations problems).

The demands on the London rail system in general and the Underground in particular were growing and more capacity was needed.

It was taken for granted that sorting out the Underground would be delegated to John Prescott. But when he proposed an immediate, straightforward capital grant the Treasury flatly refused. Apart from the limitations due to the policy of sticking to the previous administration's spending plans for two years, the Treasury was determined to secure the same kind of managerial efficiency improvements they perceived as having been achieved under the Conservative administrations by the privatisation of the railways and the other utilities.

Genesis of the LU PPP

Soon after Labour's election Whitehall as a whole was at a loss to know what to do. Geoffrey Robinson, who had been the Treasury's Paymaster General at the time revealed in a Commons debate the Treasury's lead in what happened next:

We could skin a cat in so many ways, and when it came to public-private partnerships—which were quite innovative—there were many different options available. No. 10 had its view; the advisers to No. 10 had their view; the then

⁴⁹ Much of this text is abstracted from S. Glaister, "Transport" in A. Seldon (ed) "Blair's Britain 1997-2007", Cambridge (2007) which gives detailed references to sources.

Department of Transport, Local Government and the Regions had its view; I had a view; the Treasury had a view; and the Deputy Prime Minister had very strong views. We had to find a way that we could all see would carry this forward. ... I convened a group of four business men with experience of both the public and private sectors to make a recommendation to us. Essentially, that recommendation is what we have today ...⁵⁰

The *Evening Standard* revealed that Mr Robinson had said later that the businessmen were chosen because they had experience of major privatisations: 'they were, therefore, the very best people to advise the Government on what would work.'⁵¹ They were chaired by Sir Malcolm Bates who had been the author of two reports to the Treasury about how best to develop the Private Finance Initiative. He was appointed Chairman of London Regional Transport (LRT) in April 1998 in place of Peter Ford who had articulated LRT's view that the PPP proposal was close to the bottom of a list of fifteen alternative options.

Thus a major policy was developed not by the prime minister, not by the Secretary of State for Transport, not by the civil service, not by management consultants but by an *ad hoc* group of businessmen selected by a Treasury minister and against the considered policy of the board responsible for running the Underground.

John Prescott, Deputy Prime Minister and Secretary of State for Transport announced the PPP for the Underground to the Commons in March 1998, after refinement by management consultants, PricewaterhouseCoopers and the law firm, Freshfields. Thirty-year contracts based on three roughly equal-sized groups of lines were to be awarded to the private sector, after a competition, for the repair, maintenance and enhancement of the fixed infrastructure, signalling and trains. Two-thirds of the employees would remain in direct, public sector employment to drive the trains and staff the stations.

One embellishment authored by Mr Prescott was an assurance that staff transferring to the private sector would have their terms and conditions protected. This was an important departure from previous privatisations and private finance deals and, arguably, it compromised one of the main sources of cost reduction that the Treasury was so keen to replicate for the Underground.

Lack of scrutiny

The Treasury refused to be scrutinised but employees of the consultants did appear before the Select Committee to assist transport officials and ministers in explain the policy, and, on occasion they were put up to explain and justify it at briefings for the press.

⁵⁰ House of Commons debate, 27 June 2002.

⁵¹ *Evening Standard*, 28 June 2003.

This illustrates not only that the government was using private consultants to expound and defend government policy, but also that in 1999 it was accepted on all sides that this was, in fact, a Treasury policy. The 1998 Comprehensive Spending Review mentions ‘the new Public-Private Partnership for London Underground (which is expected to remove the need for public subsidy from 2000/01)...’⁵² Thus it was anticipated that the Underground’s under-investment problem would be solved and all need for subsidy for the Underground would be removed. Further the associated borrowing would be kept off the public balance sheet.

The Government has never revealed the analysis underlying this, even in the face of repeated demands from members of the Standing Committee of the Commons dealing with the legislation. On analysis of a 6-page sketch issued by PricewaterhouseCoopers it immediately looked too good to be true.⁵³

Confusion of financing with funding

Yet, ministers and the prime minister took the view that PFI and PPP arrangements enabled delivery of projects which could be delivered in no other way – often seeming to imply that the private sector investor would somehow ‘step in’ to replace the basic funding that the tax payer could not, or would not, provide. Thus, Geoffrey Robinson declared: ‘[PFI] is enabling Government to support a significant number of additional projects beyond what can be provided through the public purse.’⁵⁴ And the prime minister explicitly put the view that the policy was somehow providing public services that the taxpayer could not afford: ‘The reason that we are engaged in this public-private investment partnership is so that the infrastructure work, which is urgently needed in the tube, can be done.’⁵⁵ and ‘there is no way Government through the general taxpayer can do it all.’⁵⁶

Confusion over devolution

As the details of the implementation of the PPP were worked up a philosophical difference between Blair and Brown began to emerge. The legislation to devolve powers to a directly elected London Mayor and London Assembly were being developed in parallel. Blair’s 1997 *Manifesto* had indicated that this was to be genuine and substantive devolution. Yet the Treasury was concerned at the prospect that the new London Mayor and Authority would become profligate. Initially this was independent of the personality of the Mayor. The

⁵² HM Treasury, *Modern Public Services for Britain, Investing in Reform* (Comprehensive Spending Review), Cm 4011, (London: TSO, 1998), paragraph 8.4.

⁵³ See Stephen Glaister, Rosemary Scanlon and Tony Travers, *A Fourth Way for the Underground?*, (London: Greater London Group, June 1998); and Stephen Glaister, Rosemary Scanlon and Tony Travers, *Getting Partnerships Going: public private partnerships in transport* (London: Institute for Public Policy Research, April 2000).

⁵⁴ Speech to a PFI conference, 27 April 1998.

⁵⁵ House of Commons debate, 6 February 2002

⁵⁶ Labour Party Conference, 2002.

government's plan was to have the Underground PPP completed before April 2000, at which point the new Mayor would assume his or her powers.

Completion of the deals

In the event the negotiations for the Underground dragged on until the end of 2002 at which point, in accordance with the Greater London Act 2000, they and their liabilities were summarily imposed upon the Greater London Authority. Whether by design or by accident, the effect of the PPP was to fetter the Mayor's powers over the Underground. Thus the Blair-inspired move towards devolution of London Government conflicted with the Brown-inspired PPP solution for the London Underground. The conflict between this and the fact that the successful candidate for Mayor had been elected on a ticket of explicit opposition to the PPP and with an alternative solution, formed the substance of an unsuccessful Judicial Review brought by the Mayor in the summer of 2002.

The policy was hugely unpopular both within the Commons and outside it. Ken Livingstone appointed Bob Kiley from New York as Transport Commissioner (chief executive of TfL). They had an alternative, tried and tested, proposal for raising capital through the issuance of bonds secured against future revenues and other sources of income; and for procuring service from the private sector through a larger number of much shorter term contracts, which would be easier to manage and to enforce. This is related in the New York case study, above.

Several alternatives were available. The Labour government had rescued the floundering (supposedly privately funded) project to build a fast rail link between London and the Channel Tunnel by guaranteeing over £5 billion of borrowing on the markets—and subsequently the rights under this guarantee were, in effect, exercised. The bond issue method of raising local authority capital became Treasury policy in 2004.

On 5 February 2002 the Transport Select Committee published a strongly argued report that recommended that the government not proceed with the PPP.⁵⁷ The arguments were reiterated in a Commons debate led by the formidable Chair of the Committee, Mrs Dunwoody on 27 June 2002.

In Parliament Transport Secretary Byers seemed to say that he had an open mind pending final reports from consultants (rather than from officials) about the value for money of the deals. Unsurprisingly, when these arrived they were not definitive, but, in any event, the government eventually closed the deals in Spring 2003. Final negotiations were painfully slow and the terms of the contracts changed significantly with the effect of reducing the exposures to risk for the private sector, as noted by the critical report from the Committee of

⁵⁷ House of Commons Committee on Transport, Local Government and the Regions, *London Underground*, HC387 (London: TSO, 2002)

Public Accounts (PAC) in March 2005.⁵⁸ It turned out later to be crucial that the equity investment was relatively small—a total of £350 million in the case of Metronet—and the greater part of the financing was through bank debt. The government’s absolute commitment to completing the policy greatly weakened its bargaining position against the preferred (and, by then effectively the only) bidders. The lenders were able to negotiate a government guarantee that in the event that the PPP providers were to fail they would be repaid 95% of their investment come what may.

On publication of a further Transport Select Committee Report in March 2005⁵⁹, the Chairman, Gwyneth Dunwoody made the crucial point: ‘I welcome the fact that the government is at last putting real money into the Tube. But I cannot see why it needed a PPP to do it.’ The PAC found that the PPP had caused years of avoidable delay and the procurement alone had cost the taxpayer getting on for £900 million, about half in fees to advisors and consultants, and half in higher borrowing costs than an alternative promoted by Livingstone, amongst others. Transport for London published progress reports⁶⁰ showing a mixed experience, including an emerging concern about the progressive falling behind on the investment programme in track replacement and, especially, station refurbishments and that the contractors might fail to deliver the investment programme as rapidly as they had promised and that the predictions of the consequences of lack of management control are beginning to be realised.

Failue of two out of three PPP contracts

As Blair approached the end of his final term he public were beginning to learn of the parlous state of the finances of Metronet (responsible for two thirds of the Underground PPP). The independent PPP Arbiter gave a “mixed” first annual review in November 2006⁶¹ and when asked for a preliminary view about a disputed £750 million overspend, he replied that there was evidence that Metronet had not been entirely “economic and efficient” with the implication that the consortium would be held liable for at least some of the over-run⁶². As the *Evening Standard* and many other commentators reported “Metronet has been forced to admit that its handling of work has been a shambles and is under intense pressure to improve its performance”⁶³. On the day Blair announced his resignation press reports

⁵⁸ House of Commons Committee of Public Accounts, *London Underground Public Private Partnerships*, HC466 (London: TSO, March 2005).

⁵⁹ House of Commons Transport Committee, *The Performance of the London Underground*, HC94 (London: TSO, March 2005).

⁶⁰ London Underground, *London Underground and the PPP—The Third Year 2005/06* (London, London Underground Limited). There were similar reports for the two previous years.

⁶¹ PPP Arbiter, *Annual Metronet Report 2006*, November 2006 (London, Office of the PPP Arbiter)

⁶² PPP Arbiter, *Treatment of Investment at an Extraordinary Review*, March 2007 (London, Office of the PPP Arbiter).

⁶³ Dick Murray and Hugo Duncan, *Evening Standard*, 18 April 2007.

claimed that the over-run had escalated to £1.2 billion⁶⁴ and a couple of days earlier one of the ratings agencies had downgraded some of Metronet's bonds to "junk" status.

In July 2007 Metronet fell into PPP Administration. The independent PPP Arbiter gave an interim determination that it was unlikely that Metronet had been economic and efficient in executing all of its work and that that it he would not direct London Underground to make up enough of their deficit to remunerate Metronet's borrowing. It emerged that the cost overrun was likely to have reached of the order of £2 billion by the end of the first seven and a half review period.

On 6th February 2008 Secretary of State for Transport Ruth Kelly announced that the government were repaying the lenders £1.7 billion and making a further provision of up to £300 million to cover the costs of the Adiministration and other expenses. This in addition to the £450 million identified by the Public Accounts Committee as the cost in fees etc. for the negotiation of the three PPP contracts in the first place.

In early 2008 Transport for London was in the process of taking over responsibility for the Metronet Underground lines and was considering which of Metronet's procurement contracts to preserve.

Factors contributing to success

The project environment, and its turbulence

The election of a new government in 1997 offered an opportunity to sort out what had been a long running problem—as Labour had promised in its manifesto. There was a fair measure of agreement about what needed to be done. But lack of clarity, hesitancy, unwillingness to fund and political tensions turned this opportunity into a public procurement disaster.

Strong political control/ sponsorship – clear objectives, leadership.

Originally the objectives were simple enough—to implement the engineering needed to put the Underground back into good condition. But the PPP greatly confused this objective by introducing extra ones: to delay tax-funded public expenditure; to keep borrowing off the public balance sheet; to secure greater efficiencies perceived to be offered by private sector providers; to secure the benefits of modern technologies and of design for whole life costs; to fetter the powers granted to the new executive mayor under a separate policy of devolution. The procurement was badly run because real competition between bidders for the contracts was not preserved putting government in a weak negotiating position in the later stages—during which most of the risk transfer to the private sector was negotiated away. One of the two PPP contractors, Tubelines, appears to have been well managed. But operations under Metronet seem to have been chaotic and far from best business practice.

⁶⁴ Dick Murray, *Evening Standard*, 10 May 2007.

Strong strategic guidance from central government

Guidance from central government was over-strong. Government imposed a bad solution on the accountable body (the Greater London Authority) against all advice. The LU PPP is inflexible and conflicts with many aspects of the strategies the GLA would like to follow. One considerable advantage claimed by the government was the the LU PPP secured predictability of funding. It would have done this had Metronet not failed, thereby escaping its obligations.

Good procurement/ funding structure in place early

The LU PPP manifestly failed on this count. In particular, during the debate there was considerable confusion about the distinctions between funding and financing, competition was flawed and the ultimate risk allocation was so poor that it created incentives which made a material contribution towards the failure of the project.

Strong strategic planning and management of risk

Strategic planning for London by both central government and later by the GLA was actually quite strong. All recognised the central part to be played by a rejuvenated Underground. But non-transport issues, such as the balance of power and accountabilities between central and local government conflicted. Risk was badly managed.

Good infrastructure/ transport planning

Again, transport and infrastructure planning for transport in London in general and the part to be played by the Underground were reasonably good: it was clear what was required. But confused governance impeded delivery

Strong operator contract

The contracts purported to be strong but, in practice, they were hopelessly weak because they were far too complex and incapable of being enforced. By the government's design the contracts restrict the powers of the publicly accountable bodies (LU, TfL and the GLA) to manage the business. The Transport Commissioner recognised this problem early on and proved to correct when he warned repeatedly that the project would fail unless LU had "unified managerial control".

Success?

It is too soon to judge whether the Tubelines contract will turn out to have been a success but manifestly the two-out-of-three contracts with Metronet have been a failure. Objectives have not been met: the borrowing quickly went onto the public balance sheet; the work was not done in an "economic and efficient" manner. There have been numerous studies both before and after – including two by the NAO and the initial investigations by the PPP Arbiter.

Financial success

Borrowing costs have been unnecessarily high; physical delivery has been slower than planned and it is almost certain that all the PPP contractors underestimated the costs of delivering the work they were contracting for.

Policy driving the availability of funds and the methods of financing were at odds with policy and the actuality of devolution of powers to an executive mayor and Assembly.

Policy success.

Nobody is content with the outcome. Perhaps most seriously, the prolonged delay to the improvement in the capacity and reliability of the Underground has impeded delivery of strategic transport plans for London and must, to some extent, have damaged the London economy.

London Crossrail

The Crossrail project, which had been around since at least the 1970s, was proposed in the 1989 Central London Rail Study, at which time a moderately strong case was made that the scheme would offer value for money (see case study on the Jubilee Line Extension, above). This scheme was “approved” by government. More than £160 million (at today’s prices) was spent on developing the scheme between 1992 and 1997 (see http://www.dft.gov.uk/stellent/groups/dft_transstats/documents/page/dft_transstats_025218.pdf, Table 5.15). Having abolished the Greater London Council in 1986, Crossrail became—like all London’s transport issues—a matter of direct responsibility for central government. As we have seen government progressed the JLE ahead of Crossrail. In the early 1990s, the government argued that if it was a good scheme then it would be self-funding and the private sector would finance it – thus missing a fundamental point about markets: financial viability is not a valid test of public benefit if there are important external effects, as in big cities. Parliament threw out the Bill, being unconvinced that the government had arranged robust financing for the project.

As London has grown and become more congested the value for money case has improved, providing that cost increases have not overwhelmed the economic benefits (see Railway Technology Strategy Centre, 2001). The government provided a further £150 million in 2000 to allow Transport for London and the Strategic Rail Authority to work up proposals for a new version of the scheme and Secretary of State Alistair Darling duly “approved” a new scheme (*The Guardian* 18 July 2003): “The government declared its support in principle today for the £10 billion London Crossrail scheme. But the transport secretary, Alistair Darling, said there would have to be “a very substantial contribution” from the private sector if the scheme was to go ahead” and remarked that business would have to get out their cheque books. In saying this he was neglecting the problem that there is no mechanism by which “business” could use their cheque books even if they wanted too. Sure enough, on 27th October 2003, *The Guardian* reported that

Senior Treasury officials are preparing to block Crossrail, the ambitious £10bn scheme to improve public transport links in London, because private investors are refusing to get involved.

The officials have privately conceded that the government is unlikely to approve the plan to construct new train links across the capital.

The admission is a blow to the consortium and big businesses championing a project which includes a new tunnel between Paddington station in the west and Liverpool Street in the east.

Although the Treasury and transport department remain committed in public to Crossrail, the serious doubts expressed in private suggest it will never leave the drawing board.

A Treasury source involved in the discussions said Crossrail had failed to produce a viable commercial plan and accused private firms of failing to give firm commitments by guaranteeing investment.

“Crossrail will not go ahead unless the private sector comes up with most of the investment and there is no sign of that happening,” said the Treasury official.

Having created Transport for London as the new executive body responsible for transport matters in London government funded a study to be *jointly* carried out between TfL and its own national rail agency for strategic rail authority. Those two bodies duly created a jointly-owned subsidiary, Cross London Rail Ltd and delegated the task to it. Yet government found itself unable to take on trust what it has been told by CLRL. There were extensive internal studies at the Department for Transport and the Treasury. A Cabinet subcommittee took an interest. The Prime Minister’s Strategy Unit took an interest. A review committee under the chairmanship of Adrian Montague reported to the Department for Transport. But no funding decision was forthcoming. Along the way the scheme was substantially altered. For instance a new branch to Richmond (in the West) was added and later removed, and a new branch to serve Canary Wharf (in the East) was added at the insistence of the Mayor. Promoters of rival schemes⁶⁵ argue with some force that, whatever may have been the merits of Crossrail when first designed, so much has changed in the many intervening years, that the scheme is now substantially inferior to alternatives which might serve new suburban centres of population.

Then two new arguments surfaced. One was the appearance of widely accepted demographic and planning forecasts that population employment in London were likely to grow rapidly over the next few decades. This had immediate implications for growing demands on London’s commuter rail network which it was going to be hard to meet without the major capacity increase offered by Crossrail.⁶⁶ The second argument was the acceptance of the arguments set out in Sir Rod Eddington’s Report⁶⁷ to the effect that some “wider economic benefits” are omitted by standard economic appraisal techniques. The leading example is claimed to be agglomeration benefits—benefits gained by economic

⁶⁵ For example Superlink, see <http://news.bbc.co.uk/1/hi/england/london/4096667.stm>

⁶⁶ Transport for London, “London 2025 transport challenges for a growing city “ (2006)

⁶⁷ Sir Rod Eddington, “Transport Study: The Case for Action”, HM Treasury and Department for Transport (2006)

agents effectively being brought closer to one another—and, whilst controversial in general, these appear to be real in the particular case of Crossrail. This had been presaged by consultative documents published by the Department for Transport.

A further factor may have been an improving relationship between the Mayor of London (a post created in the devolution of powers to a new Greater London Authority under the 1999 Act) and the Treasury. The latter showed growing confidence that transport in London was being reasonably well managed and London was delivering central governments aspirations on transport policy in a way that other parts of the nation were not. The successful completion of the Channel Tunnel Rail Link—which will have characteristics in common with Crossrail—gave Treasury added confidence that transport infrastructure projects can, sometimes work well.

Government granted the GLA authority to promote a Crossrail Bill which is likely to succeed and receive Royal Assent in 2008. More significantly, in autumn 2007 government appeared to commit to a funding package for what had by then become a £16 billion project, excluding the cost of rolling stock or maintenance and renewals costs.

The components of the package are given in the table.

		£ billion
DfT	(central government) grant	5
GLA	borrowing funded by business rate supp.	3.5
TfL	borrowing funded by new fare revenue	2.7
Network Rail	funded by track access charges	2.3
Land sales,	developer contributions,	
	private sector contributions,	
	savings Metronet being managed in-house	2.5
Total		16

This does include £5 billion of direct grant. But the powers to levy a business rate supplement require new legislation and the substance of some of the “private sector contributions”—partly a promise organised by the Corporation of London—was unclear at the time of writing.

The Mayor has agreed to accept all the consequences of cost over-runs up to a limit, at which point they fall to government. A design and procurement operation is now commencing under the direction of CLRL, which will change from joint ownership between TfL and DfT to sole ownership of DfT following Royal Assent.

The current project plan shows the scheme opening in 2017.

Success?

The project is not complete so we cannot assess its success. However we can comment on the factors contributing towards success.

The project environment

Crossrail is a project that has started and stopped several times. Currently it looks as though some serious digging might actually start soon, under the sponsorship of the Mayor and the GLA. Yet the funding is still not yet “in the bank”.

Strong political control/ sponsorship

The project has been caught up in changes in sponsorship between London Regional Transport, central government and Transport for London. Originally enthusiastically given a “go ahead” by central government, other schemes were given priority. Originally, clearly designed to give fast access and greater capacity to central London from Reading and Essex, it has become a relatively slow stopping service with claimed wider economic benefits for London. Leadership was very weak, until the Mayor of London took it on as a scheme he felt he had to deliver to allow London to cope with rail demand.

Strong strategic guidance from central government

This has been absent. Central government has been in two minds as to whether it felt Crossrail was a good scheme and whether it was willing to find the funds for it.

Good infrastructure/ transport planning

A great deal of money has been spent on planning, design work and on two parliamentary bills. It has undoubtedly been much more costly than had the original decision been implemented in a timely manner. It is argued in the case study on the JLE (above) that at the time Crossrail appeared to have a better economic performance. Arguably, London would be better off now had Crossrail been built when first announced with the JLE (perhaps) coming later. But the perceived availability of private finance distorted this decision.

Good procurement/ funding structure in place early.

Current activity shows a good awareness on the part of CLRL of the need for good procurement and realistic funding. The Mayor will inherit responsibility for Crossrail's financial performance and government has given him every incentive to strive for an efficient outcome.

Strong operator contract

The details of the operator contract have yet to be worked out. It is somewhat concerning that important aspects of the operations and maintenance and renewal costs do not appear to have been resolved.

Docklands Light Railway and Thames Gateway Bridge

Introduction and summary

East London has never been the capital's most favoured district. Downwind of the city centre and – until the 20th Century – largely outside the metropolitan boundary, the east was favoured by heavy industrial uses and subsequently by the huge docks, reclaimed from marshland, which formed the heart of a trading empire.

By the early 1970s, this traditional function was being undermined by industrial change and in particular by the rise of containerised shipping. By 1981, the scale of the problem was becoming clear: since 1967, Docklands had lost 150,000 jobs and around 30 per cent of its population, and 50 per cent of land was now derelict⁶⁸.

The responses to this decline were various – both in their policy intent and in their organisational approach. Initially, these responses were focused on the London docklands themselves, and culminated in the establishment of the London Docklands Development Corporation in 1981. But, from the 1990s the geographic reach broadened to include the East Thames Corridor (later re-named as Thames Gateway) – a much larger area running 40 miles downstream from the Isle of Dogs to the mouth of the River Thames.

This case study reviews the development of policy and organisational arrangements for Docklands/Thames Gateway, and the role new transport projects played in these. Two contrasting projects – the Docklands Light Railway and Thames Gateway Bridge – show the importance of adaptability when dealing with the perpetual flux implicit in democratic policy and planning processes.

Institutional and policy responses

The early 1970s saw an explosion of piecemeal and at times highly 'creative' proposals for Docklands, from world trade centres on Rainham Marshes to a new vertical take-off and landing airport at Rotherhithe. One of the first systematic attempts to consider the area's future was the Travers Morgan Study, commissioned in 1971, which identified a range of potential development scenarios, including a new town based centred on the Isle of Dogs. The report was published during a GLC election campaign, and debate on the development scenarios became highly politicised.

In 1974, a joint planning committee, comprising the (Labour-led) Greater London Council, the London boroughs of Tower Hamlets, Newham, Southwark, Lewisham and Greenwich, as well as trade unions and the port authorities, was set up. The Committee's London

⁶⁸ Peter Turlik, *Initiating Urban Change*, LDDC Monograph 1997, on www.lddc-history.org.uk

Docklands Strategic Plan (LDSP) stressed the need to preserve a “flourishing and viable port”, to “slow down the exodus of industry” and to boost the supply of council housing.⁶⁹

Two further changes in political control (of the GLC in 1977 and at Westminster in 1979) doomed the LDSP, and in 1981 the Conservative Government established a new type of organisation – the multi-functional London Docklands Development Corporation (LDDC) – to deliver regeneration of Docklands, now delineated as the riverside areas of the London boroughs of Tower Hamlets, Newham and Southwark.

The statutory role of the LDDC was to secure regeneration “by bringing land and buildings into effective use, encouraging the development of existing and new industry and commerce, creating an attractive environment and ensuring that housing and social facilities are available to encourage people to live and work in the area”.

Encouraged by Government, LDDC took an explicitly free-market and developer-led approach to this remit, putting in infrastructure, preparing land for development and disposing of it within a deliberately minimalist policy framework, rather than preparing masterplans and allowing them to set the framework for development.

During the 1990s, as the LDDC came towards the end of its life, a new phase of policy development began. Following studies undertaken by Llewellyn Davies, the Government identified the East Thames Corridor as London’s “main opportunity for growth”⁷⁰, and issued supplementary planning guidance for the area (now described as ‘Thames Gateway’) in 1995⁷¹, setting out a vision based on sustainable development principles, and an explicit focus on the links between transport and development.

The new focus on Thames Gateway reflected changing political priorities. Thames Gateway was not simply about tackling the degradation left by the decline of the docks. Rather, the aim was to reverse the traditional westerly direction of London’s development and prosperity (shored up in the last 50 years by the development of Heathrow Airport as a global hub), and to achieve regeneration at the same time as accommodating a rapidly growing population.

There was also a shift in style: Thames Gateway was an explicitly collaborative programme, undertaken in partnership with local authorities rather than in the face of determined opposition. It is perhaps worth noting in passing that this second phase of policy development was kick-started by Michael Heseltine, the same politician who had established LDDC in 1981.

⁶⁹ Ibid.

⁷⁰ Regional Planning Guidance for the South East (RPG9), 1994, Department of the Environment

⁷¹ Thames Gateway Planning Framework (RPG9a), 1995, Department of the Environment

The programme received renewed impetus in 2003, when it was identified as one of the key 'growth areas' within the Government's Sustainable Communities Plan, which sought to manage the continuing growth in population in south east England.

Within London, the project also found strong support from the newly-elected Mayor of London, Ken Livingstone, who identified Thames Gateway as a priority growth area in the 2004 London Plan. In 2005, new urban development corporations were established in London (covering the Lower Lea Valley and London Riverside (the area between Barking and Rainham)) and Thurrock, though these had local councillors on their board, and were established to be more collaborative and 'strategic' than their 1980s predecessors.

Transport schemes

In 1980, east London's transport reflected the area's historical, but declining, functions. The system was designed to move goods, whether by river, road or rail. Passenger services were less developed, as the majority of east London residents had worked within the area, rather than commuting into central London. The London Tilbury Southend Line and the North Kent Line ran through East London rather than servicing the area, and both these and the London Underground District Line had alignments inland rather than through the riverside industrial and dock zones.

Despite the succession of sometimes radically different policy objectives, the basic transport 'kit' proposed for London Docklands/Thames Gateway has remained remarkably consistent. While the details of configuration and alignment have changed over time, transport proposals have included:

- A new London Underground line connecting central London to Docklands (with varying alignments). See the account of the Jubilee Line Extension below.
- A light rail/tram service providing more localised links between the City of London and the inner East End
- A new river crossing at Thamesmead, connecting the North Circular to its southern counterpart

It is worth comparing two of these schemes to understand how the UK's system of transport planning has served the regeneration of London's eastern districts.

Docklands Light Railway

While an extension of the Jubilee Line to Thamesmead (via the Surrey Quays, the Isle of Dogs and the Royal Docks) had been considered in the mid-1970s, the project had never got off the ground on account of its cost. When LDDC was set up, however, links between Docklands and the City of London were seen as paramount, and a search for cheaper public

transport options began (as well as planning work for new roads like the Limehouse Link and Lower Lea Crossing).

A 1982 review, jointly sponsored by the Government, London Transport, GLC and LDDC, compared two rail schemes (one north-south and one east-west) with enhanced bus services to connect to the Isle of Dogs, concluding: “none of the rail schemes proposed can be justified solely on transport benefits....the schemes should, however, have a substantial – though differing – impact on development and employment and, moreover, would make an important contribution to the image of Docklands...This must remain an essentially political judgement.”⁷²

Government gave the go-ahead in autumn 1982, construction started in 1984, and the first DLR opened to the public in 1987. Two lines were originally built: one from Tower Gateway to Canary Wharf and one from Canary Wharf to Stratford. These lines were procured by LDDC, through design and build contracts let to GEC/Mowlem Railway Group, within their £77 million budget, though London Transport remained in charge of services.

In 1992, in light of continuing teething problems, the operation of the DLR itself was passed to LDDC. In 1994, Government decided to privatise operation of the DLR. Serco won the franchise, under an agreement that includes targets and payments relating to punctuality and customer satisfaction. DLR estimate that the franchise saved £32 million over its initial nine-year term. The franchise, which was extended in 2006, is now managed by Transport for London.

Since then, the DLR has progressively expanded: the line was upgraded and an extension to Bank Underground Station was completed in 1991, supported by a £150 million contribution from Olympia and York, who had in 1987 stepped in as developers of Canary Wharf, and services to Beckton began running in 1994.

While these extensions were also procured through traditional approaches, a different procurement route was adopted for the extension to Lewisham. Powers were granted in 1993, and Government decided that the new line should be procured through a private finance initiative (PFI). Marketing and negotiation was protracted, and complicated by Government’s decision to cap rail fares, but in September 1996, a 24.5-year ‘design, build, finance and maintain’ concession was let to City Greenwich Lewisham Rail Link consortium. The extension opened, ahead of schedule, in 1999.

60 per cent of the total project cost of £200 million was raised through a bond issue. The balance was raised through with other forms of equity, contributions from local authorities, regeneration agencies and the University of Greenwich, and compensation from Government for the revenue lost through capped rail fares.

⁷² *Public Transport Provision for Docklands*, Docklands Public Access and Transport Steering Group, 1982 (available at www.lddc-history.org.uk)

A similar approach was adopted for the London City Airport extension opened in 2005, and the further extension of this line to Woolwich Arsenal (scheduled to open in 2009). At the same time as these extensions, the capacity of the line has been increased, and three-car operation is currently being implemented (through the Serco franchise agreement).

Longer-term plans for the DLR include an extension over Barking Creek to Dagenham Dock, providing the transport infrastructure for the construction of 10,000 new homes on the isolated Barking Reach site. While the service was plagued by poor performance in its early years, it now provides more than 60 million passenger journeys per year (compared to 8 million in 1993/94)⁷³.

Thames Gateway Bridge

This genesis of this project can be seen in the proposals for Ringway 2 in the 1969 Greater London Development Plan. In 1986 the East London River Crossing, as it was then known, was considered at a public inquiry. At that time, the proposal was for a major trunk road that would connect the North Circular Road to the A2, primarily to improve orbital and freight movements into and around London, but also to improve the accessibility of Thamesmead and Docklands.

Following the 1986 inquiry, Government approved the scheme in principle (subject to review of the bridge design), but a further inquiry was held in 1990/91. At this second inquiry, the bridge design was changed to reflect the constraints imposed by London City Airport, and it was expanded from a dual-carriageway to a triple-carriageway road, to reflect projected growth in demand.

Again, the scheme was approved, though challenged both by the London Borough of Greenwich and the European Commission. But in 1993, while the European challenge was still underway, the scheme was dropped. The Secretary of State said that the Government, “whilst fully committed to the need for a new road link across the Thames in east London as a key element in the strategy to regenerate Thames Gateway, felt that the current scheme, designed and chosen some time ago, fails to meet the high environmental standards we now apply to new road schemes”.

Following further assessments, a smaller-scale scheme was proposed as one of three river crossings in the Government’s 1996 *Transport Strategy for London* (the other two were for a rail crossing at Woolwich (now being built by DLR) and a further Blackwall Tunnel). This proposal was for a more ‘local’ dual-carriageway scheme, without a link to the A2 (the

⁷³ Sources include:

- Cynthia Grant, *Starting from scratch – the development of transport in London Docklands*, LDDC Monograph 1997, at www.lddc-history.org.uk
- DLR factsheet – www.tfl.gov.uk
- Susan Fainstein, *City Builders – Property, Politics and Planning in London and New York*, Blackwell 1994

original safeguarding orders for this route (which was highly contentious on account of its impact on Oxleas Wood) lapsed in 1997), and with tolling to part-fund the project and to prevent the bridge being used by long-distance drivers as a free alternative to the Dartford Crossing.

Following the 2000 election of Ken Livingstone as London's mayor, the scheme was further refined by Transport for London. Government promised PFI credits which, together with tolls would secure the funds, providing a PFI procurement is used. A public inquiry was held in 2005/06, but Government have deferred their decision until the inquiry is re-opened to consider further evidence in relation to transport modelling. The inquiry will re-open in 2009, and the Bridge could open by 2016, thirty years after its first 'approval'⁷⁴. Its total cost is currently estimated at £500 million.

Adaptive planning and incremental delivery

Both Thames Gateway Bridge and the Docklands Light Railways show the importance of adaptability in an evolving policy environment. Docklands Light Railway was implemented quickly and cheaply (perhaps too quickly and cheaply, given its initial operating problems, and the delay in securing a proper interchange with the London Underground network at Bank), and has been able to extend itself over time (whether through PFI, private contributions or state sponsored schemes).

The Thames Gateway Bridge story is a less happy one. What is notable is the fact that a single project, with a history extending back to the 1960s, has been adapted to meet differing policy goals: as a major orbital highway for London at one stage, and as an environmentally-sensitive scheme to support regeneration in east London at another.

The fact that a single scheme has been proposed for these different purposes reflects dogged realism on the part of its promoters. When planning timeframes are to be measured in decades rather than years, it will almost always be more rational to adapt the justification of the project under consideration when policy changes, rather than to go back to the drawing board.

Docklands Light Railway was also delivered within a very different governance context. While the 1980s Conservative government was hands-off in terms of policy, its ministers were more interventionist in terms of delivery than this might suggest. Not only did they set up LDDC with the powers and capacity to build transport infrastructure, but were also prepared to intervene directly – with colleagues from other departments or with other statutory or quasi statutory agencies – to remove roadblocks or to achieve process.

⁷⁴ Narrative largely drawn from Henry Abrahams, *Thames Gateway Bridge – Transport Policy Proof of Evidence*, TfL 2005, at www.persona.uk.com/thamesgateway/

At times (as with the decision to proceed with the DLR), decision-making clearly involved political leaps of faith. In the words of Eric Sorensen, former chief executive of LDDC: “you could either analyse everything to death or you could get on with it”.

By contrast, government ministers have been actively engaged in developing policy for Thames Gateway, but have set up delivery mechanisms that are much less formidable (even if also less controversial) than LDDC. It can almost seem as if the government that is promoting regeneration within Thames Gateway is an entirely different entity from the government that is deciding on transport schemes.

The Government’s ‘Delivery Plan’ for Thames Gateway⁷⁵, published in autumn 2007, makes much of the new high speed rail service linking London (and Ebbsfleet) to mainland Europe, highlights their recent decision to press ahead with Crossrail, and also promises £100 million to fund local transport schemes.

The Department for Transport has not published a transport strategy for the Gateway, but has prepared a ‘Transport Summary’⁷⁶, which is a list of over 60 schemes, ranging from Thames Gateway Bridge to improvements to the A127 in South Essex. While many of these projects have been on the drawing board for some years, the fact that partners have agreed to support a single list of projects (some of which are admittedly unfunded at the moment) can be seen as a partial success in itself, especially given the fragmented and multi-faceted nature of governance arrangements.

But it is harder to assess whether these transport projects will be the right projects to deliver success in Thames Gateway, or even what Government would consider success to be. Certainly there are grounds for scepticism. After the lukewarm reception accorded to Government’s Delivery Plan, the ‘chief executive’ of the project, Judith Armit, resigned.

Meanwhile, the Public Accounts Committee has been damning: “many stakeholders have questioned the Department’s ability to show the leadership and influence within Whitehall to persuade other government departments to prioritise the Thames Gateway’s regeneration. Without significant improvement in the overall management of the programme it will remain a series of disjointed projects and is unlikely to achieve its potential to make a major difference to economic regeneration and sustainable housing”⁷⁷. To steal Chiang Kai-shek’s aphorism about the French Revolution, it may be too early to tell whether Thames Gateway will be seen as a success.

There have been three very different planning and delivery approaches:

Formal planning	GLC	1970’S	no action
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⁷⁵ Department for Communities and Local Government, *Thames Gateway – the Delivery Plan*, CLG, 2007

⁷⁶ Department for Transport, *Thames Gateway 2007 Transport Summary*, DfT, 2007

⁷⁷ Public Accounts Committee, *The Thames Gateway – Laying the Foundations*, TSO, 2007

Free market	Heseltine	LDDC early 1980's	Effective (DLR the catalyst)
Thames Gateway	Central gov't	2000's	Ineffective?

The projects were *very* different. DLR was to be a catalyst. Its alignment was obvious – using the existing disused rail right of way to and beyond ‘the action’ at Canary Wharf. It was designed to fit the right of way and be capable of low-cost incremental development. Initial cost was £77 million outturn and with this ceiling budget delivery was focused and effective. High calibre staff were attracted throughout its development.

DLR exists and by any measure DLR is a success story (one can question specifics but not the totality). The JLE was one result of this success. Despite its capacity to be incrementally upgraded DLR it could not cope with the success that was Canary Wharf and the Isle of Dogs in general. One can wish that something else had happened, but one cannot question the success that is Docklands and the critical role of first DLR and then JLE to making it happen. This was not the result of any Masterplan, it was a response to market and developer interests pressed strongly and effectively by one of the UK's most far-seeing and effective ministers (Michael Heseltine).

DLR is also an exemplar of private sector participation. The operating concession and sequence of design/build/maintain infrastructure extensions provides a model for network development that other systems envy.

One last thought – an official closely involved told us “The cost was very tight (capped by HMT). If £85mn (+10%) had been available DLR would have been a super railway.”

Thames Gateway Bridge was to be (1) a missing link in the trunk road network; and then (2) provide access to Docklands. It was always going to be a megaproject that could not be developed incrementally (being a Thames crossing). Its alignment options were few (linking with the trunk road network).

The Bridge does *not* exist. We therefore can know nothing of its success. The evidence is that the Thames Gateway development is suffering badly from multiple sponsors, absence of leadership and absence of strategic thought and development. It would be incredible that there is no transport strategy, until one realises that there is no real development strategy – in the sense of having a thought-through business plan. The Thames Gateway Bridge bears some similarities to Crossrail in that it was repeatedly changed to fit changing policy concerns and fashions. Both were the subject of a huge and in many ways unproductive use of planning and design effort. The difference is likely to be that Crossrail will be seen to have been a vital investment, while the Gateway Bridge may turn out to be a costly link whose value is less than hoped? This illustrates that strategic rail projects are much more adaptable to changing policy agendas than major roads (something observed in the US).

Thames Gateway Bridge – an Inevitable Failure?

It is hard to identify a viable project that is viable in terms of central government objectives (its funder) given the following:

- It is a megaproject – because it needs to cross the Thames. Even a low capacity bridge would be costly.
- Institutionally central gov't is involved. Had LDDC still been sponsor, it may have rationalised implementation – because it had a strong influence on implementation (reducing risk), and could argue for the benefits of an (always risky) megaproject.
- In practice responsibility is dispersed, and there is no substantive⁷⁸ development plan for its immediate catchment area north of the river. In other words its viability is particularly risky. This causes problems in meeting central gov't viability criteria.
- Its implementation needs to follow a long planning inquiry. Change to its specification causes substantial delay.
- The policy agenda has changed, causing the function of the project to change, from part of the strategic network to a local access function. In other words we have a costly megaproject that fulfils a broadly local function.

We see that the Thames Gateway Bridge is an almost inevitable failure. Had LDDC still existed it could have been rationalised, on grounds of catalysing development, by creating essential cross-river access, while recognising that it would take time to build demand; of course it would have had a large capacity, maybe with bus and MRT priorities, with a view to the longer-term.

But the lack of institutional authority leadership that failed to create a coherent development framework, or define clearly and robustly the strategic purpose for the link, combined with DfT/HMT scrutiny over risk (where vision is seen as synonymous with an uncapped risk!) and the public inquiry process led to inevitable failure. This complex does not allow a costly megaproject – however potentially valuable – to be justified, and for good reason. At heart this is an institutional failure, from which all else follows.

Reflections on Docklands and the JLE

Docklands is an example of *ad hoc*, incremental development. There was no plan. The DLR was a punt (justified on non-transport grounds). It worked. DLR was in many ways good (see above). But it was a victim of its success. It could not cope with the huge demands catalysed by Canary Wharf. The Canary Wharf development decision was taken probably

⁷⁸ Substantive in the sense of being well thought through by institutions that would implement it.

without understanding the problems in creating the accessibility to the centre upon which it depended.

Docklands and the JLE were imposed upon a bureaucracy that prided itself in its strategic planning. This had gone through an interesting history. The London Traffic Study became the London Transportation Study in the mid 1960's . In practice there was little focus on public transport until the 1970's with the DLR and Central London Rail Study. The 1980's saw the London Assessment Studies, and the Conservative government backing off all significant road building in the face of widespread protests at their findings. Since then roads have been off the agenda apart from selected locations such as East London. Meanwhile post 1989 London boomed but little happened to increase capacity.

Superimposing Docklands non-planning on a mature planning system was problematic. The former usurped the latter. The JLE went ahead and had transport planning implications for other priority projects identified by 'planning' as higher priority. Its failure then undermined LUL/TfL's reputation and starved it of funds for many years. It is a singular achievement of London's new government, the Mayor and TfL that this has so soon been recouped, such that there is now an unprecedented programme of rail work committed.

The case study brings home strongly the 'danger' that *the private sector* tail may wag the dog... There is no doubt that project planning and procurement was far too influenced by the chimera of securing large private sector funding. There was indeed a real danger of the line missing the Greenwich Peninsula/ 2 river crossings and staying north of the river, for a marginally higher private sector funding expectation.

JLE always depended upon HMT funding the bulk of its costs. But HMT had no clear criteria that would unambiguously say whether it was justified. Instead it had a combination of unclear criteria and the imperative of the day – that private funding was essential – to prove there was a real market for it, thereby avoiding claimed failures of public sector planning. In practice this meant a combination of politics (Mrs Thatcher's links with the O&Y developers) and acceptable (least) cost. The failure to focus on the benefits of higher cost were to become obvious.

As Lord Hesseltine says, HMT does not do vision. Vision = uncontrollable risks. This was observed on JLE. R. Allport suggested the railway (that was from the beginning undefined apart from its Canary Wharf pivot) could become part of London's first RER linking through to Paddington/ Heathrow Express. This would have large bore tunnels, be comfortable and have a high capacity. The HMT representative at the Cabinet sub-committee Allport was presenting to killed this stone dead on the compelling basis: that it would increase cost!

The case study says little about delivery. It is interesting that the ex-HK/Singapore expats led this and this engendered confidence. But the UK proved a very much more challenging environment. It was clear from the Arup report that there was no clear business case – probably for the reasons of ill-defined and changing sponsors/ leadership – and that as a result there was considerable scope creep. The one unambiguous measure of success appears to be the architectural achievement; yet this was not a stated objective at the beginning!

One impact of the prospect of Canary Wharf was to rapidly change the City of London's development strategy, to one of actively accommodating major new development. At the time the key O&Y decisions were taken it was obvious that there was far more floor space committed than demand.

The JLE evaluations were pre-agglomeration benefits – that more than doubled the Crossrail economic benefits and would presumably have done something similar for JLE, albeit there were much greater risks with JLE.

JLE was a '*failure*' in HMT terms. Its legacy was large - London and LUL paid for this as noted. Interestingly the combination of *success* by CTRL (a major project on time and within budget) and TfL's now established effectiveness– have apparently been influential in securing HMT's support for Crossrail.

Reflection

The LDDC Enterprise Zone experiment was Michael Heseltine's response to what he considered the almost impossibility of making things happen. He created a single empowered body with someone in charge, and exemptions from the normal planning system. Docklands has been a huge success and this 'experiment' must in many terms be judged successful: arguably it should be widely replicated. This model does not fit easily with our hypothesis - a matter of some importance.

The issue for us is how the project environment should influence project development. If we look back in 50 years will the JLE 'failure' be seen to be so important? To the extent it is we have strong lessons to learn – about sponsorship/ clear objectives, about developing and adhering to a business case, and yes to working with (but not being distracted by) the private sector.

JLE tells us more, about how *not* to use the private sector. This early attempt was to secure large up-front funding, something that failed to happen. The project alignment and strategic purpose was nearly derailed by this focus. What was not done was involving the private sector in the project planning and development and then delivery and operations. Subsequent projects revealed this is where the major benefits lie – in strengthening public sector planning and in delivery. Private sector funding is a by-product of such involvement, but not its major benefit.

Croydon Tramlink

This is an innovative, excellent project, developed purposefully by joint sponsors the London Borough of Croydon and London Regional Transport. Part way through its development Government launched the PFI, and a private Project Development Group [PDG] was imposed upon the project to reality check its finances and implementability, setting back its progress but probably improving its deliverability.

This was always to be a permanent private business, and a 99-year PFI-DBFO concession was let. Almost all risk were transferred under the contract, other than a formula for fares compensation, utilities diversions and bus restructuring to be carried out by LRT/TfL. There was strong competition for the concession; and interestingly the PDG was not successful. The shareholders implemented and operated the project. Approximately 40% of the £205mn cost was private financing.

Summary

The procurement route for this project was imposed mid-development. That provided a setback but probably improved deliverability. It did not however create a successful operating commercial project. The concession was in trouble from day 1, was always going to be bankrupt in 2016 (when a specific TfL compensation payment ceased) and was recently bought back by TfL for about £100mn to reduce uncertainty, secure heavy maintenance and renewals which were in danger of being neglected and enable extensions to be developed.

Hong Kong MRT System: Summary

Hong Kong is widely compared with Singapore. Both are city states that apply a technocratic approach to planning and managing their constrained land areas and both are exemplars of good practice in many respects. In 30 years Hong Kong has developed a 101km rail system comprising heavy metro (that has recorded the largest flows in the world), LRT, suburban and intercity rail. The two rail corporations, that have just been merged, carry 3 million passengers per day.

Both governments apply purposeful planning to considerable effect. But then they differ: the Singapore government develops projects itself, finances them from its own reserves, and then arranges for operations by one of two vertically integrated private operators. The Hong Kong Government until recently allocated a project to one of the two rail corporations (one was part-privatised), negotiated arrangements for property development (the basis for its financing model) after which the corporation developed, financed, implemented and operated the project. Both approaches have demonstrated consistent success, with only occasional problems.

Summary

Early decisions on procurement and financing have not been an issue in Hong Kong. In all cases government has identified in some detail projects that will be implemented. All rail projects have been implemented as public sector projects under strong competition. And until recently projects have gone ahead on the basis of a property-based financing model; the scale of property development support has been a matter for negotiation between government and the rail corporation.

In other words government has established a predictable project development process, where there is no material uncertainty surrounding issues of procurement and financing. It is too early to tell whether this may change now that government is faced with explicitly part-funding future rail extensions.

HONG KONG MTR⁷⁹

Sector Context

This case study considers the development of Hong Kong's rail system and the causes and degrees of its success.

City and governance:

Hong Kong is a city-state with 7 million people living in a land area of 1099 square kilometres, concentrated in very dense corridors (only 17% of the land area is built-up) making 11 million trips/ day. 90% of travel is by public transport. There are about 275 licensed vehicles per kilometre of road, and the topography makes it very difficult to provide additional road capacity in the built-up areas.

It is governed by a single tier of Government that has traditionally been strongly technocratic, but is responding to democratisation with some politicisation of formerly technical decision-making.

The city structure is the result of major investment in integrated land use and transport planning within a free-market culture, regulated within the firm rule of law, and the purposeful implementation of strategy.

Transport system and urban rail:

Transport is central to government policy. An extensive highways programme has been developed that is effectively managed. Rail has increasingly been seen as the 'backbone' of the transport system. Strong controls over car ownership and use (parking) have been implemented, and public transport is based on 2 major bus operators (Kowloon Motor Bus Company with about 4400 mainly double-deck buses and Citybus Limited with 950 buses), 2 rail corporations (Mass Transit Railways Corporation - MTRC with 88 route-kms of heavy metro) and Kowloon Canton Railway Corporation - KCRC, together with 4000 and public light buses (PLB's), taxis and ferries.

Until recently rail services were organised under the two corporations: MTRC (that had been part privatised) and KCRC (wholly government owned). MTRC operated a 'first-world' metro, and KCRC street-running modern LRT, state-of-the-art West Rail, electrified intercity passenger and freight services. The MTRC network comprised 84 kms (5 lines, 65% underground) plus the Airport Express (35kms), an overall 119 kms. KCRC operated East Rail - 34 kms, LRT (Tsuen Mun) - 36 kms, and West Rail - 31 kms, an overall 101kms.

⁷⁹ This case study is taken from the following reference; data quoted refer to 2003-4: "A Tale of Three Cities: Urban Rail Concessions in Bangkok, Kuala Lumpur and Manila" - Paper for East Asia and Pacific Infrastructure Review. Halcrow Group Ltd for The World Bank, December 2004.

[http://lnweb18.worldbank.org/eap/eap.nsf/Attachments/background+13/\\$File/threecities.pdf](http://lnweb18.worldbank.org/eap/eap.nsf/Attachments/background+13/$File/threecities.pdf)

The two rail corporations were merged in 2007/8.

Rail Ridership:

in 2003 rail ridership was

MTRC: 2.2mn/day

KCRC: East Rail domestic - 540K/day and LRT 290K/day.

Total ridership is therefore about 3mn passengers/ day.

Institutions, Funding and Strategy

Governance

Hong Kong is governed by an authoritative meritocracy developing populist politics. The city has been planned with a free-market culture that has been regulated within the firm rule of law. The (until recently) two MRT corporations were required by charter to act on prudent (defined) commercial lines. Government behaves transparently, corruption is not tolerated, and procurement is strongly competitive

Institutions and Decision-making

MTRC has a deserved reputation as maybe the leading MRT institution worldwide. It is now working within China and overseas in Europe. KCRC has a reputation for efficiency. The Corporations have fares autonomy under their charters.

The rail corporations have been regulated by Transport Branch. The merger of the 2 corporations into a single part-privatised entity has now taken place, with the objective of integrating their networks/ services and leading to better future service provision.

Land use and Transport Policy/ Strategy

Hong Kong does not have a large land area, and the developable part of the Island is particularly constrained. Partly for this reason, government has always invested heavily in land use/ transport planning, with the objective of proactively managing land use and the transport system. It was decided in the 1970's, following exhaustive studies that a high density city form should be adopted, based upon a rail backbone as part of an integrated transport strategy. Hong Kong would today be very different without its rail network. Not by accident it is widely recognised to be an exemplar of integrated land use/ transport planning.

The Environment for Project Development

Government owns all land. Until recently a property-based MRT financing model had avoided the need for any public subsidy in the development of the large MRT system. This fact had important implications. It removed some of the politics from decision-making, and

meant that go-ahead decisions did not confront government with the difficult resource allocation decisions that would otherwise have been necessary.

Since the 1970's there has been a consistent consensus behind MRT, LRT and suburban rail. Over this period Hong Kong has become the financial centre and private finance leader of Eastern Asia.

Government has as noted tended to become less technocratic over time, but it remains effective and supports major project development.

Funding and Private Sector Participation

Hong Kong's high density is ideally suited to rapid transit. Because of this, and because of the corporations' strongly commercial charters and effective managements, operating finances are very healthy, and these limit the need for supplementary financing for major projects. MTRC revenues exceed operating costs by 110% (60% on basis of farebox alone); whilst KCRC had a similar performance (120% in 2003) pre-West Rail.

Indeed as noted, until recently no public subsidy was required for rail operations. This was made possible by a property funding model that supplemented the rail operating surplus. But changes in the property market, two poorly performing projects (the Airport Express and West Rail) and the less attractive opportunities now existing (the best lines have been built) have led to government finance becoming necessary.

Private sector participation:

Hong Kong was the founder of private financing. Government has embraced private sector financing for harbour crossings/ tunnels with considerable success. In the rail sector because of the chosen property-based financing model - that has produced high levels of service at no public cost, until recently the issue of rail concessions has not arisen. But the MTRC was part-privatised in 2000, and has just been merged with KCRC.

Development of the Mrt System

Role for Planning

Government puts a major investment into planning, through Comprehensive Transport Studies (CTS) and Rail Development Studies (RDS). It identifies in considerable detail what it wants. The result is a meaningful transport strategy that government owns and is by and large implemented. It is characterised by major attention to all aspects of integration.

Project Development Process

There is a well-developed, efficient project development process for major projects. Until the recent merger, government after deciding to implement a project, would invite (sometimes after a form of competition) one of the rail corporations to develop, finance, implement and then operate the project. The corporations have thus taken a very different role to that of

most rail operators. Government provides effective support throughout all phases of project development.

Procurement

Having invited a corporation to develop the project, government determines with them the property requirement that will provide for commercial viability. Property rights then become part of the project, and the corporation proceeds to implement and operate the project.

All procurement is subject to rigorous competition, and such competition has always been a hallmark of major project procurement.

Financing

Projects are financed from a combination of internal revenue-generation , property income (capital uplift in value + rentals), and debt. The corporations have excellent credit ratings and raise debt on the market.

Operations

Both corporations' operations have been found to be very efficient when benchmarked against leading metros worldwide.

Because operators develop new projects, operations are centre-stage throughout project development – in marked contrast to common practice elsewhere..

Success Achieved

Appropriateness of the solution:

The MTR is considered to be wholly appropriate to need.

Financial success

With 2 exceptions, this is understood to be good or excellent. The first phase of metro development is understood to have met all forecasts. However the Airport Express and West Rail suffered from unrealised ridership/ revenue forecasts, and caused problems for MTRC and KCRC respectively. The problems appear to have been respectively optimistic forecasts and a poor alignment.

Until very recently MTRC and KCRC have received no public subsidy, only public investment on which government received a return.

Policy success

Economic efficiency: we are not aware of any post-evaluations of the rail system. However it is considered extremely likely that would be so justified. It has always carried very high

volumes, is operated efficiently, and has permitted Hong Kong to function and develop as a major financial centre.

Impact on development: The MTR has undoubtedly had a major, positive impact upon Hong Kong's urban form. Development is integrated with MRT by design from the beginning of project development. The rail system has become the backbone to Hong Kong's existing urban structure.

Impact on the environment: Much of MTR and West Rail are underground. Where there are elevated sections they are partly noise-shielded. There have been increasingly strenuous efforts to mitigate environmental problems in the face of rising expectations. More generally MTR has been central to the overall transport policy that has managed congestion and local pollution.

Durability success

Hong Kong's government has applied a strongly proactive approach to city and transport management consistently over 30 years or more, such that the initial financial and policy successes of rail investment have perpetuated.

The project development process, developed with considerable expertise and purposefulness by government and the rail corporations, has shown itself to be, with one exception replicable. Recently the property-based financing model has ceased to be viable, and government now needs to support rail projects from the public finances. This has caused some short-term challenges: government has had to make more difficult choices and define modified appraisal procedures, and it has also become more interested in the efficiency and performance of the (now merged) rail corporations.

Issues

The case study has identified the following relevant issues:

Hong Kong has had a property-financed funding model for its metro development that has required no public subsidy to date; but that model has now run its course. This is the result of the best routes having been developed, a property market crash and dissatisfaction by major developers with the ever-growing role in property development by the rail corporations. Hong Kong probably has the most propitious circumstances for rail viability anywhere, and MTRC is one of the leading operators worldwide, yet it is not profitable without its property operations. It therefore seems unlikely that any metro is likely to be financially viable on a stand alone basis anywhere.

Hong Kong demonstrates the importance of good operators. MTRC is recognised as a world leader in operating effectiveness. The two corporations finance, develop, implement and operate MRT projects that government wishes to go ahead. Their scope is similar to that of some MRT concessionaires. The HK experience shows that good operators require the rule of law to firmly apply, and the MRT organisation to be established by ordinance, statute and

contract, defining *inter alia*: fares determination and adjustment, how it will be regulated, rights to extensions, prudent financial requirements for investments, government step-in rights, and the organisation to be staffed meritocratically with decision-making delegated.

HK demonstrates the benefits of effective development/ transport planning. Essential in a populous city-state, HK has applied effective planning as central to its policy. The purpose of planning has been to allow government to make informed decisions. Government has historically put much effort into planning, to ensure that this meets its objectives. This has resulted in planned, integrated infrastructure and efficient, dense development. Sometimes the achievement has been extraordinarily impressive.

There are benefits from a purposeful structured project development process. The HK government and rail corporations have developed an efficient project development process, continually building upon their experience. This comprises a small number of tasks and decisions, carried out usually efficiently, and resulting in implementation (always) and success (usually).

Large benefits can result from government developing an institution-focused MRT investment programme. When an efficient corporation (like MTRC or KCRC) is required to carry out a sustained programme of investments, it becomes much more efficient. Securing these benefits requires government to take a strategic view that over the next substantial period there will be a continuous programme of network development. The resulting cost is then much lower; and this means that such projects are much easier to justify. A virtuous circle is created to the point at which the limits of efficiency are reached.

The 2-operator model that has been successful to date is now being changed. It came about because KCRC ran inter-urban and cross-border trains, a very different function and territory from creating Asia's first underground high-capacity metro – for which MTRC was created. Now the HK Government has decided to merge the 2 corporations on the grounds that: 1] there will be some scale economies; 2] Fares will be integrated and the second boarding fare between systems removed – increasing passengers, making travel more convenient, attracting new passengers from the buses, but also reducing revenues; and 3] there will be benefits from planning future network additions, and avoiding the existing situation where each corporation seeks to serve its own network and keep its own passengers.

Yet not everything is successful. Road pricing, long studied has yet to be implemented and traffic congestion is often severe. Bus and rail are reportedly not competing on a level playing field, with buses paying low taxes yet rail required to fund its infrastructure. And the reliance on the property-financing model has shifted discussion from the right scale of MRT network, and it may be there has been an under-investment in rail. But against this very much has been achieved, and the success of the transport system underpins the dense, efficient city structure that is Hong Kong.

Conclusions

Early decisions on procurement and financing have not been an issue in Hong Kong. In all cases government has identified in considerable detail projects that will be implemented. All rail projects have been implemented as public sector projects under strong competition. And

until recently projects have gone ahead on the basis of a property-based financing model; the scale of property development support has been a matter for negotiation between government and the rail corporation.

In other words government has established a predictable project development process, where there is no real uncertainty surrounding issues of procurement and financing. It is too early to tell whether this may change now that government is faced with explicitly part-funding future rail extensions.

Singapore North-East Line: Summary

Singapore is widely referred to as an exemplar of good city management. It is characterised by good governance, strong institutions, sound finances, a technocratic approach to planning, and experience in major project development. Its sound finances and reputation for effective public sector procurement have led it to reject the potential for private financing (as unnecessary/ not preferable to the public sector model), whilst keeping international developments in view to inform future policy.

It puts considerable effort into identifying its strategic priorities. Its first MRT lines opened in 1990 and were an immediate success. Government has always taken planning very seriously. The North-East Line was the last such major 'heavy' MRT line in Singapore. It was developed in the tested-and-tried manner. It had a compelling purpose; and it was forecast to meet government's strategic financing rule - when the north-east of the island reached a development threshold. The identified project was approved 'in principle' in 1995 and given the go ahead in 1996 on the same basis as previous lines. Then, late in the day, after award of contracts, a decision was taken to award an operating concession to one of two newly-created vertically integrated operators.

Financing: Government defines an explicit enabling framework that, for MRT projects provides a government grant to fund up-front costs and then requires incremental revenues to more than cover incremental operating costs and asset replacement costs. Providing such a project has a compelling strategic purpose and meets this financing rule, it is approved 'in principle' for implementation 'when the time is right'; and steps are taken to safeguard the route to make this possible.

Procurement: The main contracts for project implementation were bid competitively and well by the authority following its conventional practice.

The operating concession bidding was however unusual. It was based not on commercial bids but on the company's financial strength and the level of service they would provide. The contract protected the Authority from any financial problems; whilst experience suggested that help could be forthcoming if trouble ensued. This happened when there was a substantial revenue shortfall relative to expectations. There since appears to have been some accommodation, but the experience has been fraught for the new concessionaire.

Summary

In almost all respects Singapore applies an excellent approach to major project development. In particular it provides early and consistent strategic financial guidance for what projects it may approve; and it takes measured decisions about major projects. Because it has strong finances, and is able to fund up-front costs from its own reserves, it is able to take the final 'go' decision 'when the time is right'.

But in one respect it did not perform well. The reasons for the late decision to involve the private sector in an operating concession are recognised, and relate to a restructuring of public transport companies on the island. But lateness combined with the basis for that bidding proved ill-thought through; and this has since caused considerable problems.

SINGAPORE⁸⁰

Sector Context

Background

Singapore is a city state with a population of 4.2 million people on an island of 683 km². It has an average population density of 6,160 persons/ km² and only 720 kms of road per million people, but with a per capita GNP in excess of US\$20k.

It provides an excellent, perhaps unique, example of progress from a relatively poor city on its separation from Malaysia in 1965 to a well managed successful city-state today. It has income levels of a similar order to those in Western Europe (following three decades of economic growth of over 8%/year), little poverty, good housing and a successful economy. Perhaps more important for this study, it has managed to achieve this whilst avoiding the severe stress on its transport system that is associated with almost all cities, developing and developed. How has it managed to achieve this degree of success?

Governance

Whilst Singapore boasts a strong market economy, government has played a key hand in its development. Strong leadership is considered essential given the entrepot's small size (an island the size of the Isle of Wight) and exposure to international pressures/ events. This is achieved in an unusual democracy: power has consistently been dominated by one party, but its performance has been kept under strong scrutiny by its increasingly demanding citizens. Nowhere is this more so than with the transport system. One result is that government puts huge effort into engaging with its stakeholders and managing their expectations.

Government has created a well-paid civil service, with a technocratic culture of excellence, to ensure the city state is governed responsibly and sustainably; this has been an obvious imperative imposed by its limited resources and potential vulnerability. It has delivered transparency with minimal corruption that is not tolerated. In Singapore land speculation is a serious issue, and this constrains their governments' openness in project planning.

Institutions and Decision-making

Key decisions are taken collectively by the Cabinet, by the line agencies (Land Transport Authority – LTA - for transport) and the Ministry of Finance; thereafter line agencies have the implementation/ operational authority. Cabinet members make collegiate decisions arising from a shared technocratic ideal and long period in office. Decisions about project commitment and funding are linked. Government typically plans and decides 'in principle' that a major project should proceed 'when the time is right'. Project timing is then

⁸⁰ The facts in this review were accurate at approximately 2004

influenced by factors such as its new town development programme and the economic outlook; then when the time is right 'the button is pressed'.

Transport is overseen by the Ministry of Transport, under which there are four statutory boards, including the LTA and Public Transport Council; The latter licensing public transport fares and bus services. The LTA was formed in 1995 bringing together four previous government agencies including the Singapore Mass Rail Transit Corporation. Its objectives are:

To deliver a land transport network that is integrated, efficient, cost-effective and sustainable to meet the nation's needs.

To plan, develop and manage Singapore's land transport system to support a quality environment while making optimal use of our transport measures and safeguarding the well-being of the travelling public.

To develop and implement policies to encourage commuters to choose the most appropriate transportation mode.

LTA places great importance upon *integration*. The high level of transport and land use integration exemplified by recent MRT schemes can rarely be found in even the most sophisticated planning and implementation regimes; to try and achieve these with a mixture of public and private interests would be virtually impossible. The latest major project [the North-East Line - NEL] adopted a holistic approach in developing the best corridor project as a whole that was implementable, cost-effective and would be supported.

The LTA procures most scheduled public transport services through franchises with two private companies – SMRT and SBS-Transit and, through its subsidiary, EZ-Link Pte Ltd the multi-operator fare card/payment system. This 'duo-opolistic' arrangement resulted from a restructuring of the public transport industry in 2001, at the government's initiative, into two multi-modal franchises each operating metro, light rail⁸¹, buses and taxis. SBS-Transit was formed out of the former Singapore Bus Services and it became the concessionaire for the latest metro line – the NEL. SMRT Transport was set up in 1987 to operate the first two metro lines; it acquired Trans Island Buses and Singapore Shuttle Bus on formation.

Role for Planning

Government takes planning extremely seriously, as the core mechanism for managing the state's future development. It devotes considerable resources to this activity. It has produced successive plans for the long-term development of the nation state and the services required to underpin this; and taken an active role in implementing these. These plans embrace the

⁸¹ Light Rail in Singapore has to date comprised fully elevated automated people-mover systems to MRT stations, designed to increase the MRT catchment

key aspects of development: employment, housing, education, health and welfare and transport.

The state has considerable control over implementation and integration with land use and transport. It is the major housing developer and develops major new towns itself. It takes the lead in comprehensive redevelopment of inner city areas. The state takes the initiative to secure implementation.

The Environment for Project Development

Singapore's approach to governance and planning results in it being far more stable than many, apparently better endowed countries. It has developed an excellent land use and transport database and in-house transportation modelling capability that substantially reduces planning risk⁸². Although strongly influenced by international events, its strong and consistent policy focused upon technocratic excellence, management of its small land area and openness of its economic policies have mitigated many problems, while identifying opportunities for its continuing economic and social progress.

This approach to city development has created a relatively stable environment in which infrastructure is developed, and in no small measure it contributes to the success of transport policy.

Land Use and Transport Policy/ Strategy

Land Use and Transport Policy

The Island's sustainable development strategy was established with considerable rigour shortly after its founding between 1967 and 1974. A major urban renewal and development project determined the core features of the land use and transport system: a strong CBD, linked with major new towns and industrial areas via expressways and an MRT system. This MRT proposal was then subject to a major mass transit study, in which rail transit and busways were developed, evaluated and debated with great rigour.

The metro decision was probably the most difficult decision that faced government because it's central importance to the city-state's future was understood at the highest level. It was made only after presentations by bus and metro proponents to the Prime Minister.

This land use and transport strategy has remained intact virtually unchanged for thirty years to the present day. Subsequent metro decisions have also proved to be 'difficult' because of their strategic importance combined with high opportunity cost. But once the

⁸² Government put major effort into defining formal 'planning parameters' for use in all planning, projected some forty years into the future. These are expressions of policy, designed to encourage cross-sector integration and are treated as targets.

strategy was adopted the issue was 'where next' rather than 'whether' to develop the MRT system.

Transport Policy

Transport has long had a special significance for Singapore that has sought to become an international shipping/ aviation hub⁸³, and achieve excellence in its sustainable development. These objectives have largely been achieved. The government's attitude to transport therefore is rooted in recognition of its importance to the state's successful development and quality of life of its citizens. It translates this as a commitment to act as necessary – not to rely on initiatives by third parties- to bring about the necessary improvements.

Transport strategy has always recognised the necessity for three complementary components: an excellent public transport system, restraint on the use of private vehicles and the development of a high quality road network. Policies for public transport are set within a general transport policy based on limitation of car ownership and use. The Vehicle Quota Scheme and Certificate of Entitlement to purchase a new car have kept the number of cars down to around 100/1000 population – a level to be expected in countries with a quarter the income levels of Singapore. The Electronic Road Pricing system, which has been progressively developed from the original 1975 Area Licensing Scheme, keeps traffic densities on expressways and main roads to levels where vehicles normally flow freely.

LTA's 1996 Transport Plan

The new LTA prepared its first [1996] White Paper - 'A World Class Land Transport System'. This proposed that by 2008 the Government would expand the metro system to approximately 175km with the completion of the NEL (20km), the Marina Line (34km) and the Light Rapid Transit systems in the new towns of Sengkang (10.7km) and Punggol (10.3km). In the longer term, plans were set out to expand the rail system by another 3 lines in the next 10 to 15 years at a cost of S\$11 billion (US\$6.5bn).

The rapid transit system is complemented by a comprehensive bus system, operated under licence to the PTC as part of the franchising system. SBS operates a 2,500 bus network and SMRT a network of over 800 buses. This is designed to serve those sections of the market that are not provided for by the rail system and to augment in those sections where rail best provides the trunk service.

⁸³ It is located at the southern end of the Strait of Malacca, and consequently has one of the busiest ports in the world; while Changi airport is recognised as a world class airport hub and Singapore Airlines is the fourth busiest international carrier (measured by passenger kms).

There is a similar plan for Singapore's roads. The Road Master Plan (RMP) is a strategic road plan to guide long-term road development in Singapore. Projects are awarded to civil construction contractors through open competitive tender.

Operationalising Policy and Strategy

Funding and Private Sector Participation

Traditionally, Government has funded all capital expenditure programmes in the form of advances and grants; this being possible because of its stellar economic performance. Countries with strong economies can fund major projects from their own resources – and Singapore is one of a few. This provides the enormous advantage that project development and decision-making need not be dominated by the state or the public finances; instead decision-making can be, and is opportunistic. The strong link between the state's economic performance and transport strategy, and the opportunity cost of major projects is constantly centre-stage in decision-making.

Government has sought to be fully informed about the experiences of private sector participation (PSP) elsewhere, but has neither had the imperative of securing private financing, nor needed to given the widespread recognition of the government's impressive performance.

However in 2000 the government turned to the market for the first time to successfully raise S\$300 million through a Singapore dollar bond issue and, in May 2002, a second offering of 10 year public bonds was made to raise a further S\$500 million. Its latest metro line – the North East Line (NEL) for the first time involved an operating contract with a concessionaire.

Project Development Process

Government has developed its own project development process, based on the accumulated experience of implementing major projects successfully over 30 years. It features periodic major strategic studies that are holistic and to which government commits considerable resources, to form the basis of decision-making. It requires projects to meet clear, quantified appraisal criteria, commits to full government funding 'when the time is right'; and thereafter its focus is wholly upon quality operations. It evaluates project performance against expectations and forecasts, to better improve its project development process.

This approach provides sponsors with *strategic* guidelines for identifying potentially viable projects, and their subsequent development. Thus MRT projects are required to generate additional revenues adequate to cover additional operating and asset replacement costs, such that no recourse will be made to government after initial funding. This strategic financing requirement is taken very seriously.

Government ensures its technocrats are equipped to provide leadership, and decide how best to use consultants and contractors and suppliers. It puts considerable effort into scoping and procuring consultants for major studies; it then puts major effort into managing the studies - ensuring the output provides the necessary basis for decision. There has always been strong competition to work for government based on the understanding that it is a demanding but competent client that pays for performance.

Procurement

After commitment LTA has developed a formal project management and procurement process, with risk management at its core. It focused on five risks: safety, programme, cost within budget, public relations/ environment and quality (but interestingly not operations).

Singapore's LTA is given a major project budget cap by Cabinet that in one sense is 'generous' – it affords LTA technocrats flexibility in making whole-life costing and revenue decisions that may require additional up-front expenditure; their concern is then to ensure there is a culture that keeps a downward pressure on costs and delivers effective operational performance. This is very different to the UK central government approach that defines a budget that in the event is inadequate and requires cut-backs that are later seen to have been ill-advised.

Development of the MRT System

The MRT system has demonstrated a high and growing level of ambition by a public authority that is unusual. The construction of the MRT system began as a state venture in 1983 and was opened in 1987. The next line was to Woodlands in the north of the Island, while in 2002 an extension to Changi Airport was opened. These lines are operated by SMRT under licence to the LTA which owns the assets; this licence originally ran until 1998 but has been extended to 2028.

The most recent line, and last of the heavy metro lines is the North East Line (NEL). This is fully underground and commenced passenger service in June 2003. The NEL is operated by SBS Transit, under license to the LTA which owns the assets, as part of the two franchise regime. These two franchises are not designed to compete in the provision of service but do allow performance comparisons to be made. Construction continues with the 29 station Circle Line being built which will connect the three radial metro lines. More recently three feeder light rail systems have been opened. Together the rail services in Singapore carry 2½m rides a day. So - much of the 1996 rail development plan has already been completed.

Success

Overall Policy

Singapore is widely referred to as one of the few exemplars of sustainable development worldwide. It has achieved the early land use and transport vision set out 30 or more years ago. This has delivered economic efficiency and a high quality of life for Singapore's

citizens; and it has done this with few resources other than its people. It has avoided many of the pitfalls of others and has demonstrated the value of decision-making based on forward planning undertaken with rigour, whilst keeping abreast of international developments. It has pioneered car ownership and car use controls adopting practical policies that it has consistently developed. Its public transport system is an exemplar of a high quality, integrated system. Its road system reflects 'green Singapore' and provides high levels of accessibility. The result is that traffic congestion remains under control and its environment is by all measures 'green'.

But things have never stood still in Singapore. The challenges certainly have not, and government is fully aware that the increased incomes of its citizens will continue to drive up their demands, which if not met will threaten the prosperity of the state⁸⁴. So Singapore has always looked forward, thinking the unthinkable and often developing new approaches. It does this to this day.

Major Projects

The first MRT system was by international standards good, efficient, and immediately successful. Implementation was broadly to time and budget, ridership was close to expectations and the metro experience was an immediate success. The same happened with the next Woodlands Extension. However the last major NEL project caused considerable consternation when there was a one-third shortfall in forecast ridership/ revenue; while cost was slightly less and implementation time somewhat longer than forecast. This lack of complete success caused considerable problems for LTA.

The succession of MRT projects has demonstrated the constantly rising ambition of its government that underpins continuing success. The first metro project followed the success of the Hong Kong MTR, and provided a step improvement in some respects. Its major extension to Woodlands focused on integrating it better with the existing transport system; and this was achieved and again immediately successful. The latest NEL was the most ambitious project yet, that sought both excellent integration with land uses and property at stations and full automation (said to be the world's first automated heavy metro). This was substantially successful, albeit that ridership is lower than expected. Huge effort was put into stakeholder engagement, and the result was almost total stakeholder alignment, with limited opposition.

⁸⁴ At the turn of the century social research concluded that its young, mobile technocrats sought 'a house with car and garden' – like their western counterparts. Government concluded that it needed to plan for greater car ownership/ use; without these changes there was concern that they would emigrate, threatening the city state's future prosperity. Accordingly government concluded it needed to modify the scale of road building and the vehicle restraint system – ensuring that congestion remained under control.

Our Hypothesis and Conclusions

Our Hypothesis

Singapore is an exemplar of the study hypothesis that overall policy, developed into a balanced strategy, used to identify individual projects, and ensure their effective delivery – does lead to considerable success.

The Singapore case study has its beginnings in:

- 1) A small new country, whose destiny was anything but obvious, faced with the huge problems of many developing countries, but also an absence of resources other than its mainly Chinese people.
- 2) A leader (Lee Kuan Yew), who combined an excellent intellect with an ethos of technical excellence, and assembled other like-minded technocrats, who have governed virtually unchanged to create modern Singapore.

It was obvious from the beginning that Singapore could only be successful if it managed its scarce resources – in particular land. And this led to a total commitment to land use planning. From the beginning the leadership was committed to a city structure based on a strong CBD, with new towns to create healthy, modern living for its people, and industrial areas employment. It was obvious from very early that traffic congestion threatened the achievement of this vision, and there was an understanding that a high quality road system, excellent public transport and road pricing were necessary to control congestion; road pricing was introduced in 1975. The major debate concerned the need for rail-based MRT. After rigorous technical studies the decision was taken that it was. And the rest is more-or-less history.

Singapore first developed its land use and transport plan; then the MRT study rigorously addressed the rail issue. These provided the framework for development through to the 1990's. The 1996 White Paper sets out policy and strategy, and sets the framework for subsequent major project development. Delivery has followed Singapore's own approach that builds on the best of its experience. It has an enviable track record of completing projects to time, budget and specification, and securing demand.

Conclusions

Singapore's development has had the following defining features:

Recognition that the state's future development is very important, and to a substantial extent in Government's hands. This has required effective strategic planning.

Central recognition that the future is uncertain, and that future strategy needed to follow from analysing and managing that risk.

Understanding the fundamentals of sustainable land use/ transport policy, that inter alia provides the foundation for sound finances.

Complete financing realism that has guided their strategic planning, and avoided the perceived 'necessity' for PSP.

Great care in committing to and developing megaprojects (sometimes ensuring that 'free' government financing does not distort their strategic imperatives).

Policies of creating an effective civil service, with good conditions, to create the correct incentives to perform.

Singapore is probably unique in having such a powerful unitary government which has, in effect, been in power for four decades. The government has set progressively high standards as the state's economy has grown and is prepared to be held to account for achieving these. Moreover in making comparisons with other cities in SE Asia it should be recognised that the combination of the success of 'government' in Singapore and a consistently rapidly growing economy means that it has had the support and means to undertake major projects on its own account. Thus while it has periodically reviewed international experience of PSP, it has not so far seen merit in applying this in the land transport sector.

Lessons to be drawn for Singapore's experience in developing its rail MRT system include the following:

Government has for 30 years had a strong, consistent policy for integrated transportation and land use. It takes planning very seriously and demonstrated its effectiveness when backed with resources and political will. It never stands still, and modifies the strategy, but within the same objectives and framework of integrated development

Government has set clear financial requirements for the development of the MRT system, related to its core objectives. These have consistently guided its decision-making. Projects are prepared for implementation, but implemented only when 'the time is right'. This is a very sophisticated approach rarely matched.

The rare combination of technical competence, political priority, will and capability and a strong economy have allowed Singapore to develop a comprehensive high quality public transport system with little need for private capital for rail investment.

Franchised private sector multi-modal operations have recently been established. It is too early to assess their success following problems with one franchise (resulting from the NEL)

Not everything has been a complete success. There is debate about the success of the LRT feeders to MRT stations. It is too early to form a judgement on the success of the fully automated NEL. There has been concern about its revenue shortfall. But these comments are

made against a background of hugely impressive performance that is ever driving up standards, and in many ways sets a benchmark for other cities worldwide.

