NATIONAL AUDIT OFFICE

Report by the
Comptroller and Auditor General

Department of the Environment, Transport and the Regions

The Private Finance Initiative: The First Four Design, Build, Finance and Operate Roads Contracts

HC 476 Session 1997-98
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This report has been prepared under Section 6 of the National Audit Act 1983 for presentation to the House of Commons in accordance with Section 9 of the Act.

John Bourn
Comptroller and Auditor General

National Audit Office
15 January 1998

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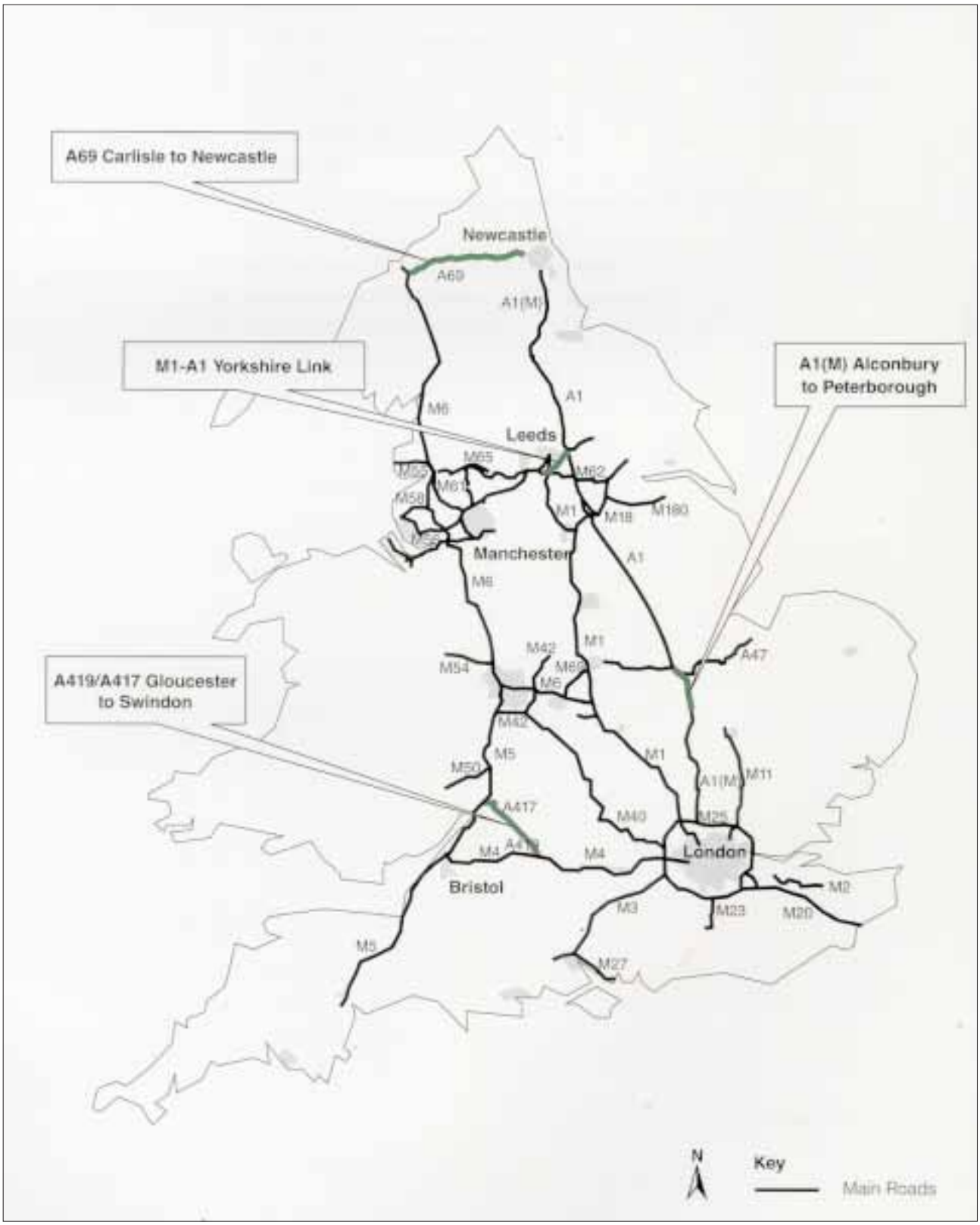
Location of the first four project roads comprising tranche one



Source: National Audit Office

Executive summary

1 This report is about the first tranche of privately financed road contracts which were let by the Highways Agency, an executive agency of the Department of Transport, in 1996. It examines the way the Highways Agency procured the roads, the value for money likely to be obtained from the contracts, and the effectiveness of the Highways Agency's arrangements for managing the contracts. The methodology used in this examination is set out in Appendix 1.

2 The four road projects were:

a) **the M1-A1 link road near Leeds**

b) **the A1(M) widening between Alconbury and Peterborough**

c) **the A419/A417 between Swindon and Gloucester**

d) **the A69 between Carlisle and Newcastle-upon-Tyne**

3 Under each of the contracts, the private sector has agreed to build a road meeting the Highways Agency's technical requirements and to operate and maintain it and some existing roads for a period of 30 years. In return the Agency will pay the private sector builder/operator according to the number of vehicle kilometres driven on the road. Road users will not pay directly for using the roads.

4 The Highways Agency were seeking to let the contracts in such a way that:

a) **the new roads would be designed and constructed, and the new roads and the existing roads would be maintained and operated safely and satisfactorily so as to minimise any adverse impact on the environment;**

b) **the enthusiasm of the market for such road contracts would be tested across a range of different scheme types;**

c) **would assist in the establishment of a road operating industry within the private sector;**

d) **innovation would be promoted;**

e) **value for money would be maximised through the use of a competitive process and by allocating risks between the public sector and the private sector in the most appropriate manner.**

Management of the procurement process

5 **The Highways Agency and the Department of Transport managed the process in a way which both attracted widespread interest among bidders and maintained competitive tension throughout, including the periods of exclusive negotiations with preferred bidders in each contract**. The Agency applied consistent evaluation criteria thoroughly to bids at each stage of the process and awarded the contracts in each case to the bid meeting their technical requirements and offering best value. The contracts provide, in particular, for the Agency's safety and environmental requirements to be met in full.

6 **The Department of Transport selected these four projects specifically to test the market for different kinds of project**. This meant choosing projects to which they might not have given priority as conventionally financed schemes.

7 To launch the use of private finance for roads without the uncertainty of statutory risk - for example, obtaining the necessary planning approvals - the projects were selected from those which they had taken through public inquiries in the conventional manner. As a result, **the core technical requirements which all bidders had to meet included some required to honour undertakings given during the public inquiries**. Although bidders could propose changes to the detailed design or the use of materials, **there was limited scope for innovative changes to the base design**, for which bidders received complex and detailed specifications. In one case the Highways Agency agreed to a relaxation in the core requirements after the award of the contract.

8 The Department of Transport and the Highways Agency incurred costs for external advice of £8.3 million in awarding these contracts. Bidders' costs were higher than for conventionally financed road projects.

Value for Money

9 **Under the contracts the private sector assumes substantial risks, including those relating to designing, building and operating the roads**. The private sector can reasonably be expected to be able to manage these risks better than the public sector under traditional methods of procurement. The placing of risk appropriately in this way is likely to provide better value for money than

placing risks with those not well able to manage them. And **the fact that the procurement process was highly competitive gives assurance that the terms obtained were the best obtainable from the market for deals of this type at the time**.

10 Because the road operators will be paid each year primarily according to the use made of the road, their income will vary as traffic varies. The Department of Transport wished the operators to take a share of the traffic risk in this way to help create a road operating industry which would be sensitive to road usage. They believed that this would better accommodate future policy options and encourage more efficient construction and maintenance practices. The operators, however, cannot control or manage this risk. **The use of shadow tolls has therefore introduced a new risk which can be expected to have increased the cost of these roads, offsetting to some extent the benefits of placing other substantial risks appropriately**. A further feature of the contracts which also may be expected to increase the costs of these roads compared with conventionally procured roads is that **the financing of the projects will take place wholly in the private sector.**

11 To examine the balance of advantage arising from these projects the Highways Agency used extensive financial analysis and modelling. **The Highways Agency concluded that, after taking account of the value to them of the transfer of risk to the private sector, three of the four contracts would provide the road projects on financially better terms than traditionally procured and conventionally financed alternatives**. The public sector comparators used in this assessment were in line with the Highways Agency's recent experience of conventionally financed projects, and did not take account of any potentially advantageous innovations in the procurement of such projects, such as the use of design and build contracts. The Highways Agency considered that the fourth contract would provide unquantifiable benefits in pursuit of the Government's policy of encouraging the development of a private sector road operating industry which would justify proceeding with it.

12 **The Highways Agency's financial assessment of the contracts is very sensitive to some key assumptions**, in particular to the choice of discount rate which is used to enable comparisons to be made between payments made at different times over the duration of the contracts. The discount rate is intended to quantify the extent to which £100 (say) today is worth more to the Government than £100 in a year's time. The choice of discount rate for comparing privately financed projects with conventionally financed alternatives is very important. It enables the extra cost of financing these projects with private sector capital rather

than with government borrowing to be taken fully into account. If the discount rate is too high, the impact of that extra cost will be under-estimated, and a misleading impression given as to the financial merits of the privately financed option.

13 **The Treasury decided that** in assessing road projects **the Highways Agency should use a discount rate of eight per cent** (after inflation). **The Treasury's published guidance recommended that most public sector projects, including privately financed projects, should be appraised using a discount rate of six per cent** which is the Treasury's own estimate of the Government's effective cost of capital (taking account of tax).

14 Nationalised industries, including the railways, were set a required rate of return to be earned on their investment programmes. This was a rate of eight per cent and that rate was also to be used for appraising railway investment. The Treasury published guidance noted that it was considered appropriate to apply this same rate to the costs and benefits of publicly financed roads to ensure comparability between different publicly financed investments. Since early 1997, following the privatisation of the railways, the Treasury have recommended use of a six per cent discount rate for appraising publicly financed roads.

15 **Using a six per cent discount rate two of the four projects offer less good value, in terms of quantifiable costs, than the conventionally financed alternatives, Figure 1.**

Comparison of expected net value of tranche 1 road projects at eight and six per cent discount rates

Figure 1

Net value to the Highways Agency of privately financed project (£ millions):	*M1-A1*	*A1(M)*	*A419/A417*	*A69*
at 8 per cent discount rate	112	50	11	-5
at 6 per cent discount rate	84	30	-3	-12

Notes: 1. Negative figures indicate that traditional procurement may have offered better value for money
2. See Figure 14 for more detailed breakdown of these figures.

This figure shows that the choice of discount rate has a large impact on the financial assessment of these projects, and that two of the four projects give worse financial value than the public sector comparators when assessed using a discount rate of six per cent.

Source: The Highways Agency

16 **Although eight per cent was the standard discount rate for appraising the costs and benefits of public sector roads, we consider that this rate was too high for the different task of comparison of public and private financing.**

17 **Where the result of a comparison is very sensitive to key assumptions, such as, in this case, the discount rate, there is a limit to how far it might be worthwhile refining the calculation.** Spurious accuracy may result. In such cases a public sector comparator provides indicative figures only.

Contract management

18 **The Agency have taken steps to monitor compliance with the contracts** but there were delays in setting up effective arrangements for monitoring the construction and operational phases of the contracts.

19 The contracts provide protection for each party in the event of breach of contract by the other, and should also ensure that the roads revert to Agency operation in good condition at the end of the contracts.

20 **The Agency's arrangements for auditing the payments due to operating companies are dependent upon the accuracy of traffic measurement. At the time the contracts were signed, current technology could not provide the required accuracy** but operators were given three years to meet the required level of accuracy. By September 1997 a significant proportion of the measuring equipment was meeting the necessary standard.

Recommendations

21 We recommend that:

a) **the Department of Transport should take into account the relative priority of road projects in the roads programme when selecting projects for inclusion in future rounds of tendering (paragraph 1.5).** Since not all road projects may be suitable for the privately financed approach, attention to overall priorities is needed to avoid potential distortion of the roads programme and to ensure that the long term commitment of resources is directed at priority schemes.

b) **Government departments and agencies procuring privately financed projects should consider the need to stimulate market interest in forthcoming projects before commencing the formal procurement procedures (paragraph 1.9).** This was one of the ways the Highways Agency ensured that the procurement process was highly competitive.

c) **to encourage innovation in privately financed projects, it is important to minimise the extent of core technical requirements, and when it is, exceptionally, necessary to vary those requirements, it is preferable for that to be done in a way which enables competitive pressure to bear on pricing such variations (paragraph 1.24).** Procurement regulations may limit the ability of procurers to accept novel technical solutions, however attractive, if they are outside the formal procurement specification.

d) **departments and agencies should be wary of spurious precision in carrying out public sector comparators as part of their evaluation of the value for money of privately financed projects (paragraph 2.18).** The outcome of these comparisons can be very sensitive to factors, such as discount rates, which are not capable of being known with precision; it could be wasteful to seek precise answers from such calculations. A similar point applies in cases in which public sector comparators are replaced, as we recommended in our report on the Skye Bridge (HC5/1997-98), by a systematic comparison with realistic alternative options.

e) **the Highways Agency should ensure that effective measures are in place to secure compliance with the contracts for the road projects both during construction and during operation (paragraphs 3.1 - 3.10).** Such measures should be in place so that they are fully effective from the time the contracts are awarded.

Part 1: The procurement process was consistent with the Highways Agency's objectives

This part of the report examines the procurement process from announcement of the competition through the pre-qualification, bidding and negotiation stages to contract award.

1.1 From its announcement to the signing of the fourth contract, the procurement process ran from December 1993 until March 1996. In December 1993 the then Secretary of State for Transport announced that the first Design, Build, Finance and Operate roads contracts were to be let within 18 months. In August 1994, the Department of Transport advertised the competition for the first tranche of four contracts in the Official Journal of the European Communities. Background information and pre-qualification requirements for the four projects were also published. In January 1995, following pre-qualification, four consortia were invited to tender for each project. Their bids were assessed to decide on a short-list. Two bidders were short-listed for three of the projects, and three for the A1(M). Best and final offers were invited in late 1995. A provisional preferred bidder for each project was chosen and a second bidder invited to remain in reserve. Detailed negotiations took place with the preferred bidders before the four contracts were signed between January and March 1996. Figure 2 sets out the detailed stages for the procurement process. Details of the four projects included in tranche 1, including maps showing their respective locations and routes are given in Appendix 2.

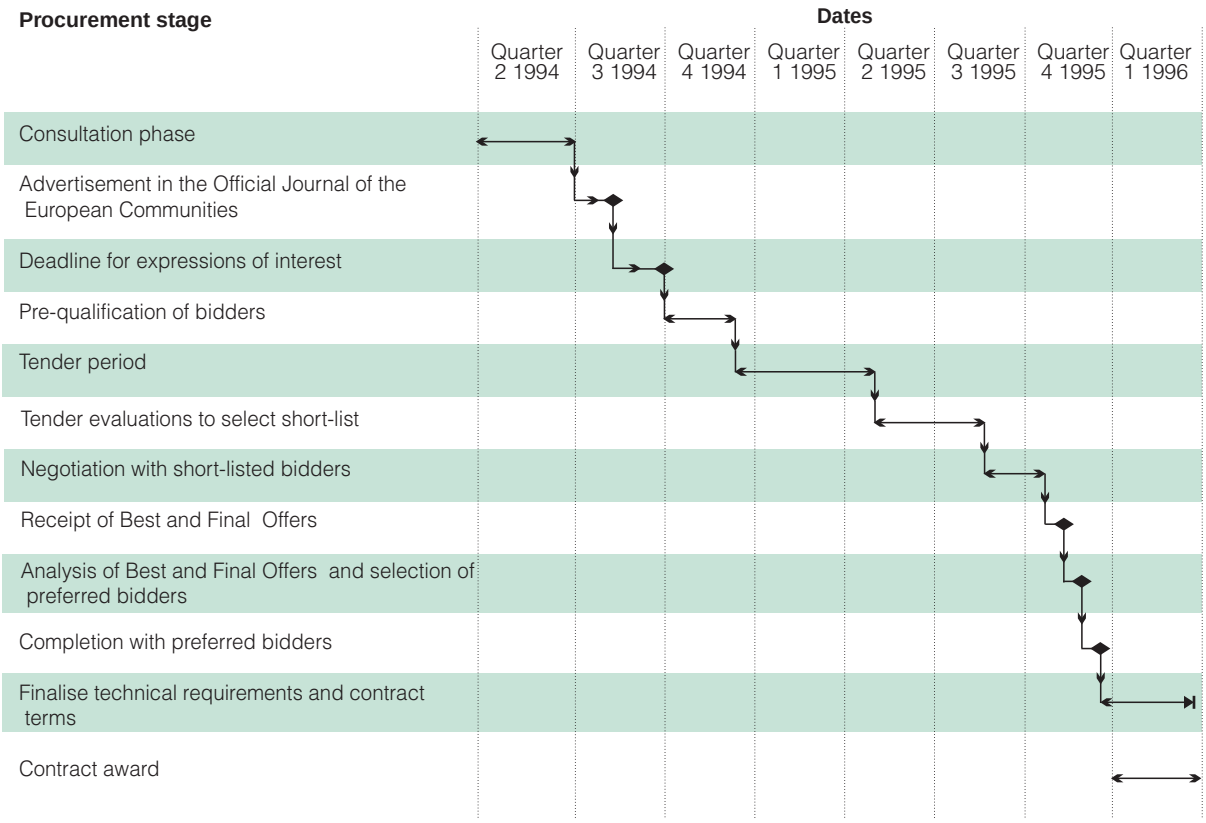
The Department of Transport selected four projects for an experimental first tranche

The Department of Transport and the Highways Agency consulted widely on the introduction of private finance

1.2 The application of the Private Finance Initiative to road programmes was set out in two consultation documents - the Department of Transport's Green Paper "Paying for Better Motorways" (1993) and "Design, Build, Finance and Operate Concessions for Trunk Roads and Motorways"(1994). Under the proposals, the private sector would contract to build a road meeting the Department's core requirements and to operate and maintain the road for a period of 30 years. In return the Department would pay the private sector builder/operator according to

Figure 2

Key stages in the procurement process of the four contracts



Note: ◆ indicates key date

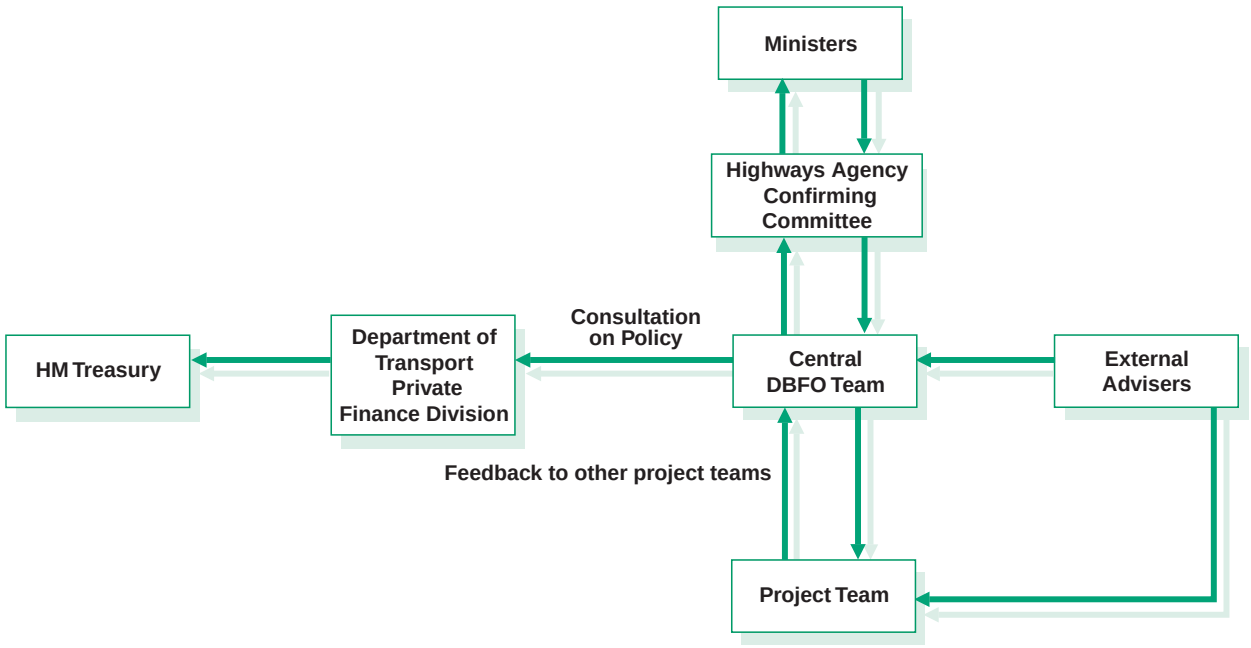
This figure shows that the procurement process began in April 1994 with a consultation phase, and ran until the four contracts were signed between January and March 1996.

Source: The Highways Agency

the use made of the road. The mechanism they chose was known as “shadow tolls": payments based on the number of vehicle kilometres travelled by road users. Road users would not pay directly for using the roads. Initial policy development and formulation of the Design, Build, Finance and Operate contract terms was led by the Central Transport Group of the Department of Transport. Further development of the policy and procedures became a shared responsibility following the establishment of the Highways Agency in April 1994. Implementation of the projects was carried out by the Highways Agency. The Agency established a Confirming Committee of the Agency Management Board which played a central role in steering the process through the negotiations. This

board level involvement also demonstrated the Agency's commitment to the Design, Build, Finance and Operate approach to all parties. Figure 3 sets out the inter-relationships of the various parties involved.

Figure 3 Organisation Chart



The figure shows the inter-relationships between the organisations.

Source: The Highways Agency

1.3 The private sector companies are responsible for financing the capital, operational and maintenance costs of the roads. In each case the private sector company has been formed specifically for the purpose of taking on the contracts. These companies are owned by consortia whose members are, in general, contracting to provide various services to the companies, such as the construction of the roads in question. The membership of the winning consortia is shown in Appendix 2.

1.4 The Highways Agency's objectives for their work on the first tranche of Design, Build, Finance, and Operate roads were:

a) to maximise value for money by allocating risks appropriately between the public sector and the private sector;

b) to ensure that the new roads will be designed and constructed, and the new roads and the existing roads will be maintained and operated safely and satisfactorily and so as to minimise any adverse impact on the environment;

c) to promote innovation; and

d) to test the enthusiasm of the market for Design, Build, Finance and Operate roads contracts across a range of different project types and assist in the establishment of a road operating industry within the private sector.

The four projects were chosen to test the enthusiasm of the market

1.5 In choosing the first four projects the key consideration was to provide a selection of projects of differing size and complexity, involving different mixes of new construction and maintenance, to test the private sector's appetite for such projects. From the outset this first tranche was declared to be experimental and as such the relative priority of projects in the trunk road programme was not the main issue in the selection of the trial projects. To launch the initiative without the uncertainty of statutory risk - for example, the need to obtain necessary planning consents - and ensure that progress was made reasonably quickly, the projects chosen for tranche 1 were in an advanced stage of development. They had each passed through the necessary stages that require substantial design and planning to have been completed, including Public Inquiries.

The procurement process produced compliant bids for all projects

1.6 The procurement process consisted of the following main stages:

a) Setting up the procurement machinery

b) Pre-qualification of potential bidders

c) Tendering

d) Bid evaluation and selection

The Department of Transport and the Highways Agency established a sound basis for the procurement

Appropriate expert advisers were appointed in good time

1.7 Following a competition in February 1994, the Department of Transport appointed Hambros Bank Limited and Price Waterhouse to provide financial advice on the development of draft contract documents, and to support the Department at all stages of the competition from pre-qualification to contract award. Hambros Bank Limited and Price Waterhouse worked jointly and are referred to in the remainder of this report as Hambros Price Waterhouse. Denton Hall were appointed similarly as legal advisers in June 1994 to assist in drafting tender documents and in negotiating and drafting contract documents. Sir William Halcrow and Partners were appointed in November 1994 after a competition to provide technical support to the Highways Agency's central team.

The procurement rules adopted complied with European Union regulations

1.8 The letting by Government departments of contracts is subject to United Kingdom regulations which enforce the terms of the relevant European directive. There is a range of possible options within the regulations and following advice from the Treasury Solicitor, the Agency decided that the most appropriate procedure was the negotiated procedure of the Public Works Contracts Regulations 1991 (SI 1991 No. 2680), regulation 13. This procedure permits the degree of negotiation with bidders on the detail of their proposals during the bid evaluation stage which the Agency wished to take advantage of. The negotiated procedure was therefore adopted for tranche 1 and has been used for subsequent tranches of Design, Build, Finance and Operate road projects.

The Highways Agency stimulated the interest of the market

1.9 In April 1994, the Department of Transport invited comments from interested parties on their consultation document "Design, Build, Finance and Operate Concessions for Trunk Roads and Motorways". The Department's advisers also undertook a market sounding exercise amongst key players and other potential participants during May 1994. This, together with the wide coverage of the green paper and budget statements, ensured that all those with a potential interest knew of the proposals in advance of the advertisement in the Official Journal of the European Communities in August 1994 providing the Agency with confidence that there was sufficient market interest in the projects.

1.10 Information and pre-qualification procedures setting out the project details, timings and procedures were also made available to prospective bidders in August 1994 following a press briefing. Those seeking to pre-qualify were invited to indicate their interest in bidding for one or more of the four projects on offer. Submissions from interested parties were required by 30 September.

The pre-tendering phase enabled the Agency to find four bidders for each project

The criteria to be used in the pre-qualification assessment were made clear to the market

1.11 The information document contained an extensive list of assessment criteria and required supporting information. The criteria were that the tenderers had a technical, financial and economic track record in designing, planning, construction, maintenance and financing of roads and other Design, Build, Finance and Operate type projects, and the skills and capability to fulfil the requirements of these projects. The relative weightings for the assessment criteria varied for each of the four projects reflecting their different characteristics. The weightings were not made available to those seeking to pre-qualify.

1.12 The Agency were successful in generating extensive interest in the proposed projects. Pre-qualification submissions were received from 17 consortia, comprising some 70 individual companies. Certain consortia had expressed preferences for particular projects, others expressed an interest in all four. Twelve consortia were assessed as meeting the criteria to proceed to the tender stage and these were ranked by project by the Agency and their advisers in accordance with the evaluation criteria specified in the Information and Pre-qualification Requirements, Figure 4. Some pre-qualification submissions were rejected by the Agency because in the Agency's view they failed to show they could meet the Agency's requirements in areas such as the financial commitment and the need for active road operating experience.

Figure 4 **The ranking of the consortia at pre-qualification**

M1-A1		*A1(M)*		*A419/A417*		*A69*	
Ranking	*Consortia*	*Ranking*	*Consortia*	*Ranking*	*Consortia*	*Ranking*	*Consortia*
1	Road Management Group	**1=**	Road Management Group Yorkshire Link	**1=**	Road Management Group Connect	**1**	Road Management Group
2=	Connect UK Highways Yorkshire Link	**3**	UK Highways	**3**	UK Highways	**2**	Express Route
5	Autolink	**4**	Connect	**4=**	Autolink Express Route Modern Highways	**3=**	Autolink Connect Modern Highways UK Highways
6	Modern Highways	**5=**	Autolink Modern Highways National Road Operators	**7**	National Road Operators	**7**	Road Link
7=	Express Route Hochtief	**8**	Express Route	**8**	Road Link	**8=**	Graham Network Operators Route Management

Note: At this stage the Yorkshire Link consortium consisted of a joint venture by Trafalgar House and Wimpey Construction. During the negotiation phase Wimpey withdrew from the joint venture and were replaced by BICC.

This figure shows how qualifying consortia were scored and ranked for their suitability for each project before final tender lists were prepared.

Source: The Highways Agency

Four consortia were selected for each project, but not always the highest ranked

1.13 Four consortia were invited to bid for each project as shown in Figure 5. Having been ranked initially on the basis of a simple scoring system other factors came into play to determine which consortia were invited to bid for which project. The ability to build and finance the project was a major determinant in the selection. No consortium was invited to bid for more than two projects and, where possible, the tender lists reflected the preferences expressed by the qualified consortia. Also, to the extent permitted by the procurement regulations, the Agency wished to spread the work around to sustain private sector interest and thus assist in meeting the objective of creating a private sector road operating

industry. The effects of these considerations were that: in the case of the M1-A1, the largest of the four projects, two of the initially top four ranked consortia were not invited to tender whereas the two lowest ranked consortia were invited to bid; on the A1(M) two of the initially top three ranked consortia were not invited to bid; and, on the A69, neither of the initially top two ranked bids were invited to bid.

The consortia invited to tender for each project

Figure 5

M1-A1	*A1(M)*	*A419/A417*	*A69*
UK Highways	Autolink	UK Highways	Road Link
Express Route	Road Management Group	Connect	Graham Network Operators
Yorkshire Link	Connect	Road Management Group	Autolink
Hochtief	Modern Highways	National Road Operators	Modern Highways

This figure shows the consortia invited to bid for the four projects following further evaluation after pre-qualification.

Source: The Highways Agency

The invitations to tender were complex

1.14 Standard bids were required:

a) to meet a specified quality threshold for all aspects of the output specification;

b) to meet specific and detailed core requirements covering safety, the Secretary of State's statutory and common law obligations, standard of highway service, third party undertakings, response to emergencies, traffic control and communications, and maintenance and environmental objectives;

c) to demonstrate bidders' willingness both to assume sufficient risk and responsibility to allow the projects to proceed as Design, Build, Finance and Operate projects, and to accept responsibility for design, construction, maintenance and financing;

d) to include proposals for the two risks of protester action and unknown, or latent, defects. These proposals were invited on the basis of three options involving different levels of risk transfer so that the Agency could effectively put a price on the value of the different levels of transfer for these risks;

e) to be on the basis of a 30 year contract life. This figure was recommended by the Highways Agency's financial advisers following consultations with financial institutions. The period was intended to facilitate longer term financing and also encourage the bidders to take a long term "whole life" approach, and to ensure consistency and hence ease bid evaluation; and

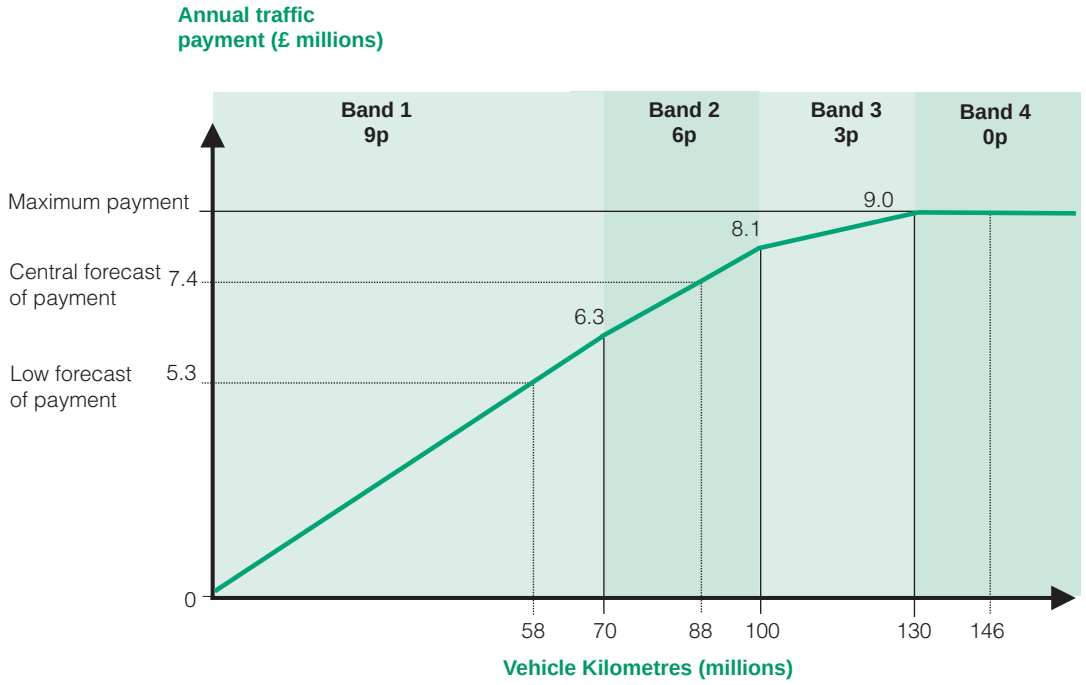
f) to be based upon shadow toll payments on 2 classes of vehicle - those over 5.2 metres long (primarily heavy goods vehicles) and all others - to be measured by equipment provided by the operators. The toll payments for each class of vehicle were to be split into between two and four shadow toll bands, with the shadow toll in the top band set at zero. This would provide a cap on revenues.

1.15 The Agency also invited consortia to submit variant bids to the standard requirements which would offer different ways of meeting the Agency's requirements and provide scope for innovation.

1.16 Although the Invitations to Tender specified the basis of payment as being banded shadow tolls, bidders were allowed considerable flexibility within that structure. Bidders proposed their own toll rates for the different classes of vehicles and the level of traffic in each band. No restrictions were placed upon where the band limits were to be, nor how the prices and band limits could fluctuate over time. Each tenderer was given the Highways Agency's historic traffic flow data for the existing road and, for the sections of new road to be constructed, were also given the high and low growth projections made public during the planning inquiries. This information provided the basis for further traffic forecasting to be undertaken by the tenderers. A worked hypothetical example of how the shadow tolling structure operates is provided in Annex A to Appendix 3. A graphical representation of the shadow toll structure showing the annual payment due for vehicles over 5.2 metres long in the example is shown at Figure 6.

Figure 6

Illustration of traffic related shadow toll payment mechanism



Traffic band	*Band size (million vehicle kilometres a year)*	*Toll (per vehicle kilometre)*	**Total annual payment in band under each growth scenario (£ millions)** *High growth*	*Best estimate*	*Low growth*
Band one	0 to 70	9p	6.3	6.3	5.3
Band two	70+ to 100	6p	1.8	1.1	0
Band three	100+ to 130	3p	0.9	0	0
Band four	over 130	0p	0	0	0
Total payment in year (£ millions)			**9.0**	**7.4**	**5.3**

This figure illustrates how the payment mechanism operates. It shows that the minimum payment is zero if there is no traffic and the maximum payment is £9 million if traffic exceeds 130 million vehicle kilometres in one year. The figures used are based on the worked examples for Heavy Goods Vehicles in Annex A of Appendix 3.

Source: National Audit Office

Bids were fairly and consistently evaluated

Transaction teams were established for each project to evaluate the bids

1.17 There were four bidders for each project except the M1-A1, from which Hochtief withdrew citing other commitments, leaving three bidders. The Highways Agency decided to evaluate bids using a transaction team for each project consisting of a member of the Highways Agency, and advisers from each of Denton Hall, Sir William Halcrow and Partners and Hambros Price Waterhouse. The transaction teams received significant training in team building and negotiation skills which the Agency believe contributed greatly to the deals achieved. The Agency were also assisted in each of the projects by their Design Agents who had been commissioned to develop the proposed schemes which had been taken through the planning processes by the Agency. The main criteria by which bids that met the required technical standards were assessed were the expected discounted cost of shadow toll payments and specific values ascribed to transferred risks[1]. The sensitivity of shadow toll payments to changes in traffic volumes was also considered in the event that two or more bids were very close after the net present values and values of risk transfers had been considered. A description of how these figures were calculated is given in Appendix 3.

1.18 A number of bidders submitted variant bids. The transaction teams chose an evaluation bid from each bidder based on the lowest priced financially robust offer that satisfied the Agency's technical requirements. This was not always the cheapest bid but reflected the Agency's and advisers' concerns that the financing of some of the cheaper bids was unlikely to be deliverable.

1.19 The transaction teams undertook two separate traffic simulations based on two traffic forecasts - one assuming a high proportion of heavy goods vehicles and one assuming a low proportion - to establish the bidders' ranking in terms of expected net present values. Both forecasts were based on the Highways Agency's own traffic forecasts which had not been supplied to bidders.

1.20 The financial models submitted by bidders in support of their bids were reviewed by the transaction teams. These models showed how bidders expected their income and expenditure to be spread over the life of the contract.

1 These discounted costs were calculated as the net present value at a given discount rate of the expected future cash flows. For convenience, they are expressed as a positive number. So a high net present value represents a high cost to the Highways Agency.

The transaction teams selected short-listed bidders for each project

1.21 On the basis of the interim evaluations described above the transaction teams selected a short-list. On three projects two bidders were short-listed. Three bidders were short-listed for the A1(M) project as the second and third placed bids were particularly close. Figure 7 shows the net present values of the expected payments over the lives of the contracts for the bids received and the short-listed bidders for each of the projects.

Figure 7

The net present values of expected payments calculated for the individual bids on each project

Project	*Short-listed Bidders and Net Present Values of Bids (£ millions)*			*Other Bidders and Net Present Values of Bids (£ millions)*	
M1-A1	Yorkshire Link 224	UK Highways 258		Express Route 288	
A1(M)	Road Management Group 167	Connect 204	Autolink 217	Modern Highways 374	
A419/A417	Road Management Group 118	National Road Operators 126		Connect 154	UK Highways 156
A69	Road Link 60	Graham Network Operators 79		Autolink 90	Modern Highways 100

Note: Net present values are calculated using eight per cent discount rate. The higher the net present value figure the greater the expected cost to the Agency.

Source: The Highways Agency

This figure shows that on all four projects the bidders offering the lowest and second lowest net present values were short-listed other than the A1(M) where three bidders were short-listed.

Best and final offers were sought from the short-listed bidders for each project

1.22 The Agency invited best and final offers from the short-listed bidders which were evaluated against the same criteria as initial bids. On the basis of these evaluations, a preferred bidder was provisionally appointed for each project. In each case the preferred bidder was the consortium whose bid had the lowest net present value at the short-listing stage. Each of the preferred bidders was required to arrange for an independent financial audit of their model to be carried out and a report provided to the Secretary of State and the bidders' own lending institutions.

Provisional preferred bidders were also asked to have committed financing in place within two weeks. The reserve bidder on each project was invited to leave its bid on the table to maintain competitive pressure.

The Agency's efforts to evaluate bids on a consistent basis may have limited innovation

1.23 The Agency's core requirements were derived from the project plans and orders following public inquiries. Some bidders proposed variant bids which sought to provide good value for money in ways which departed to some extent from the core requirements. The Agency sought to ensure fairness and a level playing field and decided not to pursue non-conforming bids without giving details to the other bidders and allowing them to bid on the same basis. In one case the Agency negotiated changes to the core requirements and this resulted in a saving from the indicative design, although the saving was less than if the change had been accepted when first offered during the competition (see Box 1).

Box 1

Blackgates Bridge, M1-A1

A core requirement for the M1-A1 project was the demolition and replacement of Blackgates Bridge south of Leeds. This was to allow the construction of a dual four lane motorway with hard shoulders. One bidder proposed a design alteration - estimated to save £1 million - that did not require the bridge's demolition, but meant that there would be no hard shoulders under the bridge. Although this suggested departure from the Agency's standards was fairly common, the Agency stated that, in order to maintain a level playing field with other bidders, they would only allow this solution to be assessed if it was passed on to other bidders for them to price. The bidder chose to withdraw the solution so the evaluation was carried out on the standard basis assuming bridge demolition. The bidder eventually won the contract for the project. Although no indication was given to the bidder that the Agency would be prepared to agree to the proposal, the bidder later brought the proposal forward again and negotiated with the Highways Agency and their solution was accepted. The bidder eventually won the contract for the project and the solution resulted in a £600,000 (excluding VAT) discount from the indicative design.

1.24 Innovation is most likely to be promoted by allowing bidders the maximum scope to propose new ways of meeting service requirements. It is therefore important to minimise the extent of core technical requirements, and if a change to these requirements is, exceptionally, necessary, it is preferable for that change to be made when the cost or value of the change is still subject to competitive pressure.

Competitive pressure was maintained up to contract award

1.25 While negotiations continued with the preferred bidders, the other short-listed bidders were asked to keep their bids on the table in case the Highways Agency wished to re-open negotiations with them. All agreed and this competitive pressure helped ensure that there was limited adjustment of toll levels and risk transfer during the final negotiations. Where there were movements, these did not threaten the competitive position of that proposal compared with the reserve bidder as the Highways Agency ensured the preferred bidder was aware of the availability of the reserve bidder to step in. Box 2 shows how this process helped to maintain competitive pressure in relation to the Road Management Group bids for the A1(M) and the A419/A417 projects.

Box 2

Following their selection as preferred bidders for both the A1(M) and the A419/A417 projects, the successful consortium, Road Management Group, submitted revised bids which would have increased the expected net present values of their bids. By maintaining competitive pressure through having a reserve bidder in place, the Agency's negotiating position remained strong and the bidder absorbed most of the increase.

1.26 The preferred bidders for each of the projects were awarded the contracts without significant movement in terms and contracts were signed between January and March 1996. Figure 8 shows the winning consortia, the final net present values of the winning bids and the range within which total payments are expected to fall for each of the four projects.

Figure 8

The winning bidders and net present values of expected payments by project

Road Project	Winning consortium	Net Present Value of Expected Payments (£ millions)	Net Present Value Ranges of Expected Payments (£ millions)
M1-A1	Yorkshire Link	232	186-281
A1(M)	Road Management Group	154	138-165
A419/A417	Road Management Group	112	106-124
A69	Road Link	62	58-66

Note: Net present values are calculated using an eight per cent discount rate. The higher the figure the greater the expected cost to the Agency.

Figure 8 shows the winning consortia, the net present value of expected payments - used by the Agency in assessing the winning bidders - and the net present values of the ranges of expected payments depending upon traffic flows.

Source: The Highways Agency

Bidders were broadly satisfied with the process

1.27 To obtain the views of bidders involved in the process we issued survey questionnaires to members of bidding consortia. A copy of the questionnaire is at Appendix 4. Summary details of the survey results can be found at Appendix 5. The main points arising from the survey were as follows:

a) **responses indicated that interest from larger players in the industry in subsequent tranches of Design, Build, Finance and Operate roads remains high, Figure 17 Appendix 5.**

This finding is supported by the fact that nearly all parties who submitted bids for Tranche 1 have come forward for subsequent tranches despite misgivings primarily about the cost of bidding. Respondents indicated not only their interest in future projects, but commented on the potential efficiencies in building up a portfolio of Design, Build, Finance and Operate and Private Finance Initiative projects;

b) **the quality of information supplied to bidders was adequate but they saw scope for improvement, Figure 18 Appendix 5.**

For example, 16 of those who responded felt that the information on costs was inadequate or poor and 19 felt similarly regarding traffic forecast information. There appears to be a clear opinion on the part of bidders that such information should be available to them to assist in putting together their bids. The Highways Agency told us that they accept that bidders need robust operation and maintenance cost data and have endeavoured to provide it, but believe that the provision of Agency traffic forecasts may make bidders too reliant on Agency estimates and this may inhibit bidders from putting forward innovative solutions;

c) **respondents considered the level of information required by the Agency in support of bids, generally about right, but excessive on design issues, Figure 19 Appendix 5.**

The amount of information required was due in part to the fact that the Agency needed to satisfy themselves that bids complied fully with the detailed requirements of the public inquiries. The Agency told us that they are alive to the concerns of bidders and, in the light of experience with the first four projects, have reduced their requirements for subsequent tenders;

d) **the criteria against which bids were to be assessed were considered to be unclear, Figure 20 Appendix 5.**

Respondents would have welcomed a clear statement showing the criteria and their relative weightings and some indication of how risk transfer was to be quantified as this would have helped them to produce bids that better met the Agency's need. The Agency believe, as at b) above, that releasing such information might stifle innovation. They believe that bidders may put together bids aimed at the most heavily weighted criteria rather than using their own expertise and skills to identify alternatives and putting forward the best bid for the whole project;

e) **opinion among respondents was sharply divided as to whether using a model contract assisted the process or not, Figure 21 Appendix 5.**

Comments ranged from finding the model very useful as it helped bidders to focus on the key issues such as risk allocation, to those which suggested that it required significant time-consuming, complex and expensive negotiation. The Agency told us that using a model contract as the starting point for negotiations is a better and more efficient approach than developing a different contract for each project, particularly when projects are being procured concurrently;

f) **although innovative solutions were encouraged in tender documents, respondents felt that the Agency showed little enthusiasm for innovation in practice, with the exception of financing, where the Agency had been receptive to new ideas, Figures 22 and 23 Appendix 5.**

Generally respondents considered that the Agency were restricted by the terms of the public inquiries in their ability to adopt innovative design ideas. The Agency nevertheless approved, for example, more than 300 departures from their normal standards proposed by the winning consortium on the M1-A1 project, Yorkshire Link Limited;

g) **bidders expressed concern at the cost of staying in the competition as a reserve bidder, see Figure 10.**

The retention of a reserve bidder was critical to maintaining the competitive pressure right up to contract signature and notwithstanding the costs which bidders claim are involved, none of those given reserve bidder status withdrew;

h) **respondents indicated that the allocation of risk contained in the model/signed contracts was broadly in line with their view of where the various risks should properly lie.**

The exceptions related to legislative and traffic risks where respondents indicated that they saw a discrepancy between where they felt such risks should lie in an ideal contract and where they actually lie in the contracts as signed. A contract considered ideal by bidders may, of course, be far from ideal for the Agency and not in the public interest;

i) **respondents considered that the quality of debriefing given to bidders by the Highways Agency was variable, Figure 24 Appendix 5.**

A thorough and timely debriefing is important to ensure maximum real competition for succeeding schemes.

Compared to traditional procurement the process was time consuming and bidding costs were high

1.28 The original Ministerial targets for the tranche 1 tendering process proved to be optimistic. The process slipped two months before the issue of the information pack for pre-qualification primarily due to the need to identify the roads that were available. The tender documents themselves were delayed by two to three months due to the complexity of information that had to be prepared, but also due to the Agency's wish to prepare a model contract. Contract award was delayed by some six to nine months compared with the timing proposed at the original consultation stage due to the unforeseen amount of negotiation required on the contract terms and, in some cases, the bidders' difficulty in bringing financing arrangements to a close.

The cost to all parties of letting the first four contracts was high compared with conventional road schemes

1.29 The development of the first tranche of contracts was expensive but the process was new to the Department, the Agency and bidders alike. A proportion of these costs is directly attributable to development work that has proved beneficial for subsequent tranches of projects. In particular, the model and final signed contracts are providing a useful basis for negotiation on subsequent tranches.

1.30 The Department of Transport and the Highways Agency made extensive use of advisers appointed following competition. Although the Department (and subsequently the Agency) set budgets and caps on the financial and legal advisers' fees, and monitored expenditure against these, the caps were re-negotiated as the

complexities and costs involved became known. Figure 9 summarises the total fees of advisers in respect of the first eight Design, Build, Finance and Operate projects - separate figures for the four contracts in tranche 1 alone are not available.

1.31 The Highways Agency would not usually incur such costs for financial and legal advice under traditional procurement because traditional procurement usually involves significant input only from technical advisers, for example, on scheme design and site supervision. However, the Design, Build, Finance and Operate concept was new and the amount of work in developing it was uncertain. For this reason the full estimated costs of the work were not budgeted at the outset of the process but budgets were set and reviewed incrementally as the work progressed.

Budgets and actual advisers' fees incurred by the Department of Transport and the Highways Agency[1]

Figure 9

Advisers' fees incurred in respect of the first eight Design, Build, Finance and Operate roads projects

	1994-95		1995-96	
Consultants	*Budget*[2] *(£ thousands)*	*Actual (£ thousands)*	*Budget*[2] *(£ thousands)*	*Actual (£ thousands)*
Hambros Price Waterhouse	–	1,624	–	2,091
Denton Hall	–	930	–	2,022
Sir William Halcrow & Partners	–	149	–	1,467
Totals	**2,600**	**2,703**	**6,120**	**5,580**

Notes 1. The above figures relate to the total 1994-95 and 1995-96 budgets and expenditure for advisers in respect of the first eight Design, Build, Finance and Operate roads contracts. The Highways Agency were unable to supply disaggregated information for the four contracts included in tranche 1 alone.

2. Individual budgets were not kept for the different consultants used by the Agency.

This figure shows that fees paid to legal and financial advisers make up the major share of total fees paid.

Source: The Highways Agency

1.32 The Highways Agency recognise that consortia's bidding costs for these first projects were high by comparison with conventional road procurement. This is largely because these contracts differed significantly from conventional construction contracts for roads projects. For example, in addition to the new construction works, the contract includes the capital and current maintenance of the road for the 30 year duration of the contract, and requires the successful bidders to raise the finance for the projects. The contracts were also awarded

under the negotiated procedures of the procurement regulations which meant that both parties had to develop bidding methodologies for the negotiation process and payment mechanisms involved.

1.33 We asked bidders to give indicative figures for their bidding costs for each stage of the procurement process, Figure 10.

The bidding costs for the four projects

Figure 10

Costs per stage	*M1-A1*	*A1(M)*	*A419/A417*	*A69*
Pre-qualification	under £100,000	under £100,000	under £100,000	under £100,000
Bidding to short-list	up to £2 million	up to £2 million	up to £2 million	up to £1 million
Reserve or Winning bidder	over £4 million	over £3 million	over £3 million	around £1 million

Source: National Audit Office survey

Bidding costs on one of the schemes increased to over £4 million dependent upon how far in the bidding process the consortium progressed.

Part 2: All four contracts are in line with Private Finance Initiative principles; two of them offer substantial savings compared with traditional procurement

Part 1 has shown that the Agency's procedures are likely to have delivered contracts representing the best available terms in the market at the time for the services specified by the Highways Agency. This part of the report examines whether those terms represent good value for money.

The contracts transfer substantial risk to the private sector

2.1 In the absence of substantial innovation, efficiency improvements, or risk taking by the private sector it is very unlikely that a privately financed road project can ever be better value than the same project financed in the traditional way by the Government. Because the private sector cannot spread risks so widely, and some new risks are created, the private sector expects to have to pay higher costs of capital (interest on loans or returns by way of dividends and capital growth to shareholders) than the Government faces in the market for gilt-edged stock. Without innovation, efficiency improvements or risk-taking by the private sector, for example to reduce the likelihood of the Agency paying for construction cost increases, the use of private finance can bring no benefits to offset the higher cost of finance.

2.2 Throughout the procurement process the Highways Agency therefore sought to transfer risks to the private sector. The final contracts resulted in a position where some risks will be transferred wholly to the private sector, some retained by the Secretary of State and others shared between the parties. The allocation of risks as achieved in the final contracts is shown in Figure 11. It is quite clear from this figure that substantial risks are being borne by the private sector parties to the contracts.

Figure 11

Design, Build, Finance and Operate Roads: Risk Allocation in Final Contracts

Type of Risk	*Importance*	*Public*	*Private*	*Shared*
Design & Construction	High		Mostly with operator, but provision for compensation in the event of Secretary of State's changes. Detailed design undertaken by operator, but Secretary of State had already borne costs of designing routes, standards etc.	
Latent/ inherent defects	Medium		Defects which arise during the 30 year contract period lie with the operator.	
Delivery/timing	High		Delay risks lie with operator (will have revenue impacts as shadow tolls will usually not be payable until service delivered), except in the case of delays due to Secretary of State's changes, in which case compensation may be payable.	
Planning	Medium	Projects in first tranche had passed all statutory planning stages as public sector projects.		
Volume	Medium			Downside risk with private sector; upside risk with Secretary of State. However, structure of shadow tolls is intended to reduce upside risk by application of cap to maximum traffic flows on which tolls are payable.
Operation & Maintenance	High		Private sector responsible for maintaining road to provide the service specified in the contract. Failure to do so can result in the award of penalty points. Closure of lanes can result in adjustments to the payments made to the operator.	
Protester Action	Low			Varies between projects. On some projects it is entirely borne by operator, on others it is shared.
Force Majeure	Low			Most force majeure risks lie with the Secretary of State, but the contract definition is very limited (for example, it excludes extreme weather), and the risk is shared because equity holders are not compensated if termination occurs as a result of a force majeure event.
Indemnity/ Insurance	Medium		Insurance and indemnity risks lie with the operator which indemnifies the Secretary of State against all claims from third parties arising from the design, maintenance and operation of the road. Generally only cost risks are insurable and loss of revenues is not, so this increases revenue risks for the operator.	
Legislative	Medium		Risks of legislative changes are with operator, except where the law is discriminatory against operators or DBFO roads. No compensation for lower revenues due to non-discriminatory laws which have effect of suppressing traffic.	

The balance of protester action risk sharing varies by project

2.3 Generally, the allocation of risk is similar for the four schemes but there are some variations in degree particularly in the two risks - protester action and latent defects - for which specific bids were invited, as described in paragraph 1.14. The Highways Agency aimed to transfer protester action risk to the operating companies and estimated the likely potential cost of dealing with protester action. This risk was not considered significant for some of the projects but was considered to be more serious on others. On these, the Agency had difficulty in persuading tenderers to accept the risk in full. As far as is possible, however, the Agency have transferred responsibility for dealing with protester action to the winning bidders and incentivised them to deal with it.

The Highways Agency have transferred the risk of some legislative changes to the operators

2.4 There are two types of legislative risk which concern operators: i) general legislation affecting vehicle users such as increased fuel duty, and ii) discriminatory legislation that bears on the holders of Design, Build, Finance and Operate road contracts in particular. Under the signed contracts the former risk lies with the operators, on the grounds that general changes in legislation will affect many businesses and legislative risk of this kind is a normal risk for any business. The contracts provide, however, for compensation to be paid to the operators for loss attributable to discriminatory changes in legislation.

Road operators are paid for service rather than for construction of an asset

2.5 Payments to operators are based primarily upon the amount of traffic that travels on the operators' roads during the lives of the contracts. This reflects the principle underlying the Private Finance Initiative that the public sector should pay directly only for the service provided - in this case the use of the road - rather than for the road itself. This is important because it shows that risks of ownership of the roads rest with the private sector during the concession period. The placing of risks of ownership is one of the key criteria for determining whether the capital cost of the project should reckon as public expenditure or whether the public expenditure cost is better represented by the annual payments made to the private sector operators.

2.6 The Department of Transport considered at the time the first contracts were developed that traffic was the best available basis for payment for Design, Build, Finance and Operate roads. This was in line with the policy objective of encouraging the development of a private sector road operating industry as shadow tolls were seen as a means of encouraging the private sector parties to think as operators and service providers, rather than asset providers. The existence of a private sector road operating industry with experience of receiving income based on traffic was also regarded by the Department of Transport as being helpful in the event of the introduction of user paid tolls. The principle set out in "Paying for Better Motorways" (1993) was that payments per vehicle kilometre relate to the benefit the country receives from having new roads.

2.7 Some other Private Finance Initiative schemes are based upon the availability for use of the asset. A greater emphasis on this type of payment mechanism is being developed by the Highways Agency for possible use in future Design, Build, Finance and Operate road projects based in urban areas, for example the A13 project.

Major risks, but not all risks, rest with those best able to manage them

2.8 Risk taking in these road projects presents an opportunity for the private sector to provide better value than the traditional approach. This is more likely if the risks borne by the private sector are those which the private sector is better able to manage than the public sector. In general, the Agency succeeded in allocating the risks appropriately in the four contracts. Figure 11 shows that responsibility for construction and maintenance risks rests mainly with the consortia, who have direct control over such matters; whereas certain legislative risks which could have a direct impact on the road operators and which are subject to possible changes in government policy are mitigated. The response to our survey on this issue indicated that broadly respondents were satisfied with the risk allocation achieved (paragraph 1.27(h)).

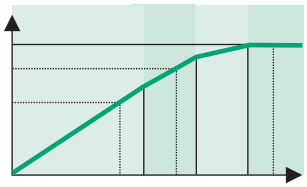
Traffic volume risk cannot be managed by the private sector

2.9 Because the road operators will be paid each year primarily according to the use made of the road, their income will vary as traffic varies. The Department of Transport wished the operators to take a share of the traffic risk in this way to help create a road operating industry which would be sensitive to road usage. They believed that this would better provide for possible future policy options and

encourage more efficient construction and maintenance practices. The shadow toll mechanism, however, whilst consistent with the concept of payment for service, places a risk on the private sector which they are no better placed to manage than the public sector. There is no practical scope for the private sector operators of these roads to encourage growth in traffic, yet their revenues and, to a lesser extent their costs, are highly dependent on such traffic. Furthermore, accurate traffic forecasting has proved to be very hard which means that it is difficult for the private sector to predict likely revenues over the 30 year life of these contracts.

The Agency have tried to mitigate traffic volume risk

2.10 If traffic volumes vary significantly from a consortium's expectations, its viability might be affected, leading in an extreme case to financial collapse or, at the other extreme, unexpectedly high profits. Similarly, if traffic varies significantly from the Agency's forecasts, the costs of the contracts over their 30 year lives could alter significantly up or down with implications for the Agency's future expenditure plans. In evaluating the bids the Agency were careful to test the bidders' assumptions about traffic forecasts against a variety of scenarios to check whether bids were likely to be sustainable and were unlikely to produce excessive revenue. They also took steps to limit their exposure to unexpectedly high traffic volumes by specifying that shadow tolls in the top traffic bands had to be zero, thereby effectively capping the shadow tolls payable at an agreed level of traffic, Figure 6.

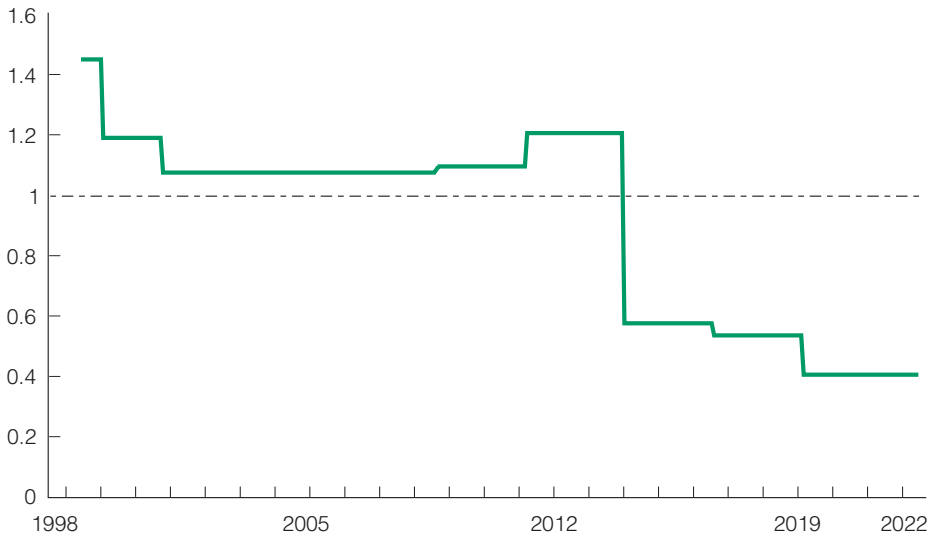


2.11 In the M1-A1 project, which involves predominantly new construction and where there is no payment for a service provided on existing roads, the Highways Agency have agreed to an additional method for mitigating the risk borne by the private sector by changing the payment profile over the life of the contract to mirror more the operator's costs rather than the service being provided. This is achieved by weighting the Agency's payments to the operator towards the beginning of the contract period using "sculpting factors", thus reducing the time necessary for the repayment of bank debt. This in effect reduces the risk borne by the operator although there is no change in the level of service the operator provides. Figure 12 provides a hypothetical example of how this mechanism works.

Figure 12

Sculpting factors to be applied to the shadow toll payment

Sculpting factors are applied to shadow toll payments in order to mirror more closely the costs of the operator



This figure shows that payments are high during set up of the operator. Major capital maintenance normally occurs around 15 years after a scheme opens (2013-2014), according to the traffic and other assumptions underlying the bid. All bank debt is repaid after 18 years (2014) from contract signature (1996).

Source: National Audit Office

Two of the four deals offer substantial benefits compared to traditional procurement

2.12 To assess value for money of the Design, Build, Finance and Operate roads as Private Finance Initiative projects the Agency prepared public sector comparators for each of the four projects. The calculations of costs relating to the public sector comparator were based on estimates of the construction costs of the schemes and estimates of operational and maintenance costs over the lives of the contracts. The public sector comparators used in this assessment were in line with the Highways Agency's recent experience of conventionally financed projects, and did not take account of any potentially advantageous innovations in the procurement of such projects, such as the use of design and build contracts. The Agency quantified the value of the risks transferred and incorporated them into the public sector comparators. Box 3 describes how these were calculated in more detail. Separate public sector comparator estimates were also commissioned from Sir William Halcrow and Partners to validate the Agency's own calculations.

Box 3

The Highways Agency constructed a public sector comparator for each project in order to assess whether Design, Build, Finance and Operate roads represented value for money compared with traditional procurement.

In order to assess whether the Design, Build, Finance and Operate projects represented value for money compared with traditional public sector procurement, the transaction teams prepared a public sector comparator for each project. They aimed to consider the whole life cost of constructing and operating the projects for the 30 year contract period. The estimates were based on the following main elements and methods:

- estimated net present value of construction costs assuming the traditional public sector procurement route was followed. Prior to the decision to follow the Design, Build, Finance and Operate procurement route, each of the projects in tranche 1 had been progressed as traditional public sector schemes. Detailed estimates of construction costs were therefore available based on Bills of Quantities for the materials and works required to undertake the construction. These were then adjusted in the light of up to date information on for example, construction indices and costs of materials. Cost profiles for the construction works were then used to assess the net present value of project construction;

- net present value of estimated operation and maintenance costs over the 30 year contract period. Operation and maintenance costs were estimated for periodic and non-periodic maintenance. These include re-surfacing, carriageway strengthening, and works on structures, lighting and telecommunications. Highways Agency data allowed ranges of costs to be estimated for the cost of maintenance work per kilometre for the various standards of road. These estimates were used to calculate the costs of maintenance work over the 30 year period. Major maintenance work, such as carriageway strengthening is usually undertaken at fairly predictable periods throughout a road's life, depending on the type of materials and construction used. These major elements of capital maintenance were also included in the operation and maintenance calculations;

- net present value of the quantifiable risks of construction and operation and maintenance transferred to the consortia. Traditionally procured road schemes have a history of cost overruns and delays from the estimates made during the scheme assessment period. Under Design, Build, Finance and Operate procurement, the Highways Agency aim to transfer the risk of these overruns to the private sector. The transaction teams prepared estimates of the value of transferring these risks to complete the public sector comparator. Detailed breakdowns of the likelihood of cost overruns were prepared by the consulting engineers. Risk simulations were undertaken using the engineers' assessments of the likelihood of an overrun occurring on each element and the effect this would have on the construction costs. These assessments were based on their best detailed knowledge of for example, ground conditions in the area and the amount of Statutory Undertaker work necessary etc. For operation and maintenance costs, contingencies were added in to allow for overruns in these areas over the contract period; and

- the value of risk transfer was then added to the estimated construction and operation and maintenance costs for the roads and the figures were discounted at a real rate of eight per cent per year to produce the public sector comparator.

The Agency calculated that three of the four projects were good financial value

2.13 Figure 13 shows a comparison for all four projects of the final bid price with the original public sector comparators prepared by the Agency's project teams and Halcrows. On two of the projects, the M1-A1 and the A1(M), the final bid price appears to show a significant saving over both public sector comparators. On the A419/A417 the final bid price was below the project team's estimated public sector comparator but slightly above that prepared by Halcrows. The Agency considered that their own project teams' more detailed assessment was likely to be more robust than Halcrows'. On this basis they took the view that the scheme did provide value for money.

Figure 13

Comparison of project teams' and Halcrows' calculated public sector comparators with expected net present values of winning bids

	M1-A1 (£ millions)	A1(M) (£ millions)	A419/A417 (£ millions)	A69 (£ millions)
Project team estimate	326	204	121	54
Halcrows' estimate	339	195	110	49
Discounted expected value of signed contracts	232	154	112	62

Note: The Agency continued to refine their own estimates for the public sector comparators until the best and final offer stage. The final public sector comparators for each project are shown in Figure 14 below and Appendix 2.

An independent check by Sir William Halcrow and Partners of the project team public sector comparators prior to best and final offers showed the estimates to be within 10 per cent of each other. The project team calculation was higher except for the M1-A1.

Source: The Highways Agency

2.14 The Agency assessed the winning bid on the A69 project as giving poorer value for money than both the public sector comparators. They identified two main arguments to justify proceeding with this project as a Private Finance Initiative scheme: firstly, it enabled an estimate to be obtained of the commercial management risk premium on roads as bidders bid for differing levels of risk transfer which is important for long term bench-marking; and secondly, the public sector comparator does not fully recognise the value of residual risk transfer, such as that relating to legislative change, and non-quantifiable benefits, such as helping to foster a private sector road operating industry.

The projects demonstrating the highest savings are the most capital intensive

2.15 Figure 14 shows that the expected net present value of shadow tolls for the M1-A1 is over 30 per cent lower than the public sector comparator; the A1(M) is around 25 per cent lower. These two projects involved the highest proportions of road construction compared with operation and maintenance of the four tranche 1 projects. The two projects which involve higher proportions of operation and maintenance show much lower savings, and the A69 has a higher cost than under traditional procurement. This suggests that the construction element of Design, Build, Finance and Operate roads offers the greatest scope for innovation. The Agency also found that this was the case in a recent review of the first eight Design, Build, Finance and Operate road projects.

Discount rate sensitivity tests

Figure 14

Sensitivity of Net Present Values to Discount Rate
(£ millions, Net Present Value, discounted at stated rate)

Real Annual Discount Rate	M1-A1		A1(M)		A419/A417		A69	
8 per cent								
Shadow Toll Payments		232		154		112		62
Conventional Procurement	238		167		96		50	
Value of Risk Transfer	106		37		27		7	
Public Sector Comparator		344		204		123		57
Net Savings (additional cost)		**112**		**50**		**11**		**(5)**
6 per cent								
Shadow Toll Payments		288		192		140		78
Conventional Procurement	257		182		106		58	
Value of Risk Transfer	115		40		31		8	
Public Sector Comparator		372		222		137		66
Net Savings (additional cost)		**84**		**30**		**(3)**		**(12)**

This figure shows that the impact of using a real annual discount rate of six per cent was to reduce the value for money of the Design, Build, Finance and Operate bids compared with the public sector comparator at the best and final offer stage. The A419/A417 net present value turns negative.

Source: The Highways Agency

The Agency's analysis tended to overstate the benefits

2.16 After discussion between the Highways Agency, the Department, their advisers and the Treasury about the appropriate discount rate to be used in preparing the public sector comparators the Treasury decided in November 1994 that a real rate of eight per cent a year should be used. Bidders were informed that their bids would be appraised at that discount rate.

2.17 On Treasury advice, the Department of Transport have, since 1989, used eight per cent a year in real terms as the discount rate for investment appraisal of railway projects and publicly financed roads. The argument for using an eight per cent rate for investment appraisal in industries (such as railways) operating in commercial markets was to ensure an average return on capital employed of eight per cent, which would provide a level playing field with private sector companies. The Government considered that it was important that the same rate should be used for appraising road investments, to avoid public criticism that a lower rate would be a bias in favour of roads over public transport.

2.18 A change of even a few percentage points in the discount rate has little effect on the comparison of road schemes which are traditionally funded. Most projects have broadly similar time profiles of costs and benefits, so that rankings are little affected by the discount rate; and the rationing of total public spending on roads is decided mainly on criteria other than the net present values calculated for individual projects. However the discount rate used when comparing the price of a Design, Build, Finance and Operate bid with the cost of traditional procurement is more critical. Even a small percentage change will markedly affect the calculated cost difference between the two options. The higher the discount rate, the lower the value that is put on future cash flows. So a higher discount rate, by discounting the shadow tolls of the Design, Build, Finance and Operate option more heavily, will reduce the apparent costs of that option relative to the traditionally financed alternative.

2.19 During 1996 and 1997 the Treasury discussed with departments a new edition of its guidance on appraisal and evaluation in central government. This, together with the privatisation of the rail industry, prompted a review of the use of eight per cent as a discount rate for appraising publicly financed road projects. Subsequently, and after these four contracts were let, the Department have adopted the Treasury's new approved rate of six per cent as the standard rate for all road appraisals.

2.20 After the contracts were awarded, the Highways Agency undertook sensitivity tests of the impact of using a six per cent real discount rate on the final public sector comparator calculation for tranche 1 projects. Figure 14 shows that, as would be expected from the argument above, the lower discount rate implied that the net benefits of the privately financed roads would be smaller, and this reduction in value was enough to negate the positive benefits previously assigned to the A419/A417 project. It is possible that had the Highways Agency used the six per cent rate and so informed bidders, then the bids themselves might have been constructed differently.

2.21 The decision to use the eight per cent discount rate overstated the net benefits of the Design, Build, Finance and Operate option. The then current edition of the Treasury's guidance (Economic Appraisal in Central Government, April 1991) acknowledged (page 78) that eight per cent was used as a rate for discounting the costs and benefits of ***publicly financed*** roads. The guidance for the appraisal of all ***privately financed*** projects (page 75) was that a discount rate of six per cent should be used. (As briefly explained in Appendix 6, the rate of six per cent is the Treasury's estimate of the Government's effective cost of capital).

2.22 There are large uncertainties inherent in many of the assumptions underlying the quantified public sector comparators used in assessing the value for money offered by privately financed projects. In this case, for example, a change of only two percentage points in the discount rate reduced the net benefit on the M1-A1 project by 25 per cent. These inherent uncertainties limit the precision that can be obtained from public sector comparators. These factors need to be taken into account in decisions on the effort to be put into developing quantified comparators and carrying out sensitivity tests, and on the interpretation of the results. Quantified comparators and sensitivity analyses can be no more than guides to the exercise of judgement.

Part 3: The Highways Agency have taken steps to monitor compliance with the contracts and protect their position

This part of the report examines the Agency's arrangements for monitoring the construction and operational phases of the contracts.

In the construction phase of each contract an Agent monitors progress

3.1 During the construction phase of the contracts the interests of the Highways Agency are looked after by the Department's Agent. The Agent's responsibilities include monitoring the design, construction, testing, commissioning, completion and operation of the new sections of road until the completion certificate is issued.

3.2 In all cases the Department's Agents are external appointments from the same organisations that were previously the lead designers when the roads were being procured in the traditional way. The Agents therefore have detailed understanding of the projects which is useful for their monitoring role. However, comments from some of the respondents to our survey suggested that in practice this approach was restricting the operators' freedom as the Agents were reluctant to approve changes to the contractual designs. The contract enables disputes about such matters to be resolved through a disputes resolution procedure.

3.3 In a traditional road project a Resident Engineer would be responsible for overseeing all the construction activity directly on site to ensure compliance with approved designs and quality. In these privately financed projects, however, construction risk rests entirely with the private sector and it would not be appropriate for the Department's Agent to set up quality assurance or oversee construction in the same way as the traditional Resident Engineer. But the Agent needs to be able to rely on the operator's Quality Assurance systems.

3.4 The Agents have full right of access not only to the operators' Quality Assurance systems, but also to their on site records and the sites themselves. The Agents visit the contractor sites regularly and report to the Highways Agency. Consistent with the transfer of construction risk to the private sector, this monitoring implies a lower degree of involvement than the traditional Resident Engineer.

3.5 As the detailed designs for the new road can be changed, the Agents have responsibility for reviewing proposed changes by the operators' designers for compliance with both safety standards and the requirements detailed in the contract. Although a response must be given as soon as possible and, in any event, within 28 days of receipt of the plans, Agents can refuse a plan if it fails to meet equivalent standards to those provided for by the contract.

3.6 Should anything not be in accordance with the provisions of the contract (which includes the agreed designs), Agents have the power to insist on remedial action. If this is not carried out satisfactorily, they can put the work required out to tender, and recover the cost from the operator. To date this has not occurred on any of the tranche 1 contracts.

The operation and maintenance phase of each contract is monitored by a Department's Representative

Department's Representatives have a similar role and rights to the Department's Agents

3.7 The Department's Representatives may be either internally or externally appointed. As with the Department's Agents, they rely primarily on the operators' Quality Assurance systems to assist in their monitoring of the operation and maintenance aspects of the project in accordance with the terms of the contract. The Department's Representatives also approve all maintenance schedules and lane closures with the operators, liaising with other nearby Highways Agency Agents to ensure there is no conflict with their plans. As well as ensuring compliance with the agreed time-tabling, the Department's Representatives have similar powers to the Agents in that they can arrange for work to be done should it prove necessary and recharge it to the operator. Box 4 provides an example of the work of the Representative on the M1-A1 project

Ensuring adequate liaison with the police for traffic management is crucial to ensure the safety of the public

Box 4

Traffic management measures may result in agreed lane closure charges (generally for daytime midweek working) as specified in the contract. The Representative has the task of ensuring that these are correctly installed and removed to the agreed programme. On the M1-A1, there was an early teething problem when the traffic signs were displayed before the traffic management was in place. The Representative's early action to ensure that the operator worked to the agreed plan, avoided an escalation of the problem and the involvement of the police.

Not all Department's Representatives were involved in the contract negotiations and have received only limited training in how to monitor and plan their work

3.8 None of the four tranche 1 projects' Representatives were appointed until after the contracts were signed. In the case of the M1-A1 and A69 projects, the Representatives are from the Highways Agency office responsible for the negotiation of the contracts. Nevertheless, there has been a steep learning curve for the individuals involved. In subsequent Design, Build, Finance and Operate contracts the Highways Agency have appointed Representatives at an earlier stage to give them time to become familiar with the contract.

3.9 Representatives have had some formal training for their new role. By September 1996, six months into the contracts, the internally appointed Representatives on the M1-A1 and A69 projects had received one day of training on the role of the Department's Representative. This included an introductory session on Quality Assurance systems and was followed by a full day of training devoted to these systems held in September 1996. Further training has since been provided and the Agency's consulting engineer, Sir William Halcrow and Partners, has assisted with the quality assurance and auditing functions. As of September 1996 the internal Representatives did not have formal and fully comprehensive plans and procedures for auditing operators' Quality Assurance systems and were still learning how quality assurance works and how to audit a Quality Assurance system. Management plans for Representatives on each project, detailing their role, operating instructions and guidance on monitoring Quality Assurance systems were finalised in January 1997 some 9-12 months after contracts were signed.

3.10 In May 1996, the Agency established a Contracts Operation Group to provide feedback and a sharing of experiences for those staff involved in negotiating Design, Build, Finance and Operate contracts. This group is attended by Agency staff and meets on a monthly basis.

The contracts provide protection for both parties in the event of breach of contract

Minor breaches earn penalty points which can ultimately lead to contract termination without compensation

3.11 All four tranche 1 contracts include a penalty points system for minor breaches which is managed by the Department's Agents and Representatives. In the event of such breaches they are responsible for awarding the appropriate number of penalty points subject to guidelines within the contracts. Once a set number has been accumulated, the Agency can require increased monitoring at the operator's expense. The award of further penalty points within specified periods that exceed stated thresholds can entitle the Agency to terminate the contract without compensation. The penalty points system therefore acts as an incentive to the company to minimise such breaches and also acts as a warning to the shareholders and lending institutions that all may not be well with the contract. Evidence suggests that the lending institutions are reacting quickly to the application or threat of penalty points as they see them as a threat to their investment. The circumstances and numbers of points which may be applied varies between contracts.

Procedures are in place in the event of fundamental breaches occurring

3.12 There are procedures for dealing with fundamental breaches of the contract. Breaches can be divided into two categories: those caused by Secretary of State and those caused by the operators. Fundamental breaches by the operators include the accumulation of a certain number of penalty points (see paragraph 3.11 above), failure to deliver a completed road by a certain date, insolvency, or other inability to perform the functions required of them by the Highways Agency. In such circumstances the operator may be removed from the project without compensation.

3.13 The lending institutions supporting the various consortia have negotiated their own direct agreements with the Highways Agency. These broadly follow a model proposed by the Agency in May 1995 as an extension to the model contract aimed at protecting the banks' investments. The lending banks can step in for a period that varies depending on the exact contract terms to procure performance of the obligations of any defaulting operator. At the end of this period the institutions must have appointed another operator, approved by the Agency, for the remainder of the life of the contract, failing which the Agency may terminate

the contract. During the step-in period, the Highways Agency cannot terminate the agreement, but the banks indemnify the Highways Agency against various liabilities.

3.14 In the event that any operator defaults whilst construction of the new road is underway, their insurance companies or institutions have deposited performance guarantees that are not recoverable until milestones in the projects have been reached. This protects the Highways Agency, for example, if only a small amount of construction work is completed before the operator withdraws since the cost of rectification can exceed the value of work undertaken.

Operators are protected from failure by the Agency to fulfil their obligations under the contracts

3.15 In the event of the Highways Agency failing to carry out their obligations, the company may terminate and receive full compensation. For example, this may be failure to make payments for the service provided or failure to issue the certificate of commencement within a specified period of the date on which it should be issued. Compensation is calculated in accordance with the detailed provisions set out in each contract. These payments seek to repay the debt borrowed by the company to finance the project and also to compensate the equity providers. Where, in certain circumstances, the contract is terminated because of the occurrence of force majeure, the risk is shared between the Agency and the company. In that situation, although the debt is repaid, no compensation is payable to reflect lost equity.

The roads must revert to the public sector in good condition

3.16 To ensure that the road is returned in a fit condition for service that will not require major capital maintenance immediately following the end of the contract, specific clauses have been put into the contract regarding hand-back. A required residual life is specified for each element of the project road. For example, at least 85 per cent of the road pavement should have a 10 year residual life on hand-back. Certain road elements never last that long (for example, cats' eyes) and are required to be replaced before the end of the contract. Though bridges have a design life of 120 years, it is still necessary to demonstrate that most elements of these structures have a residual life of at least 30 years on hand-back.

3.17 Five years prior to hand-back, detailed inspections of the roads and main structures will be carried out by the Agency and the operator. Likely works needed are noted and remedial action is expected to be taken in accordance with an agreed programme. A similar procedure covering all elements of the project road is carried out 18 months prior to the end of the contract to ensure work has been carried out in accordance with the agreed programme and to assess any other works needed to achieve the required standard at contract termination. During the five year period prior to hand-back the Agency will deposit 40 per cent of the agreed remedial works costs into ring-fenced accounts upon which only the Agency can draw until contract termination. This money will be used by the Highways Agency to carry out any work that the operator fails to complete. Once the contract ends and all such repairs have been made, any money remaining in the accounts is paid to the operator.

The Agency are indemnified on safety matters

3.18 Although day to day responsibility for the roads is transferred to the winning consortia for the 30 year lives of the contracts, the Highways Agency, on behalf of the Secretary of State, retain his statutory responsibility for safety standards. The terms of the contracts are intended to protect the Secretary of State's position in respect of safety.

The contracts provide sufficient flexibility to cope with future changes

The contracts provide for the introduction of user paid tolls if considered desirable by the Government

3.19 Shadow toll payments when introduced were originally intended as a precursor to the introduction of real or user paid tolls - that is a toll paid directly by the road user. In the event that user paid tolls are introduced it is likely that some form of electronic tolling system will be used. As the tranche 1 contracts are already in place, the money raised by these electronic tolls will not go to the operators, but to the Government who will continue to pay shadow tolls to the operators.

3.20 Drivers' responses to the introduction of user paid tolls is difficult to predict, however it is possible that it will lead to some traffic diverting onto other alternative non-tolled roads, which may affect the road operator's income. However, depending on the local circumstances and the availability of alternative routes, it is possible that this will lead to an increase in congestion and journey

times on the non-tolled roads. This could then cause less traffic to divert from the tolled road as drivers may prefer to pay the toll to avoid increased congestion on the non-tolled road. Traffic forecasts made by both the Highways Agency and the operators have not made allowances for the impacts of user paid tolls, but allowances have been made in the contracts. On the tranche 1 schemes contract clauses allow for shadow tolls to be rebased to compensate the operator for the effects of any reduction in traffic. These payments under the contract will be adjusted to reflect the actual changes in traffic over a three year period.

The contract provides for required road improvements to be accommodated with consequent adjustment to shadow toll levels if required

3.21 The contracts allow for changes to projects during the lives of the contracts, such as widening or new bypasses. The Highways Agency may, subject to procurement regulations, instruct the operator to incorporate any such new works into the project and always have the option of letting the new works through competitive tendering. In certain cases, for example a change required by the Agency, the operator is expected to raise new finance as appropriate to fund the new works. Should this prove impossible, the Agency may pay a lump sum for the work. Where a lump sum payment is not made the shadow tolls are adjusted to ensure that the operator is in no worse position financially than previously.

3.22 The operators are free to make suggestions of their own which the Highways Agency review for value for money. For example, on the M1-A1, the operator is in discussion with a developer and the Agency to alter a side road and junction layout to give easy access to the motorway from a proposed business park.

3.23 Where there are minor changes proposed, for instance the erection of a new signpost or minor remodelling of a junction, these are agreed between the operator and the Department's Representative without requiring an immediate readjustment of the tolls. Cash thresholds have been set for each project, which the value of minor works changes to the contract must reach before adjustments to the toll mechanism will be made. In most cases, if the thresholds are not reached within a specified period, the value of any change which falls beneath the threshold is dealt with by compensation. This approach distinguishes between minor and major works and avoids the time and expense of revising shadow tolls regularly to reflect minor changes. These arrangements are a sensible and practical way of handling minor changes.

3.24 The contracts contain mechanisms which allow operators to be reimbursed for implementing successful safety improvements. The operators monitor accidents along a stretch of road and may propose alterations to improve the road's safety. Should the proposals be accepted by the Agency, payments are made over a five year period, depending on resulting safety improvements. These are measured by the reduction in accidents following the improvement. Payments are based on the Highways Agency's values for road traffic accident savings. It remains to be seen whether these mechanisms will in practice encourage operators to improve safety but such innovative approaches are to be welcomed.

Subsequent introduction of changes in standards is not automatically applied to signed contracts

3.25 The standards required under the contracts were effectively frozen at the time of signing. Construction and maintenance have to be on the basis agreed in that contract. However, standards are updated periodically in the light of new technical information. The Agency will review the need to implement new standards in the Design, Build, Finance and Operate contracts on the basis of safety and value for money. In the event of any changes that have cost implications the contracts provide for amendments to be made together with an adjustment of toll levels or a one off payment to be made to accommodate them. The contracts contain a disputes resolution procedure to resolve disagreements about the operation of the change mechanism in the contracts.

Payments to operators are based on complex audits of traffic flows

Correct payment is dependent upon the accuracy and reliability of traffic measurement

3.26 Payments made to the operators are based upon the vehicle kilometres travelled by two classes of vehicles. Traffic counts are measured at key locations on the network, for the traffic in the two classes. The accuracy of payments therefore depends upon the accuracy of traffic measurement which is undertaken by the operator. The operators carry out their own audits of traffic flows and present the results to the Highways Agency. The Agency may also independently verify the counts by performing their own check. Accuracy must be within certain parameters, and noted deviations cause re-adjustment to the payments made to the operators. Payments are made by either monthly or quarterly estimates based on prior year traffic figures and reconciled annually at which time any necessary adjustments are also made.

3.27 The initial parameters set by the Highways Agency for the accuracy required are that traffic counts must be within three per cent by direction, five per cent by lane, improving to one per cent by direction and three per cent by lane in 1999 for each class of vehicle. This means that the count for each class of vehicle, as measured by the monitoring equipment, must provide readings within these specified percentages of actual traffic counts. The validation of traffic counts may be undertaken manually or from video equipment. When the contracts were let, the available technology did not permit the higher degree of accuracy from year one. The contracts require the operators to ensure the availability of more accurate equipment by the 1999 deadline. Failure to provide the necessary accuracy could result in increased monitoring by the Highways Agency which would have to be paid for by the operator or, ultimately, in termination of the contract even if the lack of accuracy is caused by the failure of the counting equipment manufacturers to perform. By September 1997, a significant proportion of the measuring equipment was already meeting the required accuracy.

Calculating the amounts payable requires continuing financial and legal advice

3.28 The accuracy of traffic payments rests not only on traffic measurements, but on reconciling these with the estimates made in the prior year. The measurements are then set against the moving banding and indexation assumptions in the financial model, some of which rely on external variables such as the Retail Price Index. The calculations are complex and the staff dealing with payments have required training by the Agency's financial advisers in using a spreadsheet to calculate the results. The financial advisers will be required to audit the accuracy of traffic payments and to overcome any difficulties encountered with the calculation of payments and, to redo the spreadsheet should the underlying financial model change. However, the Agency are considering bringing these functions in-house.

Glossary of Terms

Base design	The outline road design arising from the planning process and forming the basis of the indicative design made available to bidders.
Conventionally financed/Traditionally procured roads	A road construction contract in which the Agency pay the contractor as the works are progressed. Such projects are fully paid for on completion. Maintenance is dealt with in separate contracts.
Core (technical) requirements	Technical details which must be satisfied by the design and construction and the operation and maintenance to meet the Secretary of State's requirements in the contract.
Cost of capital	The interest rate at which an organisation is able to raise funds.
Discount rate	The percentage rate applied to cash flows to enable comparisons to be made between payments made at different times. The rate quantifies the extent to which a sum of money is worth more to the Government today than the same amount in a year's time.
Force majeure	Events over which the parties to the contract have little control, but which could have serious impacts on the contracts. These include war, rebellion, nuclear explosion, earthquakes, pressure waves from aircraft.
Latent/inherent defect	A defect in the existing road which had not been detected before the contract was signed.
Output specification	Specified aspect of the Agency's service requirements or performance specification, for which the Agency set minimum quality standards to be met by bids.
Planning risk	The risk that delays or increases in costs could occur due to procedures in the planning process, such as Public Inquiry.
Private Finance Initiative principles	As they apply to Design, Build, Finance and Operate contracts, these are that: the allocation of risk and reward should be clearly defined and private sector returns should be genuinely subject to risk; and the contracts should represent value for money, taking into account the benefits of transferring risk to the private sector and the cost of that transfer.

Protester action	The risk of delay and increased costs due to disruption during the construction phase by anti-roads protesters.
Public sector comparator	An estimate of what the project would cost if traditional procurement methods were used. This was used to determine whether private finance offered better value for money than traditional procurement.
Reserve bidder	Second place short-listed bidder after Best and Final Offer stage. Reserve bidders were invited by the Agency to keep their bid on the table in order to maintain competitive pressure on the provisional preferred bidder.
Risk transfer	The passing of risk normally borne by the Agency to the road operator.
Sensitivity test	Test of the impact on value for money of bids of changes in key assumptions underlying the Agency's main value for money assessment.
Shadow toll	Amount paid by the Agency to the road operator for each vehicle kilometre travelled on the operator's roads.
Statutory risk	The risk that the law will be changed in a way which specifically affects the operation of the service - for example the introduction of user paid tolls. The risk of general changes in law is borne by the operators as a normal business risk.
Traffic measurement	Counting the volume and type of traffic using the operator's roads in order to calculate the amount of shadow tolls payable by the Agency for each period.
User paid tolls	Tolls paid by road users for road usage, otherwise known as "real" tolls.
Volume risk	The risk that traffic volumes may be higher or lower than forecast volumes, thus affecting the amount of shadow toll payments.
Whole life approach	Taking a view of the construction, operation and maintenance of the road project over the 30 year period. Under traditional procurement the whole life cost is borne by the Agency; in Design, Build, Finance and Operate contracts this is passed to the operator.

Appendix 1

Methodology

1 The National Audit Office examined how far the Highways Agency and the Department of Transport achieved their objectives for the first tranche of four privately financed roads.

2 The examination covered:

- Procedures: how the Department and the Highways Agency went about the task.

  The purpose of this part of the work was to assess the extent to which the procedures were well chosen, in the sense of being likely to lead to an outcome in line with the objectives. Well chosen and well executed procedures give some assurance about the outcome even if it cannot fully be measured.

- Result: how far the four contracts which resulted appear to meet the objectives.

  This part of the work required us to examine the contracts and the Highways Agency's own assessment of them against the objectives. In some cases quantification was feasible, and we considered how accurate a picture was likely to be obtained from the calculations which the Highways Agency had done. We also obtained legal advice on the extent to which the contracts were in line with, or better or worse than normal business practice.

- Future delivery: whether the arrangements for future contract management would be likely to deliver final outcomes consistent with the objectives.

  This stage of the examination focussed on the adequacy of arrangements set up in the contracts for their future management and on how those arrangements had operated in the period since the contracts were signed. The criterion was the extent to which those arrangements would be likely to secure delivery of the deals entered into by the Highways Agency.

3 In more detail, the high level audit questions in each stage of the examination were as set out below. In each case we developed more detailed sub-questions which could be answered directly by the collection of specific evidence.

a) Did the Agency manage the procurement process effectively to meet their objectives?

i) Were the projects chosen for tranche 1 selected to test the market's interest for such projects and was the market consulted before the competitions began?

ii) Were the competitions managed to produce compliant bids and were bids evaluated fairly and consistently and in accordance with European Union procurement regulations?

iii) Was competitive tension maintained throughout the process and did the economically most advantageous bids win the competitions?

iv) How does the industry view the procurement process as run by the Highways Agency?

v) Were the Agency's costs carefully controlled?

b) Are the signed contracts likely to deliver the objectives required?

vi) Have risks been successfully transferred to the private sector?

vii) Do the contracts provide for the provision of a service rather than an asset?

viii) Are the contracts likely to offer worthwhile benefits compared to more traditional arrangements for roads procurement?

c) Have the Agency taken steps to monitor compliance with the contracts and protect their position?

ix) What arrangements are in place to monitor the construction and operational phases of the contracts?

x) Are the parties to the contracts protected in the event of breach of contract?

xi) Are there safeguards in place to ensure that the roads will revert into public ownership at the end of the contracts in good condition?

xii) Are the contracts sufficiently flexible to cope with future changes?

xiii) Are arrangements in place to audit the level of payments due to the operators over the life of the contract?

4 The evidence comprised, in general, documentary evidence from the papers of the Department of Transport or of the Highways Agency, interviews with officials and their external advisers, and correspondence with third parties, including a survey of the companies involved in bidding for any of the contracts. In this survey we contacted in total 105 individual organisations, of whom 49 responded to the questionnaire. The primary purpose was to identify industry views of how well the competition process for the four projects was managed by the Highways Agency. The Agency provided useful input into the design of the questionnaire and we are grateful to them and to those organisations who responded.

5 Before the Highways Agency sent the Invitations to Tender to the selected bidders, the Agency required each of them to give an undertaking to preserve the confidentiality of the information they would receive. The Invitations to Tender themselves said that all tenders would be treated on a confidential basis by the Government and its advisers.

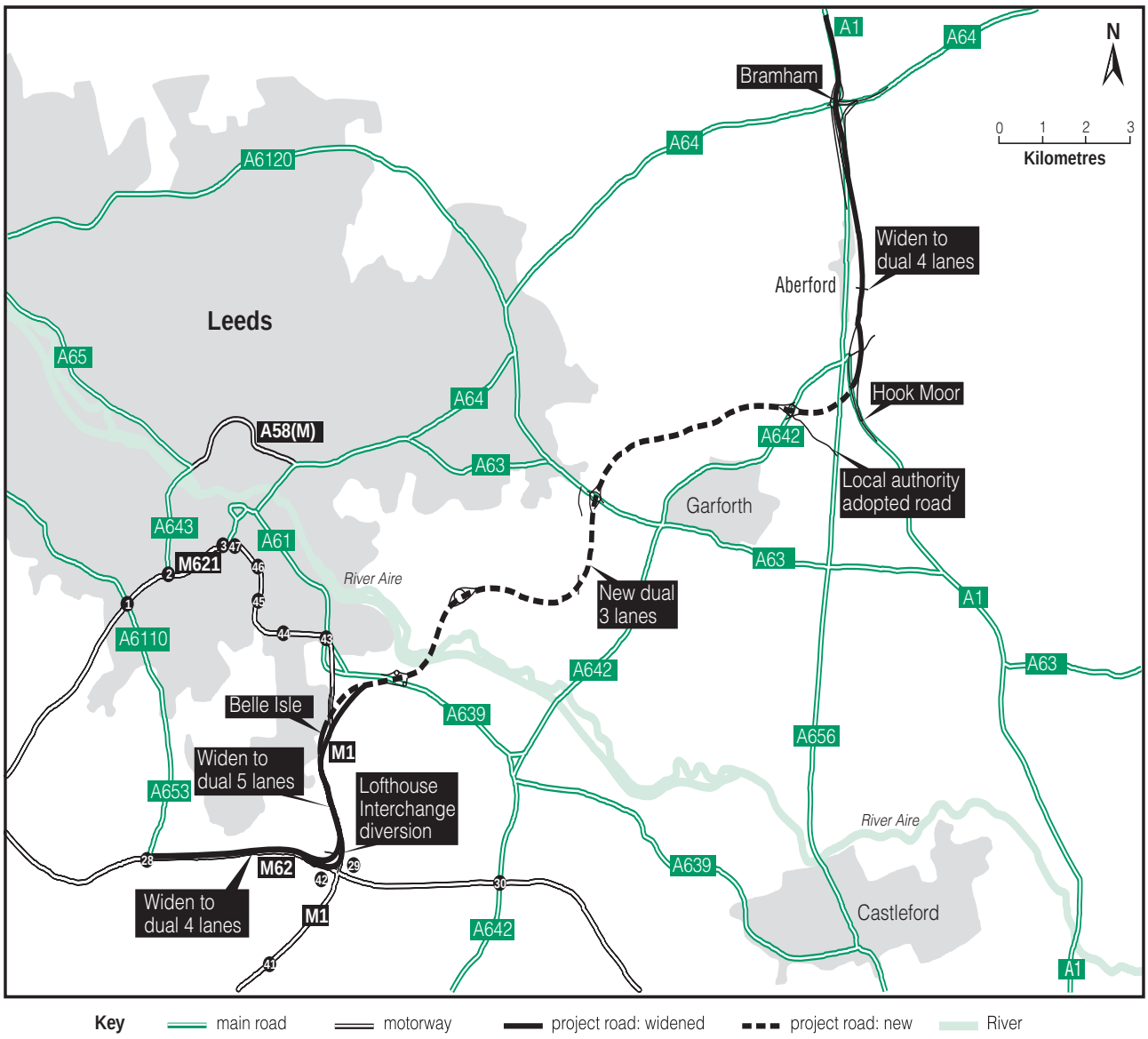
6 The model contract which formed part of the tender documentation also included confidentiality clauses intended to preserve confidentiality for the duration of the road contracts themselves. These confidentiality clauses were to bind both the private sector parties and the Government as signatories to the contracts. The contract provided some exceptions to the confidentiality. These exceptions include permitting a party to the contract to disclose confidential information when required to do so by law, or to the extent that the confidential information was already lawfully in the possession of the recipient.

7 By virtue of the National Audit Act 1983, we have access to the information in question, and are entitled to report setting out for Parliament how the Agency sought to achieve value for money. In this case we have decided that to fulfil this purpose it is essential for us to include financial and other information about the Highways Agency's evaluation of the bids.

Appendix 2

Details of tranche 1 road projects

1. The M1-A1 (Yorkshire) Link



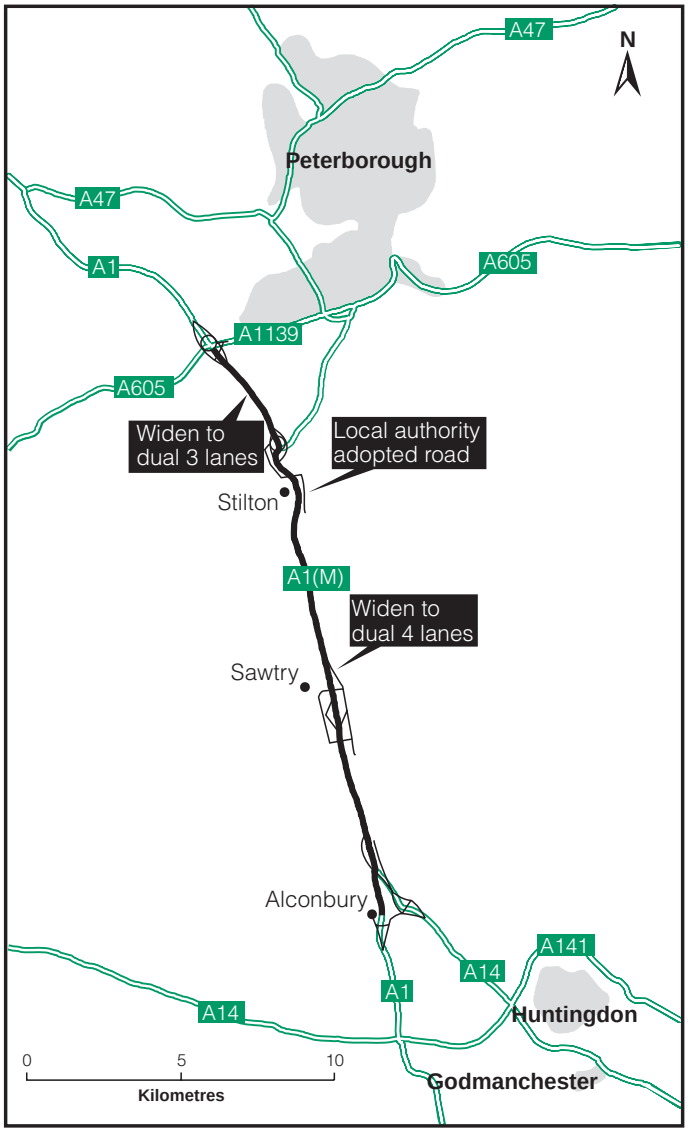
Source: National Audit Office and the Highways Agency

Purpose of project

This project entered the Roads Programme in 1989. The project will provide a new motorway between the M1/M62 south of Leeds and the A1 and the A64 east of Leeds and provide the operation and maintenance of the route for 30 years. It will provide a strategic route for traffic bypassing Leeds and will remove traffic from existing roads to the east and south. A new dual 3 lane motorway will be built between the M1 at Belle Isle and the A1 at Hook Moor. The M62 will be widened to 4 lanes in each direction between Junctions 28 (Tingley Junction) and 29 (Lofthouse Interchange). The M1 will be widened to 5 lanes in each direction between Lofthouse Interchange and a new interchange at Belle Isle. The A1 will be widened to a dual 4 lane motorway between Hook Moor and Bramham. At the Lofthouse Interchange motorway links connecting the M62 west and M1 north will be built. At Bramham Crossroads new road links will be built for traffic turning between the A1 south and A64 east.

Type of road	Ranges from 2 to 5 lane dual carriageways
Length of road	Totals 30 kilometres plus 22 kilometres side roads
Winning consortium	Yorkshire Link Limited (Trafalgar House (part of Kvaerner Group) and Balfour Beatty (part of BICC PLC))
Date contract let	March 1996
Date of expected opening	Spring 1999
Expected net present value of shadow tolls	£232 million (excluding VAT)
Public sector comparator	£344 million (excluding VAT)
Department's Agent	Pell Frischmann Consultants Limited
Department's Representative	Highways Agency

2. The A1(M) Motorway Alconbury to Peterborough



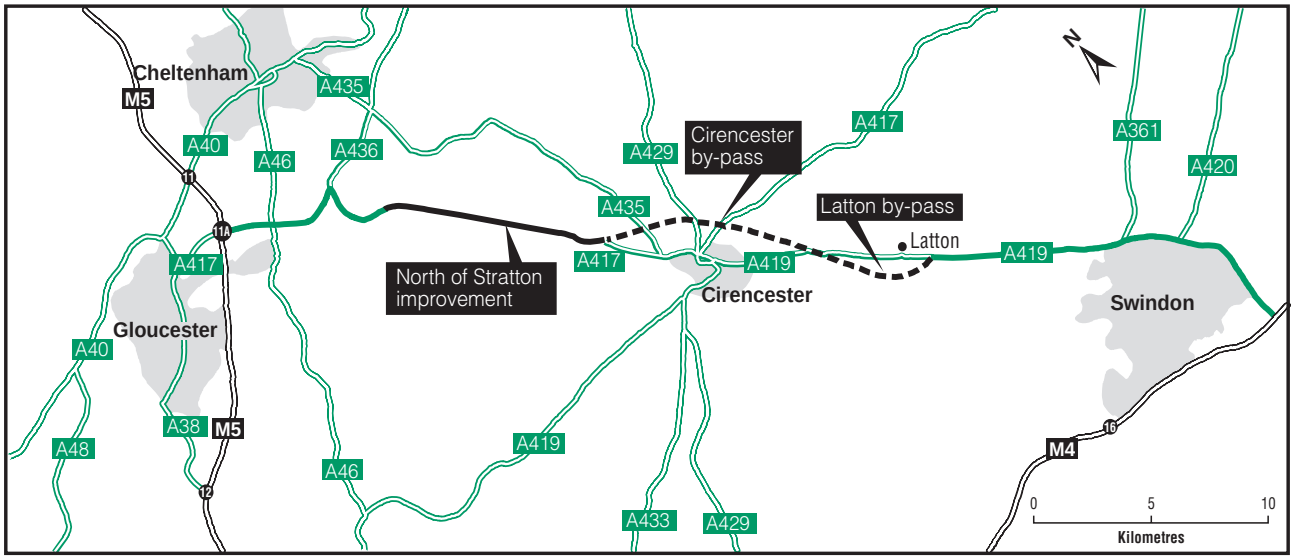
Source: National Audit Office

Purpose of project

The A1(M) project forms part of the proposed upgrading of the existing A1 between London and Newcastle to motorway standard. It consists of the construction of motorway between Alconbury and Peterborough and maintenance and operation for 30 years. The section between the Alconbury Interchange and Norman Cross is to be built to dual 4 lane motorway standard, with the remainder as dual 3 lane motorway. In addition a short section of the A604 which adjoins the A1(M) just to the north of Alconbury will be built into dual 2 lane motorway standard. Until completion the operator will also be responsible for the operation and maintenance of the existing A1; following completion, this road will be de-trunked and responsibility for its operation and maintenance will transfer to the local highway authority, Cambridgeshire County Council.

Type of road	All motorway
Length of Road	21 kilometres of motorway
Winning Consortium	Road Management Group (Amec, Brown & Root (part of Haliburton Group), Dragados, Alfred McAlpine)
Date contract let	February 1996
Date of expected opening	October 1998
Expected net present value of shadow tolls	£154 million (excluding VAT)
Public sector comparator	£204 million (excluding VAT)
Department's Agent	Cambridgeshire County Council
Department's Representative	Cambridgeshire County Council

3. The A419/A417 Swindon to Gloucester



Key — main road — motorway — project road: maintained — project road: widened - - - project road: new

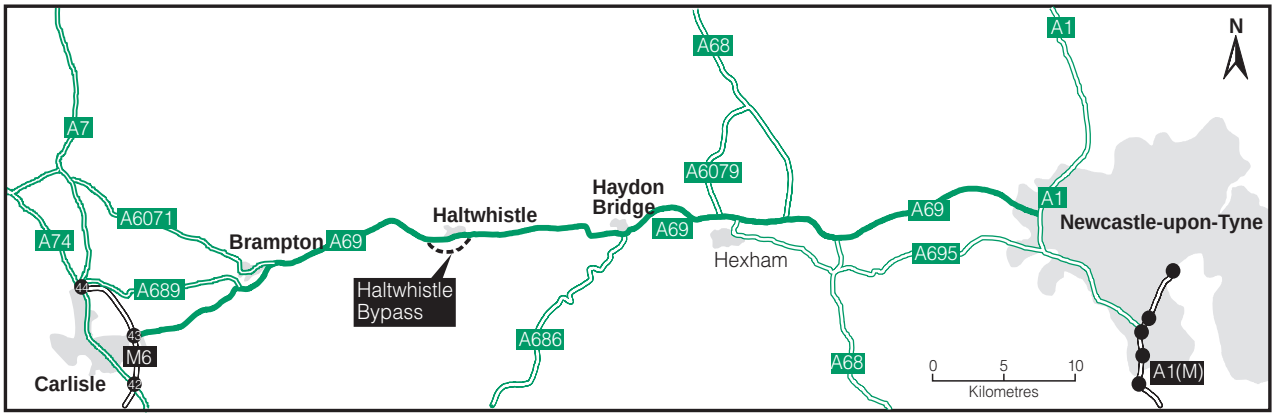
Source: National Audit Office

Purpose of project

The A419/A417 project forms a strategic route between Junction 15 of the M4 near Swindon and the M5 near Gloucester. The overall length of the route under the contract is 52 kilometres. About half of this length is new construction and operation, and the other half involves the operation and maintenance of existing parts of the road network in the Swindon to Gloucester area. The project comprises the construction and operation for 30 years of three contiguous trunk road improvement/bypass schemes to dual lane standard. These are the A419 Latton Bypass (6 kilometres entered the roads programme in 1985); the A419/A417 Cirencester and Stratton Bypass (10 kilometres entered the roads programme in 1987); and the A417 North of Stratton to Nettleton Improvement (9 kilometres entered the roads programme in 1985).

Type of road	single/dual carriageway
Length of road	52 kilometres
Winning consortium	Road Management Group (Amec, Brown & Root (part of Haliburton Group), Dragados, Alfred McAlpine)
Date contract let	February 1996
Date of expected opening	Early to mid 1998
Expected net present value of shadow tolls	£112 million (excluding VAT)
Public sector comparator	£123 million (excluding VAT)
Department's Agent	Frank Graham Consulting Engineers
Department's Representative	Frank Graham Consulting Engineers

4. The A69 Carlisle-Newcastle DBFO project road



Key main road | motorway | project road: maintained | project road: new

Source: National Audit Office and the Highways Agency

Purpose of project

The A69 is the principal east west all weather route serving the north of England and has been designated a part of the Trans-European Road Network. The road is predominantly rural in character. The project included the construction of the single carriageway Haltwhistle Bypass which entered the Roads Programme in 1975 and was opened in May 1997. The primary objectives of the project are to relieve the existing A69 at Haltwhistle of through traffic and provide maintenance and operation of the whole length of the A69 between Carlisle and Newcastle for 30 years.

Type of road	Single and dual carriageway
Length of road	84.3 kilometres with new Bypass of 3.2 kilometres
Winning consortium	Road Link (Henry Boot, Christiani & Neilsen, Cogefarimpresit, Morrison, Pell Frischman, ASTM-SINA)
Date contract let	January 1996
Date of opening	May 1997
Expected net present value of shadow tolls	£62 million (excluding VAT)
Public sector comparator	£57 million (excluding VAT)
Department's Agent	Ove Arup and Partners
Department's Representative	Highways Agency

Appendix 3

Calculation of expected Net Present Values for Bid Comparisons

Highways Agency advisers assessed the bids from each of the tenderers based on calculations of the following three elements:

- expected net present values of the shadow tolls over the 30 year contract period. These were based on the Highways Agency's standardised traffic forecasts and common assumptions about inflation and interest rates in order to provide a "level playing field" for assessment;

- the value of the differential retained risks. This involved quantification of the risks retained by the Secretary of State for the biddable risks where tenderers were taking different risk positions; and

- the expected variability of shadow toll payments. The variability depends on traffic growth forecasts, and each tenderer's banding and toll structure.

The main criteria for the assessments were the first two calculations, with the third being brought in only in the event that the expected net present values of competing bids were very close. The elements are described in turn below.

Bid Assessment

a) Expected Net Present Value of Shadow Toll Payments

Tenderers bid on the basis of shadow tolls per vehicle kilometre. The Invitations to Tender stated that they were free to decide their own levels of tolls, and could decide whether to charge different rates for vehicles over 5.2 metres (primarily Heavy Goods Vehicles) and Other Vehicles. However, in order to reduce the traffic risk on the Highways Agency, the Invitations to Tender also stated that the tolls should be in two, three or four bands, with the toll in the top band set at zero. This means that the Highways Agency do not pay any shadow tolls on a scheme once traffic has grown to the level set for the top band, so putting a cap on Agency expenditure. Bidders tended to use the maximum four bands, with declining tolls at each band.

In order to calculate the expected net present value of shadow toll payments, Highways Agency advisers input the bidders' shadow tolls per vehicle kilometre into models containing the Agency's current base traffic flows and 30 year traffic forecasts for each of the roads. This allowed the advisers to calculate the expected traffic flow for each year on a consistent basis. Forecasts were in the form of probability distributions and expected values were drawn from these distributions following 5000 iteration Monte Carlo simulations.

The toll payments per year were calculated by multiplying the shadow toll per vehicle kilometre by the expected number of vehicle kilometres. This was done separately for Heavy Goods Vehicles and Other Vehicles. The yearly payments were discounted at the HM Treasury recommended rate of eight per cent real per year to derive a net present value. Once the expected net present values of the bids had been derived, the advisers undertook detailed sensitivity analysis to study the effect on the values of changes in the major parameters, such as traffic growth. This was to analyse the robustness of the bids in terms of, for example, whether the operator would be able to service its debt if traffic flows - and hence shadow toll payments - were lower than expected. Annex A shows a hypothetical example of how annual shadow toll payments were estimated. Figure 6, paragraph 1.16 of the main report illustrates this graphically for Heavy Goods Vehicles. More complex mechanisms, allowing for movement in shadow toll bands and indexation of tolls over time were also bid for, but these are not detailed here in the interests of simplicity.

b) Expected Net Present Value of Differential Retained Risks

The Invitations to Tender stated that the Highways Agency expected operators to assume fully certain risks, such as construction cost overruns. However, they also invited tenderers to state to what extent they were prepared to accept certain other risks, such as protester action risk. Where these amounts differed and where quantification was considered feasible, the Agency's advisers estimated values for the amount of risk remaining with the Secretary of State and added these to the expected net present values of the bids.

Advisers estimated the total potential costs to the project of the occurrence of a significant amount of protester action on one project, based on experience with other nearby schemes during which significant protester action had occurred. Tenderers were then invited to bid for accepting different amounts of this risk. So, for example, if the estimated total costs of potential protester action were £6 million and a tenderer stated it was prepared to accept only the first £1 million of protester action costs, the advisers would add the £5 million difference to the expected net present value of the bid.

In the event, the analysis was not as simple as this example, as a variety of strategies and conditions were bid for the differential retained risks, but this gives an illustration of how the net present values were adjusted in the light of differing amounts of risk transfer.

c) Variability of Shadow Toll Payments

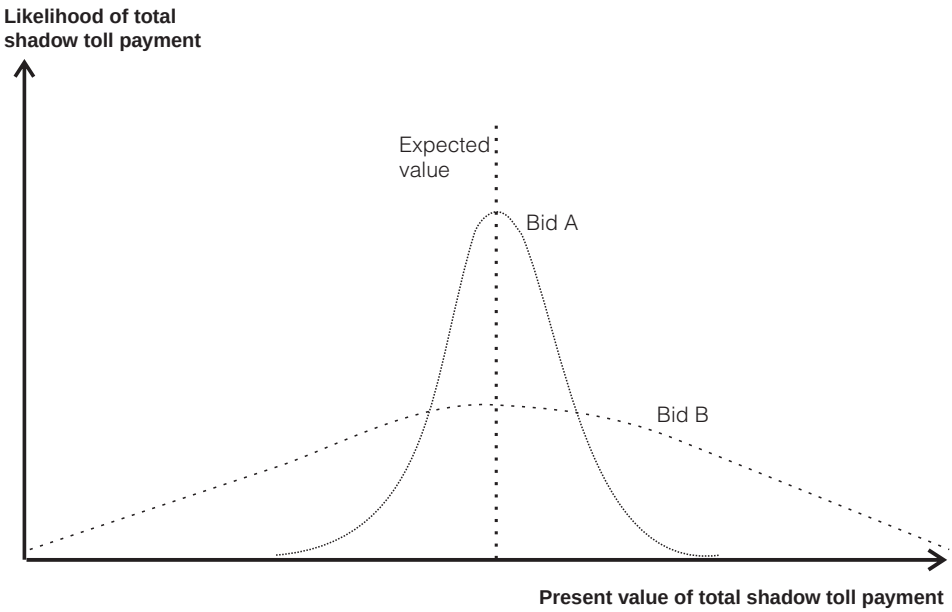
In the event that analyses of net present values and risk transfer were not decisive, the Agency's advisers would analyse the variability of shadow toll payments as a further factor. If net present values of shadow toll payments and differential retained risks were similar, the Highways Agency would consider the volatility of payments and consider giving preference to the bid which showed the highest volatility as this would mean that greater risk was being transferred for a similar cost.

Figure 15 shows such a comparison; in this case, bid B has the greater spread and would be chosen. The figure is a simplification as the illustrative curves are symmetrical around the expected value, ignoring the impact of the shadow toll cap at the upper limit to Band 3, above which zero tolls are payable. In the actual analysis, the Band 3 upper limits meant that the distribution curves were skewed so that the potential downside risk to the Agency (the risk of greater than expected shadow toll payments due to higher than expected traffic levels) was less than the upside risk.

In practice, comparison of the variability of shadow toll payments was not a deciding factor in any of the tranche 1 projects. There was sufficient difference between the winning and second place bidders to decide on the basis of expected net present value and risk transfer.

Volatility of payments

Figure 15



Note: Bid A and Bid B have the same expected value of discounted shadow toll payments. Bid B has accepted higher traffic risk and is more "volatile" but has increased the potential downside to the Highways Agency. The Highways Agency would choose Bid B as this accepts a higher level of traffic risk than Bid A at the same expected level of payments.

Source: National Audit Office

The Highways Agency preferred bids that at the same expected value took more risk.

Annex A

Example of hypothetical shadow toll payment calculations under three traffic growth scenarios

This hypothetical example involves a 100 kilometre long road, on which traffic is made up of 20 per cent vehicles longer than 5.2 metres (primarily Heavy Goods Vehicles (HGVs)) and 80 per cent Other Vehicles (OVs). There are three scenarios for future traffic growth which produce different estimates of shadow toll payments. The calculation estimates the shadow tolls under the three scenarios for a future year.

Growth Scenario	*High*	*Best estimate*	*Low*
a) Annual average daily traffic	20,000	12,000	8,000
b) Road length (kilometres)	100	100	100
c) Total average daily vehicle kilometres (A x B)	2 million	1.2 million	800,000
d) Total annual vehicle kilometres (C x 365)	730 million	438 million	292 million
e) HGV annual vehicle kilometres (20 per cent of D)	146 million	87.6 million	58.4 million
f) OV annual vehicle kilometres (80 per cent of D)	584 million	350.4 million	233.6 million

The tenderer proposes the following four shadow toll bands for each vehicle class. The top band in each class is rated at zero.

	HGVs		**OVs**	
Traffic band	*Band size (million vehicle kilometres per year)*	*Toll (per vehicle kilometre)*	*Band size (million vehicle kilometres per year)*	*Toll (per vehicle kilometre)*
Band One	**0 to 70**	**9p**	0 to 300	3p
Band Two	**70+ to 100**	**6p**	300+ to 450	2p
Band Three	**100+ to 130**	**3p**	450+ to 550	1p
Band Four	**Over 130**	**0p**	Over 550	0p

The amount of shadow tolls paid in the year depends on the actual traffic level. Figure 16 shows the toll payments which would be made under each of the three traffic growth scenarios above.

Figure 16

The amount of annual shadow toll payments made under the three growth scenarios

Traffic Band	Vehicle type	Toll per vehicle kilometre	High growth scenario		Best estimate		Low growth scenario	
			Annual traffic (million vehicle kilometres)	*Annual payment (£ millions)*	*Annual traffic (million vehicle kilometres)*	*Annual payment (£ millions)*	*Annual traffic (million vehicle kilometres)*	*Annual payment (£ millions)*
Band One	HGV	9p	70	6.3	70	6.3	58.4	5.3
	OV	3p	300	9.0	300	9.0	233.6	7.0
Band Two	HGV	6p	30	1.8	17.6	1.1	0	0
	OV	2p	150	3.0	50.4	1.0	0	0
Band Three	HGV	3p	30	0.9	0	0	0	0
	OV	1p	100	0.1	0	0	0	0
Band Four	HGV	0p	16	0	0	0	0	0
	OV	0p	34	0	0	0	0	0
Total Annual payments, each vehicle type (£ millions)	HGV			9.0		7.4		5.3
	OV			12.1		10.0		7.0

Note: Figure 6 of the main report provides a graphical illustration of the payments due for HGVs.

The table shows that the annual payment depends on the traffic flow, and that there is a maximum payment of £9 million for HGVs and £12.1 million for OVs. Above this level, traffic falls in Band Four and zero tolls are payable.

Appendix 4

National Audit Office Survey Questionnaire

Please tick the most appropriate box.

1. *How did your interest in DBFO roads arise?*

OJEC	A consortium member	Budget statement	Roads green paper
❑	❑	❑	❑

Other source, please specify; together with any comments:

2a. *How do you rate the information made available to bidders by the Highways Agency?*

	Excellent	Good	Adequate	Inadequate	Poor
Costs - running and construction	❑	❑	❑	❑	❑
Traffic modelling	❑	❑	❑	❑	❑
Indexation and inflation assumptions	❑	❑	❑	❑	❑
Design details	❑	❑	❑	❑	❑

2b. *How has dealing with a model contract compared to using a heads of agreement procedure?*

Preferred	Indifferent	Worse	Not Applicable
❑	❑	❑	❑

Please comment on your answers:

3. *Do you consider you were treated fairly by the Agency in their consideration of bids?*

Yes	No
❑	❑

Please comment on your answer:

4. *How would you characterise the time-scales allowed by the Agency during the following stages of the bidding process?*

	Too long	About right	Too short	Not applicable
Expressions of interest	❑	❑	❑	❑
Pre-qualification	❑	❑	❑	❑
Tender period	❑	❑	❑	❑
Post tender negotiation - before preferred bidder	❑	❑	❑	❑
Post tender negotiation - after preferred bidder	❑	❑	❑	❑
Award of contract	❑	❑	❑	❑

Please comment on your answer:

5a. *How would you describe the allocation of risk either proposed in the model contract or achieved in the signed contract?*

	Wholly with the Agency	Mostly with the Agency	Shared between the Agency and the DBFO Co	Mostly with the DBFO Co	Wholly with the DBFO Co
Design and Construction	❑	❑	❑	❑	❑
Road opening and performance	❑	❑	❑	❑	❑
Traffic	❑	❑	❑	❑	❑

Residual Life	❑	❑	❑	❑	❑
Legislative/Regulatory	❑	❑	❑	❑	❑
Project Financing	❑	❑	❑	❑	❑
Operation	❑	❑	❑	❑	❑
Maintenance	❑	❑	❑	❑	❑

5b. In your view, how would the risk be allocated so that it is with the party best able to manage that risk?

	Wholly with the Agency	Mostly with the Agency	Shared between the Agency and the DBFO Co	Mostly with the DBFO Co	Wholly with the DBFO Co
Design and Construction	❑	❑	❑	❑	❑
Road opening and performance	❑	❑	❑	❑	❑
Traffic	❑	❑	❑	❑	❑
Residual Life	❑	❑	❑	❑	❑
Legislative/ Regulatory	❑	❑	❑	❑	❑
Project Financing	❑	❑	❑	❑	❑
Operation	❑	❑	❑	❑	❑
Maintenance	❑	❑	❑	❑	❑

If any of your answers in questions 5a and 5b are different please comment.

6. *To what extent was innovation encouraged in the Agency's documents in the following areas?*

	Greatly encouraged	Encouraged	Discouraged	Greatly discouraged
Design	❑	❑	❑	❑
Financial structure	❑	❑	❑	❑
Consortium structure	❑	❑	❑	❑
Risk allocation	❑	❑	❑	❑
Maintenance	❑	❑	❑	❑
Operation	❑	❑	❑	❑
Future changes e.g introduction of real tolls or further road improvements	❑	❑	❑	❑
Other	❑	❑	❑	❑

Please specify "other"

Please comment on your answers:

7. *How would you describe the Agency's attitude towards any innovations suggested by you in the following areas?*

	Very enthusiastic	Enthusiastic	Not enthusiastic	Opposed	Not applicable
Design	❑	❑	❑	❑	❑
Financial structure	❑	❑	❑	❑	❑
Consortium structure	❑	❑	❑	❑	❑
Risk allocation	❑	❑	❑	❑	❑

Maintenance	❑	❑	❑	❑	❑
Operation	❑	❑	❑	❑	❑
Future changes e.g. introduction of real tolls or further road improvements	❑	❑	❑	❑	❑
Other	❑	❑	❑	❑	❑

Please specify "other"

Please give details:

8. *How do you view the level of information required of you by the Agency?*

	Very excessive	Excessive	About right	Too little
Design	❑	❑	❑	❑
Financial structure	❑	❑	❑	❑
Consortium structure	❑	❑	❑	❑
Risk assessment	❑	❑	❑	❑
Traffic forecasts	❑	❑	❑	❑
Maintenance	❑	❑	❑	❑
Operation	❑	❑	❑	❑
Quality systems e.g. ISO9000	❑	❑	❑	❑
Other	❑	❑	❑	❑

Please specify "other"

Please give details:

9a. *Do you consider banded shadow tolls to be an appropriate payment mechanism?*

Yes ❑ No ❑

Please comment on your answer:

9b. *Can you suggest any alternatives or improvements to payment mechanisms?*

10. *How clear to you were the criteria by which bidders were assessed at the various stages of the tendering process?*

Very clear ❑ Clear ❑ Unclear ❑ Confusing ❑

Please comment on your answer:

11. *How would you describe the quality of the Agency's debriefing?*

Excellent ❑ Satisfactory ❑ Unsatisfactory ❑ No Debriefing ❑ Debriefing arranged ❑ Not applicable ❑

Please comment on your answer:

12. *How clear was the DBFO management structure of the Agency and Department of Transport throughout the process?*

Very clear ❑ Clear ❑ Unclear ❑ Confusing ❑

Please comment on your answer:

13a. *What were the full costs of pre-qualification for the tranche 1 DBFO schemes?*

Up to £100,000 ❑ £100,001 to £250,000 ❑ £250,001 to £500,000 ❑ £500,001 and over ❑

13b. *What were the full bidding costs post pre-qualification for each of the DBFO schemes for which your consortium bid on tranche 1?*

Up to £500,000 ❑ £500,001 to £1,000,000 ❑ £1,000,001 to £2,000,000 ❑ £2,000,001 to £3,000,000 ❑ over £3,000,000 ❑

Please make any comments on this below:

14. *As a result of the DBFO bidding process how interested are you in bidding in future for:*

Other DBFO road schemes?

Very interested ❑ Quite interested ❑ Not very interested ❑ Not interested ❑

Other PFI schemes?

Very interested ❑ Quite interested ❑ Not very interested ❑ Not interested ❑

Please comment on your answers:

15. *How would you characterise your views of the DBFO contract letting process?*

No changes required ❑ Some minor changes required ❑ Major changes required ❑

Please comment on your answer:

16. *If you have been involved with either tranche 1A or tranche 2, how would you characterise any changes that have taken place in the contract letting process following tranche 1?*

A significant improvement ❑ A slight improvement ❑ No improvement ❑ A deterioration ❑

Please provide details:

17. *Are there any other issues that you would like to raise regarding the Highways Agency's first tranche of DBFO roads, or the Private Finance Initiative in general?*

18. *Please indicate whether you would be content for the NAO to follow up this questionnaire with an interview?*

Yes ❑ No ❑

Thank you for completing the questionnaire.

Appendix 5

National Audit Office survey results - highlights

1 Respondents to the survey confirmed their continuing interest in future Design, Build, Finance and Operate roads, as well as other Private Finance Initiative schemes, Figure 17.

Figure 17

Responses to the question: "How interested are you in the following?..."

Question	Very Interested	Quite Interested	Not Very Interested	Not Interested	Not answered
Other Design, Build, Finance and Operate road schemes	25	19	1	0	4
Other Private Finance Initiative schemes	19	23	2	0	5

2 A significant number of respondents felt that the costs and traffic modelling information supplied by the Agency was inadequate or poor, Figure 18.

Figure 18

Responses to the question: "How do you rate the information made available to bidders?"

	Excellent/Good	Adequate	Inadequate/Poor	Not Answered
Costs	1	11	16	21
Traffic Modelling	1	19	19	10
Indexation and Inflation Assumptions	6	21	5	17
Design Details	1	18	3	27

3 The level of information required for bid evaluation by the Highways Agency was generally considered to be "about right" although regarding design issues was largely considered to be excessive, Figure 19.

Figure 19

Responses to the question: " How do you view the level of information required of you by the Agency?"

Information Required	Very Excessive	Excessive	About Right	Too Little	Not Answered
Design	7	15	8	0	19
Financial	0	10	21	1	17
Consortium structure	0	4	26	1	18
Risk assessment	0	6	24	3	16
Traffic forecasts	1	3	28	0	17
Maintenance	3	8	22	0	16
Operation	3	5	24	0	17
Quality Systems	5	7	18	0	19

4 A significant majority of respondents indicated that the evaluation criteria were unclear or confusing, Figure 20. Comments received referred to the difficulty in assessing how the acceptance of risk by bidders was evaluated. Also, the non-availability of the Agency's traffic forecasts (the basis of the Agency's net present value calculations), information on the relative weightings of the various criteria or whether any consideration was to be given to quality were cited as giving rise to confusion.

Figure 20

Responses to the question: "How clear to you were the criteria by which bidders were assessed at the various stages of the tendering process?"

Very clear	Clear	Unclear	Confusing	Not answered
1	9	28	5	6

5 Opinion was divided on the benefits of the model contract, Figure 21. Respondents who expressed dissatisfaction felt that too often the Highways Agency stated the terms were non-negotiable. In particular, the contract was widely unacceptable to the lenders to the consortia, and required significant negotiation between them, thus adding to the delay. Other respondents queried the need to discuss detailed contract terms prior to short-listing, involving lawyers more deeply at that stage than had been envisaged, thus increasing bidding costs.

Responses to the question: "How has dealing with a model contract compared to using a heads of agreement procedure?"

Figure 21

Preferred	Indifferent	Worse	Not answered
18	3	12	16

6 A significant majority of survey respondents felt that innovation had been encouraged, Figure 22.

Responses to the question: "To what extent was innovation encouraged in the Agency's documents?"

Figure 22

Suggested Innovations	Greatly encouraged	Encouraged	Discouraged	Greatly discouraged	Not answered
Design	1	14	20	3	11
Financial Structure	7	26	4	1	11
Consortium Structure	1	30	3	0	15
Risk Allocation	5	13	13	9	9
Maintenance	1	20	17	1	10
Operation	1	21	15	1	11
Future Changes e.g. real tolls	1	14	15	4	15

7 On the other hand respondents also felt that in practice the Highways Agency were not enthusiastic about innovative ideas other than in the area of finance, Figure 23.

Responses to the question: " How would you describe the Agency's attitude towards any innovations suggested by you?"

Figure 23

Suggested Innovations	Very enthusiastic	Enthusiastic	Not enthusiastic	Opposed to Innovation	Not answered
Design	0	9	17	5	18
Financial Structure	1	20	4	1	23
Consortium Structure	0	8	7	0	34
Risk Allocation	0	5	14	15	15
Maintenance	0	7	12	4	26
Operation	0	6	11	3	29
Future Changes e.g. real tolls	0	3	9	4	33

8 The survey indicated that a significant proportion of respondents to the National Audit Office questionnaire thought their debriefing unsatisfactory, Figure 24.

Figure 24

Responses to the question: "How would you describe the quality of the Highways Agency's debriefing?"

Excellent	Satisfactory	Unsatisfactory	No Debriefing	Not applicable or Not answered
1	9	11	10	18

Appendix 6

Discounting and Private Finance

With a publicly financed project the capital cost is paid as it is incurred, although the capital could be raised by government borrowing and paid back, with interest, over the life of the project. With a privately financed project, such as a Design, Build, Finance and Operate road, the capital cost is paid back over the life of the project, with a return to the private financiers. The comparison of publicly and privately financed alternatives is in principle the comparison of (in addition to all the other costs) these two streams of capital.

Some early guidance recommended using the government borrowing rate to calculate a set of cash flows with public financing, and subtracting these from the cash flows with private financing. The difference between the two gave a series of cash flows over the life of the project, which could then be discounted at the standard public sector discount rate, to reflect taxpayers' "time preference" for income. However this two stage process was complicated to apply, and it needed more detailed knowledge of the private sector costings than bidders are now expected to provide. It was retained as an alternative method in the Treasury's 1991 guidance, but not in the new, 1997 edition.

The currently recommended method, and the normal method in the 1991 guidance, is to discount the private and public sector costs directly, at the public sector discount rate, which serves both as government cost of capital and as a time preference rate.

The current value of this rate, at six per cent, is higher than the real government borrowing rate, which in recent years (for long term index linked debt) has been about 3.5 per cent. This difference is explained partly by an adjustment for tax, which in the new guidance is described as being of the order of one per cent or less, partly by a smaller adjustment for "systematic risk", and partly by upward rounding to err against optimistic bias in estimates of publicly financed capital costs. The rate of six per cent is also presented in both the 1991 and the new guides as being at the top of the plausible range for time preference.