



Northern Ireland Audit Office

Improving the Strategic Roads Network – The M1/Westlink and M2 Improvement Schemes



REPORT BY THE COMPTROLLER AND AUDITOR GENERAL
4 November 2009



Northern Ireland Audit Office

Report by the Comptroller and Auditor General for Northern Ireland

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Improving the Strategic Roads Network – The M1 /Westlink and M2 Improvement Schemes

This report has been prepared under Article 8 of the Audit (Northern Ireland) Order 1987 for presentation to the Northern Ireland Assembly in accordance with Article 11 of that Order.

KJ Donnelly
Comptroller and Auditor General

Northern Ireland Audit Office
4 November 2009

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Abbreviations

BAFO	Best and Final Offer
C&AG	Comptroller and Auditor General
DBFO	Design, Build, Finance and Operate
DFF	Department of Finance and Personnel
EIB	European Investment Bank
HGV	Heavy Goods Vehicle
NAO	National Audit Office
NIAO	Northern Ireland Audit Office
NPV	Net Present Value
OFMDFM	Office of First Minister and Deputy First Minister
OGC	Office of Government Commerce
OJEU	Official Journal of the European Union
PAC	Public Accounts Committee
PFI	Private Finance Initiative
PPP	Public Private Partnership
PSC	Public Sector Comparator
SIB	Strategic Investment Board

Summary



Broadway underpass

Summary

Overview

1. In September 2001, the Department for Regional Development (the Department) published its Regional Development Strategy. A key priority of the Strategy was to facilitate the efficient movement of freight and to manage access to the motorway system. The Westlink was specifically identified as requiring a priority upgrade to reduce the impact of congestion and facilitate through traffic and freight movement, particularly that associated with the ports of Belfast and Larne.
2. The Strategic Investment Programme for Northern Ireland, launched as part of the Budget announcement in December 2002, enabled Roads Service to identify 'packages' of strategic highway improvements that could be delivered through a Design, Build, Finance and Operate (DBFO) form of contract¹. Following a competitive bidding process involving four bidders the DBFO Package 1 Project (Package 1) agreement was signed in January 2006. Package 1 provided for improvements to the M1/Westlink, provision of slip roads on the M2 at the Antrim Hospital and widening of the M2 from the Sandyknowles to Greencastle junctions. It also covers network maintenance which includes the M1 from Sprucefield to Belfast, the Westlink and the M2 from Belfast to Dunsilly, which covers 59.5km of motorway. The total cost of Package 1 is estimated to be £508 million over the 30 years of the agreement (assuming an inflation rate of 2.5 per cent a year), equivalent to approximately £186 million in Net Present Value² (NPV) terms. This is 26 percent less than the cost estimated by Roads Service of procuring the project through traditional means.
3. Package 1 was financed from two main sources which included bonds, issued by a commercial bank and a long term loan, sourced from the European Investment Bank (EIB)³. Both these sources accounted for 80 per cent of the total finance required and were a first for Northern Ireland.
4. In May 2009 the final phase of Package 1 (the widening of the M2 from Sandyknowles to Greencastle) was completed, some three months ahead of schedule. Roads Service explained to us that following the completion of testing and the clearance of any outstanding works, a "Completion Certificate" will be issued. This will then trigger the start of a formal evaluation assessment which will include a review of benefits and outcomes of Package 1 and evaluate the extent to which its original objectives have been delivered and the extent to which value for money has been achieved.

Study scope and methodology

5. This report examines the procurement phase of Package 1. In particular it considers whether Roads Service has secured a good deal for Northern Ireland and examines:
 - the **option chosen**, i.e. Public Private Partnership (PPP) over traditional

1 The DBFO approach is a form of Public Private Partnership (PPP)/Private Finance Initiative (PFI) Project, whereby a selected private sector company, using specified public sector guidance, designs, builds, finances and operates a Project for an annual unitary payment. Legal ownership of the facility remains with the public sector throughout the contract, with the private sector interest in the Project being based solely on the contractual rights to operate the Facility.

2 The Net Present Value (NPV) compares the value of a pound today versus the value of that same pound in the future, after taking inflation and return into account.

3 The European Investment Bank is owned by the European Union and is a long-term lending bank.

procurement and considers whether this choice was the most economically advantageous (**Part 1** of the Report);

- the **project management arrangements** within Roads Service, including the use of its financial, technical and legal advisers (**Part 2** of the Report); and
- the **funding arrangements** chosen for the Project along with the payment mechanisms in place (**Part 3** of the Report).

6. During construction of the improvements to the Westlink, heavy rainfall resulted in the flooding of the Broadway Underpass (the Underpass) in August 2008. This Report does not examine the detailed circumstances of the incident, which are still under investigation. However, it is clear that significant costs were incurred, for example, costs to emergency services, economic costs arising from road unavailability and potential public liability costs. We will continue to monitor the investigation into the incident and may, if appropriate, report on it following its conclusion.
7. Information was obtained through meetings with key staff in Roads Service and their financial advisers; review of available documentation held by Roads Service; review of an Internal Audit report and supporting documents; legislation; departmental papers/circulars and guidance; Treasury guidance; and National Audit Office (NAO) guidance.

We also engaged two local University academics⁴ to complete a review of the Package 1 Financial Models and Business Cases. Our report does not examine whether the Project is an operational success, but considers whether the Project is likely to deliver value for money. As explained in paragraph four a benefits realisation management process will follow.

Key findings and recommendations

8. **Work began on Package 1 in January 2006 and the final phase of the project (the widening of the M2 from Sandyknowles to Greencastle) was completed in May 2009, some three months ahead of schedule.** Following the issue of a Completion Certificate, a formal assessment will be undertaken by the Department which will include a review of project benefits and outcomes. This will compare initial project expectations against what has been actually achieved, for example, the contract programme, the final cost and improvements in journey times. Initial assessments by Roads Service, in relation to the Westlink improvements, indicate that significant benefits are accruing, for example, a reduced journey time at peak hours of seven minutes on one particular route. (see paragraph 1.23)
9. **Roads Service's ability to complete a more accurate calculation of the potential economic benefits⁵ when assessing various procurement options was constrained.** This was due to limited information being available, at

4 Ciaran Connolly, Queen's University Belfast and Tony Wall, University of Ulster.

5 Roads service were of the opinion that certain economic benefits could arise from the use of a Private Finance Initiative, which could not be realised through traditional procurement. These were identified and factored into their decision to choose a Private Finance Initiative.

Summary

the planning stage, on up-to-date traffic statistics for the proposed routes in Package 1 and the absence of a full economic analysis for the M2 widening scheme. This led Road Service to use large and basic calculations to quantify the economic benefits. In our view some of these benefits could equally have arisen through traditional procurement.

10. **A comparison between the Shadow Bid Model⁶ and the Public Sector Comparator (PSC)⁷ shows there was little to choose between a Private Finance Initiative (PFI) and traditional procurement in cost terms. While we are satisfied that Roads Service selected the most economically advantageous solution, its choice was limited given the public funding constraints. In addition, it applied quantifiable economic benefits based on basic high level information.** The Westminster Public Accounts Committee has expressed concerns about the spurious precision of some Public Sector Comparators. In particular, its report on the National Roads Telecommunications System⁸ identified the use of a single figure PSC estimate, rather than a range, as contrary to good practice. A single figure estimate has been used in the value for money assessment for Package 1. We recommend that, as part of the post project evaluation, Roads Service examines the extent to which value for money has actually been achieved and expected benefits delivered.

11. **PPP Units should identify and analyse the internal and external costs of procuring recent and ongoing PPP/PFI projects to identify the scope for improving the efficiency of the procurement of future deals.**
12. **A high level review of the management of the tender process shows that the procurement phase compares favourably to PFI deals in other UK regions.** Roads Service applied elements of good project management, putting in place sufficient governance structures, incorporating the lessons learned by the Highways Agency⁹ and engaging with the Strategic Investment Board¹⁰ (SIB) and other professional advisers. Whilst the original forecast timetable was extended by a five month period and costs of professional advisers were significantly more than originally forecast, these downsides can be attributed to the fact that this was Roads Service's first PPP and original budgets and forecasts were overly optimistic. The receipt of four bids created an environment which made it easier for Roads Service and its advisors to challenge the bidders. It also created a sufficient level of competitive tension, particularly between the two lowest bidders, which helped to drive down construction and operational costs and therefore help achieve better value for money. The cost of professional advice was approximately 2.6 per cent of the capital value, which is in line with the average of PPP projects in England. It is also important

6 The Shadow Bid Model is developed as an attempt to approximate what the winning private financed bid is likely to be through the PPP/PFI route.

7 A Public Sector Comparator is the estimated cost of procuring a project by traditional means and is used as a comparison or benchmark against private financed bids.

8 *The Procurement of the National Roads Telecommunications Services*, October 2008, HC 558.

9 The Highways Agency is the English equivalent Executive Agency of the Department for Transport. This Agency had project managed a number of DBFO Projects and had a well developed business model and methodology which could be utilised by the Roads Service Agency.

10 The Strategic Investment Board Limited (SIB) supports the Northern Ireland Executive and Government Departments in delivering the Investment Strategy for Northern Ireland.

to set this project within the context of the wider Roads Service PPP programme which also includes Package 2¹¹. Our high level review of timetables and professional costs in this context indicates that savings were made in Package 2 through the application of lessons learned from Package 1 and experience built up within the Roads Service PPP Unit.

13. **No robust internal administrative costs for Package 1 were available. It is important that all costs associated with a major project, regardless of how it is financed or funded, are separately identifiable.** This should include all internal administrative costs, together with all costs incurred by other public sector bodies which, in Package 1, include any costs incurred by its sponsoring Department and SIB. We recommend that in future, such costs are captured for all major capital projects. As far as possible, these costs must also be included in the post - project evaluation for Package 1.
14. **A clear process for setting assessment criteria and evaluating bids had been established.** The use of a variant bid¹² helped Roads Service identify the financing structure that could deliver best value for money. The evaluation process contained a number of good practice steps demonstrating a clear process for setting assessment criteria and evaluating bids.
15. **The types of financing used to fund the project delivered benefits to Roads Service, both in terms of value for money and affordability. In addition the payment mechanism designed by Roads Service ensured that the certainty of costs and the affordability of Package 1 as a whole, could be forecast with reasonable accuracy.**
16. **It is important that any indemnified costs incurred by the Department and Roads Service, for example, public liability costs and damages, in dealing or as a result of the flooding incident on the Westlink, are identified and recouped from the Consortium. Other costs incurred, which are not indemnified, should also be identified and the potential to recoup those costs should be investigated. Similar costs incurred by the other public sector organisations, for example costs to emergency services, should be identified by those organisations, and the potential to recoup those costs should also be investigated.**

11 Package 2 is a larger DBFO Project which relates to the A1 from Sprucefield to the border and the M1/A4 from Sprucefield to Ballygawley.

12 The variant bid was based on a different financing structure which could potentially provide better value for money. This was compared to the main bid and the one which offered the best value for money was selected.

Part One:

Roads Service secured a competitive deal and the DBFO Package 1 Project is expected to deliver significant benefits



Westlink road improvements

Part One:

Roads Service secured a competitive deal and the DBFO Package 1 Project is expected to deliver significant benefits

The Regional Transportation Strategy 2002-12 identified investment priorities and considered potential sources of funding

1.1 In September 2001 the Department for Regional Development (the Department) published the Regional Development Strategy 'Shaping Our Future 2025'. This set out the planned future development of Northern Ireland to 2025 to help meet the needs of a fast growing region and ever-increasing levels of car ownership. The Strategy identified a Regional Strategic Transport Network which included five key

transport corridors deemed essential to the realisation of an integrated transport system (see Figure 1). A key priority of this Strategy, within the Belfast Metropolitan Area, was to facilitate the efficient movement of freight and especially the management of access to the motorway system and the regional gateway¹³, the Westlink and river crossings. The Westlink was specifically identified as a priority for upgrading to reduce the impact of congestion and facilitate through traffic and freight movement, particularly that associated with the ports of Belfast and Larne.

Figure 1: Five key transport corridors were identified as part of the Northern Ireland Regional Strategic Transport Network



Source: Department for Regional Development

13 The Regional Gateway referred to relates to the Belfast Port, Belfast International Airport and the George Best Belfast City Airport.

1.2 The Development Strategy was followed in July 2002, by the production of a Regional Transportation Strategy for Northern Ireland 2002-2012, aimed at delivering *“a modern, sustainable, safe transportation system which benefits society, the economy, and the environment and which actively contributes to social inclusion and everyone’s quality of life”*. This identified the Department’s strategic transportation investment priorities and considered potential sources of funding and the affordability of planned initiatives for the 10 year period 2002 to 2012. The Strategy acknowledged that a deficit in transportation investment could not be addressed through public expenditure alone and indicated that £150 million could be generated through private finance for road improvements.

1.3 Around the same time, a consultant’s report¹⁴ identified four ‘packages’ of projects (with a combined value of £188 million) that could be promoted as Design, Build, Finance and Operate (DBFO) road projects. At that time the M1 and Westlink improvements were not included, as the Department had decided that this project would be progressed through traditional funding (i.e. publicly funded construction).

The publication of the Strategic Investment Programme enabled Roads Service to consider a Design, Build, Finance and Operate approach

1.4 The Strategic Investment Programme for Northern Ireland was launched, as part of the Budget announcement in

December 2002, as the next phase of the Reinvestment and Reform Initiative. It set out plans for potential investment of around £2 billion over the five year period to 2007-08. Following its launch, Roads Service recommissioned consultants it had previously engaged in 2002 to produce a supplementary report. This was aimed at identifying ‘packages’ of strategic highway improvements that could be delivered through DBFO which would allow for the earliest possible delivery of improvements to the M1 and Westlink, and provide overall capital investment totalling approximately £200 million. The report recommended two DBFO packages:

- **Package 1:** The M1 East from the Sprucefield junction to the end of the M2 at Antrim; and
- **Package 2:** The A1 from Sprucefield to the border and the M1/A4 from Sprucefield to Ballygawley.

1.5 The report also recommended that Roads Service should adopt an approach to procurement which would be generally based on that used by the Highways Agency. The report identified the appointment of advisers and the development of tender documentation (adopting the Highways Agency Model Contract) as being key to completing Package 1. Furthermore, it suggested that Roads Service create a central PPP Unit to lead PPP policy and manage delivery of PPP projects.

14 *Review of Suitability of Roads Packages for PPP*, June 2002. This report was one of a series of formal reports which were commissioned leading up to the DBFO Package 1 Outline Business Case as shown in Appendix 1.

Part One:

Roads Service secured a competitive deal and the DBFO Package 1 Project is expected to deliver significant benefits

The Outline Business Case proposed three schemes for Package 1 aimed at reducing congestion and increasing traffic flow

1.6 Economic appraisals conducted during 2003 identified high volumes of traffic along a number of the key strategic corridors. For example, average traffic volumes along the M1, north of Black's Road inbound in the morning one hour peak, exceeded 4,300 vehicles, well in excess of the flow it was designed for. The consequential delays caused significant economic, environmental and social costs which would only continue to escalate as traffic flows increase. To improve the situation, the Outline Business Case proposed three core capital elements¹⁵ (schemes) for Package 1 with the following transport objectives:

- **Westlink road improvements** - aimed at reducing congestion and increase traffic speeds both on the Westlink itself and on the parallel routes, particularly Lisburn Road, Malone Road and Falls Road. This was expected to result in reduced journey times, reduced accidents, reduced emissions (due to improved vehicle operating efficiency) and improved transport reliability on all these routes;
- **M2 widening** - aimed at reducing congestion and improving journey times by increasing road capacity; and
- **M2 Antrim Area Hospital slip roads** - aimed at improving accessibility and

journey times currently experienced by road users (including ambulance services) seeking to access the M2 from the Antrim Area Hospital.

1.7 Figure 3 sets out the key objectives identified by Roads Service for each of the three core Schemes. Roads Service told us that the specific and measurable objectives for the schemes were developed in a number of ways. These included modelling through computer analysis and estimating the new road capacity and journey times against those that existed before the proposed improvements.

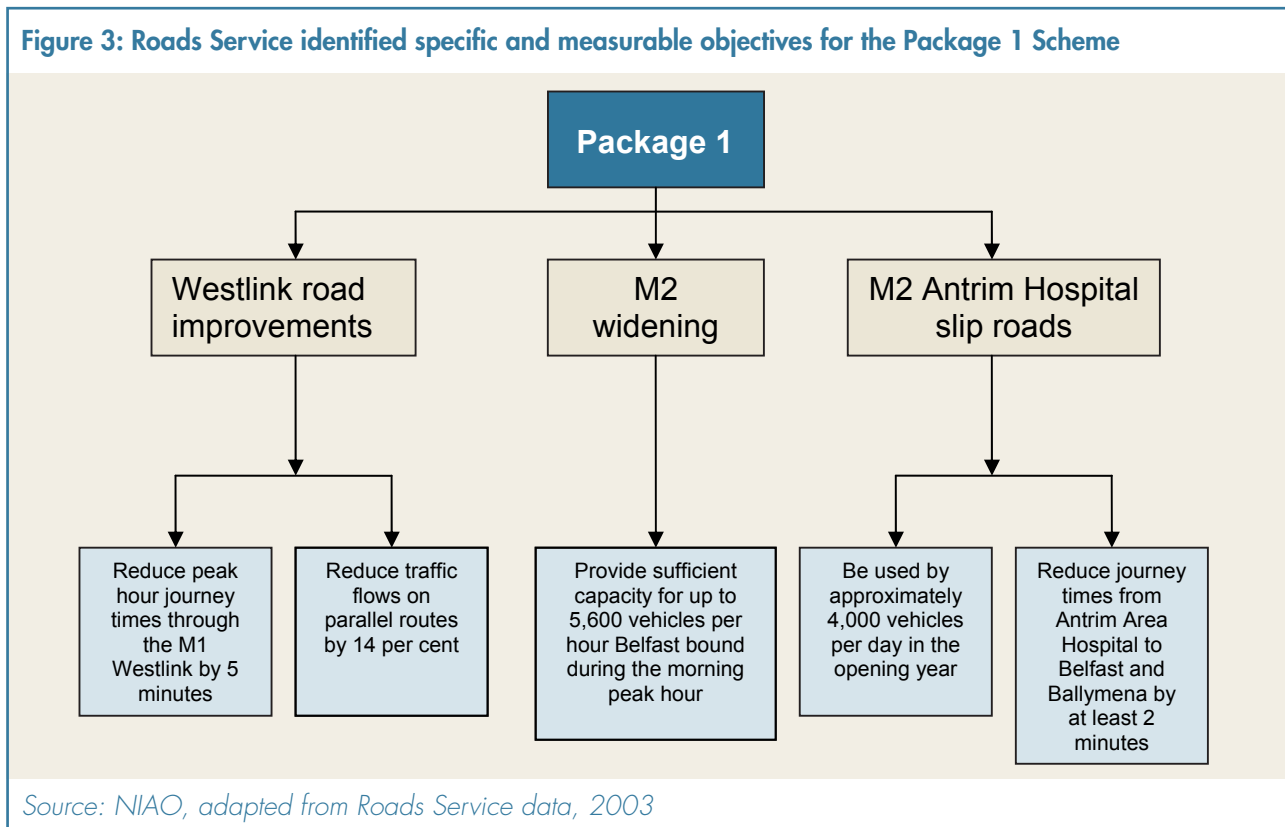
The original specification of Package 1 was extended after the Outline Business Case

1.8 Appendix 1 provides a summary of the key dates for Package 1 to contract signature. The Outline Business Case included an indicative timetable of 18 months for the procurement phase i.e. to financial close. However, a six month delay arose due to negotiations with bidders over technical and commercial issues, some of which related to additional specifications to Package 1. These included an Advanced Traffic Control System (£4.5 million), added before the "Invitation to Negotiate" was issued, and additional communications items (£2.5 million), added between Invitation to Negotiate and "Best and Final Offer" (BAFO)¹⁶.

¹⁵ In addition to these three core schemes, a smaller fourth scheme, (referred to as the 'Specific Improvements scheme') with an initial capital value of almost £5 million, was included in Package 1.

¹⁶ These additional specifications were packaged within the smaller Specific Improvements scheme.

Figure 3: Roads Service identified specific and measurable objectives for the Package 1 Scheme



Roads Service identified value for money savings of £27 million if the PPP option was selected, but the calculations lacked precision

- 1.9 To assess whether procuring Package 1 on a PPP basis could deliver value for money, Roads Service prepared a preliminary PSC, to serve as a benchmark against which to compare a PPP option. The PSC estimated the cost of procuring the project on a more traditional basis, namely design and build for the construction element of the project and traditional procurement for maintenance of the network.
- 1.10 As the structure of project costs under PPP differs significantly from traditional

procurement, a private sector Shadow Bid Model was also produced by Roads Service. The model represented a detailed analysis of all the potential cash flows of a PPP Company (backed by a Consortium) and produced an indicative level of annual payments potentially payable under a PPP agreement. It therefore provided Roads Service with a benchmark that enabled it to evaluate value for money and affordability.

- 1.11 A cost comparison between the Shadow Bid Model and PSC shows there was little to choose between PFI and traditional procurement in cost terms. However, Roads Service calculated an early estimated value for money saving of £27 million (after including economic benefits of £25 million)

Part One:

Roads Service secured a competitive deal and the DBFO Package 1 Project is expected to deliver significant benefits

Figure 4: A value for money saving of £27 million was identified if the PPP option was selected

PSC	£'000	Shadow PPP Bid	£'000
Total PSC	206,169*	Estimated Payments to a PPP Co	204,029
		Less Quantifiable Economic Benefits	(25,000)
Total Project Cost	206,169	Total Project Cost	179,029
Potential Value for Money Saving of £27 million (13%) using PPP Option			
*The PSC was updated until September 2004 when it showed a final total of £253 million (Appendix 3).			
Source: Adapted from Roads Service Outline Business Case, December 2003			

if the PPP option was selected (Figure 4). It was this early estimated value for money saving which led to the decision to choose the PPP option.

- 1.12 Our review of the two quantifiable economic benefits (value £25 million) found that the first of these was based on an assumption that, despite longer procurement times, the PPP option could achieve a shorter construction period than traditional procurement and this had financial benefits for road users in terms of reduced journey times. Basic analysis was provided to us by Roads Service showing an indicative benefit of £2.2 million based on an advanced opening time of three months. Roads Service, however, was unable to provide sufficient evidence supporting the basis of this calculation or the source of the figures. We understand that this was due to their technical advisers being unable to locate the supporting documentation.

- 1.13 The second benefit, with a value of £22.8 million, was based on an assumption that, for maintenance purposes, the DBFO Company would operate lane closures at times of least disruption to road users and that the traditional procurement option would lack the financial incentives to manage disruption to the same extent. An accurate measure of calculating a benefit such as this would require specific data on road usage relating to the Westlink, M1 and M2. However, such data had not been collected at the time the Outline Business Case was being prepared. In its absence, Roads Service calculated a basic, high level estimate of £22.8 million.¹⁷ The detail of the calculations and our comments are set out in Appendix 2.

- 1.14 We asked Roads Service why this benefit could not be achieved through traditional procurement. They explained that the comparison is made against a traditional procurement where the lowest

¹⁷ The analysis supporting the calculation appears to have been documented in retrospect by Roads Service. A document dated 20th October 2006 outlining the rationale of the calculation was forwarded by the Project Manager to Internal Audit following a request from them to substantiate the calculation. According to the Internal Audit Report, it "... took a considerable period of time for this to be made available."

cost for doing works is during the period 9 – 5 on a Monday – Friday. In order to minimise the cost of lane unavailability deductions, the availability payment mechanism (paragraph 3.15) encourages the contractor to work at times outside this time, when the cost of disruption is less but payments to contractors may be higher. Whilst lane occupation type regimes can be negotiated into traditional procurement, Roads Service told us that experience would tend to show that any increase in costs is passed directly back to the client by the contractor, so savings in disruption will to some extent be offset against an increased capital cost.

- 1.15 The Westminster Public Accounts Committee has expressed concerns in the past about the spurious precision of some Public Sector Comparators. In particular, its 2008 report on the National Roads Telecommunications System¹⁸ identified the use of a single figure PSC estimate, rather than a range, as contrary to good practice. A single figure estimate has been used in the value for money assessment for Package 1. Whilst recognising Roads Service's efforts to conduct a wider analysis of costs and benefits, in our view the high level calculation lacked precision or accuracy and the assumptions regarding the likely disruption to road users in a traditionally procured project against PPP option, were not adequately tested for the Package 1 model.
- 1.16 We noted that the Outline Business Case indicated that the assessment of these quantifiable economic benefits would need to be refined and adjusted during

the procurement process and in particular following receipt of tenders. However, Roads Service did not conduct any further refinement or adjustment which may have helped to demonstrate that the PPP option did indeed have lower whole life costs¹⁹ than traditional procurement. A preliminary economic appraisal of the M2 widening scheme (a key part of Package 1) presented a strong 'benefit against cost' comparison. However, this was not finalised until December 2004, a full year after the Outline Business Case was approved and eleven months after Package 1 was advertised in the Official Journal of the European Union (OJEU) in January 2004. This limited Roads Service's ability to complete a more accurate calculation of potential economic benefits when assessing various procurement routes.

- 1.17 A number of non-quantifiable benefits associated with the PPP option were also identified including; improved safety; improved journey times; introduction of new techniques and technologies; and environmental considerations. Whilst each of these benefits is potentially achievable, we believe that the same benefits could also be realised using the traditional procurement option.

Roads Service secured a competitive bid following a series of evaluation exercises and negotiations

- 1.18 Roads Service and SIB engaged with suppliers in the road infrastructure market, to stimulate interest in all known roads projects at the time. This resulted in four

18 Westminster Public Accounts Committee *The Procurement of the National Roads Telecommunications Services*, October 2008, HC 558.

19 Whole-life cost refers to the total cost of ownership over the life of an asset.

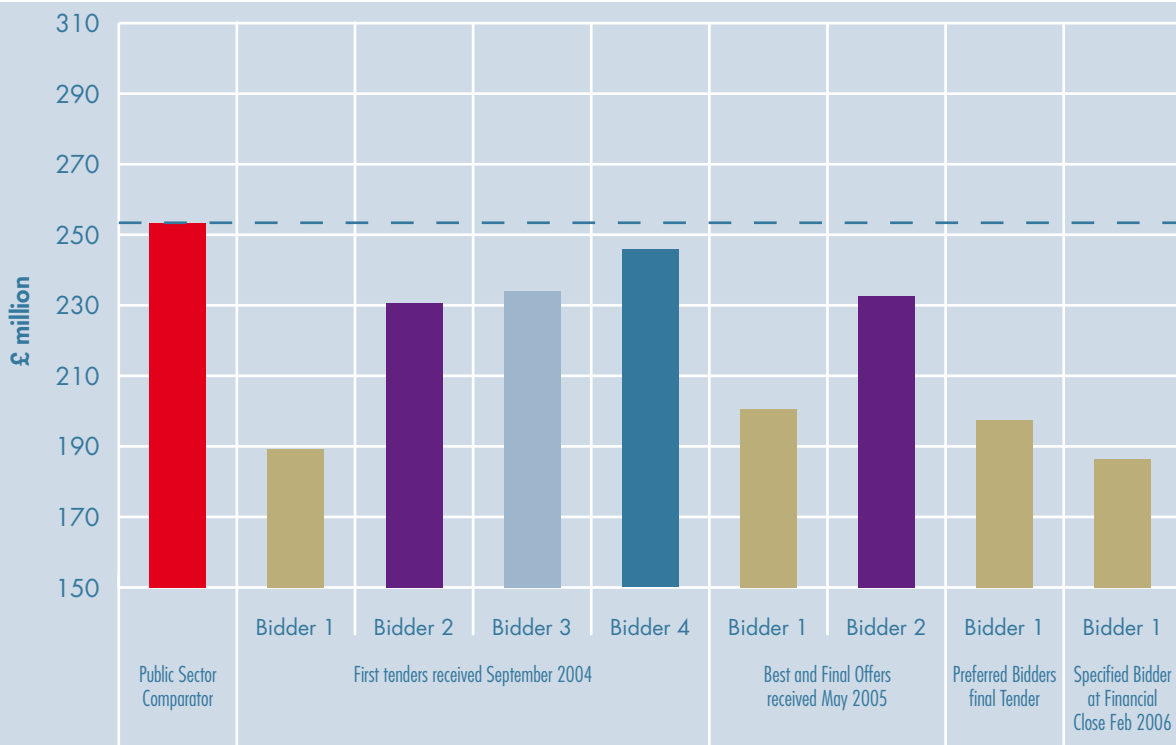
Part One: Roads Service secured a competitive deal and the DBFO Package 1 Project is expected to deliver significant benefits

consortia submitting tenders in September 2004 for Package 1, with bids ranging from £189 million to £246 million (Figure 5 and Appendix 3). These showed savings ranging from 3 per cent to 25 per cent compared with the PSC.

- 1.19 The two lowest tenders were selected on the basis that *“the DBFO contract will be awarded to the bidder which, at the conclusion of negotiations, offers to enter into the DBFO contract on the most economically advantageous terms. This may not be the tender which offers the*

lowest DBFO payments. Risk transfer will also be taken into account as a significant factor”²⁰. A Final Evaluation Report by Roads Service explained that the relative differences in the bidders’ Model Contract position were not material to the overall conclusions and recommendations made. We were told that consequently no detailed analysis of individual risks was carried out as they were not deemed to be significant. As a result there was no estimated quantifiable value attributed to the risks transferred in any of the bidders’ models.

Figure 5: Values of bids received ranged from £189 million to £246 million*



*Note: Net Present Value

Source: NIAO analysis of Roads Service data

- 1.20 As required by DFP/Treasury guidance all bids were subjected to a rigorous qualitative and quantitative appraisal process which included technical, legal, financial and insurance assessments. In addition, the presence of four robust bids, all of which were lower than the PSC, was viewed by Roads Service as evidence that neither market abuse nor market failure occurred. Its assessment process concluded that all four tenderers submitted satisfactory technical proposals in accordance with 'Instructions and Guidance to Tenderers' and that each could be considered for short-listing.
- 1.21 Based on this selection process, the two bidders with the lowest cost were invited to submit their Best and Final Offer (BAFO) from which Roads Service would select a Provisional Preferred Bidder. Roads Service adopted this approach because of its concerns over possible upward pressure on the lowest bidder's costs and also to increase the potential of delivering competitive financial, technical and contractual terms. Roads Service did not identify any issues with either bidder from either a technical, contractual or insurance viewpoint that would have affected the evaluation, or which Roads Service considered could not be resolved at Preferred Bidder stage. The level of commitment on the part of funders²¹ was considered by Roads Service to be satisfactory and both bids were found to be financially robust. As a result the Preferred Bidder chosen was the lowest bid, with a projected value for money saving (in monetary terms) of 22 per cent against the final PSC.
- 1.22 Following a period of seven months negotiation, which arose primarily from issues relating to the due diligence²² process and to securing funding, the contract was signed. During this period the value of the winning bid was reduced to a Net Present Value of £186 million, mainly from the net effect of increased project costs (£5 million), a reduction of insurance costs (£7 million) and a reduction in finance costs (£10 million), reflecting the market conditions at that time. Roads Service continued to keep the second bidder in reserve, in the event that negotiations with the preferred bidder might break down, up to the point at which the contract was signed.
- The final phase of the project was completed in May 2009, some three months ahead of schedule**
- 1.23 In May 2009 the final phase of the project (the widening of the M2 from Sandyknowles to Greencastle) was fully opened to traffic, some three months ahead of schedule. Roads Service explained to us that, following the completion of testing and the clearance of any outstanding works, a "Completion Certificate" will be issued, which will capture all the construction schemes. They will then undertake a formal evaluation assessment which will include a review of benefits and outcomes of Package 1. This will compare initial project expectations against what has been actually achieved, for example, the contract programme, the final cost and improvements in journey times. Initial assessments completed by Roads Service,

21 The funders supply private finance to fund Package 1. This is discussed in more detail in Section 4 of this report.

22 Due diligence is a process involving prudent and independent investigation to determine whether the project plan is accurate, realistic and makes sense.

Part One:

Roads Service secured a competitive deal and the DBFO Package 1 Project is expected to deliver significant benefits

in relation to the Westlink improvements; indicate that significant benefits are expected, for example, a reduction of journey times at peak hours from 22 to 15 minutes for the journey from the Saintfield Road Junction to the Grosvenor Road. This was being achieved against a 14 per cent increase in traffic flow on the M1/Westlink from approximately 68,000 vehicles a day to 78,000 vehicles a day. No meaningful information on traffic figures is yet available for the M2 Widening and Antrim Hospital slip roads as no traffic assessments have been carried out to date.

A major flooding incident at the Broadway Underpass occurred in August 2008

1.24 Following heavy rain on 16 August 2008, the Broadway Underpass²³ (the Underpass) was flooded. Roads Service appointed an independent advisor to carry out an investigation and report into the circumstances surrounding the event and to identify recommendations to prevent a reoccurrence. The Report found that, following a period of heavy and prolonged rainfall, the Clowney Water River overtopped its banks at the inlet to a newly constructed culvert, resulting in the major flooding of the Underpass. The advisor's report highlighted a number of reasons which led to the flooding (summarised in Appendix 4), and identified that the flow

of water entering into the drainage system was less than its design capacity of "1-in-100 year" flood event. However, this was based on theoretical calculations and it was recommended that a hydraulic model be commissioned. Roads Service told us that this recommendation, together with other recommendations in the report, have been implemented and that it will work in partnership with the Rivers Agency and the Consortium to identify further measures to prevent reoccurrence.

1.25 Roads Service told us that the additional flood-specific costs to date include £58,000 for the cost of the Report²⁴ and £70,000 towards a hydraulic model²⁵, the results from which will determine whether or not there is an issue with the design of the underpass and identify options to avoid a flood reoccurrence. Some costs, such as clean up and repair costs and replacement of lighting, have been borne by the Consortium. Roads Service explained that the contract requires the Consortium to indemnify the Department and Roads Service against cost of damage and liability, whether a design weakness is identified or not. If it is discovered, from the hydraulic model, that the drainage system cannot take the contractual design requirement of a "1-in-100-year" flood event, then Roads Service will require the Consortium to undertake rectification work to provide for this.

23 A Public Inquiry undertaken in 2000 followed an Environmental Statement prepared by the Department and the publication of an Inspectors Report on the M1/Westlink Project Stage 2 Westlink (A12) Improvements. Roads Service's proposal for these improvement works included 3 lanes in each direction between the M1 and Grosvenor Road and the construction of flyovers at Broadway and Grosvenor Road. Following the Inquiry, Roads Service published a statement accepting the recommendation of the Inspector that an underpass was a better option from an environmental viewpoint, even though it had a greater impact on construction, maintenance and existing services. The other two main aspects of the proposed project, relating to Motorway communications and bridge strengthening across the M1, proceeded and were funded traditionally.

24 This independent report identified recommendations to be taken forward to provide public assurance and safety and for this reason the cost of £58,000 was funded by the Department.

25 The cost of the hydraulic model, which will examine the complexities of the drainage system, is to be shared equally by Roads Service, Rivers Agency and the Consortium.

- 1.26 It is clear that other significant costs, including the economic costs arising from road unavailability, were incurred as a result of this incident. However, the contract does not indemnify other public sector organisations against any costs incurred as a result of the incident. Nonetheless, it is important that costs incurred by other public sector organisations, for example, costs to emergency services, and public liability costs in dealing with, or as a result of, the flooding incident are identified by those organisations. The potential to recoup those costs should be investigated.
-

Part Two:
The procurement of the DBFO Package 1 Project was
well managed by Roads Service



M2 widening

Part Two:

The procurement of the DBFO Package 1 Project was well managed by Roads Service

2.1 In 2003 the Committee of Public Accounts at Westminster concluded that the taxpayer was not always getting the best deal from PFI contracts because good procurement practice was not being followed²⁶. In a follow up to these comments, the NAO 2007 Report "Improving the PFI tendering process", revealed that the average tendering time for English projects between 2004 and 2006 was 34 months, compared with 33 months for projects that closed prior to 2004. The average cost of advice was £3 million, reflecting the length of the process. NAO also found examples of well-managed and properly resourced projects that took 18 months to tender, including preferred bidder negotiations lasting less than six months. They suggested that a target of between 18 and 24

months would not be unreasonable for many projects, although they believed that it may be unrealistic for particularly complex, one-off PFI deals.

2.2 The table at Figure 6 examines Roads Service's performance against a number of key indicators identified by the NAO. The results indicate that the procurement process compares favourably with other PFI projects in England. Whilst Roads Service had the benefit of access to lessons learned from earlier roads infrastructure projects in England and Scotland and the support of experienced advisers from the Highways Agency and SIB, performance is noteworthy given that this was the first PPP deal Roads Service had managed.

Figure 6: The procurement process of the project has performed well, when compared with similar PFI projects in England

Indicator	Average of PPP projects in England	DBFO Package 1 Project
Capital value of project	£115 million	£118.2 million
Number of bidders	2.46	4
Tendering time	34 months	25 months
Preferred bidder negotiations	15 months	8 months
Cost of professional advice*	£3 million	£3.1 million
Cost of professional advice as a percentage of capital value	2.6 per cent	2.6 per cent
Additional costs of professional advice in excess of budget	£0.9 million	£1.3 million
Additional costs of professional advice in excess of budget as a percentage	43 per cent	72 per cent

* Cost of Professional advice does not include assistance provided by SIB. This is because up until April 2006 detailed records were not kept of how long each advisor spent working on each project.

Source: NIAO analysis of National Audit Office and Roads Service Agency data

Despite some slippage, the overall procurement timeframe (Figure 6) compares very favourably to the average PPP project in England

2.3 The Outline Business Case included a timetable for the tendering phase through to commencement of the contract (Figure 7). However, as the project progressed a number of unforeseen slippages arose. The Project Steering Group became aware that the original timetable was optimistic, particularly in relation to the issue of the 'Invitation to Negotiate' documents and the requirement to ensure full compliance with Standardisation of PFI Contracts, Northern Ireland (SoPCNI)²⁷. As a result the BAFO process was delayed by a total of five months. The project incurred a further two months of slippage as negotiations over outstanding technical and commercial issues with the preferred bidder were

resolved and competitive funding from private lenders was finalised. However, in the final stage of negotiations, before commencement of the contract, two months were clawed back leaving the final total project slippage of five months.

The project was well managed with sufficient governance structures in place and a clear allocation of roles and responsibilities at all levels

2.4 The NAO framework for evaluating the implementation of PFI projects includes an outline of five indicators of good quality project management. Whilst the NAO guidance post-dates much of the Package 1 procurement, we examined the project management structures in place against the 2006 guidance. Our findings against each of the five best practice indicators

Figure 7: Outline of PPP Project Management timetable

Milestone	Outline Business Case Forecast date	Actual date
OJEU publication	January 2004	January 2004
BAFO process commencement	December 2004	December 2004
Provisional preferred bidder	April 2005	June 2005
Financial close	July 2005	February 2006
Contract commencement	September 2005	February 2006

Source: NIAO analysis of Roads Service data

²⁷ Guidance was implemented in England and Wales to apply to Standardisation of PFI Contracts. It followed extensive consultation with stakeholders in England and Wales. SoPCNI was based exclusively upon SoPC and only deviated from it where there was a need to reflect Northern Irish legal or policy matters.

Part Two:

The procurement of the DBFO Package 1 Project was well managed by Roads Service

Figure 8: There was evidence of good quality project management

Assessment Criteria	Outcome
Was a good project team set up and maintained?	A Central PPP team was established and maintained to manage all aspects of each DBFO project.
Was a clear and realistic timetable for procurement and tendering put in place and maintained?	A SMART ²⁸ timetable was established in the Outline Business Case. Total overall slippage of five months arose as a result of negotiations over outstanding technical and commercial issues and securing funding.
Have procurement costs been controlled?	Procurement costs were controlled; however detailed costs were unavailable for review.
Have likely contract issues been identified before the start of tendering?	Issues were identified and managed using experience of SIB, the Highways Agency and expert professional advisers.
Has a clear process for evaluating bids and setting assessment criteria been put in place?	A clear process for evaluating bids and setting assessment criteria was established.

Source: Based on National Audit Office / NIAO Analysis A Framework for evaluating the implementation of Private Finance Initiative projects: Volumes 1 and 2', National Audit Office 15 May 2006

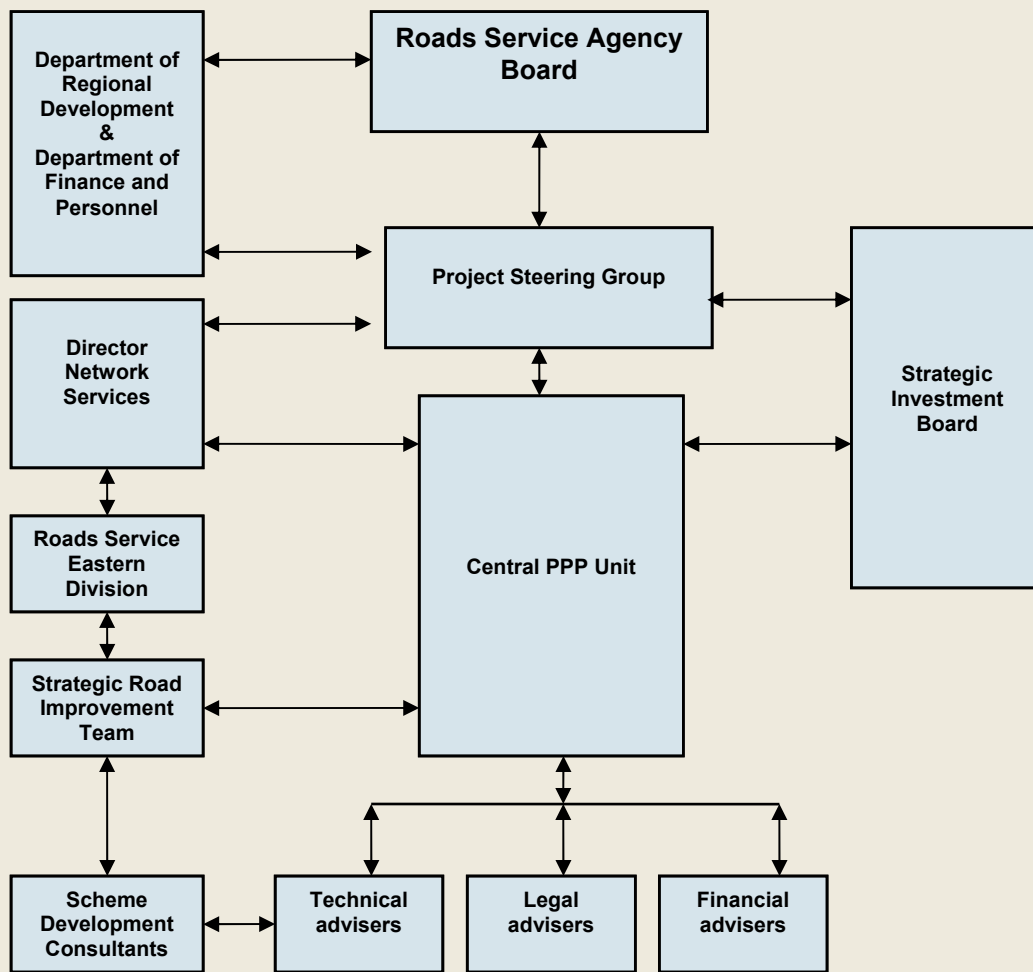
is summarised in Figure 8. Overall we found that the project was well managed with sufficient governance structures in place and a clear allocation of roles and responsibilities at all levels.

2.5 Figure 9 provides an overview of the governance arrangements operating within Roads Service through the procurement process. At an early stage the Roads Service Board was identified as the Investment Decision Maker, with its Chief Executive as the Accounting Officer. A Project Steering Group provided guidance to the Board and co-ordinated the inputs of other key decision makers. It was made up of members of the Road Service

senior management team together with representatives from the Department, DFP and SIB. It met approximately once a quarter and project progress was reported to the Roads Service Board on a monthly basis by the Director of Network Services.

2.6 A senior member of Roads Service staff was appointed as Project Manager for the PPP tender process; his responsibilities included the appointment and management of legal, financial and technical advisers, preparation of business cases, tender documentation and negotiations. SIB was involved in the appointment of the professional advisers, as well as being a member of the Project Steering

Figure 9: Roads Service put formal governance arrangements in place during the procurement process



Source: Roads Service

Group. From April 2006, following the signing of the PPP agreement, Strategic Road Improvement Teams (based in the local Roads Service Divisions) managed consultants who took the individual schemes making up the two²⁹

DBFO packages through their statutory procedures. These consultants prepared the Roads Service requirements for inclusion in the overall DBFO contract and supervised construction on site.

29 The two DBFO packages include Package 1 (the subject of this report) together with Package 2, which relates to the A1/A4 upgrades.

Part Two:

The procurement of the DBFO Package 1 Project was well managed by Roads Service

A Central PPP Unit was established and private sector technical, financial and legal advisers were commissioned and integrated into the Unit

2.7 In March 2003, following recommendations from an internal report³⁰ and a separate independent consultancy report³¹, proposals were agreed by the Board to create a Central PPP Unit within Roads Service, with Senior Professional and Technical Officers led by the Project Manager. Its primary role was to lead PPP policy and manage delivery of the PPP projects. This specifically included the project management of the two PPP packages up to contract completion and into the operational phases.

2.8 This governance structure has provided Roads Service with clear accountability for the Project, with appropriate communication for all key stakeholders provided through the Project Steering Group. This assisted Roads Service through the budgetary process and project accounting, Business Case approval process and facilitated useful information sharing for Package 2.

2.9 Following advice from Partnerships UK³², prior to the appointment of technical financial and legal advisors, Roads Service appointed each individual advisor under separate commissions. The rationale for this approach was to ensure that "best in class" would be appointed. Partnerships UK advised Roads Service to have part of the commission set as a fixed fee, and work to be completed was divided into approximately 30 individual activities,

with some suitable for a fixed fee and others where a daily rate would be more appropriate. A small number of issues became apparent early in the commission:

- it was going to be difficult to manage each consultant with a combination of fixed and daily activities running in parallel because of the difficulty of allocating time between the two categories; and
- 30 activities was too high a number of individual items and created scope for misinterpretation.

2.10 Roads Service therefore moved to a fully time-based arrangement and reduced the number of activities to less than ten, with activities, where possible, running consecutively rather than in parallel. Revised target costs for each activity were agreed within the previous overall budget. This revised structure facilitated improved management for each individual commission. Roads Service told us that, in its view, the decision to go for individual commissions to provide 'best in class', has proved to be a critical element in successful delivery of the project and that the use of separate contracts with each consultant placed more responsibility on the Project Manager to manage the interfaces and reduce the scope for overlap between advisers. It believes that maintaining continuity of advisers between the two DBFO packages was also important for both internal consistency, applying lessons learned, and for developing relationships with bidders.

30 *Business Case for the Appointment of Advisers for the Roads Service DBFO Programme* – March 2003, The Roads Service Agency.

31 *Proposed DBFO Road Packages for NI Roads Service DBFO Programme* – March 2003.

32 Partnerships UK is a public private partnership supporting the delivery of PPP/PFI Projects in England. It provided advice to Roads Service prior to 2002 and the establishment of SIB.

Procurement costs were controlled, however the full costs associated with the Project were unavailable for review

- 2.11 It is important that PPP Units identify and analyse internal and external costs of procuring recent and ongoing PPP/PFI projects to identify areas that might improve the efficiency of the procurement of future deals. Our report on the funding and management of three PFI projects in the health sector³³ highlighted the importance of managing internal costs and recommended that a time recording system for internal costs for any major projects should be introduced. The importance of monitoring internal costs was also recently endorsed by the Public Accounts Committee Report on the Altnagelvin PFI Project³⁴.
- 2.12 The Final Business Case stated that internal costs relating to the project amounted to £0.5 million up to January 2006, the date on which it was approved by DFP. However, no robust internal administrative costs relating to Package 1 were available. Roads Service acknowledged that it did not have a time recording system and that there was no separate cost code established for the 2003-04 financial year. Whilst costs were recorded in subsequent years, they were allocated to a shared cost centre which included Package 2. The total internal cost for both Packages, up to and including the 2008-09 financial year (with the exception of 2003-04), was £1.3 million.
- 2.13 In addition to internal administrative costs, Roads Service incurred significant

consultancy fees associated with the use of professional advisers. The work required to develop a suitable payment mechanism for the project and deal with additional issues which arose through the development of the contract and the extended period of legal and financial negotiations, resulted in expenditure on advisers exceeding the initial budget by approximately £1.3 million as outlined in Figure 6 (not including any additional costs incurred by SIB). However Roads Service told us that, because of the decision not to “reinvent the wheel” for Package 2, expenditure on this package was significantly less than the budget. It explained that, as a result the total cost of professional advice as a percentage of capital value for both PPP projects, was 1.5 per cent which is in line with the Highways Agency’s original guidance. It is also significantly less than the 2.6 per cent average in PFI projects in England (see Figure 6). However, this can be partly attributed to the fact that SIB costs have not been included in the data provided to us by Roads Service (see 2.14).

- 2.14 In addition to external private advisers, Roads Service received assistance from SIB. Its contribution to the Project was not insignificant, since this was the first PPP project managed by Roads Service, SIB was represented on the Project Steering Group and provided ad hoc support and advice on specific issues. The total cost incurred by SIB, which included internal staff costs and other enabling costs, is not known. SIB informed us that its records from 2003 to March 2006 were not up to

33 *The Private Finance Initiative: A Review of the Funding and Management of three Projects in the Health Sector*, NIAO, February 2004, HC 205

34 *Delivering Pathology Services: The PFI Laboratory and Pharmacy Centre at Altnagelvin*, Public Accounts Committee November 2008, 16/08/09R.

Part Two:

The procurement of the DBFO Package 1 Project was well managed by Roads Service

the standard that they would expect today and that during this period detailed records were not kept in relation to how long each advisor spent working on each project.

A clear process for setting assessment criteria and evaluating bids was established

- 2.15 Following the approval of the Outline Business Case by DFP in December 2003, the project was advertised in the European Journal under the Public Works Contract. An evaluation of the pre-qualification responses received resulted in four consortia being invited to tender. Each of these consortia contained international firms familiar with the Highways Agency DBFO procurement process and documentation. Three of the four consortia included contractors based in Northern Ireland.
- 2.16 The evaluation process contained a number of good practice steps demonstrating a clear process for setting assessment criteria and evaluating bids. We noted that the project was not subjected to a Gateway Review process due to the fact that it had entered an advanced stage of procurement by the time DFP had released the applicable guidance. The Gateway Review Process in the Department and Roads Service was the subject of a recent report³⁵ by the C&AG. The Office of Government Commerce (OGC) recommends, as good practice, that a project in this position should action a 'Healthcheck' review.³⁶ However, this was not reflected in the equivalent
- DFP guidance and whilst no official 'Healthcheck' review was commissioned by Roads Service, it did ask the Department's Internal Audit to review the Package 1 and Package 2 projects together. This review was conducted using the NAO analytical framework, 'Examining the value for money of deals under the Private Finance Initiative'. The Internal Audit report noted that *"The only significant deviation from the NAO analytical framework identified... related to the failure to subject the programme / project to a Gateway Review during the procurement lifecycle as recommended by OGC. However it is acknowledged that the Department had DFP's approval not to apply the Gateway Review process as normally required by DAO (DFP) 17/04."* A summary of Internal Audit findings is at Appendix 5.
- 2.17 By following elements of good project management and PPP/PFI guidance, incorporating the lessons learned by the Highways Agency and through professional engagement with SIB and other professional advisers, the project management of the procurement stage of Package 1 was brought to a successful conclusion by Roads Service. Whilst the original timetable was extended by a five month period and costs of professional advisers were significantly more than originally forecast, these downsides can be attributed to the fact that this was Roads Service's first PPP. It is also important to set this project within the context of the wider PPP programme which includes Package 2. Roads Service explained that

35 'A Review of the Gateway and the Management of Personal Injury Claims' 8 July 2009 NIA 175/08-09.

36 A 'Healthcheck' review is an independent, optional review which can be conducted at any stage of a project. The review uses Gateway workbooks, the NAO/OGC list of common causes of project failure, PRINCE2 methodology, and other good practice to identify any current project issues. Recommendations are then made (which may indicate degree of urgency) to the project team leader.

Package 2, which is a larger project with a longer procurement timetable, incurred professional adviser costs which were approximately £1.2 million less than that of Package 1. This was achieved as a direct result of knowledge transfer and application of lessons learned from the procurement of Package 1 by the PPP Unit.



Part Three:
Roads Service has secured a value for money deal
through a competitive process



M2 Antrim Area Hospital slip roads

Part Three: Roads Service has secured a value for money deal through a competitive process

- 3.1 As set out in Part One, Roads Service considered two options for the delivery of Package 1:
- a traditional procurement option approach, using public funding to pay for the construction and operation of the project; and
 - the PPP option, using private finance to pay for design, construction and operation, with an annual payment made to a PPP Operator (or Consortium).

Of these it identified the PPP option as offering optimum value for money. Roads Service wanted to ensure that the impact of financing costs was minimized and that an equitable payment mechanism was established that would maximise value for money over the life of Package 1.

The use of a variant bid helped Roads Service identify the financing structure that could deliver best value for money

- 3.2 To test whether better value for money could be obtained for the taxpayer, Roads Service invited tenderers to prepare a "Mandatory Variant Bid"³⁷, in addition to the fully privately financed bid. This bid was to be based on an assumption that 40 per cent of the estimated construction cost (up to an overall cap of £40 million) would be paid during construction from public funds, thus reducing the private financing requirement. Roads Service told us that the £40 million cap was based on estimated construction costs of £100 million; an assumption that bidders would put in £10 million of equity funding and that there would be at least a £50 million funding through bond / bank debt, as this was the level it expected to be necessary to obtain competitive rates. This was based on advice from their financial advisers. It was originally anticipated by Roads Service that providing 40 per cent public funding would have a positive and substantial impact on value for money.
- 3.3 In addition to the Mandatory Variant Bid, tenderers were encouraged to submit other variant bids in which they could offer proposals for DBFO Payments on the basis of different allocations of risk, or alternative commercial terms to those contained in the Standard Bid. Only one of the four bidders submitted a financial variant bid offering a bank funding solution as opposed to bond funding. However, the impact on the NPV was approximately £13 million higher than the index linked bond³⁸ solution.
- 3.4 Roads Service's review of the bids concluded that the additional value for money offered by the Mandatory Variant Bid was marginal (approximately 1 per cent); in the event the anticipated substantial value for money savings did not materialise. Roads Service and its advisers were concerned there was a risk that using the finance structure included in the Mandatory Variant Bid would make the investment less attractive to the EIB and the proposed bond issue, thus adversely affecting the final cost of finance. On this basis the Project Steering Group agreed

37 A bid which differs from the standard bid to deliver the output specification and proposes better value for money.

38 Index linked bonds are an inflation-protected government bond. The key feature is that the interest rate is not fixed. Instead, the margin over inflation is fixed.

that only fully financed bids at the BAFO stage would be accepted.

- 3.5 The two bidders with the lowest bids were shortlisted and invited to participate in detailed negotiations prior to submitting BAFOs in April 2005. The subsequent evaluation of BAFOs resulted in a Provisional Preferred Bidder being appointed in June 2005 with Financial Close on the 15 February 2006.

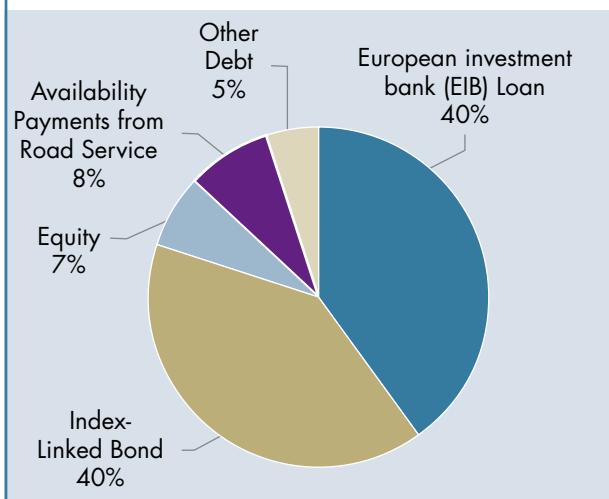
The combination of finance sources raised for Package 1 was a first for Northern Ireland

- 3.6 Finding the ideal structure to satisfy both the public and private sector investors is critical to the financial success of a project and must be done in such a way as to minimise the cost of finance and delivers best value for money. Risk plays an important role, as the greater the risk transferred to the private sector Consortium, the greater will be the expected return on investment by investors. However, there is a balance to be struck between what investors are prepared to accept as a minimum return on their investment in the equity of the Operator, and the level of risk attached to the project.
- 3.7 As part of the evaluation of the financing arrangements, Roads Service's financial advisers carried out a comparison of each bidder's proposals against PPP financing markets at the time. It explained that this analysis was performed to ensure that the terms proposed by the bidders were competitive enough to provide value for money but not so aggressive that there may

be a problem raising the finance during the preferred bidder stage. It further explained that this was supported by the structure of the competitive procurement process, which helped to ensure that both bidders had an incentive to secure the most competitive terms possible.

- 3.8 The sources of funds agreed with the preferred bidder for Package 1 at Financial Close are set out in Figure 10. Index linked bonds were used to raise 40 per cent of the required financing instead of fixed bonds or a long-term bank loan (a first for Northern Ireland). A further 40 per cent of the finance required for the project was sourced from EIB, another first for Northern Ireland.

Figure 10: Outline of sources of finance and funds for Package 1



Note: "Availability Payments from Roads Service" are the initial availability payments that Roads Service make to the Operator during the construction phase and are to compensate for the operating/lifecycle costs on the sections of roads that have opened.

Source: Adapted from the preferred bidder's final financial model

Figure 11: Comparison of DBFO Package 1 index linked bond rates with other UK PPP projects

Project	Date of Financial close	Capital Value £'million	Total Coupon %
Barking, Havering and Redbridge Hospitals	January 2004	315	2.884
Manchester Hospital	December 2004	350	2.411
Newcastle-upon-Tyne Hospital	May 2005	300	2.187
Portsmouth CGF Hospital	December 2005	286	1.793
DBFO Package 1	February 2006	118	1.609
St Bartholomews Hospital	April 2006	1020	1.703
St Helens & Knowsley Hospital	June 2006	288	1.777
South Lanarkshire Schools	June 2006	352	2.085
Dundee Schools	February 2007	137	1.948

Source: Adapted from Roads Service data

3.9 Figure 11 sets out the bond pricing details of 8 other UK PPP index linked bond financed projects that closed between January 2004 and February 2007. It compares the final pricing details of the bonds against those achieved for Package 1. Ignoring the differing risks associated with different kinds of PPP projects, Package 1 achieved a competitive coupon percentage (i.e. the rate of interest paid to the bond investor), which made the project more affordable.

3.10 The rate of return agreed at Financial Close for Equity finance was 12 per cent and the cost of raising the Debt finance to fund the project was 4.24 per cent. With a debt to equity ratio of almost 9:1, the financing structure was constructed by the winning Consortium to allow its equity

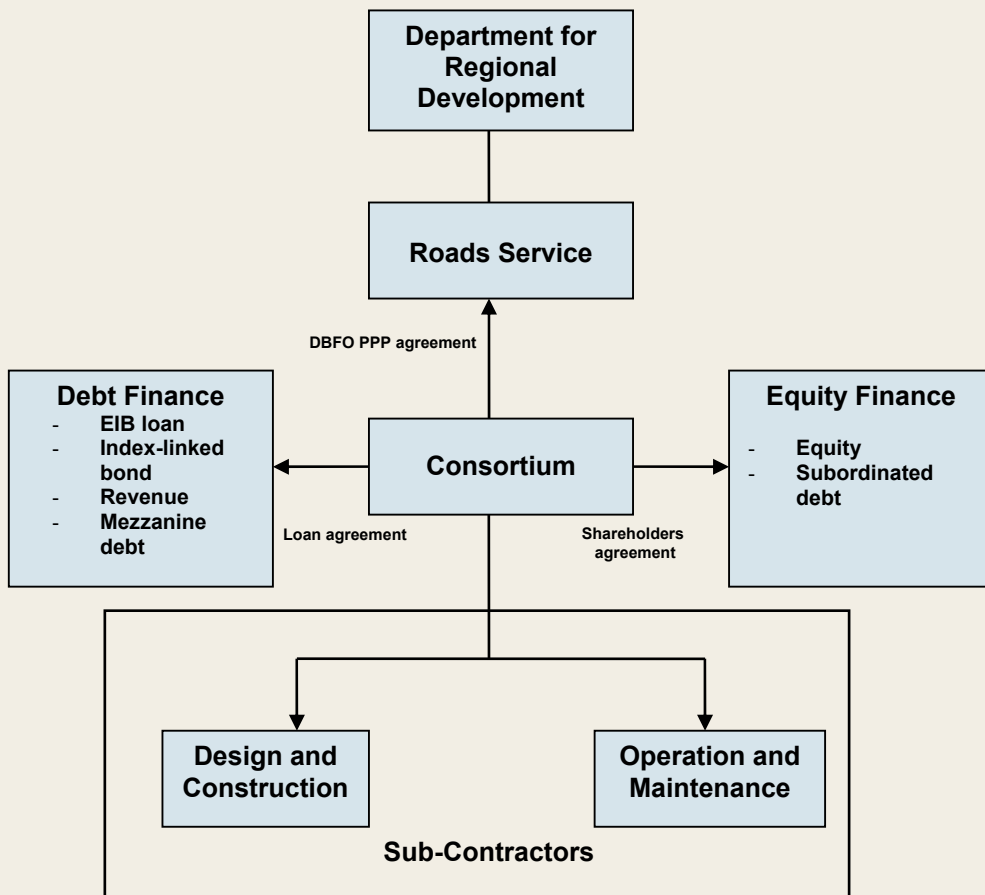
investors a rate of return on their investment which was acceptable to the Financial Services Authority and the Department. This was arrived at following a period of difficult negotiation, during which the winning Consortium and Roads Service resolved a number of items, including changes in scope, additional insurance premium commitments, and contingencies and financial restructuring. The net effect of these negotiations decreased the Best and Final Offer value by £1 million. It is difficult to draw comparisons with other projects due to the limited availability of comparable data on other PPP/PFI projects. This is because public bodies, DFP or Treasury do not collect data on how much PFI/PPP investors are earning despite the fact that this is relevant to monitoring the cost-effectiveness of the projects. The

absence of comparable PFI/PPP data has been raised by the NAO and the Westminster Public Accounts Committee in the past.³⁹

3.11 Figure 12 outlines the relationship between the key stakeholders and Appendix 6 sets out the different characteristics of bank and bond financing. In a PPP project it is the public sector that carries the risk of interest rate movements up to the point of financial close, after which the Consortium carries

the risk. Movements ahead of financial close, either positive or negative, can have a significant impact on the annual payments and therefore the overall costs of a project. In Package 1, around the time of finalising the Best and Final Offer for Financial Close, there was a significant drop in interest rates which saw finance costs decrease by £10 million. Whilst the decrease was influenced by prevailing interest rates at the time, project certainty and a carefully designed financing

Figure 12: Relationship between key stakeholders



Source: NIAO

39 Update on PFI debt refinancing and the PFI equity market Twenty-fifth Report of Session 2006-07 – House of Commons Committee of Public Accounts

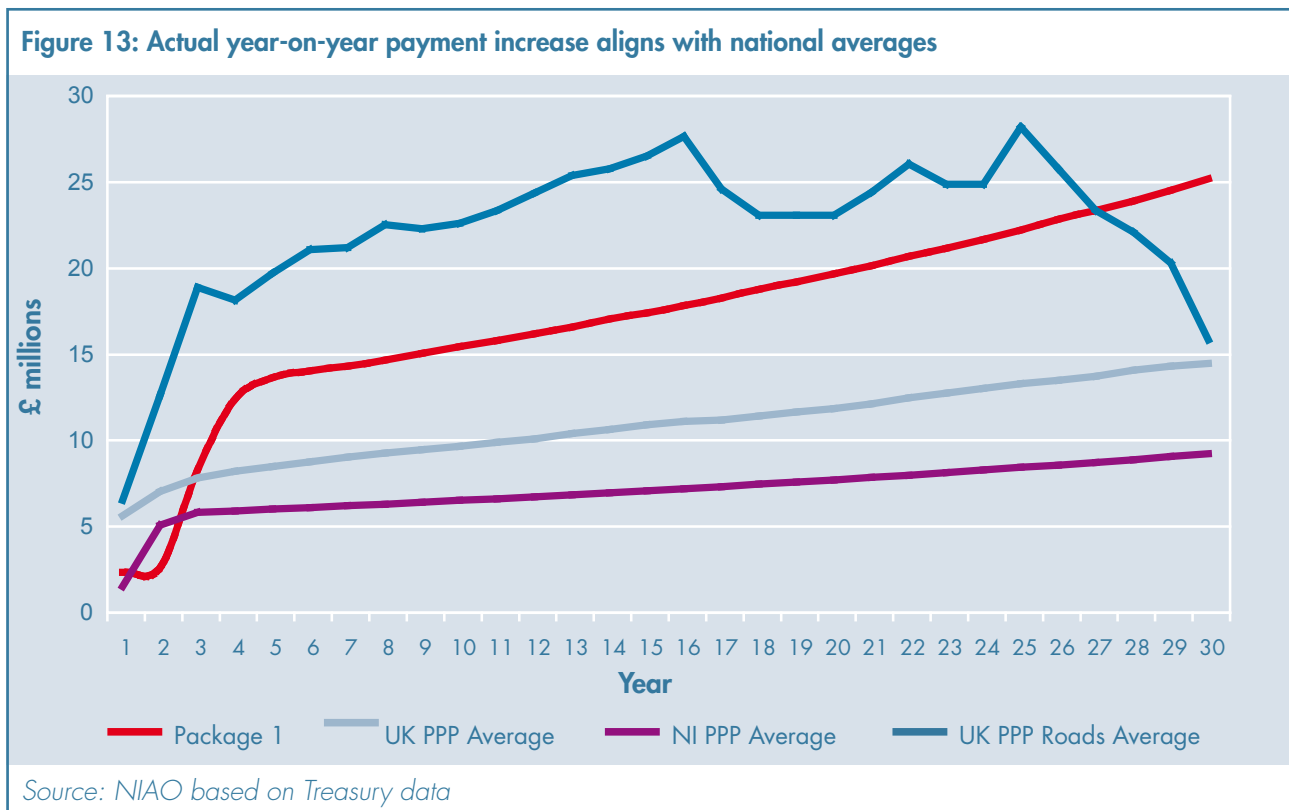
mechanism ensured that the public sector received the benefit of the reduction in interest rates.

3.12 The payment mechanism, also known as the service fee mechanism, is how the public sector pays a PPP consortium for the construction and operation of the project. This consists of a schedule with levels of monthly payments (also known as unitary payments) which, as well as factoring in inflation, covers the contractor’s operating expenditure, financing costs (including the lenders’ required set-up fees and management charges) and a profit element. The length of time over which these payments are made vary, but usually last between ten years and thirty years. Package 1’s payment mechanism is

designed to last for thirty years and cover the capital costs involved in constructing the upgrades, together with the subsequent operating and maintenance costs up to the year 2036. The total cost of the Project is estimated to be £508 million over the 30 years of the agreement (assuming an inflation rate of 2.5 per cent per annum), which equates to a net present value of £186 million.

The contract commits the Northern Ireland public sector to paying £508 million over the thirty years of the contract

3.13 Figure 13 outlines the projected levels of unitary payments to be made by the Roads Agency for Package 1 and compares



these to the average UK roads PPP unitary payments and those for the average UK and Northern Ireland PPP projects lasting thirty years. In relation to Package 1, the small payments in years one to three were made during construction and reflect that the roads at each of the three locations had some limited availability i.e. were partially open. Whilst the graph highlights that the cost of the project is significantly higher than national averages, this is purely a result of the size of the project, the actual year-on-year payment increase aligns with national averages and the annual unitary payment for Package 1 are less than the UK Roads average. In terms of Northern Ireland's public finances, the impact of Package 1 is that annual PPP payments in Northern Ireland will average almost £17 million for each of the next 30 years (totalling £508 million, assuming an inflation rate of 2.5 per cent per annum). Our report on the Reinvestment and Reform Initiative highlighted the importance of providing the Assembly with information on commitments arising from both PFI and borrowings.

- 3.14 Refinancing of debt or equity by the Consortium allows it to potentially make significant financial profits. Our review indicates that should any funding element of Package 1 be refinanced, it must have approval from the Department who would be entitled to 50 per cent of any refinancing gains. This is in line with the established SoPCNI.

The payment mechanism transferred risk to the private sector by making all payments to the Operator availability based

3.15 From the outset Roads Service wanted the payment mechanism to incentivise the winning bidder to deliver a high standard of performance. It adopted lessons learned from the early Roads DBFO projects in Great Britain by evaluating an alternative to a shadow toll-based payment. Roads Service proposed that the payment mechanism should comprise two elements:

- payment (85 per cent) directly linked to the performance of the PPP Operator in maintaining the availability of the roads included in Package 1, (known as availability based payments⁴⁰); and
- the remaining part of the payment (15 per cent) a shadow toll⁴¹ planned to be linked to the usage of the project roads by Heavy Goods Vehicles (HGVs).

3.16 This mechanism was intended to ensure that maintenance works and other obstructions did not impede the flow of traffic for any longer than necessary and, as far as possible, did not do so at times of peak traffic flows. In addition, it would also take into account the importance of HGV traffic in servicing the economy and the additional maintenance costs that arise from their use on the network. The option of a mixed usage and availability payment mechanism also significantly reduced the risk of higher payments to the PPP Operator, should actual traffic levels be higher than estimated.

40 Availability Based Payments are based on availability of the road to users. Where lanes are made unavailable due to works or defects, Lane Unavailability Deductions (LUD's) are applied.

41 Shadow Tolls are usage based payments paid by the Public Authority rather than users.

- 3.17 However, when it became apparent that Package 1 was likely to be “on-balance sheet”, the Roads Service Board approved the removal of the shadow toll element from the mechanism. This enabled Roads Service to put a maximum ceiling on the unitary payments to the PPP Operator. It also reduced the additional costs associated with the shadow toll element, such as monitoring equipment to determine road usage and higher financing costs. Whilst this meant that, potentially, value for money was eroded, should HGV traffic levels be lower than forecast, it allowed Roads Service and the Department to more easily assess the overall affordability of Package 1 from the outset, (excluding the impact of future inflation). While Roads Service was unable to provide us with details of savings as a result of this change, it told us that it believed that the reduction in external risk variations in traffic levels to the contractor will have lowered the unitary payments payable by the Department. In addition, it believes that the monitoring regime has also been simplified, which will also reduce costs. Our review indicated that the mechanism reduces the amounts paid to the Operator when sections of the network are unavailable. This varies depending on the type of day and time of day, for example unavailability reductions at weekday peak times will be greater than weekend peak times.
- 3.18 A number of key performance indicators were agreed through which Roads Service could routinely monitor the quality of the work of the Operator. This helped to ensure that the quality of design, materials and construction was not compromised at the expense of completing construction as early as possible.
- 3.19 Roads Service and its advisers have designed a payment mechanism that has ensured that the certainty of costs and the affordability of Package 1 as a whole can be forecast with reasonable accuracy.
-

Appendices:



Broadway roundabout

Appendix One: (paragraph 1.8)

Summary of key dates for Road Service DBFO Package 1 up to Contract Signature	
Date	Development
March 1996	Minister for Environment announces the "Westlink Flyovers and Stockman's Lane Junction" scheme as part of the Roads Service Major Works Programme 1996/1997 – 2000/01.
December 1996	Professional advisers appointed to develop the M1/Westlink scheme as a PFI project.
October 1997	An Outline Business Case was prepared and submitted to the Department of Finance and Personnel.
May 1998	The announcement of the Chancellor's Initiative in May 1998 substantially changed the background for major capital investments. As a result it was decided not to progress the project as a PFI.
September 2000	Westlink/M1 – Economic assessment report commissioned by Department for Regional Development Roads Service.
September 2001	'Regional Development Strategy 'Shaping Our Future 2025' is published.
May 2002	'Review of the Opportunities for PPP in Northern Ireland'.
June 2002	Consultants engaged to prepare a review of Strategic Highway Improvements that could be delivered through DBFO.
July 2002	The Regional Transportation Strategy 2002 – 2012 identifies strategic transportation investment priorities and considers potential funding sources and affordability of planned initiatives over the 10 year period 2002 - 2012.
Feb 2003	OFMDFM published "Working Together in Financing Our Future: Policy Framework for Public Private Partnerships in Northern Ireland".
March 2003	Report produced by consultants, 'Proposed DBFO Road Packages for NI Roads Service'. The Roads Service Agency set out a 'Business Case for the Appointment of Advisers for the Roads Service DBFO'.
Aug 2003	Appointment of financial, legal and technical advisers.
Dec 2003	Outline Business Case approved by DFP and SIB allowing Road Service to officially pursue a Design, Build, Finance and Operate option.
Jan 2004	Formal Official Journal European Union contract notice was published.
Feb 2004	Expressions of interest received from four consortia.
April 2004	Four consortia invited to submit tenders.
June 2004	Road Service proposes the implementation of an Advanced Traffic Control Scheme as part of the M1/Westlink improvements in DBFO Package 1 (estimated additional cost - £4.5 million).
Sept 2004	Four consortia submitted the standard and mandatory variant (construction payments) bids.
Dec 2004	Two consortia short-listed to Best and Final Offer stage.

Date	Development
Jan – May 2005	Series of meetings with consortia to discuss detailed contractual, technical and financial issues. A planned programme of works to extend motorway control and driver information over the motorway network is incorporated into the project at an estimated additional cost of £2.5 million.
May 2005	Best and Final Offers received from two short listed consortia.
June 2005	Provisional Preferred Bidder appointed.
July – Dec 2005	Negotiations over outstanding technical and commercial issues. Delays in the programme for securing funding (completion of due diligence and that finances have been underwritten to a sufficient degree).
Jan 2006	Full Business Case approved by DFP and SIB.
Feb 2006	Contract signed with the Consortium for an estimated £186 million (Net Present Value).
<i>Source: NIAO based on Road Service data</i>	

Appendix Two: (paragraph 1.13)

Examination of the Roads Service's calculation of economic benefits	
How the £22.8 million in economic benefits were calculated by Roads Service	NIAO Comments
<p>In April 1999 the NAO reported on the Contract to Complete and Operate the A74 (M)/M74 Motorway in Scotland. As part of that report, they examined certain assumptions and calculations contained in the PSC.</p> <p>The PSC for that project had included a figure of £29 million as an estimate of Lane Occupancy Charges which were set at 50 per cent of the cost of the disruption to traffic caused by lane closures. This was calculated using the QUADRO (Queues And Delays at Roadworks) Model. NAO considered that the PSC figure could be overstated by £9 million and should be more like £20 million.</p> <p>For Package 1, Roads Service calculated that the range of lane closure costs was between £40 million and £58 million (based on applying 100 per cent of the cost of the disruption to traffic caused by lane closures) or a mean of £49m.</p> <p>The NAO report on the A74 (M)/M74 also noted that PFI bidders came in with Lane Occupancy Charges ranging between £3m and £8m. Roads Service calculated that this represented a range of £6m to £16m in economic costs (again by applying 100 percent of the cost of traffic disruption) or a mean of £11m.</p> <p>Roads Service calculated that taking the difference in the mean of the figures gave an economic benefit of the DBFO option compared with the public sector option of (£49m - £11m) = £38m</p> <p>The M74 was 100km of rural two-lane motorway. Package 1 is 60km of mainly urban motorway with up to 5 lanes. A direct pro-rata was used (which was considered conservative given the very much higher cost of delays on Package 1 due to higher congestion levels) which gave an estimated benefit of $(0.6 * £38m) = £22.8m$.</p>	<ul style="list-style-type: none"> • In calculating the impact for Package 1, Roads Service did not treat this as an additional cost to the PSC, but treated it as a benefit adjustment, lowering the cost of the PPP option. • The QUADRO Model provides a recognised method for assessing the total cost of major road maintenance works and is used widely across the United Kingdom. Roads Service were unable to perform a QUADRO analysis on Package 1 due to the absence of road usage data specific to the Westlink, M1 and M2. • The A74 (M)/M74 is in fact 92 km long, not 100 km. The impact of this in monetary terms equates to the £22.8m benefit being understated by £2m.
<p><i>Source: Roads Service/NIAO</i></p>	

Appendix Three: (paragraph 1.18)

Summary of Value for Money (in NPV monetary terms) assessment					
Tender Submissions	Bidder	Bidder Adjusted NPV* per VFM Evaluation Model £'000	NPV per PSC⁴² Model/Reference Model £'000	(Cost) / Saving £'000	(Cost) / Saving %
First tenders received September 2004	Tender 1	189,329	253,261	63,932	25.2
	Tender 2	230,678	253,261	22,583	8.9
	Tender 3	234,115	253,261	19,146	7.6
	Tender 4	245,818	253,261	7,443	2.9
Best and Final Offers received May 2005	Tender 1	200,497	253,261	52,764	20.8
	Tender 2	232,660	253,261	20,601	8.1
Preferred Bidders final Tender	Tender 1	197,515	253,261	55,746	22.0
Selected Bidder at Financial Close February 2006	Tender 1	186,373	253,261	66,888	26.4
<p>* The Net Present Value (NPV) compares the value of a pound today against the value of that same pound in the future, after taking inflation and return into account.</p> <p>Source: Roads Service Agency</p>					

42 Until 2004, when new guidance was issued by the Treasury, best practice recommended that a PSC should be updated at each stage of the procurement process. RS updated their PSC model until September 2004. Subsequently they used the original PSC as a Reference model, however it was only updated at a high level and as such the net effect at Financial Close was nil.

Appendix Four: (paragraph 1.24)

Summary of findings in relation to the reasons for the flooding of the Westlink underpass in August 2008

The Independent Report⁴³ into the flooding incident on 16 August 2008 highlighted a number of possible causes that could have contributed to the flooding of the Westlink underpass. The investigation comprised a series of interviews, an assessment of supporting data and site evidence. The possible causes of the flooding, set against a heavy and prolonged period of heavy rainfall, included:

- the setting of the Penstock Valve⁴⁴ on the Blackstaff River will have restricted flow from the Overflow Structure into the Blackstaff Culvert⁴⁵. Whilst historically this setting had been found to provide a satisfactory distribution of flows between the Blackstaff and the Relief Culverts, it was not known whether or not it had been tested under high flow conditions, through the new configuration, such as those experienced on 16 August 2008;
- the design capacity of the culverts and flow patterns in the overflow structure - there was some evidence that the culverts were not running full and to maximum capacity, indicating that the discharge from the overflow structure may have been restricted in some way; and
- the potential blockage of the trash screen⁴⁶ at the Clowney Culvert inlet may have restricted the discharge from the overflow structure.

43 "Broadway Underpass – Westlink, Belfast, Independent Report into the Flooding Incident on 16 August 2008" – Amey, October 2008.

44 A penstock is a gate used to control the flow of water.

45 A culvert is a drain crossing under a road or embankment. The improvements to the Westlink included two culverts to divert and manage the flow of two rivers (Clowney Water and Blackstaff River) adjacent to the motorway.

46 A trash screen is the description used for a screen placed in a waterway to prevent the passage of rubbish.

Appendix Five: (paragraph 2.16)

Summary of Internal Audit findings

The following information has been adapted from the Executive Summary of the Department's Internal Audit Report '*Internal Audit Review of Roads Service PPP Projects – Package 1 and 2*'. The Department's Internal Audit team carried out a review of Roads Service's PPP Programme (Packages 1 and 2) which commenced in May 2006 and fieldwork was completed in July 2006. The review was conducted using the NAO analytical framework '*Examining the value for money of deals under the Private Finance Initiative*'. At the time of fieldwork, Package 1 had reached contract award stage and Package 2 had reached evaluation of bidders stage. Consequently the internal auditors were unable to consider some aspects of the NAO analytical framework, namely delivery of service over the contract life for Package 1.

Internal audit considered that there were sound or adequate control systems in all of the areas reviewed up to July 2006 in relation to Package 1 and their testing confirmed that, in most instances, key controls were operating effectively. In overall terms, this provided Road Service management with '*reasonable assurance*'⁴⁷ in this area. The key areas covered included:

- **Programme / Project Management**
Internal Audit considered that there was a sound system of control in place and their testing confirmed that the key controls identified were operating effectively which should provide management with substantial assurance in this area.
- **Definition of Project Objectives**
Internal Audit considered that the control systems were generally adequate and their

testing confirmed that key controls identified were operating effectively in most instances which provided management with '*reasonable assurance*' in this area.

- **Procurement Process**
Internal audit considered that there was a sound system of control in place and testing confirmed that the key controls identified were operating effectively which provided management with '*substantial assurance*' in this area. They recommended that adequate supporting documentation be maintained to substantiate financial information such as economic benefit calculations.
- **Procurement of Services / Processing of Payments/ Financial Planning and Budgetary Control**
Internal Audit considered that the controls in place were adequate and their testing confirmed that in most instances key controls identified were operating effectively which provided management with '*reasonable assurance*' in this area. The PPP Unit had established a comprehensive system for monitoring budgets but this system had not been kept fully up to date. Internal Audit stated that given the value of spend associated with PPP projects, it was important that the systems established for monitoring actual versus budgeted spend should operate effectively for the duration of the project. In addition, they stated that Management should ensure that information is kept up-to-date and is readily available for key stakeholders e.g. Project Board.

⁴⁷ Internal audit provide a number of assurance levels to management ranging from full, substantial, reasonable and limited assurance. Reasonable assurance generally means that there is a sufficient framework of key controls but that they could be stronger, whilst substantial assurance generally means that there is a robust framework of controls with some minor weaknesses identified.

Appendix Six: (paragraph 3.11)

The different characteristics of bank and bond financing		
Financing characteristic	Bank Financing	Bond Financing
Source of funds	Directly provided by a bank or possibly a group of banks that form a syndicate.	Funds provided by bond investors. A potentially disparate group that can include anyone from large financial institutions to individual investors.
Arrangement of funds	Direct negotiations between the project company and the bank.	Arranged via an intermediary known as a bond arranger.
Certainty of funds	Once the project company and bank reach an agreement there is certainty over funding.	There is less certainty with a bond. The project company will only know if funding is forthcoming once the bond arranger has started to try and sell the bond. The certainty is increased by appointing a bond underwriter to purchase any part of the bond not sold to other investors.
Maturity	Currently up to around 30 years.	Currently up to around 38 years.
Re-payments	Flexible. Repayments can be matched to project cashflows.	Fixed (unless index-linked). Repayments on fixed date, generally at maturity of the bond. Repayments follow an annuity profile on fixed contract dates.
Flexibility	High. As the project company is contracting with a single bank or a group of banks, the financing can be flexible. It is possible to negotiate changes to the project, possible early repayment of the loan or refinancing of the project. Also, if the project runs into difficulties the project can negotiate with the funders to try and avoid the project collapsing.	Very little flexibility. Due to the arms length and potentially disparate nature of the bond holders in relation to the project company it is very difficult to make alterations to the project. It is very expensive to make early repayments or refinance a project. There is also no room for negotiation with regards to the payment of interest or capital.

Financing characteristic	Bank Financing	Bond Financing
Receipt of funds	Staged. Banks will allow the project company to drawdown the required funds as and when they are needed during the project. This means that the project company will only pay interest on the amount actually borrowed at a particular time.	Generally funds are received in one go at the time the bond is sold to investors. The consequence of this is that interest will be paid on the total value of the funds from the beginning of the project. The project company needs to manage this and seek to minimise the costs by depositing the funds in an interest bearing account.
Assessment of project risk	The banks will undertake this risk assessment themselves during their due diligence work. The banks will therefore be in the best position to assess the risks and to price the funds accordingly.	Bond investors are often in a weaker position to assess the project themselves and rely on the bond arranger to make an assessment of the project risk for them. As the bond investors are not always in a good position to assess risk the bond issue may insure the bond to make the bond more attractive to investors. In this Project a monoline guarantor acts as the monitor of financial performance of the project on behalf of the bond holders and guarantees payments to them.
Costs	Front end fees, interest on the funds borrowed and a commitment fee for the available funds not yet drawn down.	Interest to the bond investors. An Arrangement fee to the bond arranger and an insurance fee if the bond is insured.
Ongoing project scrutiny	Significant. The bank will monitor the project carefully to ensure that it is operating viably. If the project runs into difficulty the bank may have step in rights to actually run the project.	Very little. The bond investors have little influence on the project once it is funded.
Optimum size	Few, if any, restrictions.	Approximately £100m - 400m - outside of this range there can be a dumbbell effect on the pricing of bond finance.
Opportunities for refinancing	There may well be opportunity for refinancing if the project risks become less than those assumed in the initial financing.	Refinancing is unlikely to be possible as the terms of the financing are generally fixed for the life of the bond.

Source: Adapted from the NAO Report, Ministry of Defence: Redevelopment of MOD Main Building HC 748 Session 2001-2002: 18 April 2002

Glossary:

Availability payments – monthly payments made to the Operator which, in total, make up the annual unitary payment. These payments are based on availability of the road network. Limited or no availability will reduce the payments.

Consortium – an association of construction companies for the purpose of engaging in the Project. Also referred to as the Operator in this report.

Index linked bonds – an inflation-proofed government bond. The key feature is that the interest rate is not fixed. Instead, the margin over inflation is fixed.

Mandatory Variant Bid – a bid which differs from the standard bid to deliver the output specification and proposes better value for money.

PPP and PFI – the terms PFI and PPP are commonly used interchangeably to refer to any aspect of private sector involvement in provision of public sector facilities e.g. a road, school or hospital. PPPs are any projects where the public and private sectors are working together in a partnership. One of the most common types of project is the Design, Build, Finance and Operation (DBFO) of new facilities by the private contractor and is commonly referred to as PFI.

Public Sector Comparator – the estimated cost of procuring a project by traditional means and is used as a comparison or benchmark against private financed bids.

Quantifiable economic benefits – a desirable and measurable outcome of the Project in money terms.

Non-quantifiable economic benefits – a desirable outcome of the Project that cannot be measured in money terms.

Risk transfer – this is a key element of PPP/PFI projects. The aim is to ensure that project risk is transferred to the party that is best able to manage it.

Shadow Bid Model – this is a financial model which calculates an anticipated bid from the private sector (i.e. a PFI bid) and is used to compare to the PSC to establish which option offers best value for money.

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