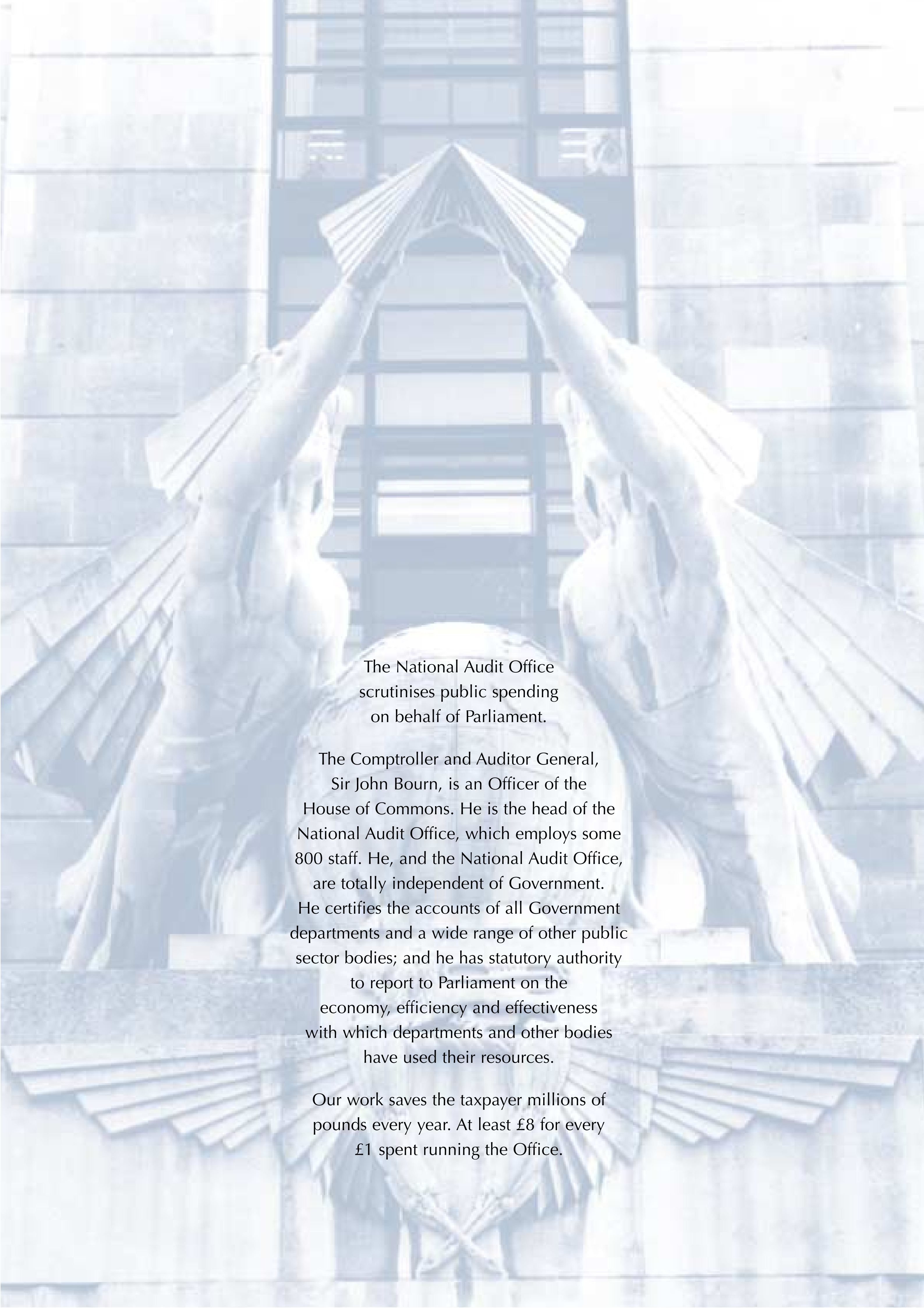
London Underground PPP: Were they good deals?

REPORT BY THE COMPTROLLER AND AUDITOR GENERAL
HC 645 Session 2003-2004: 17 June 2004



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John Bourn **Comptroller and Auditor General**

National Audit Office
14 June 2004

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executive summary

1 On 7 February 2002 the then Secretary of State for Transport announced approval of a decision by the board of London Regional Transport to enter into three Public Private Partnerships (PPPs) for the infrastructure of the London Underground system (the Tube). The operation of the trains would remain a public sector responsibility of London Underground Limited (LUL), together with responsibility for managing the PPPs themselves. In July 2003 LUL was transferred to Transport for London which was set up in July 2000 and reports to the London Mayor.

2 By approving the PPPs, the Government intended to establish long term arrangements for the private sector to carry out a major programme of improvements to the Tube infrastructure. London Underground evaluated the net present value[1] of spending under the three PPPs over 30 years at £15,700 million (with a value of £9,700 million over the first 7½ years). The public sector would make service charge payments subject to the private sector partners, Tube Lines and Metronet **(see Figure 1)**, delivering specified contract outputs.

3 The resulting deal structure is unique, complex and contains a number of novel features. These include an output-based performance and payment regime. There is also a built-in periodic review mechanism to enable the parties to re-specify requirements within the PPP scope and re-price the deals every 7½ years. And an Arbiter has been established who can be called on to decide on the price, including financing costs, that an economic and efficient supplier in similar circumstances could charge.

4 This report examines whether these PPP deals are likely to give good value for money, taking into account the Government's objectives. It concludes that:

a The complexity of the deals resulted from the scale of the work required to modernise the Tube, the decision to have innovative output-based contracts and limited knowledge of the condition of the less accessible infrastructure.

1 The discount rate used by London Underground here and elsewhere, in line with the Treasury's guidance, was 6%.

b There is only limited assurance that the price that would be paid to the private sector is reasonable. The terms of the deals changed markedly during prolonged negotiations with the eventual winning bidders. Periodic review at the 7½ year breakpoints leaves some uncertainty about what the price eventually will be - but given the uncertain condition of some assets, greater price certainty would have resulted in bigger contingency provisions and a higher price. Revisions to the price have to meet tests of economy and efficiency for the rate of return to be unchanged.

c The process of negotiating the deals, and obtaining consents (including state aid clearance), was costly for all the parties involved. Extra time and costs were incurred as a result of partially rebidding contracts on two occasions before the selection of preferred bidders, and - the Department for Transport believes - as a result of the legal challenges from Transport for London although Transport for London disagree. The public sector (comprising the Department for Transport, London Regional Transport and London Underground Limited) spent some £180 million and the winners of the three bids a further £275 million. This £455 million equates to about 1½ per cent of the undiscounted 30 year deal value (2.8 per cent of the discounted deal value).

d Compared to London Underground's pre-1997 investment regime, the resulting deals offer an improved prospect, but not the certainty, that the infrastructure upgrade will be delivered. The work will start 2 years later than originally planned. Recovering the maintenance backlog will take 22 years rather than the 15 years originally intended, following the Department for Transport's decision to spread the scale of remedial work required, which proved greater than anticipated, over a longer period.

The PPP structure

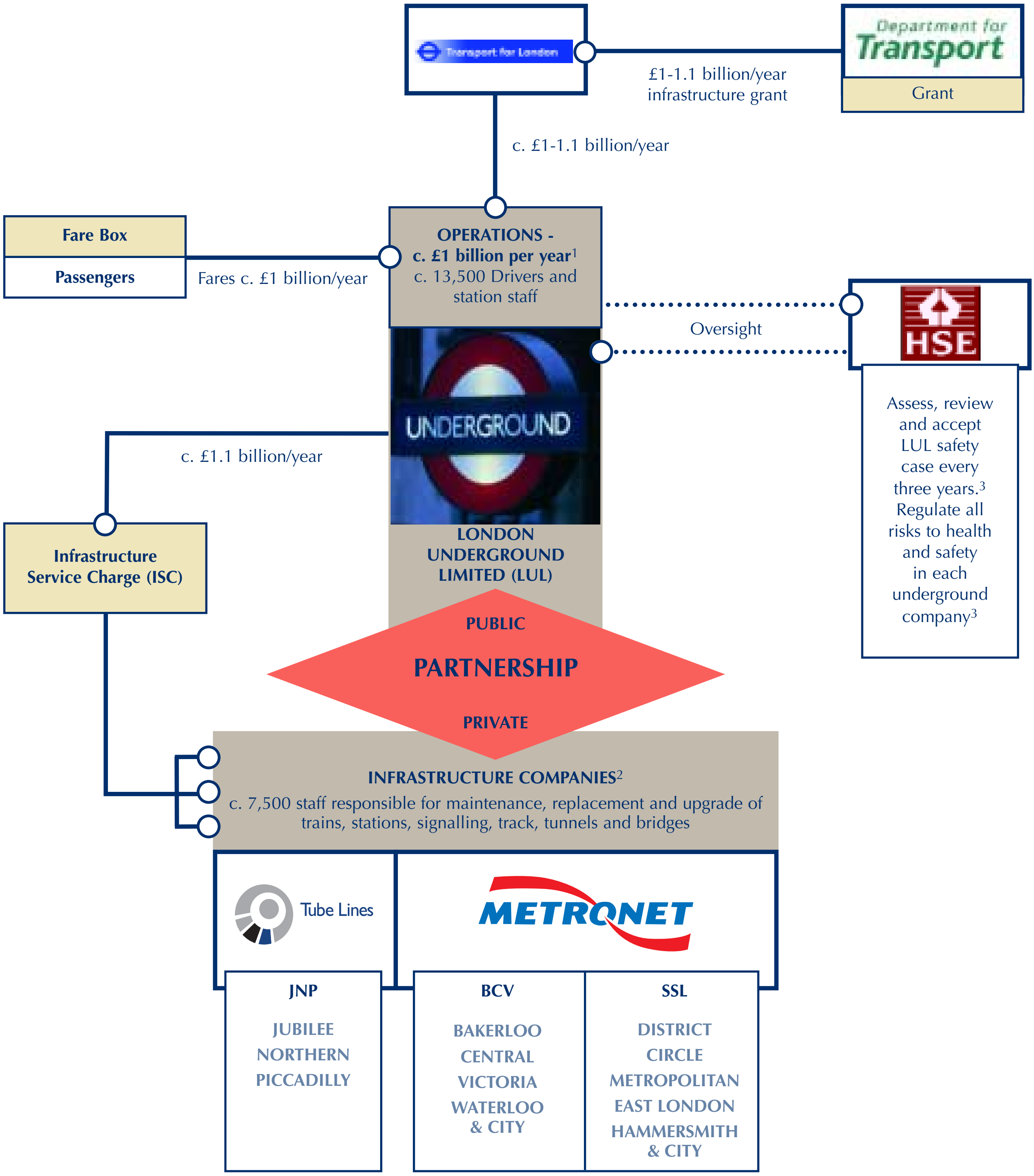
5 Between June 1997 and February 1999 the Government and London Regional Transport conducted a wide-ranging debate about the future arrangements for the Tube. A number of options were analysed. The Government considered that under conventional public sector management the Tube had long suffered from under-funding and also from financial uncertainty as a result of annual public expenditure reviews. Moreover, it considered that London Underground's management of major capital programmes had been weak, leading to substantial cost and time over-runs. Yet, the Government considered that performance in operating the trains had been satisfactory and selected a structure of PPPs intended to combine:

- stability of funding - because the private sector would raise the capital required on a long term basis;
- private sector project management of a major infrastructure programme, in which the private sector retains an interest in the performance of the infrastructure over 30 years; and
- continued public sector management of the train operations.

Although these goals are not inherently complex, setting out to achieve the desired outcomes through output based contracts requires the PPP structure to be sufficiently detailed and, at times, complex.

1 Structure of the Public Private Partnerships (PPPs)

Tube operations and infrastructure are run through a partnership between three parties - LUL, Tube Lines and Metronet. They are paid through a combination of grant and farebox revenue.



NOTES

1 All monetary amounts are the most recent annual figures.

2 A Partnership Director, nominated by LUL, sits on all three Infraco boards.

3 Each Infraco is also required, under the PPP agreement, to satisfy safety requirements.

Source: National Audit Office

Price

6 LUL and London Regional Transport (collectively "London Underground") established a competitive framework and secured a competitive process leading to the selection of preferred bidders in May and September of 2001. To secure such competition in the face of the very high bidding costs and political risks to the project, London Underground took the unusual but not unprecedented step of agreeing to reimburse bidding costs.

7 Although bidders were asked to price their delivery against an output-based specification, they were not asked and could not have offered firm prices beyond the first 7½ years of the deals. This was because there was limited information available about the condition of some of LUL's assets, and no-one had experience of pricing against output specifications for such a large and extended programme of work. In addition LUL wished to retain flexibility to re-specify its output requirements on a periodic basis. As a result, bidders and finance providers offered conditional or estimated prices over 30 years, unavoidably adding to the qualitative element of the assessment of the bids. The parties will, however, be able to refer to the Arbiter, for review of whether adjusted prices are economic and efficient and provide for the agreed return on equity.

8 During negotiations with short-listed bidders, it became evident that more work would be required to deliver the outputs and the terms of the deals changed significantly. The prices quoted all rose, adding £590 million to the 30 year cost of the deals. In addition the Department for Transport (the Department) and London Underground accepted the case, which some lenders had been making throughout, for an increase from 90 per cent or less to 95 per cent or more in the amount lenders to the PPPs would get back in the event of termination. The Department attributes this, in large part, to market perceptions of political risk.

9 In December 2000, we reported on the public sector comparator exercise then being used as part of the assessment of the value for money of the bids. London Underground acknowledged that its public sector comparators were always subject, as we had shown, to a high degree of inherent uncertainty and therefore gave only limited assurance about the reasonableness of the prices quoted by the bidders. When, some 12 months later, the Board of London Regional Transport took the decision to proceed with the PPPs, public sector comparator figures were available to them alongside, as we had recommended, considerable analysis of the wider benefits and risks associated with the deals.

10 The bidders' prices reflected not just their estimated costs of delivering the upgraded Tube system but also their financing costs. There is a risk of loss of the PPP investment, conditional on persistent uneconomic and inefficient behaviour, but the PPP otherwise differs in scale and type of risk from PFI deals. A comparison of financing costs with PFI deals is not straightforward, and is seen as inappropriate by the Department, but shows:

a Private sector shareholders, who have put up altogether some £725 million risk capital in the PPPs, stand to receive nominal returns of 18-20 per cent a year. As the first deal of its kind, London Underground considered that such a rate of return was proportionate to the risks being borne. It is about one third higher than on recent PFI deals if the infrastructure businesses can deliver the bid levels of performance. Likely real rates of return at the benchmark levels set by the performance regime would be lower - in a range from 10-17 per cent.

b Lenders, who are committed to advance at least £3,800 million to the private sector companies, have limited downside risk (because in the event of termination they stand to get back 95 per cent of what they have lent) but are charging rates of interest in line with an independent credit rating of the companies as "low investment grade". Direct government borrowing of such a base case amount, had it been available, would have cost some £450 million less. The Department considers this is a reasonable cost to pay for the risk sharing settled on and for scrutiny of the deal and Infraco performance by lenders.

c In the Tube Lines PPP, at least £600 million of the original bank financing was due to be refinanced at an early stage by issuing bonds. Refinancing of the larger sum of about £1,800 million was completed in May 2004 and resulted in a net disclosed gain of £84 million. Tube Lines told us that the initial 60 per cent share for the public sector rises, over time, to 70 per cent, leaving 30 per cent for the consortia shareholders.

The costs of the PPPs

11 The Department, together with the Treasury, took the lead in deciding on the form of the PPPs and relied largely on London Underground to develop and procure the deals. London Underground had always understood that it would be expensive to negotiate such large and complex deals and in February 1999 budgeted to spend £150 million. The outturn was £180 million (£170 million in 1999 prices). In addition, having decided to reimburse bidders' costs, London Underground agreed to add £57 million to the total deal cost to cover bidders' costs up to the point of selecting preferred bidders. London Underground required the preferred bidders to disclose the level of bid costs they intended to recover from the service charge. After prolonged negotiations the accepted level amounted to a further £218 million of bidders' costs and fees. In total £275 million of bidders' costs are reimbursed. Those costs included a success fee payable to the sponsors of the Tube Lines consortium as compensation for funding bid costs based on the cost of capital, the lost opportunity of utilising this capital to make other business investment returns, and any risk of non-recovery of costs during the three year bid process. London Underground realised this at the preferred bidder stage and questioned whether it was reasonable. It was advised that this was a normal market practice and the level was a matter for commercial judgement.

12 Three factors that are not easily quantified contributed to the transaction costs which in total came to £455 million:

a As they were based mainly on output specifications rather than inputs, the costs of the programme could only be known when firm bids came in. It was then that the Department came to realise that the total costs falling on the taxpayer were far more than those considered affordable. There followed a review of the specification to reduce the total cost of the programme. The review and the subsequent re-bidding added some five months to the process therefore increasing costs.

b A second cause of re-bidding arose from identifying, before it was too late, and then addressing constraints on the ability of LUL to provide the power required by initial proposals for new trains.

c Transport for London was due to take over responsibility for LUL but only after the PPPs had been put in place. For most of the negotiations Transport for London, therefore, stood outside the process but understandably, as a future party to the deals, took a very close interest in it. Transport for London opposed the PPPs and made a number of interventions, including two applications for judicial review, in its efforts to change the deals. This - the Department believes - further extended the time taken to complete the deals and obtain state aid clearance, although Transport for London disagrees.

Delivery of Tube modernisation

13 As signed, the eventual PPPs are broadly in line with the Government's objectives to bring in private sector expertise to manage the Tube infrastructure on the basis of stable long-term funding, while the train operations remain a public sector responsibility. Although, as noted above, there is only limited assurance that the price of the deals is reasonable, the deals do provide safeguard mechanisms (including the provision for an Arbiter) aiming to link payments to the private sector to actual delivery of services at prices in line with those an economic and efficient supplier would charge.

14 The private sector companies are firmly committed for the first 7½ years, and are incentivised to stay in the deals for the full 30 year period. After the first period they are committed to provide services at a price agreed between the parties, or an economic and efficient price determined by the Arbiter if the parties are unable to agree. If the Infraco requires additional funding for the next period, which is likely, the existing lenders do not have to provide it. A number of options are available, including a reduction in the deal scope, LUL providing equity or new forms of financing. LUL is committed to pay for the services delivered and has limited contract rights to terminate the deals for non-performance or non-compliance with safety requirements. LUL has no formal right to terminate the deals voluntarily, subject to paying compensation, although this is a common arrangement in PFI deals.[2] The Department told us that London Underground gave up this right to discourage lenders from increasing their price because of political uncertainty.

15 Following the signing of the deals, work to improve the Tube started in 2003, two years later than planned, and following recognition that more work was needed some investment has been deferred to keep within subsidy limits that central Government was willing to permit. This increased the period over which the Tube would be brought up to a steady state, at which it would then be maintained, from 15 years to 22 years.

16 In our companion report, also published today, we examine:

- the potential to deliver improvements to passengers;
- whether key success factors are in place for building a partnership approach to managing the contracts; and
- how the issues that have been left open will be tackled and how the wider context affects the Tube.

2 *Standard PFI contract terms proposed by the Treasury do provide for voluntary termination by the public sector authority on payment of prescribed compensation.*

Recommendations

Partnership design:

1a A traditional partnership means sharing openly and transparently in the profits and/or losses of a business equally, without special advantage to either partner. In the case of London Underground, this principle has been applied to tackling major procurement challenges in a non-adversarial way. As attempted in this case, Departments and agencies should explore the scope for sharing risks and design how to share the rewards before entering detailed contract negotiations. If this appears feasible, the business proposition can then underpin the economic proposition by providing a detailed, but not necessarily complex, contract structure.

1b Good corporate governance calls for maximum transparency. Public sector bodies should insist that contracts include strong provisions for open book monitoring of both special purpose company and prime contractor performance. As in any partnership, there is scope for LUL and the Infracos to develop working relationships that improve on the contract arrangements.

Economic analysis

2 Departments that take forward a business option, after stronger business cases have been eliminated on policy or market grounds, as was done in this case (see paragraph 1.8) should ensure that they, or the agency, subject it to the same extent of economic analysis to reduce the risk of later controversy.

Joint Review and Negotiations

3 The provisions for consultation with Transport for London failed to secure agreement at each stage of a review process that preceded the current good practice framework of 'gateways'. In its absence, the Department and London Underground's decision makers faced difficulty in attempting to satisfy the private partners that they were insulated from the consequences of a possible early breakdown in the partnership. As good practice, and to avoid strengthening the private partner's negotiating position, Departments should - whenever possible - follow the path of joint negotiations and, at each stage, shared decision making with their agencies and other public sector bodies.

Transaction costs and reimbursement provisions

4 Bid & transaction costs: In some cases, such as this one, Departments may not be able to develop sufficient competition without reimbursing bid costs. If so, after conceding the principle of reimbursing losing bidders, they should take care to control the extent of reimbursement, generally excluding sunk costs. This should also include restricting any early distributions to shareholders, if disclosed, for example the success fees in this case.

Contract Terms

5 Departments should negotiate commercial terms that are broadly neutral in respect of unforeseen and unforeseeable asset condition because seeking to transfer too much risk is likely to over-compensate the private sector on grounds of uncertainty. Steps were taken to think through and reduce such risks in this case. Specifically, the provisions for decision by an independent Arbiter mitigate the risk that thresholds for price review are too easily reached. In larger deals, Departments should consider similar arrangements after weighing up the benefits and costs involved.

6 Departments should avoid asymmetry in the right to terminate, and should not permit the private sector an easier exit from a long term partnership that encounters difficulties. Although, for what the Department considers understandable reasons, this was not achieved here, the voluntary right to terminate becomes more important with arrangements that face a higher degree of uncertainty.

Financing

7 The risk profile for lenders was improved at the committed finance offer stage such that the worst case outcome put 5 per cent of the loan at risk (compared to at least 10 per cent previously). Changing the risk profile for lenders could materially influence financing options. As was done in this case, Departments should continually assess the scope for repackaging the various types of debt. Before accepting the final loan package and pricing, they should ensure that their written advice from financial institutions is updated from current market knowledge for both the proposed and alternative sources of finance.

8 As with the Tube Lines deal, market perceptions of political risks could initially lead to higher costs. Departments should consider whether the prospect of an early refinancing, before major project construction milestones have been achieved, evidences uncompetitive original terms. In such cases, as with Tube Lines, a larger public sector share than the 50 per cent envisaged in current guidance should be negotiated - 60 per cent was achieved in the Tube Lines deal. The appropriate percentage will depend on the scope for reducing risk in the specific case.


CANARY WHARF

Part 1

PPP design

This section examines the process for determining the particular choice of PPP and the implications of the choice. It finds that four basic structures, involving the private sector, were analysed extensively before arriving at an outcome involving significant complexity.

1.1 In May 1997, the Government started to examine the options for creating a PPP for the Tube. It excluded privatisation but sought a structure that would involve the private sector. Governing its review were three overarching policy objectives:

- Obtaining private sector investment and expertise to modernise the Tube;
- Guaranteeing value for money for taxpayers and passengers; and
- Safeguarding the public interest, which included the safe operation of the Tube.

In addition to these, the Department had its own objectives: the timely elimination of deferred maintenance to the Tube and the inclusion of the PPP in an integrated transport policy for London.

Private sector expertise and investment

1.2 The Government held the view that, in its then existing form, London Underground was not capable of managing efficiently and effectively the investment needed to improve and modernise the Tube. Wanting to bring in private sector expertise and funding, the Government, over a 10-month period, reviewed variants of four basic PPP business structures to determine which option could have the best impact.

The public sector's ability to meet the investment challenge

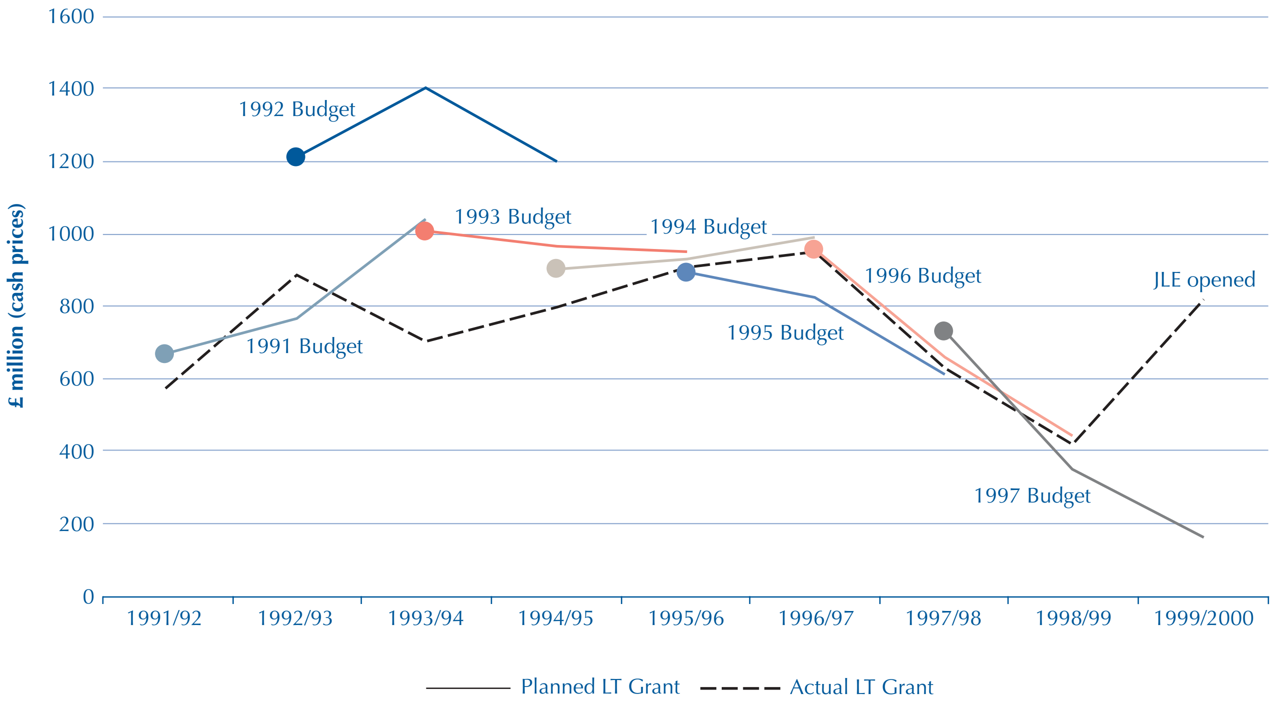
1.3 There was a general view, accepted by the Government, that there had been decades of underinvestment in the Tube, adversely affecting train service reliability and passenger comfort. In 1997, the Department and London Underground estimated that the present value of the funding required, just to overcome the maintenance backlog, was between £1,000 million - £1,500 million.

1.4 The investment that had taken place had suffered from budgetary uncertainty. As with all public sector bodies, every year London Underground submitted budget requests looking forward three years. The process resulted in a firm budget for the first year and provisional budgets for the following two years. In repeating the process in year 2, there was considerable uncertainty about whether the company's actual budget for that year would even be close to the provisional figure agreed in Year 1 **(Figure 2)**. This annual funding uncertainty compromised planning and execution of infrastructure investment. When budgets were cut, projects were not only postponed but also curtailed. This often meant that synergies between planned expenditure could not be realised fully. When unused or excess funds were available projects that could be carried out quickly were rushed through.

1.5 The gestation of the PPP business structure occurred when public sector investment in the Tube was higher than average because of funding for the Jubilee Line Extension Project. This ambitious project, managed by London Underground, was running £100s of millions over budget, and two years late. Although this type of project was excluded from the PPP, more comparable was London Underground's attempt to upgrade the Central Line in the 1990s. This had failed to deliver, in full, the desired improvement in journey times. As a consequence, there was little Government confidence that the management of London Underground could be relied on to manage the infrastructure investment on the scale needed to modernise the Tube. Nor was London Underground management thought to be in a position to reduce the risks that it retained under conventional contracts sufficiently to cover the economic costs of failure, e.g. the consequences of late delivery and non-performance.

2 Uneven grant levels

Stop-start funding levels made investment planning erratic and inefficient.



NOTE

All figures for total London Regional Transport grant, including Jubilee Line Extension, bus etc as well as 'core' London Underground.

Source: Department for Transport.

Analysis of a range of business structures

1.6 In summer 1997 an inter-departmental working group[3], identified and investigated four basic business structures which could meet the Government's objectives for the PPP **(Figure 3)**.

1.7 London Underground representatives were not included in the working group because the Department considered their presence could inhibit a frank exchange of views. Instead immediate outside advice was sought and in July 1997 following an accelerated procurement, the Department appointed Price Waterhouse as the working group's financial advisers from a short list of five bidders. Price Waterhouse was given a free rein to analyse the merits and disadvantages of the possible business structures and encouraged to consider any others, such as a non-public sector trust arrangement, that might be better suited to deliver the objectives.

1.8 In October 1997, a Price Waterhouse report recommended horizontally splitting the business into three private sector infrastructure companies (Infracos) and one or more operating companies. It ranked the variants of this option 3rd, 4th and 5th (in net present value terms) out of the eight considered variants. The report presented the argument that the recommended arrangement would better stimulate performance improvements than alternatives and could maintain the benefits of integrated operations. The report valued two options more favourably in financial terms but identified disadvantages that over-ruled the valuation findings. A single private sector concession appeared more advantageous by £300 million - but this was thought to involve greater monopoly risks. The report ranked three vertically split and entirely private concessions next, but ruled the option out because of a lack of flexibility and a requirement for a greater degree of regulation.

1.9 Although the Department did not invite London Underground onto the working group, it was asked to provide its views on possible PPPs, for which it retained separate advisers, Lazard Brothers & Co., Limited. London Underground analysed 16 variants of the same four basic business structures reviewed by the working group and circulated the results in September 1997. The analysis valued a publicly owned Tube, with stable public funding, delivering half the operational efficiency improvements assumed in the private sector business options, more favourably than all other options in financial terms. The assessed advantage was some

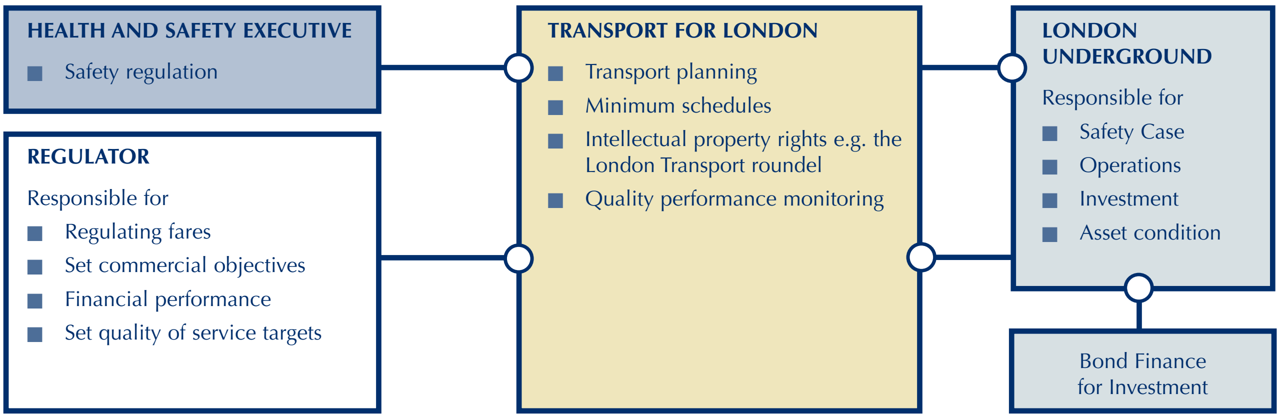
3 *The Department, the Treasury, No 10 Policy Unit, the Department for Trade and Industry and Government Office for London.*

£700 million to £900 million (in 1997 values) compared to the horizontally split options (public sector operator variants with three private Infracos - which were ranked 12th and 15th out of 16). London Underground used these findings to argue that the whole Tube should remain under public sector control with a new stable funding regime (privately or publicly sourced).

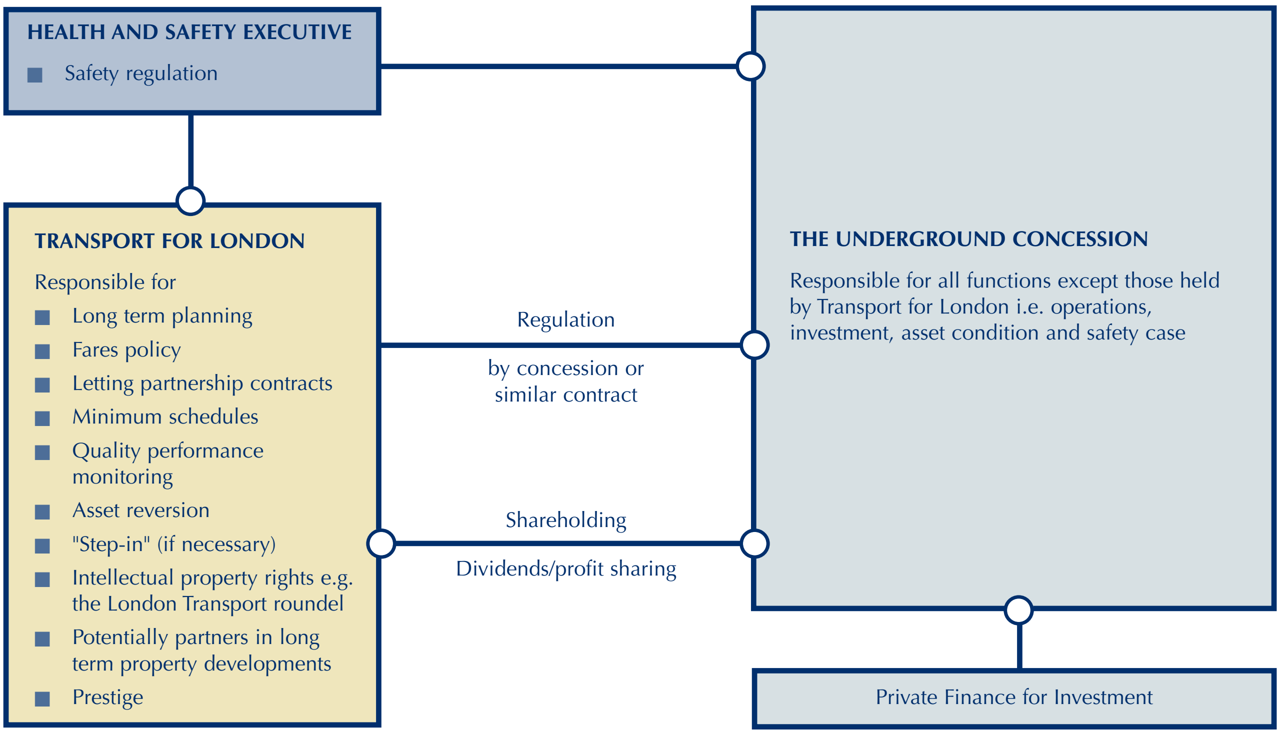
1.10 Price Waterhouse identified constraints on a partnership based on public ownership and private debt funding. The report cited prevailing public expenditure rules that would classify the debt as public sector debt. The report also stressed concerns that the capital markets would have to develop more confidence in the public ownership arrangements. Price Waterhouse suggested that the option would require the creation of a long term framework for fares **(see Figure 3(a))** and realistic performance targets. This would have been necessary to give the markets comfort that London Underground's revenue base was predictable and protected from cuts in funding. Even so, Price Waterhouse doubted that London Underground would be able to raise the necessary funds without Government backing for debt repayments, something the Government was not prepared to offer.

3 The four basic business structures considered for the PPP

a Unified business option (public sector)

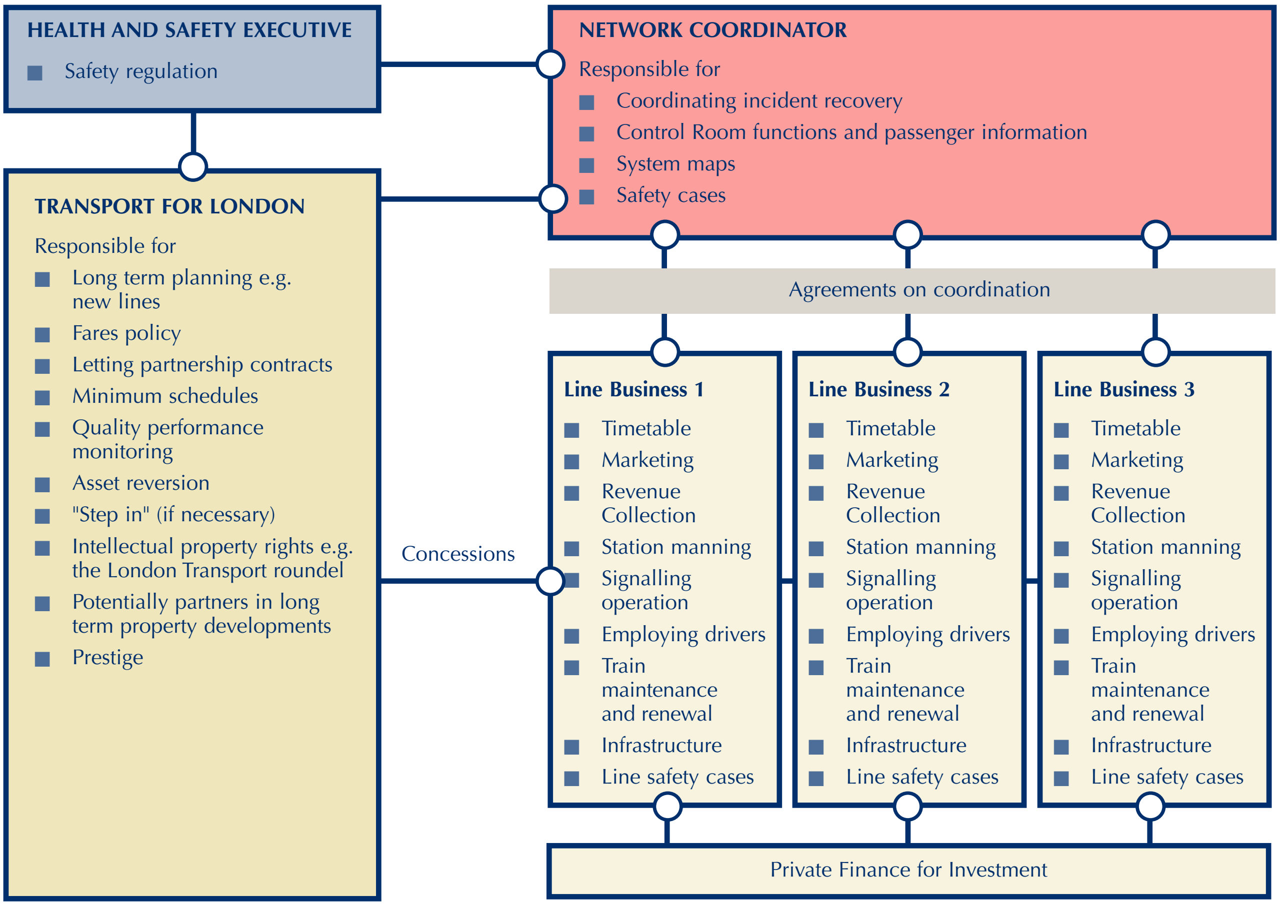


b Unified business option (private sector)

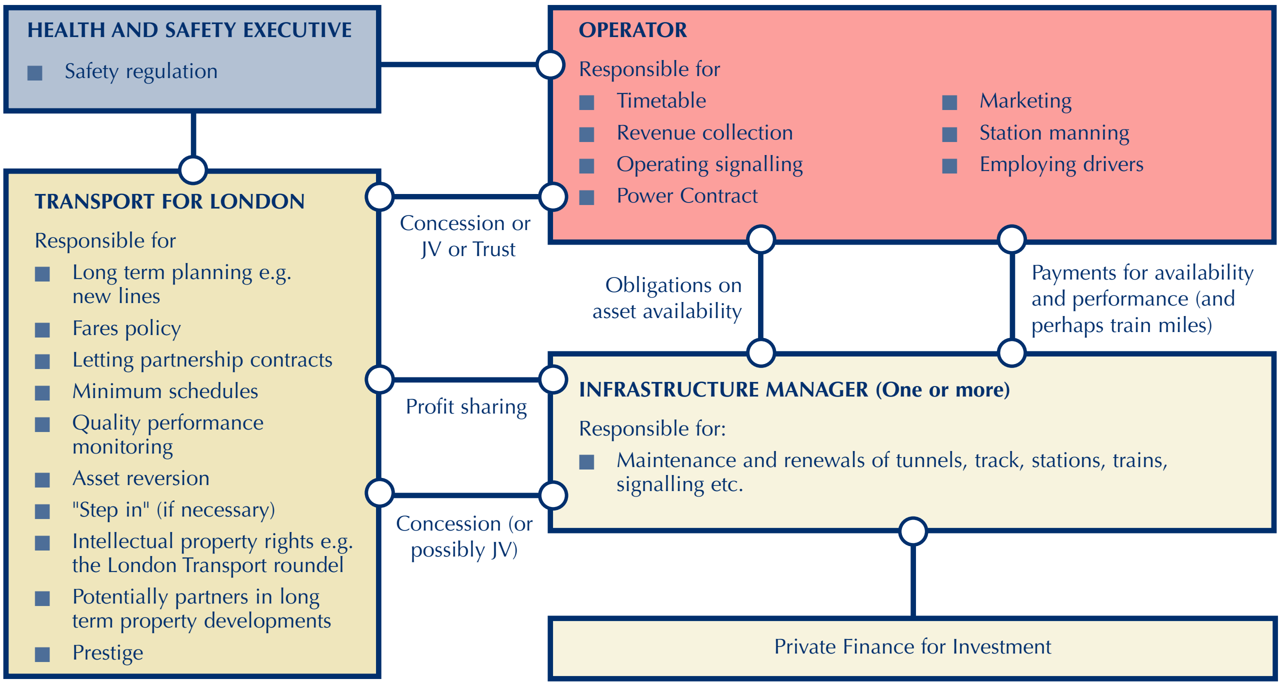


3 The four basic business structures considered for the PPP *(continued)*

c *Vertically integrated business model*



d *Horizontally split business model*



NOTE

The working group decided that rolling stock should be treated as infrastructure when day-to-day operations were separated from infrastructure maintenance and renewal. As a consequence the train driver was to be an employee of the Operator, but the train was to belong to an infrastructure company.

Agreement to private sector responsibility for the Tube's infrastructure

1.11 In November 1997, the working group decided to give further consideration to three of the options. These were:

- the partial flotation of London Underground;
- some form of horizontally split business; and
- notwithstanding Price Waterhouse's comments, a public sector owned London Underground that would be given the right to raise funds in the capital markets, then still the Department's preferred option.

1.12 In December 1997, the Treasury commissioned a team of four businessmen to review the merits of the three options. In January 1998, this team reported that it favoured splitting London Underground horizontally, with the private sector running a single Infraco and the public sector retaining responsibilities as the operating company. London Underground's good operating record helped to convince this team that this part of the business should remain in the public sector. The team had concerns about managing the considerable investment that a single Infraco would face and held the view that only Railtrack could take this on - given its strong position in the market at the time. This resulted in a recommendation that management and responsibility for maintaining, upgrading and renewing the Tube's infrastructure, areas of public sector weakness, would be passed to the private sector in one, two or three concessions.

Keeping operations in the public sector

1.13 London Underground's senior management was concerned that dropping a unified structure could reduce safety levels. Although appropriate safety procedures and accountabilities could be set out in a way that satisfied the safety regulator (the Health and Safety Executive), London Underground remained concerned about how to ensure that safety was not undermined by poor communications between businesses.

1.14 From the start of the PPP process, the working group considered the issue of safety as paramount. Maintaining or bettering London Underground's good safety record was considered central to the Government's objective of safeguarding the public interest. The Department said that attainment of safety standards was to be a pass/fail test and started consultation with the Health and Safety Executive in June 1997.

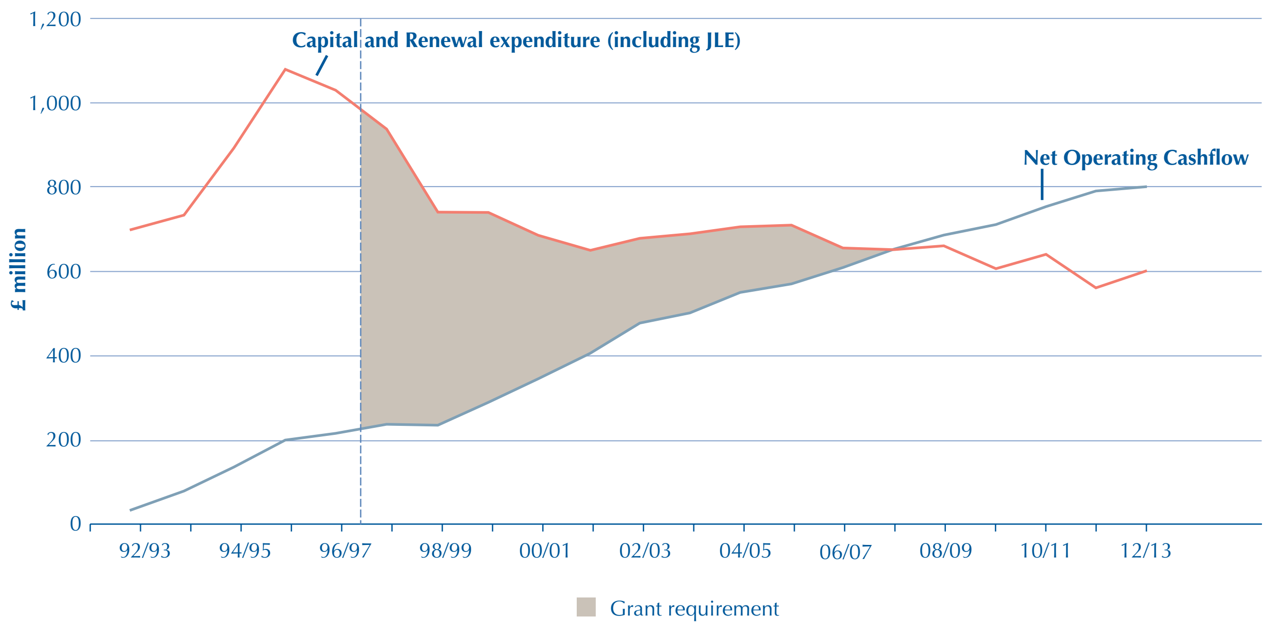
1.15 In October 1997, the Health and Safety Executive reviewed Price Waterhouse's report on business structures. It concluded that none of the options posed insoluble safety problems, but noted that the potential for loss of safety was greater in the more sub-divided business options because the risk of management failures increased. Later, in March 1998, the Health and Safety Commission confirmed that the proposed horizontal split of the Tube could be made to work safely.

1.16 The Department considered that the objective of safeguarding the public interest argued for retaining operations in a single, publicly owned entity, with overall responsibility for safety including oversight of the Infracos' safety regimes. The Department also saw advantages in this option as, from the perspective of passengers, it would preserve a single unified Tube - with one fare system and one company selling tickets and marketing the service. The Department considered that the recorded improvements in London Underground's operating performance both in terms of customer focus and operating profits over the preceding seven years was evidence of its ability to manage operating costs and collect fares within agreed budgets **(see Figure 4)**.

The option taken forward

1.17 The working group discarded two of the three options, one because of lack of market interest in a partial flotation, the other because existing rules prohibited a public sector owned London Underground from raising debt in the capital markets. The Government was unwilling to make a special exception to these rules because of concerns that the selected option should provide for the structural changes necessary to engender cost efficiencies and utilise new management skills.

4 London Underground's improving cashflow (1997 estimate)



Source: Price Waterhouse study (1997)

1.18 The working group considered regulatory options and rejected extending the role of the national rail regulatory regime to the Tube. With the public sector operating the trains, the group considered that the PPPs should have a contractual rather than a regulatory framework. It saw, however, the need for an independent third party with powers to adjudicate on whether the Infraco contracts operated as intended and that the Infracos responded economically and efficiently to the investment incentives built into the PPP payment regime. This resulted in the establishment of such a party, the Arbiter, whose duties include the following:

- To determine the economic and efficient price, when asked, to ensure that the Infracos receive an agreed return, depending on performance;
- to give directions on whether changing requirements are new or old obligations; and
- to adjudicate on whether adverse conditions have exceeded the threshold in the contract thereby permitting price revision.

Output-based contracts

1.19 In April 1998, the Department, satisfied that its objectives including eliminating the investment backlog could be achieved, told London Underground to proceed with implementing the chosen horizontally split PPP. Two priority tasks were: to determine how many Infracos there should be; and to carry out a preliminary assessment of the condition of the Tube's assets. For the former, London Underground's team concluded during 1998 that splitting the infrastructure business into three Infracos was likely to deliver better value for money. In particular, the team's investigation found little market appetite for bidding for a single Infraco. The resulting split led to two concessions for the deep tubes (see glossary) and one concession for the sub-surface lines, as shown in Figure 1.

1.20 To assist in the procurement, London Underground engaged Ove Arup to prepare an engineering assessment of the investment programme and to estimate base costs. Ove Arup's findings provided the basis for London Underground's estimate of the cost of the public sector carrying out a programme of maintaining and upgrading the Tube over 30 years. London Underground also held a series of workshops to analyse the extent of risk and uncertainty faced in this programme. As a result of this analysis, in March 2000, the public sector comparator forecast a wide range of risk adjusted net present costs, between £12,600 million and £17,200 million. This wide range was indicative of the uncertainty surrounding the costs of modernising the Tube.

1.21 In proceeding with the PPP, the Department concluded that this cost uncertainty could be managed by building in: appropriate incentives into the Infraco contracts; and a mechanism to ascertain that future costs, where unknown at the outset, would be re-based on the economic and efficient price for the outputs. As set out in more detail in the following section, the Department and London Underground saw a way of dealing with the uncertain infrastructure condition by aligning payment with delivery of the desired outputs.

Part 2

Deal price

This part of the report examines the performance and payment regimes and contract negotiations. It finds that the assurance on value for money is limited because of timetable delay (see Figure 5), the unknown impact of substantial provisions for contingency and greater risk sharing than London Underground had hoped to negotiate.

The specification and the performance baselines

2.1 The payment regime that London Underground devised for each Infraco contract was based on paying the Infraco a monthly charge, set during the procurement, that covered maintenance, renewal and upgrading of the relevant infrastructure. This infrastructure service charge (ISC) would be subject to monthly adjustments, both up or down, determined by measuring the performance of the infrastructure against a performance and asset management specification that moulded together three existing London Underground metrics and one new one. These measures are:

- **Capability** - A target measure of passenger journey time for the given capability of the railway infrastructure. The capability of a line is either estimated or tested when the condition of the infrastructure has changed and this has affected the passenger journey time. For example, after a line

5 PPP bid and procurement chronology

Milestone	Two Deep Tube line competitions	One Sub-surface line competition
Prequalification	22 July 1999 [2 x 4 bidders]	22 July 1999 [4 bidders]
ITT issued to bidders	October 1999 [2 x 4 bidders]	April 2000 [3 bidders]
Response to ITT	March 2000 [2 x 3 bidders]	September 2000
Short-listing for BAFO	July 2000 [2 x 2 bidders]	n/a
BAFO and revisions	November 2000, January and April 2001	February 2001 and July 2001 resubmission
Preferred bidders	May 2001	September 2001
Application for first judicial review	3rd April 2001	
First Judicial Review	July 2001	
CFO bids	December 2001	February 2002
2nd Judicial Review	June to July 2002	
Financial Close (after May 2002 *initialling*)	JNP - December 2002	April 2003
	BCV - April 2003	

NOTES

ITT Invitation to Tender.

BAFO Best and Final Offers; and

CFO Committed Finance Offers.

Source: Department records

upgrade has reduced passenger journey time, or a speed restriction has been imposed for more than three months;

- **Availability** - A measure that assesses the availability of train and station infrastructure in terms of non-performance using lost customer hours per line per month; and
- **Ambience** - A measure that assesses the quality of the train and station environment provided to passengers.

And a fourth measure that London Underground did not already have but which is common in PFI contracts. This was:

- **A service point regime** - A regime designed to incentivise preventative maintenance in areas not covered by other measures and provide assurance on quality standards achieved, for example, in station refurbishment. The points regime calculates deductions for equipment failures and rewards timely fault rectification.

A fuller explanation of these measures, and the asset condition benchmarks that were also set, is contained in Appendix 2.

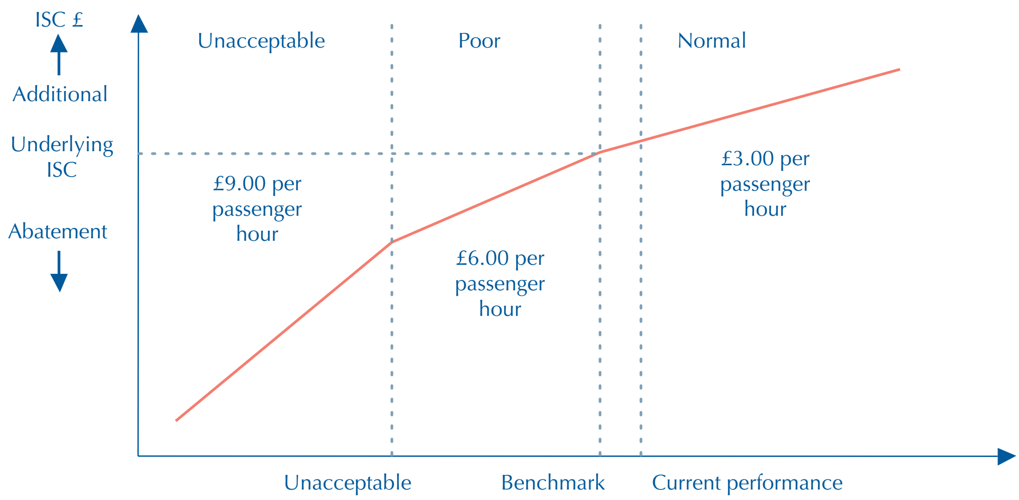
2.2 London Underground wanted the performance regime to spur the Infracos into focusing their efforts on meeting those outputs of the railway service that it considered passengers valued: journey time; safe and reliable services; and cleanliness. Judging whether the performance targets were challenging was difficult. What complicated the setting of asset maintenance and performance baselines was: the considerable uncertainty about the then condition of the assets; the level of sustainable performance at the start; and interference from the concurrent business restructuring.

2.3 London Underground calculated the availability measure from the cumulative number of hours that passengers lost over three months when using a particular line and then divided by three. Rather than set the availability baseline at the mean, with equal bonus/abatement rates for better/worse than average performance, London Underground set the availability bonus/abatement structure boundary such that the Infraco could earn bonus payments when availability was within five per cent of the average i.e. up to five per cent more lost customer hours **(see Figure 6)**. However, the bonus rate was set at £3 per customer hour saved when performance was better than the baseline, while the abatement rate started at £6 per customer hour lost when performance was worse than the baseline. This skewing was designed to incentivise the Infraco to improve availability performance, but was set to be price neutral if availability remained at current levels with the same degree of variability. London Underground set an increase in the abatement rate to £9 per customer hour when performance was deemed to be unacceptable. The volatility inherent in train performance meant that, without this skewing, the Infracos would have faced deductions for matching current performance and would have raised their bid prices to achieve a neutral position.

2.4 The benchmark levels for the other two measures were set above estimated current performance with financial incentives to deliver further improvement. For each line, for example, the capability payment is set to increase

6 Infrastructure Service Charge (ISC) for Availability

The abatement increases with worsening performance.



Source: London Underground

from certain points in time. In return, the Infraco has an obligation to shorten, by a set amount, the journey time capability of the line by upgrading it. Should the Infraco fail to deliver the improvements within the required time, London Underground would be entitled to make deductions from that Infraco's ISC.

2.5 In September 1999 London Underground restructured its business to mirror the proposed PPP, separating LUL as the operating company (and contract manager) from three Infraco divisions. This allowed the performance regime, particularly the ambience and availability measures, to be tested and fine tuned. London Underground compared the expected results from the theory behind the specification (see Appendix 2) against actual performance data drawn from operations, and shared the results with the bidders. Bidders were expected to factor in expectations about improving trends, for example as new investment bore fruit after a temporary dip in performance.

Competitive bidding

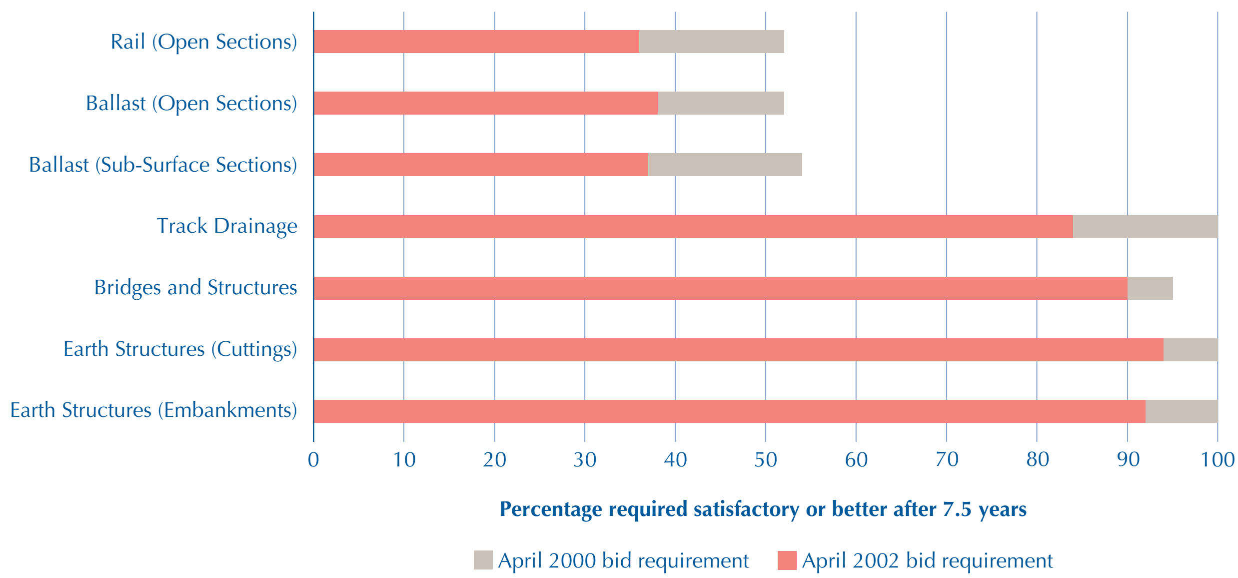
2.6 London Underground's decision to create three Infracos aligned with the preference aired during consultations across various market sectors in the summer of 1998. For all three Infraco concessions there was competitive bidding through to the appointment of preferred bidders - although this was not initially the case for the Infraco SSL contract.

2.7 At an early stage, both the Department and London Underground viewed Railtrack, then owner of the national railway infrastructure, as a dominant bidder likely to affect competition adversely. London Underground dealt with this by engaging Railtrack in exclusive negotiations for Infraco SSL, after Railtrack had made a strategic case for integrating the sub-surface lines into the national railway. In exchange, Railtrack agreed not to bid for Infraco BCV and Infraco JNP whose deep tube concessions included extensive tunnels.

2.8 London Underground, in July 1999, sought expressions of interest in the two deep tube concessions by advertising in the Official Journal of the European Communities. In response, six consortia, comprising 26 companies, were formed. But by late 1999, however, the negotiations between London Underground and Railtrack for Infraco SSL broke down. Subsequently in December 1999, London Underground announced that it was running a competition for Infraco SSL and received expressions of interest from five consortia.

2.9 London Underground knew that despite investigations by its own advisers, Ove Arup, and investigative work by bidders, the condition of less accessible fixed assets (tunnels, some embankments, bridges etc.) would not be known before award of the contracts, and in some cases not before the end of the first 7½ year period **(Figure 7)**. The uncertainty meant that bidders sought protection from the consequences of adverse conditions exceeding prudent levels of contingency. They were particularly

7 Required condition by asset class



NOTE

LU classify asset conditions on a scale of A-E, where A, B and C are satisfactory or better; D means heavy maintenance or replacement/overhaul is needed; and E requires frequent inspection or removal from service until fixed. This figure shows, for different asset types, the PPP bid requirement for the proportion to be made satisfactory (condition A-C) within 7.5 years in April 2000 and April 2002. The variations depend on the underlying baseline: for example, 85-90% of drainage assets were classed as A, B or C in shadow running years. Grey assets (see glossary) are provisionally classed as satisfactory unless engineering judgement indicated otherwise.

Source: London Underground

concerned because London Underground envisaged the Infracos taking full 30 year responsibility for the design, procurement strategy and decision-making in support of infrastructure renewal and upgrade activities.

Reimbursement of bidding costs

2.10 The market interest that London Underground had created in the PPP started to fade. Adverse media publicity, objections to the PPP from Mayoral candidates and railway safety concerns following the accident at Paddington raised market fears about the Government's commitment to the PPP. These issues added to the concern of the consortia that bidding, and related investigations of the asset condition, would be expensive. Bidders would have little resource left over to bid on other business opportunities, increasing their commercial risk. By October 1999, one of the consortia interested in the deep tube concessions had withdrawn and a key member in another was considering withdrawing. Under sustained pressure from bidders, London Underground, after consulting with the Department and the Treasury, agreed to reimburse some of the bid costs.

2.11 For those bidders that received invitations to tender for Infraco BCV and Infraco JNP, London Underground initially offered to reimburse each runner-up 75 per cent of its reasonable and audited bid costs, capped at £1 million. Moreover, a pool of £4 million was established for each competition to be shared between the continuing bidders on condition that at least one of the bids came in at a lower value than that assessed for the public sector. The £4 million pool per competition was raised to £15 million to cover preferred bidders' anticipated expenditure, and then raised again to £19 million to allow for delays. At a cost of £57 million, London Underground, in all three competitions, therefore avoided finding itself in single bidder situation until it selected preferred bidders **(see Figure 8)**. Although London Underground rejected some bidders' costs, it did not exclude all of the bidders' preliminary marketing costs (effectively 'sunk costs'). Although these had been audited, this scrutiny does not necessarily limit reimbursement to efficient and unavoidable spending - as further discussed in Part 3 (paragraph 3.18).

Cost was one of four bid evaluation criteria

2.12 Six bidders submitted initial bids in March 2000 for two deep tube contracts on the basis of a fixed Infrastructure Service Charge and target performance levels. The initial evaluation resulted in two bidders being short-listed in July 2000 for each infrastructure contract (Figure 5). In November 2000, the short-listed bidders made best and final offer submissions (BAFOs). London Underground evaluated these bids against four sets of criteria:

- technical (including asset management and safety);
- organisational (including impact on LUL costs);
- legal/commercial (evaluating contract qualifications); and
- financial (over 7½ and 30 years).

London Underground compared bid profiles against its expectations of the necessary long term spending strategy. Bidders' proposals were tested for internal consistency, informed by a simulation model developed with PA Consulting (see Appendix 2). Using the model to identify key assumptions and sensitivities led to bid evaluation adjustments, when judged that a bidder had submitted a low bid price expecting to revise its prices upwards following the first periodic review after 7½ years.

2.13 Specified qualities sought in a long term partner were: ability to deliver the required performance; asset stewardship, including evidence of safety and environmental competence; stewardship of staff transferred from LUL; acceptance of the principles of partnership; and value for money. As part of the latter, London Underground evaluated the present cost of the payment streams for each bid, and separately estimated the present value of non-cash benefits relating to performance at £2,100 million (see Part 4).

8 Eligibility for reimbursement of bidders costs

Date	Cumulative ceiling £ millions	Comments
October 1999	8	ITT issued to deep tube bidders[1]
April 2000	45	ITT issued to SSL bidders
January 2001	57	SSL BAFOs
September 2002	80	After review of unsuccessful bidder claims
December 2002	270	After JNP financial close and review of successful bidder claims

NOTES

1 Losing bidders also eligible up to 75% of audited costs (capped at £1 million)

2 April 2000 Additional bidders, if short listed, eligible up to 90% of audited costs (capped at £5 million, increased to £7 million in February 2001)

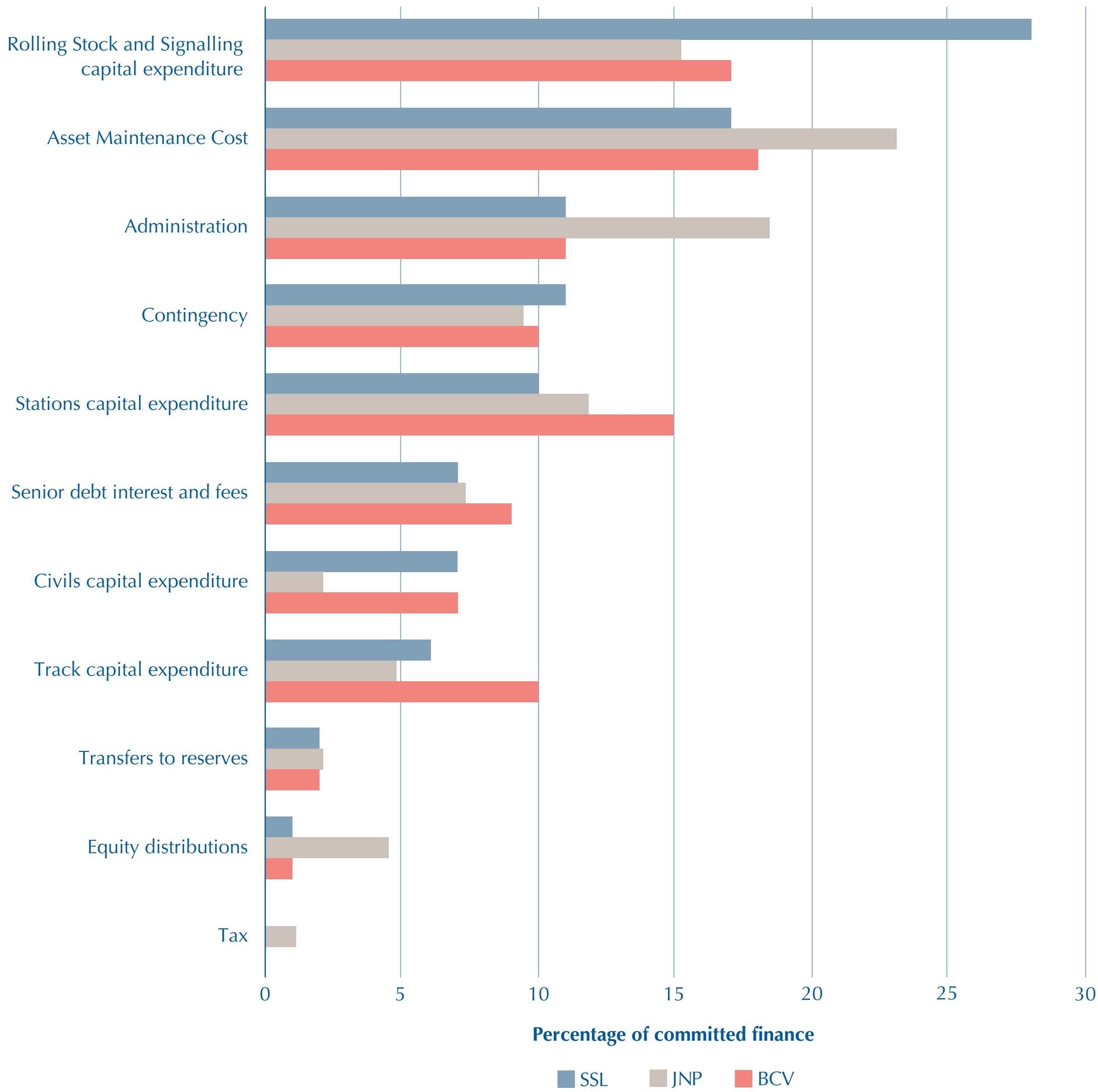
Source: National Audit Office

Affordability constraints

2.14 Over the period since 1999, London Underground's original engineers' estimates of £13,300 million for base costs had increased, once allowance had been made for risks, to a range of £15,000 million to £17,300 million. This increase was attributed to investigations that found that the state of some of the assets was worse than expected and required more remedial work. Although it did not disclose these cost findings to bidders, London Underground concluded that the increased base costs and contingency used in the BAFO bids, which also came in higher than expected, were mostly reasonable.

2.15 The two BAFO bids for Infraco JNP contained considerable increases in contingencies for risk over those included in earlier submissions following the invitation to tender, bringing the level in these bids more into line with Metronet's provisions on the other Infraco bids **(see Figure 9)**. Metronet's later revised BAFO bid (para 2.17), however, had lower exposure to risk because it could seek a price revision if adverse conditions, unrelated to the risks transferred under the contract, reached £50 million, instead of the higher threshold of £200 million originally sought by London Underground, and retained for the first 7½ years in the Tube Lines bid.

9 Uses of Finance



Source: Metronet and Tube Lines Information Memoranda (1/2003 and 5/2002)

2.16 The magnitude of the infrastructure service charges included in these bids and the estimated ISC for Infraco SSL (before receipt of BAFO bids) increased the grant requirement. Another factor contributing to affordability concerns was a deteriorating view of London Underground's operating profit projections for the first 7½ years. This annual surplus of some £450 million (Appendix 3, Figure 3.3) reduced the amount of grant needed. The assumption that this would remain was to prove too optimistic, but was accepted by the Department following advice from Ernst & Young that London Underground's forecasting was generally robust. Continuation of a surplus depended on the favourable prevailing trend of operating costs growing less than revenues. In fact, the trend reversed so increasing the call on grant to meet the charges.

2.17 As a result, London Underground re-profiled the timing of investment for the PPP by delaying some key service improvements and asked bidders for the deep tube Infracos to revise their BAFO offers thereby delaying the procurement by five months. Affordability continued to be under review during the post BAFO negotiations. In February 2002, Metronet submitted its Committed Finance Offer (CFO) for the sub-surface line revealing a shortfall against planned funding levels, or affordability shortfall, of some £55 million a year. Based on cost-benefit appraisal by London Underground, the Department therefore decided that Metronet's proposal to upgrade the sub-surface line two years early be declined, reducing the affordability shortfall to some £40 million. This was offset by an overall increase in costs for the SSL over the 30 year period of £827 million (10 per cent), which included additions to train maintenance, and to signals and control maintenance costs on the SSL prior to the delayed first upgrade. Following a similar appraisal, the Department decided, however, that the upgrade on Metronet's deep tube Victoria Line bid should go ahead as proposed.

2.18 All in all, after some de-scoping of the BAFO requirements, the grant requirement for the Tube was estimated at some £900 million a year for the first 7½ years of the contract. The Department and London Underground throughout had been careful to avoid a disclosed ceiling becoming a bid target. Bidders became aware of an affordability constraint only when, at BAFO, their bids breached the Government's affordability threshold. At this stage London Underground issued guidance giving short term affordability constraints for the first 3 and 7½ years which deferred the rate of recovery from the maintenance backlog. (see Figure 7 on page 17) These targets reduced London Underground's forecast annual grant requirement by £80 million.

Selection of preferred bidders

2.19 In May 2001, London Underground appointed Tube Lines Holdings and Metronet as preferred bidders for Infracos JNP and BCV respectively. Metronet, in September 2001, also won preferred bidder status for Infraco SSL. London Underground wished to preserve its bargaining position over the preferred bidders, and therefore invited Tube Rail and LINC to become reserve bidders for Infracos JNP and BCV respectively. With no other immediate opportunities to win other railway infrastructure business, it was always likely that the organisational support behind the reserve bidders would start to dissolve, and this is what happened. Even if London Underground had agreed to meet the cost of keeping the bid teams together, key members would naturally have moved on to more challenging work. The credibility of the approach was further reduced when London Underground approved contact with the financial backers of the reserve bidders to help one of the winning bidders prepare a Committed Finance Offer.

2.20 Time spent in negotiations with Railtrack about Infraco SSL for, among other reasons, exploring greater integration with the national railways resulted in the competition for Infraco SSL running about five months behind those for the deep tube Infracos. When the negotiations collapsed, London Underground designed the Infraco SSL competition to be independent of the others. So London Underground considered itself legally compelled to award preferred bidder status to Metronet when its bid was judged to be the most economically advantageous. The selection of two consortia for the three Infracos effectively led to a smaller market for Infraco contractors than the Government had originally hoped when it, in part, justified the chosen PPP structure on the basis that there would be more competitive pricing and opportunities to benchmark prices.

2.21 London Underground was aware of the risk of unduly limiting the Infraco supply market, and said early in the procurement that no bidder would be able to win more than two Infracos. Had it realised, in July 1999, that its negotiations with Railtrack might prove fruitless and had maximising the diversity of supply been an explicit objective, London Underground could have designed the procurement around sustaining the largest possible railway infrastructure market throughout the process. It could have drafted its advertisements in the Official Journal to the European Communities to reflect such a goal. For example, the notice could have informed bidders that those bidding for more than one Infraco would have to rank the Infracos in preferred order. Bids for second and/or third ranked Infracos would attract negative weighting, if the relevant bidder led the competition for its top choice Infraco. While not guaranteeing the selection of three different preferred bidders, this, or a similar process, may well have led to such a result in this case, with the appointment of LINC rather than Metronet as the preferred bidder for Infraco SSL, given the small differences between their bids. In the same advertisements London Underground could have advised bidders that, in the event of there being three different preferred bidders, each preferred bidder would have to act as a reserve bidder for one or both of the other two Infraco competitions. If such an arrangement had been an option for London Underground, it could have provided considerably more bargaining power than it had with only two bidders and no reserve bidders.

Delay and deal drift

2.22 As a result of market reservations about the timetable, noted in October 1998, London Underground re-set target completion from April to December 2000. As shown in Figure 2.1, the procurement exercise lasted 45 months, from the July 1999 pre-qualification date (60 months overall). Settling the position of Railtrack and the need to revise deep tube bids after BAFO to meet affordability criteria extended the timetable. Revisions to bids were sought a second time from identifying and addressing - before it was too late - constraints on the ability of LUL to provide the power required by initial proposals for new trains. There was then a long gap between the award of preferred bidder status on the contracts and their completion. Some concerns of both bidders, and most notably of Metronet which, unlike Tube Lines, had to approach the capital markets, took time to resolve. The two judicial reviews and contested state aid proceedings led to further unplanned delays.

2.23 The Government indicated in its submission to the European Commission that certain changes to the PPP requirements might have increased the price of the contracts for the preferred bidders, indicating £590 million as its maximum extent from award to commercial close:

- The maximum increase in the net present value of the JNP contract after the time of award was £140 million (or 2.2 per cent) over 30 years.
- The maximum increase in the net present value of the BCV contract after the time of award was £280 million (or 6.8 per cent) over 30 years.
- The maximum increase in the net present value of the SSL contract after the time of award was £170 million (or 3.5 per cent) over 30 years.

2.24 Transport for London's advisers, based on information provided during consultation, calculated that the infrastructure service charge would come out £711 million higher than at the award of preferred bidder status. Unlike London Underground, Transport for London also attempted to put values on: changes in the profile of Infraco costs; areas where bidder risk reduced; potential bidder bonuses; and adjustments to the rates of return. London Underground rejected the approach adopted by Transport for London to quantify bid changes on the basis of the lack of probability analysis, and failure to include benefits secured during the negotiations, to arrive at an overall outcome.

2.25 London Underground tested the reserve bidders' proposals against the scope changes and concluded that the expected price impact, had they been required to price the changes to the PPP, would have been similar to those of the preferred bidders. In April 2002, the Government sought confirmation from the European Commission that the PPP arrangements did not constitute 'state aid'. After its review of the Government's submission in October 2002, the European Commission concluded that "an open, transparent and non-discriminatory tendering process occurred" as part of the procurement. Moreover, the Commission stated that any increases in value during the negotiating period with the preferred bidders did not detract from the conclusion of a deal representative of a market price.

Completeness of price information

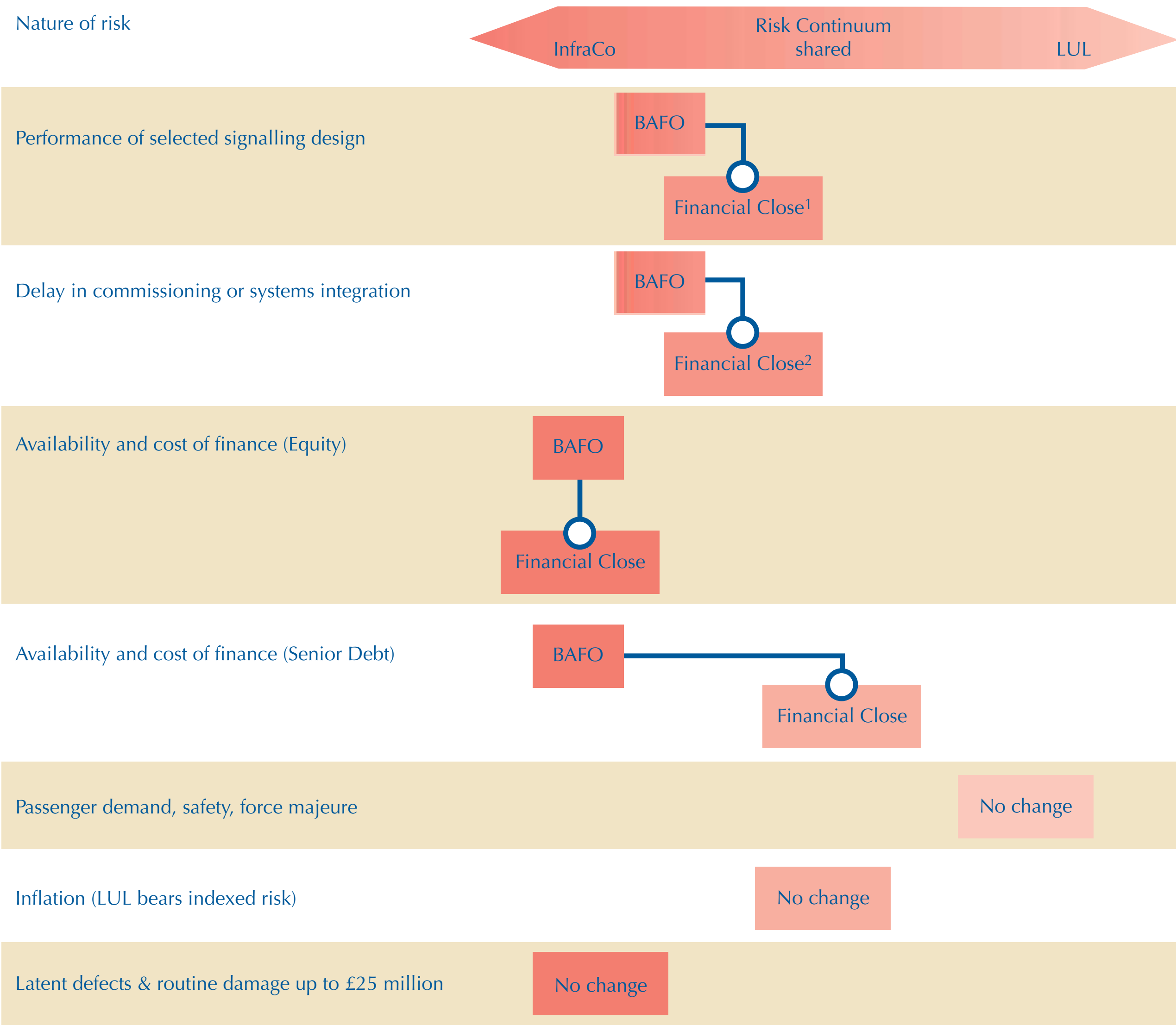
2.26 Although London Underground routinely inspected and maintained its infrastructure assets, its knowledge about the residual life of some, particularly those difficult to access, was not complete. Even after Ove Arup had collated the available asset condition information, London Underground knew that its bidders would not have sufficient starting information to judge reasonably the residual life and associated maintenance requirements for varying percentages of the fixed assets (see Figure 7 showing variation by asset class). London Underground had identified this problem at the outset:

> "The condition of some assets (e.g. cast iron structures) will be difficult to determine, however good the due diligence process. The private sector may apply a heavy discount to cope with the uncertainty or the public sector might have to bear or share the residual risk."
>
> *Source: London Underground 'Evaluation of Options'*

2.27 The uncertainty associated with the condition of some assets also elevated the importance of the proposed periodic reviews. London Underground accepted that the contracts would include provisions on the basis that, at periodic review, contingent sums for unforeseen risks would be adjusted. In modelling this risk there was, over the bidding period, a noticeable convergence between the public sector comparator (although this was kept confidential) and the bids. It was not clear to us to what extent the public sector accepted and took on board risks identified by the private sector. London Underground told us that it made an independent judgement of the impact of these risks.

2.28 Bidders were concerned about the 7½ year periodic reviews because they considered that LUL could re-scope the extent of the work for which Infracos were responsible, and could amend the Infrastructure Service Charge. They were worried that this could create disproportionate risk. These fears and the commercial imperative for bidders to clarify all the risks they were assuming led to London Underground accepting more risk sharing than it had originally hoped to negotiate when sending out its desired form of contract at the BAFO stage (illustrated in **Figure 10**) in order to keep bidders' provisions down.

10 Risk clarification examples (illustrative only)



NOTES

1 Although the underlying commercial risk share on signalling design did not change, bidders insisted on it being much more precisely defined, reducing their uncertainty.

2 Infracos are allowed certain extensions of time for delays not attributable to them. Bidders argued that this no fault principle should apply generally, and LUL dropped certain exclusions it had sought. If such extensions were used in full, which would be unlikely, Transport for London estimated their value at £117 million.

2.29 London Underground had to strike a balance between holding a desired line on risk transfer and conceding higher levels of contingency in bidder pricing, and had to make sure that each bidder had sufficient funds in reserve to fund contingency **(see Figure 11)** to avoid triggering a request for an extraordinary review by the Arbiter in normal circumstances. For the Infracos, that are judged economic and efficient, their exposure to non performance deductions and/or increased costs is capped. Appendix 2 provides additional information on performance and payment arrangements.

Finance costs

Equity pricing and risk

2.30 Although London Underground gave some thought to holding a separate funding competition (as reviewed in the NAO report on the Treasury Building PFI deal),[4] such an approach would have depended on going to the market with a well defined financial structure appropriately aligned with risk. This could not be followed because the PPP competition was looking to identify the terms on which the market would finance a novel structure and the different PPP bidders came up with alternative and competing funding solutions at the BAFO stage (see Figure 11).

11 Sources of finance for the first 7½ years

	Tube Lines		Metronet - BCV		Metronet - SSL	
	Equity £m	Debt £m	Equity £m	Debt £m	Equity £m	Debt £m
Equity *(about 20% return)*	45		75		75	
Contingent equity	45		30		30	
Shareholder loans	90		100		100	
Mezzanine debt[1]	135					
Senior Debt						
Banks		630		330		330
"Wrapped"[2]		600		515		515
EIB[3]		300		300		300
Senior standby loans		273		180		180
Totals	**315**	**1,803**	**205**	**1,325**	**205**	**1,325**

NOTES

1 Mezzanine debt is counted with equity for senior debt ratio purposes.

2 "Wrapped" debt has been credit insured.

3 European Investment Bank (EIB) lends on a parallel basis to senior debt.

Source: London Underground

4 *"Innovation in PFI Financing: The Treasury Building Project" HC 328 March 2001.*

2.31 London Underground, supported by the Department, took steps through the bidders to firm up earlier proposals to arrange long term fixed rate financing. CFO bids consist of fees, margins for lenders and non-binding estimates of the expected underlying cost of funds. London Underground put arrangements in place to fix the underlying cost of funds following financial close (see para 2.15). The fees and margins were negotiated as part of the tendering process and were accepted by London Underground, following benchmarking and advice from its advisers. There was also provision to claw back any future savings through at least a 50 per cent share in refinancing gains (or 60 per cent in the case of an initial Tube Lines refinancing).

2.32 London Underground will be paying equity investors a risk premium about 15 per cent above the risk free rate (see glossary). This is 50 per cent more than most deals with an established PFI structure, but it had arrived at this premium through competitive bidding. Tube Lines, in its base case for lenders, showed a nominal post tax equity rate of return of 19.9 per cent (17.45 per cent real). The risk premium on the nominal rate is some 15.4 per cent above the risk free rate of about 4.5 per cent at Financial Close for Infraco JNP. Metronet's base case shows a nominal rate of return of 17.7 per cent on both Infraco BCV and Infraco SSL, with real rates of return being 15.09 per cent and 14.9 per cent respectively. These rates of return depend on the consortia achieving bid levels of performance - not the lower levels set by benchmarks - and investors are at risk of losing their investment if defaulted for failing to achieve upgrades through inefficient and uneconomic behaviour. The rate of return could be different from the bid rate because payments are aligned to actual performance, but at benchmark levels could still reward investors with real returns of between 10 per cent and 17 per cent. If an Infraco experienced cost overruns similar to those on recent line upgrades managed by London Underground, and delivered performance lower than forecast, returns would fall further.

2.33 In most PFI deals, the risk on the underlying funding costs (excluding the equity and risk elements) remains with the public sector up to Financial Close. London Underground took steps to manage this risk actively. London Underground's Director of Finance submitted a memorandum to the Board on 2 September 2002 setting out detailed proposals to manage interest rate risk through two separate operations:

- A risk management programme to manage the impact of the Metronet bond financing by selling the bonds that served to benchmark the issue and so, with Financial Services Authority consent, creating a net short position[5] immediately prior to the bond launch; and
- a programme of interest rate swaps for bank debt over the 3 month period following financial close, rather than all at once, with broadly similar arrangements for Tube Lines and Metronet.

2.34 The Royal Bank of Canada reported on the Tube Lines funding on 18 March 2003 and on the Metronet funding on 2 May 2003. In both cases it generally found that market disruption was kept to a minimum and that the underlying cost of funds was in line with the market at the time. This represents an improvement on earlier PFI deals that we have examined.[6]

The cost of bank financing and risk carried by lenders

2.35 We have noted above that the debt that does not count as part of the equity investment benefits from a form of guarantee. In the event of the financial failure of the limited liability company set up to implement a PFI transaction, lenders are protected by the value of the asset under construction. One way of realising this value is to re-let the service contract to a replacement provider. Re-letting contracts in this way posed problems in the case of the Tube, partly because ownership of the assets remained with LUL. The protection afforded to the lenders was increased in autumn 2000 before the BAFO bids were due for submission. This was done by providing clarity that LUL would pay lenders a sum (known as the 'underpinned amount') set at a minimum of 90 per cent in the event of a default leading to termination. This was backed up by Government letters, known as comfort letters (see glossary), which recognise the amounts of Infraco borrowing and the circumstances that the Secretary of State would consider in setting the transport grant for Transport for London. One bidder told us, however, that based on supplier support, his group had arranged indicative financing without requiring that the minimum underpinned amount be made explicit. This is indicative of what might be possible on smaller scale transactions, rather than being achievable from the lending market as a whole.

5 Potential investors in the Metronet issue holding reference bonds that they sell in order to purchase the new issue potentially depress the price and increase the yield. In this case Metronet would have to match the higher benchmarked yield. As a result of the short sales, London Underground's agent can meet this demand and minimise the price impact.

6 See, for example, Ministry of Defence: Redevelopment of MOD Main Building HC748 April 2002.

2.36 The placing of Railtrack in administration in October 2001 had an impact on market sentiment in part by illustrating the risks of costing maintenance and renewal of assets when their condition is not well known. Market sentiment can also be expected to have been affected by the ongoing political opposition to the PPP. The PPP preferred bidders persuaded London Underground that increasing the underpinned amount to 95 per cent in the run up to Committed Finance Offers (CFO) was essential to raise the total amount of finance required from the bank and bond markets for all three deals. Even with this support, financial institutions consider the Infraco borrowers a riskier proposition than the Government and this is reflected in their lower investment grade credit rating BBB+/Baa3 partly based on unique aspects that carry uncertainty, for example the periodic review arrangements. Although they ultimately carry risk reduced to 5 per cent or less, lenders are charging about £450 million more than they would charge on some £3,800 million of direct Government loans that would enjoy the highest credit rating (AAA).

2.37 The Tube Lines financing structure, in May 2004 refinanced in the bond market, had been developed earlier in the bidding process. Tube Lines had always planned to refinance at least £600 million of their debt at an early stage after project risk had reduced and after allowing time for market capacity to increase. The full potential impact of re-structuring most of the financing, say £1,800 million, in the light of the 95 per cent guarantee became clear when an investment bank made proposals to switch the main source of funding to the bond market between May and December 2002. London Underground and Tube Lines have both told us that at this late stage they made a conscious decision not to switch over to an unproven bond market structure because the bank deal was ready to close and they feared that any further delay could have prevented the PPP from reaching close at all. As is normal in PFI deals, the whole amount of any savings before close would have gone to London Underground, but this decision meant sharing the potential savings in financing costs with Tube Lines. As a result of commercial negotiations, the normal 50 per cent public sector share was increased to an initial 60 per cent rising, Tube Lines told us, to a 70 per cent share (undiscounted) over time out of a net gain of £84 million. This leaves a share of at least 30 per cent that Tube Lines was able to earn in the first sixteen months of the project.

2.38 Alongside delivering economic and efficient investment and services the key risk being passed to Tube Lines, and Metronet, was that of project managing multi-trade work packages and ensuring that the commissioning interfaces are dealt with efficiently. Part of the early refinancing gain arises from managing this risk with Tube Lines placing sub-contracts to the value of £620 million between Financial Close and October 2003. Political risk reduced when the Department and the London Mayor finally reached agreement on a funding statement in January 2003 setting out the grant for the period to 2009-10, fixed for the first three years and with scope to adjust the grant in the event of major unforeseen expenditure pressures. If they had been able to reach agreement earlier, for example before agreeing to guarantee 95 per cent of the senior loans, public money might have been saved through more competitive bank or bond financing terms.

Value for money assessment

2.39 In December 2000, we reported on the public sector comparator exercise then being used as part of the assessment of the value for money of the bids. When, some 12 months later, the Board of London Regional Transport took the decision to proceed with the PPPs, public sector comparator figures were available to them alongside, as we had recommended, analysis of the wider benefits and risks associated with the deals. But, as in many cases, value for money was difficult to demonstrate objectively and London Underground's and Transport for London's financial advisers made public strongly contrasting assessments of the value for money analysis of the PPP bids.

2.40 The Public Sector Comparators were subject, as we had shown and London Underground acknowledged, to considerable inherent uncertainty and therefore gave only limited assurance about the reasonableness of the prices quoted by the bidders. At the time of Committed Finance Offers, the Secretary of State considered it important that he had his own independent opinion on whether the value for money analysis of PPP bids was robust. In that light, the Department took on Ernst & Young to provide an independent review of the analysis in October 2001.

2.41 Ernst & Young scrutinised and generally approved the public sector comparator methodology finally used by London Underground in reporting to the Board (the Final Assessment Report) - but re-emphasised that the outcome would depend on the performance factors that had been assessed and quantified in terms that did not represent different monetary payments. In particular, Ernst & Young noted that London Underground's social cost adjustments (relating to passenger benefits) increase the cost of the public sector option by 9 per cent and decrease the cost of the private sector option by 5 per cent, giving a net movement of £2,100 million. London Underground updated the analysis in December 2002/January 2003. In the final comparison transaction costs and the financing costs of senior debt formed part (around £1,000 million) of the cost of the PPPs, mostly costs which public sector borrowing would not incur. It is important to quantify wider factors, both positive and negative, and to identify any range of uncertainty. Considering the present value of expected (including non-cash) benefits against a present value of costs is then a standard part of transport investment appraisal.

2.42 Ernst & Young advised the Secretary of State that any potential saving from granting a public sector London Underground access to the bond markets, based on Transport for London's credit rating, would be an arbitrage saving, meaning that it would be a form of subsidy from outside the project. In their view this would distort project selection. Instead they favoured an allowance of £825 million that they considered would represent the potential benefit, in the form of lower costs, to a public sector project given access to stable funding. On this basis the CFO bids, as analysed by London Underground, also offered value for money. Before closing the deal with Tube Lines, the London Transport Board considered an updated overall assessment of the PPP, reflecting changes to the deal since contracts were signed in May 2002. These changes included revised inflation assumptions and the fact that the PPP contracts would now start later than originally assumed. London Underground carried out its analysis on an Infraco basis, with JNP at 31 December 2002 prices, and BCV and SSL at 31 March 2003 prices showing that the bids, as adjusted for expected performance over 30 years, were assessed at lower levels of cost than the levels estimated for the public sector.

2.43 Transport for London updated their estimate of the cost of funding the entire transaction through £5 billion of bonds that they were advised could be issued at a market rate of 5.29 per cent per annum, based on rates in April 2003[7]. This form of financing was not open to London Underground as a policy option (see para 1.17) and this limits its value for benchmarking purposes. This exercise took the composition of the financing of the Metronet transaction as a proxy for all three deals before the Tube Lines refinancing outcome became known. Based on a weighted average cost of total Infraco funding (debt and equity) of 7.15 per cent per annum, their analysis concludes that the annual financing cost of the actual structure is £90 million higher than their preferred structure. About two thirds, or £60 million per year, of this extra cost is variable and would not be payable, or payable in full, in the event of poor performance or repayable in the event of termination. This potential cost specifically rewards some £620 million to £725 million that bears equity risk in the actual structure. A benchmarking exercise in this form also assumes that there would have been bond market capacity for the full amount and this is not necessarily the case, although issuing bonds in phases would have mitigated this risk.

2.44 London Underground's findings depend on the Infracos delivering the expected level of performance with sufficient economy and efficiency to offset at least those higher borrowing costs that are payable regardless of performance. Such higher costs can also be estimated by taking Transport for London's bond cost benchmarking calculation and applying the resulting lower cost of funds only to the senior debt element that does not take material project risk. On this test PPP performance will have to make up for annual costs of £30 million on an amount of senior debt financing of £4,450 million. This annual cost would reduce by about £10 million if no senior standby debt is drawn down. These costs will be covered if the PPP delivers about one third of the performance benefits considered in bid evaluation.

7 *In March 2002, Transport for London made detailed proposals for a public sector bond alternative and this paragraph is not, and is not intended to be, a summary of those proposals. These bond proposals are not analysed in detail here because we find the benchmarking exercise more relevant in looking at the costs of the financing that was actually raised.*

Part 3

Management of the procurement

This part of the report examines the extended procurement process and finds that that the costs were on a scale that was consistent with the overall size and complexity of the deals but contained some elements that are of doubtful benefit.

3.1 In total London Underground spent £180 million on procuring the PPP and reorganising its business, equating to £170 million in 1999 values. Of this sum £109 million was spent on advisers and external resources **(Figures 12 and 13a)**.

Scope of work

3.2 The PPP involved an extensive corporate reorganisation leading into a massive procurement exercise. This meant London Underground's management and in house specialists had to break new ground and faced very heavy work loads during peaks of procurement activity. The Department made funds available, which it increased as a consequence of project delays, to mobilise external help and expertise. These funds were generally used to good effect.

London Underground's project team

3.3 London Underground, in April 1998, had to assess and then overcome its own skill deficiencies by appointing external advisers. Realising that in some areas teams of advisers would be necessary to support the procurement,

12 External Advisers costs to London Underground

External Advisers	Firm	Cost £ million
Legal (with LT legal team)	Freshfields	29.2
Commercial (part financial)	PriceWaterhouseCoopers	21.4
Reorganising operations	Arthur Anderson	13.8
Reorganising engineering activities & dynamic simulation model[1]	PA Consulting	12.5
Engineering	Ove Arup	6.0
Project management, audit, insurance, property, pension and miscellaneous technical advice	Hornagold & Hills, KPMG and more than twenty-five other firms	26.5
	Aggregate to April 2003	**£109 million[2]**

NOTE

1 The PA model attempts to simulate the performance of the PPP using, where past data exists, observed relationships between investment and outcomes.

2 The NAO figures have been deflated from £112.4 million for comparison with the 1999 budget, and include £9 million transition project costs that were part of the same budget (Property PPP & Windsor House refurbishments).

Source: London Underground records as at April 2003

London Underground decided to embed key individual financial, legal and project management advisers into senior positions in the project team.

3.4 London Underground appointed its advisers following competition. The key legal and financial advisers were Freshfields and PricewaterhouseCoopers respectively; both were appointed in May 1998. Bid submissions came from nine potential legal advisers and six potential financial advisers. In both competitions, London Underground secured competitive fee rates. Freshfields agreed an average hourly rate for all qualified lawyers, irrespective of seniority. During the procurement, the firm found that more partner time was required on an ongoing basis than it had estimated when calculating its blended rate. After a period absorbing extra costs, the Freshfields contract was renegotiated in 2001 at rates closer to its standard commercial billing rates. PricewaterhouseCoopers was paid on the basis of hourly rates, but agreed to cap the chargeable time and in practice worked hours that frequently exceeded the time that they could charge.

3.5 In the run up to financial close for the deal with Tube Lines, London Underground became aware that lenders' structural exposure to risk, and corresponding market pricing uncertainty, had been lessened by the increase in the underpinned amount (see para 2.36). The financing terms underpinning the Tube Lines deal were therefore capable of improvement, increasing the potential financial benefits from an early or larger refinancing. This led to negotiations between commercial agreement and achieving final contracts including finance. The public sector share could perhaps have been improved if, in anticipation of the Tube Lines structure, which earlier analysis had identified as a possibility, London Underground could have negotiated more favourable refinancing terms before the commercial agreement in May 2002. When developing a programme to manage interest rate risk, PricewaterhouseCoopers brought in specialist capital markets advice from leading financial institutions in a timely manner. The approach was endorsed by Partnerships UK and achieved a satisfactory outcome (see paragraphs 2.33 and 2.34).

3.6 To avoid duplication of advice and reduce expenditure on advisers, the Department agreed with London Underground that the latter would share the advice it received. When the Department considered that independent scrutiny of London Underground's activities was prudent, for example analysing forecasts and reviewing assumptions in key documents, it engaged its own advisers; principal among them was Ernst & Young.[8]

Overall budget

3.7 When Price Waterhouse produced its report in October 1997 about possible PPP business structures, it estimated the cost of reorganising London Underground and procuring the PPP would be about £110 million. This figure was estimated from the known costs expended in privatising British Rail. In 1998, the Department initially set a lower budget of some £70 million. London Underground did not consider this realistic and in February 1999 its main board agreed a budget of £150 million of which £100 million was budgeted expenditure for external advice.

3.8 London Underground engaged professional project managers, Hornagold & Hills, to track expenditure against budgets, to obtain estimates of future expenditure and to report progress. This firm of project managers, together with London Underground's senior project managers set the initial budgets for each of the appointed advisers; for PricewaterhouseCoopers and Freshfields the original budgets were each set at about £4 million. The final amounts paid to these two firms for procuring the PPP and reorganising London Underground were £21.4 million and £29.2 million respectively **(Figure 13b)**. The overruns do not reflect early over optimism or misunderstanding, but rather, the fact that initial budgets were set to reflect estimates of the known amount of work to be done. With the PPP being a novel business approach, the knowledge of what was required to deliver the project was incomplete. As parcels of work were identified, London Underground, its project managers and advisers determined what was required and estimated the cost. The overall budget was then amended and authority for the change sought from London Underground's main board.

8 *The Department estimated at £2 million since 1998-99.*

Costs of producing the Public Sector Comparator

3.9 London Underground, concerned about hostility to the project, elected to produce a very detailed public sector comparator which followed the guidance available at the time. In our December 2000 report (HC54: The financial analysis for the London Underground Public Private Partnerships) we said,

> "The ranges of values produced from the [Public Sector] Comparators are of some use in guiding judgement. But, as London Underground recognises, a decision taken only on the basis of where a bid lies compared to the ranges for the Comparators would be unsound. The financial analysis provides useful but incomplete insight into the value for money of alternative approaches to managing and funding the Underground's infrastructure".

With hindsight, London Underground agrees that some of the cost, particularly the production of refined cost projections, extensive Monte Carlo simulation (see glossary) and the overly detailed documentation associated with the model's development, was unnecessary, given inherent weaknesses in the underlying data. Aspects of the model, however, did have value, for example the investment in base cost analysis, which was relatively high level and could usefully have been further developed at lower levels,[9] gave the project team a general idea about what the bidders' proposals should cost. The risk analysis work was also available and was used productively outside of the public sector comparator, for example in informing contract negotiations.

Transport for London's involvement

3.10 Concurrent with the planning of the PPP, the Government had also been preparing to devolve certain powers to a new form of local government for London, the Greater London Authority, consisting of the Mayor of London (the Mayor) and the London Assembly. Transport for London came into being under the Mayor's direction, and had responsibility for meeting the Mayor's transport strategy. Originally the relevant legislation was drafted on the expectation that the PPP arrangements would be in place when the Mayor took office in 2000.

3.11 When it became apparent that the PPP procurement timetable was too optimistic, the Department decided that London Underground would complete the PPP before transferring the Tube to Transport for London. The GLA Act granted Transport for London consultation rights, recognising that the future owners of LUL should have some involvement in the process, mainly to facilitate the eventual transfer of ownership.

3.12 The Mayor and Transport for London had repeatedly and with determination objected to the PPP. During the course of the procurement London Underground engaged in twenty rounds of consultation and many meetings - mainly in the early stages. Increased resources had to be deployed to respond in detail to issues raised as the deals evolved but London Underground could not disaggregate all the associated costs from other transaction costs. London Underground, however, did keep separate records for the direct legal costs of meeting the two legal challenges brought by the Mayor, amounting to £1.5 million in the second case (and less in the first). The Department waived its rights to collect the costs awarded against the Mayor at the conclusion of both actions. Transport for London consider the scale of its legal costs to be very modest in comparison with the size of the deal and the professional costs incurred on other aspects of the PPP. The Department notes that London Underground's costs do not include substantial internal costs and extra work for non-legal advisers, nor reflect the impact on procurement negotiations, the timing and the market's perception of political risk.

3.13 The Department attempted to combine resources and negotiate jointly with the private sector from 4 May 2001 to 17 July 2001 by putting Transport for London's Commissioner for Transport in charge of the PPP negotiations, but his goal of unified public sector management control proved incompatible with the Department's aim of transferring comprehensive risk and responsibility to the private sector. Some benefits were, nevertheless, obtained during the prolonged consultation exercise - and the Department believes could have been obtained without prolonged opposition to the PPPs. Transport for London's scrutiny of the proposed PPP deals resulted in it raising numerous points where it was concerned, as the future owner of the Tube, that the client's position was or seemed weaker than it should be. In some cases the proposed contracts were redrafted to reduce, or remove, the expressed concerns.

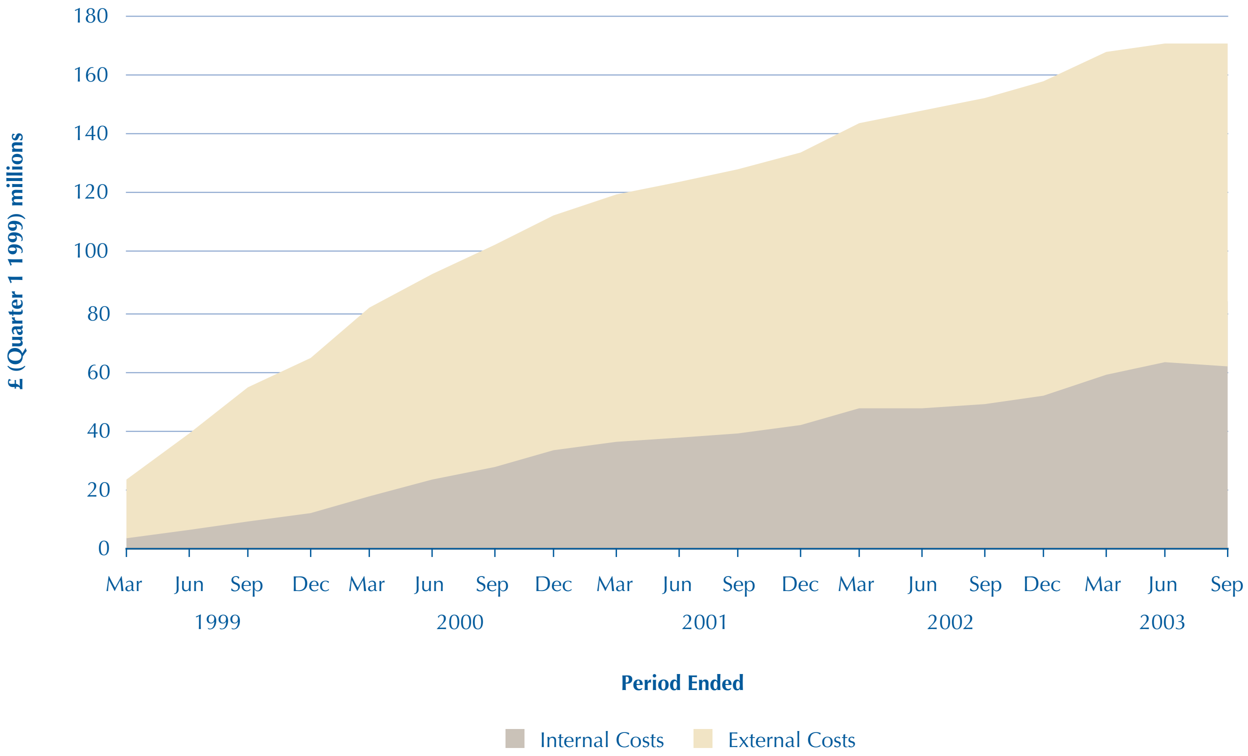
The impact of delays

3.14 When the PPP was first considered there was a view that it could be completed within two years. The programme for the PPP, produced in March 1998, proved optimistic and, in almost every revision thereafter, the actual timing needed proved greater than the incremental increases allowed. In particular, the Mayor's opposition proved to be more deep-seated than the Department anticipated and had a more serious impact on completing the deals.

9 *Ernst & Young's 5 February 2002 review said (page 17) that the "Public Sector Comparator represents a high level of costing of the PPP requirements so a detailed analysis of the individual differences between the Base Costs and the PPP bids cannot be undertaken."*

13a Progression of London Underground's costs over time [tables]

London Underground Transition Project Expenditure.

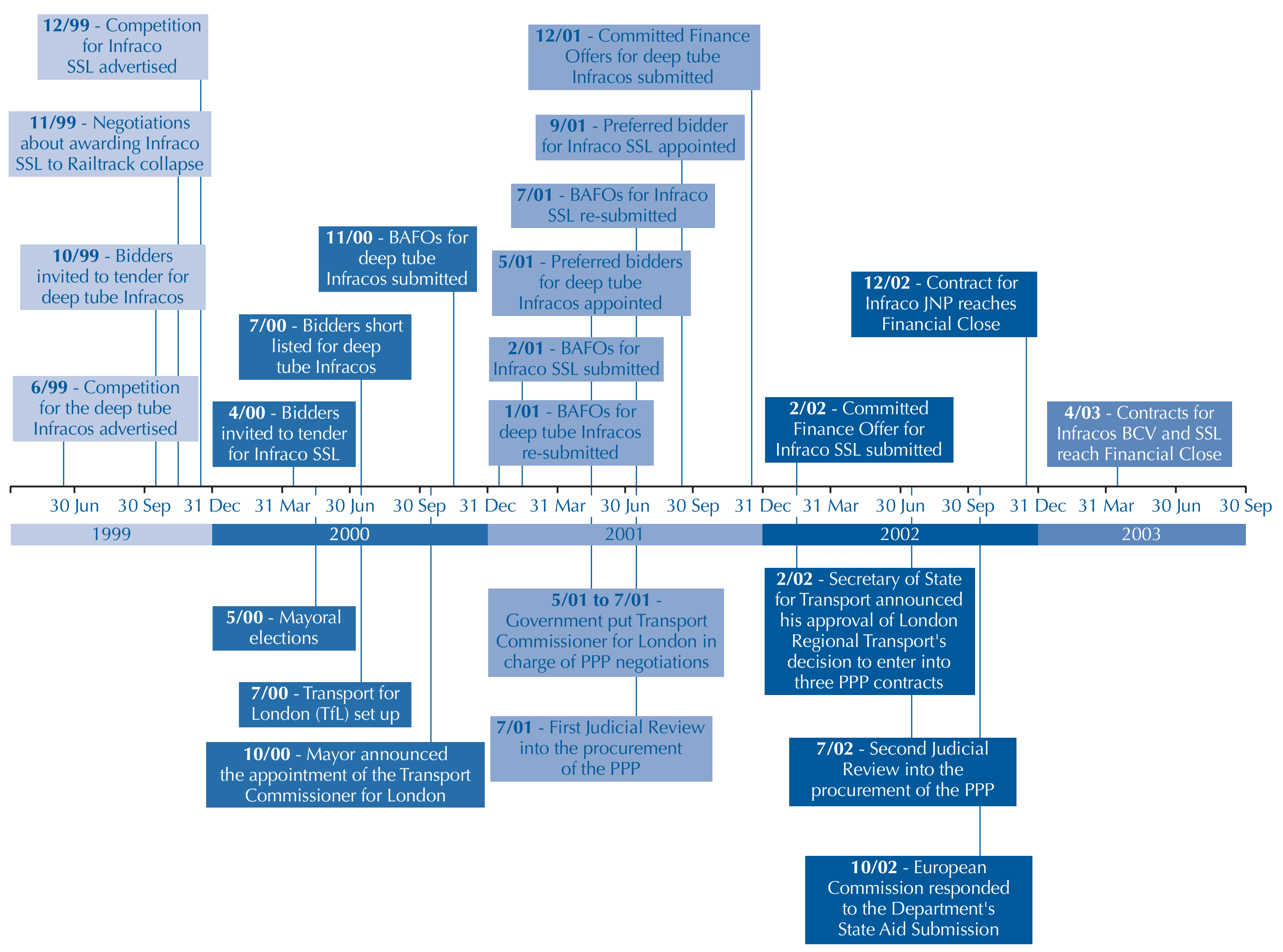


Source: London Underground

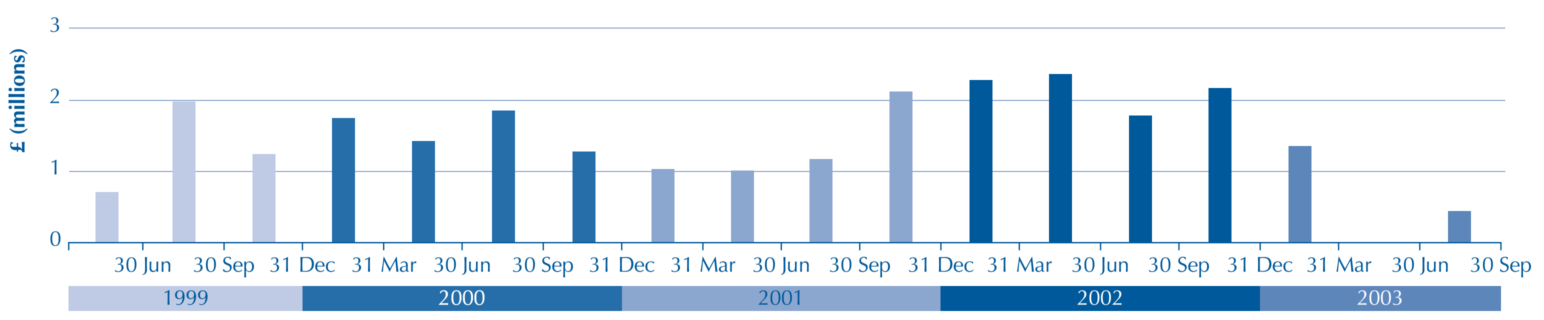
Figure 13

Figure 13 overleaf

13b Profiles of London Underground's quarterly expenditure during the procurement of the PPP

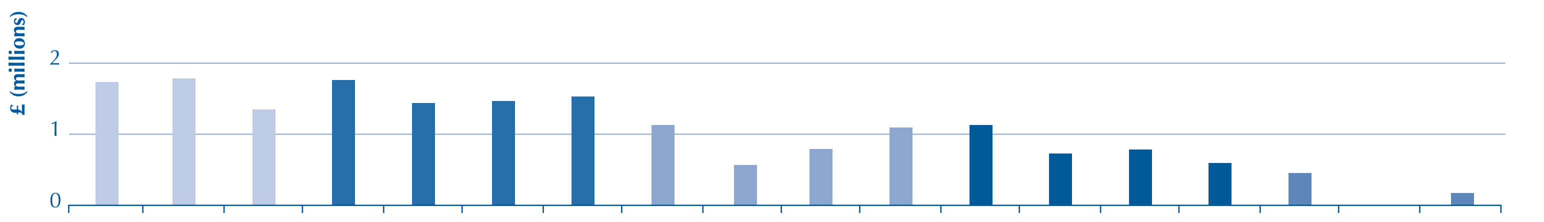


Freshfields (Legal advisers)



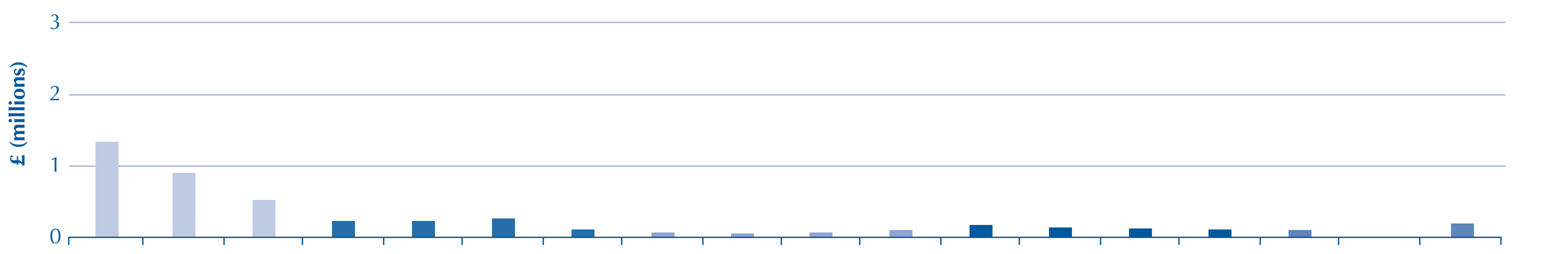
Total spend £29.2m[1]
Just over 50 per cent of this expenditure was incurred prior to the appointment of preferred bidders for the deep tube Infracos (Qtr. ending 30 June 2001)

PricewaterhouseCoopers (Financial advisers)



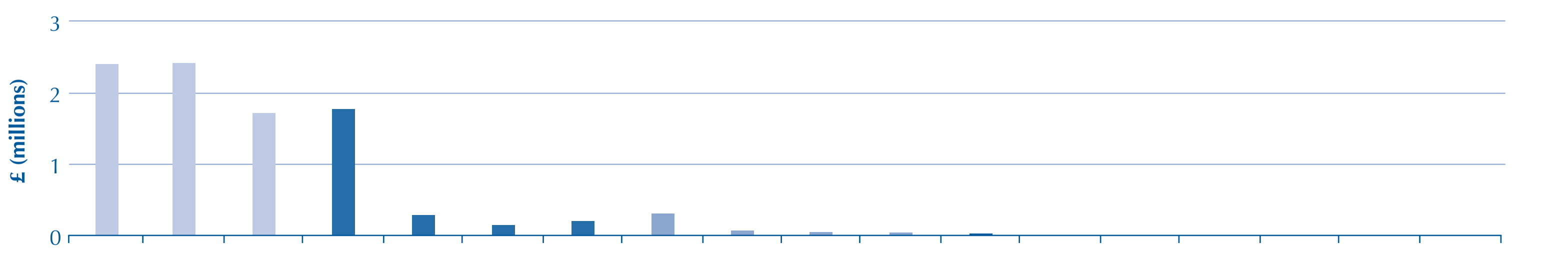
Total spend £21.4m[1]
Nearly 70 per cent of this expenditure was incurred prior to the appointment of preferred bidders for the deep tube Infracos (Qtr. ending 30 June 2001).

Ove Arups (Engineering advisers - Assessment of base costs and asset condition)



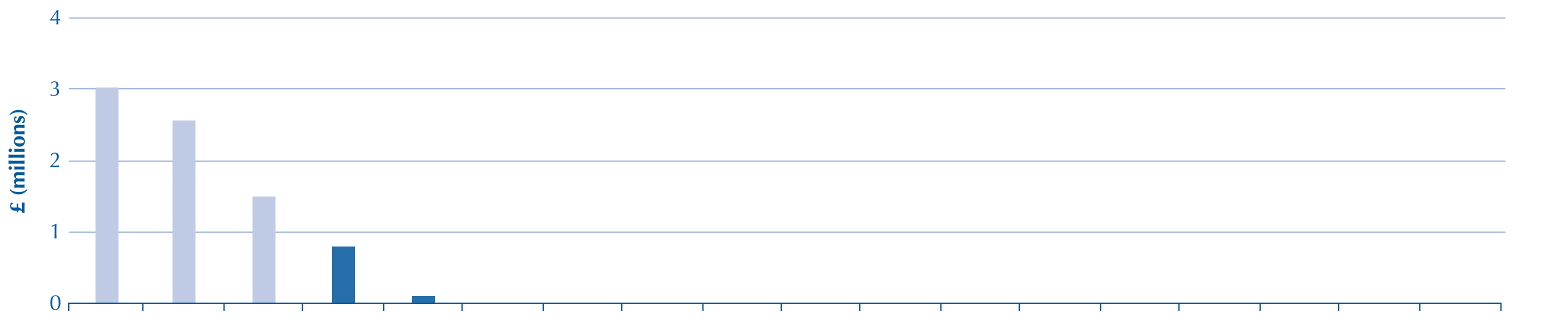
Total spend £6.0m[1]
Nearly 75 per cent of this expenditure was incurred before the end of December 1999, when bidders were responding to the invitation to tender for the deep tubes.

PA Consulting (Business advisers - Restructuring the infrastructure business)



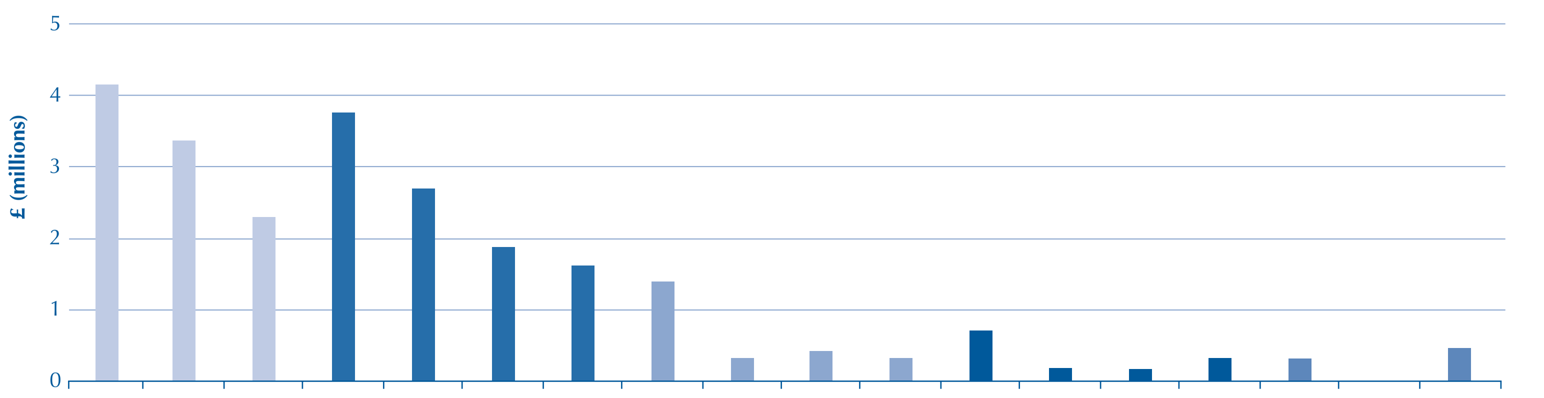
Total spend £12.5m[1]
Just over 90 per cent of this expenditure was incurred prior to the quarter ending March 2000.

Arthur Anderson (Business advisers - Restructuring operations)



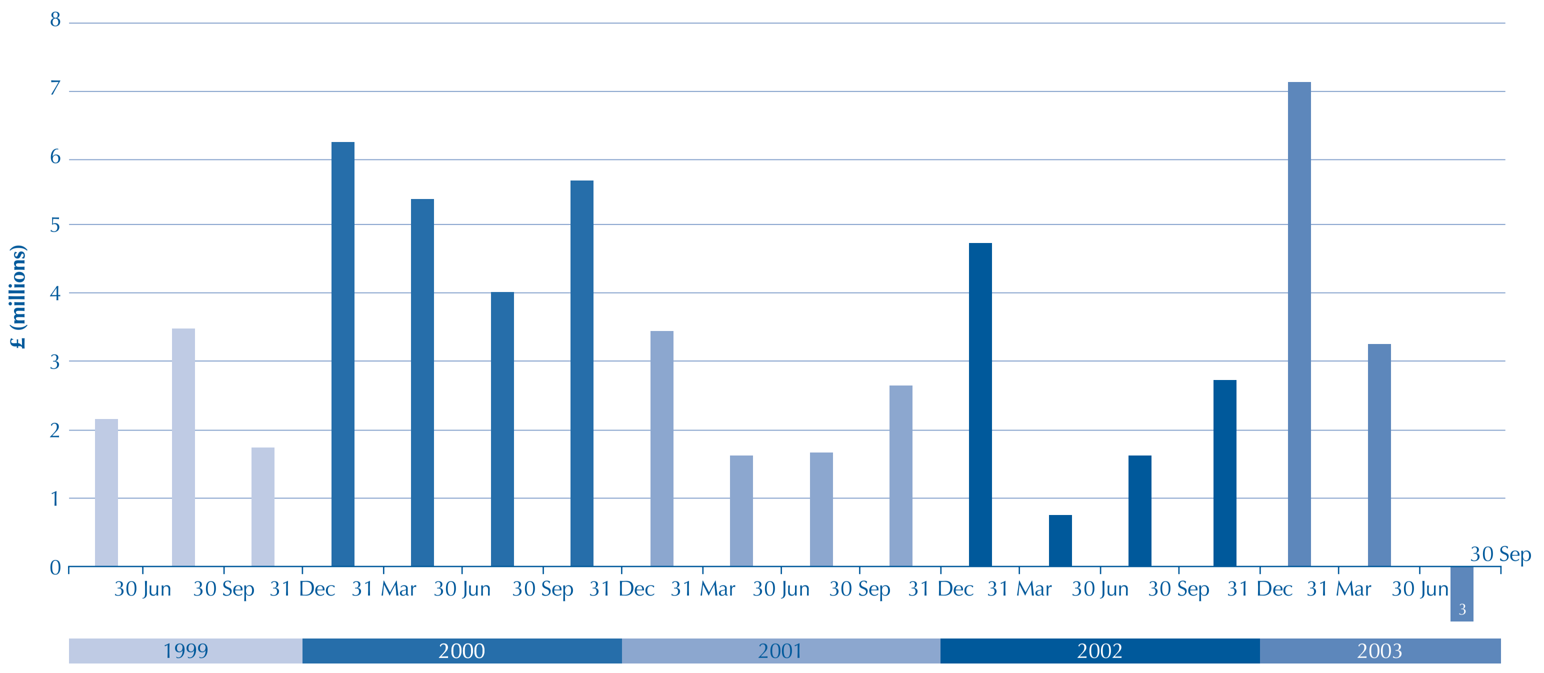
Total spend £13.8m[1]
Advising London Underground about restructuring its operations was effectively complete by the end of March 2000.

Other External Advisers



Total spend £26.5m[1]
Nearly 90 per cent of this expenditure was incurred prior to the appointment of preferred bidders for the deep tube Infracos (Qtr. ending 30 June 2001).

London Underground's Internal Costs



Total spend £61.0m[1]
Approximately 60 per cent of this expenditure was incurred prior to the appointment of preferred bidders for the deep tube Infracos (Qtr. ending 30 June 2001).

NOTES
1. Totals include expenditure incurred between May 1998 and 31 March 1999.
2. All figures are expressed in Qtr. 1 1999 monetary terms
3. Positive cost adjustment at project close

Source: London Underground

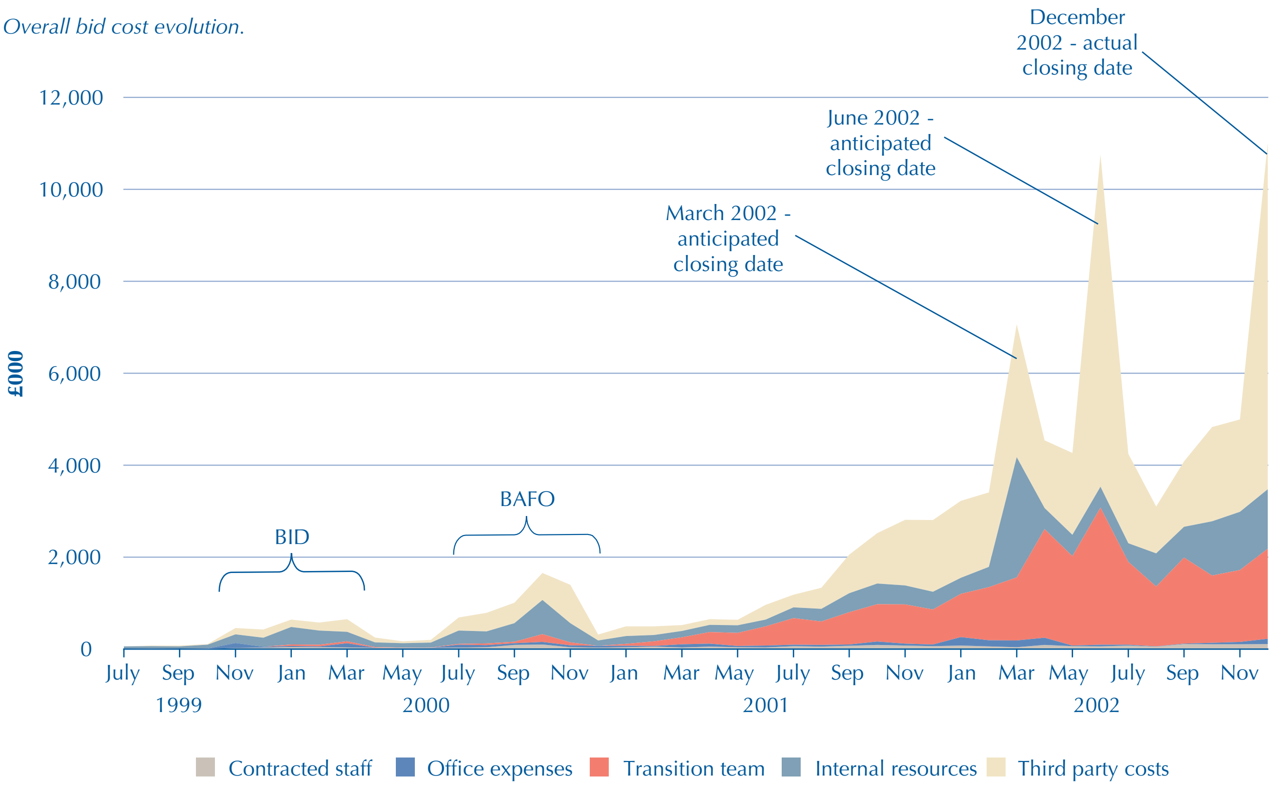
3.15 Having taken the step to meet bidders' costs, London Underground acquired a financial interest in how bidders managed their affairs. Before taking this step PricewaterhouseCoopers had estimated that each of the short listed bidders would spend between £12 million - £15 million up to the appointment of preferred bidders. In late 2002, the London Underground endorsed payment of £14 million to the LINC consortium[10] when it was unsuccessful in its two bids: one for the Infraco BCV contract; the other for the Infraco SSL contract. On the same basis the Board agreed to cover Tube Rail's bid development costs (£11 million) for being the unsuccessful shortlisted bidder in the JNP competition.

3.16 **Figure 14**, profiling the monthly costs incurred by Tube Lines during its bid for the JNP Infraco contract, shows that, up to its appointment as preferred bidder Tube Lines spent only a small proportion of the final total of £134 million. After being appointed preferred bidder Tube Lines' bid costs increased as it negotiated the terms of the contracts in the run up to Committed Finance Offers. Working to London Underground's proposed timetable which turned out not to be feasible Tube Lines geared up its staffing levels in anticipation of reaching the target closing dates; (the two peaks at March 2002 and June 2002 in Figure 14). Metronet also claimed bid and other related costs of some £116 million in aggregate for Infraco BCV and Infraco SSL. In the Tube Lines and Metronet cases the mechanism for recovering bid costs was through an adjustment to the relevant infrastructure service charge.

3.17 In total the transaction costs from the early preparations by London Underground through to closing all three PPP deals reached £455 million, including restructuring costs, internal costs, external costs and bidders' costs - but excluding spending incurred by Transport for London.

14 The evolution of Tube Lines bid costs 1999-2002

Overall bid cost evolution.



Source: Tube Lines

10 *Consortium members comprised - Linc: Bombardier, Mowlem, Fluor Daniel, Alcatel and Anglian Water and Tube Rail: Brown & Root, Alstom, Amec and Carillion.*

3.18 In the process of validating bidders' costs London Underground identified some areas of difficulty, for example an apparently widespread practice of loading the cost of bidding with an element for funding bid costs. This was based on the cost of capital and factored in the lost opportunity of utilising this capital to make other business investment returns. Although there was agreement to reimburse bid costs under certain conditions, there was also a premium for the risk that these conditions might not have been met. In the case of the Tube Lines consortium this amounted to 21 per cent of the sum of money that Tube Lines invested as equity in the PPP. During the delays associated with the legal challenges Tube Lines also made progress with its detailed analysis and the design of its PPP proposals. It claimed these as bid costs although arguably these same costs would have been incurred post contract award had the delays not occurred, and as such there is a risk of double payment of some costs built into Tube Lines' pricing of the service charge.

3.19 In the latter stages of the procurement, the way bid costs were treated as a deferred expense in bidders' company accounts changed. The change adversely affected the commercial strength of Amey[11], one of the members of the Tube Lines consortium. To provide comfort, London Underground agreed to set out in writing the position on bidders' costs in a form that was satisfactory to the financial backers of the consortium. London Underground refused to make issuance of this letter a precedent for dealing in the same way with Metronet due to the number of outstanding commercial issues.

3.20 London Underground told us that in December 2002 it considered walking away from the two Metronet deals right up to the minute when it finally obtained written confirmation on how to finalise commercial points that had been left open in May 2002. Standing firm on pre-agreeing Metronet's bid costs may well have helped London Underground to obtain the contract certainty it required at this point in order to finalise the deal on Infraco JNP that Tube Lines was then ready to close.

11 *In 2003 Amey was acquired by a Spanish company, Grupo Ferrovial SA.*

Part 4

Achievement of Tube modernisation

This part examines the outcome of the negotiations. It finds that the contracts had survived negotiations broadly in line with the Department's original objectives. The work will start later than originally planned and will take longer than originally intended, following the Department's decision to spread the greater scale of work over 22 years.

Achievement of objectives

4.1 The deals broadly satisfy the Department's main objectives by bringing in the private sector expertise to manage the upgrade projects, and to maintain the infrastructure on a whole life basis supported by stable funding. Assurance on value for money is limited because of extended negotiations and pricing uncertainty, but there are mechanisms in place (i) linking payment to services for passengers and (ii) to try to ensure the public sector is paying the costs justified by economic and efficient Infracos, for example by appeal to the Arbiter (who may also be called on by the Infracos to protect their agreed rate of return). And there are measures in place to safeguard the public interest.

4.2 The PPP negotiations led to changes to the proposed risk sharing. Deal complexity - in the sense of estimating the additional volume of work needed - contributed to an affordability crunch. Both this, and the political controversy contributed to the easing of some contract conditions and - the Department believes - to the prolonged delays in closing the deals, although Transport for London disagrees. Work to improve the Tube has started two years later than planned and some investment, valued at some £80 million per year, was deferred to later periods. Affordability driven changes spread the period for achieving the desired "steady state" for the improved Tube network over 22 rather than 15 years.

Stable funding

4.3 The equity investors are committed to supply management, expertise, goods & services for a known monthly service charge for 7½ years. Under certain conditions, including potential price revision, they are committed and incentivised to supply over the full 30 years. The equity investors arranged accompanying debt finance on the following basis:

- There is reasonable price certainty for the first 7½ years about the Infracos' charges for honouring their asset maintenance obligations. Where contingency has been exhausted, and if he agrees that the Infraco has been economic and efficient, the Arbiter could set a revised price following an Extraordinary Review (see glossary).
- The equity investors are committed to a 7½ year funding programme and to fund the agreed work specification to completion. They have an option to fund any agreed additional work.
- Some lenders have the option to decline to fund the increased cost of meeting existing contract conditions (known as 'new money for old obligations'), but, if so doing, will lose one year's interest margin. This loss of profit would be worth some £6 million[12] to £16.5 million per Infraco. There is no penalty for declining to fund changes of scope (known as 'new money for new obligations'). It would be unusual for lenders to commit to open-ended amounts, but the loss of profit gives them an incentive to continue.

Protection against post contract legal challenges

4.4 To conclude the contracts the Department, on the advice of in-house lawyers and London Underground's legal team, took steps to defuse issues surrounding a further possible legal challenge. The main step consisted of an indemnity from the Secretary of State to reassure PPP lenders and investors that they would be paid out in full in the event of a further legal challenge overturning the PPP.

12 *The bottom of the range excludes loss of margin on the bond financed element.*

4.5 Concern about outstanding legal issues was also mitigated by an unusual drawdown arrangement whereby private debt funding would not be drawn down until the second half of 2003-04. Although the investors' initial injection of equity and mezzanine funding at financial close remained unchanged and funded the start of work, all other work in the early months of the contracts was funded by accelerating the payment of infrastructure service charge. The Department saw this as a practical solution - in essence, the full year infrastructure service charge due in 2003-04 was paid to the PPP companies by London Underground during these months. In return, the investors were committed to funding all of the work over the second half of 2003-04 from drawn down debt.

4.6 Following these two sets of last minute changes to accommodate lender concerns about political risks, the Department and London Underground expect the deal to deliver the original objectives. We note that obtaining private sector expertise, one of the objectives, usually includes scrutiny by private lenders when they bear substantial exposure to the risk of default by the private borrower. In this case, although equity investors bear project risk, the exposure of lenders to default risk carries less consequence at the start as well as later on if the PPP contracts were to terminate prematurely. The negotiations on refinancing do, however, provide evidence that lenders want to retain the normal controls they started out with in order to monitor their loans closely.

Impact of better performance

4.7 London Underground undertook detailed technical and performance reviews of the bids to satisfy itself the proposals were deliverable and that higher performance was likely to be achieved at a lower cost. The performance payments included in their analysis were only expected levels and because bidders are not contractually bound to these levels, performance and subsequent payment levels could vary although London Underground believes bidders are incentivised to structure their performance proposals accurately. Over the first year of PPP operations performance, including the level of service charge payment reductions, has generally been in line with the base case projections provided to lenders.

4.8 Although the BCV and SSL performance data, in both cases, were updated as at Metronet's financial close, the JNP performance baselines were left as originally bid and were not updated as new data emerged from shadow running. Expected improvements in Northern Line (new trains in 1999) and Jubilee Line performance were allowed for during the competitive bidding.[13] In isolation these expectations on performance would not be significant but should they prove over-optimistic, we estimate that - if coinciding with a major delay to an upgrade - key loan covenants could be breached. This means that corrective action would be required and lenders could block the drawdown of bank loans that have been agreed subject to certain ongoing conditions being met. This block would continue until such time as Infraco JNP and LUL could agree on new financial arrangements. Our technical analysis illustrates that the Debt Service Cover Ratio[14] (DSCR) for total debt (incorporating senior debt plus mezzanine) could fall below the minimum level of 1.10 required by the loan covenants **(see Figure 15)**. This shortfall is projected in both years seven (DSCR 0.79), and eight (DSCR 0.92), and would be a result of reduced payments to compensate for delay, and Infraco JNP not receiving payments for the expected improvements, both coinciding with poor daily performance.

Safeguards for the public interest

4.9 The contracts, as negotiated, provide for a long term strategy for maintenance and renewal of the Tube infrastructure but London Underground, in the form of LUL, has a vital ongoing role to play as operator, well-informed partner and a guardian of the public interest:

- As operator, LUL has overall responsibility for the statutory safety regime approved by the Health and Safety Executive.
- London Underground's plans to monitor the Infracos' maintenance of assets were prepared and in place at the date of contract award and supported by an LUL 'obligations database'.
- LUL has rights to obtain the information that it requires to assess performance on asset maintenance, renewal and upgrades[15]. In preparation for taking over the Tube operations, Transport for London also commissioned Parsons Brinkerhoff to develop an approach to track 'earned value' as a supplement to the planned approach.
- London Underground made the contracts subject to an undertaking on protection of certain employment terms and, following representations from the trade unions, no compulsory redundancies without alternative job offers. From the outset, the GLA Act had included provisions protecting pension rights.

13 *"The Northern line consolidated its position at the top of the performance league by operating over 98% of timetabled services in the year [to 31 March 2002], while the Jubilee line has recently been achieving its best performance since the extension opened in 1999." London Underground Chairman's statement 16 July 2002.*

14 *In the combined low performance scenario, cash available for debt service falls below the amount required (a DSCR of 1.0) and loan covenants require a 10% cushion.*

15 *HC 644 "London Underground: Are the PPPs likely to work successfully" examines LUL's rights to information at an early stage in PPP operations.*

15 Low performance/delayed upgrade scenario loan cover ratios

	Covenant Default	Tube Lines Bid	High Combined Scenario	Low Combined Scenario
Min Loan Life Cover Ratio (LLCR)	1.15	1.32	***1.34***	**1.29**
Avg. Loan Life Cover Ratio (LLCR)	1.15	1.33	***1.34***	**1.30**
Min Debt Service Cover Ratio (DSCR)	1.10	1.13	***1.24***	**0.79**
Avg. Debt Service Cover Ratio (DSCR)	1.10	1.29	***1.40***	**1.18**
Cash flows (£million nominal pre-tax) for 7½ years	N/A	920	***987***	**846**

NOTE

1 All Tube Lines debt ratios for the first 7½ years. Adjusting the ratio calculation to exclude debt that carries equity risk, for the remaining senior debt, the Debt Service Cover Ratio falls to a minimum of 0.95, still below the covenants.

Source: Consultants to the National Audit Office

4.10 One of Transport for London's major concerns was over the absence of arrangements for voluntary termination on a no fault basis, which is usually found in PFI contracts. Ernst & Young in their report echoed this concern because the provision enforces a duty on the PFI contractor to mitigate costs in such an event.[16] We find that the PPP's pervasive requirement for 'economic & efficient' behaviour captures the duty to mitigate costs, but the absence of pre-agreed contract provisions leaves considerable room for argument. The Department told us that based on discussions with London Underground and their advisers, and given the political climate in which the deals were negotiated, the omission of a right for the public sector to terminate for convenience was a considered decision. This aimed to prevent the market from adding a premium to their pricing to reflect greater political uncertainty, even if voluntary termination had, as Transport for London proposed, required the prior consent of the Government. Transport for London told us that this surprises it because it had understood the grounds to be those included by London Underground its Final Assessment Report of 7 February 2002 which said:

"TfL regard the PPP as experimental and untested and believe, therefore, that it should be capable of being terminated, without an Infraco default, if this were judged to be in the public interest. This could be determined, for example, by the Secretary of State. They have said that it would be 'reckless' of LUL not to provide such a right. London Underground did not originally propose such a right because it is vital, in London Underground's view, to ensure that Infracos take a genuine 30-year view of their obligations in order to achieve the object of proper whole life asset management. Anything which might make the Infracos believe that the contract might terminate early, even if they were performing adequately, would compromise this. Nor is it easy to see why LUL would need such a right in circumstances where Infraco were meeting all its obligations, and where changes to the contract could be made through the existing periodic review mechanism to deal with any amendments LUL thought desirable. However, given the strength of Mr Kiley's view, LUL discussed with bidders whether they would accept including such a provision. They said that it was fundamental to their assessment of the transaction that they should only be exposed to the risk of termination if they were in default, and that a unilateral right to terminate by LUL would be unacceptable, even if it required the consent of the Secretary of State. LUL therefore decided not to introduce a right of public interest termination; it considers this a reasoned judgement which cannot be characterised as reckless."

The Arbiter

4.11 About half the less accessible civil infrastructure assets, known as grey assets, had not been classified at the date of contract and are required to be classified within the first review period. This material un-priced contract scope compounds the difficulty of knowing whether the contract closing position represents an economic & efficient proposition and agreeing these further costs will provide a test for the contract structure and the Arbiter. By design, if asked to by any of the parties to the contract, the Arbiter is given the final word in judging, based on good industry practice, what would be economic and efficient for dealing with assets in each particular classification and set of circumstances.

16 *Ernst & Young's 5 February 2002 review paragraph 6.3.7.*

The private equity financing

4.12 As reviewed earlier in para 2.32 the rates of return to the equity investors carry a premium of some 15 per cent above the risk free rate. The equity investors have a substantial exposure to project risk (with the exception of traffic volume risk). Underperformance leads to lower payments, followed by a notice requiring corrective action. Ultimately LUL could step in to correct defects at the Infraco's expense. This is potentially mitigated by appeal to the Arbiter in extreme circumstances; (where the Infraco has exhausted all of its contingencies plus a further amount of the relevant materiality threshold (£50 million for Metronet and, initially £200 million for Tube Lines) if the additional costs that have been incurred can be shown to be economic and efficient.

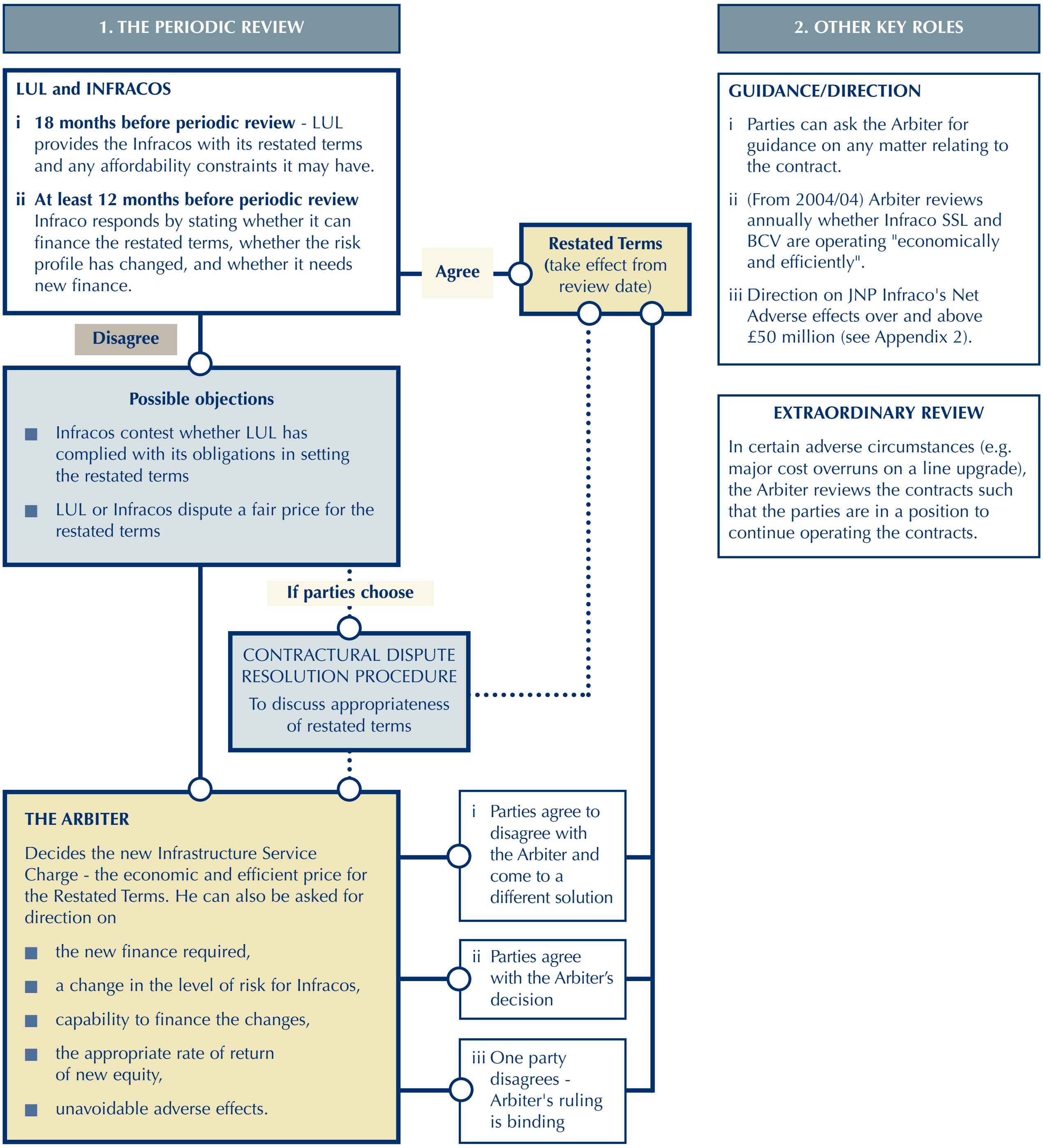
4.13 Claw back provisions that become effective if the equity rate of return exceeds a reasonable upper bound were not required. Instead the Arbiter recalibrates pricing for an economic and efficient Infraco to earn agreed rates of return every 7½ years. The contract (Schedule 1.9) specifies these agreed rates for the Arbiter (JNP 26 per cent, BCV 18.3 per cent and SSL 18.2 per cent). This protective arrangement may be weakened if the amount of investment that bears equity risk is reduced by any refinancing (although the public sector shares any gains) that permits any original investors to recover their investment early and therefore earn a higher rate of return.

Other issues affecting the cost of delivery

4.14 The grounds for the 7½ year funding breaks reflected what the market would accept. The Arbiter can, if asked, recalibrate pricing, and this gives some assurance that pricing cannot get too far out of line with that charged by an economic and efficient Infraco. Although there is guidance in the contracts, London Underground has said that the lack of definition of uneconomic and inefficient expenditure is deliberate and best left for the Arbiter to decide. We are concerned about the difficulty of benchmarking to what extent an Infraco has been 'economic and efficient' or has suffered any losses that it should bear. This issue will be considered further in our companion report, also published today.

4.15 LUL is at risk if, for example, the Infraco passes a Journey Time Capability upgrade test, which can be a paper test. The Infraco ostensibly earns a step increase for the capability upgrade but bedding down problems could emerge. We find that if these problems persist they may only be partly offset by abatements on payments for availability because of a short delay in arranging physical testing of the capability upgrade, but the impact on the Infraco could then be material.

16 The Arbiter: Roles and timing



Source: NAO, derived from PPP documentation

Glossary

Ambience	An output measure covering the quality of the environment for passengers, including the cleanliness and general condition of trains and stations, and the provision of passenger information.
Arbiter	means the PPP arbiter appointed by the Secretary of State under the GLA Act, appointed on 4 December 2002, for a four year term, as Mr Chris Bolt. He has an annual budget (currently £1.6 million) and two of his staff were closely involved in the negotiation of the PPPs.
Availability	A measure of passengers' total additional journey time resulting from disruption caused by incidents attributable to the Infraco.
BAFO	means the 'Best and Final Offer' submissions, made in the competition between private sector bidders intended to set out final commercial terms in respect of the Invitation to Tender, and submitted on: - Infraco BCV and JNP on 20 November 2000 as subsequently revised - Infraco SSL on 5 February 2001 and resubmitted (in respect of capability data) on 9 July 2001.
BCV	Bakerloo, Central, Waterloo & City, and Victoria lines.
Capability	A performance measure of the infrastructure's ability to support train services. It is based on average journey time per passenger, for a given time of day, and for a given line or part of a line and includes Journey Time Capability, Service Consistency and Service Control
CFO	means the 'Committed Finance Offer' intended to set out final financed terms in respect of the Invitation to Tender, and submitted on: - Infracos BCV and JNP in November 2001 - Infraco SSL in February 2002
Comfort Letter	means a letter of awareness issued by the Secretary of State to senior lenders to each of the three PPPs. The comfort letter sets out the amounts of debt and indicates that he would consider re-setting the transport grant in various circumstances where London Underground cannot meet its obligations. The comfort letter also recognises the possibility of the transport grant being insufficient to meet the potential sums due on termination and that he would not "stand by and do nothing in those circumstances".
Corrective Action Notice	means a notice in the form contained in the PPP Contracts specifying the nature of an Infraco's default and a reasonable period for completing corrective action.
Deep tube	means BCV and JNP lines which include bored tunnels that are too small to carry rolling stock used on the national railways.
Extraordinary Review	means a full review of costs incurred and/or future cost forecasts that support the contention that an Infraco's costs, after exhausting their provisions for contingent sums and due to adverse conditions, have exceeded a threshold in the contract thereby permitting price revision.
Firm prices	in the context of this PPP means that for the first 7½ years there is a fixed schedule of payments, known as the baseline infrastructure service charge (see ISC below), and indexed to the retail price index. There are also fixed performance related provisions for applying additional payments or abatements to the baseline ISC.

Greater London Authority Act or GLA Act	means the Greater London Authority Act 1999.
Grey Assets	means those assets where the condition has yet to be fully identified against specific engineering standards, and that will be classified during the first 7½ years.
Health and Safety Executive	The statutory body established by the Health and Safety at Work etc. Act 1974, which includes HM Railways Inspectorate and is responsible for accepting and enforcing London Underground's statutory railway safety case (the statement which sets out how it will handle safety). Her Majesty's Railway Inspectorate, as established by the Railways Regulation Act 1840 (repealed) was subsequently transferred to the Health and Safety Executive on 1 December 1990.
Infrastructure companies (Infracos)	The three organisations (BCV, JNP and SSL) responsible for delivering infrastructure services to London Underground under the PPP contracts.
Infrastructure	Railway, trains, stations and depots on London Underground's network (including track, signals, tunnels, bridges, embankments, platforms, escalators, lifts). Signals means the method of controlling trains over the Network by creating blocks of track to keep trains apart and control exit and entry to crossings and sidings.
Infrastructure service charge (ISC)	The amount payable under the PPP contract by London Underground to the Infraco, as adjusted from time to time (as set out in the Service Contract or as agreed between the parties or determined by the Arbiter at Periodic Review), to cover the Infraco's costs of maintaining, renewing and upgrading the infrastructure, including overheads, profit and financing costs.
Infrastructure operation/service	Work to maintain, renew and upgrade the infrastructure so as to deliver the outputs required under the PPP contract, to progressively reduce and eliminate the existing backlog in asset maintenance, and to deliver a continuous overall improvement in asset health, capability and reliability in service.
JNP	Jubilee, Northern and Piccadilly lines.
London Regional Transport	a nationalised industry previously responsible for London Underground and answerable to the Department for Transport.
London Underground	London Underground Limited - previously a subsidiary of London Regional Transport - now responsible for operating passenger trains and stations and being responsible for safety. It awarded the PPP contracts to the private sector bidders and will be their public sector partner under those contracts. After PPP contracts were signed, it has remained in the public sector and has been transferred to Transport for London.
Long Term Investment Plan	London Underground's 30 year plan for the major projects and other capital expenditure which they estimate will be required to meet the PPP performance specification. The private sector Infracos are not bound to adhere to this plan.
Major Enhancements	means: (i) Station accessibility projects and/or Station lengthening projects which will or are likely to require the acquisition of land or property and/or an order under the Transport and Works Act 1992 and are not combined with a congestion relief project; (ii) congestion relief projects (which may include inter alia, works to effect Station accessibility projects; (iii) Line extension projects; (iv) Station control room projects; (v) externally funded projects (other than infrastructure protection); (vi) interchange projects; and (vii) the provision of additional staff accommodation.
Metronet Consortium	means the unincorporated joint venture comprising Atkins, Balfour Beatty, Bombardier Transportation, SEEBOARD and Thames Water.
Monte Carlo simulation	randomly generates values for uncertain variables repetitively to analyze the effect of varying inputs on outputs of the modeled system.

Output(s)	Capability of the train service; availability and ambience of train services and station services; improvements in asset health. Collectively, the PPP Performance Specification refers to the levels of output which the Infraco is required to deliver under the PPP contract, covering "ambience, availability and capability" for train and station services.
Outcome	the visible effect or practical result of an organisation's actions or expenditure, for example an improvement in service reliability and a better passenger experience.
PFI Contract	means, in each case, the main project contract entered into or to be entered into by LUL and/or London Transport and the relevant private sector partner in respect of a PFI project.
Rolling Stock	means trains, carriages, cabs, coaches, locomotives, self-propelled mechanical plant and other vehicles which can operate alone or together on Track together with all powered and unpowered Track trolleys.
Partnership Director	means the independent non-executive director appointed to the Board of each Infraco by London Underground pursuant to the terms of issue of the preference share of £1 in the capital of an Infraco (designated as a 'special' share).
Periodic review	A provision in the PPP contract which, every 7½ years, allows London Underground's payments to the Infracos to be reset to take account of changed circumstances and cost increases which an "economic and efficient" Infraco would incur.
Public sector comparator	One benchmark against which value for money is assessed. It is typically a cost estimate based on the assumption that assets are acquired through conventional funding and that the procurer retains significant managerial responsibility and exposure to risk. In this case, it is London Underground's estimate of the cost to the public sector of procuring the maintenance, renewal and upgrade of the infrastructure for each of the proposed contracts so as to deliver the PPP outputs.
Risk free rate	means the rate that an investor can obtain on direct unconditional UK government bonds, known as gilts, if held until an equivalent maturity date.
Safety Case	means the statutory safety case prepared by the Infraco and LUL working together as a train operator and accepted by HMRI in compliance with the Railways (Safety Case) Regulations 2000.
Sub-Surface Lines (SSL)	Circle, District, Metropolitan, East London and Hammersmith and City lines. These lines are in the open or only just below ground level in 'cut and cover' tunnels.
Transport for London	The body appointed under the Greater London Authority Act 1999 which has taken over London Transport's responsibilities, and from July 2003 London Underground Limited. From that date London Underground Limited is answerable to the Mayor of London for the service it delivers.
Underpinned Amount	means the amount equal to the higher of 95 per cent of the Approved Debt and the sum calculated in accordance with a formula contained in the Service Contract.

Appendix 1 Methodology

1 In December 2000, the National Audit Office reported on the extent to which London Underground's initial financial analysis resolved the value for money test against which the Department for Transport sought to assess the Tube Public Private Partnerships. This report, together with "London Underground: Are the PPPs likely to work successfully?" also published today, takes our evaluation of the PPPs through to May 2004, as follows:

- Were they good deals? - Covers the period from mid 1997 to contract close in December 2002 (for Tube Lines) and April 2003 (for Metronet)
- Are the PPPs likely to work successfully? - Covers the period from first contract close in December 2002 to May 2004.

Methods matrix

2 We used a variety of methods to undertake our examination, from qualitative approaches such as document review to the quantitative method of statistical analysis, aimed collectively at ensuring logical rigour and technical robustness in the final report. **Table 1** shows the different methods we used, by study phase:

T1 Methods used to undertake our examination

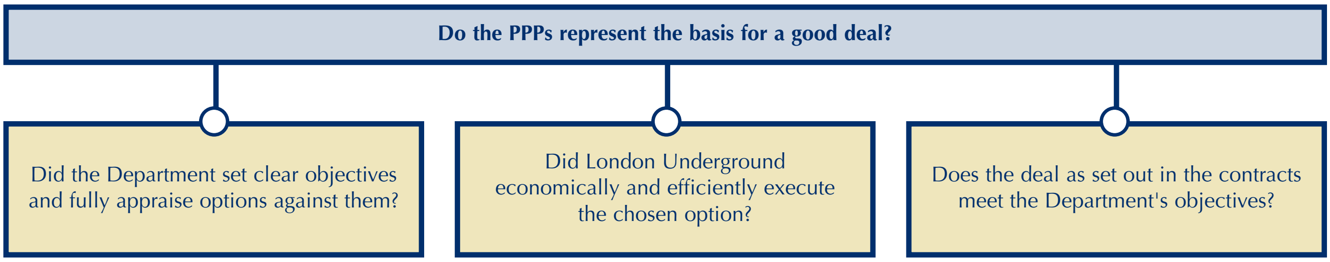
Method	Study phase			
	Issue identification	Audit programme	Evidence collection and analysis	Report drafting
Stakeholder interviews (e.g. LUL; Infracos; HSE)	✖		✖	
Brainstorming	✖			
Internet research	✖			
Issue Analysis (see note 1)		✖		
Statistical/financial analysis (see note 2)			✖	
Review of key documents (e.g. PPP contracts; board minutes; Transport for London submissions)			✖	
Dinner Party™ (see note 1)				✖
Consultation with expert panel (see note 3)	✖	✖	✖	
Storyboarding (see note 4)				✖

Explanatory notes

Note 1 - The Issue Analysis/Dinner Party approach (IADP™)

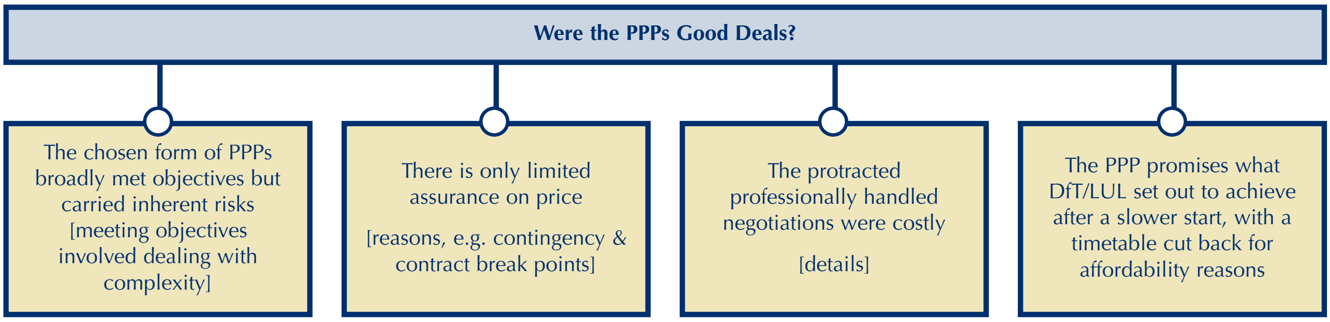
3 The Issue Analysis/Dinner Party approach (IADP™) is a methodological framework developed by the NAO as a means to deliver audit reports that are focused, logically rigorous and built on consensus.[15] It helps us structure an audit programme around which to base evidence collection and analysis (the aim of the issue analysis) and organise the resultant report in a clear and logical way (the aim of the dinner party).

4 Issue analysis produces a series of yes/no questions that terminate in audit tasks that indicate what hypothesis the auditor should seek to test and what method of data collection and/or analysis he or she should use. The high level questions that we based this audit around were as follows:



For each of the top level questions, we set a subsidiary group of questions, linked logically to the main question, in order to direct our detailed work and analysis.

5 The Dinner Party™ approach is based around what happens at a real dinner party, when you typically have only a short period of time to hold a fellow guest's attention. The Dinner Party meeting takes place after data collection and analysis is complete and the aim is to produce crisp, interesting report conclusions that can each be stated in 10-15 seconds, and to build up more levels of detail on that basis. In this case, the high level conclusions that resulted from the Dinner Party™ process were:



Note 2 - Statistical/Financial Analysis

6 The transport consulting firm of Steer Davies Gleave reviewed the performance regime and provided financial analysis of potential performance outcomes based on scenarios that had previously been discussed and agreed with London Underground. Their work also provided insights for interpreting the shadow running data of relevance to both reports.

15 *The approach is based in part on theory contained in The Pyramid Principle, by Minto B. (2002), 3rd edition, Harlow: Pearson Education, and the principles of argument mapping as for example set out in Horn, R.E., Yoshimi, J., et al. (1998) Mapping Great Debate: Can Computers Think?, Bainbridge Island, WA: MacroVu, Inc.*

Note 3 - NAO expert panel

7 In addition, we appointed a Review Panel, which contained experts from outside the National Audit Office. This panel provided advice on issues and aspects of the report. External members of the Review Panel were:

- Anthony Grossman, Director, Centre for Effective Dispute Resolution
- Kingsley Manning, Managing Director, Newchurch Limited
- Professor Tony M. Ridley CBE, FREng, Emeritus Professor of Transport Engineering, Imperial College
- Michael C. Spackman, National Economic Research Associates
- George Steel, Managing Director INDECO (International Management Consultants) Limited
- Bruce O. B. Williams
- Robin Pratt, Steer Davies Gleave

Note 4 - Storyboarding

8 We are constantly seeking to improve the accessibility and impact of our reports. With this aim in mind, we used a storyboarding approach to develop the main messages for this report. The approach is widely used in the advertising industry as a means to develop advertisements for new products. In this case, we started with the key messages that emerged at the Dinner Party™ (see note 1) but followed a conventional report format. In the companion report "Are the PPPs likely to work successfully?" this approach has been taken considerably further into developing the graphic design and lay-out of that report.

Appendix 2 The PPP Targets and performance regime

1 Introduction: When responsibility for the procurement of the PPP transferred to London Underground, the Department did not request a formal business case that scoped the work of the PPP in terms of investment. Instead, with focus on the objective of eliminating the investment backlog in a timely manner, London Underground sought assurance that the investment needs of its pre-existing long term investment plan could mainly be arrived at through specifying desired performance outcomes. To do this, among other measures, London Underground commissioned PA Consulting to create a dynamic simulation model with the aim of confirming, at a high level, the linkage between investment and desired outcomes. This informed London Underground's strategic thinking and assisted in developing the performance regime.

2 London Underground sought to incentivise the Infracos to bring about improvements to the Tube's infrastructure and, consequently, passenger service through a combination of contractual conditions: performance obligations, standards, asset condition benchmarks and residual life benchmarks **(Figure 2.1)**. Under private ownership, the Infracos have the whole life ownership responsibility to maintain and upgrade the track, tunnels, signals, stations, lifts, escalators and trains under 30 year contracts to London Underground. After the contract period the upgraded assets will return to the public sector. The measures are further defined below:

Ambience An output measure covering the quality of the environment for passengers, including the cleanliness and general condition of trains and stations, and the provision of passenger information. Surveys are professionally undertaken by a 'Mystery Shopper' and scores are weighted by station and by line to obtain an Infraco average score. Each score is recorded at least once quarterly. Abatements are set at twice the bonus rate (three times if the score reaches the unacceptable level).

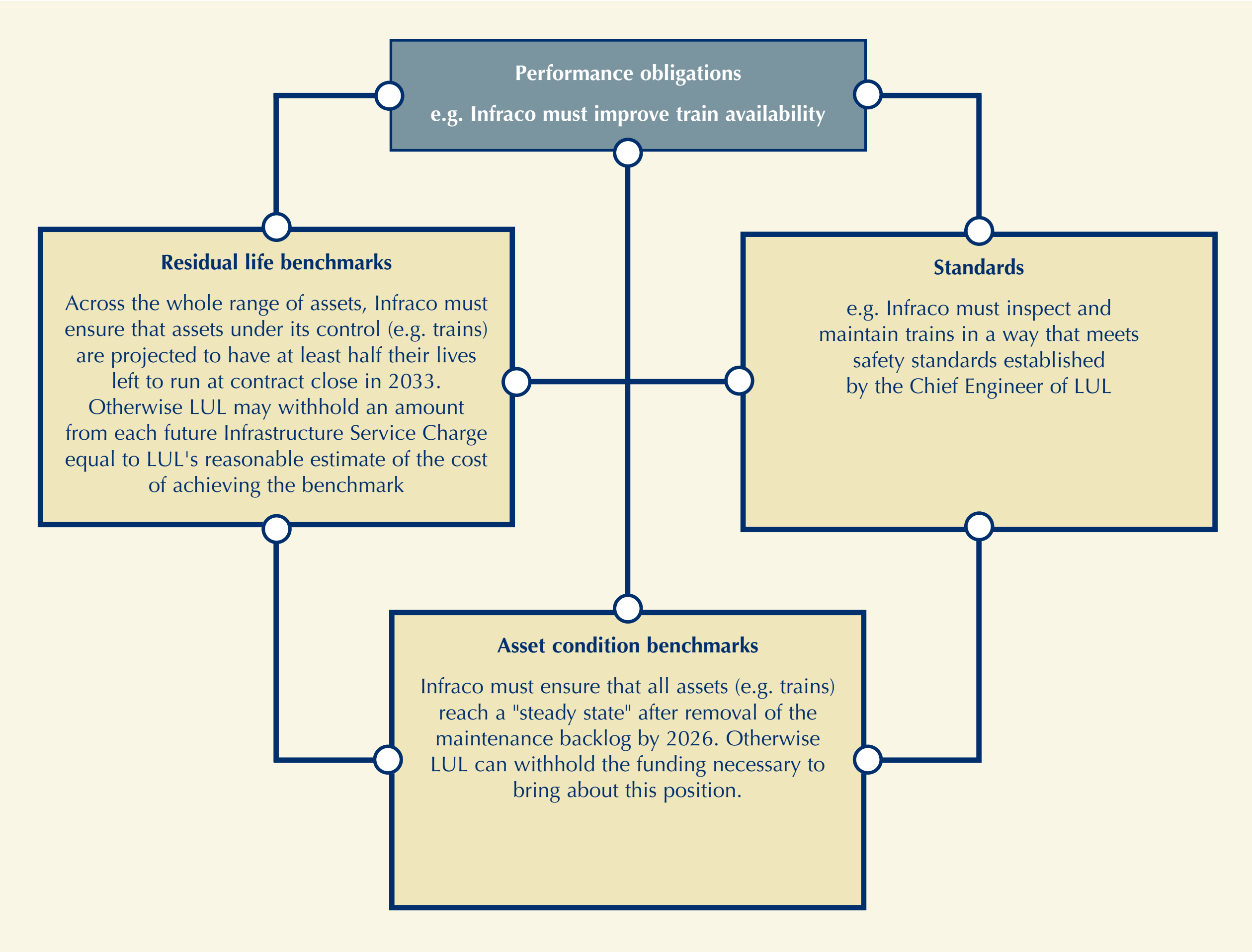
Asset Management regime calls, inter alia, for an annual plan setting out steps to achieve a comprehensive register of all assets, to bring the assets into an overall state of good condition and a Work Package Plan that forms part of the evidence of the adoption of efficient and economic whole life asset management.

Availability A measure of passengers' total additional journey time resulting from disruption caused by incidents attributable to the Infraco. It measures the reliability of the rolling stock, signalling, track and station based equipment assessed in terms of impact on passengers' 'Lost Customer Hours'. Tables calculate the impact according to time and place. Incidents are recorded daily and scores are determined as a three month moving average.

Capability A performance measure of the infrastructure's ability to support train services. It is based on average journey time per passenger, for a given time of day, and for a given line or part of a line and includes separate measures denoted as Journey Time Capability, Service Consistency and Service Control. In aggregate capability measures journey time in minutes from a passenger entering a station to exiting on reaching his final destination.

Fault rectification Measures to incentivise the speed and quality of fault fixing - for example, fixing faults with trains, lighting, pumps and drains. Faults must be fixed within standard clearance times. To illustrate, litter and spillages must be removed within one hour, while train rolling stock faults must be rectified within 15 days.

2.1 Chart illustrating the incentive regime

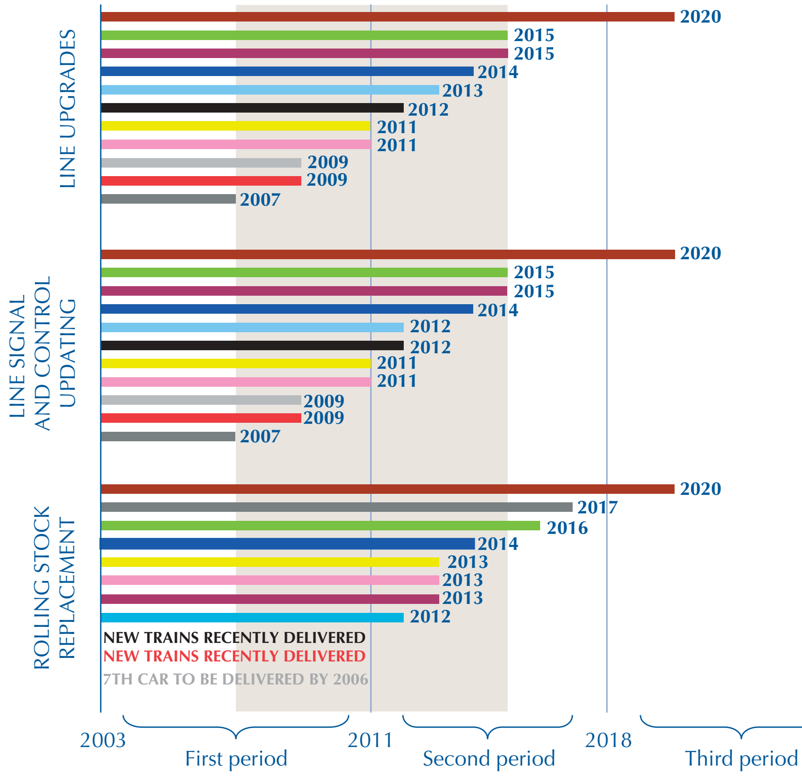


The table below, setting out promised capability upgrades, is taken from our companion report which also evaluates the likelihood of achieving the promised performance levels in the light of early case examples from the three PPP contracts after one year of private sector ownership.

3 Provided that they act in an overall economic and efficient manner, the Infracos are entitled to limit their exposure to adverse changes in expected costs or expected revenues. The way this is done is by comparing actual expenditure or revenue with the expenditure or revenue that a notional economic and efficient infraco would have spent or received in similar circumstances. **Figure 2.3 (a to c) overleaf** sets out the contract provisions that govern this relief. Either party may appeal to the Arbiter in the case of disagreement.

2.2 Infraco capability Promises

The private infracos have promised to deliver capability improvements across the Tube network, with most enhancements – partial and full upgrades - scheduled to be completed between 2007 and 2015.

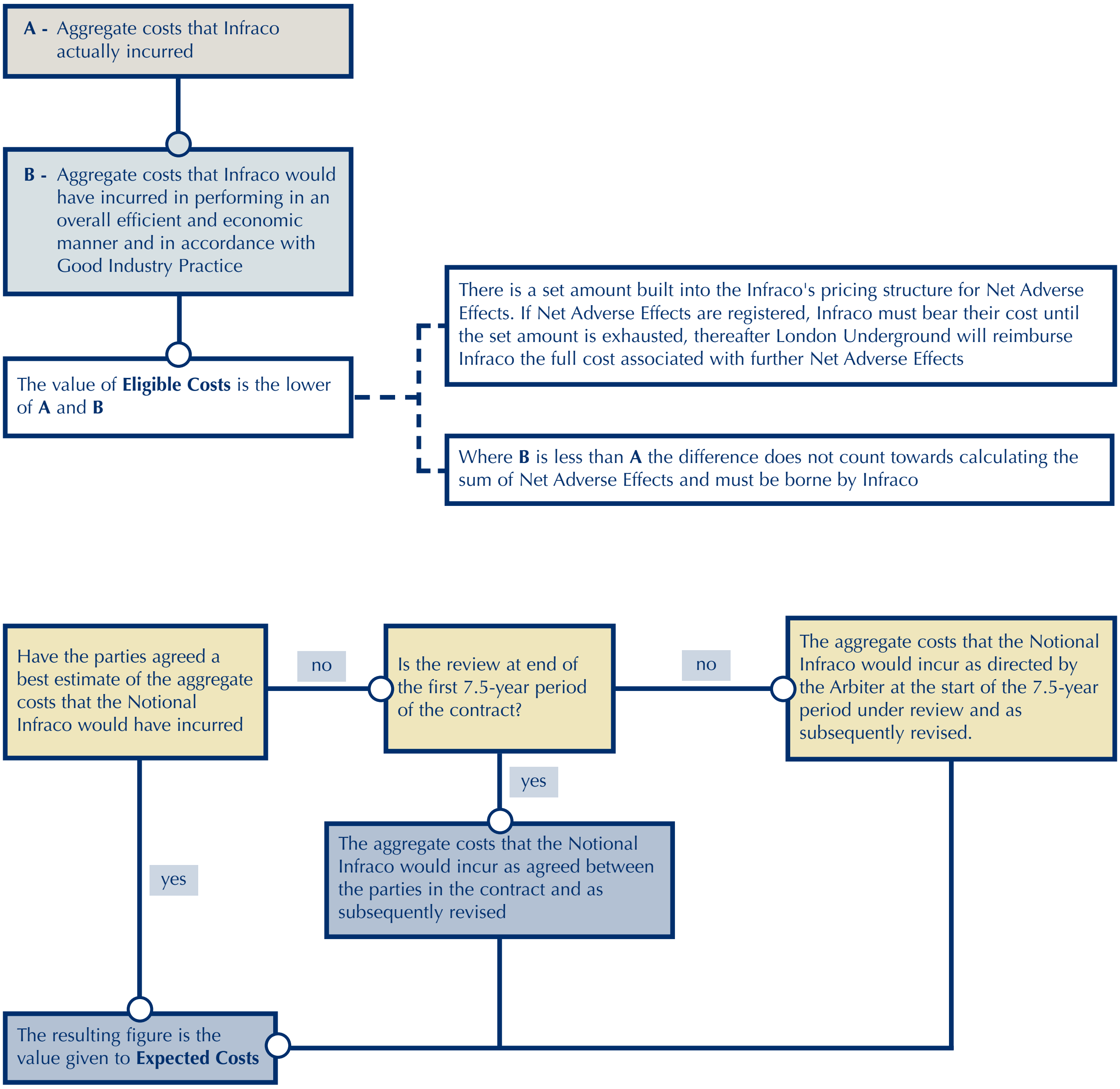


	Increase in Capability Percent
Bakerloo	15
District	11
Piccadilly	19
Victoria	14
Northern	18
Circle	tbc
Hammersmith/City	tbc
Metropolitan	17
Jubilee	22
Waterloo/City	12
Central	6

NOTE

** The coloured bars show the "latest implementation dates" by which extra capability is to be delivered on each line. The Infracos determine when they carry out the work programme.*

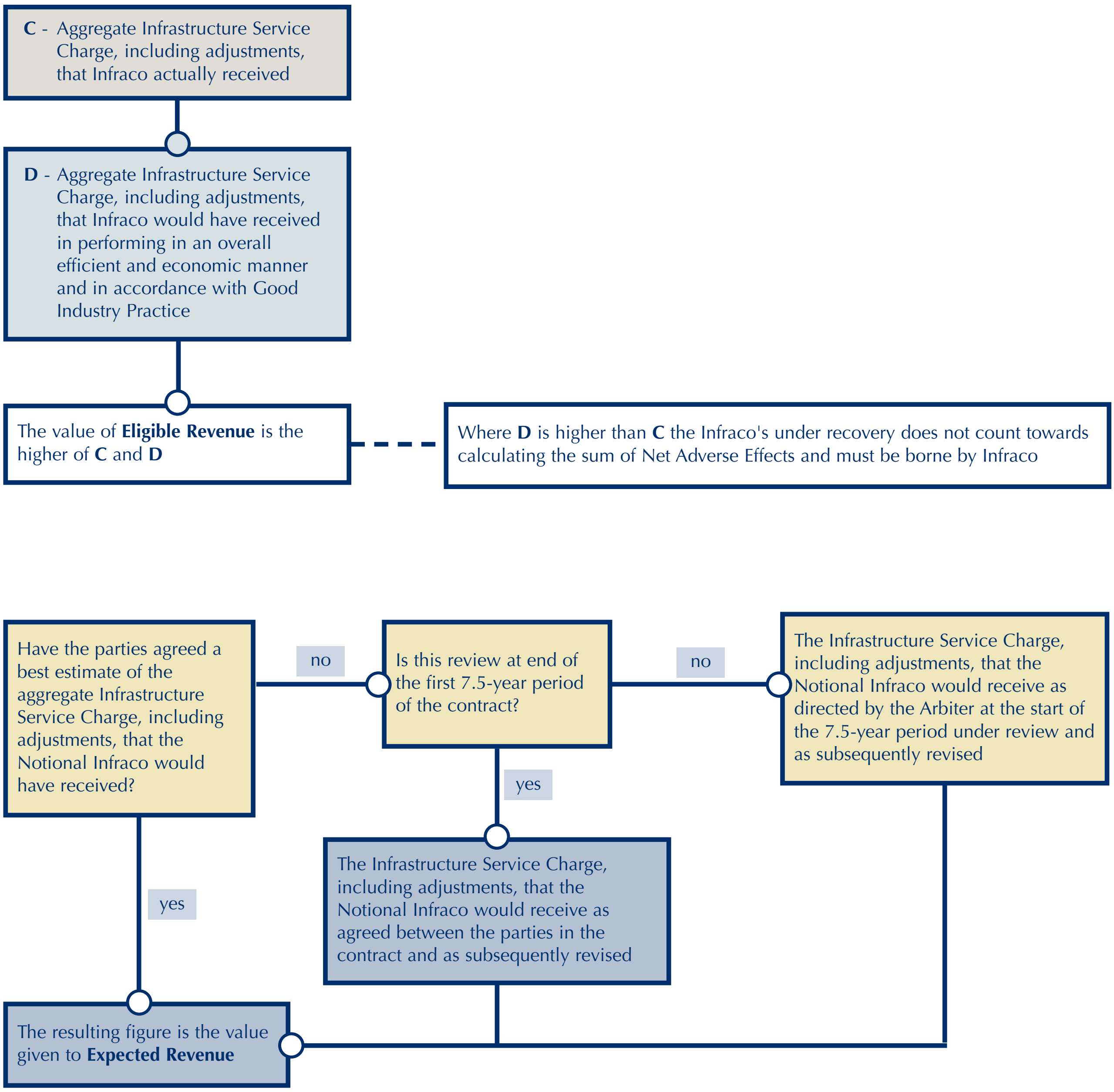
2.3a Process for calculating Eligible and Expected Costs



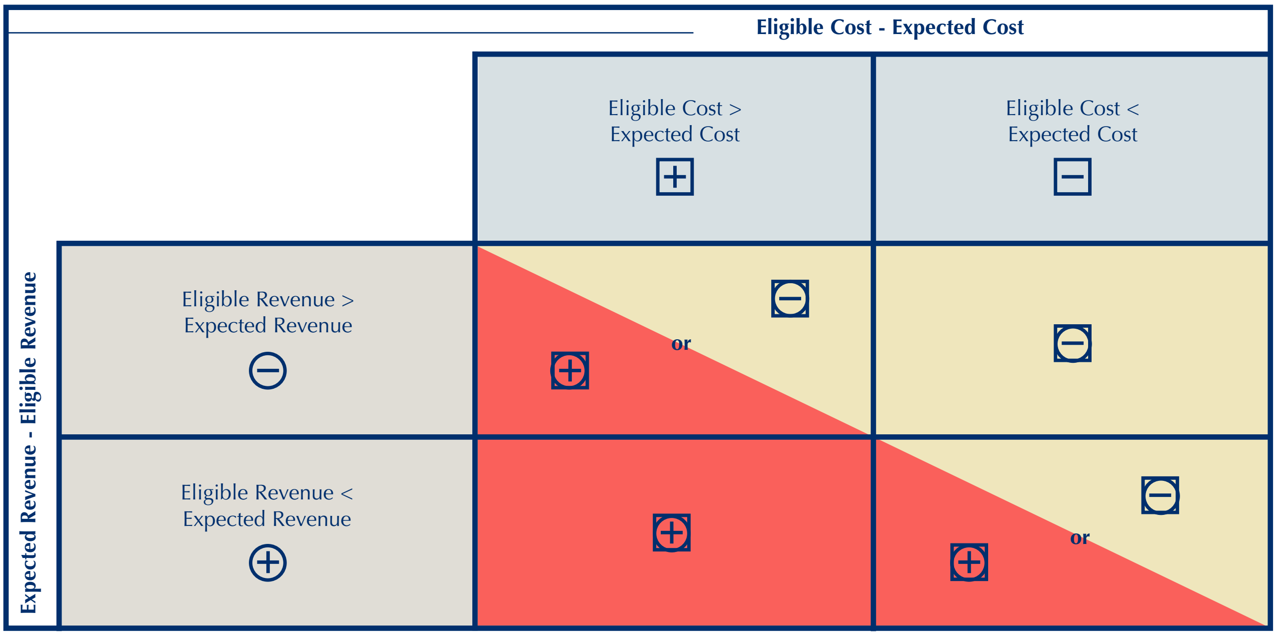
NOTE

There is a separate Notional Infraco for each actual Infraco to reflect different funding and sub-contracting arrangements. The Notional Infraco acts in an economic and efficient manner and in accordance with good industry practice.

2.3b Process for calculating Eligible and Expected Revenue



2.3c **Process for calculating the amount of Net Adverse Effect**



Amount set at zero indicating that there has been no Net Adverse Effect

Amount counts as a Net Adverse Effect. If the amount exceeds the maximum set in the contract for Net Adverse Effects, London Underground reimburses Infraco the difference

Appendix 3 The PPP grant

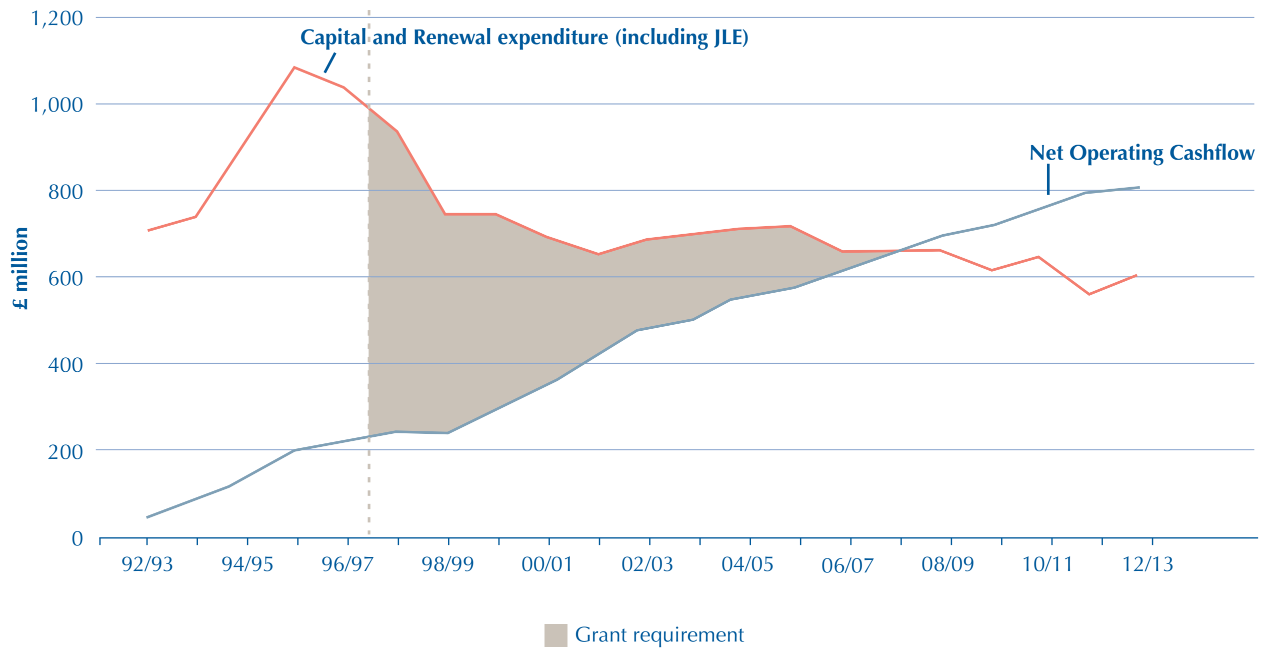
There was a starting point that the PPP would reduce the call on public funds. This was to be achieved through an increasing level of net revenue from LUL and reduced maintenance/upgrade costs due to efficiency savings.

In October 1997 Price Waterhouse reported, extrapolating from London Underground figures, that there were potential efficiency savings and revenue growth that together could eliminate the need for subsidy. Glenda Jackson, then Minister for Transport in London, told the GLA Bill Standing Committee in February 1999 that:

"Our aim is to avoid paying further grant if possible, but that is not a prerequisite of concluding the PPP."

However, as the bidding process evolved, it became apparent that the original revenue projection growth was revealed as overly optimistic and was therefore revised downwards.

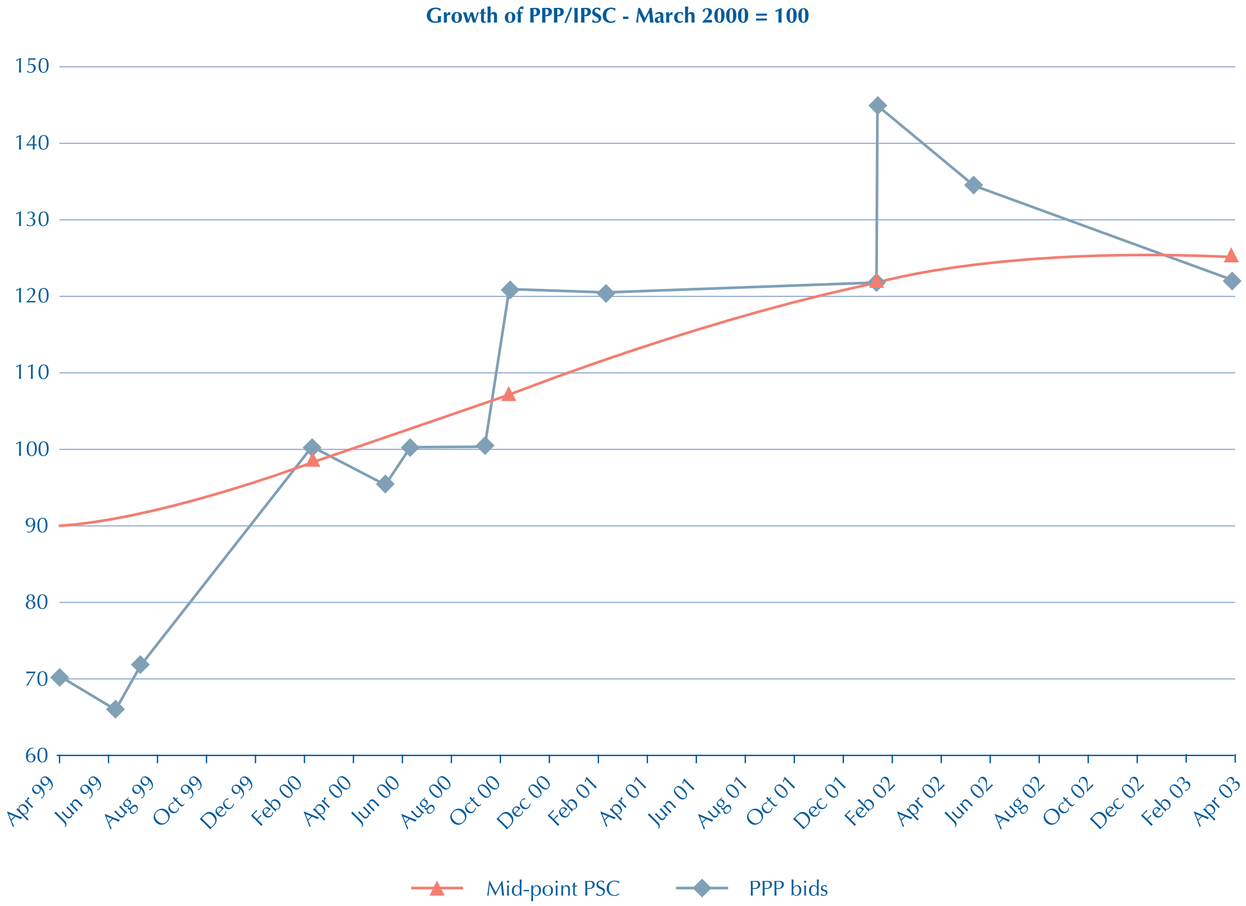
3.1 Showing early expectations that LUL net revenue would lower grant over time



Source: Price Waterhouse study (1997)

3.2 Showing periodic estimates of the increased work required

Chart uses a relative scale to compare four data points for LUL's 'mid-point' estimate public sector comparator (PSC) cost (averaged over thirty years) with the evolving bid total Infrastructure Service Charge (averaged over seven and a half years).



Source: National Audit Office analysis

3.3 Collective effect on grant required

The effect of these parallel dual effects, from lower revenue and increased work, was to substantially increase the level of the average first period grant requirement from the original £60 million to the final £979 million.

Growth of London Underground Grant Estimate to March 2003