



National Audit Office

**REPORT BY THE  
COMPTROLLER AND  
AUDITOR GENERAL**

**HC 433  
SESSION 2009–2010**

**30 MARCH 2010**

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**Ministry of Defence**

Delivering multi-role tanker  
aircraft capability

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Ordered by the House of Commons  
to be printed on 29 March 2010

**Report by the Comptroller and Auditor General**

HC 433 Session 2009–2010  
30 March 2010

London: The Stationery Office  
£14.35

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

Amyas Morse  
Comptroller and  
Auditor General

National Audit Office

25 March 2010

Multi-role tanker aircraft provide two vital operational services for the Armed Forces, transporting military and other personnel and air-to-air refuelling.

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# Contents

Summary **4**

Part One

Procurement of the Future  
Strategic Tanker Aircraft **11**

Part Two

The provision of existing  
capability **24**

Part Three

Planning for the transition to  
the Future Strategic Tanker  
Aircraft **30**

Appendix One

Study methodologies **36**

Appendix Two

Departmental mitigating  
actions **37**

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This report can be found on the  
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# Summary

## Background

**1** Multi-role tanker aircraft provide two vital operational services for the Armed Forces. Air-to-air refuelling enables other aircraft to stay airborne for longer, thereby extending their range or the length of time a mission can last. Tanker aircraft also transport military and other personnel to and from operational theatres, training exercises and overseas bases.

**2** In March 2008 the Ministry of Defence (the Department) signed a contract with AirTanker for an air-to-air refuelling and passenger air transport service to replace 24 Tristar and VC10 aircraft. The service will be based around 14 Future Strategic Tanker Aircraft (FSTA), but will also include all the necessary infrastructure, maintenance and training. FSTA is being procured through a 27-year, £10.5 billion, private finance initiative (PFI) contract, under which AirTanker will own the aircraft and provide them to the Department. FSTA is due to enter service between October 2011 and September 2016, with the existing fleets leaving service between November 2010 and August 2016. This report examines:

- The procurement of FSTA (Part One)
- The provision of existing capability (Part Two)
- Planning for the transition to FSTA (Part Three)

Our methodology is summarised in Appendix One.

**3** The FSTA project's long procurement timescale means that many of the problems associated with the deal arose some time ago. The Department has recognised these problems and is taking action to ensure the likelihood of their repetition is minimised (Appendix Two). Through our Major Projects Reports and other work, we will be monitoring whether the Department's actions are resulting in the desired improvements.

## Key findings

### The procurement of FSTA

**4** In 1997 the Department for the first time included budgetary provision for FSTA as a PFI deal in its ten-year Equipment Plan. This assumption was driven by affordability pressures on the Department's capital programme and its prevailing policy to use PFI whenever possible unless a project could be demonstrated not to work, be inappropriate or be uneconomic. The Department's guidance stated that PFI offered the opportunity to fund capital projects which might otherwise have been unaffordable.

**5** We have been unable to find any evidence that the Department undertook a sound evaluation of the alternative procurement routes when it took the decision to plan its future expenditure on the basis of a PFI solution in 1997. Although the choice of the PFI route provided the Department with short-term affordability benefits, it meant that any later decision to revert to a conventional procurement would have required the Department to make difficult trade-offs between projects in its capital programme, a generic challenge for PFI projects. Indicatively, in 2000, the Department estimated that it would have to identify £1 billion of capital funding over a four-year period later in the decade (equivalent to approximately five per cent of the total procurement budget over the period) if it did not follow the PFI option.<sup>1</sup>

**6** The procurement proved more complex than anticipated, took over nine years to achieve contract signature and resulted in the FSTA in-service date slipping by five and a half years against the original plan. Despite problems during negotiations, and the project team's recommendation to cancel the project in 2004, the Department only seriously considered a fallback plan as it approached its main investment decision in 2007. This fallback work left major affordability issues to be resolved and never solved the challenge of avoiding a capability gap. The immaturity of the work reflected the Department's decision not to engage industry on fallback solutions which could have unsettled the market and increased the cost of the PFI deal. As a consequence, it became harder for the Department to switch to an alternative strategy should PFI prove unfavourable.

<sup>1</sup> Our latest Major Projects Report shows that affordability remains a problem, with the defence budget currently overcommitted and the Department continuing to make decisions on individual projects which represent poor value for money in order to make the programme affordable. Comptroller & Auditor General, *Ministry of Defence, Major Projects Report 2009*, Session 2009-10, HC 85-I, National Audit Office, December 2009.

7 The Department's guidance noted that the key evaluation criterion to be satisfied was that of value for money, usually based on the transfer of risks to the private sector. After 2000, the Department assumed that FSTA would be "off-balance sheet"<sup>2</sup> and worked to ensure sufficient risk transfer to achieve this under the prevailing accounting rules. The contract certainly has the potential to transfer significant risk, as the Department identified in its planning, such as the delivery of the aircraft, infrastructure and training to the contractor. However, the Department never gained visibility of the sub-contractor costs for designing and modifying the aircraft, so was unable to determine whether it was paying an appropriate margin for the aircraft given the level of risk to which the sub-contractors were exposed.

8 During the negotiation of the deal, the Department tested the value of the solution against a Public Sector Comparator. This testing showed that the PFI solution was between 15 per cent better and 5 per cent worse than the Comparator depending on which aircraft, discount factor and delivery confidence level was selected, and offered better value for money in seven of the eight scenarios presented. Although the Treasury had granted FSTA an exemption from using the 3.5 per cent discount factor, in 2007 the Department's Senior Economic Adviser stated that, had this discount factor been applicable, the PFI solution would not represent value for money against a Comparator using an A330 aircraft. However, given the Treasury exemption, the project team recommended that the PFI solution should go ahead. This recommendation was based on a value for money judgement against a Comparator using the agreed 6 per cent discount factor and an A330 aircraft, together with affordability issues and the adverse operational implications of adopting an alternative procurement route at such a late stage.

9 The Department conducted some of the PFI-specific elements of negotiations well, making good use of advisers and ultimately acting with agility to close the deal in March 2008 before the full impact of the credit crunch was felt. The over-arching cause of delay was the unforeseen scale and complexity of the deal which in turn contributed to many of the problems encountered on the project. Specific difficulties stemmed from:

- **the limited competition** – the Department maintained competition for five years, in part by contributing to the losing bidder's costs, but was unable to close a deal within this period. One of the bids was only available within a limited timeframe and, once this had expired, it took the Department four years of non-competitive negotiation to agree an acceptable deal with AirTanker. The Department's view is that, although over that period there was no competition, it used the bidder's significant sunk costs as leverage to achieve further cost reduction and close the deal;
- **specifications continued to evolve until late in the procurement** – while the Department's top-level requirements remained broadly stable, difficulties in developing a complex new service delivery model caused delays;

<sup>2</sup> Off-balance sheet classification meant that the capital value of the assets would not be included in the Department's accounts, and that the Department would not bear the Treasury's cost of capital charge on the aircraft.

- **poor access to full cost data** – the Department never gained visibility of detailed sub-contractor costs and margins for the aircraft and their modification; and
- **poor project resourcing and governance** – until 2004, the project team had insufficient staff with PFI experience and frequent changes of team leader. The Department did not appoint a Senior Responsible Owner until January 2007, eight years after the contract was advertised to industry.

### The provision of existing capability

**10** The Department is successfully fulfilling its highest priority roles of supporting the airbridge to Afghanistan and providing operational air-to-air refuelling with Tristar and VC10 aircraft. However, because there are insufficient aircraft available to undertake the full range of tasks required, and to address fluctuations in demand from deployed operations, the Department supplements the current fleets with chartered transport aircraft. This has risen markedly in recent years and totalled approximately £175 million between 2006-07 and 2008-09 for all passenger air transport.

**11** The time taken to negotiate the FSTA contract has meant the Department has been forced to rely on the ageing and increasingly unreliable Tristar and VC10 aircraft. Despite the Department working more closely with industry to maintain aircraft performance, flying hours across both fleets have reduced by 21 per cent since 2002-03 due to planned fleet reductions, the need for essential operational modifications and the increasing maintenance work required to resolve structural and other obsolescence issues. As a result there has been no compensating reduction in the support costs for the Tristar and VC10 fleets, which stood at approximately £105 million in 2008-09.

### Planning for the transition to FSTA

**12** Since contract signature, the project has achieved its delivery milestones and is on budget. FSTA is likely to meet the overall requirements, provide a similar number of flying hours to the existing fleets and offer a capability comparable with other countries' new aircraft. Across the term of the contract, the Department will pay on average £390 million per annum for the baseline FSTA service, which includes the cost of related services and infrastructure. Of this amount, AirTanker expects the cost of operating the service to be £80 million, leaving £310 million to cover financing, profit and the capital cost of the project, including aircraft and infrastructure. In addition, the Department expects to spend a further £60 million per annum on personnel, fuel and other related costs, resulting in a total estimated spend over the life of the project of £12.3 billion.

**13** The Department does not record the current equivalent costs of providing the full range of services included in the FSTA contract, making comparisons between the two sets of arrangements difficult. The available data suggest that in addition to the £105 million spent supporting the current fleets, the Department spent a further £117 million on related personnel, fuel and simulator training, giving a total spend of approximately £222 million in 2008-09. However, it is misleading to compare this figure with the projected £450 million annual cost of FSTA since the former does not include the sunk costs associated with the procurement of the current fleets, or related training and infrastructure.

**14** There remain a number of issues for the Department to address. The original FSTA requirement did not envisage the aircraft flying directly into high-threat environments such as Afghanistan. When the need for possible additional platform protection measures became apparent, the Department sensibly did not alter its requirement for fear of prejudicing the ongoing commercial negotiations. Having established that these modifications are likely to cost several hundred million pounds, the Department is considering the costs and technical requirements in the light of other options. If the Department chooses to fit these modifications, it will take a number of years to do so.

**15** The Department is undertaking a large scale re-development at RAF Brize Norton with the intention that new facilities are operational by 2012, shortly after FSTA's entry into service. However, there is little timescale contingency in these plans. At the same time, the Hercules C130 fleet will move to RAF Brize Norton. Any delays to the new infrastructure projects or problems in coordinating the various aircraft types operating from the base would mean that there is a risk to the efficient operation of the FSTA service.

**16** FSTA is a complicated project and means that AirTanker will interface with a wide range of Departmental staff and RAF personnel. To achieve value from the project these staff will need to understand the contract's new service delivery arrangements, for example, by understanding how the components of the complex payment mechanism are calculated and the effects their own actions may have on charges which the contractor is able to make. The Department is taking sensible steps to address the continuity of knowledge and staffing that the complexity of the project demands, and is using a modelling tool to support better decision-making during the period of transition to FSTA.

### **Conclusion on value for money**

**17** The Department managed the later stages of the procurement of FSTA well, including making effective use of advisers and skilled Departmental staff in the latter stages of the negotiation, and transferring the risk to AirTanker for the introduction of the service. The Department did well to close the deal in difficult market conditions, particularly given the increasingly urgent operational need for the aircraft, and has done well to meet key operational tasks using the existing ageing aircraft.

**18** In conducting the procurement, the Department followed Treasury rules but the test of value for money is not whether actions were taken within the rules but whether the outcome is the best use of public resources which could reasonably be expected. Against this benchmark we cannot conclude that the Department has achieved value for money from the procurement phase of FSTA. The Department's ability to get the best deal it could was undermined by the following:

- the selection of a PFI solution was made without a sound evaluation of alternative procurement routes to justify why the PFI route offered the best value for money;

- timescales more than doubled. After a five-year competition the Department was unable to close a deal and subsequently it took four years of non-competitive negotiation to agree an acceptable deal with AirTanker. Over this period the Department incurred additional costs both in conducting the procurement and running on the existing aircraft fleets;
- during the procurement the discount factor for assessing the Public Sector Comparator changed but the Treasury granted FSTA an exemption. If the revised rate had been applied the PFI solution would not have represented value for money against a Comparator using an A330 aircraft; and
- the lack of a mature fallback plan and the fact that any alternative would have required difficult decisions to find additional capital funding left decision-makers with limited alternatives to going ahead with the deal even when problems arose.

**19** Looking ahead, if the Department is to maximise the value of the deal it has struck with AirTanker, it must develop, implement and maintain the management skills and working practices necessary to operate more commercially.

## Recommendations

**20** These recommendations build on the actions the Department has initiated, as summarised in Appendix Two.

### Lessons from the procurement of FSTA

- a The Department chose a PFI strategy for FSTA with no realistic assessment of alternatives.** In future procurements, where PFI is an option, the Department should undertake a more robust appraisal of alternative options at the point where it makes the decision to programme the funding.
- b The Department was forced to narrow the field to one bidder while a number of significant issues remained.** As sustaining competitive tension is central to delivering value from competitions, the Department should:
  - analyse the suitability of the procurement route at the outset, recording findings as a baseline for decisions, to assist any consideration of alternatives that may improve value for money; and
  - develop a credible alternative commercial solution, which can be invoked if the bidders do not meet the Department's expectations.

- c** The Department had access to AirTanker and AirTanker Services cost data but never gained visibility of sub-contractor costs and margins for designing and modifying the aircraft. Neither did the Department undertake any “should-cost” modelling. To inform negotiations, the Department should:
- mandate an appropriate degree of openness and transparency from the bidders in its tender documentation, including access to key supply chain data; and
  - develop a “should-cost” model to estimate how much it ought to cost bidders to deliver a contract.
- d** The Department did engage with suppliers in accordance with its own PFI guidelines, but the complex nature of the deal made it difficult to establish clear specifications for the FSTA service and was a major factor behind the extended procurement timescale. The Department should:
- seek to establish with potential commercial partners, as early as feasible in the procurement process, a common understanding of how the full service will be delivered in novel or complex arrangements such as FSTA; and
  - if changes to the requirements are necessary, establish a robust and transparent mechanism to take into account the cost and timescale implications of proposed changes, as the project has implemented for the operational phase.

#### Delivering long-term value for money from FSTA

- e** The project team has put in place a number of processes to help maintain knowledge and skills and manage the FSTA contract in future. To build on these and maximise the cost-effectiveness of the operational phase, the Department must:
- incorporate updates of the contract manual into its existing document handling system on at least an annual basis; and
  - continue its succession planning activity to ensure that knowledge is retained within the team, by implementing documented handover processes and ensuring the availability of staff with appropriate experience and expertise.
- f** The Department has started planning how it will share information about the contract with stakeholders. The Department should:
- implement its stakeholder plan, ensuring that it includes details of service levels and the implications of changes to the contract. This work should be led by the project team; and
  - undertake ongoing tests of tasking and the payment mechanism against its existing process to help stakeholders understand the new arrangements and to identify mitigations to issues highlighted ahead of the introduction of FSTA.

# Part One

## Procurement of the Future Strategic Tanker Aircraft

**1.1** The Future Strategic Tanker Aircraft (FSTA) contract will provide the Department with up to 14 Airbus A330-200 aircraft to replace the Tristar and VC10 fleets that currently undertake air-to-air refuelling and strategic passenger transport. This part of our report examines how the Department procured FSTA.

### **FSTA is a complex and expensive project**

**1.2** In March 2008, the Department signed a contract with the AirTanker consortium to provide FSTA along with associated services (**Figure 1** overleaf), via a 27-year PFI contract ending in 2035.<sup>3</sup>

**1.3** The Department will have a core fleet of nine aircraft, and access to a further five aircraft if required, which will otherwise be available to AirTanker to lease for commercial flights. Under the PFI contract, the Department will only pay for the capacity it uses, subject to agreed annual minimum usage levels of 9,000 hours. The first aircraft is due to be introduced to service in October 2011, with full service expected in September 2016. The AirTanker consortium comprises five shareholders, who are also its principal contractors and sub-contractors as outlined in **Figure 2** on page 13.

**1.4** The contract for FSTA is likely to cost around £10.5 billion over its duration, although this is a forecast based on expected usage rates and the actual cost could vary. The Department has estimated the full project cost at £12.3 billion, once its own ongoing costs are included. FSTA will cost the Department an average annual payment of around £390 million to AirTanker, but the Department will not start paying for the contract until FSTA is introduced to service. In addition, the Department will pay £60 million per annum on personnel, fuel and other related costs. Between the start of the formal assessment phase and contract signature, the Department spent £48 million managing the project, including £27 million on advisers, £10 million on supporting the bidders and £11 million on internal costs.

<sup>3</sup> The Department has more than 50 PFI contracts for the provision of different services, of which FSTA is the largest.

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**Figure 1**  
Services provided through the FSTA contract

<b>Service</b>	<b>Details</b>
Aircraft	<p>Air-to-air refuelling capability:</p> <ul style="list-style-type: none"> <li>● Fuel capacity of 111 tonnes for dispensing to aircraft.</li> <li>● All aircraft capable of simultaneously refuelling two fast jet receivers.</li> <li>● Seven aircraft capable of, and five fitted for, refuelling large aircraft.</li> </ul> <p>Air transport capability:</p> <ul style="list-style-type: none"> <li>● Seating capacity of 290 seats.</li> <li>● Various configurations for medical evacuations of up to 40 patients.</li> <li>● Commercial standard freight-carrying capacity.</li> </ul> <p>Able to operate in military and civilian roles.</p>
Crewing services	<p>14 Sponsored Reserve pilots able to operate on military and civilian flights.</p> <p>48 qualified cabin crew</p>
Infrastructure at RAF Brize Norton	<p>Maintenance hangar capable of servicing two FSTA.</p> <p>Flight operations, storage and office facilities.</p> <p>Training building.</p>
Training services	<p>Training for military and AirTanker flight and cabin crews, technical and support personnel.</p> <p>Provision and support of FSTA flight simulator.</p>

*Source: National Audit Office analysis of Departmental documents*

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**Figure 2**

AirTanker shareholder and sub-contractor arrangements

**Shareholder and sub-contractor structure**

Shareholder and sub-contractor companies	AirTanker	AirTanker Services	EADS-CASA	
	Percentage shareholding	Percentage shareholding	Sub-contractors	Sub-contractors
EADS-CASA Military Transport Air Division	40	28	✓	
Rolls-Royce plc	20	22	✓	✓
Thales	13	22	✓	✓
VT Group	13	22		
VT Aerospace Ltd			✓	
Cobham plc	13	5		✓
Flight Refuelling Ltd (part of Cobham Group)			✓	

Source: National Audit Office analysis of Departmental documents

**1.5** During the procurement, the project team carried out two separate lessons-learned exercises, in March 2001 and June 2007, and identified various factors to change for future projects. We refer to the conclusions of these exercises as appropriate throughout the report. Additionally, in May 2007, the Department's Investment Approvals Board requested that an exercise be undertaken to examine and understand the reasons behind the particular difficulties faced in the project in the run up to the main investment decision point. A lessons-learned exercise was started in June 2008, and focused on identifying the causes of the difficulties and delays and looked at the role and behaviour of all stakeholders. At the time of our audit, the results of this exercise had not been finalised or published.

### **The decision to proceed with a PFI solution was taken primarily for affordability reasons and without a sound evaluation of alternatives**

**1.6** The Department's over-arching acquisition guidance suggests that one of the key aspects of the work to be undertaken ahead of making the main investment decision on a project is to "identify the most cost-effective procurement solution".<sup>4</sup> At the beginning of the FSTA project, separate Departmental guidance endorsed PFI as a funding mechanism unless it could be demonstrated not to work, be inappropriate or uneconomic, and emphasised that PFI offered the opportunity to fund capital projects which might otherwise have been unaffordable. Recognising a perceived key benefit of PFI, the guidance stated that "the key evaluation criterion that needs to be satisfied is that of value for money, usually based on the transfer of certain risks to the private sector that had previously been MoD responsibility".<sup>5</sup>

**1.7** In 1997, the Department included budgetary provision for FSTA in its ten-year Equipment Plan, assuming that the deal would be a PFI solution. Although the Department carried out a preliminary examination of options to replace the VC10 fleet in 1992,<sup>6</sup> the decision to follow a PFI solution was taken without a sound evaluation of alternative procurement options and was based primarily on affordability considerations. After 2000, the Department also worked on the assumption that the PFI solution would be "off-balance sheet". This would mean that the capital value of the assets would not be included in the Department's accounts, and that the Department would not bear the Treasury's cost of capital charge on the aircraft.<sup>7</sup>

**1.8** By pursuing a PFI solution, the Department could adjust the project's budget profile to spread the cost over a longer period, rather than make a major upfront investment in the early years of the project as required with conventional capital procurement. The choice of PFI therefore helped the Department, in the short-term, to address the gap between the available funding and the costs of the project to which it was

<sup>4</sup> [http://www.aof.mod.uk/aofcontent/tactical/ppm/content/lifecycles/cadmid.htm?zoom\\_highlight=CADMID](http://www.aof.mod.uk/aofcontent/tactical/ppm/content/lifecycles/cadmid.htm?zoom_highlight=CADMID).

<sup>5</sup> *PFI Guidelines for the Ministry of Defence*, Ministry of Defence, undated.

<sup>6</sup> This assessment did not include PFI as the initiative had not yet been launched.

<sup>7</sup> Based on our current understanding of the implementation of International Financial Reporting Standards, FSTA is now likely to be classified as "on-balance sheet".

committed. It also meant that any subsequent decision to revert to a conventional procurement would have re-introduced major affordability problems, requiring difficult decisions on the relative importance of air-to-air refuelling against other priorities. In 2000, the Department estimated that if it did not follow a PFI solution it would be necessary to identify £1 billion of capital funding over a four-year period later in the decade.

**1.9** The Department also identified that adopting a PFI solution provided it with the opportunity to transfer significant levels of risk to the contractor, particularly in the development and ongoing maintenance of the aircraft. While the contract does have the potential to transfer risk to AirTanker, the Department was unable to quantify the value of risk transfer. However, the Department did analyse the nature of the risk transfer to establish that sufficient risk could be transferred to qualify for “off-balance sheet” accounting treatment.

### **The effectiveness of the competition was limited**

**1.10** **Figure 3** overleaf shows the key events in the FSTA procurement. Following an advert in December 1998, six consortia pre-qualified to enter the competition, with the Department planning to award the contract by October 2002, to meet the planned in-service window of 2007-09. Between 1999 and 2001 a period of consortia consolidation left just two bidders: AirTanker and Tanker & Transport Services Company (TTSC).

**1.11** AirTanker and TTSC submitted proposals in July 2001; the Department assessed both as weak. As a result, both bidders were allowed more time to develop their proposals. By September 2002 the Department was becoming increasingly concerned about the viability of the competition and quality of the bids. It therefore decided to offer to pay the losing bidder up to £10 million to sustain competitive tension between the consortia. This practice is rare across Government but was a pragmatic response given the circumstances of the competition, and had precedence in other defence PFI projects.<sup>8</sup>

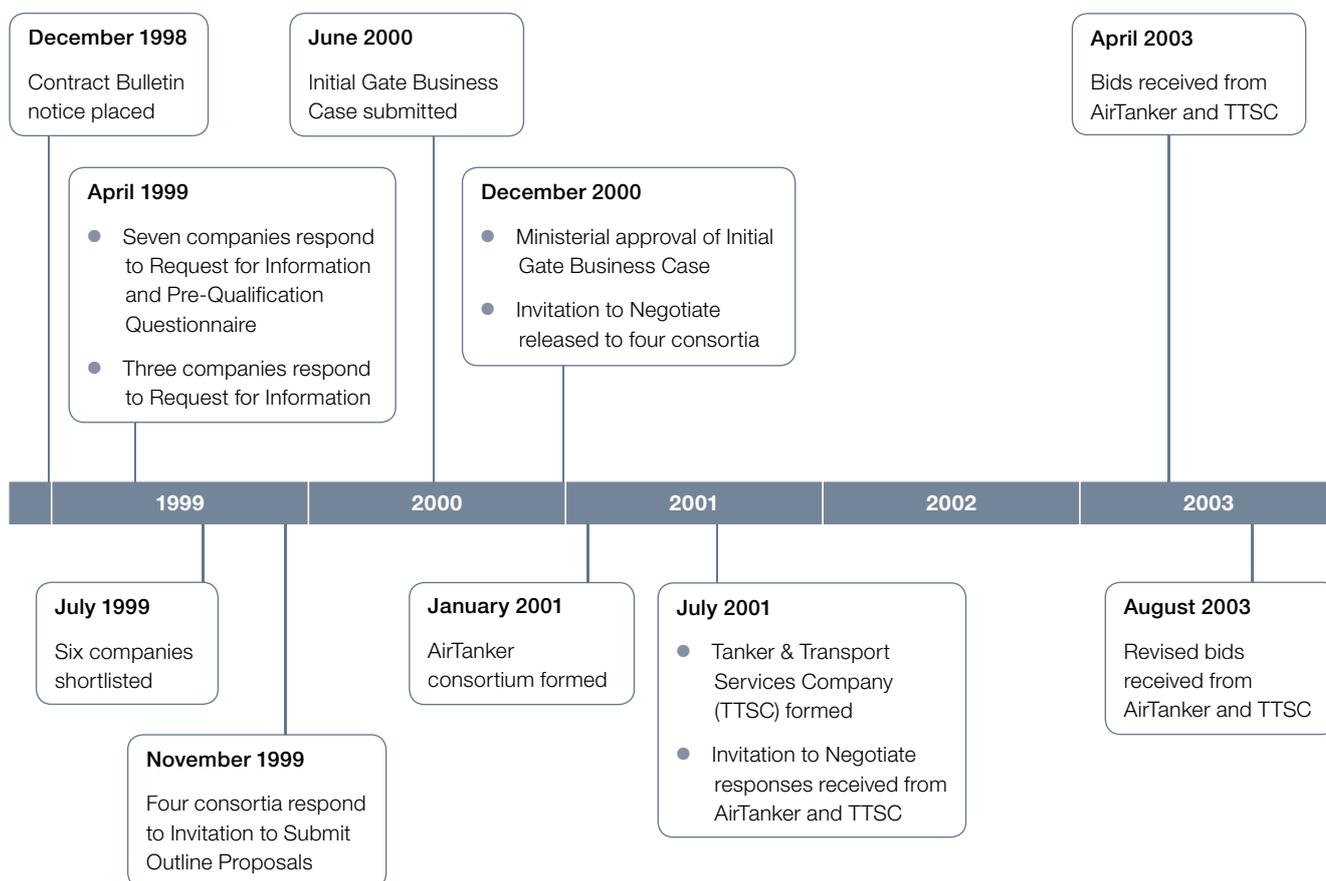
**1.12** After several iterations, the two consortia submitted revised bids in August 2003. There was little between the bids in capability terms, but the Department assessed that the TTSC bid was the more commercially mature and was more likely to secure funding in the financial markets. However, the TTSC bid was more expensive, exceeding the AirTanker bid by 19 per cent, and the Public Sector Comparator<sup>9</sup> by 6 per cent. In addition, the TTSC solution was predicated on buying Boeing 767 aircraft which were being sold as a complete package within a limited timeframe, requiring the first aircraft to be purchased by 2005. This meant that any changes in the number of aircraft required, or the timing of delivery, would be difficult for the consortium to manage.

<sup>8</sup> On the Skynet satellite communications project the Department had paid bidders' risk reduction contracts to help them in the bidding process.

<sup>9</sup> A Public Sector Comparator is used by Government to test whether a private investment proposal offers value for money in comparison with a conventional procurement.

**Figure 3**

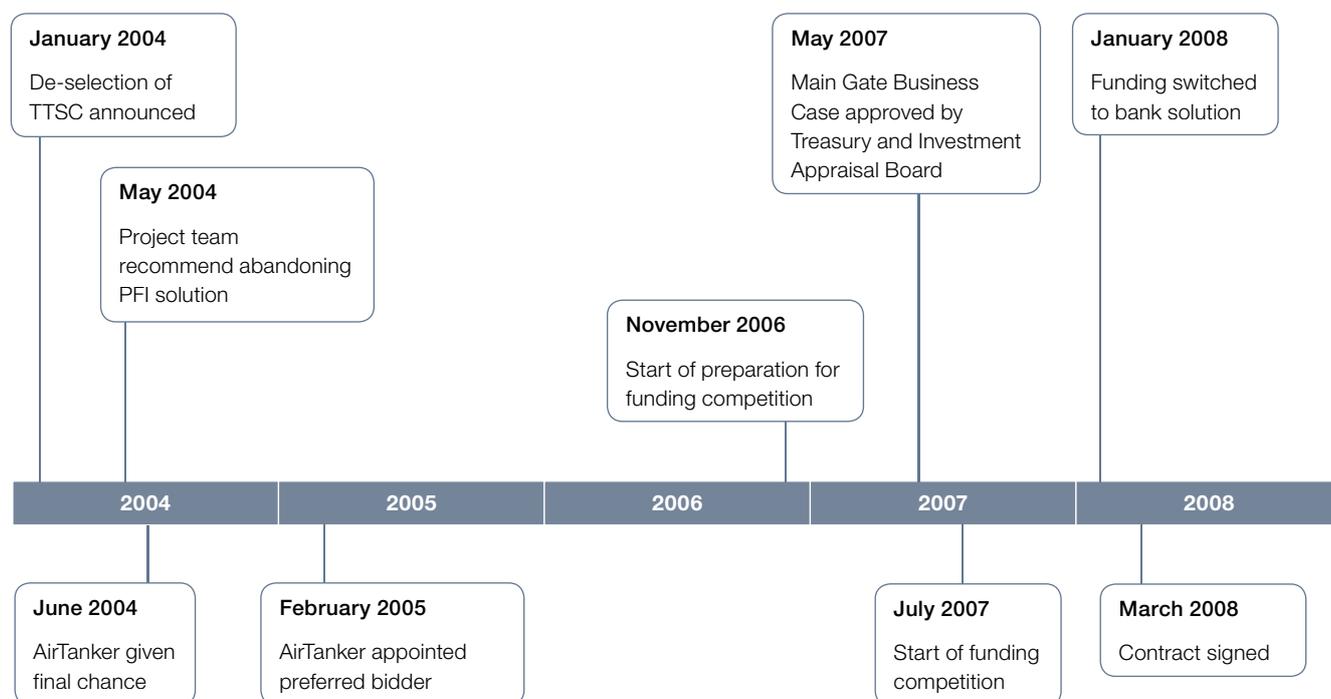
Timeline showing key events of FSTA procurement



Source: National Audit Office analysis of Departmental documents

**1.13** The Department announced the de-selection of TTSC's bid in January 2004, leaving only AirTanker's bid under consideration. Whilst this bid was cheaper and technically compliant, the Department had significant concerns over its maturity in a number of areas. These concerns increased during negotiations and included the following:

- the risk remaining with the Department meant the deal was likely to be "on-balance sheet";
- costs had risen during negotiations and were likely to be higher than the Public Sector Comparator;
- the commercial immaturity of the proposal meant that, if funding could be secured on the financial markets, the rate would further increase the price of the deal; and
- it would be difficult to close the deal in a reasonable timescale – the team estimated that it would take 12 to 24 months.



**1.14** Given the outstanding concerns over the AirTanker bid, in what was a non-competitive negotiation, in May 2004 the project team recommended abandoning the PFI solution and initiating a conventional procurement. Corporately the Department decided that, given the risks involved in starting a new competition, AirTanker should be given an opportunity to improve its bid. In June 2004, the Department gave AirTanker an ultimatum that the project would be cancelled unless progress was made. In response AirTanker reduced its price to a figure below the Public Sector Comparator and took on more risk so that the project was less likely to be “on-balance sheet”. The Department finally appointed AirTanker as preferred bidder in February 2005.

## The Department did not utilise the Public Sector Comparator as effectively as it could have

**1.15** The Department used its Public Sector Comparator to assess whether the bids were value for money. It was constructed in accordance with Treasury guidance, using the then extant mandated discount rate of 6 per cent. The Comparator was agreed in February 2003 and was based on the capital procurement of 19 used Boeing 767 aircraft with a conventional, RAF-led, support solution.

**1.16** The Department considered the impact on the Public Sector Comparator of two important developments at its main investment decision point in 2007. Firstly, during the procurement the price of used aircraft in the commercial market changed, meaning that an Airbus A330-based solution would be cheaper than the Boeing 767 option originally considered. Secondly, in August 2004, the Treasury changed the discount rate to 3.5 per cent. Although the project was granted exemption from using the revised discount rate, the Department modelled scenarios for A330 and Boeing 767 options using both discount rates for its main investment decision point in 2007 (**Figure 4**). In 2007, the Department's Senior Economic Adviser noted that the A330-based Comparator with the 3.5 per cent discount factor applied was cheaper than the AirTanker bid.<sup>10</sup> However, the Department judged the PFI solution to be value for money against a Comparator based on the agreed discount factor of 6 per cent and the A330 aircraft, and a number of compelling qualitative factors.

**Figure 4**  
Comparisons between AirTanker's bid and Public Sector Comparators

Discount factor	Delivery confidence level	Public Sector Comparator scenario	Net present value (£bn)		Comparison of Public Sector Comparator and equivalent AirTanker bid (%)
			Public Sector Comparator	Equivalent AirTanker bid	
6 per cent	50 per cent	Airbus A330	2.49	2.47	-0.8
		Boeing 767	2.73		-9.6
	90 per cent	Airbus A330	2.70	2.51	-7.0
		Boeing 767	2.97		-15.3
3.5 per cent	50 per cent	Airbus A330	3.61	3.80	5.2
		Boeing 767	3.94		-3.7
	90 per cent	Airbus A330	3.92	3.86	-1.5
		Boeing 767	4.28		-9.7

Source: National Audit Office analysis of Departmental data

<sup>10</sup> Using a delivery confidence level of 50 per cent, as shown in Figure 4.

**1.17** If aspects of the Public Sector Comparator had been shared with the two bidders, competitive tension could have been maintained for longer, since they would have known whether their bids were broadly competitive. However, the Comparator solution was not affordable within the defence budget and would have required re-prioritising other major capital expenditure projects to make the Comparator affordable, a generic challenge when applying a Comparator to an off-balance sheet PFI project. Furthermore, in 2007 the Department concluded that it would be unable to deliver the capability envisaged in the Comparator within the required timescale.

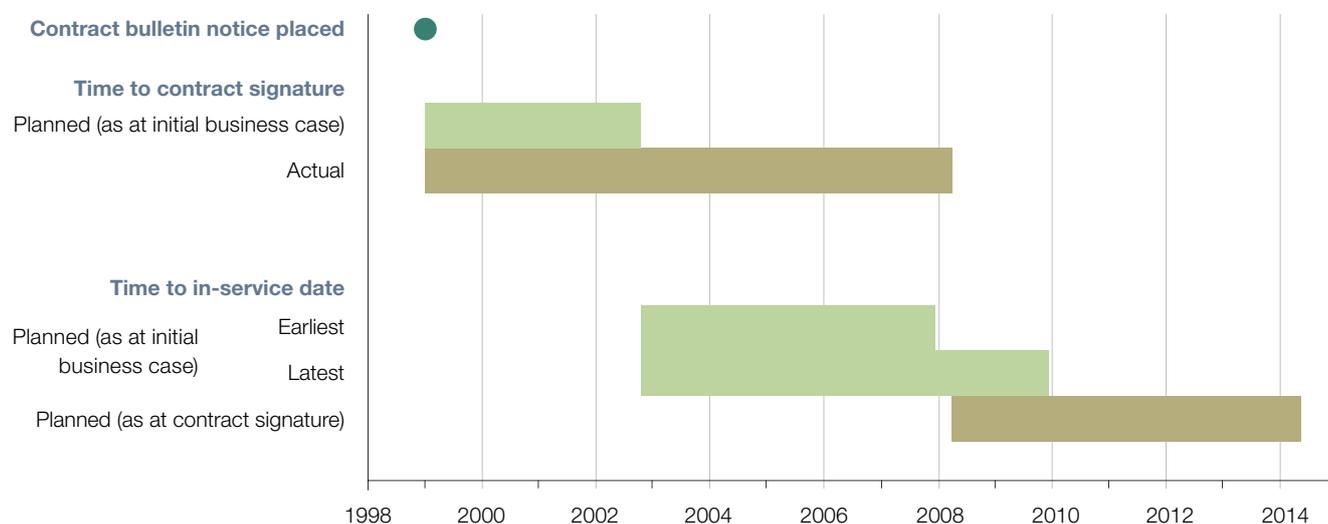
**1.18** There is no suitable international comparator to benchmark FSTA costs against, because no other nation has chosen a PFI or leasing route. The United States of America formally considered alternatives to purchasing aircraft, including a range of leasing options, but chose a traditional procurement route. Identifying costs in other nations' equipment procurement programmes is difficult because of economies of scale, differences in attributing costs and varying technical specifications. However, as other nations own their aircraft, they have greater freedom to adapt them as required. While the Department can do this, experience from other PFI schemes suggests it will be more complex and at significant cost.

### The Department underestimated the novel and complex nature of the PFI solution

**1.19** The initial timescales were too ambitious given the complexity of the project. The requirement to develop and mature the AirTanker bid meant that the period from contract advertisement to contract signature took over nine years, more than double the three years and ten months originally anticipated. Overall, the scheduled in-service date for FSTA was delayed by five and a half years (**Figure 5**).

**Figure 5**

Delays to the procurement of FSTA



Source: National Audit Office analysis of Departmental documents

## The service specification was not tied down early enough

**1.20** Finalising the FSTA contract required both the Department and AirTanker to understand fully both the aircraft delivery arrangements, and how the service would be provided during the 27-year deal. At the time AirTanker became the sole bidder, both parties' understanding of how the service would be delivered was immature. As a result, the requirement could not be finalised to provide a firm foundation for negotiations, with the RAF still identifying issues and additional requirements late in the process. Each change required discussions between AirTanker and its partner companies and sub-contractors, adding cost, complexity and delays to negotiations. The June 2007 review identified the need to define the service specification requirements more firmly, and earlier, as a lesson-learned.

**1.21** It is not possible to quantify the number of requirement changes from Departmental records, but important issues, such as the number of aircraft, were changed at a relatively late stage of the negotiations. To help make the deal affordable, early in negotiations the Department reduced the number of aircraft required from 17 to 14, with a core fleet of nine aircraft. In 2006, however, the RAF raised concerns that this core fleet would be insufficient, and that to meet routine maintenance and modification work, it would require a tenth aircraft. This caused the Department to negotiate an option to extend its core fleet to ten aircraft if necessary. In this case the Department's internal debate was particularly time-consuming to agree because the balance between the size of the core fleet and the total fleet could have resulted in the project being classified as "on-balance sheet".

**1.22** The agreed FSTA requirement means that the Department is procuring a strong core air-to-air refuelling and air transport capability comparable with other nations, some of whom have also chosen the A330 aircraft. The existing or planned Australian, Japanese, Italian and US Air Force fleets all have freight doors, and some of these other countries' aircraft have the ability to receive fuel. After consideration, the Department concluded it had no requirement for these capabilities and so did not include them on FSTA.

## Visibility of costs was poor

**1.23** Throughout negotiations the Department had access to AirTanker and AirTanker Services cost data and understood the profits these companies expected to make. However, despite repeatedly requesting access late into negotiations, the Department never gained visibility of the sub-contractor costs for designing and modifying the aircraft so was unable to determine whether it was paying an appropriate margin for the aircraft, given the level of risk to which the sub-contractors were exposed. As the Department did not have access to the cost breakdown of EADS' sub-contract with AirTanker it could not assess whether the former was making excessive profits.

**1.24** While the Department undertook some costing work, it did not use a formal “should-cost” model. While the complexity and specialist nature of the contract would have made such an activity challenging, this could have partially addressed their lack of cost visibility.

### **The Department did not develop a mature “Plan B” to provide a fallback or give commercial leverage during negotiations**

**1.25** Despite the shortcomings with the Public Sector Comparator solution, recognised risks with finalising the PFI deal and risks to the continuity of capability delivery, the Department never developed a mature “Plan B”. Some initial consideration of such an option was made in 2000, but the Department identified that this option might create a capability gap and lead to a budgetary shortfall. Further work on a fallback solution was immature although it was formally considered as an alternative to the PFI deal in January 2007. This work concluded that a solution based on used A330 aircraft would cost £9.9 billion. The proposal was not fully developed and, to avoid potentially unsettling the market and increasing the cost of the PFI deal, the Department did not engage with industry to develop the solution. It also included assumptions which could have significantly increased the cost or risked the capability. For example, the solution assumed the availability of used A330 aircraft, supplemented by four converted aircraft drawn from the A400M military airlift project. As a consequence, the Department did not have a ready alternative to PFI, limiting its ability to negotiate with AirTanker.

### **In the early stages expertise was limited and leadership lacking**

**1.26** The Department always recognised that FSTA was amongst its higher risk projects because of its strategic importance, high value, complexity and the decision to use a PFI solution. However, when the project was launched it was not well resourced with PFI expertise and did not have a full-time team leader until April 2000. By 2004, the fourth team leader in four years had been appointed, and although the project team was better resourced, only two members of the team had direct PFI experience. Since 2004, when the Department secured additional resources, there has been more continuity, with the team leader and key commercial staff remaining in post until the deal was concluded. Sensibly, the Department has sought to sustain this continuity until after AirTanker begins delivering services, by appointing the commercial manager to run the project and extending the postings of other key staff.

**1.27** The Department compensated for the shortage of PFI skills in the project team in two ways, making extensive use of the Department’s Private Finance Unit and external advisers. Between 2000 and 2008 when the deal was finalised, the Department spent £27 million on financial, legal and technical advice (**Figure 6** overleaf). Based on our analysis of PFI deals across Government, this was appropriate given the complexity and time spent on the project. We found that the advisers were generally used well, particularly after the Department’s lessons-learned exercise conducted in March 2001, which resulted in improvements in how advisers were used and managed.

**Figure 6**

Total expenditure on external advisers from 2000-01 to contract signature

<b>Services provided</b>	<b>Cost £m (including VAT)</b>
Legal advice	10
Finance, tax and accounting advice	10
Technical advice	7
<b>Total</b>	<b>27</b>

*Source: National Audit Office analysis of Departmental documents*

**1.28** The FSTA project's long timescale means that many of the problems associated with the procurement arose some time ago. The Department has recognised these problems and is taking action to ensure the likelihood of their repetition is minimised (Appendix Two). Through our Major Projects Reports and other work, we will be monitoring whether the Department's actions are resulting in the desired improvements.

**1.29** Previous work by the Public Accounts Committee has identified the need to appoint a Senior Responsible Owner for major projects to promote and deliver the full benefits of the capability.<sup>11</sup> The Senior Responsible Owner had a particularly important role in ensuring FSTA was delivered effectively due to the complexities of the project and number of stakeholders involved. The Department did not, however, appoint a Senior Responsible Owner to the project until January 2007. The 2007 lessons-learned exercise identified the requirement for the early appointment of a Senior Responsible Owner to support the team at a senior level.

### **The Department did well to close the deal given the global financial crisis and turbulence in the markets**

**1.30** The Department established an effective committee to coordinate the funding for the deal. Detailed work on the funding arrangements began in November 2006, and by May 2007 the deal was sufficiently mature for the Department's Investment Approval Board to agree that the project could launch a debt funding competition. The Department wanted the project to be largely bond funded, as bonds are generally a cheaper, although less flexible, form of financing and it was on this basis that the competition was launched in July 2007. The collapse of the bond markets in late 2007 made this solution untenable, so the Department and AirTanker agreed to switch to a bank-funded solution.

<sup>11</sup> HC Committee of Public Accounts, *Ministry of Defence: Delivering digital tactical communications through the Bowman CIP Programme*, Fourteenth Report of Session 2006-07, HC 358, March 2007, paragraph 1.

**1.31** Under the all-bank solution the cost of funds included a margin of between 1-1.15 per cent which was above the typical margins for a PFI deal at the time. This premium reflected the complexity of the deal, but was also a sign of a deteriorating credit market. Since the deal was closed, margins in the market have increased to around 2.5 per cent, re-emphasising the importance of the Department closing the deal when it did. The Department was alive to the risk that the premium could make an early re-financing of the deal attractive if the markets recovered and therefore negotiated an enhanced refinancing clause. Under the revised arrangements there is a 10-year window for refinancing, during which time 70 per cent of any gain will flow to the Department.

**1.32** Despite the late change in the funding solution and the continuing deterioration in the financial markets, the project successfully raised funding of £2.5 billion. This enabled the Department and AirTanker to sign the contract in March 2008. Given these difficult circumstances, the Department did well to conclude the deal as further delays would have made obtaining finance very difficult.

# Part Two

## The provision of existing capability

**2.1** Negotiating the FSTA deal took nine years, over twice as long as planned.

The delays mean that the Department has had to rely on its existing ageing aircraft for significantly longer than expected. The 15 VC10 and nine Tristar aircraft comprising the RAF's multi-role tanker aircraft fleet entered military service between 1966 and 1993, most of which had previously been flown by commercial airlines. Globally, there are few other operators of either aircraft type and the Department's fleets are scheduled to be gradually withdrawn from service between November 2010 and August 2016, having been extended due to delays with the procurement of FSTA. This part of our report examines how the Department provides the existing capability.

### **The costs of providing the capability are rising**

**2.2** The Department holds a range of cost data for the current fleets (**Figure 7**), but the granularity of that data means it is not possible to attribute precisely the underlying variations in spend patterns to reductions in fleet size, changes to planned out-of-service dates or operational modifications. These costs include the direct support costs paid through various contracts and the costs of upgrades to support current operations, which stood at £105 million in 2008-09. The Department estimates that the cost of maintaining the existing fleets until they are withdrawn from service will exceed £500 million.

**2.3** Between 2002-03 and 2008-09, maintenance costs per flying hour increased by 35 per cent, an additional £1,500 per flying hour (**Figure 8**). The Department has also spent other costs to support the fleets. During 2008-09, the Department spent £114 million supporting the current fleets at RAF Brize Norton; the majority of these costs were for personnel, fuel and other related costs and will continue when FSTA is in service. In addition, the Department spent £2.7 million on Tristar and VC10 simulator training and simulator modifications, costs that will be included under the FSTA contract once the aircraft is in service.

**Figure 7**

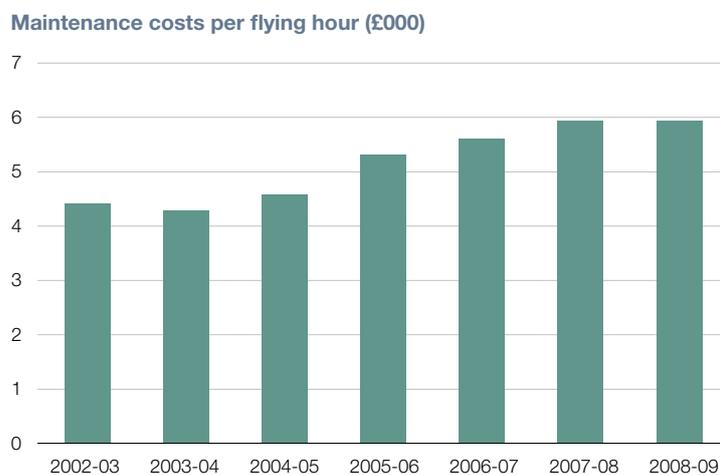
The costs of providing Tristar and VC10 capability

Costs	2002-03 (£m)	2003-04 (£m)	2004-05 (£m)	2005-06 (£m)	2006-07 (£m)	2007-08 (£m)	2008-09 (£m)
Aircraft maintenance and support	77.8	76.7	64.5	81.1	78.8	91.6	83.0
Costs of supporting operations	21.2	17.8	24.5	22.7	27.4	19.1	22.1
<b>Total aircraft costs</b>	<b>99.0</b>	<b>94.5</b>	<b>89.0</b>	<b>103.7</b>	<b>106.2</b>	<b>110.7</b>	<b>105.1</b>
Apportioned RAF Brize Norton costs	–	–	–	–	–	79.7	114.3
Simulator training and modification costs	2.4	2.9	2.6	3.0	3.2	2.7	2.7
<b>Total support costs</b>	<b>101.4</b>	<b>97.4</b>	<b>91.6</b>	<b>106.7</b>	<b>109.4</b>	<b>193.1</b>	<b>222.1</b>

Source: Ministry of Defence

**Figure 8**

Maintenance costs per flying hour for Tristar and VC10



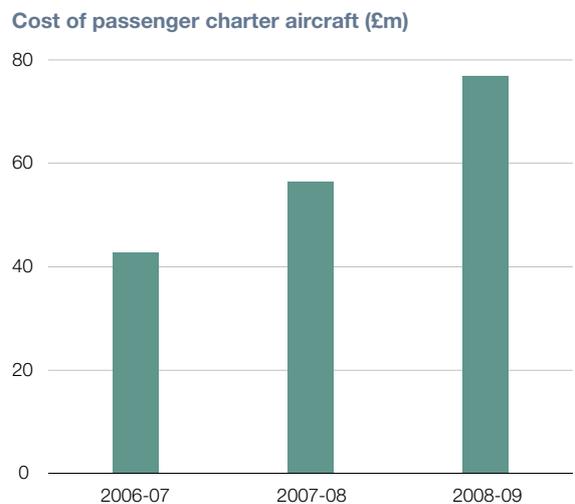
Source: National Audit Office analysis of Departmental data

**2.4** The Department has made increasing use of the charter market to fulfil tasks that cannot be met by its own aircraft on both the Defence Exercise Programme and between the United Kingdom and operational theatres. In this latter case, passenger charter aircraft are not flown into high-threat regions, so their use necessitates journeys being undertaken in two stages, with military aircraft delivering troops into theatre. While this approach increases journey time and troop fatigue, it focuses the Department’s limited number of aircraft that are fitted with the required platform protection measures on the tasks that are most essential. The estimated cost of providing passenger charter between 2006-07 and 2008-09 is approximately £175 million (**Figure 9**). This represents an 80 per cent increase in annual cost over this period, in line with the increase of United Kingdom troop numbers in Afghanistan over the same period. When FSTA is in service, the Department still expects to use the charter market to provide additional capacity, where the Department’s needs exceed the aircraft available from AirTanker.

**The Department is successfully delivering troops to operational theatre despite falling availability**

**2.5** The highest priority task for military air-to-air refuelling and air transport aircraft is supporting the “airbridge” – the route for moving troops between the United Kingdom and the operational theatre in Afghanistan. The threat of flying into theatre means aircraft need to be fitted with specific protection measures (known as Theatre Entry Standard) and be flown within certain constraints. With five flights per week, the airbridge has become the Tristar fleet’s primary focus. Despite the known reliability problems of the Tristar fleet, the Department has successfully supported the airbridge by scheduling a spare aircraft at RAF Brize Norton to provide back-up to the tasked aircraft. This is a sensible decision but has reduced the number of aircraft available for other tasking.

**Figure 9**  
Cost of passenger charter flights

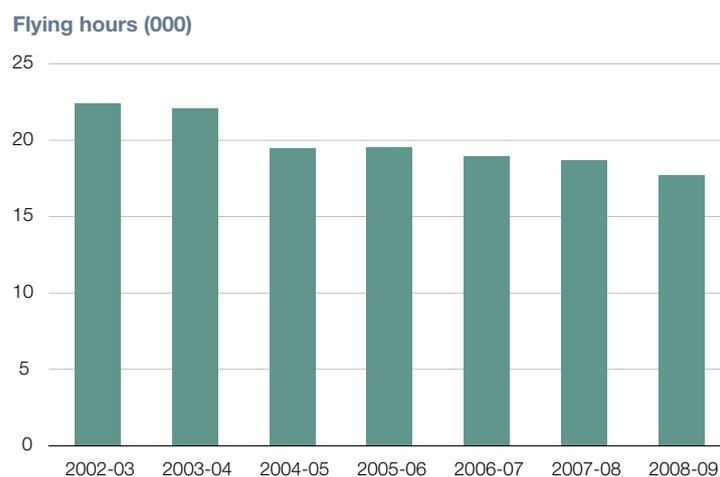


Source: National Audit Office analysis of Departmental data

**2.6** As the Tristar fleet's primary focus is supporting the airbridge, the skills and experience of Tristar aircrew are adversely affected through regularly flying the same route under the same flight conditions and therefore failing to obtain or maintain broader flight experience in both military and civilian environments. The fleets also fulfil a range of tasks including supporting other operations, training for operations, refuelling services to United Kingdom air defence aircraft and supporting enduring commitments such as the Falkland Islands, with most air-to-air refuelling undertaken by the VC10s. Although the Department has not formally changed its policy on VC10 use, the fleet's known reliability problems result in the aircraft mainly being used for short to medium range tasking. This is because it is expensive and time-consuming to repair aircraft which become unserviceable overseas.

**2.7** Between 2002-03 and 2008-09, the number of hours flown by the Tristar and VC10 fleets has fallen by 21 per cent, to 17,700 hours per year (**Figure 10**), primarily due to the reduction in VC10 total fleet size, essential Tristar modification programmes and increasing maintenance work required to resolve structural and other obsolescence issues. During 2008-09 the combined fleets delivered 84 per cent of the expected usage level set by the Department. Across both key roles flying hours have reduced; air-to-air refuelling and other strategic passenger transport flying hours reduced by 12 per cent and 7 per cent respectively in the year ending June 2009, compared to the position two years previously.

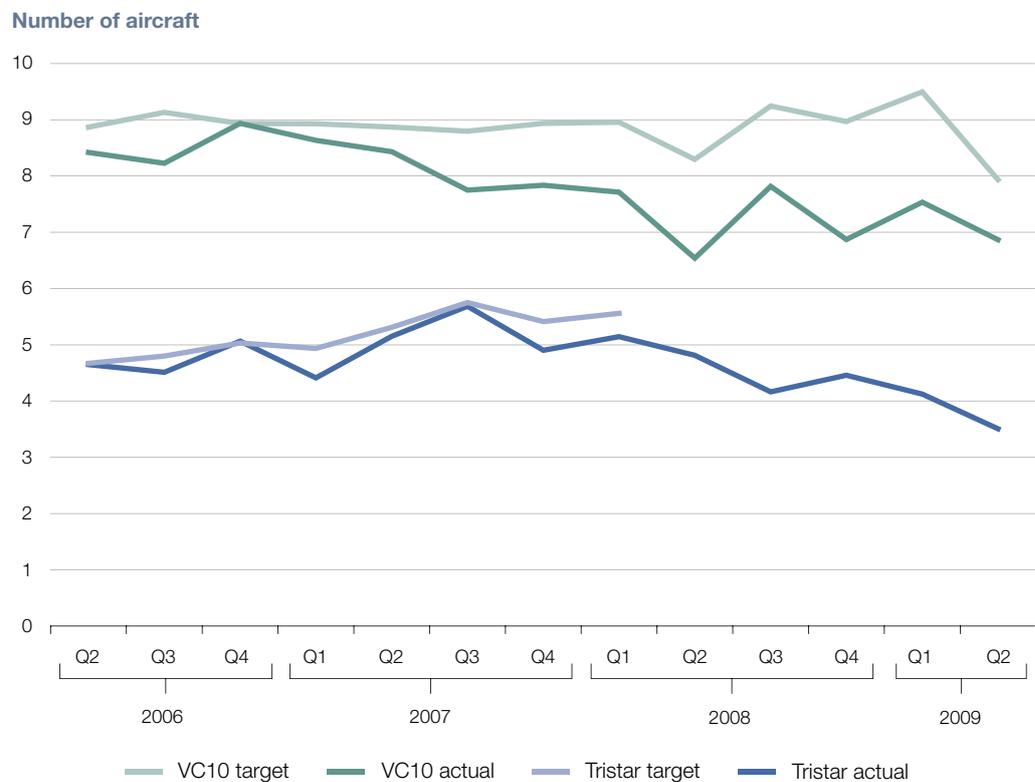
**Figure 10**  
Combined Tristar and VC10 flying hours



Source: National Audit Office analysis of Departmental data

**2.8** The Department defines aircraft available to be tasked as being fit-for-purpose. Since the second quarter of 2006, the agreed target for the number of fit-for-purpose aircraft has rarely been achieved for either fleet (**Figure 11**). Over this period, across the combined fleets, the average number of days each aircraft was available for tasking reduced by 23 days, the equivalent of a reduction of 550 days across both fleets or two fewer aircraft per year. These reductions have resulted in late changes to tasking schedules, meaning that some planned tasks have not been completed and forcing the Department to make alternative arrangements.

**Figure 11**  
Tristar and VC10 fit-for-purpose availability against target<sup>1</sup>



Source: National Audit Office analysis of Departmental data

**NOTE**

<sup>1</sup> No data available for May 2007. In 2008-09 the Department changed how it measured fit-for-purpose aircraft, but this does not affect the trends illustrated. During financial year 2008-09 the Department did not set fit-for-purpose targets for Tristar.

**2.9** The tasking demands on and availability of both aircraft fleets mean that cancellations of planned air-to-air refuelling sorties from RAF Brize Norton are increasing. During the financial year 2008-09, 17 per cent of the 486 planned air-to-air refuelling flights were cancelled due to unserviceable aircraft, or higher priority activity taking precedence: an increase from 12 per cent (of 618 flights) the preceding year. These cancellations are in addition to the 29 occasions during 2008-09 where it was known prior to tasking that no aircraft were available for discretionary air-to-air refuelling tasks.

**2.10** The Department has taken steps to deal with the diminishing size and availability of the Tristar and VC10 fleets by letting two contracts whereby industry is paid to manage aircraft support, principally through consolidating the number of sub-contracts the Department previously had in place. Despite the improvements these contracts have brought, the Department has identified the sourcing of sufficient spares as a key challenge given that it is still some time before the fleets are taken out of service.

# Part Three

## Planning for the transition to the Future Strategic Tanker Aircraft

**3.1** This part of our report examines how the Department is planning for the transition from the existing Tristar and VC10 fleets to FSTA, and how it can be an intelligent customer for the wide-ranging service AirTanker will provide.

### **The Department is planning for the introduction of FSTA but risks remain**

**3.2** Since the contract was signed in March 2008, the FSTA project has progressed well, with AirTanker meeting all contractual milestones to date. This achievement highlights one benefit of PFI projects, whereby industrial partners do not receive payment until contract delivery, so are therefore incentivised to deliver the stages of the contract as agreed. In our previous work on the Introduction of the Apache Attack Helicopter<sup>12</sup>, we highlighted the importance of managing all of the Defence Lines of Development<sup>13</sup> effectively when introducing new equipment capabilities. Learning from these past experiences, the Department has put in place robust organisational arrangements to manage the transition from the existing fleets to FSTA.

### **FSTA will require substantial modifications to fly into high-threat environments**

**3.3** The original FSTA requirement did not envisage the aircraft flying directly into high-threat environments such as Afghanistan. However, this requirement changed during the procurement phase and the Department's 2006 Concept of Use document for FSTA established the need for the aircraft to be fitted with a range of platform protection measures, such as flight deck armour and vulnerable point protection, to fly into high-threat environments. There was no approved funding for this requirement at the time it was produced. The Department did not establish a formal requirement for all large aircraft to be fitted with the full Theatre Entry Standard equipment, including fuel tank inerting, until 2008.

<sup>12</sup> Comptroller & Auditor General, *Ministry of Defence, Building an Air Manoeuvre Capability: The Introduction of the Apache Helicopter*, Session 2001-02, HC 1246, National Audit Office, October 2002.

<sup>13</sup> Defence Lines of Development are the eight elements that are necessary to provide operational military capability. They are: training, equipment, personnel, information, concepts & doctrine, organisation, infrastructure and logistics.

**3.4** The required platform protection measures were not transferable from other aircraft types and therefore required specific solutions to be developed for FSTA. The Department sensibly decided to continue negotiating the contract with AirTanker without altering its requirement, thus preventing delays to the negotiations. The platform protection modifications were the subject of a 2009 feasibility study costing the Department around £1.5 million, but are likely to require further research. The platform protection modifications to FSTA could cost several hundred million pounds, and the Department is reviewing the costs and technical requirements against other options.

**3.5** To preserve the delivery schedule for FSTA, any modifications will be retro-fitted to the aircraft after they have been delivered, although this will take a number of years to complete. To compensate for the time this would take, the Department is addressing equipment obsolescence and performance issues to extend the life of the Tristar fleet, notably by replacing the flight management system and cockpit displays at a cost of £23.5 million. This work is proving more complex than anticipated and has meant that one aircraft has been unavailable for more than 18 months, rather than seven months as scheduled.

### **Infrastructure is being developed to improve support at RAF Brize Norton**

**3.6** To coordinate the management of air transport and air-to-air refuelling aircraft, the Department has developed a management planning tool, Interweave, which draws on a wide range of existing data sources on aircraft serviceability, infrastructure plans and manpower plans to create usable and consistent management information. It is already being used to support major decisions, for example on developing infrastructure, crew transition and identifying where Defence Lines of Development are stretched.

**3.7** Although the increasing unreliability of the Tristar and VC10 aircraft causes delays, pressure on other Defence Lines of Development and external factors also result in flights being delayed. Between January 2007 and May 2009, using the Department's chosen performance measure, 91 per cent of flights left RAF Brize Norton within three hours of the scheduled departure, including some which the Department chose to delay, for example to wait for an aero-medical team to join a flight to Afghanistan. An analysis of the factors behind all delays to Tristar and VC10 air transport flights shows that 42 per cent of delays were due to technical problems with the aircraft. Other delays were due to infrastructure and personnel problems at RAF Brize Norton (23 per cent), external factors such as adverse weather and airspace availability (9 per cent) and other causes (26 per cent). The service arrangements being introduced under the FSTA contract will resolve some of these issues but the Department has also recognised that it must address the areas it has responsibility for in order to operate the FSTA contract efficiently.

**3.8** As part of the re-development at RAF Brize Norton, a significant level of building work is planned.<sup>14</sup> AirTanker is building, and will operate, maintenance hangars and the associated support infrastructure as part of the FSTA contract. This work is progressing to schedule. The Department plans to build a new passenger terminal and freight handling facility, since the current terminal has limited space and facilities and struggles to support large numbers of passengers. Given the additional passenger capacity of FSTA, this situation will be heightened when FSTA comes into service. The new facilities are intended to be operational in 2012 shortly after FSTA is introduced to service, but there is little time contingency in these plans.

**3.9** Shortages of military staff at RAF Brize Norton who are responsible for loading and unloading aircraft with passengers and cargo can also cause delays. In August 2009, over a quarter of these 300 posts were filled by civilian contractors and reservists. As these staff require greater supervision, and have restrictions over the roles to which they can be assigned, this is less efficient than having military personnel in these roles. The introduction of FSTA, and the planned move of the Hercules C130 aircraft from RAF Lyneham, will increase both the type and number of aircraft operating from RAF Brize Norton, requiring improved coordination of personnel and equipment at the base to service the increase in flights.

### **Managing variations in manpower will be difficult**

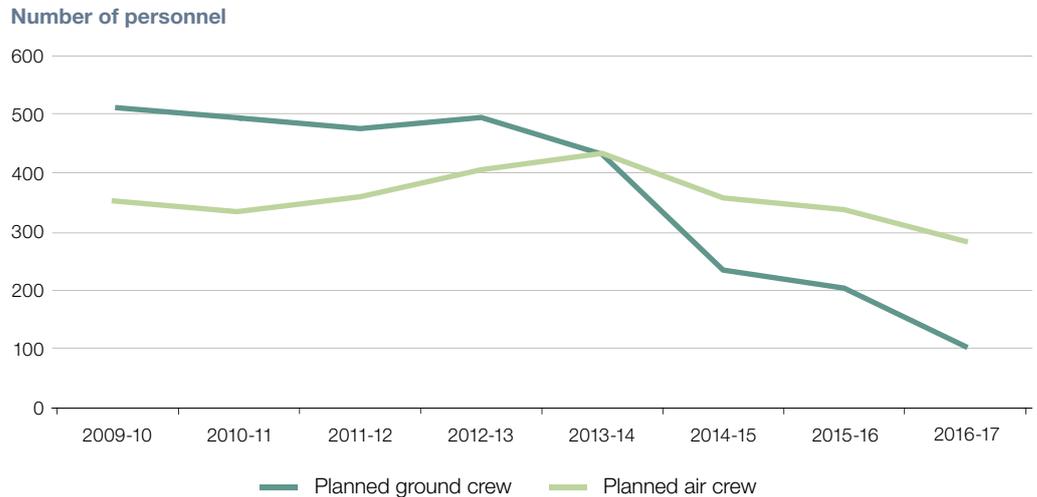
**3.10** **Figure 12** shows the numbers of service personnel required to support the multi-role tanker aircraft as fleets are brought into, or withdrawn from, service. For aircrew, the Department's greatest challenges are managing the temporary peak in numbers required in 2013 and encouraging personnel to stay working on aircraft which are shortly due to be withdrawn. The Department plans to manage this by increasing recruitment, and extending the contracts of some personnel approaching the end of their time working on the aircraft.

**3.11** For ground-crew the challenge is different, as AirTanker will provide greater manpower support under the FSTA contract, thereby reducing the number of military ground-crew required. Given the high volume of A330 aircraft in commercial use, the Department has identified that the direct transferability of the A330 engineering licence to the civil aerospace market presents a risk to staff retention. To mitigate this risk, personnel obtaining this accreditation will have to agree a five-year retention period.

<sup>14</sup> This includes consolidation of air transport and air-to-air refuelling assets to a single operating base at RAF Brize Norton, currently forecast at £151 million. This figure excludes the provision of supporting accommodation and additional aircraft parking areas.

**Figure 12**

Multi-role tanker aircraft planned manning levels



Source: National Audit Office analysis of Departmental data

### There are challenges if the Department is to be an intelligent customer for FSTA

**3.12** The commercial arrangements of the FSTA contract are complex (**Figure 13** overleaf) involving the provision of aircraft, crewing and training services and infrastructure for 27 years. The Department faces a number of challenges to maximise value for money from the contract and act as an intelligent customer throughout the life of the deal. The precise details of the contract are commercially sensitive, but the payment mechanism contains a complex hierarchy of variables, requiring considerable expertise to master. Understanding the philosophy underpinning the mechanism, how the individual metrics are calculated and the extent to which the Department's own actions may affect the achievement of those metrics is essential if the Department is to obtain best value from the contract.

**3.13** The Department also has responsibilities under the contract to provide information, assets and services to AirTanker to enable it to deliver the capability. Failure to provide these items could lead to compensation claims by the contractor, further diminishing value for money. These claims should only arise if the contractor can demonstrate an increase in costs and has been unable to mitigate the effects of any delay.

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### Figure 13

#### Commercial arrangements for FSTA

Poor contractor performance	The Department can receive a maximum of £22 million per annum in service credits for repeated service failure. If this limit is reached, the contract can be terminated for contractor default.
Requirements change	The contract outlines the procedure for AirTanker to respond to changes proposed by the Department and the Department's financial responsibility for any required feasibility studies.
Parameters for operational use	The contract outlines core assumptions on aircraft usage which, if exceeded, could transfer risk back to the Department. This provision limits the liability on the contract and avoids AirTanker having to price an unquantifiable risk.
Strategic change	If over any 12-month period, FSTA military air transport or air-to-air refuelling usage reduces or increases by pre-defined amounts from the expected rates because of a strategic change in Departmental policy, the contract allows AirTanker to review the service charges payable by the Department.
Exclusivity	Ordinarily, the expectation is that the Department will use FSTA rather than charter commercial aircraft. With a limited number of exceptions, if the Department chooses to use charter aircraft it would have to pay AirTanker additional payments of, for example, £8,000 per flight and £300 per hour (subject to indexation).
Termination	As with most PFI contracts, if the Department terminates the contract it would have to pay various costs including breakage costs, financier liabilities, redundancy and outstanding contractor change costs.  Compensation payments are linked to milestones covering the fixed assets, for example, compensation for each aircraft accepted into service would be £75 million (subject to indexation).

*Source: National Audit Office analysis of Departmental documents*

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### The project's complexity places a premium on continuity of knowledge and staffing

**3.14** The Department is dependent on a small number of post-holders in the team who have detailed knowledge of the contract. In the short term, the Department has mitigated the risk by appointing the existing commercial manager to lead the team. It has also developed detailed guidance, including a contract manual, for future commercial staff and the wider FSTA community. In the longer-term, ensuring continuity of expertise will require careful management and succession planning if the Department is not to be disadvantaged in discussions with its commercial partners who, typically, place a premium on such staff continuity. In addition, the Department has invested in a data storage and handling system to facilitate access to project documentation and act as a repository for the "corporate memory".

**3.15** Compared to a conventional procurement project, AirTanker will interface more directly with a wider range of Departmental staff and RAF personnel. The Department faces a challenge to ensure that this broad range of contacts understand the nature of the commercial relationship and the new service arrangements. To coordinate engagement with its contacts, the project team has jointly developed a stakeholder management plan with AirTanker.

**3.16** In particular, the Department needs to develop its existing tasking process from one based on owning a relatively large number of aircraft to a more commercial one based on being a customer for a service with access to fewer aircraft. In order to maximise the effective use of FSTA the new tasking process will need to be:

- **Commercially aware:** to make sure the Department utilises the guaranteed element of the service which the Department is obliged to pay for. Although FSTA are more capable than the existing fleets and should be significantly more reliable, their reduced number means the Department will have to increase aircraft utilisation to maximise value from the contract.
- **Efficient:** if the Department is to avoid having to call on its option for a tenth aircraft. More generally, it is important that the Department does not call on the reserve fleet unnecessarily. Doing so could incur significant costs including breaking third party leases, transferring aircraft to the military register and reconfiguring aircraft.

# Appendix One

## Study methodologies

Method	What we did	How we used the results
Semi-structured interviews	Around 35 interviews with key individuals and groups responsible for delivering, tasking and using air-to-air refuelling and air transport capability, as well as Departmental personnel responsible for related policy issues. We also spoke to the major bidders and advisers involved in the competition to let the FSTA contract.	We used interviews throughout the study to determine how the Department is managing the current fleets and the procurement and introduction of FSTA.
Site visits	Various visits to RAF Brize Norton and briefing from staff responsible for air movements, plans and the commanding officers of 101 and 216 Squadrons. We also visited the construction site of the new FSTA hangar.	We used site visits to understand the issues identified by interviewees, and meet staff responsible for managing issues on a day-to-day basis.
Document review	We reviewed a large number of Departmental documents. These documents included policy and planning papers related to the cost and performance of the current fleets, FSTA advice from third parties and internal papers, Investment Approvals Board papers and minutes of key meetings and committees.	We used document review to triangulate the evidence provided by interviewees and to structure interviews. We summarised documents to produce the timelines and diagrams included in the report.
Quantitative analysis	We collected financial data on the cost of supporting the VC10 and Tristar fleets and data on the costs of charter services. We also collected non-financial data on fleet performance based on availability, fit-for-purpose levels, flying hours and departure times.	We analysed financial data to show how costs had changed over time, and to determine cost per flying hour. We used non-financial data to assess trends in performance levels of the current fleets.
International comparisons	We contracted RAND Europe to undertake comparative research of other nations' multi-role tanker aircraft using publicly available information.	We used this research where possible to compare the cost, capability and flexibility of other nations' provision.

# Appendix Two

## Departmental mitigating actions

**1** The following table demonstrates why the Department is confident that some of the problems that occurred on the FSTA project could be better managed or mitigated against today.

Issue	Mitigating Action
Lack of analysis of alternative procurement options at outset	The Department's current policy is to initially adopt a conventional (i.e. capital) acquisition approach and to assess the viability of PFI in the Concept Phase along with other options, with support from its Private Finance Unit and in accordance with HM Treasury's PFI Value for Money Assessment guidance. If PFI appears to offer better value for money at this stage, approval is sought at Initial Gate to further explore the PFI solution. If PFI continues to be the most promising option, a Review Note is submitted seeking approval to begin Industry engagement and to re-profile funds accordingly.
Lack of mature fallback plan	The Department's policy (Smart Approvals) is to maintain a 'suitably robust fallback' solution. However, if work on maturing the fallback places the PFI solution at risk, the Department may elect, as it did on FSTA, to limit this work in order to preserve the viability of the PFI solution.
Under-estimation of project complexity	A key development since the inception of the FSTA project was the formation of the Private Finance Unit in February 2005. It has overall responsibility for the Department's private finance programme. It provides a central focus for PPP/PFI policy and support within the Department and offers corporate assurance about individual PPP/PFI projects to the acquisition community, Investment Approvals Board and HM Treasury. The Private Finance Unit supports project teams in their assessment of procurement options and in considering the viability, desirability and achievability of PFI. The Assessment Phase work focuses on ensuring there is clarity of the deal structure, the requirement and the payment and performance mechanism, all of which are cleared through the Private Finance Unit, prior to formal engagement with industry. This ensures that the complexities are understood and thought through as the deal structure is developed.
Limited competition	Smart Approvals permits market soundings prior to Initial Gate, seeks expressions of interest from industry prior to seeking bids, and permits funding of an element of bid costs, if necessary, noting that PFI usually involves much higher expenditure during the competition phase. All of these measures were employed on FSTA.

<b>Issue</b>	<b>Mitigating Action</b>
Difficulties in developing a complex new service delivery model	The Private Finance Unit is a centre of expertise within the Department, providing advice and assistance to all project teams exploring the viability, desirability and achievability of PFI. It is therefore able to draw on experience and best practice gained from over 50 Departmental PFI procurements enabling project teams to develop an appropriate service delivery model, commercial risk allocation and deal structure.
Lack of visibility of detailed sub-contractor costs	Lessons have been learned since FSTA and subsequent deals have introduced mechanisms within bidder documentation to ensure transparency of all costs.
Inadequate staff with PFI experience in project team, early in the process.	The paucity of personnel with PFI experience in the formative years of FSTA was instrumental in the formation of the Private Finance Unit. The Private Finance Unit recognises the difficulties of limited numbers of the Department's acquisition staff having PFI experience. However, in having regular contact with all project teams involved in procuring and operating PFI projects, it has knowledge of these individuals and strives to influence the appointment of key personnel. The Private Finance Unit also sponsors and provides PFI training and continuing professional development to the acquisition community.
Frequent changes of leadership within project team.	Continuity is recognised as an important factor in building a PFI programme and maintaining the confidence of the investors. In later years, key positions in the FSTA project team were extended in post to enable them to deliver Financial Close and the Senior Commercial Officer was re-appointed as the Team Leader to maintain corporate knowledge and continuity.
Late appointment of Senior Responsible Owner to project	The Private Finance Unit provides advice and support to project teams to ensure that governance arrangements are clearly documented and operated. The appointment of Senior Responsible Owners is a key consideration in developing the governance structure and such appointments for major military capability and business change programmes are appointed by and accountable to the Permanent Secretary through the Defence Board.

*Source: Ministry of Defence*



Design and Production by  
NAO Marketing & Communications Team  
DP Ref: 009245-001

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