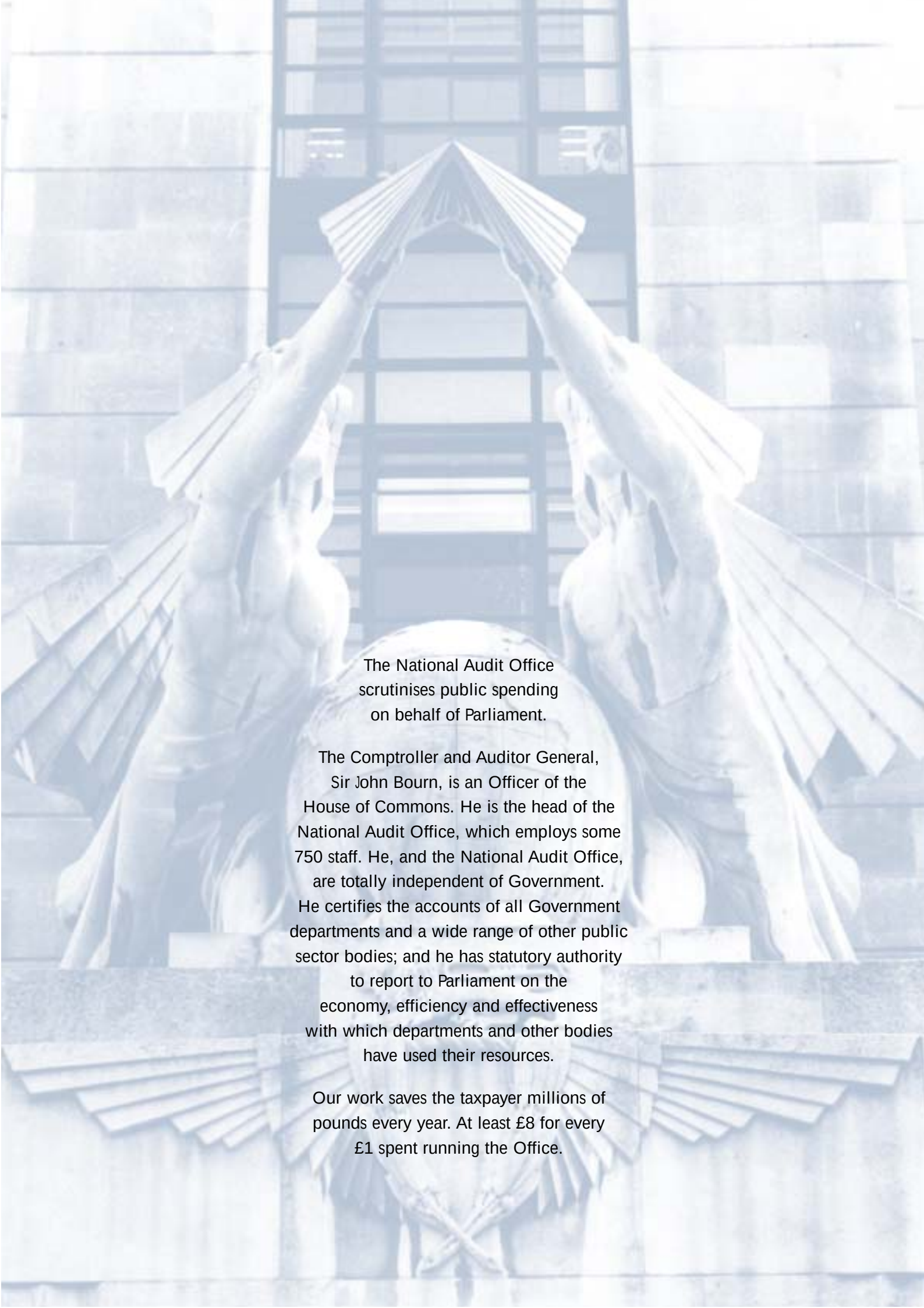
NATIONAL AUDIT OFFICE

Ministry of Defence

Major Project Reports 2002

REPORT BY THE COMPTROLLER AND AUDITOR GENERAL
HC 91 Session 2002-2003: 4 December 2002



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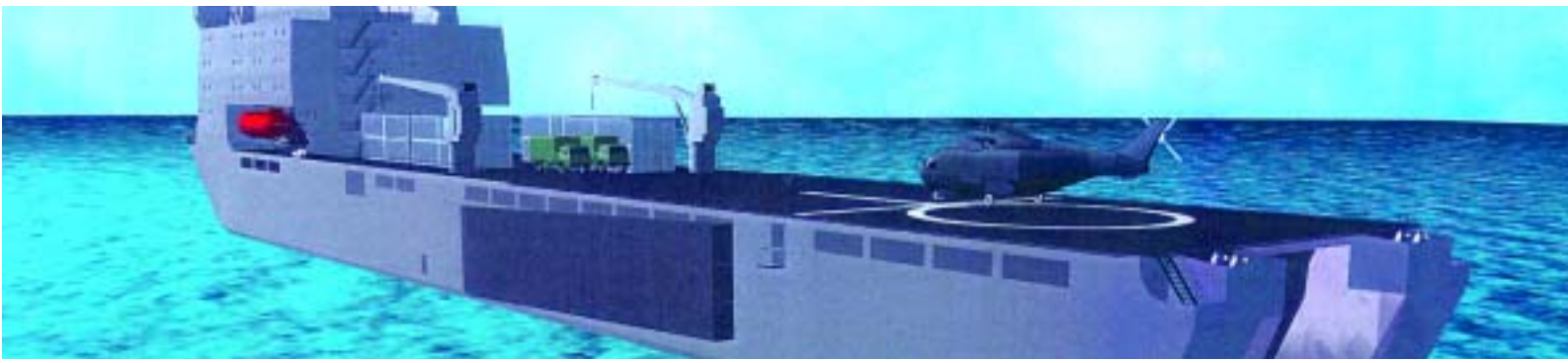
Ministry of Defence

Major Project Reports 2002



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John Bourn
Comptroller and Auditor General

National Audit Office
22 November 2002

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Summary

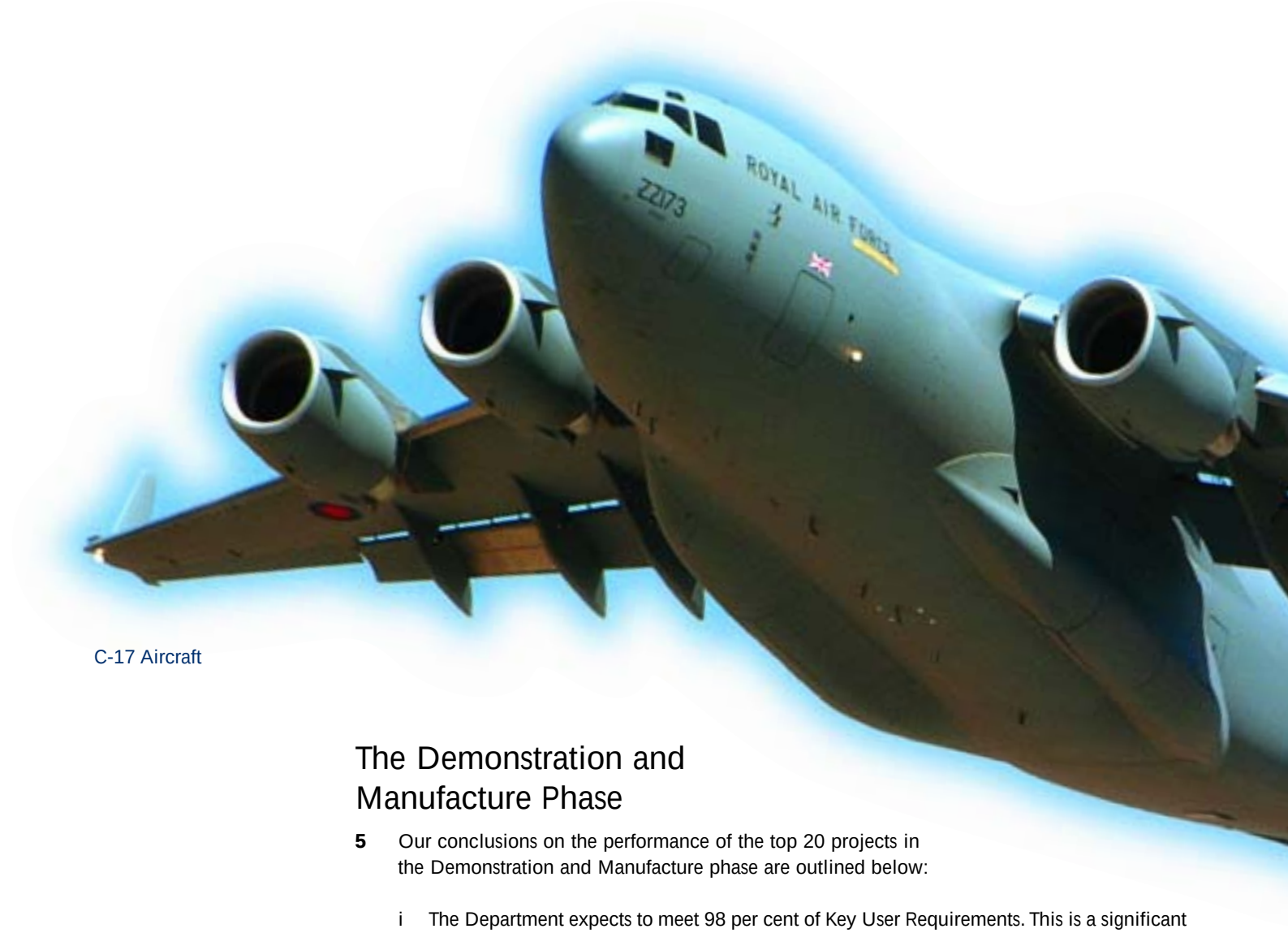
In this section

1 Each year since 1984, the Ministry of Defence (the Department) has reported to Parliament on its progress in procuring major defence equipments. Prior to 1991, the Department classified much of the data submitted to Parliament and our analyses of the key themes and trends emerging were therefore not published. The Major Projects Report 2002 is the eleventh that we have published since the level of classification was reduced.

2 The Major Projects Report 2002 covers the 12 month period to 31 March 2002 and provides cost, time and technical performance data for 30 projects split, in accordance with Smart Acquisition principles, between the 20 largest projects on which the main investment decision has been taken (post-Main Gate) and the 10 largest projects yet to reach that point (pre-Main Gate). In future, the range of data we report will be expanded to include Cost of Ownership information (see Appendix 6). The population of projects included in this year's Report differs significantly from that of previous years with 10 new projects entering the report. This change and the inclusion of the "Risk Differential" for newly approved projects means that direct comparisons with previous Major Projects Reports is difficult.

3 Before the introduction of Smart Acquisition, the Department approved projects and managed the equipment programme on the basis of estimates of time and cost that it was 50 per cent confident of achieving. Ten of the Major Projects Report 2002 projects (the "Legacy" projects) were approved using this baseline. Under Smart Acquisition the Department still budgets on the basis of estimates that it is 50 per cent confident of achieving. However, projects are now approved on the basis of time and cost figures that it is 90 per cent confident of achieving.

4 Our overall conclusion is that there is a continuing improvement in project performance, especially regarding cost control, but that maintaining this improvement will be the challenge. Notably, there are encouraging indications that Smart Acquisition is resulting in innovation in the design of programmes to deliver equipment capabilities faster, cheaper and better. Messages on the management of individual programmes to time and cost once they are underway are more varied. Our specific conclusions are summarised below.



C-17 Aircraft

The Demonstration and Manufacture Phase

5 Our conclusions on the performance of the top 20 projects in the Demonstration and Manufacture phase are outlined below:

i The Department expects to meet 98 per cent of Key User Requirements. This is a significant achievement;

ii Under the new approvals process, total overall forecast costs are within total approved costs and have fallen again in-year;

iii Cost and time performance across the majority of factors responsible for variation has improved. Exchange rates, which are outside the Department's ability to influence, are a major cause of in-year cost increase;

iv In the past year, 14 of the 20 post-Main Gate projects have suffered adverse movement in either time or cost performance. Of these, two projects are showing adverse movement in more than one area; and

v The Department is showing signs of improvement on the management of slippage but overall there is still forecast time variation beyond approval.

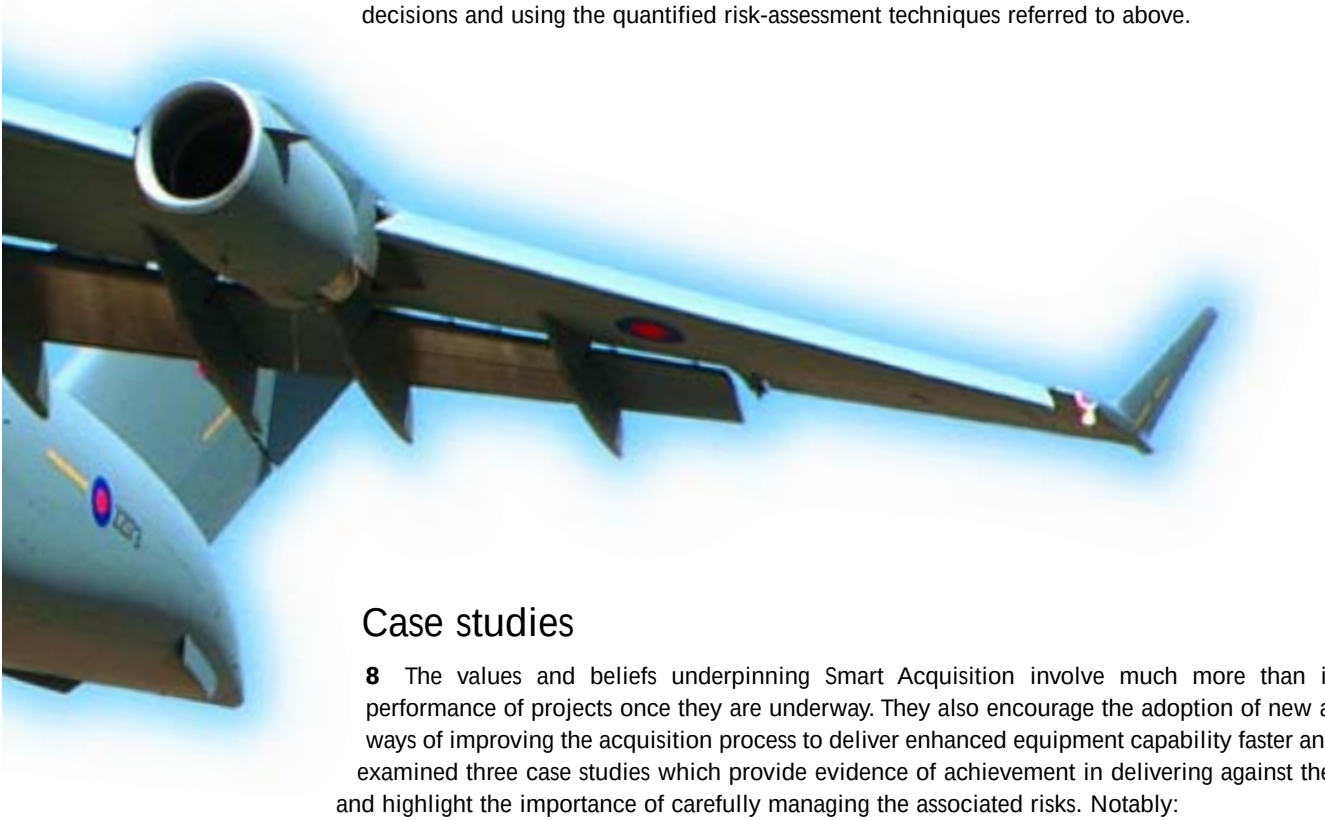
6 Our analysis of historical data suggests that the majority of cost variation tends to be reported in the middle of the procurement cycle while time variation has historically been reported either early in the procurement cycle or towards the end. The challenge for the Department and Smart Acquisition will be to break this mould and to improve the management of projects to cost and time. However, we also recognise it is unrealistic to expect that such a challenge will result in uniform success straight away, and the Department may experience some setbacks. Future Major Projects Reports will provide a better indication of the success of Smart Acquisition in this area.

The Assessment Phase

7 Our conclusions on the top ten projects in the Assessment Phase are:

i There have been improvements in the quantification of risk. Three-point estimates are being used more comprehensively, Technology Readiness Levels are being introduced and Assessment Phase expenditure has increased.

ii Assessment Phase timescales are often over-optimistic. This can have a knock-on effect through the Demonstration and Manufacture Phase and lead to unplanned capability gaps. There are also indications that wider risks to timescale achievement are being under-estimated during the Assessment Phase. Addressing the cultural and systemic factors that have contributed to such over-optimism will be key to the Department and its partners in making better-informed decisions and using the quantified risk-assessment techniques referred to above.



Case studies

8 The values and beliefs underpinning Smart Acquisition involve much more than improving the performance of projects once they are underway. They also encourage the adoption of new and innovative ways of improving the acquisition process to deliver enhanced equipment capability faster and cheaper. We examined three case studies which provide evidence of achievement in delivering against these aspirations and highlight the importance of carefully managing the associated risks. Notably:

i **C-17 Heavy lift aircraft**: Has been acquired to a short timescale under a leasing deal to meet a capability gap identified during the Strategic Defence Review. Both the leasing deal itself and the way in which the lease has been funded are significant innovations.

ii **Type 45 Destroyer**: Is being procured using incremental acquisition techniques and an innovative procurement strategy. BAE Systems Electronics is acting as the prime ship build contractor responsible for managing a shared programme of work with two sub-contractors, BAE Systems Marine and Vosper Thornycroft, building the first six vessels in "blocks". The Department's relationship with BAE Systems Electronics is based on partnering principles.

iii **Skynet 5 Satellite Communications System**: Is being delivered under a Private Finance Initiative agreement using innovative methods to maximise value for money on the deal and with substantial risk transferred largely to the contractor.

There is continued improvement in project performance, maintaining this will be the challenge

Part 1

1.1 In the first part of this Report, we examine progress on the Department's 20 largest post-Main Gate procurement projects against cost, time and the achievement of the Customer's Key User Requirements. We determine how the projects have performed both in-year and since project approval, considering not only the size of variations but their cause. The overall population of this year's Major Projects Report differs significantly from those of previous years, with the introduction of ten 'Smart Acquisition' projects. This change, together with the differing approval baselines that result from the mix of Legacy and Smart Acquisition projects, makes overall comparison with previous Reports difficult.

1.2 Our analysis shows that the Department is forecasting that expenditure will remain within approval and that 98 per cent of the Customer's Key User Requirements will be achieved. There are also encouraging signs that project slippage is being addressed, although overall the projects exceed their time approval, primarily as a result of historic performance on the Legacy projects.

Overall costs are within approval but time variation exceeds approval

Direct comparisons with previous years might not take into account the impact of the Smart Acquisition approvals process and the population change

1.3 This year the post-Main Gate project population comprises 10 Legacy projects and 10 Smart Acquisition projects[1]. Legacy projects are measured against a 50 per cent approval and are comparable with those of previous years. Smart Acquisition projects are measured against a 90 per cent approval, which cannot be compared directly against projects with a 50 per cent approval. For Smart Acquisition projects, the difference between the forecast (50 per cent) for cost and time and highest acceptable (90 per cent) for cost and time at Main Gate is a measure of risk in the project and is reported in the Major Projects Report as the Risk Differential. Smart Acquisition projects can therefore experience adverse movement without exceeding approval.

1.4 While the Major Projects Report population varies each year the Major Projects Report 2002 project population has changed significantly with the inclusion of 10 new projects, all at a relatively early stage in their procurement cycle. Overall, the net variation associated with the inclusion of the 10 new projects is a reduction of £2,784 million for cost and a reduction of 419 months for time relative to the 2001 Major Projects Report population.

Under the new approval process, total forecast costs are within total approved costs and have fallen again in-year

1.5 The Department is maintaining the trend of cost control established over the past few years. Given the mix of Smart Acquisition and Legacy projects in the Major Projects Report 2002 it is appropriate to compare this year's forecast against the budgeted cost (this is the most likely or 50 per cent cost) and the approved cost (90 per cent for Smart Acquisition projects and 50 per cent for Legacy projects). The total forecast cost of the Major Projects Report's 2002 projects is £45.4 billion against an approval of £45.6 billion. The total forecast costs are 2.3 per cent (£1 billion) more than originally forecast but 0.4 per cent (£0.2 billion) less than the approved cost. Eurofighter accounts for £1.3 billion of the overrun.

1.6 **Figure 1** shows that the Major Projects Report 2002 projects are under approval by £0.2 billion. Within this, the total forecast costs in-year have fallen again by £0.1 billion (0.2 per cent). This is the net effect of a decrease of £576 million on eight projects (80 per cent of which occurred on two projects, Eurofighter and A400M) and an increase of £477 million on 10 projects (most significantly the Future Joint Combat Aircraft which accounts for 39 per cent of the increase). There has been no in-year variation on two projects, the Advanced Air-launched Anti-Armour Weapon and Trojan and Titan.

1 *For Major Projects Report reporting purposes, Smart Acquisition projects are those projects with most likely (50 per cent) and highest acceptable (90 per cent) estimates approved at Main Gate. The Multi-Role Armoured Vehicle has a Smart approval for time but not cost, Successor Identification Friend or Foe has a Smart approval for cost but not time.*

1 Summary of overall cost performance in-year and from approval

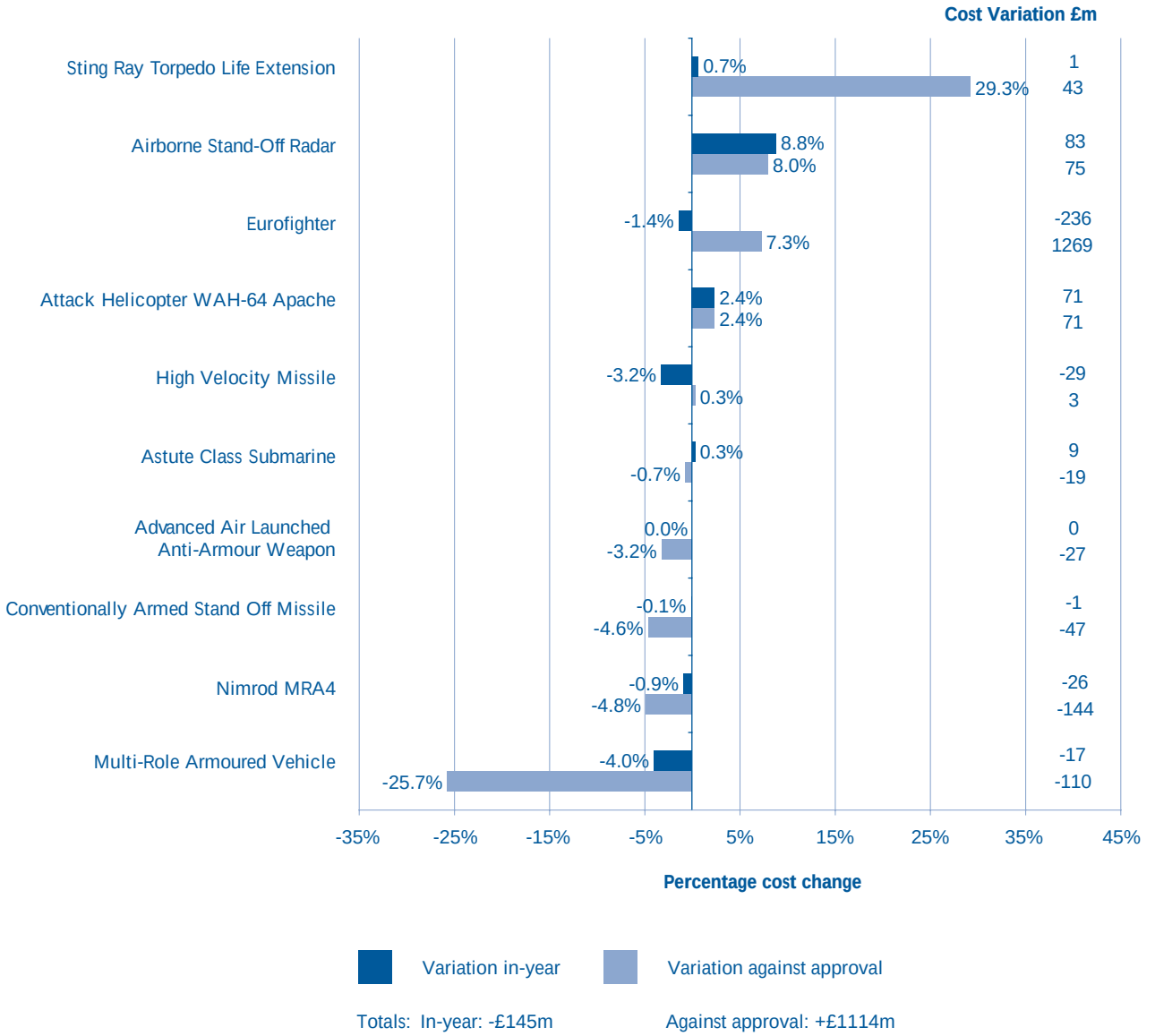
Overall the Department is within its approved cost by £0.2 billion and costs are down in-year

£ Billion	Forecast cost at Approval (50 per cent)	Approval	Major Projects Report 2002 Forecast cost (50 per cent)	Difference from Approval	In-year variation
Legacy Projects	30.4	30.4 (50%)	31.5	+1.1	-0.15
Smart Acquisition Projects	13.9	15.2 (90%)	13.9	-1.3	+0.05
Total	44.3	45.6	45.4	-0.2	-0.10

Source: National Audit Office

2 Cost variation in-year and against approval for Legacy projects

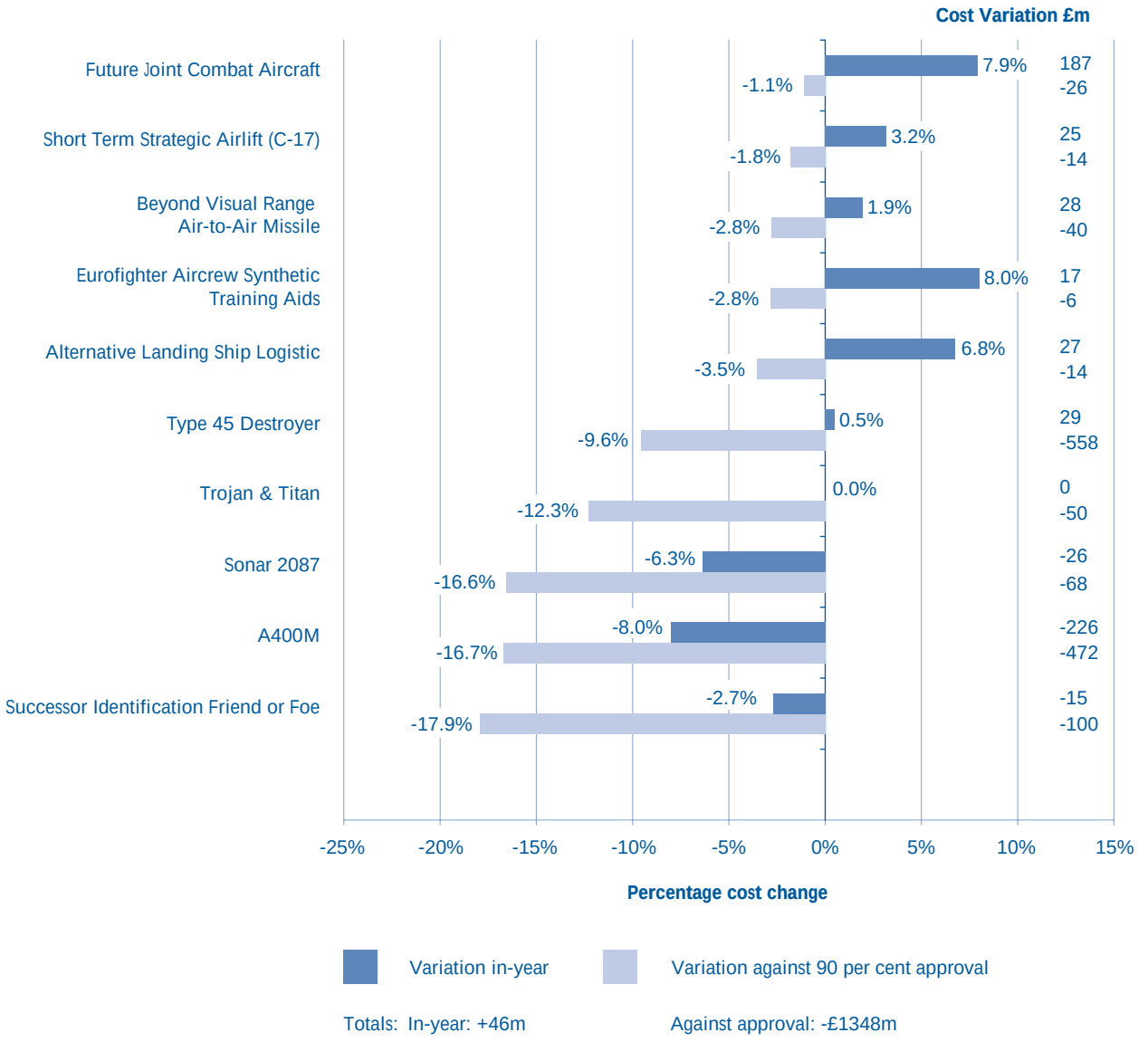
In-year forecast expenditure has decreased but total forecast expenditure remains above approval



Source: National Audit Office

3 Cost variation in-year and against approval for Smart Acquisition projects

None of the projects are beyond their approval



Source: National Audit Office

Cost variation on Legacy Projects

1.7 Given the mix of approval baselines in this year's population, our analysis has been divided between Legacy and Smart Acquisition projects. **Figure 2** shows the in-year and overall cost variation for Legacy projects. In-year, four projects show a positive cost variation, five projects show a negative variation and one has no variation. In-year, the total forecast costs for Legacy projects have decreased by £145 million.

1.8 Overall, five projects are above their approved cost and five remain below their approved cost. The total overspend for Legacy projects is £1,114 million above approval. Excluding Eurofighter (currently forecasted at £1,269 million beyond its approval), the remaining projects are £155 million within their approval.

Cost variation on Smart Acquisition projects

1.9 **Figure 3** shows the in-year and overall cost variation for the 10 Smart Acquisition projects. In-year, six projects have a positive cost variation, three have a negative cost variation while one project has no variation. The total in-year variation for Smart Acquisition projects is an increase of £46 million (0.3 per cent). Despite the positive in-year variation none of the projects is beyond approval. Overall, the Smart Acquisition projects are £1,348 million within their cost approval.

4 Summary of overall time performance in-year and from approval

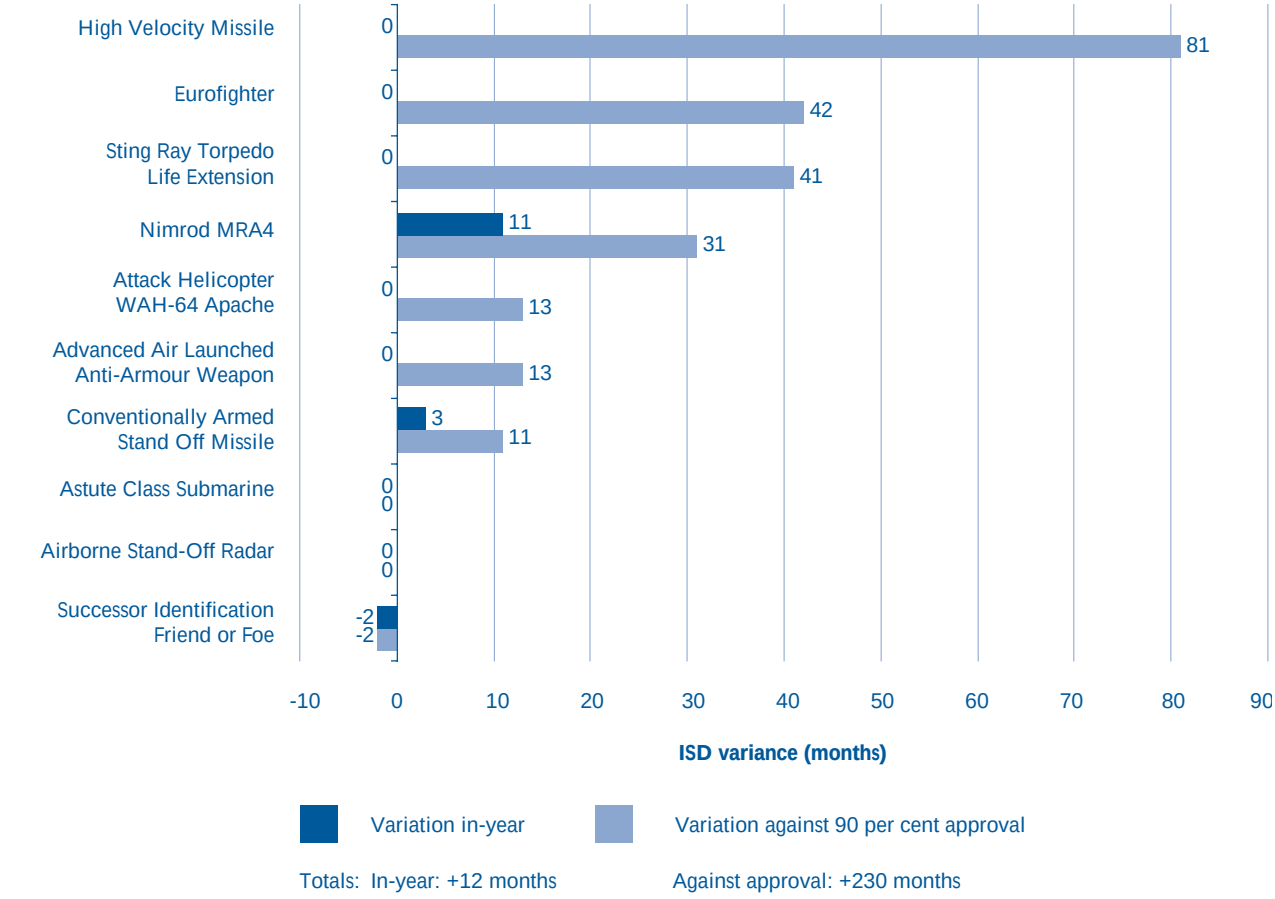
Overall, the Department is 20 months beyond its time approval

Time (months)	Difference from approval	In-year variation	
		Net total	Outside Approval
Legacy Projects	+230 (50%)	+12	+14
Smart Acquisition Projects	-57 (90%)	+31	+6
Total	+173	+43	+20

Source: National Audit Office

5 Time variation in-year and against approval for Legacy projects

Seven projects have overun their time approval



Source: National Audit Office

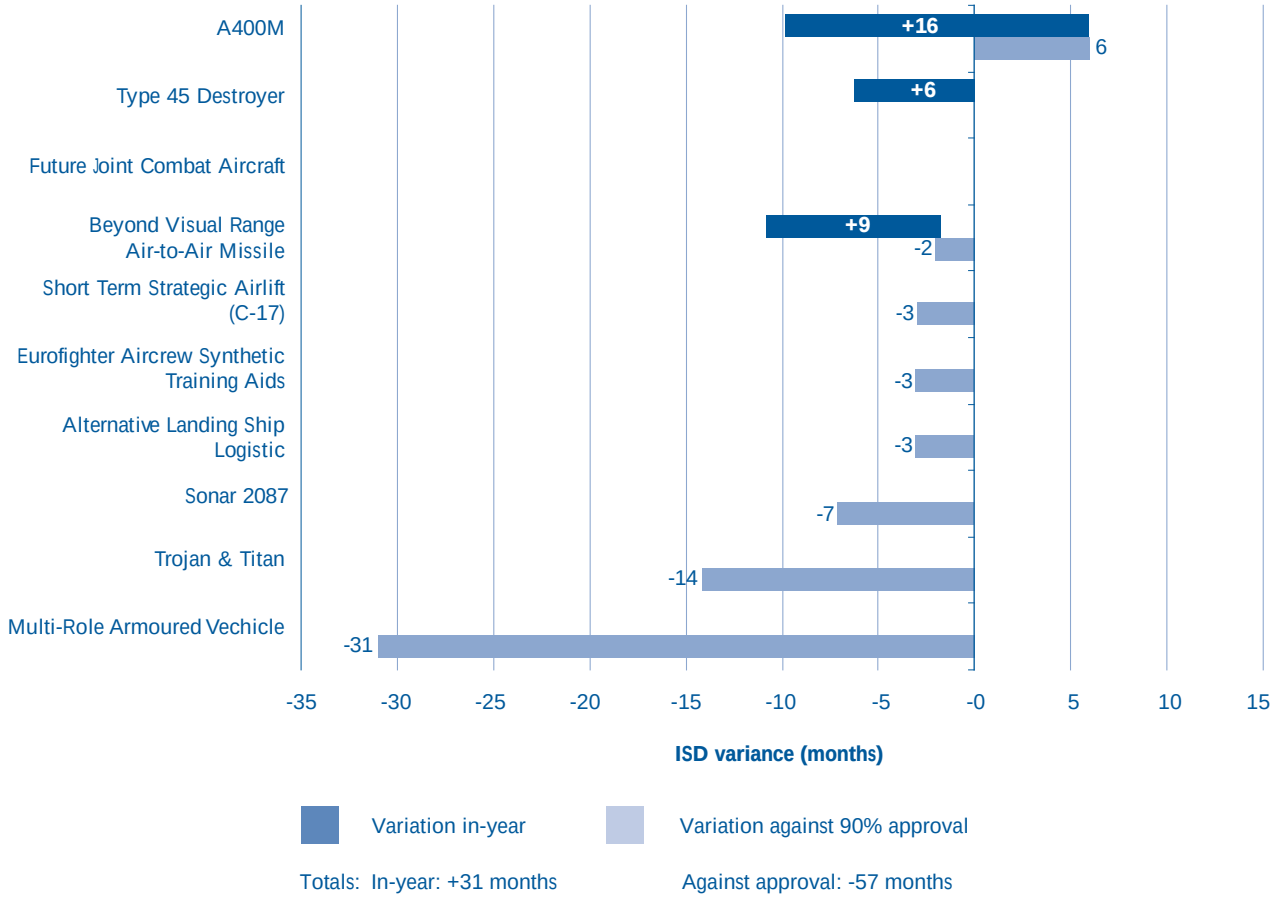
Slippage continues to be a problem, primarily on Legacy projects

1.10 **Figure 4** summarises the overall time variation, both against approval and in-year, for the Major Projects Report 2002's mix of Smart and Legacy projects. In-year, there has been 43 months of slippage, of which 20 months are beyond approval, compared with 29 months beyond approval last year. Overall project slip against approval totals 173 months of which 130 months are historic and of those 91 months relate to projects now in-service. Across the 19 projects, slippage extends a project's average lifecycle, from Main Gate approval to the current in-service date, by nine months compared to 27 months in Major Projects Report 2001[2].

2 *The Future Joint Combat Aircraft does not have an approved in-service date as it has a 'tailored' Main Gate approval to fit in with the United States' acquisition cycle.*

6 Time variation in-year and against approval for Smart Acquisition projects

One project has overrun its time approval



Source: National Audit Office

Time variation on Legacy projects

1.11 **Figure 5** shows in-service date variations both in-year and against approval for the Legacy projects. In-year net slippage totals 12 months. Nimrod has slipped by 11 months and the Conventionally Armed Stand-Off Missile has slipped three months in-year. This is offset by one project, Successor Identification Friend or Foe which is forecast to be delivered two months ahead of its approval date.

1.12 Legacy projects continue to overrun against approval. However, the degree of overrun is reducing, continuing the downward trend of the previous three years. In total, seven of the Legacy projects are beyond their approval, two are on their approval, and Successor Identification Friend or Foe is within approval. The total slippage across all the Legacy projects is 230 months.

Time variation on Smart Acquisition Projects

1.13 **Figure 6** shows in-service date variations in-year and against approval for the Smart Acquisition projects. In-year, three projects have declared a positive time variation making a total in-year variation for the Smart Acquisition projects of 31 months. The in-year slip of 16 months for A400M has taken the project six months beyond its approved in-service date. The remaining Smart Acquisition projects are all within approval by a net total of 57 months.

There is a continuing improvement in performance

The Department is forecasting it will meet 98 per cent of the Key User Requirements

1.14 The Department is forecasting to meet 173 out of the 176 (98 per cent) Key User Requirements in-year, compared with 93 per cent for the projects in the Major Projects Report 2001. This translates into meeting all Key User Requirements for 18 out of the 20 projects in the Major Projects Report 2002 compared with 16 out of 20 in 2001. The two projects where the Department is forecasting less than 100 per cent achievement are Eurofighter (nine out of 10 Key User Requirements forecast to be met), and Multi-Role Armoured Vehicle (nine out of 11 Key User Requirements forecast to be met).

1.15 Of the three Key User Requirements which are forecast not to be met the Customer has in-year, chosen to transfer two Key User Requirements from the Multi-Role Armoured Vehicle project to another programme. The third Key User Requirement which it is currently forecast will not be achieved is a legacy Eurofighter issue and arose due to technical factors[3].

Cost and time: Performance across the majority of factors responsible for variation has improved

1.16 The Major Projects Report 2002 attributes cost variation across eleven factors as described at Appendix 5. Allocation of variation to each factor is useful in helping to understand where significant variations are occurring and therefore to direct management effort. The total cost variation is the net result of the variations, both favourable and adverse, across all the factors. **Figure 7** lists each of the factors and how they have varied in-year. With the exception of the Risk Differential, the other factors have been common since the Major Projects Report 2000. Comparing the variations on the factors across the last three years will help identify any trends associated with specific factors.

3 Please refer to the Comptroller & Auditor General's Report: The 2000 Major Projects Report HC970 Session 1990-2000 paragraph 1.22.

Artist's Impression of a Type 45 Destroyer

7 Breakdown of cost and time variation in-year by factors

Cost and time variation is less than previous years across the majority of factors

Factor	Impact on 2002 Cost Variation	Impact on 2002 Time Variation
Procurement Strategy	In-year, the overall impact of this factor is balanced by ALSL and STSA. (Overall, the factor accounts for approximately 0.5 per cent of the cost variation since Main Gate but this is associated with variation in previous years primarily with Eurofighter and BVRAAM.)	**A delay of 6 months in-year** is attributable to this factor. One project, Type 45, is responsible for all 6 months.
Changed Requirements	In-year, this factor accounts for **a decrease of £405 million**. Three projects show significant negative variation; A400M (£319 million), Nimrod (£114 million) and FJCA (90 million). Nimrod also had a positive cost variation (£105 million) in-year as a result of changed requirements.	In-year, no projects have recorded any time variation associated with this factor.
Changed Budgetary Priorities	In-year, this factor accounts for **an increase of £78 million**. Five projects have recorded a cost increase due to this factor, the most significant being FJCA (£43 million).	**A delay of 16 months in-year** is attributable to this factor. This is the most significant cause of project slippage in-year. One project, A400M, is responsible for all 16 months.
Changes in Associated Projects	In-year, no projects have recorded any variation associated with this factor.	In-year, no projects have recorded any variation associated with this factor.
Technical Factors	In-year, this factor accounts **for an increase of £147 million**. Eurofighter (£140 million) and Astute (£61 million) make up the majority of the positive variation associated with this factor. Eurofighter also has a negative variation of £43 million associated with this factor.	**A delay of 14 months in-year** is attributable to this factor. In-year, the Nimrod and CASOM in-service dates are forecast to slip 11 and 3 months respectively. Historically, this has been the most significant factor affecting time but this year it is second behind Changed Budgetary Priorities.
Contracting Process	In-year, this factor is responsible for **an increase of £264 million** primarily associated with A400M (£227 million).	**A delay of 7 months in-year** is attributable to this factor. In-year, the BVRAAM in-service date is forecast to slip 9 months and the SIFF in-service date is forecast to be 2 months earlier than planned.
Receipts	In-year, there has been little variation **(£1 million)** associated with this factor.	Not applicable.
Accounting Adjustments and Redefinitions	In-year, this factor is responsible **for a decrease of £91 million**. Six projects have recorded negative variation due to this factor, the most significant being Astute (£62 million).	In-year no projects have recorded any variation associated with this factor.
Inflation	In-year, the change associated with this factor is **a cost reduction of £255 million**. This is primarily accountable to the Eurofighter project, which has recorded an in-year variation on inflation of £290 million.	Not applicable.
Exchange Rate	In-year, this factor is responsible for **an increase of £164 million**. Four projects, all Dollar - based, have recorded cost growth due to this factor; FJCA (£189 million), ASTOR (£83 million), STSA (£24 million) and Apache (£23 million). Both A400M (£141 million) and CASOM (£13 million) have seen cost reduction due to Euro exchange rate variation in-year.	Not applicable.
Risk Differential	Risk Differential is calculated as the difference between the 50 per cent and 90 per cent forecasts at Main Gate approval. Only the Smart Acquisition projects in the population have a cost risk differential, totalling £1,257 million.	Risk Differential is calculated as the difference between the 50 per cent and 90 per cent forecasts at Main Gate approval. Only the Smart Acquisition projects in the population have a time risk differential, totalling 88 months.
Total In-Year Variation	**Costs have decreased in-year by £99 million.**	**Slippage has increased in-year by 43 months. (20 months beyond approval).**

Source: National Audit Office

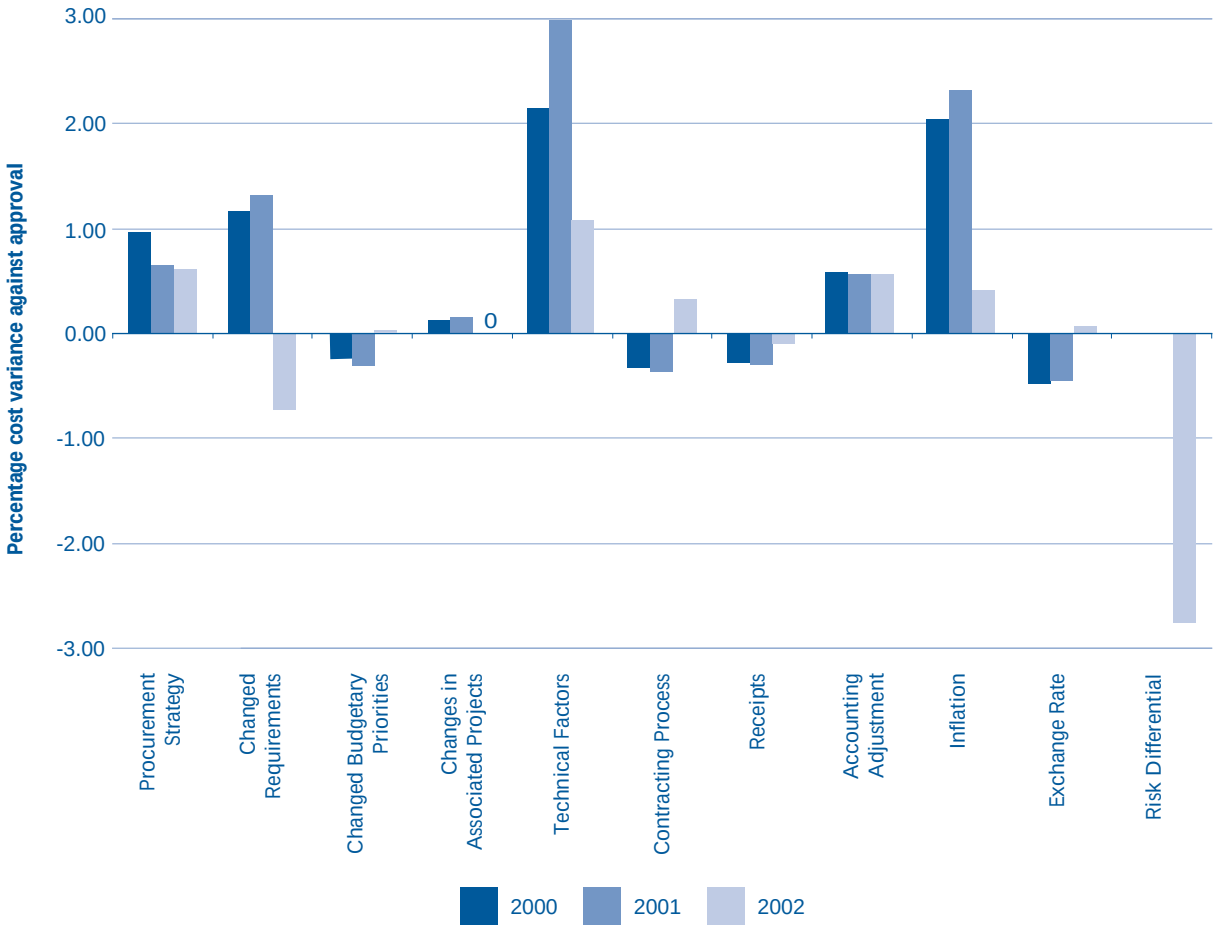
1.17 **Figure 8** shows the total cost variation[4] for each of the factors since approval as recorded in each of our reports from the Major Projects Report 2000 to the Major Projects Report 2002. For the majority of factors the level of variation has reduced. Most notable is the variation in Changed Requirements reflecting the Department's ability to trade-off capability for cost. The significant reduction in the impact of Inflation is also worthy of note. While the underlying rate of inflation is beyond the Department's control, it can control its exposure to inflation in the contractual terms and conditions it negotiates with Industry. Greater awareness of the impact of inflation and negotiation of more suitable indices have helped reduce the Department's exposure.

1.18 Contracting Process and Exchange Rate are the two major factors showing cost growth in the Major Projects Report 2002. This reflects programme delays on the A400M and adverse movements in the Pound/Dollar exchange rate variation, respectively.

1.19 The Department has varying degrees of control over the factors influencing the variation categories. The factors are laid out in Figure 8 with those that the Department has most control over on the left, to those where the Department has limited or no control on the right. Within some of the factors under Departmental control, for example, Changed Budgetary Priorities, the level of variation is primarily the responsibility of the Department's Equipment Capability Customer rather than the Defence Procurement Agency. We note that some of the factors where the Department has limited or no control, for example, industrial performance and exchange rates, have a significant impact on the Department's financial position. The Exchange Rate variation shows a net increase of £164 million compared to the Major Projects Report 2001 figure of £9 million. **Box 1** provides more detail on the impact of exchange rates.

8 Analysis of cost variation by factor since the Major Projects Report 2000

Cost variation is less than previous years across the majority of factors



Source: National Audit Office

4 *This is total variation from approval not purely in-year variation.*

Box 1- The effects of Exchange-Rate Variation

1. One of the principal causes of in-year cost increases in the Major Projects Report 2002 has been exchange-rate variations which accounted for a net increase of £164 million. This compared with previous years where exchange-rate variations accounted for increases of £3 million in the Major Projects Report 2000 and £9 million in the Major Projects Report 2001.

2. Six projects in the Major Projects Report 2002 are exposed to Dollar or Euro exchange-rate variations. In-year, four projects, all Dollar-based, recorded exchange-rate-related cost growth: Future Joint Combat Aircraft (£189 million), Airborne Stand-Off Radar (£83 million), Short Term Strategic Airlift (£24 million) and Apache (£23 million). Two projects, both Euro-based, have experienced cost reductions in-year due to exchange-rate variations: the A400M Transport Aircraft (£142 million) and the Conventionally Armed Stand-Off Missile (£13million).

3. The value (and number) of projects with exchange-rate exposure has remained largely constant over the period covered by the Major Projects Report 2000 to the Major Projects Report 2002 at about £30 billion or 65 per cent of the Major Projects Report total. For example, a one per cent exchange-rate variation could have an impact of up to £300 million on the overall Major Projects Report expenditure total. Over the past three years, the value of Dollar-based projects has increased by five per cent while that for Euro-based projects has decreased by five per cent.

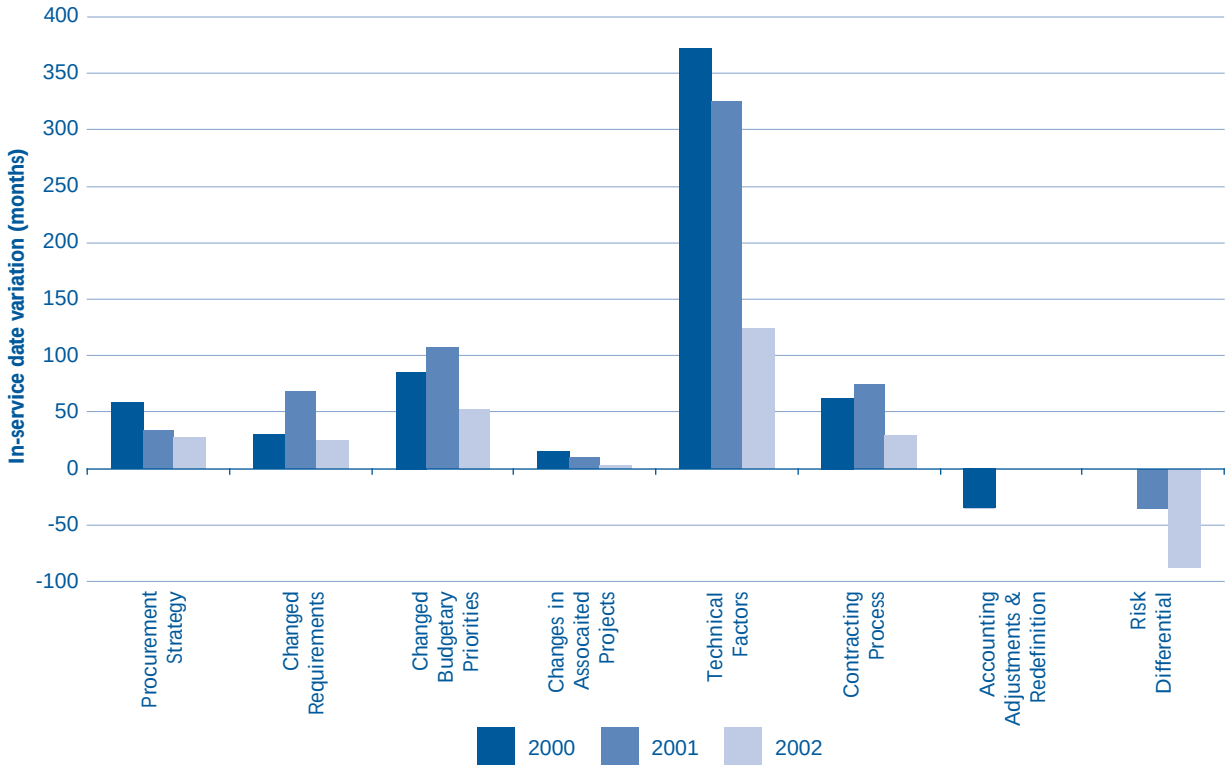
4. The primary cause of the increase in exchange-rate variations is changes to the exchange-rate forecasts for future years. Projects with exchange-rate exposure produce their annual forecast costs using exchange-rates provided centrally by the Department which cover the current planning year and the following three years. This is the period covered by the Department's Short Term Plan. The Defence Procurement Agency uses a 10-year planning horizon and advises projects to 'flat-line' exchange-rates after the fourth year, which means that the rate forecast in the fourth year is used to plan all future years for that project. For projects with a Dollar/Pound element in the Major Projects Report 2002, this has meant that what was flat-lined at $1.63: £1 during 2001, is now flat-lined at $1.41: £1. For projects such as the Future Joint Combat Aircraft, which has expenditure programmed until 2011 on Development work alone, the exchange-rate is flat-lined from 2003/4 to 2015 at this constant low rate, resulting in a cost increase of £189 million in-year.

5. There are alternative methods of costing the effect of future exchange-rates, for example, using 10-year Bank of England forward exchange-rates. Such rates could provide a better indication of where the Bank of England expects exchange-rates will strengthen and weaken in the longer term. This approach could be pertinent for those projects with significant expenditure taking place beyond the four-year point. For example, the A400M Integrated Project Team used Bank of England forward exchange-rates for the first 10 years in its Business Case. This year the Integrated Project Team has adopted the more widely used practice of flat-lining the fourth year exchange-rate, resulting in a cost reduction of £141 million. The 10-year Bank of England forward exchange-rates reflected a continued strengthening of the Euro against the pound over the period whereas the current flat-lining approach takes no account of forecast exchange-rates after year four.

Artist's Impression of an A400m

9 Analysis of time variation against factors since the Major Projects Report 2000

Time variation is less than previous years across the majority of factors



Source: National Audit Office

1.20 **Figure 9** shows that the Major Projects Report 2002 in-service date variation since Main Gate is less across all the factors compared with previous years. There is significant improvement associated with Technical Factors, Contracting Process, Changed Budgetary Priorities and Changed Requirements. As with cost variations, the Department has varying degrees of control over the factors and Figure 9 has been structured such that the factors on the left are those over which the Department has most control to those on the right where the Department has little or no control. The major improvement in performance results from a combination of factors including the Major Projects Report 2002 population change and the Smart Acquisition approval process.

Maintaining improved performance is now the challenge

Fourteen of the twenty projects are showing an adverse movement in-year

1.21 **Figure 10** shows that seven of the 10 Legacy projects are exhibiting adverse movement in-year. Of these, four have an adverse movement in cost, two have an adverse time effect and one has an adverse impact on performance. **Figure 11** shows that seven of the 10 Smart Acquisition projects are also showing adverse movement in-year. Six projects are showing an adverse impact on cost and three an adverse impact on time. Two of the Smart Acquisition projects are showing an adverse impact on both cost and time. However, all except one project (A400M) are within their cost and time approval which has resulted from the Risk Differential which is associated with Smart Acquisition approvals. We discuss the issue of the Risk Differential in more detail in **Box 2 overleaf**.

10 Summary of in-year Legacy project performance

No projects have had adverse movement in more than one category

Project	No adverse Cost impact	No adverse Time impact	No KURs Missed
Advanced Air Launched Anti-Armour Weapon	✓	✓	✓
Airborne Stand-Off Radar	X	✓	✓
Astute Class Submarine	X	✓	✓
Attack Helicopter WAH-64 Apache	X	✓	✓
Conventionally Armed Stand Off Missile	✓	X	✓
Eurofighter	✓	✓	✓
High Velocity Missile	✓	✓	✓
Multi-Role Armoured Vehicle	✓	✓	X
Nimrod MRA4	✓	X	✓
Sting Ray Torpedo Life Extension	X	✓	✓
No. of projects with no adverse impact	**6**	**8**	**9**
No. of projects with adverse impact	**4**	**2**	**1**

NOTE

1. The Multi-Role Armoured Vehicle has transferred two of its Key User Requirements to another project.

Source: National Audit Office

11 Summary of in-year Smart Acquisition project performanace

Two projects have had adverse movement in two categories

Project	No adverse Cost impact	No adverse Time impact	No KURs Missed
A400M	✓	X	✓
Alternative Landing Ship Logistic	X	✓	✓
Beyond Visual Range Air-to-Air Missile	X	X	✓
Eurofighter Aircrew Synthetic Training Aids	X	✓	✓
Future Joint Combat Aircraft	X		✓
Short Term Strategic Airlift (C-17)	X	✓	✓
Sonar 2087	✓	✓	✓
Successor Identification Friend or Foe	✓	✓	✓
Trojan & Titan	✓	✓	✓
Type 45 Destroyer	X	X	✓
No. of projects with no adverse impact	**4**	**6**	**10**
No. of projects with adverse impact	**6**	**3**	**0**

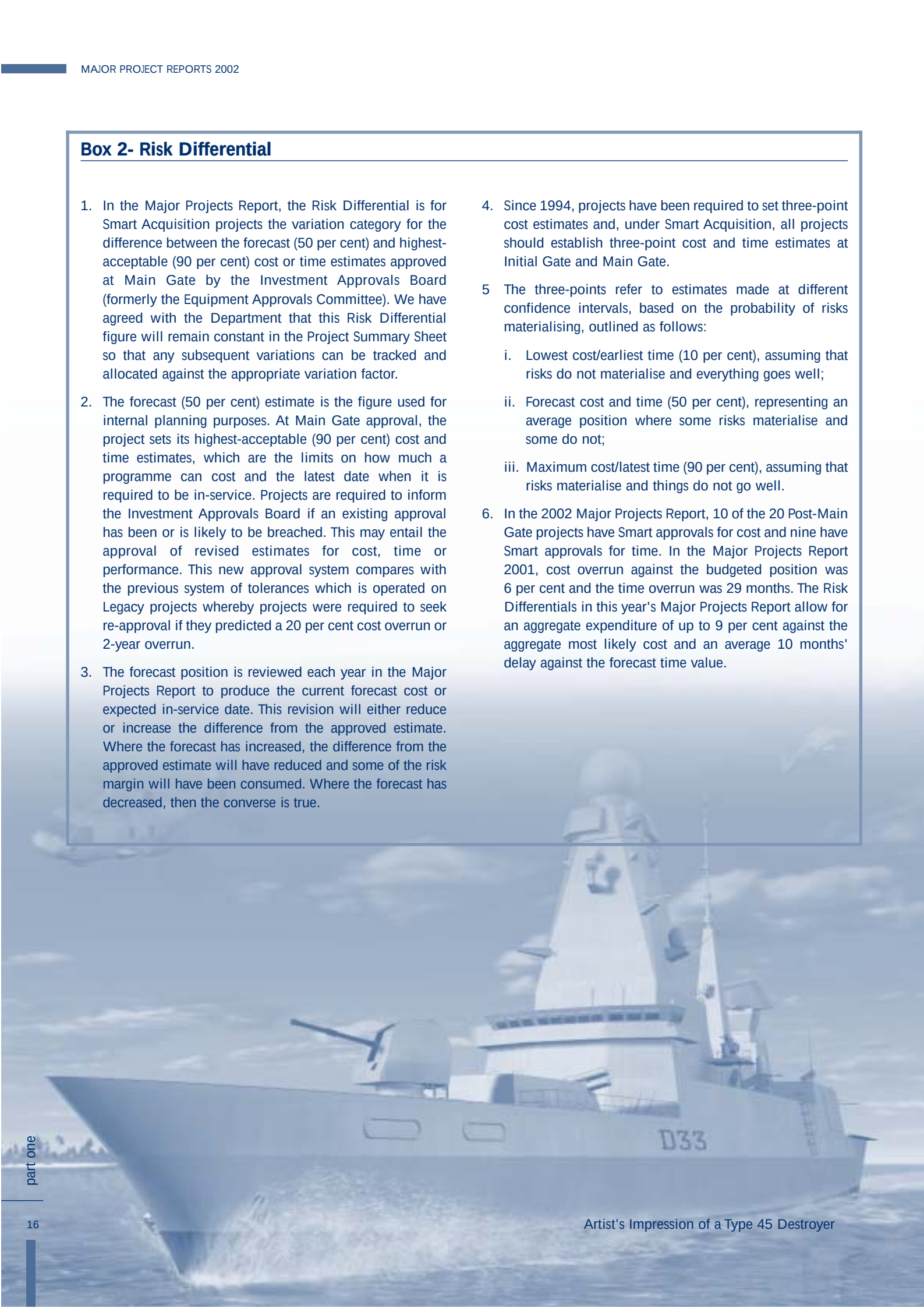
NOTE

1. The Future Joint Combat Aircraft has a tailored Main Gate and subsequently does not have an approved in-service date.

Source: National Audit Office

Box 2- Risk Differential

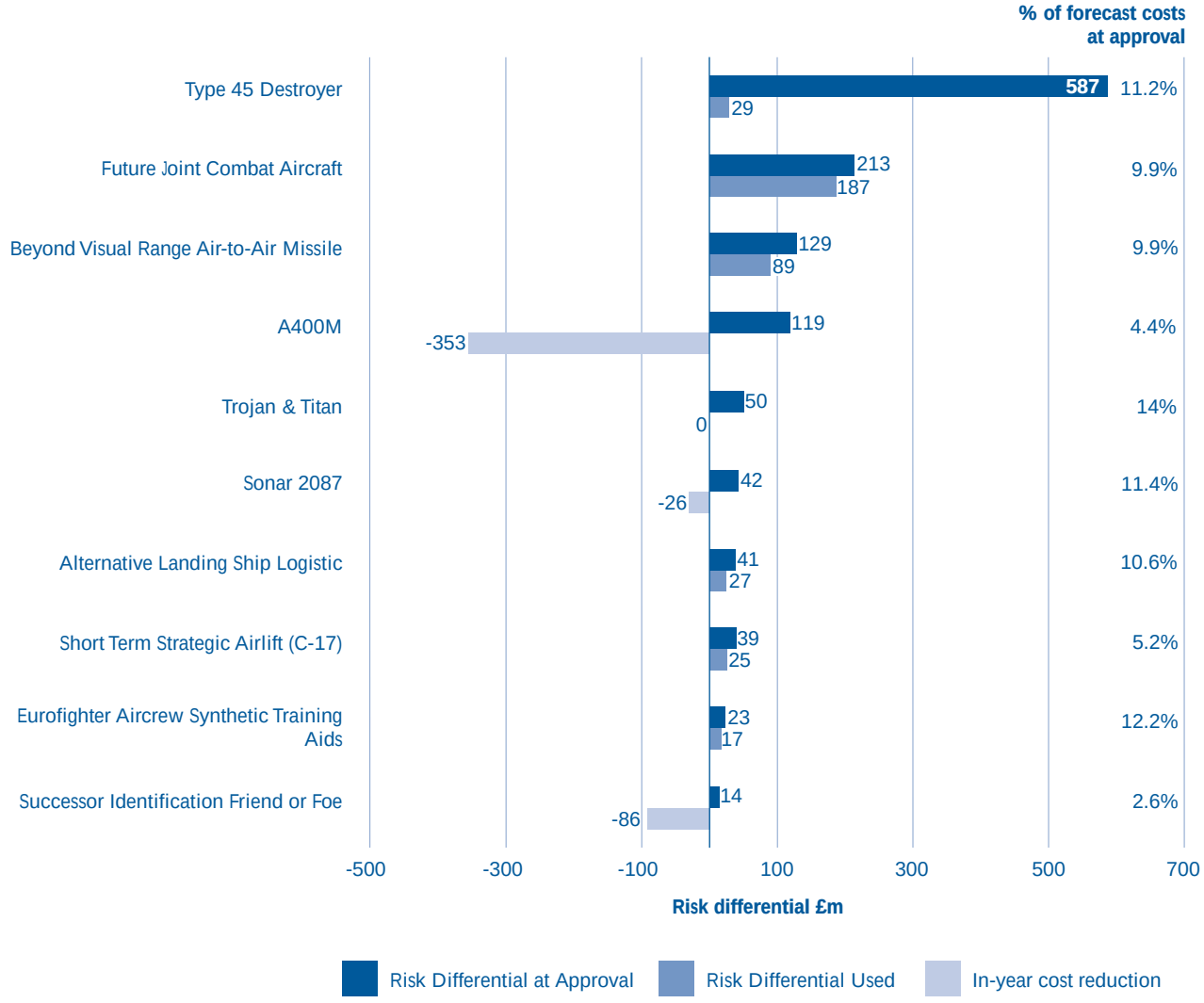
1. In the Major Projects Report, the Risk Differential is for Smart Acquisition projects the variation category for the difference between the forecast (50 per cent) and highest-acceptable (90 per cent) cost or time estimates approved at Main Gate by the Investment Approvals Board (formerly the Equipment Approvals Committee). We have agreed with the Department that this Risk Differential figure will remain constant in the Project Summary Sheet so that any subsequent variations can be tracked and allocated against the appropriate variation factor.
2. The forecast (50 per cent) estimate is the figure used for internal planning purposes. At Main Gate approval, the project sets its highest-acceptable (90 per cent) cost and time estimates, which are the limits on how much a programme can cost and the latest date when it is required to be in-service. Projects are required to inform the Investment Approvals Board if an existing approval has been or is likely to be breached. This may entail the approval of revised estimates for cost, time or performance. This new approval system compares with the previous system of tolerances which is operated on Legacy projects whereby projects were required to seek re-approval if they predicted a 20 per cent cost overrun or 2-year overrun.
3. The forecast position is reviewed each year in the Major Projects Report to produce the current forecast cost or expected in-service date. This revision will either reduce or increase the difference from the approved estimate. Where the forecast has increased, the difference from the approved estimate will have reduced and some of the risk margin will have been consumed. Where the forecast has decreased, then the converse is true.
4. Since 1994, projects have been required to set three-point cost estimates and, under Smart Acquisition, all projects should establish three-point cost and time estimates at Initial Gate and Main Gate.
5 The three-points refer to estimates made at different confidence intervals, based on the probability of risks materialising, outlined as follows:
   i. Lowest cost/earliest time (10 per cent), assuming that risks do not materialise and everything goes well;
   ii. Forecast cost and time (50 per cent), representing an average position where some risks materialise and some do not;
   iii. Maximum cost/latest time (90 per cent), assuming that risks materialise and things do not go well.
6. In the 2002 Major Projects Report, 10 of the 20 Post-Main Gate projects have Smart approvals for cost and nine have Smart approvals for time. In the Major Projects Report 2001, cost overrun against the budgeted position was 6 per cent and the time overrun was 29 months. The Risk Differentials in this year's Major Projects Report allow for an aggregate expenditure of up to 9 per cent against the aggregate most likely cost and an average 10 months' delay against the forecast time value.



Artist's Impression of a Type 45 Destroyer

12 Cost risk differential for 2002 Major Projects Report Smart Acquisition projects

30 per cent of cost Risk Differential has been consumed, although this has been offset by cost reductions in-year



Source: National Audit Office

Risk Differential for Cost

1.22 **Figure 12** illustrates the cost Risk Differential for the 10 projects with Smart cost approval[5]. The figure shows how much cost Risk Differential was included at the Main Gate approval and how much has been consumed to date. The Smart Acquisition projects have varying degrees of cost Risk Differential ranging from 2.6 per cent to 14 per cent (of the 50 per cent forecast), an average of 9 per cent. The total Risk Differential is £1,257 million of which £374 million (30 per cent) has been consumed. The Future Joint Combat Aircraft accounts for £187 million of this total, principally because of exchange rate variations.

1.23 A number of the projects forecasts have reduced since their approval, notably A400M with a reduction of £353 million, which is due primarily to Changed Requirements. The net effect of all the changes has been to increase the difference between the forecast costs and the approved costs for the Smart projects from £1,254 million to £1,348 million.

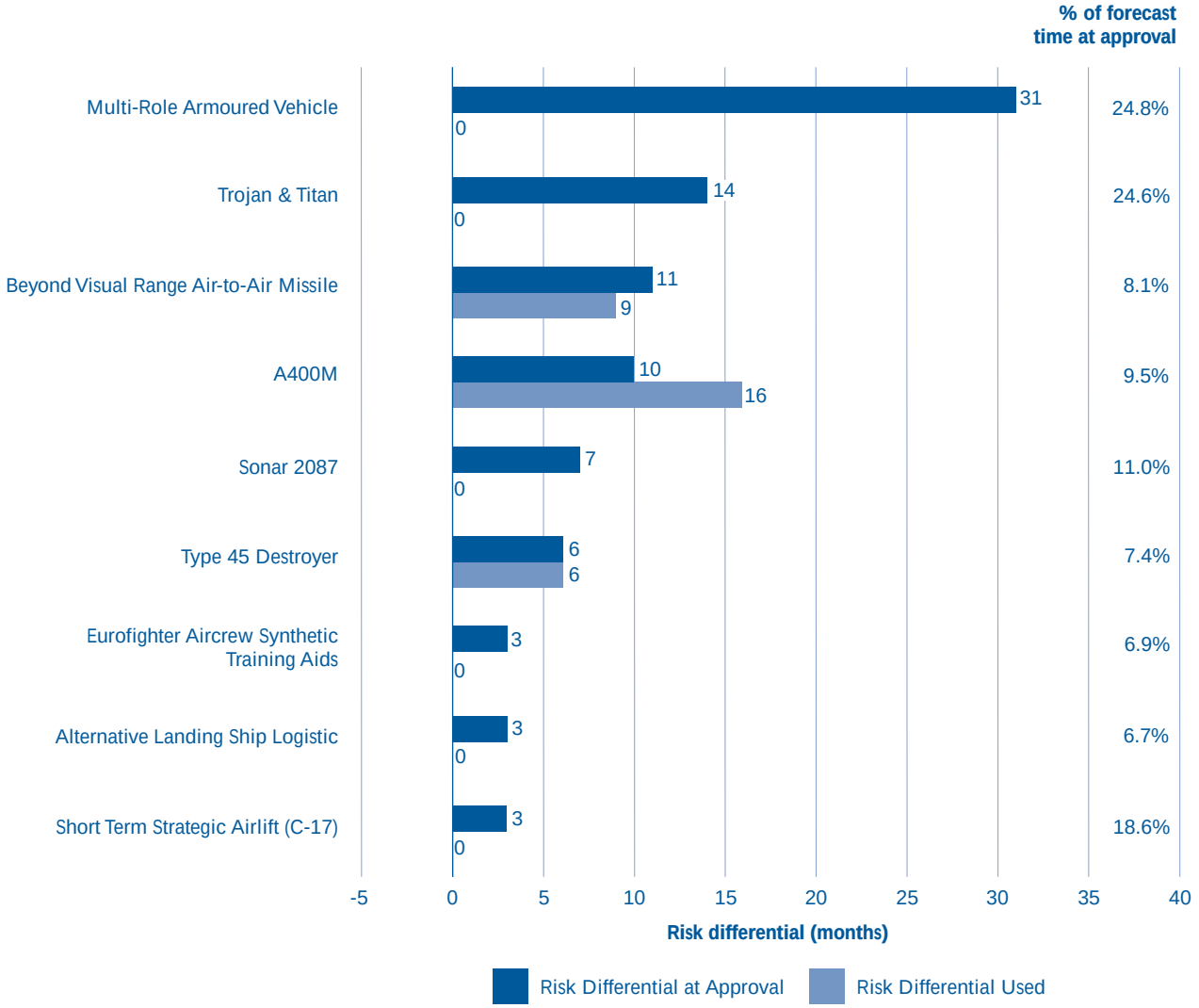
Risk Differential for Time

1.24 **Figure 13** illustrates the time Risk Differential for the nine projects with Smart time approval[6]. The figure shows how much time Risk Differential was included at Main Gate approval and how much has been consumed to date. The time Risk Differentials range from 6.7 per cent to 24.8 per cent (of the 50 per cent forecast), an average of 13 per cent or 10 months.

5 *The Successor Identification Friend or Foe project has a Smart approval for cost but not time.*
6 *The Multi-Role Armoured Vehicle project has a Smart approval for time but not cost. The Future Joint Combat Aircraft has yet to set its time Risk Differential.*

13 Time Risk Differential for the 2002 Major Projects Report Smart Acquisition projects

Two projects have consumed their entire risk differential



Source: National Audit Office

1.25 The total time Risk Differential is 88 months of which 25 months (28 per cent) have been consumed. The A400M and Type 45 have consumed their entire allocated time Risk Differential (and A400M is now six months beyond its approval). Notably, the Multi-Role Armoured Vehicle has a significant time Risk Differential of 31 months, which may reflect the additional time uncertainties often associated with a collaborative venture.

The Major Projects Report 2002 population includes a significant number of projects in the early stages of their procurement cycle

1.26 Ten of the 20 post-Main Gate projects are within two years of their approval. The age of the remaining 10 projects range from two to 15 years since approval. Two projects (the Airborne Stand-Off Radar and the Apache Attack Helicopter) have breached their cost approval in-year. However, the overall conclusion is the same as for the Major Projects Report 2001, namely that newer projects are showing less cost overrun than older projects:

i The 10 Smart Acquisition projects approved within the past two years are all within their approved cost.

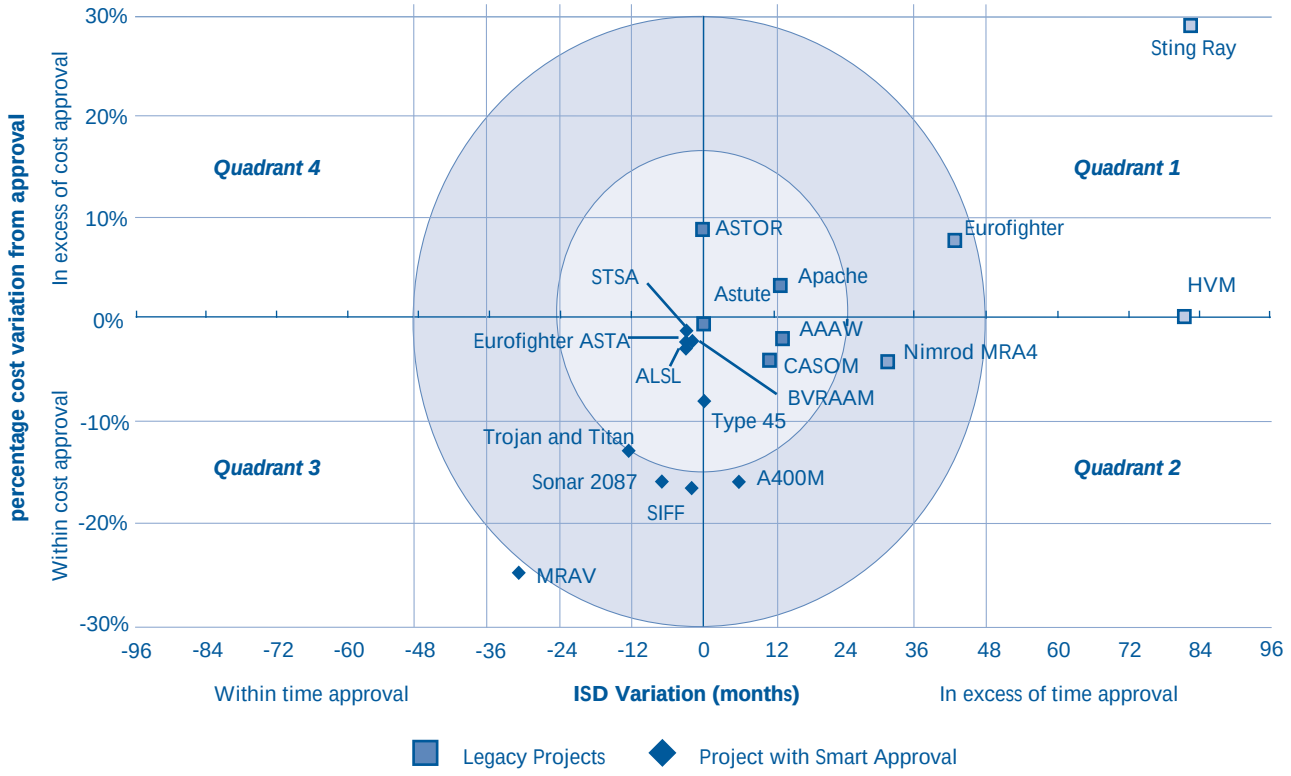
ii Fourteen of the 15 projects approved in the last six years are within their approved cost.

iii Only one of the five projects approved more than six years ago is within its approved cost.

1.27 There are a number of possible reasons why newer projects tend to show less cost overrun. For example, projects that are at an early stage of their lifecycle have less opportunity for problems to arise. Also, these newer projects have been initiated and managed under the Department's Smart Acquisition process which aims to improve risk management and estimating to better control costs.

14 Analysis of project cost and in-service date variations

The majority of projects are within cost and time approvals



NOTE

FJCA has not been included in this analysis because it does not have an approved in-service date

Source: National Audit Office

1.28 Analysis of in-service date variation shows the same trend as for cost, in that newer projects tend to show less adverse in-service date variation. **Figure 14** which brings together cost and time variations against approval on a single figure shows the percentage cost variation from approval and the in-service date variation in months from approval.

1.29 Our analysis in Figure 14 shows that as in previous years there is still little correlation between the time and cost variation[7]. However, analysis of the project populations by quadrant shows that:

i Projects in the first quadrant have on average completed their procurement phase;

ii Projects in the second quadrant are on average 60 per cent through the procurement phase;

iii Projects in the third quadrant are on average 48 per cent through the procurement phase, although any margin for movement within the time approval for many of the projects in this quadrant is small; and

iv No projects fall in the fourth quadrant.

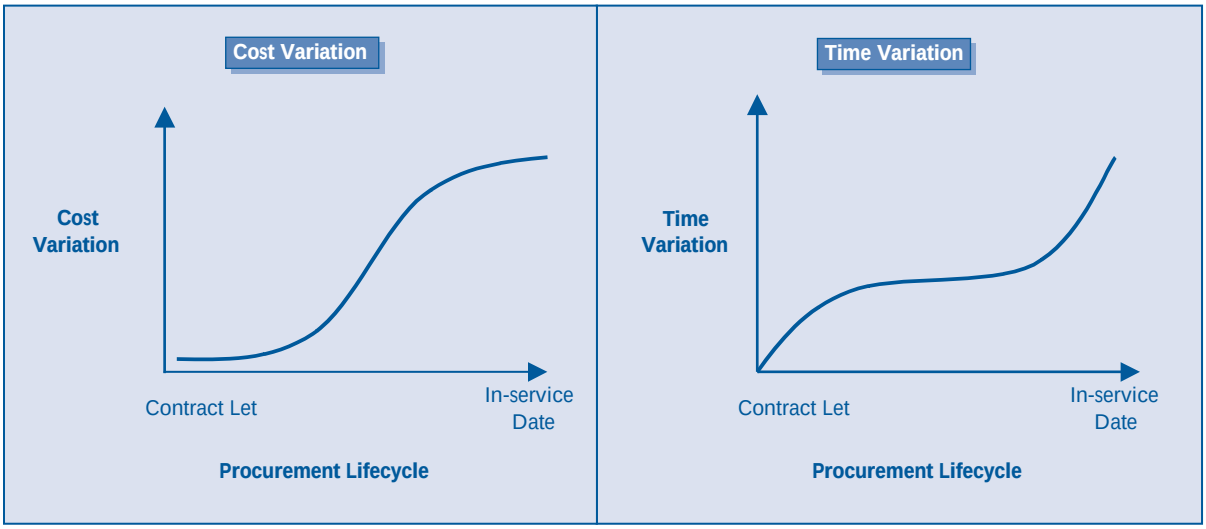
1.30 This reinforces the earlier conclusion that newer projects tend to exhibit less adverse time and cost variation against approval. However, it also suggests that, historically, as projects mature through the Procurement Phase, there has been an anticlockwise quadrant shift towards positive time and cost variations.

1.31 With the majority of newer projects in the third quadrant, the challenge for Smart Acquisition is to limit any migration into the other quadrants. The figure shows that there is on average less scope for time variation than for cost variation within their respective approvals.

7 *Intuitively, we would expect to see some correlation as there is a relationship between time and money, however, the Department's fixed price contracting policy limits their exposure to the cost of delays.*

15 Historic reporting of cost and time variation on Major Projects Report projects

Historically time and cost have different reporting patterns



Source: National Audit Office

1.32 In future, it will be possible to plot the annual cost and time performance of each of the projects on this figure to show the impact of in-year movement. This will show at a glance how the project population as a whole is progressing.

1.33 Further analysis based on historical Major Projects Report data shown at **Figure 15**, suggests that most cost variation tends to be reported towards the middle of the procurement lifecycle. Time variation has historically been reported early in the procurement lifecycle and then remains reasonably constant with some further increase towards the end of the Procurement Phase[8].

1.34 From the analysis of historical Major Projects Report data, adverse cost variation is typically not declared at an early stage. Consequently, analysis of project populations with a significant number of projects in the early phase of procurement may not be representative. There is historical evidence of adverse time variation occurring late in the Procurement Phase. Problems often arise on the final system integration of equipment, and tests and trials often do not run to plan and so have to be repeated.

1.35 Examining Figures 14 and 15 together, projects in the first quadrant in Figure 14, which are nearing their in-service date are historically more likely to incur further slippage than further cost variation in the light of the analysis in Figure 15. The majority of second and third quadrant projects in Figure 14, are in a period where the analysis in Figure 15 would suggest that historically cost growth is at a maximum. Despite this, the overall figures show that the Major Projects Report 2002 cost forecasts are within approval.

1.36 Projects in the second and third quadrants in Figure 14, have yet to reach the period approaching their in-service date, where slippage on projects has historically been significant. If Smart Acquisition has broken the historical mould on time variation then slippage declared at later stages should not be as significant as it has been in the past.

There have been further developments within the Major Projects Report 2002 projects outside the reporting period

1.37 The Department has announced difficulties with two projects since the end of the reporting period:

Astute Class Submarine Delay

1.38 The definition of in-service for the Astute Class Submarine is acceptance of safe operation and the start of operational work-up of the first of class HMS ASTUTE from the contractor. This was due to be achieved in June 2005. In July 2002, the Department announced that the in-service date had slipped to late 2006 at the earliest, subject to confirmation by the contractor. BAE Systems had made slower than expected progress in the detailed design and build-up of production.

1.39 The contractor is taking a range of actions to minimise programme slippage but firm launch dates are not yet available. Actions being undertaken include reassessing the best time to perform the launch during the build sequence as well as programmes to recover time during the trial period, after its initial entry into service.

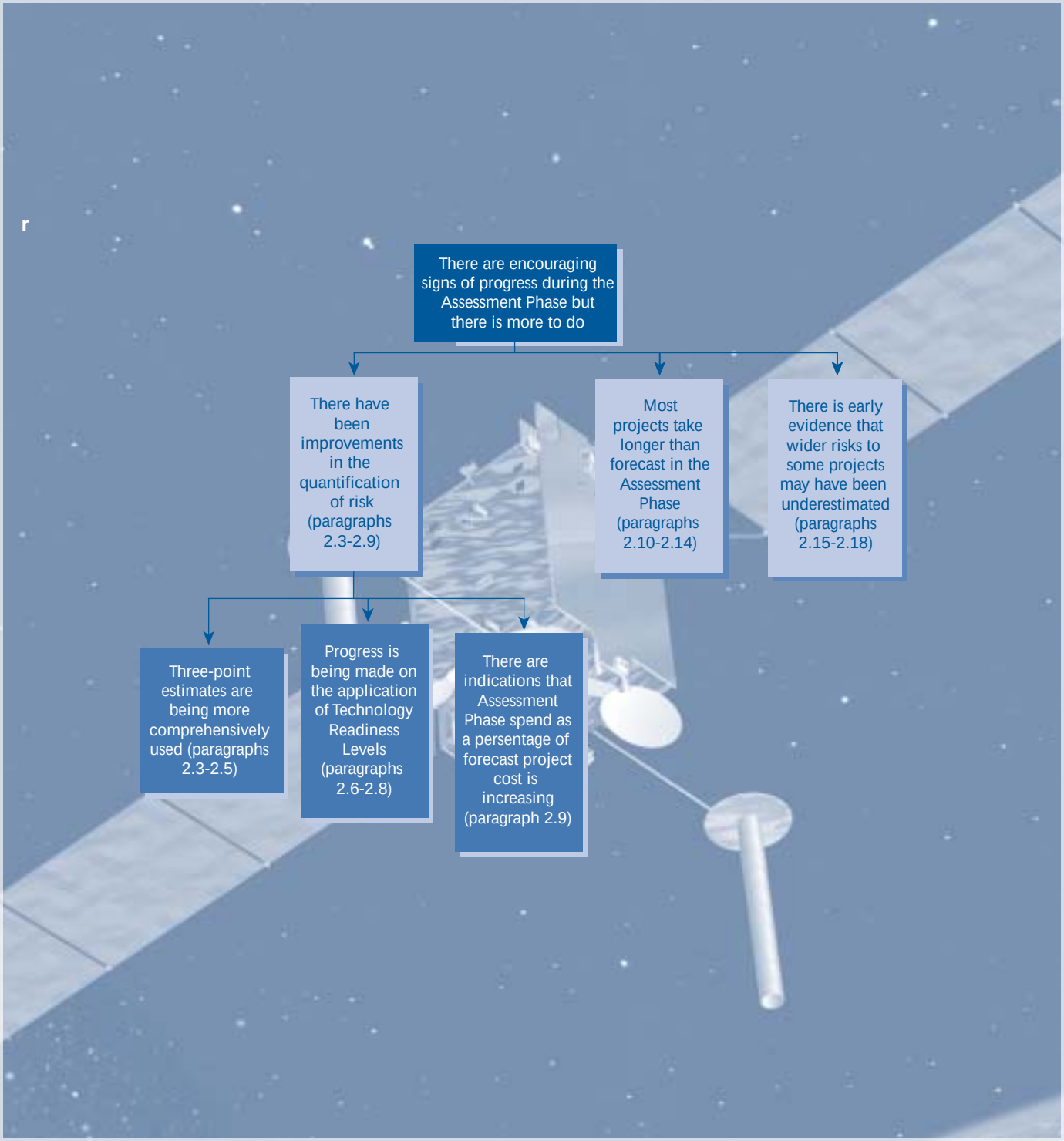
8 *Procurement lifecycle is defined as the period from contract let to in-service date or the latest forecast in-service date in the period analysed.*

Eurofighter In-Service Date Delay

1.40 The in-service date for Eurofighter is defined as delivery of the first aircraft to the Royal Air Force. In February 2002, the Department announced that the anticipated June 2002 in-service date for Eurofighter was becoming increasingly difficult to achieve, after delays in bringing the detailed design to maturity. Progress has been made including, in April 2002, the first flights of three instrumented production aircraft. However, following a thorough review of the programme involving partner nations, the NATO agency responsible for undertaking the procurement and Industry, the Department announced that acceptance of the first production aircraft would now take place by the end of 2002.

1.41 The Defence Procurement Minister, Lord Bach, announced that "we shall now be working hard with industry to recover lost time and to achieve the planned Operational Employment Date in the second half of the decade, thus avoiding any gap in front-line capability or extra costs to the Ministry of Defence. The delays are disappointing but reflect the complexity of the project and the major advance in technology it represents. Initial flights of the instrumented production aircraft have been impressive and the Government remain fully committed to the UK's military capability".

There are encouraging signs of progress during the Assessment Phase but there is more to do



Artist's Impression of a Skynet 5 Satellite Communications System

Part 2

2.1 In this part of our Report we assess the performance of the 10 largest Major Projects Report 2002 projects which are in the pre-Main Gate phase. A project's Assessment Phase is the phase between Initial Gate and Main Gate (see Appendix 1). This Phase is designed to: assess and down-select possible options for meeting military requirements; to select a procurement route; and to reduce programme risk to an acceptable level before the project commits to the post-Main Gate Demonstration and Manufacture Phase. The Assessment Phase is crucial to the successful delivery of the project to time, cost and performance.

2.2 In previous Major Projects Reports, we have noted that the Department has been working towards setting measures of risk reduction. The Major Projects Report 2002 is the first report in the new format to have full three-point estimates on all projects for cost and for nine out of ten projects for time. The Department is also demonstrating an increased use of Technology Readiness Levels. Expenditure during the Assessment Phase as a percentage of total planned procurement costs has increased since the Major Projects Report 2001. However, there is evidence to suggest that projects are taking longer than forecast in this Phase. This suggests that the Department may be too optimistic in forecasting the cost and duration of the Assessment Phase.

There have been improvements in the quantification of risk

Three-point estimates are being more comprehensively used

2.3 Under Smart Acquisition, all pre-Main Gate projects are required to establish three-point risk estimates for time and cost. The three-point estimates are at different confidence levels (10 per cent, 50 per cent and 90 per cent) and reflect the probability of risks materialising. These estimates are refined during the Assessment Phase and are expected to narrow as the level of risk is reduced to an acceptable level for the Main Gate decision. The Department is currently working to put in place procedures to make three-point estimating more rigorous.

2.4 All 10 pre-Main Gate projects we examined have full three-point risk estimates for cost and all but one project (Future Strategic Tanker Aircraft) have such estimates for time. This is much improved on the Major Projects Report 2001 when relatively few projects had three-point estimates for either time or cost at the datum point. At Initial Gate, the Future Strategic Tanker Aircraft had an in-service date "window" approved. The project team has been working on full three-point estimates and we expect to see these be made available for the Major Projects Report 2003.

2.5 The Department assesses its performance on managing costs in the Assessment Phase through the average percentage variation from the approved Assessment Phase cost. Excluding Bowman, which is forecasting a 205 per cent (£267 million) cost overrun in the Assessment Phase, the total net cost overrun across the nine remaining projects is 2.4 per cent or £8 million on total forecast expenditure of £331 million. Of the 10 Assessment Phase projects, five projects are under their forecast cost (Lightweight Mobile Artillery Weapons Systems (Gun), Future Strategic Tanker Aircraft, Light Forces Anti-Tank Guided Weapon System, Next Generation Light Anti-Armour Weapon, and Future Command and Liaison Vehicle), three are forecasting to spend in excess of their approved cost (Skynet 5, Bowman and Future Aircraft Carrier) and two are forecasting to spend their approved cost (Guided Multi-Launch Rocket System and Terrier).

Progress is being made on the application of Technology Readiness Levels

2.6 Technology Readiness Levels are used to assess the level of technical maturity and to target risk-reduction activity before Main Gate. This approach uses a quantified scale, from basic concept technologies at Level 1 to a fully mature and proven technology at Level 9. Technology

Readiness Levels are now a mandatory part of the approvals process and must be included in all Main Gate Business Cases submitted after April 2002. Though not mandatory, the Investment Approvals Board expects projects to reach specific levels of readiness at Initial and Main Gate (normally 3 and 7 respectively).

2.7 Of the 10 pre-Main Gate projects in the Major Projects Report 2002, eight are using Technology Readiness Levels to assess technical risks and the bids submitted by Industry. The two projects that have not used the Technology Readiness Level approach are Bowman and Skynet 5, both of which were approved before the approach was mandated.

2.8 Of those projects using Technology Readiness Levels, two are approaching Main Gate with high readiness scores. The Light Forces Anti-Tank Guided Weapon System has a Readiness Level of 8 and the Future Combat Liaison Vehicle is expected to achieve Level 7. In future, it will be possible to make a qualitative assessment of the methodology by comparing the progress of different projects with varying Technology Readiness Levels.

There are indications that Assessment Phase spend as a percentage of forecast project cost is increasing

2.9 The Department aims to spend the right amount of money reducing risks during the Assessment Phase. As a guide, up to 15 per cent of the total procurement costs should be spent before reaching Main Gate. Although data on Assessment Phase spend (particularly in earlier Major Projects Reports) is limited, initial analysis of the available information suggests that there is evidence of a growth in Assessment Phase expenditure in recent years.

i Analysis of post-Main Gate projects since the Major Projects Report 2000 shows that the average historical Assessment Phase expenditure is 2.6 per cent of the total acquisition cost.

ii Calculating the average Assessment Phase expenditure as a percentage of the total procurement expenditure for the 10 pre-Main Gate projects in the Major Projects Report 2002 yields a figure of 5 per cent. This compares with a figure of 4 per cent for the Major Projects Report 2001, and taken together with the historical average, suggests that Assessment Phase expenditure is increasing.[9]

Most projects take longer than forecast in the Assessment Phase

2.10 The objective of the Assessment Phase is to spend the right amount of time and money to reduce risks to an acceptable level for Main Gate approval. This involves striking a balance between the need to avoid creating perverse incentives by setting targets which, in isolation, might place more emphasis on the time and cost of the Assessment Phase at the expense of risk reduction. Under Smart Acquisition, spending more money in the Assessment Phase and postponing Main Gate may, in some circumstances, be the right thing to do if it reduces risk to an acceptable level for Main Gate. However, there is also a requirement to be more accurate with time estimates of the Assessment Phase to avoid any unplanned capability shortfalls that may result in the long run.

2.11 The analysis in **Figure 16**, of eight Assessment Phase projects where a target date for Main Gate was set, shows that five of the projects are over their forecast time, two are on forecast and one is forecast to be three months early. This suggests that the Department may be underestimating the length of time that a project requires in the Assessment Phase, although in some cases trade-offs may be being made with other capabilities.

2.12 Of the five projects beyond their Assessment Phase time forecast, three have been delayed to further drive out risk (Bowman, Future Strategic Tanker Aircraft and Guided Multiple Launch Weapon System); one has been delayed because of a combination of risk and affordability issues (Terrier); and one has been delayed while decisions were made over another capability (New Light Anti-Armour Weapon).

2.13 There are two pre-Main Gate projects which did not have target dates for Main Gate set at Initial Gate. Of these, the Lightweight Mobile Artillery Weapon System (Gun) (LIMAWS (G)) has been deferred in favour of accelerating the LIMAWS (Rocket) system to better fulfil the Customer's priority requirement. Tighter financial constraints meant that the Customer had to prioritise the capabilities. The remaining project, Skynet 5, has incurred no delay and had Main Gate approval in February 2002.

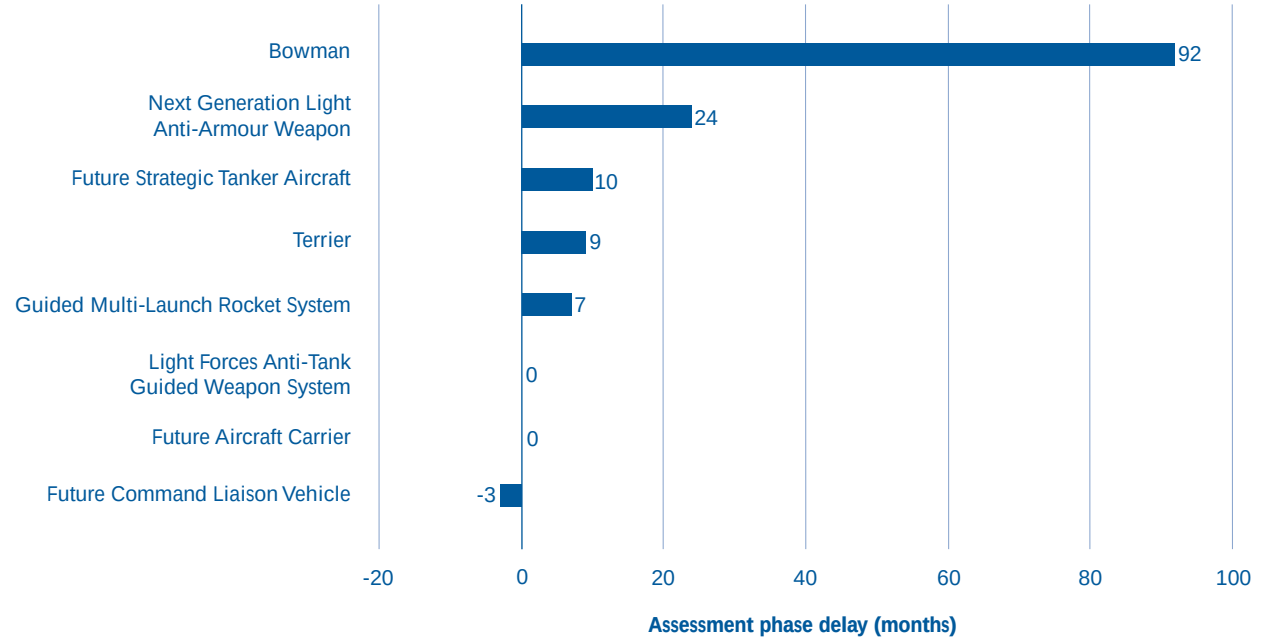
2.14 Time overrun in the Assessment Phase can lead to delays to the start of the Demonstration and Manufacture Phase and result in an unplanned capability shortfall. For example, delays on Bowman have led to capability shortfalls, highlighted in our report on Kosovo: The Financial Management of Military Operations and on Exercise Saif Sareea 2.[10] Air-to-air refuelling is a key military capability which will in future be fulfilled

9 Data from the 2000 Major Projects Report has not been used as a comparison because the population included a project with an extremely large assessment phase spend (because it included some production) which skewed analysis (Microwave Landing System).

10 The Comptroller & Auditor General's report, Kosovo: The Financial Management of Military Operations, HC530 Session 1999-2000; the Forty-Sixth Report from the Committee of Public Accounts, Ministry of Defence, Kosovo: The Financial Management of Military Operations, HC582 Session 1999-2000; and the Comptroller & Auditor General's report, Exercise Saif Sareea 2, HC1097, Session 2001-2002.

16 Time variation of projects during the Assessment Phase

Five projects are taking longer than forecast in the Assessment Phase



Source: National Audit Office

by the Future Strategic Tanker Aircraft. The aircraft's in-service date has already slipped by one year because of difficulties in driving out risk during the Assessment Phase. Recognising that further delays could cause a capability gap, the Department is currently working to mitigate this risk.

There is early evidence that wider risks to some projects may have been underestimated

2.15 Some projects that have recently passed Main Gate are showing adverse in-year time and cost movement. This may indicate that project teams had over-optimistic cost and time estimates at Main Gate approval. **Figure 17** is an analysis of five projects that were pre-Main Gate projects in the Major Projects Report 2001 and that have subsequently become post-Main Gate projects in the Major Projects Report 2002. The analysis shows that in their first year all five projects have declared adverse time and/or cost variation from their Main Gate approval. Despite reporting an in-year reduction, A400M has slipped beyond its time approval. As indicated in the Project Summary Sheets (Appendix 2), the factors driving these adverse variations are primarily Exchange Rate (cost) and Contracting Process (cost and time).

2.16 Difficulties in aligning national approvals and gaining consensus between the partner nations to proceed can cause lengthy delays between Main Gate approval and letting the contract for collaborative projects. Both the Beyond Visual Range Air-to-Air Missile and A400M have encountered in-service date slippage (though only in the case of A400M beyond its approval) because of delays in placing contracts in the first example and a mixture of contract delays and "realism measures" in the case of A400M. Our report on Maximising the Benefits of Defence Equipment Co-operation commented that the Department should factor the potential for delays due to the co-operative process into its analysis when taking procurement decisions. In-year, the Beyond Visual Range Air-to-Air Missile is also showing an increased cost variation, owing to a combination of factors that include costs relating to a contracting issue regarding the Department's new policy on Insensitive Munitions.

2.17 The Future Joint Combat Aircraft is showing an adverse in-year cost variation, bringing it close to its highest-acceptable cost figure. Although the variation is attributed across several factors, the most significant of these is a £189 million increase arising from the Dollar/Pound exchange rate. (See Box 1 on Exchange Rates for further information).

2.18 The contracting process has resulted in an increased cost for the Eurofighter Aircrew Synthetic Training Aids Suite and an adverse time movement for the Type 45 Destroyer. The increased cost for the Suite has resulted from the difference between the contract milestones estimated at Main Gate and the actual contract. For the Type 45, the most likely in-service date has slipped six months to the latest-acceptable position owing to delays in establishing arrangements with BAE Systems Electronics.

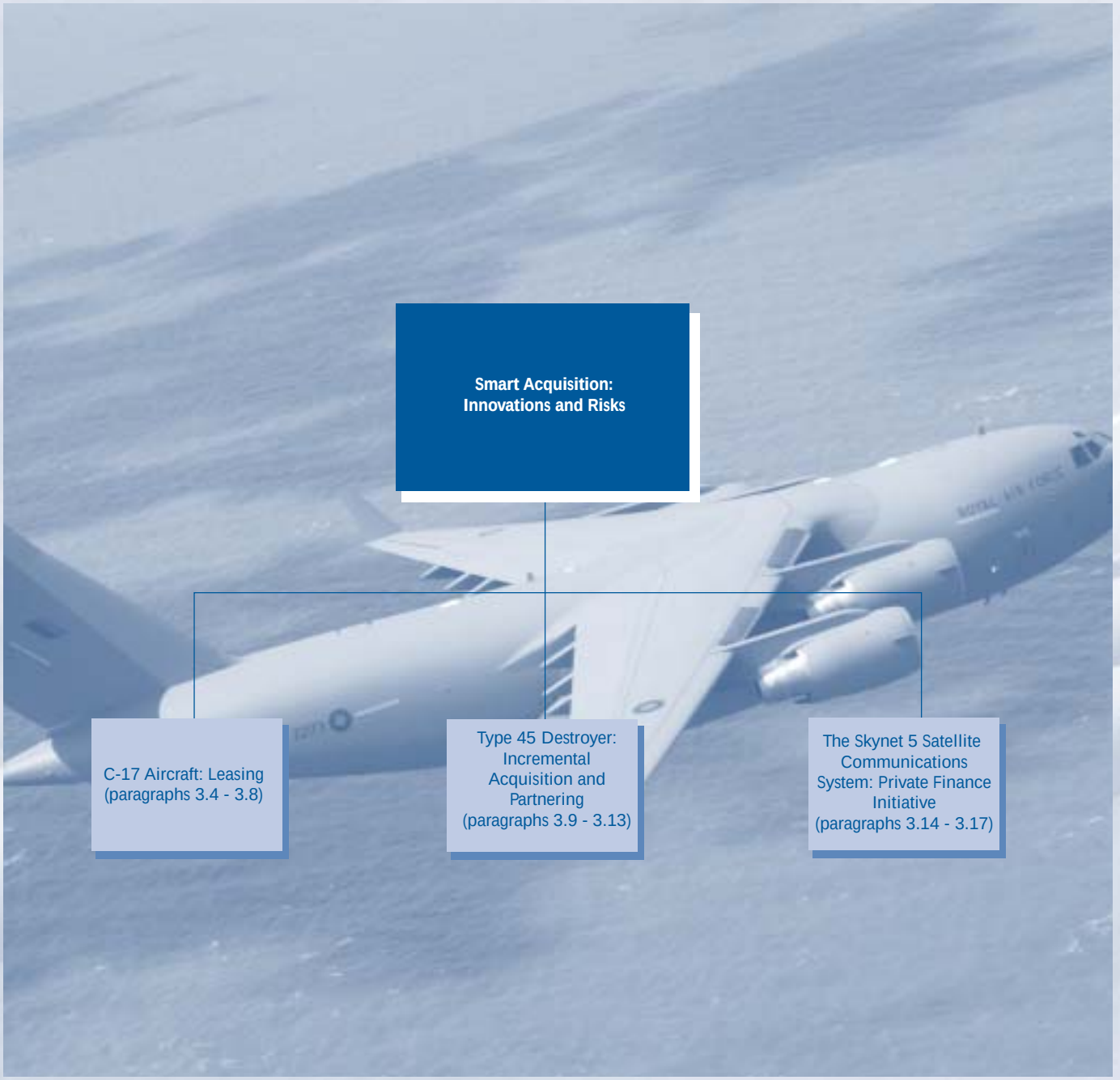
17 Post-Main Gate performance of Major Projects Report 2001, Part 2 projects

All projects remain within their approval for cost and all but one for time

Project	In year movement		Within approval	
	Time	Cost	Time	Cost
Eurofighter ASTA	0	+£17m	✓	✓
BVRAAM	+9	+£28m	✓	✓
A400M	+16	-£226m	✗	✓
Type 45	+6	+£29m	✓	✓
FJCA	N/A	+£187m	✓	✓

Source: National Audit Office

Smart Acquisition: Innovations and Risks



Part 3

3.1 Smart Acquisition was one of the main policy initiatives which arose as a result of the 1998 Strategic Defence Review. The aim of Smart Acquisition is:

"To enhance defence capability by acquiring and supporting equipment more effectively in terms of time, cost and performance."

Smart Acquisition has a number of key features to help to achieve that aim:

i A whole-life approach embodied in a single Integrated Project Team (IPT);

ii Clearly identified Customers;

iii A willingness to identify trade-offs between system performance cost and time;

iv An open and constructive relationship with Industry;

v A streamlined process for project approvals; and

vi New techniques for the management of risk on acquisition projects.

3.2 These key features are supported by a number of values and beliefs:

i An empathy with the Customer;

ii The drive to deliver a high level of performance;

iii A desire to work co-operatively with fellow team members and others;

iv A predisposition to share ideas and information and the resolve to overcome problems; and

v A wish to challenge convention and improve processes.

3.3 With the introduction of Smart Acquisition a number of Integrated Project Teams have adopted innovative acquisition methods for their projects. While these innovations have provided opportunities to improve the efficiency of the defence acquisition process they have also involved some significant risks. We examined three projects from the Major Projects Report 2002 population that have adopted innovative approaches to equipment acquisition. We discuss how well the Integrated Project Teams have performed in adopting some of the key features and values of Smart Acquisition and the steps they have taken to mitigate any risks involved.

C-17 Aircraft: Leasing

The leasing of aircraft is a significant innovation

3.4 The Strategic Defence Review identified an urgent need to improve the Royal Air Force's strategic lift capability. In May 2000, the Department announced that its Short Term Strategic Airlift solution would be provided by leasing four C-17 aircraft from the United States and that the proposed A400M aircraft would be the choice for the long-term Future Transport aircraft. The lease of the C-17s is for seven years with two options to extend by one year each. The financing is also set up to run over seven years and the funding provision exists to cover the possibility of the lease being extended by an eighth or even ninth year. The first aircraft was delivered in May 2001 and the In-Service Date was declared in September 2001.

3.5 The lease contract between McDonnell Douglas Corporation, a wholly owned subsidiary of The Boeing Company, and the Royal Air Force was signed on 2 September 2000. This was based on a civil lease deal and has the following features:

i Title of the aircraft to remain with McDonnell Douglas Corporation during the lifetime of the lease (unless the Department exercises the purchase option);

ii Boeing to receive the costs of the aircraft in Pre-Delivery Payments;

iii Fixed six-monthly payments to be made six months in arrears over the term of the lease;

iv Boeing to assume an agreed residual value guarantee when the aircraft are returned at the end of the lease; and

v The Department to have an option to purchase the aircraft.

3.6 The lease required the Department to make the Pre-Delivery payments before the aircraft were delivered. This meant the Department finding a significant sum of money that was not consistent with the annual lease-payment profile in the Department's Equipment Programme. The Department therefore looked for alternative ways to fund this arrangement. Under an approach proposed by Boeing, a Special Purpose Company was set up, named C-17 Leasing Company plc. All funds are channelled through this vehicle and an independent company is paid to administrate this venture.

3.7 In close consultation with Boeing's advisers, the Department considered the merits and drawbacks of a number of funding options and chose to issues bonds as representing best value. In setting up the Special Purpose Company the Department consulted various stakeholders to ensure propriety, tax efficiency and acceptability. The Department also obtained advice that confirmed the legality of the structure and of the issue of bonds. The bond issue was successfully completed in January 2001, via a semi-placement (offered to a selected number of customers) administered by Boeing's bankers. A single holder, a German investment bank, holds the issue.

The approach adopted to fund the lease created two risks to value for money

3.8 The leasing option and the funding mechanism used to acquire the lease created two risks to value for money.

i The funding arrangement adopted enabled the Department to produce an innovative solution to the short-term requirement for a heavy airlift capability. While the Department could afford to lease the aircraft it could not fund aircraft production. The Department therefore converted the lease funding into pre-delivery payments on the commercial markets, an approach which is inevitably more costly than normal methods of Government borrowing.

ii The Department's financial model forecasts a small residual surplus within the C-17 Leasing Company at the end of the seven-year lease which would be distributed to named charities. A deficit could potentially arise through an increase in the C-17 Leasing Company administrative costs.

Type 45 Destroyer: Incremental Acquisition and Partnering

The procurement strategy for the Type 45 is innovative

3.9 The Type 45 will be a versatile destroyer capable of contributing to expeditionary operations in a wide range of scenarios from peace support operations to full warfighting, providing a specialist air warfare capability until 2040. The Department is looking to buy 12 vessels with an in-service date for the first of class of 2007. The programme's total acquisition cost is capped at £6 billion.

3.10 In late 2000, the Department awarded a prime contract for the Demonstration and First of Class Manufacture of the first three vessels to BAE Systems Electronics. This was envisaged to involve two principal sub-contractors building the first three vessels: BAE Systems Marine (two vessels) and Vosper Thornycroft (one vessel). Each company would have been allowed to compete for the assembly of further vessels. The immaturity of the ship's design meant, however, that BAE Systems Electronics were unable to agree the terms of sub-contracts with either Vosper Thornycroft or BAE Systems Marine.

3.11 In the event, therefore, the Department accepted a BAE Systems Electronics Ltd proposal for BAE Systems Marine to assemble vessels from "blocks" built by Vosper Thornycroft and BAE Systems Marine. The contract for the first three vessels was subsequently amended in February 2002, increasing the order to six vessels on the new ship-building basis. BAE Systems Electronics are therefore the prime contractor responsible for managing a shared work programme between two sub-contractors for the ship-building element.

Incremental Acquisition is an integral part of the Type 45 programme

3.12 From mid-1999 the Department used a Capability Cost Trade-off Model to determine the optimum affordable capability. This model showed that a sonar for the vessels would initially be unaffordable but that downstream funding would support more capability after the first-of-class design had been agreed and when new technological advances would be available. This progressive approach to acquisition has many benefits:

i Prior to Smart Acquisition, the operational requirement might have straitjacketed the project. Now, even though the Type 45 is endorsed as a programme, the Integrated Project Team can continue to trade off capability and cost;

ii The Type 45 has a funded Incremental Acquisition Plan to increase the capability of the initial vessels from the first-of-class standard to that sought in later vessels. The original procurement strategy was unaffordable by £30 million. The new strategy for the platform is affordable in the Department's 2002 Equipment Plan;

iii The Department's Equipment Capability staff manage the Incremental Acquisition Plan, which is used to address capability gaps which may arise; revised Customer priorities; emerging requirements; and outstanding design issues. From the outset, the sonar required for the Type 45 was the Department's number one priority in the Incremental Acquisition Plan.

iv Having placed the contract in December 2000, there was less uncertainty of the possible costs of the risks and in February 2001, the Department decided to accelerate the sonar programme as part of ongoing improvements to the vessels. Analysis of the project's design process demonstrated that the sonar is affordable within the contract and could be fitted on the first-of-class without affecting the in-service date of November 2007. The project team is therefore using incremental acquisition principles to ensure that a sonar with a limited capability is fitted at the earliest opportunity. The capability of the sonar will then be progressively developed during delivery of the later vessels.

The Department is using Partnering on the Type 45 programme

3.13 The Department and the prime contractor are both committed to partnering on this project; this arrangement provides the following benefits:

i The Department has seconded staff to the prime contractor to assist the contractor whenever required. In return, BAE Systems Electronics has lent the Integrated Project Team some requirements engineers. There is open-book working and a Charter in which each side has confidence;

ii The Integrated Project Team and the prime contractor are using a day-to-day project control system and the Integrated Project Team issues a document recording progress every month; and

iii The Type 45 prime contract contains a gainshare clause which is not only related to price but also affects the specification. As there is little in the way of spare funds, gainshare may help to self-finance any desired changes to the vessels. Gainshare should act as an incentive to the contractor but should not be a loophole through which the Department would allow the contractor to escape its obligations under the contract.

The Skynet 5 Satellite Communications System: Private Finance Initiative

Innovative methods are being used to maximise Value for Money on the deal

3.14 The Skynet 5 project will provide the key elements in the end-to-end delivery of information services between the United Kingdom's Defence Network and in-theatre networks and other users anywhere in the world. Skynet 5 will take over from the existing Skynet 4 system providing an Initial Operating Capability in March 2005 and a full service in March 2008. The Department decided to use the PFI route in July 2000 when it issued an Invitation to Negotiate to two consortia. Ministerial approval of Paradigm as the preferred bidder was announced in February 2002 and the contract is due to

be signed by December 2002. At over £2 billion, this is currently the Department's largest PFI project to reach this stage.

3.15 The procurement route chosen was deemed to be the most suitable as it provided best value for money, without an unacceptable transfer of control. The deal will operate according to novel ideas that are designed to help maximise value for money as follows:

i The Department's costs will depend on how much the system is used;

ii The Department is supporting the contractor's efforts to secure third party utilisation of potential spare capacity. This will bring continued downward pressure on the final contract price, as well as maximising third party revenue in which the Department will share;

iii The Department recognises that there may be circumstances in which the military assets provided under the deal will be insufficient for its needs. The contract therefore includes clauses that will enable the contractor to provide access to commercial or alternative capacity at such times. Sensitive information is protected by encryption of a quality which ensures that information can be read only by the appropriate authorities. This arrangement should ensure that unused satellite capacity is reduced to a minimum;

iv To achieve further efficiency savings the contractor is taking over certain mobile ground terminals. The Department has estimated that the efficiency saving arising from this arrangement is five per cent and 10 per cent of the cost to the Department if it had continued to acquire these terminals itself, as had originally been intended; and

v The satellite system is embracing significant new technology. The Department helped to fund risk-reduction work undertaken by both contractors to reduce risks in the bids and to provide the Department with confidence in the bids.

3.16 The result of these innovations and the decision to use PFI has been a value for money solution that amounted to a saving of six per cent or £80 million (Net Present Value) against the Public Sector Comparator.

The risks of the procurement will be largely transferred to the contractor

3.17 In mid-2003 management of the entire Skynet 4 system will be transferred to the new contractor who will fully manage that system until the transition to Skynet 5, due to begin in March 2005. When the contract is signed, the majority of the risks of the service will be transferred to the contractor as follows:

i The risks of providing a complete service provision including management of the Ground Stations;

ii If one or more of the Skynet 5 satellites were lost, or performance was below requirements, the contractor would be responsible for addressing the failures and financing remedies. If this included the necessary provision of a new replacement satellite, this would be the contractor's total responsibility;

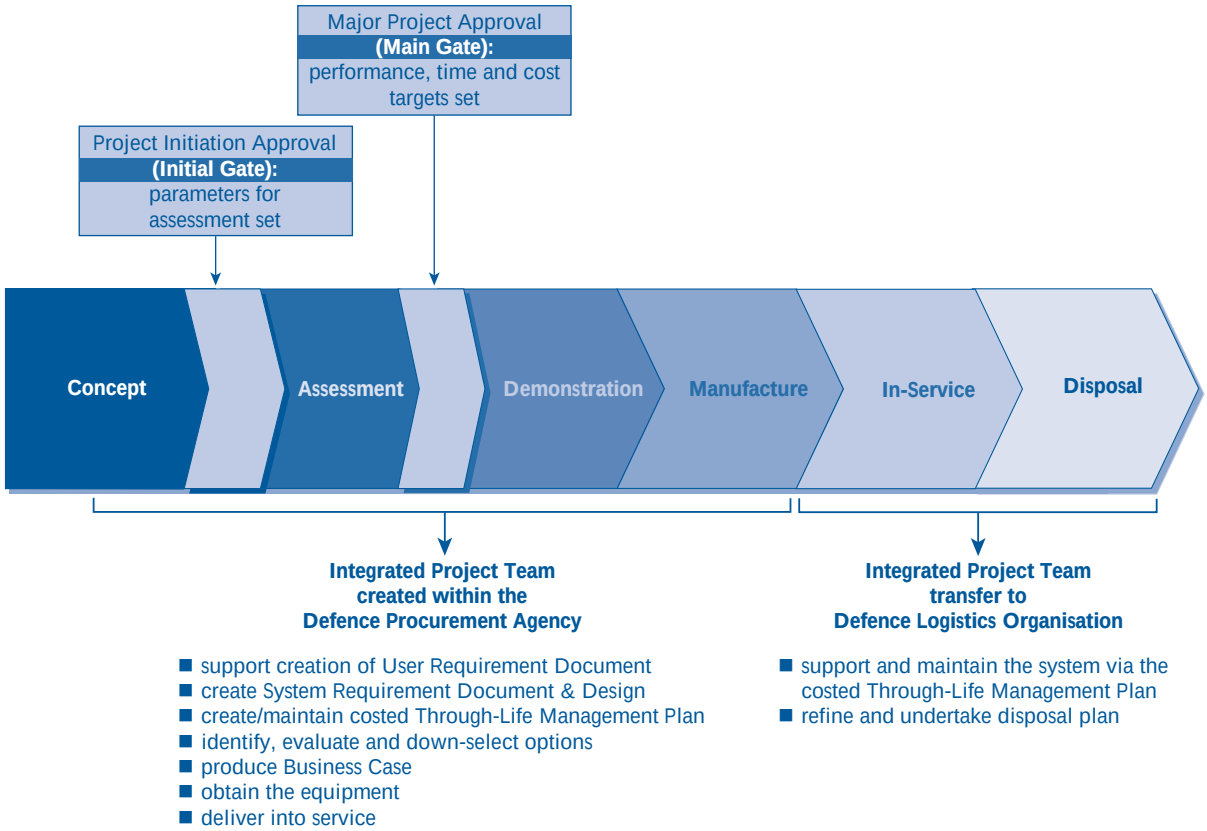
iii In the event of the contractor having financial difficulties, the lenders of the financing have the ability under their direct agreement with the Department to arrange a suitable alternative supplier; and

iv If there is no third-party revenue, there is no difference to the fees paid by the Department, or any impact on the viability of the PFI deal. While there would be no further benefit to the Department in terms of gainshare from the extra revenue this would not affect the service provided.

Appendix 1 The Smart Acquisiton Lifecycle

1. Under the Smart Acquisition lifecycle, there are two key approval points, Initial Gate, at which parameters for the Assessment Phase are set, and Main Gate, at which performance, time and cost targets for the Demonstration and Manufacture Phase are set. **Figure 1** outlines the acquisition lifecycle and the responsibilities of Integrated Project Teams at each stage.

1 The Smart Procurement acquisition cycle showing the role of Integrated Project Teams



Source: National Audit Office

Appendix 2 Ministry of Defence - Project Summary Sheets

This appendix contains the Project Summary Sheets for all 20 post-Main Gate and 10 pre-Main Gate projects included in this year's Report.

APPENDIX 2: MINISTRY OF DEFENCE PROJECT SUMMARY SHEETS

POST-MAIN GATE PROJECTS

PRE-MAIN GATE PROJECTS

CANCELLED PROJECT

POST-MAIN GATE PROJECT SUMMARY SHEET

A400M

Integrated Project Team Responsible:
A400M

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

The Future Transport Aircraft (FTA) requirement seeks to provide tactical and strategic mobility to all three Services. The capabilities required of FTA include: the ability to operate from well established airfields and semi-prepared rough landing areas in extreme climates and all weather by day and night; to carry a variety of vehicles and other equipment, freight, and troops over extended ranges; to be capable of air dropping paratroops and equipment; and to be capable of being unloaded with the minimum of ground handling equipment. Furthermore, the Strategic Defence Review confirmed a requirement for an airlift capability to move large single items such as attack helicopters and some Royal Engineers' equipment and concluded that this requirement would be met, in the latter part of this decade, by FTA.
The A400M was selected to meet this requirement for an air lift capability to replace the remaining Hercules C-130K fleet. Ministers announced their decision on 16th May 2000 to make a commitment to procure 25 A400M aircraft in the initial production tranche. This is a collaborative programme involving eight European nations (Germany, France, Turkey, Spain, Portugal, Belgium, Luxembourg and United Kingdom), procuring a total of 196 aircraft. Inter-Governmental Arrangements and contract were signed on 18 December 2001 but did not immediately become effective. In November 2001 the approved in-service date was slipped 12 months as a consequence of changed budgetary priorities.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
Airbus Military Societe Par Actions Simplifee (AM SAS)	Development, Production & Initial in-service support	Fixed price subject to Variation of Price (VOP)	International Competition

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	2356
Approved Cost at Main Gate	2828
Variation	-472
In-year changes in 2001/2002	-226

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Changed Requirement		319	Reduction in number of aircraft to be equipped with Defensive Aids Suite from 25 to 9 (-£238m). Programme option to delete and defer Configuration Items and to slip In Service Date by 12 months (-£81m).
Changed Budgetary Priorities	7	61	Changed delivery profile from that in the Business Case (-£61m). Minor realism adjustments, includes UK share of OCCAR Programme Division costs increased (+£5m), DERA Support costs increased (+£1m), unidentified variance (+£1m).
Inflation	6	6	Changes between inflation rate assumed in the Business Case and yearly inflation indices resulting in a reduction 2001/2001 (-£6m) and an increase 2001/2002 (+£6m).
Exchange Rate		142	Variation in exchange rate assumptions used in the Business Case, 2000/2001 and 2001/2002 (-£142m).
Contracting Process	227		Realism to reflect 3 months' delay to contract effectivity (+£52m). Slip of aircraft payments and associated equipment to reflect above contract let decision (+£15m). Improved costing data for Configuration Items available (+£160m).
Procurement Strategy		65	Total number of aircraft ordered by participating nations increased, and consequent reduction in UPC (-£65m).
Risk Differential		119	Difference between the risk allowed for in the most likely (50%) and highest acceptable (90%) estimates at Main Gate (-£119m).
Total	+240	-712	
Net Variation		-472	

2c. Expenditure to date

Expenditure to 31 March 2002 (£m)	2

2d. Years of peak procurement expenditure

2008/2009	2009/2010

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
***	***	25	25

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	Delivery of 7th aircraft with Strategic Military Aircraft Release and support arrangements.

3b. Performance against approved in-service date

	Date
Current forecast ISD	June 2010
Approved ISD at Main Gate	December 2009
Variation (Months)	+6
In-year changes in 2001/2002	+16

3c. Reasons for variation from approved ISD

Factor	Increase (months)	Decrease (months)	Explanation
Changed Budgetary Priorities	16		Change in the customers' requirement flowing from changed budgetary priorities.
Risk Differential		10	Difference between the risk allowed for in the most likely (50%) and highest acceptable (90%) estimates at Main Gate (-10 months).
Total	+16	-10	
Net Variation	+6		

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	34		Estimated run-on costs for C130K and C-17 (+£34m).
Other	86	87	Extra lease costs of C-17 (+£86m) offset by savings from A400M delay (-£87m).
Total	+33		

3e. Operational impact of ISD variation

The highest acceptable In Service Date (ISD) of the first A400M aircraft to the UK has been deferred by 12 months on affordability grounds. As a consequence, we are planning for the current lease of C-17 to be extended by one year; the C130K fleet Out-of-Service Date will also be extended one year. The operational impact of the 12-month slip in the A400M ISD will be a delay to the capability enhancement the programme offers.

SECTION 4: KEY USER REQUIREMENTS *

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Deployment Capability	Yes
2	Payload	Yes
3	Environmental Operating Envelope	Yes
4	Tactical Operations	Yes
5	Navigation Performance	Yes
6	Communication System	Yes
7	Defensive Aids Suite	Yes
8	Aerial Delivery	Yes
9	Crew Composition	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	None

*Key User Requirements (KURs) for A400M were not fully defined at Main Gate. Section 4a reports performance against the draft KURs.

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

The Government announced in December 1994 that it would replace its ageing C-130K Hercules fleet, in part by procuring 25 C-130J's from Lockheed Martin and in addition, subject to certain conditions, by rejoining the next phase of the collaborative Future Large Aircraft (FLA) programme (now known as A400M). Initial Gate approval was achieved in July 1997 and in the same year the solution assumed for costing purposes was changed to an initial lease of four C-17 and subsequent procurement of 25 FLA. A Request For Proposals (RFP) was issued to Airbus in September 1997 on behalf of the seven FLA nations (UK, France, Germany, Italy, Spain, Belgium, Turkey). Subsequently, in July 1998, four nations (UK, France, Spain, Belgium) issued a "competitive RFP" for a FTA to Airbus Military Company (A400M), Boeing (C-17) and Lockheed Martin (C-130J).

Proposals were received on 29 January 1999 and parallel national and international assessments were undertaken. These covered Combined Operational Effectiveness and Investment Appraisal, technical and commercial compliance, risk assessment, and an appraisal of the international and industrial dimensions. This work also led to parallel negotiations and clarification with the three bidders. At the direction of the Equipment Approvals Committee (EAC) in December 1999, additional work was undertaken to inform the Main Gate submission. Main Gate approval was subsequently granted and on 16 May 2000 the Government announced their decision to procure 25 A400M aircraft to meet the FTA requirement.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	1	0.05%
Approved Cost at Initial Gate	2	0.07%
Variation	-1	

5c. Duration of Assessment Phase

	Date
Date of Main Gate Approval	May 2000
Target Date for Main Gate Approval at Initial Gate	June 1999
Variation (Months)	+11

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	2709	2828
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	February 2009	December 2009
Forecast ISD at Initial Gate	-	December 2007	-

POST- MAIN GATE PROJECT SUMMARY SHEET

ADVANCED AIR-LAUNCHED ANTI-ARMOUR WEAPON (AAAW)

Integrated Project Team Responsible:
Brimstone

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

The Advanced Air-launched Anti-Armour Weapon (AAAW), known as Brimstone, is designed to reduce the fighting power of enemy armoured forces as early and as far forward as possible. It replaces the BL755 cluster bomb in the anti-armour role, and will be carried by Tornado GR4/4a, Harrier GR9 and Eurofighter. These fixed-wing aircraft will compliment the capability provided by the Apache AH64-D, which is armed with the Hellfire anti-armour weapon. Brimstone operates automatically after launch, which helps reduce the hazard to the attacking aircraft from enemy fire. The longer reach and speed of deployment of fixed-wing aircraft mean that they can engage armour far beyond the battlefield area, and before it can join the contact battle.

Following an international competition a development and production contract was let in November 1996 to GEC-Marconi Radar and Defence Systems (later Alenia Marconi Systems, now MBDA) for the Brimstone system. The development phase is almost complete, with only the remainder of the air trials firing programme to be finished. Provided that this can be concluded satisfactorily, delivery will begin later this year, in time to enable the in-service date of 31 October 2002 to be met.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
Tornado GR4/4a (Package 2)	2002	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
MBDA. Prime Contractor.	Development and Production.	Firm price until December 1998, fixed price thereafter.	International Competition.
Boeing North American Operations. Sub contractor.	-	-	-

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	822
Approved Cost at Main Gate	849
Variation	-27*
In-year changes in 2001/2002	0

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Technical Factors	2	10	Reassessment of Development activities (-£4m); reassessment of Tornado Integration Requirements (+£2m); and Harrier Integration Requirements (-£3m); reassessment of level of QinetiQ Support (-£3m).
Changed Requirement	4	4	Reduction in launcher quantities and Service Weapon Test Sets (-£3m); deletion of Tornado Inboard Pylon (-£1m); additional requirements for Emulators (+£4m).
Changed Budgetary Priorities	4	49	Delay to ISD, milestone payment and Eurofighter Integration (+£4m); reduction of missile quantity by 25% (-£49m).
Inflation	16		Difference between the inflation assumed at contract let and the GDP deflators from the time of approval (+£14m); difference between GDP and inflation on the main contract since placement (+£2m).
Exchange Rate		6	Change in US Dollar exchange rate quoted in the contract (-£6m).
Accounting Adjustments and Re-definitions	19	3	Changes due to conversion of cash based approvals and contract details to resource basis (-£3m). Increase in Cost of Capital due to the inclusion of Harrier/Tornado costs (+6m). Change to take account of an adjustment to the current forecast cost, reflecting the availability of more accurate data (+£13m).
Total	+45	-72	
Net Variation		-27	

2c. Expenditure to date

Expenditure to 31 March 2002 (£m)	407

* The in-year change takes account of an adjustment to the Current Forecast Cost for MPR01 reflecting the availability of more accurate figures relating to accruals and Harrier/Tornado integration costs in 2000/01.

2d. Years of peak procurement expenditure

2001/2002	2003/2004

2e. Unit production cost

Unit Production Cost (£m)*		Quantities Required	
at Main Gate	Current	at Main Gate	Current
***	***	***	***

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	Delivery of the first *** weapons and associated equipment to a front-line unit, and declaration that the unit is operational.

3b. Performance against approved in-service date

	Date
Current forecast ISD	October 2002
Approved ISD at Main Gate	September 2001
Variation (Months)	+13
In-year changes in 2001/2002	0

3c. Reasons for variation from approved ISD

Factor	Increase (months)	Decrease (months)	Explanation
Changed Requirement	12		Equipment Capability Customer request to bring Brimstone ISD into line with that of Tornado GR4/4a. (+12 months).
Contracting Process	1		Delay in letting contract with Alenia Marconi Systems as pricing negotiations took longer than anticipated. (+1 month).
Total	+13		
Net Variation	+13		

* UPC is cost of 1 weapon, i.e. launcher plus 3 missiles.

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	1		Annual support cost for BL755 (approx +£1m/pa).
Other	19	5	Annual support cost for Brimstone (approx -£5m/pa). Additional costs to modify BL755 (+£11m). Urgent Operational Requirement for further modifications to BL755 (+£8m).
Total	+15		

3e. Operational impact of ISD variation

The ISD delay of 13 months results in the lack of a fully effective anti-armour capability and the run-on of RBL755 in the anti-armour role. However, 12 months of the delay were necessary to align Brimstone ISD with the availability of its Tornado GR4/4a platform.

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Carriage, launch and jettison from Tornado GR4/4a, Harrier GR9 and Eurofighter.	Yes
2	Autonomous operation after launch.	Yes
3	Detection and attack of Main Battle Tanks, Armoured Personnel Carriers and Self Propelled Guns.	Yes
4	Kill probability as defined in System Requirement Specification (SRS).	Yes
5	Launch from high and low altitude.	Yes
6	Resistance to active and passive countermeasures.	Yes
7	Component lives as defined in SRS.	Yes
8	Compatibility with existing aircraft loads.	Yes
9	Reliability, Maintainability and Testability as SRS.	Yes
10	Minimum Through-life costs.	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	None

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

Approval was given for feasibility studies to be carried out in 1982. However, during Options for Change, programme funding was withdrawn while alternatives for a future anti-armour capability were considered. The project was reinstated in 1993 and the revised Staff Requirement, for an Advanced Air-launched Anti-armour Weapon (AAAW), was presented to the Equipment Approvals Committee (EAC) early in 1994.

In June 1994, the EAC gave approval for an Invitation to Tender (ITT) to be issued to industry for an AAAW. Following issue of the ITT in December 1994, proposals were received from GEC Marconi, Hunting Engineering, Texas Instruments, Thorn EMI and British Aerospace.

Following full technical and commercial assessment of the proposals a further tender round took place in January 1996. This concentrated on the commercial aspects of the bids in line with revised timescales and production quantity requirements.

The tender assessment was completed in February 1996 with the findings being presented to EAC. Brimstone was found to have superior relative performance by a comfortable margin and also provided the most cost-effective solution. In July 1996 the Secretary of State for Defence announced that GEC Marconi had won the AAAW competition with its Brimstone weapon, and would be awarded the contract to develop and produce the weapon system.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	23	2.8%
Approved Cost at Initial Gate	20	2.4%
Variation	+3	

5c. Duration of Assessment Phase

	Date
Date of Main Gate Approval	March 1996
Target Date for Main Gate Approval at Initial Gate	-
Variation (Months)	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	849	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	September 2001	-
Forecast ISD at Initial Gate	-	December 1991	-

POST-MAIN GATE PROJECT SUMMARY SHEET

AIRBORNE STAND-OFF RADAR (ASTOR)

Integrated Project Team Responsible:
Airborne Stand-Off Radar (ASTOR)

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

ASTOR is a new capability, which will provide a long range all-weather theatre surveillance and target acquisition system, capable of detecting moving, fixed and static targets. It is designed to meet a joint Army and RAF requirement. The system comprises a fleet of air platforms, each with a radar sensor, and a number of ground stations.

Following a competition with Lockheed Martin and Northrop Grumman, Raytheon Systems Limited (RSL) was selected as the preferred bidder for ASTOR in June 1999. Contract award was achieved in December 1999. The Prime Contract with RSL is for the full development and production of 5 aircraft and the 8 mobile and transportable ground stations. The contract also covers the provision of 10 years contractor logistic support, the costs of which are not reported below but amount to around £140m. Bombardier is the major sub-contractor providing the 5 Global Express aircraft.

Flight validation trails commenced in July 2001 and the first unmodified aircraft was delivered in February 2002 to the then Raytheon site at Greenville. In March 2002 RSL completed the sale of its Aircraft Integration Services business to L3 –Communications. RSL remains the Prime Contractor for the ASTOR programme but much of the aircraft design and systems integration activity has now been sub-contracted to L3 – Communications. Preparations are currently being made for the System Critical Design Review (CDR) which is due to be held in July 2002. The CDR is the review of the whole ASTOR design. The design work has taken longer than expected and so the CDR has slipped but manufacture is proceeding as planned, in parallel with the completion of the remaining design work.

The first aircraft and ground stations are due to be delivered in 2004 with final deliveries being made in 2008.

1b. Associated projects

Critical to Achievement of ISD		**Critical to Meet Initial Gate Requirement**	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
Raytheon Systems Limited (Prime Contractor)	Full Development and Production	Firm	International Competition
Bombardier Aerospace (Sub-contractor)	Production	Firm	International Competition

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	1013
Approved Cost at Main Gate	938
Variation	+75
In-year changes in 2001/2002	+83

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Changed Requirement	9	12	Deletion of requirement to be fitted "for but not with" Air to Air Refuelling (-£12m) and incorporation of a number of improvements primarily for improved biological chemical protection (+£8m) and Bowman derisk (+£1m)
Exchange Rate	86		Changes in £/$ exchange rates (+£86m).
Contracting Process	11	17	Delay in contract award and reduced costs during Best and Final offers and contract negotiation (-£16m); reassessment of project support costs (-£1m); requirement for additional Technical Documentation (+£9m) and additional costs associated with Satellite communications and ground stations (+£2m).
Accounting Adjustments and Re-definitions		2	Derivation of the approved cost on a resource basis (-£2m).
Total	+106	-31	
Net Variation	+75		

2c. Expenditure to date

Expenditure to 31 March 2002 (£m)	327

2d. Years of peak procurement expenditure

2002/2003	2003/2004

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
-	85.1	5 Aircraft	5 Aircraft
-	15.7	8 Groundstations	8 Groundstations

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	2 aircraft and 2 ground stations accepted into service and supported by the provision of an adequate logistic and training support.

3b. Performance against approved in-service date

	Date
Current forecast ISD	September 2005
Approved ISD at Main Gate	September 2005
Variation (Months)	0
In-year changes in 2001/2002	0

3c. Reasons for variation from approved ISD

Factor	Increase (months)	Decrease (months)	Explanation
-	-	-	-
Total	-	-	
Net Variation	-	-	

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	-	-	-
Other	-	-	-
Total	-	-	

3e. Operational impact of ISD variation

-

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Endurance: Minimum of *** *hrs*, within which *** *hrs* at best endurance speed above *** *ft* above mean sea level. ****hrs* at best cruise height and speed	Yes
2	Altitude and Range : *xft* and *xkm*[3]	Yes
3	Ground Station Transportability : C130K/J	Yes
4	Ground Station Responsiveness : Pre-planned tasks within *** *hrs* of sortie closure	Yes
5	Radar Range : Radar Range bracket *xkm* (Min far range) – *xkm* (Max near radar range)	Yes
6	Air Platform Reaction Time : Turnaround > *** *hrs*	Yes
7	Air Segment Battlefield Mission : *Moving Target Indicator scan rate x per min*	Yes
8	Air Segment Battlefield Mission(1) : *x Synthetic Aperture Radar Spot* xkms[4]	Yes
9	Air segment Battlefield Mission (2) : *x Swathe Images* per mission	Yes
10	Ground segment Battlefield Mission : *x days crisis and x days war*	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	None

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

In 1989 a technology demonstration programme (TDP) worth £12m (at 1999/00 prices) was agreed with Research Establishments now incorporated into the Defence Evaluation Research Agency (DERA). This intramural work ran for two years and demonstrated that the concepts used in ASTOR were practicable. A move into Project definition (PD) was approved in September 1993. This is now deemed to be the equivalent of Initial Gate.

Following open competition, two parallel contracts for an 18 month PD programme were let in February 1995. After assessment of the PD proposals it was considered that the optimum solution would be to invite the two PD consortia to submit Best and Final Offers (BAFOs) for the Development, Production and In-Service Support. This revised Procurement Strategy was approved by the then Minister for Defence procurement in March 1997.

During the preparation to invite the two PD consortia to submit BAFOs in September 1997 programming decisions were taken which delayed the availability of funding, particularly in the early years, and the in-service date for the ASTOR capability was delayed by 15 months. During the BAFO phase a decision was taken to consider a third bid based upon the US Joint Surveillance Target Attack radar system (JSTARS) upgrade programme, the Radar Technology Insertion programme (RTIP). As a result various unsolicited revisions to the bids were received during the assessment process, further delaying the in-service date by 14 months. Approval for the implementation phase was given after down selection in June 1999.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	13	1.3%
Approved Cost at Initial Gate	12	1.2%
Variation	+1	

5c. Duration of Assessment Phase

	Date
Date of Main Gate Approval	June 1999
Target Date for Main Gate Approval at Initial Gate	March 1998
Variation (Months)	+15

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	938	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	June 2005	September 2005
Forecast ISD at Initial Gate	-	April 2003	-

POST-MAIN GATE PROJECT SUMMARY SHEET

ALTERNATIVE LANDING SHIP LOGISTIC (ALSL)

Integrated Project Team Responsible:
Alternative Landing Ships Logistic (ALSL)

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

The Alternative Landing Ship Logistic (ALSL) is a new class of ship designed to deploy troops, vehicles and equipment directly into operational areas. It has been developed as an alternative to the costly life extension programme for the existing Landing Ship Logistic. ALSL is larger and more versatile than its predecessor, enabling troops to be loaded and disembarked with their vehicles and equipment at sea by landing craft and helicopter.

An Invitation to Tender was issued to five UK shipbuilding consortia in April 2000 for the design and build of two ALSLs with an option for up to a further three. A subsequent assessment of the requirement resulted in a decision to procure four ships from two separate shipyards using a parallel build strategy. It is expected that this will offer value for money and earlier In-Service Dates. In December 2000 a contract was placed with Swan Hunter (Tyneside) Ltd to design and build two ALSLs. BAE SYSTEMS Marine will build a further two ships to the Swan Hunter design. A contract was placed with BAE SYSTEMS Marine in November 2001.

The programme is progressing satisfactorily and the following key dates remain on target:

1. Start fabrication of Royal Fleet Auxiliary (RFA) Lyme Bay and RFA Cardigan Bay	December 2002
2. Launch of RFA Largs Bay	February 2003
3. Launch of RFA Mounts Bay	October 2003

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
Swan Hunter (Tyneside) Ltd	Design & build two ALSLs, initial spares provisioning and Lead Yard Service support	Firm Price	UK Competition
BAE SYSTEMS Marine	Build of two ALSLs	Maximum price to be converted to firm price	No Acceptable Price No Contract (NAPNOC)

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	381
Approved Cost at Main Gate	395
Variation	-14
In-year changes in 2001/2002	+27

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Procurement Strategy	27		In-year changes (+27M) due to the revised procurement strategy.
Risk Differential		41	Difference between the risk allowed for in the most likely (50%) and highest acceptable (90%) estimates at Main Gate (-£41M).
Total	+27	-41	
Net Variation		-14	

2c. Expenditure to date

Expenditure to 31 March 2002 (£m)	50

2d. Years of peak procurement expenditure

2002/2003	2003/2004

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	At Main Gate	Current
97.8	94.6	4	4

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	Availability of First of Class RFA Largs Bay for operational use.

3b. Performance against approved in-service date

	Date
Current forecast ISD	July 2004
Approved ISD at Main Gate	October 2004
Variation (Months)	-3
In-year changes in 2001/2002	0

3c. Reasons for variation from approved ISD

Factor	Increase	Decrease	Explanation
Risk Differential		3	Difference between the risk allowed for in the most likely (50%) and highest acceptable (90%) estimates at Main Gate (-3 months).
Total		-3	
Net Variation		-3	

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	-	-	-
Other	-	-	
Total	-	-	

3e. Operational impact of ISD variation

-

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently Forecast to be met (Yes or No)
1	Ability to offload/onload troops, equipment and munitions quickly and safely at sea.	Yes
2	Ability to offload/onload to mexeflote (powered raft) in sheltered waters in order to utilise the large lift capacities of these assets.	Yes
3	To be fitted to carry two Landing Craft Vehicle & Personnel and two mexeflotes.	Yes
4	Provision of a single spot flight deck to meet defined operational requirements.	Yes
5	Maximise lift capacity for troops, vehicles and equipment beyond minimum acceptable levels.	Yes
6	Capability to maintain a speed of 18 knots full laden with a minimum range of 8000 nautical miles at 15 knots.	Yes
7	A reliable combat support system and communications package to guarantee the timely and efficient exchange of information with the command platform.	Yes
8	Ability to conduct a passage through a contaminated environment for a specified period and conduct operations on completion.	Yes
9	To provide a self-defence capability as required by current and future threat analysis.	Yes
10	Provide an operational availability of five years peacetime availability of at least 93% and not more than 12 hours mission downtime during a 60-day mission.	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	Not Applicable

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the assessment phase

In September 1997 approval was given to proceed with a programme of initial assessment studies to define the ALSL requirement for use in a conventional or Private Finance Initiative (PFI) procurement. This was followed in April 1999 by further work to develop a Systems Requirement Document to minimise risk and set a baseline for tender assessment under a conventional procurement. PFI was ruled out due to the front line role of the ALSLs in supporting an Amphibious Task Group.

The resultant studies and design solutions offered by industry enabled the Project to move to Initial Gate in October 1999 in order to seek formal costed tenders for the design and build of two ALSLs to inform the Main Gate Business Case, planned for December 1999. However, the Invitation to Tender was delayed until April 2000, whilst a series of programme options were considered. During the tender process it became clear that a four-vessel procurement through a parallel build strategy offered greater long-term value for money and met the capability required for transporting 3 Commando Brigade into amphibious operations. This strategy also offered earlier In-service Dates compared to a sequential build of all the vessels at one shipyard. Main Gate approval was given in October 2000.

5b. Cost of the assessment phase

£m	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	1	0.3%
Approved Cost at Initial Gate	1	0.3%
Variation	0	

5c. Duration of assessment phase

	Date
Date of Main Gate Approval	October 2000
Target Date for Main Gate Approval	December 1999
Variation (Months)	+10

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	354	395
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	159	-

5e.ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	July 2004	October 2004
Forecast ISD at Initial Gate	January 2003	June 2003	October 2003

POST-MAIN GATE PROJECT SUMMARY SHEET

ASTUTE CLASS SUBMARINE

Integrated Project Team Responsible:
Attack Submarine (ASM)

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

The Astute Class of submarines is the planned replacement for the ageing Swiftsure Class SSNs (Sub Surface Nuclear). GEC-Marconi (now BAE SYSTEMS Astute Class Ltd) was identified as MOD's preferred bidder in December 1995. Following protracted negotiations a prime contract was placed on 17 March 1997. The contract put in place the first whole boat, Prime Contract for UK nuclear powered submarines. The Prime Contract is for the design, build, and initial support of three submarines. The support task will be undertaken by the Prime Contractor for a total of eight boat years (4.5 calendar years). The Prime Contract requires an integrated Tactical Weapons System with a performance at least as good as the Swiftsure & Trafalgar (S&T) Update Final Phase. As a risk reduction measure, the former MOD contracts for the Final Phase of the S&T Update have been novated into the Prime Contract for Astute.

Fabrication of Boat 1, HMS ASTUTE, started in September 1999. As at 31 March 2002, all Boat 1 hull structure components are at the shipyard and key propulsion machinery items are undergoing off-line assembly and test. The degree of concurrency between completion of design and release to production remains a risk but the design is on schedule to be completed by December 2002.

Expenditure in clear prospect – It is anticipated that decisions about an order for up to 3 more Astute Class submarines will be made in late 2002. This order will be subject to approval by the Investment Approvals Board, Ministers and Treasury.

Project costs for Astute Class Training Services (ACTS) of £62M previously reported as Astute costs have been removed as they are part of the separate ACTS approval in January 2001.

Subsequent to 31 March 2002, the first of class HMS ASTUTE, is now not expected to enter service before late 2006 although this date is still to be confirmed by the contractor.

1b. Associated projects

Critical to Achievement of ISD		**Critical to Meet Initial Gate Requirement**	
Project Title	Forecast ISD	Project Title	Forecast ISD
S&T Update Final Phase	2004	-	-
Astute Class Training Service (ACTS)	2004	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
BAE SYSTEMS Astute Class Ltd (BACL) formerly GEC Marconi	Full development, production and initial support	Fixed price incentive fee with a maximum price	UK Competition
BAE SYSTEMS Marine Ltd	Design and Build	Fixed price plus incentive fee with a maximum price	Non-competitive

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	2707
Approved Cost at Main Gate	2726
Variation	-19
In-year changes in 2001/2002	+9

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Technical Factors	61	16	Reassessment of risk (+£51m). Reduction in risk on Sonar 2076 programme (-£16m). Re-costing of land attack missile interface & integration (+£5m). Re-costing of External communications (+£5m).
Changed requirement	32		Includes change to fore end design, completion of land attack missile capability and improved tactical data link capability (+£32m).
Inflation	40		Variation between anticipated rates for GDP and VOP on contract (sunk costs only) (+£14m). Correction of previous VOP calculation – incorrect split between labour and materials (+£26m).
Accounting adjustments		136	Decrease reflects difference between anticipated resource profile at approval and current profile (-£74m). Removal of ACTS costs that have been incorrectly included in previous MPRs – training not part of original Astute MG Approval (-£62m).
Total	+133	-152	
Net Variation		-19	

2c. Expenditure to date

Expenditure to 31 March 2002 (£m)	875

2d. Years of peak procurement expenditure

2001/2002	2004/2005

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	At Main Gate	Current
-	-	3	3

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	Stage 1 acceptance from the contractor (safe operation and start of operational work-up).

3b. Performance against approved in-service date

	Date
Current forecast ISD	June 2005
Approved ISD at Main Gate	June 2005
Variation (Months)	0
In-year changes in 2001/2002	0

3c. Reasons for variation from approved ISD

Factor	Increase	Decrease	Explanation
Total	-	-	-
Net Variation	-	-	

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	-	-	-
Other	-	-	-
Total	-	-	

3e. Operational impact of ISD variation

-

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently Forecast to be met (Yes or No)
1	Weapon system effectiveness	Yes
2	Sonar performance	Yes
3	Hull strength (survivability)	Yes
4	Top speed	Yes
5	Endurance, 70 days deeply submerged	Yes
6	Acoustic signature	Yes
7	Complement	Yes
8	Land attack capability	Yes
9	Special forces capability	Yes
	Percentage currently forecast to be met	100 %
	Change since previous MPR	None

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the assessment phase

The Astute Class of submarines is the planned replacement for the Swiftsure Class SSNs. In June 1991, (equivalent of Initial Gate) approval to proceed with a programme of studies at an estimated cost of £6M (91/92 prices) to define the Batch 2 Trafalgar Class Boat (now known as the Astute Class). This programme of studies led to the issue of an Invitation to Tender for the design and build of an initial batch of three Astute Class SSNs and a further approval of £2M (92/93 prices) for contractor and Defence Research Agency support to MOD during the tendering exercise in 1994.

In July 1994, as a result of concerns over the overall affordability of the programme, Minister (Defence Procurement) and the Treasury approved a further £23.5M (at 93/94 prices) for risk reduction studies to be undertaken in parallel with the formal bid phase of the project. To maintain an effective competition, contracts for risk reduction work were awarded to both bidders, GEC Marconi and Vickers Shipbuilding and Engineering Ltd. The successful outcome of these studies led to EAC approval (the equivalent of Main Gate) in March 1997 to place a contract for the design, build and initial support of 3 Astute Class submarines with GEC Marconi, now BAE SYSTEMS.

5b. Cost of the assessment phase

£m	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	29	1%
Approved Cost at Initial Gate	33	1%
Variation	-4	

5c. Duration of assessment phase

	Date
Date of Main Gate Approval	March 1997
Target Date for Main Gate Approval	-
Variation (Months)	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	2570	2727	2887
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	June 2005	-
Forecast ISD at Initial Gate	-	December 2001	-

POST-MAIN GATE PROJECT SUMMARY SHEET

ATTACK HELICOPTER WAH-64 APACHE

Integrated Project Team Responsible:
Attack Helicopter

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

WAH-64 Apache Attack Helicopter (AH), a version of the US Army AH-64D, will replace the ageing Lynx Mk7 system in the anti-armour role. It is equipped with Rolls Royce Turbomeca (RTM)322 engines; the Longbow Fire Control Radar; Semi-Active Laser and Radio Frequency versions of the Hellfire missile; CRV-7 (Canadian Rocket Vehicle-7) ground suppression rockets; and 30mm cannon.

The procurement strategy was based on an "off-the-shelf" buy of the complete weapons system through a Prime Contractor. Following an international competition, a Prime Contract for the supply of 67 WAH-64s and the integration of its complete weapons systems was placed with GKN-Westland Helicopters Ltd. (now Westland Helicopters Ltd.) of Yeovil in March 1996. The project is in the production phase. Boeing is the major sub-contractor. A separate contract for the procurement of munitions stocks was placed with Hunting Engineering Ltd. in March 1996. Equipments to meet key user requirements were added to the Prime Contract in 1999 (i.e. Health and Usage Monitoring System and Communications upgrade).

The first aircraft was delivered in April 2000. The In Service Date (ISD) was achieved in January 2001. Final delivery is due in April 2004, some four months later than expected, to accommodate delays in fitting the upgraded Defensive Aids Suite.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
*		-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
Westland Helicopters Ltd. (formerly GKN Westland Helicopters Ltd).	Prime Contractor for aircraft production and weapon system integration	Fixed price	International Competition
Boeing, USA	Sub-contractor	Fixed price	Sub-contractor

* The 30-year AH PFI Training service was reported in MPR2000 as being Critical to Achievement of ISD. However, the AH ISD was declared without the PFI Training package ISD being met, due in April 2003 when Wide Area Network (WAN) is Ready For Training (RFT). In parallel with the development of the PFI Training package, a total of some 16 aircrew have been qualified to fly the WAH-64, having been trained to fly the Apache in the USA.

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	3068
Approved Cost at Main Gate	2997
Variation	+71
In-year changes in 2001/2002	+71

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Changed Requirement	96	137	Reduction of air-to-air missile quantity (-£4m); deletion of funding for US Helmet solution (-£44m); deletion of M36 training round (-£8m); de-scoping of helmet requirement (-£9m); deletion of funding for generic air-to-air missile (-£72m). Extra funding for Defensive Aids Suite (+£12m); Interest on Capital on revised deliveries (£+42m); incorporation of Health & Usage Monitoring System (+£35m). Introduction of enhancements to Radar Frequency Interferometer (RFI), increased helmet range & scale, and Ground Support System link to Ptarmigan (+£4m). Introduction of Voice and Data Recorders on aircraft 1-29 (+£3m).
Changed Budgetary Priorities	150	75	Increased estimate to incorporate necessary Communications upgrade (£+31m); inclusion of funding for Low Height Warning System (+£9m), for Ordnance Board approval of munitions (+£10m), for Static Code Analysis of software (+£8m), for Arc radios (+£4m), for configuration changes (+£7m). Reassessment of costs for Foreign Military Sales cases (+£6m), for Bowman integration study (-£2m), for support to missile trials (-£1m) and for Defence Evaluation Research Agency (DERA) and Communications Electronics Security Group (CESG) support (+£26m). Reduction in VAT applicability on Prime Contract (-£60m). Increased costs for the Helicopter Integrated Defensive Aids Suite (HIDAS)(+£10m); for Hellfire missiles (+£1m). Increased cost of Ship Helicopter Operating Limits (SHOL) trial (+£7m). Increased cost for Programme option (+£5m) . Additional Testing & Instrumentation (+£4m). Additional miscellaneous equipment costs (+1m). Additional Aircrew equipment and armaments (+3m); Re-evaluation of contractor intangible development work (-£9m); Increased costs for Hellfire programme (+£18m); reduced costs for Low Height Warning System (LHWS) & Voice And Data recorders (VADR) (-£3m).
Inflation	5		Changes in Variation of Price compared with GDP Deflator (+£5m).

Factor	Increase £m	Decrease £m	Explanation
Exchange Rate	24	35	Movement in French Franc ER on Prime Contract compared with the rate assumed at contract (+£1m); Movement in US Exchange Rate (ER) for sunk costs on Prime Contract compared with the rate assumed at contract award (-£35m); Movement in US Exchange Rate (ER) Prime contract costs compared with the rate assumed at contract award (+£23m).
Contracting Process	14		Outcome of tendering and contractual negotiations (£+14m).
Accounting Adjustments and Re-definitions	29		Inclusion of DERA / CESG costs disaggregated since approval (+£23m). Derivation of the approved cost on a resource basis (£+6M).
Total	+318	-247	
Net Variation	+71	0	

2c. Expenditure to date

Expenditure to 31 March 2002 (£m)	2347

2d. Years of peak procurement expenditure

2000/2001	2001/2002

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
27.5	28.2	67	67

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	Delivery of the first 9 production standard WAH-64s.

3b. Performance against approved in-service date

	Date
Current forecast ISD	January 2001
Approved ISD at Main Gate	December 1999
Variation (Months)	+13
In-year changes in 2001/2002	0

3c. Reasons for variation from approved ISD

Factor	Increase (months)	Decrease (months)	Explanation
Technical Factors	1		ISD declaration delayed 16 days to establish special procedures relating to the use of Technical Publications (+1 month).
Changed Requirement	6		Reflects the selection of a different engine (RTM322) (+6 months).
Changed Budgetary Priorities	12		Programme slipped by 12 months in order to match the programme to the available Departmental resources (+12 months).
Total	+13*		
Net Variation	+13		

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	47		Costs of running on Lynx Mk7 and TOW missile during the period of AH ISD slippage (+£47m).
Other		45	Apache support costs not expended due to AH ISD slippage (-£45m).
Total	+2		

3e. Operational impact of ISD variation

The slip in WAH-64 ISD resulted in a requirement to extend the service of current Army aircraft: i.e. the Lynx, with its TOW (Tube-launched, Optically-tracked, Wire Guided) missile, for anti-armour, and Gazelle for reconnaissance and observation. However, whilst ISD is a key milestone for the Defence Procurement Agency (DPA), it is the Army's own Initial Operational Capability Date, currently planned for August 2004, which is on the critical path to achieving the "End State" delivery of the UK Lead Aviation Task Force availability date by February 2005. This remains achievable.

* The 6 month slip acted concurrently with the 12 month slip.

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Lethality	Yes
2	Survivability	Yes
3	Payload/Range - Anti-Armour Mission	Yes
4	Payload/Range - Ferry Mission (Internal Fuel)	Yes
5	Payload/Range - Ferry Mission (Internal and External Fuel)	Yes
6	Mission Management	Yes
7	Night/Adverse Weather Operations	Yes
8	Supportability (Attributable Fault Rate)	Yes
9	Supportability (Mission Failure Rate)	Yes
10	Supportability (Maintenance Man Hours/Flying Hour)	Yes
11	Supportability (Time to Rectify Faults)	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	None

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

The Attack Helicopter requirement was endorsed as a Cardinal Point Staff Target in June 1991 and called for a competitive Commercial Off-The-Shelf procurement. Six companies submitted bids in 1993 in response to an Invitation To Tender but only three were invited to submit Definitive Bids in 1995. Bids were assessed against four main criteria: operational effectiveness, life cycle costs, risk and industrial participation.

The supportability of each complete helicopter package proposed was evaluated within an Integrated Logistic Support approach to supportability, which included a training needs analysis and full evaluation of the training systems offered. The competition recommended to Ministers the selection of Apache to fulfil our AH requirement.

The variation of £3m between the approved cost at Staff Target (Initial Gate equivalent) and actual cost reflects spend on DERA paid by the project after Initial Gate approval.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	6	0.2%
Approved Cost at Initial Gate	3	0.1%
Variation	+3	

5c. Duration of Assessment Phase

	Date
Date of Main Gate Approval	July 1995
Target Date for Main Gate Approval (at IG)	-
Variation (Months)	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	2997	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	2751	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	December 1999	-
Forecast ISD at Initial Gate	-	December 1997	-

POST-MAIN GATE PROJECT SUMMARY SHEET

BEYOND VISUAL RANGE AIR – TO-AIR MISSILE (BVRAAM)

Integrated Project Team Responsible:
Beyond Visual Range Air to Air Missile (BVRAAM)

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

The Beyond Visual Range Air-to-Air Missile (BVRAAM) (also known as Meteor) will provide Eurofighter with the capability to combat projected air-to-air threats and sustain air superiority throughout the life of the aircraft. The weapon is required to operate in all weather conditions and will complement Eurofighter's Advanced Short Range Air-to-Air Missile (ASRAAM). Until Meteor enters service, Eurofighter will be armed with the Advanced Medium Range Air-to-Air Missile (AMRAAM). AMRAAM's current forecast procurement cost is £214M with deliveries planned to begin from mid 2005.

The key features of the requirement include stealthy launch, enhanced kinematics (giving increased stand-off and disengagement ranges, and a better ability to chase and destroy highly agile manoeuvring targets) and robust performance in countermeasures.

This is a collaborative programme with 5 other partner nations; Germany, Spain and Italy (for Eurofighter), Sweden (for JAS 39 Gripen) and France (for Rafale). The UK will place a demonstration and manufacture contract on behalf of the six nations with MBDA (formerly MBD(UK) Ltd). The UK is presently the only nation to commit to production; the contract will contain provisions for partner nations' production orders to be added post-award.

The Secretary of State for Defence announced in the House of Commons on 16 May 2000, that MBDA's Meteor missile had been selected to meet this requirement. A Memorandum of Understanding has been signed by 5 of the 6 participating nations, with Germany set to sign once the draft contract has been approved by the Bundestag.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
Eurofighter	2002	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
MBDA	Demonstration (all 6 nations) and Manufacture (UK only at present)	Firm Price up to June 2007(Demonstration), Fixed Price up to June 2006 (Manufacture), Fixed Price thereafter	International Competition

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	1397
Approved Cost at Main Gate	1437
Variation	-40
In-year changes in 2001/2002	+28

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Changed Requirement	8		UK share of additional common requirements (+£2m). Additional requirement for Dual Data Link (+£6m).
Changed Budgetary Priorities	22		Increases required for Insensitive Munitions (+£9m), Meteor Operational Missiles for Aircraft Integration (+£5m), Surveillance and Life Extension (+£5m), Initial Spares (+£1m), Container Development (+£1m), Support to Eurofighter Integration (+£1m).
Procurement Strategy	84	30	Additional funding required for integration of AMRAAM AIM 120C onto Eurofighter (+£82m), Gripen Trial (+£2m). Decrease in UK's share of Development as other nations joined/rejoined the programme (-£30m).
Accounting Adjustments and Re-definitions	9	4	Change in assumptions in regard to recovery of VAT (+£9m). Derivation of approved cost on a resource basis (-£4m).
Risk Differential		129	Difference between the risk allowed for in the most likely (50%) and highest acceptable (90%) estimates at Main Gate (-£129m).
Total	+123	-163	
Net Variation		-40	

2c. Expenditure to date

Expenditure to 31 March 2002 (£m)	0.3

2d. Years of peak procurement expenditure

2010/2011	2011/2012

2e. Unit production cost*

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	At Main Gate	Current
1.2	1.0	***	***

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	Achievement of an operational capability with *** missiles and supporting infrastructure.

3b. Performance against approved in-service date†

	Date
Current forecast ISD	June 2012
Approved ISD at Main Gate	August 2012
Variation (Months)	-2
In-year changes in 2001/2002	+9

3c. Reasons for variation from approved ISD

Factor	Increase	Decrease	Explanation
Contracting Process	9		Slippage caused by delays in placing contract (+9 months).
Risk Differential		11	Difference between the risk allowed for in the most likely (50%) and highest acceptable (90%) estimates at Main Gate (-11 months).
Total	+9	-11	
Net Variation		-2	

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	-	-	-
Other	-	-	-
Total	-	-	

3e. Operational impact of ISD variation

-

* UPC covers Meteor missile only.

† ISD shown is for Meteor only.

SECTION 4: KEY USER REQUIREMENTS*

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently Forecast to be met (Yes or No)
1	Multiple Target Capability	Yes
2	Kill Probability	Yes
3	Enhanced Eurofighter Survivability	Yes
4	Eurofighter Compatibility	Yes
5	Minimum Air Carriage Life	Yes
6	Reliability	Yes
7	Support	Yes
	Percentage currently forecast to be met	100 %
	Change since previous MPR	Not Applicable

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

* KURs are for Meteor only.

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the assessment phase

On 2 October 1995, Minister (Defence Procurement) gave approval for the issue of an Invitation to Tender (ITT) for BVRAAM. The ITT was issued on 5 December 1995. Two bids were received; one from a consortium led by Matra BAe Dynamics (MBD) UK Ltd, and one from Raytheon Systems Ltd. After extensive analysis, it was decided that both bids contained areas of risk that needed to be addressed before a development and production contract could be placed. In May 1997, a Project Definition & Risk Reduction (PDRR) phase was approved and contracts were placed on both bidders for a period of one year with the results to be technically and operationally assessed before a final decision was made. Both PDRR contracts were let in August 1997 and revised bids were received in May 1998.

Due to the complexity of the BVRAAM assessment, the need to accommodate the requirements of the Prospective Partner Nations and the need to go for Best And Final Offers (BAFOs) primarily as a result of the French request to join the programme, Main Gate Approval was not achieved until May 2000. In his statement to the House of Commons on 16 May 2000, the Secretary of State for Defence announced that MBD's Meteor missile had been selected.

5b. Cost of the assessment phase

£m	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	20	1%
Approved Cost at Initial Gate	14	1%
Variation	+6	

5c. Duration of assessment phase

	Date
Date of Main Gate Approval	May 2000
Target Date for Main Gate Approval	March 1997
Variation (Months)	+38

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	1264	1308	1437
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	1264	-

5e.ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	June 2010	September 2011	August 2012
Forecast ISD at Initial Gate	-	March 2005	-

POST-MAIN GATE PROJECT SUMMARY SHEET

CONVENTIONALLY ARMED STAND-OFF MISSILE (CASOM)

Integrated Project Team Responsible:
Conventionally Armed Stand-Off Missile (CASOM)

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

Storm Shadow is a Conventionally Armed Stand Off Missile which will enhance our stand off precision attack capability against strategic, tactical and infrastructure targets. This capability will reduce the exposure of our aircraft and crews to high levels of aircraft attrition. In February 1997, following an international competition, a contract was awarded to Matra BAe Dynamics (UK) Ltd. (now MBDA(UK)) for their Storm Shadow missile. It will be integrated initially onto Tornado GR4 and later on Eurofighter. In March 2002, the Department decided for affordability reasons that Storm Shadow will not be integrated at the outset onto the Harrier GR9 aircraft. However, the future role of the Harrier and Storm Shadow will be kept under review.

MBDA (UK) advised the Department in May 2001 that it could not deliver Storm Shadow with the contracted lethal package performance in time to meet a forecast in-service date of August 2002. The company identified a number of options to recover the performance shortfall, and the Department agreed a revised programme to provide an Initial Operating Capability (IOC) in August 2002, but delaying the in-service date by three months to November 2002. The Full Operational Capability (FOC) will be available by October 2003.

Work is progressing on the development of an interim version of the Storm Shadow Mission Planning Aid (SS – MPA) to be available for the IOC missile. The SS-MPA will be integrated with the Tornado Aircraft Mission Planning Aid (TAMPA) system.

The Department are currently examining how to extend the environmental envelope in which the missile can operate. The Storm Shadow programme is co-operative with the French Government who have designated their missile SCALP EG. To ensure programme coherency, MBDA (UK) have harmonised, where possible, all national requirements into a single specification. The Department is also procuring Storm Shadow on behalf of the Italian Government.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
Tornado GR4 (Package 2)	2002	Tornado GR4 (MLU)	1998

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
MBDA(UK) Ltd	Development, Production and Initial Contractor Logistics Support	Firm Price from contract award until December 1998. Fixed Price from January 1999 onwards.	International Competition

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	980
Approved Cost at Main Gate	1027
Variation	-47
In-year changes in 2001/2002	-1

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Technical Factors	16	1	Re-profiling of asset deliveries, leading to re-calculation of Interest On Capital charges (-£1m). As a result of problems associated with the warhead, the delivery of assets to the RAF has been delayed, resulting in additional interest on capital charges being incurred (+£16m).
Changed Requirement	19	12	Removal of funding for dedicated storage facility (-£12m), Provision for whole system trial (+£6m). Re-definitions of current requirements: Deployability Enhancements (+£2m), Additional support to Service Evaluation Trials (+£3m); Environmental Data Loggers (+£1m); Mission Planning (+£5m); SS Advanced Mission Planning Aid (+£1m); Flexible Launch Zone (+£1m).
Changed Budgetary Priorities	8	58	Reassessed estimates for: Harrier Integration (-£4m); DERA support to DPA sponsored tasks (-£4m); Tornado Integration (-£1m); Loading Systems (-£3m); Government Furnished Equipment Items (-£1m); Funding provision to support development programme (-£8m); Funding provision to support production programme (+£8m); Expected SMART Acquisition savings on DERA support and Service Evaluation Trials costs (-£21m). Removal of Storm Shadow capability from Harrier aircraft (-£16m).

Factor	Increase £m	Decrease £m	Explanation
Inflation	24	12	Difference between inflation assumed at contract award and GDP deflators used at the time of approval for development and production (+£24m); Difference between specific indices and GDP deflator in calculating annual price uplift (-£12m).
Receipts		1	Liquidated damages recovered following late deliveries of Integration Assets and Gainshare savings (-£1m).
Exchange Rate		27	Reduction reflects better rate obtained by MBDA UK in buying forward French Francs (-£27m).
Accounting Adjustments and Re-definitions		3	Derivation of the approved cost on a resource basis (-£3m).
Total	+67	-114	
Net Variation		-47	

2c. Expenditure to date

Expenditure to 31 March 2002 (£m)	675

2d. Years of peak procurement expenditure

2000/2001	2001/2002

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
-	***	-	***

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	First *** Weapons in-service with support equipment

3b. Performance against approved in-service date

	Date
Current forecast ISD	November 2002
Approved ISD at Main Gate	December 2001
Variation (Months)	+11
In-year changes in 2001/2002	+3

3c. Reasons for variation from approved ISD

Factor	Increase (months)	Decrease (months)	Explanation
Technical Factors	3		Lethal package performance problems (+3 months).
Changed Requirement	6		To align missile in-service date with Tornado GR4 (Package 2) availability (+6 months).
Contracting Process	2		Contract placed later then planned due to final pricing negotiations (+2 months).
Total	+11		
Net Variation	+11		

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	-	-	New Capability
Other	-	-	-
Total	-	-	

3e. Operational impact of ISD variation

The in-service date variation will delay the enhancement of the UK's ability to deliver precision attack against high-value strategic, tactical, and infrastructure targets at stand-off range. The UK may be precluded from prosecuting such targets until air superiority has been established and/or be unable to attack targets that require Storm Shadow's penetration and accuracy.

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Mission Planning: One individual to plan the contracted missile attacks in a specified period.	Yes
2	Mission Operation: Single Pass, multiple launch of missiles (2) from all contracted aircraft types.	Yes
3	Launch Aircraft Safety: The operational missile presents Self-Damage 3 Risk to the launch aircraft no greater than 1 x 10^{-3}	Yes
4	Stand-off Range: Contracted range at sea level.	Yes
5	Missile Survivability: Contracted probability of survival to target.	Yes
6	Target Acquisition: Contracted probability of successful target acquisition	Yes
7	Lethality: Warhead capable of perforating contracted thickness of steel reinforced concrete.	Yes
8	Terminal Accuracy: Contracted Circular error of probability.	Yes
9	Operational Availability: Storage to warhead initiation reliability as defined in the Customer Service Agreement.	Yes
10	Deployability: Carriage of 4 missiles and their containers in C-130 Aircraft.	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	None

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

In parallel with work being undertaken by NATO, the UK separately commissioned a study in 1982 to investigate the feasibility and cost effectiveness of a Long Range Stand-Off Missile (LRSOM) programme. In 1986, LRSOM was subsumed in favour of the Modular Stand-Off Weapon (MSOW) seven nation collaborative programme. The MSOW programme collapsed in 1989 when the US and UK withdrew. Following this withdrawal and the end of the Cold War, the continued military need to acquire a stand-off missile capability was reviewed as part of the "Options for Change" exercise and the requirement was confirmed. Approval was given in 1994 to issue a Request for Proposals, and responses were received from seven international companies. The assessment of the responses was undertaken against the Requirement under the classic Downey Procurement Cycle approach. The programme is now aligned to the new Smart Acquisition Cycle.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	4	0.4%
Approved Cost at Initial Gate	4	0.4%
Variation	0	

5c. Duration of Assessment Phase

	Date
Date of Main Gate Approval	August 1996
Target Date for Main Gate Approval at Initial Gate	-
Variation (Months)	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	1027	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	December 2001	-
Forecast ISD at Initial Gate	-	December 1994	-

POST-MAIN GATE PROJECT SUMMARY SHEET

EUROFIGHTER

Integrated Project Team Responsible:
Eurofighter

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

Eurofighter will be an agile fighter aircraft. Air superiority is the primary design driver, but the aircraft will also have an air-to-ground capability. Eurofighter will thus be able to offer operational capability in response to the uncertain demands of the post-Cold War strategic environment, and will enable the RAF to replace the Tornado F3 and Jaguar aircraft. An all Eurofighter fleet is substantially more cost-effective than any alternative aircraft option or aircraft mix when this multi-role capability is considered alongside costs. It is being developed in a collaborative project with Germany, Italy and Spain, and is managed on behalf of the nations by the NATO Eurofighter Tornado Management Agency (NETMA).

The Memoranda of Understanding for the Production and Support Phases were signed on 22 December 1997 and contracts covering Production Investment and Production placed on 30 January 1998. The contracts for the first tranche of 148 aircraft, of which 55 valued at some £2.5bn are for the UK, were signed on 18 September 1998. Final assembly of the first aircraft began in September 2000 with delivery of the first engine in June 2001. The second Tranche comprising 236 aircraft, 89 of which are for the UK, is expected to be ordered in 2003.

Support of the aircraft throughout its life will be conducted using Integrated Logistic Support principles under a series of 11 separate contracts, valued at approximately £10.2bn. The first contracts, covering initial support, were placed in 1998 at the same time as the Production Investment and Production contracts. The remaining contracts are expected to be placed, in association with the partner Nations, by mid 2003.

A number of potential export customers have been identified and we (in conjunction with our partner nations) are continuing with a number of active export campaigns in Europe and the Far East.

Important developments since the 31 March 'as at' date for the report are the announcement to Parliament in May of a slippage to the In Service Date from June 2002 to the end of the year, and the successful achievement in April (albeit later than planned) of the maiden flights of the three Instrumented Production Aircraft.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
Eurofighter GmbH Airframe consortium comprising: Alenia BAE SYSTEMS EADS(CASA) EADS(Deutschland)	Development	Fixed Price for Airframe and equipments and Target Cost Incentive Arrangement for Aircraft Equipment Integration.	Non-competitive but with international sub-contract competitive elements, the value of which amounts to some 30% of the overall value of the Prime Contract.
Eurojet GmbH Engine consortium comprising: FIAT ITP MTU Rolls Royce		Fixed Price.	Non-competitive but with international sub-contract competitive elements, the value of which amounts to some 10% of overall value of the Prime Contract.
Eurofighter GmbH Airframe consortium (see details under development above).	Production Investment/ Production	Overall Maximum Prices for Production Investment and Production of Airframes for all 232 Aircraft (Fixed prices for production of 1st Tranche Airframe). Fixed Prices for all Production Investment and Production of Aircraft Equipment.	Non-competitive but with international sub-contract competitive elements, the value of which amounts to some 30% of the overall value of the Prime Contract.
Eurojet GmbH Engine consortium (see details under development above).	Production Investment/ Production	Overall Maximum Prices for Production Investment and Production of Engines for all 232 aircraft. Fixed prices for Tranche 1 Engine Production Investment and Production.	Non-competitive but with International sub-contract competitive elements, the value of which amounts to some 10% of the overall value of the Prime Contract.

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	18633
Approved Cost at Main Gate	17364
Variation	+1269
In-year changes in 2001/2002	-236

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Technical Factors	489	45	Higher than expected Development costs, notably for equipments (+£316m). Obsolescence costs resulting from rapid changes in computer hardware technology (+£33m). Increases in the estimated cost of enhancing the weapons system operational capability (+£140m) Slower than expected technical progress, reducing asset balances and thereby reducing Interest on Capital Charge (-£45m).
Changed Requirement	239	50	Provision for integration of new weapons and sensors not contained within original approval (includes Conventionally armed stand-off Missile (CASOM), Advanced Anti-Armour Weapon (AAAW), Low-Level Laser Guided Bomb (LLLGB), Thermal Imaging Airborne Laser Designator (TIALD)) (+239m); Deletion of requirements for gun (-£32m); 1500L fuel tank (-£16m) & CRV7 Rocket (-£2m).
Changed Budgetary Priorities		5	Reprofiling of expenditure, reducing asset balances and thereby reducing Interest on Capital Charge (-£5m).
Inflation	212	136	Changes in inflation assumptions since approval: development (+£212m) and production (-£136m).
Exchange Rate		82	Changes in exchange rate assumptions since approval (-£82m).
Contracting Process	113	165	Reprofiling and adjustment of anticipated Tranche 2 and 3 Airframe, Equipment and Engine prices (+£103m). Introduction of benefits to be assumed from planned implementation of SMART Procurement processes (-£165m). Reassessment of the cost and timing of integrating new weapons (+£5m). Increased estimates for DERA test facilities in support of the development trials programme (+£5m).

Factor	Increase £m	Decrease £m	Explanation
Procurement Strategy	413		German withdrawal from certain equipments (+£106m). Reorientation: Development Assurance Programme (DAP) to bridge gap between Development and Production Investment (+£28m); extension of Integrated Logistic Support (ILS) programme (+£45m); Eurofighter/Eurojet GmbH management costs (+£30m); contract price increases (+£87m); risk provision (+£117m).
Accounting Adjustments and Re-definitions	504	218	Changes in accounting rules (inclusion of intramural costs) (+£275m); transfer costs of industrial consortia management activities from production phase to support phase (-£218m); derivation of approved cost on a resource basis (+£202m); Increases in Interest on Capital resulting from changes in accounting treatment of the delivery of assets (+£27m).
Total	+1970	-701	
Net Variation	+1269		

2c. Expenditure to date

Expenditure to 31 March 2002 (£m)	6554

2d. Years of peak procurement expenditure

2001/2002	2006/2007

2e. Unit production cost

Unit Production Cost (£m)		**Quantities Required**	
at Main Gate	Current	at Main Gate	Current
-	56.9	232	232

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	Date of delivery of first aircraft to the Royal Air Force.

3b. Performance against approved in-service date

	Date
Current forecast ISD	June 2002
Approved ISD at Main Gate	December 1998
Variation (Months)	+42
In-year changes in 2001/2002	0

3c. Reasons for variation from approved ISD

Factor	**Increase (months)**	**Decrease (months)**	**Explanation**
Technical Factors	20		Resulting from the application of complex technologies required to enable the equipment to meet the original Staff Requirement (+20 months).
Procurement Strategy	22		Reorientation of the Development phase in response to the changed strategic environment and budgetary pressures of the four nations and delays in signature of the Memoranda of Understanding for the Production and Support phases (+22 months).
Total	+42		
Net Variation	+42		

3d. Cost resulting from ISD variation

Type of Cost/Saving	**Cost £m**	**Saving £m**	**Explanation**
Support costs of current equipment	836	-	Cost of running on Tornado and Jaguar (+£836m).
Other	-	668	Estimated support costs of Eurofighter not incurred (-£668m).
Total	+168		

3e. Operational impact of ISD variation

Key improvements in capability not realised until revised ISD are:

i) Agility and all altitude performance;
ii) Autonomous detection, identification and multiple engagement of air-to-air targets;
iii) Human computer interface to reduce operator workload;
iv) Multi-role capability;
v) Survivability through superior airframe and equipment performance;
vi) Low mean time between failure.

The 42 month delay has been mitigated to a small extent by compressing the entry into service period, but the net effect is a delay of 3 years.

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Take off Distance	Yes
2	Landing Distance	No
3	Attributable Failures per 1,000 Flying Hours	Yes
4	Life (Flying Hours)	Yes
5	Sustained Minimum Turn Radii at Sea Level, Max Reheat	Yes
6	Maximum speed at sea level	Yes
7	Maximum speed at 36,000 ft	Yes
8	Acceleration Time at Sea level from 200 knots to Mach 0.9	Yes
9	Instantaneous Turn Rate Sea Level, Max Reheat	Yes
10	Sustained Turn Rate at Mach 0.9 at 5,000ft, Max Dry	Yes
	Percentage currently forecast to be met	90%
	Change since previous MPR	None

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
2. Landing Distance	Technical Factors	Refined modelling carried out to support the 1994 reorientation submission indicated that in the most adverse conditions the specified landing distance would not be achieved – this was accepted by the Equipment Approvals Committee.

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

Pre-Development, which commenced with the approval of the feasibility study in 1984, comprised a number of activities. Following early concept studies, and various efforts at establishing a collaborative programme, there were two key Eurofighter demonstration activities completed by the UK before development: the Experimental Aircraft Programme (EAP), an airframe programme primarily aimed at proving the feasibility of the Eurofighter unstable flight control concepts, and the XG40 engine demonstrator programme at Rolls Royce. The results of these demonstrators and their associated studies, together with the results of similar work within the other Nations were harmonised in a Definition, Refinement and Risk Reduction phase that ran from the end of 1985 when four Nations signed the initial Memorandum of Understanding, until 1988 when the development contract was signed.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	78	0.4%
Approved Cost at Initial Gate	87	0.5%
Variation	-9	

5c. Duration of Assessment Phase

	Date
Date of Main Gate Approval	November 1987
Target Date for Main Gate Approval	-
Variation (Months)	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	17364	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	December 1998	-
Forecast ISD at Initial Gate	-	-	-

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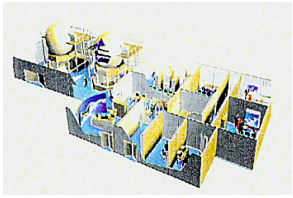
POST-MAIN GATE PROJECT SUMMARY SHEET

EUROFIGHTER AIRCREW SYNTHETIC TRAINING AIDS (ASTA)



Integrated Project Team Responsible:
Eurofighter

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

Aircrew Synthetic Training Aids *(*ASTA) will provide a ground-based synthetic aircrew training capability that is essential to supplement aircraft based training for the Eurofighter fleet. ASTA comprises two training devices: a Full Mission Simulator (FMS) and a Cockpit Trainer (CT). The FMS will provide immersive pilot training in a high-resolution visual environment and replicate sensor performance against interactive threats. The CT will primarily be used to introduce pilots to the cockpit environment and associated procedures. It will be possible to network CTs to FMSs in order that trainees can be immersed in essential distributed mission training.

ASTA is being procured in collaboration with Germany, Italy and Spain. A single source contract was placed on behalf of the 4 nations by the NATO Eurofighter & Tornado Management Agency (NETMA) with Eurofighter GmbH who have subcontracted a joint venture company, Eurofighter Simulation Systems GmbH, representing the simulation industry from the 4 nations. For the UK, it is planned to procure ASTA in 3 Tranches covering provision for RAF Coningsby, RAF Leeming and RAF Leuchars. Main Gate approval covers the first (Coningsby) tranche only. RAF Leeming and RAF Leuchars are expected to enter into service during the period 2008 to 2010. The programme is currently on schedule in the Demonstration and Manufacture stage. Construction of the first Eurofighter Training Facility (ETF) commenced on schedule (January 2002) at RAF Coningsby. This will house the first ASTA training devices together with ground support equipment training systems.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
Eurofighter (EF)	2002	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
EF GMbH	Demonstration & Manufacture	Firm Price subject to escalation	Collaborative

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	206
Approved Cost at Main Gate	212
Variation	-6
In-year changes in 2001/2002	+17

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Contracting Process	23	6	Difference between contract milestones estimated at Main Gate and actual milestones resulting in an increase in development costs (+£23m) and a decrease in production costs (-£6m).
Risk Differential		23	Difference between the risk allowed for in the most likely (50%) and highest acceptable (90%) estimates at Main Gate (-£23m).
Total	+23	-29	
Net Variation		-6	

2c. Expenditure to date

Expenditure to 31 March 2002 (£m)	76

2d. Years of peak procurement expenditure

2001/2002	2002/2003

2e. Unit production cost

Unit Production Cost		Quantities Required	
at Main Gate	Current	at Main Gate	Current
81.7	74.7	1	1

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	A Cockpit Trainer will provide the initial training capability at RAF Coningsby in September 2004.

3b. Performance against approved in-service date

	Date
Current forecast ISD	June 2004
Approved ISD at Main Gate	September 2004
Variation (Months)	-3
In-year changes in 2001/2002	0

3c. Reasons for variation from approved ISD

Factor	**Increase (months)**	**Decrease (months)**	**Explanation**
Risk Differential		3	Difference between the risk allowed for in the most likely (50%) and highest acceptable (90%) estimates at Main Gate (-3 months).
Total		-3	
Net Variation		-3	

3d. Cost resulting from ISD variation

Type of Cost/Saving	**Cost £m**	**Saving £m**	**Explanation**
Support costs of current equipment	-	-	-
Other	-	-	-
Total	-	-	

3e. Operational impact of ISD variation

-

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Eurofighter (EF) ASTA shall be capable of supporting the full range of recognised EF training.	Yes
2	EF ASTA shall permit efficient training to EF pilots based at UK Main Operating Bases (MOBs)	Yes
3	EF ASTA shall facilitate Mission Rehearsal/Practice and enable aircrew to maintain currency of their flying skills whilst deployed on operations outside of the UK. This will ensure that aircrew do not have to regularly return to the UK for training.	Yes
4	EF ASTA is to be available to meet full synthetic training syllabus of each MOB.	Yes
5	EF ASTA is required to be subject to upgrade concurrent with upgrades to the Weapon System (WS) so that EF and ASTA functionality remains harmonised.	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	Not Applicable

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

Initial approval of the ASTA requirement, to fund preparation work and allow industry to inform an Invitation to Tender (ITT), was obtained in January 1995 as part of the approval for the EF2000 development phase re-orientation. In May 1996, following a Combined Operational Effectiveness and Investment Appraisal (COEIA), the Department obtained Equipment Approvals Committee (EAC) approval to release the ITT to industry.

The Department initially sought to satisfy the full ASTA requirement through a collaborative programme based on a single contract placed by NATO Eurofighter and Tornado Management Agency (NETMA). Due to the complexities of the international collaborative proposal, the Department decided to investigate a national Private Finance Initiative (PFI) solution. After full consideration, a collaborative approach was deemed to represent the lowest risk option to the Eurofighter programme as a whole. This approach was endorsed by the EAC in October 2000, when approval was granted for ASTA demonstration and first tranche manufacture (Main Gate).

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	3.8	1.8%
Approved Cost at Initial Gate	2.9	1.4%
Variation	+0.9	

5c. Duration of Assessment Phase

	Date
Date of Main Gate Approval	October 2000
Target Date for Main Gate Approval at Initial Gate	December 1995
Variation (Months)	+58

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate*	-	189	212
Cost of Demonstration and Manufacture Phase forecast at Initial Gate†	305	314	351

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	June 2004	September 2004
Forecast ISD at Initial Gate	-	September 2001	-

* Costs shown are the approved costs at Main Gate for procuring the first tranche of the ASTA programme.

† Costs shown are the noted costs at Initial Gate for procuring all three tranches of the ASTA programme.

POST-MAIN GATE PROJECT SUMMARY SHEET

FUTURE JOINT COMBAT AIRCRAFT (FJCA)

Integrated Project Team Responsible:
Future Joint Combat Aircraft

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

The Strategic Defence Review confirmed the requirement to provide the Joint Force 2000 (joint command for all Harrier forces) with a multi-role fighter/attack aircraft to replace the Royal Navy Sea Harrier and the Royal Air Force Harrier GR7. Following participation in the Concept Demonstration Phase of the programme, the US Joint Strike Fighter (JSF) was identified as having the best potential to meet this requirement. A tailored Main Gate Demonstration Approval (to match the US procurement cycle) was obtained in January 2001 for participation in the System Development and Demonstration (SDD) phase (previously known as Engineering and Manufacture Development, along with £600M for associated non-SDD work, leading to signature the same month of the Memorandum of Understanding for the SDD Phase) by the then Minister (DP) and the US Deputy Secretary of Defense. The estimated in-service date is 2012 to coincide with the first of the new aircraft carriers (CVF) entering service. The UK is the US's sole Level 1 partner in this major programme, and is contributing $2Bn to the SDD phase. The UK has obtained key project roles within the JSF Joint Program Office. The US placed a contract with Lockheed Martin in October 2001 as prime contractor for the phase; the UK played a major part in the down selection process. The next major milestone is set for Autumn 2002 when the UK will select either the Short Take Off Vertical Landing (STOVL) or Carrier Variant (CV) version of JSF. The JCA Main Gate was tailored for Development only, to match the US procurement cycle, and approved selection of the JSF aircraft to meet the requirement and entry into the EMD (SDD) phase. Production approval will be sought on completion of MOU negotiations. The likely date for this is 2005/06.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
CVF	2012	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
Lockheed Martin	System Development and Demonstration	Cost plus incentive fee, subject to a maximum price	Competitive, international collaborative procurement. UK participation through MOU agreement

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	2332
Approved Cost at Main Gate	2358
Variation	-26
In-year changes in 2001/2002	+187

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Changed Requirement		90	A review of the external missile systems for JCA has resulted in the removal of the requirements for an externally mounted Brimstone (-£41m) and ASRAAM (-£49m) capability.
Changed Budgetary Priorities	43	1	Adjustment for realism in the cost of the UK non-System Development and Demonstration work resulting in an increase based on a deeper review of estimates originally provided by the US. (+£43m). Fewer UK Development studies than originally planned. (-£1m)
Exchange Rate	189		Change in dollar/pound exchange rate (+£189m)
Accounting Adjustments and Re-definitions	46		Interest on Capital correction (+£46m).
Risk Differential		213	Difference between the risk allowed for in the most likely (50%) and highest acceptable (90%) estimates at Main Gate (-£213m)
Total	+278	-304	
Net Variation		-26	

2c. Expenditure to date

Expenditure to 31 March 2002 (£m)	8

2d. Years of peak procurement expenditure

2006/2007	2007/2008

2e. Unit production cost*

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
-	-	-	-

* The JCA Main Gate (MG) was tailored for Development only, to match the US procurement cycle. Unit Production Cost approval will be sought as part of the MG Production Approval.

SECTION 3: PROJECT TIMESCALE *

3a. Definition of in-service date

ISD Definition:	8 embarked aircraft at Readiness 2 (2-5 days notice to move).

3b. Performance against approved in-service date

	Date
Current forecast ISD	-
Approved ISD at Main Gate	-
Variation (Months)	-
In-year changes in 2001/2002	-

3c. Reasons for variation from approved ISD

Factor	Increase	Decrease	Explanation
-	-	-	-
Total	-	-	
Net Variation	-	-	

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	-	-	-
Other	-	-	-
Total	-	-	

3e. Operational impact of ISD variation

-

* ISD approval will be sought as part of the Main Gate production approval..

SECTION 4: KEY USER REQUIREMENTS [*]

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently Forecast to be met (Yes or No)
1	Survivability	Yes
2	Interoperability	Yes
3	Combat radius	Yes
4	Mission performance	Yes
5	Mission reliability	Yes
6	Logistic footprint: The equipment required to support a number of aircraft for a prescribed period of time	Yes
7	Sortie generation rates: JCA will be required to contribute to a significant proportion of the total missions required in the early stages of future operations, demonstrating a high level of reliability. This requirement is to enable generation of a predetermined sortie generation rate without placing an unacceptable burden on the logistics system.	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	Not Applicable

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

[*] KURs were submitted to EAC for approval on 18 March 2002 and approved on 22 May 2002.

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

Approval was obtained in November 1996 to enter the Concept Demonstration Phase (CDP) of the JSF programme under an MOU signed in December 1995. The phase began in November 1996 with two competing US Prime Contractors (Boeing and Lockheed Martin) designing weapons systems and flying demonstration aircraft on which the selection of the preferred bidder was based. The phase completed in October 2001 with the announcement of the successful bidder, Lockheed Martin. Studies into alternative options to JSF to meet the requirement were also conducted but were rejected on cost-effectiveness grounds. The options were: US F/A18E, French Rafale M, a "navalised" Eurofighter and an advanced Harrier.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	144	6%
Approved Cost at Initial Gate	150	6%
Variation	-6	

5c. Duration of Assessment Phase

	Date
Date of Main Gate Approval	January 2001
Target Date for Main Gate Approval (at IG)	-
Variation (Months)	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals*

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	2079	2145	2358
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	December 2012	April 2014
Forecast ISD at Initial Gate	-	December 2012	-

* Three point estimates for the production phase have yet to be determined, as costs are dependent on the variant choice and final aircraft numbers.

POST-MAIN GATE PROJECT SUMMARY SHEET

HIGH VELOCITY MISSILE SYSTEM

Integrated Project Team Responsible:
Ground Based Air Defence

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

The High Velocity Missile (HVM) System, commercially known as Starstreak, is an Army Very Short Range Air Defence weapon designed to attack armoured helicopters and low-flying aircraft. Deployed in 3 variants; Self Propelled (SP) on a launcher vehicle (STORMER), a Lightweight Multiple Launcher (LML) mounted on a tripod base and Shoulder Launched (SL); it is deployed with the Air Defence Alerting Device (ADAD), a passive 24 hour automatic surveillance device.

Following a competitive project definition phase between Shorts Missile Systems (SMS) (now known as Thales Air Defence Ltd. (TADL)) and British Aerospace, the contract for full development and production was placed with SMS in November 1986. In-Service Dates (ISD) for SP HVM and SL/LML HVM were achieved in September 1997 and September 2000 respectively.

Four follow-on orders for missiles have been placed, the latest in December 1999, with a follow-on order of SL/LML systems and associated equipment in September 2000. The number of SL/LML systems procured was reduced from 72 to 40 although the costs for both quantities remained broadly the same. This was due to the non recurring element of the work required irrespective of quantities and because remaining Tranche 1 equipment was procured as part of this follow-on order which was also unaffected by the reduction in quantities. Approval was given in February 2001 for the Demonstration and Manufacture of Thermal Sighting Systems (TSS) for SP HVM. An order was placed for TSS for SP HVM in February 2001 and the equipment is planned to be brought into service in 2006. A TSS for LML HVM is planned for 2006.

Further expenditure in clear prospect for missiles is an estimated £270M.

The project costs for the Successor Identification Friend or Foe (SIFF) for HVM have been removed from the HVM project and are now included in the Generic SIFF programme to reflect the fact that all SIFF programmes are being procured under one Staff Requirement.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
Air Defence Alerting Device	1994	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
Thales Air Defence Ltd (TADL). (formerly Shorts Missile Systems)	Full development and production	Fixed Price	UK Competition
Thales Air Defence Ltd (TADL). (formerly Shorts Missile Systems)	Follow on production	Fixed Price	Single Tender. No Acceptable Price, No Contract (NAPNOC)

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	904
Approved Cost at Main Gate	901*
Variation	+3
In-year changes in 2001/2002	-29

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Technical Factors	7		Missile production problems caused a delay in the placement of latest missile contract (+£7m).
Changed Requirement		10	Reduction in Tranche 1 Practice Missile Kits (-£10m).
Changed Budgetary Priorities	12		SP TSS ISD deferred due to budgetary priorities resulting in increased resource cost (+£6m). Reorganisation of HVM Tranche 3 Ground Equipment future capability (+£6m).

* The Approved Cost has changed from the MPR 2001 due to the removal of the project costs for SIFF for HVM.

Factor	Increase £m	Decrease £m	Explanation
Contracting Process	17	30	Extra contractual payment in settlement of claim regarding provision of Government Furnished Equipment (+£11m). Discount obtained against contract for Tranche 1a/b Missiles (-£5m); Underestimation of funding provision for Tranche 1a/b/c missiles (+£1m); Decrease in forecast expenditure on Tranche 3 based on latest estimates (-11m). Recalculation of Interest on Capital for Tranche 3 based on revised delivery profile (-£8m). Recalculation of Interest on Capital for Tranche 3 based on revised delivery profile (+2m). Decrease due to contract negotiations of Tranche 3 HVM Ground Equipment contract (-£6m); Re-approval of Tranche 3 SL/LML costs (+£3m).
Accounting Adjustments and Re-definitions	8	1	Inclusion of DERA support costs on Tranche 1 (+£8m). Derivation of the approved cost on a resource basis (-£1m).
Total	+44	-41	
Net Variation	+3		

2c. Expenditure to date

Expenditure to 31 March 2002 (£m)	643

2d. Years of peak procurement expenditure

1989/1990	2002/2003

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
-	***	135 SP HVM Systems	135 SP HVM Systems

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	One HVM battery, fully equipped, trained and supported.

3b. Performance against approved in-service date

	Date
Current forecast ISD	September 1997
Approved ISD at Main Gate	December 1990
Variation (Months)	+81
In-year changes in 2001/2002	0

3c. Reasons for variation from approved ISD

Factor	Increase (months)	Decrease (months)	Explanation
Technical Factors	69		Problems with the dart and carrier missile, including inconsistent performance in dart guidance and second stage motor ignition of the missile. Problems with the vehicle gearbox (+69 months).
Changed Budgetary Priorities	7		A delay at the outset of the project arising from the need to match the Very Short Range Air Defence Weapons Systems Programme (including HVM) with available resources (+7 months).
Contracting Process	2		Prolonged contractual negotiations on some remaining small contracts, in part because Shorts Missile Systems (now known as Thales Air Defence Ltd.) underwent a major restructuring in 1993 and 1994 (+2 months).
Change in Associated Project	3		Software problems encountered in integrating ADAD into SP HVM caused seven months delay. Four months of this was concurrent with the delays due to technical factors (+3 months).
Total	+81		
Net Variation	+81		

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	-	-	-
Other	-	-	-
Total	-	-	

3e. Operational impact of ISD variation

SP HVM was intended to support units engaged in mobile operations and in particular counter strike forces. The delay in SP HVM in-service date from December 1990 to September 1997 resulted in the 1st (UK) Armoured Division having no specific Very Short Range Air Defence capability. A lesser capability was provided by Tracked Rapier and the manportable Javelin systems.

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	SP HVM - essential effective range.	Yes
2	SP HVM - minimum unrestricted launcher traverse.	Yes
3	HVM Missile - overall missile reliability.	Yes
4	SP HVM - minimum probability of completing a battlefield day.	Yes
5	SP HVM - wide angle field of view.	Yes
6	HVM Missile - minimum safe missile drop height in launch canister.	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	None

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

Approval for the project definition phase (now taken to equate to Initial Gate) for a High Velocity Close Air Defence Weapon System was received in July 1984. The phase lasted 12 months and was conducted on the basis of parallel work by 2 contractors, Shorts Missile Systems (SMS) (now known as Thales Air Defence Ltd. (TADL)) and British Aerospace. The results of the work were accepted as a satisfactory basis for the full development and production phase submission (now taken to equate to Main Gate) that received approval in October 1986. A contract was subsequently placed for the Tranche 1 procurement of the High Velocity Missile (HVM) System with SMS in November 1986. Performance was determined against a variety of measures of effectiveness, surveillance and target acquisition, terrain and meteorological visibility.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	8	1%
Approved Cost at Initial Gate	10	1%
Variation	-2	

5c. Duration of Assessment Phase

	Date
Date of Main Gate Approval	October 1986
Target Date for Main Gate Approval at Initial Gate	-
Variation (Months)	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	901	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Lowest	Most Likely	Highest
Forecast ISD at Main Gate	-	December 1990	-
Forecast ISD at Initial Gate	-	December 1989	-

POST-MAIN GATE PROJECT SUMMARY SHEET

MULTI-ROLE ARMOURED VEHICLE (MRAV)

Integrated Project Team Responsible:
Multi-Role Armoured Vehicle (MRAV)

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

The MRAV programme will provide the British Army with a modern and flexible family of armoured utility vehicles that can operate in both high intensity conflict, rapid reaction peace support and humanitarian operations world-wide. The vehicle affords enhanced protection, larger capacity and greater operational and tactical mobility than the ageing Fighting Vehicle 430 series, Combat Vehicle Reconnaissance (Tracked) utility variants and Saxon General War Role vehicles it replaces. A dismountable mission module atop an 8-wheel drive, 4-wheel steer drive module ensures maximum commonality, whilst allowing the flexibility to design and fit separate mission modules to meet the demands of a multi-role fleet.

MRAV is a trilateral collaborative programme between Germany, the Netherlands and the UK. On 5 November 1999, Germany and the UK signed a bilateral development contract with ARTEC GmbH. On 5 February 2001 the contract was amended to incorporate the Netherlands. The contract includes an option to manufacture a first batch of 600 vehicles to be split equally between the nations. In the final phase of development, the vehicle will undergo an intensive trials and reliability programme between 2002 and 2004 with vehicle deliveries planned to begin in 2006. The MRAV programme is being managed by the Organisation for Joint Armament Co-operation (OCCAR).

The MRAV project has been reviewed in the light of the Army's evolving requirements for mechanised infantry vehicles. In particular, the greater need for faster, lighter and more deployable vehicles has led to the conclusion that some of the forces should be equipped with the planned Future Rapid Effects System (FRES) rather than MRAV. This will remove the need for two of the six MRAV variants and the planning assumptions have been adjusted accordingly. The outcome of current Strategic Defence Review New Chapter work will enable the future combat support vehicle force mix to be refined further.

The first prototype has been delivered in June 2002 for Industry commissioning trials somewhat later than expected. Programme completion is expected to be eight months late owing to a combination of technical problems and programme management difficulties. OCCAR, the Department and ARTEC are working together to assess whether there will be any impact on the current forecast In-Service Date.

1b. Associated projects

Critical to Achievement of ISD		**Critical to Meet Initial Gate Requirement**	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
ARTEC GmbH (a consortium comprising Alvis Vehicles Ltd, Krauss-Maffei Wegmann, Rheinmetall Landsysteme (RLS) and STORK PWV	Full Development with an option for Initial Production	Firm Price	International Competition

SECTION 2: PROJECT COSTS

+. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	318
Approved Cost at Main Gate	428
Variation	-110
In-year changes in 2001/2002	-17

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Technical Factors		1	Delay in the development programme milestones resulting from the late delivery of the first prototype has reduced the Interest on Capital Charge (-£1m).
Changed Requirement		16	Reduction in development costs resulting from the Customer decision to equip the mechanised infantry with FRES rather than MRAV which has removed the requirement for an MRAV armoured mortar vehicle and a anti-tank platoon vehicle (-£16m).
Changed Budgetary Priorities		4	Reassessment of the cost of the joint project office (-£3m) and development of national variants (-£1m).
Inflation		2	Variation between GDP indices and contract VOP indices (-£2m).
Contracting Process	32		The cost variation has resulted from extensive contract negotiations where a number of UK specific requirements were added to the contract as an option (+£32m).
Procurement Strategy		118	Reduction in development costs associated with the Netherlands joining the programme and the UK share of initial production reducing from 300 to 200 vehicles (-£118m).

Factor	Increase £m	Decrease £m	Explanation
Accounting Adjustments and Re-definitions		1	Derivation of the approved cost on a resource basis (-£1m).
Total	+32	-142	
Net Variation		-110	

2c. Expenditure to date

Expenditure to 31 March 2002 (£m)	21

2d. Years of peak procurement expenditure

2007/2008	2008/2009

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
1	1.1	***	***

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	**Original ISD definition:** The operational capability to deploy a Mechanised Brigade HQ and Mechanised Infantry Battalion. **Current ISD definition:** An initial Operational Capability comprising 54 Armoured Personnel Carriers and 21 Command Vehicles fully operational in a Mechanised Infantry Battalion and Brigade Headquarters. **Reason for Change:** The development contract delivers Armoured Personnel Carriers and Command Vehicles only and in-service date definition has been amended to reflect this.

3b. Performance against approved in-service date

	Date
Current forecast ISD	August 2008
Approved ISD at Main Gate	March 2011
Variation (Months)	-31
In-year changes in 2001/2002	0

3c. Reasons for variation from approved ISD

Factor	Increase (months)	Decrease (months)	Explanation
Risk Differential		31	Difference between the risk allowed for in the most likely (50%) and highest acceptable (90%) estimates at Main Gate (-31 months).
Total		-31	
Net Variation		-31	

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	-	-	-
Other	-	-	-
Total	-	-	

3e. Operational impact of ISD variation

-

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently Forecast to be met (Yes or No)
1	Capacity: Multi-Role Armoured vehicle (MRAV) will have the minimum useable capacity to carry up to 10 personnel plus adequate supplies to operate over a 48 hour battlefield mission.	Yes
2	Mobility: It is essential that MRAV can be transported by outsize airlift (such as C5, C17 and Future Large Aircraft).	Yes
3	Survivability: MRAV, without add-on armour, must be protected against 20mm fragment simulating projectile.	Yes
4	Survivability: Occupants must be protected against effects of blast mine attack containing up to ***kg of explosive.	Yes
5	Survivability: MRAV must be fitted with Enhanced Protection overhead protection (top-attack armour).	Yes
6	Survivability: At night the Commander should be able to identify a NATO standard Target at ***m in poor conditions.	Yes
7	Reliability: Each design version shall have a basic reliability of 45% against the UK Battlefield Mission.	Yes
8	Armoured Treatment and Evacuation Vehicle (ATEV): To meet the treatment and evacuation roles, two configurations of ATEV are required. MRAV will be able to convert from one configuration to the other at first line.	Yes
9	Armoured Mortar Vehicle (AMV): AMV must mount the in-service mortar and it must be possible to fire that mortar throughout 6400 mils (360 degrees).	No
10	Communications Variants (ComV): Com(V) must be able to mount and fully integrate all future communications equipment standard to role.	Yes
11	Anti-Tank Platoon Vehicle (ATPV): ATPV must be able to carry 2 Firing Posts, 6 personnel and 16 anti-armour missiles.	No
	Percentage currently forecast to be met	82%
	Change since previous MPR	-18%

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
9. Armoured Mortar Vehicle (AMV): AMV must mount the in-service mortar and it must be possible to fire that mortar throughout 6400 mils (360 degrees).	Changed Requirement	Customer decision to equip the mechanised infantry with FRES rather than MRAV has removed the requirement for an MRAV armoured mortar vehicle.
11. Anti-Tank Platoon Vehicle (ATPV): ATPV must be able to carry 2 Firing Posts, 6 personnel and 16 anti-armour missiles.	Changed Requirement	Customer decision to equip the mechanised infantry with FRES rather than MRAV has removed the requirement for an MRAV anti-tank platoon vehicle.

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

There was no approval equivalent to Initial Gate for MRAV as the UK joined a Franco-German programme after France and Germany had conducted national Feasibility Studies. However, the UK did spend approximately £2m in formulating the Staff Requirement, conducting a Combined Operational effectiveness and Investment Appraisal (COEIA) and tender assessment. The COEIA assessed the cost and operational effectiveness of the collaborative solution against a range of alternative options. This expenditure has been subsumed by the Main Gate approval.

France withdrew from the programme in September 1999 to pursue a national approach to meet its diverging aspirations.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	-	-
Approved Cost at Initial Gate	-	-
Variation	-	

5c. Duration of Assessment Phase

	Date
Date of Main Gate Approval	March 1998
Target Date for Main Gate Approval at Initial Gate	-
Variation (Months)	0

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	428	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	April 2008	August 2008	March 2011
Forecast ISD at Initial Gate	-	-	-

POST-MAIN GATE PROJECT SUMMARY SHEET

NIMROD MARITIME RECONNAISSANCE & ATTACK Mk4 (NIMROD MRA4)

Integrated Project Team Responsible:
Nimrod MRA4

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

The Nimrod Maritime Reconnaissance and Attack MK4 (MRA4) will replace the current Nimrod MR2 as the new maritime patrol aircraft, providing significantly enhanced Anti-Submarine and Anti-Surface Unit Warfare capability through improved aircraft and sensor performance, a greater degree of system integration and better Human Machine Interface design. The new aircraft will also provide a substantial improvement in availability and supportability. The Nimrod MRA4 contract, which includes the training system and initial support was placed with BAE SYSTEMS (then BAe) in 1996. Technical and resource problems led to delays in the programme and the contract was renegotiated in mid 1999.

Since MPR 2001, a routine review of the requirement for future maritime reconnaissance capability has concluded that the operational task could be carried out with a reduced fleet of aircraft. The details of this review and the reduction from 21 to 18 aircraft were announced to Parliament on 28 February 2002. Design and development is largely complete and the Company is aiming to achieve first flight before the end of 2002 for the first trials aircraft and by Spring 2003 for the second trials aircraft, which will be fitted with the Mission System. The Department also concluded a Heads of Agreement (HOA) with BAE SYSTEMS in February 2002. The HOA covers two major issues. First, it introduces measures to mitigate the risk of further delay, by taking an incremental approach to aircraft delivery. This approach demonstrates an initial operating capability by the time of first aircraft delivery in 2004, and a progressive process of Military Aircraft Release (MAR) leads to the in-service-date and full specification compliance in 2005. Secondly, under a Memorandum of Capability Partnering agreed in December 2000, the Department and the Company are developing a joint approach to the whole life support of the aircraft. The HOA also reflects agreement with the Company over a package covering integration facilities and software tools essential for the aircraft and its subsequent long term support. There is also a joint commitment to conduct detailed studies to determine the optimum whole life support solutions to be put in place progressively from 2004.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
BAE SYSTEMS (formerly British Aerospace Defence Ltd., Military Aircraft Division)	Development and Production package	Fixed Price	Prime Contractor International Competition
Boeing Defence & Aerospace Group, USA	Tactical Command System and Sensors	Fixed Price	Sub-contractor to BAE SYSTEMS

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	2838
Approved Cost at Main Gate	2982
Variation	-144
In-year changes in 2001/2002*	-26

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Technical Factors	13	17	Increase in DERA estimate (+£13m); reduction in study requirements (-£6m); slower technical progress than originally envisaged, particularly with wing mass, leading to reduced interest on capital charges (£-9m). Reduced interest on Capital charge linked to reduction in aircraft numbers (-£2m).
Changed Requirement	105	114	Reduction from 21 to 18 aircraft (Saving of £114m less estimated termination costs of £70m). Additional commitments as part of the Heads of Agreement (HOA) (+£35m).
Changed Budgetary Priorities		34	Reduction in Risk provision (MPR00 -£17m; MPR02 -£17m).
Inflation	41		Variation in Inflation assumptions (+£41m).
Receipts		46	Forecast recovery of Liquidated Damages (-£46m).
Contracting Process	16	119	Reduction in Risk provision (-£56m); and reductions following re-negotiation of contract (-£26m); reduction in programme costs between Main Gate approval and original contract placement (-£37m); original contract was let at provisional indices that were below actual indices (+£16m).

* The In-year change takes account of an adjustment to the current forecast cost in MPR2001. This adjustment reflects the availability of more accurate figures. The actual amount approved to be spent on the project has not changed.

Factor	Increase £m	Decrease £m	Explanation
Accounting Adjustments and Re-definitions	30	19	Increase in costs owing to the creation of a trading fund for the Communications Electronic Security Group (CESG) after original approval had been granted (+£1m); derivation of the approved cost on a resource basis (-£19m). Change to take account of an adjustment to the current forecast for MPR 2001, reflecting the availability of more accurate data (+£29m).
Total	+205	-349	
Net Variation		-144	

2c. Expenditure to date

Expenditure to 31 March 2002 (£m)	1298

2d. Years of peak procurement expenditure

2002/2003	2005/2006

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
Development and Production package	Development and Production package	21	18

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	Delivery of the seventh production standard aircraft to the Royal Air Force.

3b. Performance against approved in-service date

	Date
Current forecast ISD	November 2005
Approved ISD at Main Gate	April 2003*
Variation (Months)	+31
In-year changes in 2001/2002	+11

* This was the in-service date endorsed by the Equipment Approvals Committee.

3c. Reasons for variation from approved ISD

Factor	Increase	Decrease	Explanation
Technical Factors	34	3	Resource and technical problems at BAE SYSTEMS (+20 months MPR01; +11 Months MPR02). Difference between forecast date reported in MPR99 based upon the 1999 re-approval at 90% confidence (March 2005) and forecast date reported in MPR 2000 based upon the then current plan at 50% confidence (-3 months).
Total	+34	-3	
Net Variation	+31		

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	95		Additional cost of running on Nimrod MR2 (+£95m).
Other		95	Reduction inMRA4 support costs over the same period (-£95m).
Total		0	

3e. Operational impact of ISD variation

The consequence of the Nimrod MRA4 in service date slip is that the ageing Nimrod MR2 will remain in service until mid-2008, longer than expected. This slip will delay introduction of the improved Anti-Submarine and Anti-Surface Unit Warfare capability of the Nimrod MRA4. Nimrod MRA4 has a world wide autonomous operational capability with a reach extending to some 6,000 miles. This is a considerable improvement on the current MR2 capability which is some 3800 miles. Other capability improvements over MR2 include time on station, a major improvement in overall sensor performance and weapon carrying capability. Utilising state-of- the-art equipment, the crew complement has reduced by 25%. The operational impact of this slippage will be partly mitigated by existing measures to introduce upgrades to some Nimrod MR2 systems, notably Replacement Acoustic Processors (RAP), navigation systems, datalinks and other communications to address interoperability issues. The RAP programme has benefited by making use of acoustic processors procured for Nimrod MR4.

SECTION 4: KEY REQUIREMENTS

4a. Performance against approved key requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Anti-Submarine Warfare (ASW) Barrier Search – Probability of Detection (PD)	Yes
2	ASW Area Search - Probability of Detection (PD)	Yes
3	ASW Passive Localisation & Attack - Weapon Splashpoint Error Range (WSER)	Yes
4	ASW Passive Localisation & Attack - Probability of Localisation (PL)	Yes
5	ASW Active Localisation & Attack - Weapon Splashpoint Error Range (WSER)	Yes
6	Anti-Submarine Warfare (ASW) - Time on Station (ToS)	Yes
7	Anti-Surface Warfare (ASuW) - Time on Station (ToS)	Yes
8	ASuW Area Search - Probability of detecting operational targets within a specified area	Yes
9	ASuW Third Party Targeting - Determination of target position, course and speed for third party targeting	Yes
10	Airfield Performance - achieving defined take off performance	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	None

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the assessment phase

In November 1992, the Equipment Approvals Committee (EAC) approved a Request for Information exercise whereby 17 companies were invited to provide responses to the draft Replacement Maritime Patrol Aircraft (RMPA) Staff Requirement.

Following analysis of the industry responses, the EAC endorsed the requirement and approved an Invitation to Tender phase whereby four companies (BAe, Lockheed Martin, Loral and Dassault) were invited to provide detailed technical and commercial proposals for an aircraft to meet the endorsed Staff Requirement. Dassault withdrew from the competition in January 1996, and whilst Lockheed Martin and Loral merged in May 1996, they maintained the two separate proposals until the competition concluded.

Following assessment of these responses, selection of BAe's Nimrod 2000 (later to be re-designated Nimrod MRA4) offer was approved by EAC and Ministers in July 1996. This was the equivalent of Main Gate approval.

5b. Cost of the assessment phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	5	0.2%
Approved Cost at Initial Gate	4	0.1%
Variation	+1	

5c. Duration of assessment phase

	Date
Date of Main Gate Approval	July 1996
Target Date for Main Gate Approval	-
Variation (Months)	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	2982	-
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	April 2003	January 2005	-
Forecast ISD at Initial Gate	-	December 2000	-

POST-MAIN GATE PROJECT SUMMARY SHEET

SHORT TERM STRATEGIC AIRLIFT (STSA – C17)

Integrated Project Team Responsible:
C17

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

The 1998 Strategic Defence Review identified an urgent need to improve the RAF's strategic airlift capability and concluded that, in the short term, pending the introduction of Future Transport Aircraft, MOD should acquire a capability equivalent to four Boeing C-17 aircraft.

Following a competitive process, the decision was taken to lease four C-17 aircraft from Boeing to fulfil this capability. The lease signed on 2nd September 2000 is for a period of seven years, with the option of extending for up to a further two years.

Although not a full Smart Acquisition project, some Smart elements involving innovative methods – a bond issue on the money markets - have been employed, generating Smart savings of almost £60M.

Whilst the four C-17 aircraft are leased directly from Boeing, much of the support is being provided under US Government Foreign Military Sales (FMS) arrangements through the United States Air Force (USAF)/Boeing Flexible Sustainment contract.

The in-service date was declared on 30th September 2001, after all four aircraft had been delivered ahead of the contracted delivery dates and in time to meet the stretch target of participating in exercise SAIF SAREEA II. The aircraft are operated by 99 Squadron at RAF Brize Norton and have flown in support of Operations FINGAL, ORACLE, and VERITAS.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
Mc Donnell Douglas Corporation (a wholly owned subsidiary of The Boeing Company)	Lease of four C-17 aircraft	Firm price	International Competition
United States Department of Defense (US DoD) – United States Air Force (USAF)	Provision of support services for 4 x C-17 aircraft	Foreign Military Sales (FMS)	FMS

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	771
Approved Cost at Main Gate	785
Variation	-14
In-year changes in 2001/2002	+25

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Exchange Rate	25		Change of $/£ exchange rate for FMS (+£25m).
Contracting Process	30	2	Formal FMS offer compared with estimate at time of approval (+£17m). Contracted price for Cargo Bay Mock-up compared with estimate (-£2m). Contracted price of lease compared with estimate at time of approval (+13m).
Procurement Strategy		25	Military Aircraft Release achieved using existing US Release (-£25m).
Accounting Adjustments and Re-definitions		3	Exported costs to Strike Command for Building Work at operating Base (-£3m).
Risk Differential		39	Difference between the risk allowed for in the most likely (50%) and highest acceptable (90%) estimates at Main Gate (-£39m).
Total	+55	-69	
Net Variation		-14	

2c. Expenditure to date

Expenditure to 31 March 2002 (£m)	88

2d. Years of peak procurement expenditure

2002/2003	2003/2004

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
N/A	N/A	4	4

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	The availability of 2 aircraft which are operated and maintained by appropriately trained and experienced RAF personnel within Military Aircraft Release.

3b. Performance against approved in-service date

	Date
Current forecast ISD	September 2001
Approved ISD at Main Gate	December 2001
Variation (Months)	-3
In-year changes in 2001/2002	0

3c. Reasons for variation from approved ISD

Factor	Increase	Decrease	Explanation
Risk Differential		3	Difference between the risk allowed for in the most likely (50%) and highest acceptable (90%) estimates at Main Gate (-3 months).
Total		-3	
Net Variation		-3	

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	-	-	-
Other	-	-	-
Total	-	-	

3e. Operational impact of ISD variation

-

SECTION 4: KEY REQUIREMENTS

4a. Performance against approved key requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Deployment Capability: The STSA fleet must be capable of the deployment of 1,400 tonnes of freight over 3,200 nms in a 7 day period.	Yes
2	Payload Requirements: STSA must be capable of carrying a payload of 32,000kg.	Yes
3	Environmental Conditions: STSA is to be capable of operating in temperatures which equate to sea level figures of –40 to +49 deg C.	Yes
4	Airfield Operations: STSA is to be capable of landing on airfields with paved surfaces of a minimum length of 4,000 ft.	Yes
5	Navigation: STSA is to be capable of world-wide navigation.	Yes
6	Communications: STSA is to meet current interoperability requirements for communications.	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	None

Note: Key User Requirements (KURs) for STSA were not fully defined at Main Gate. Section 4a reports performance against the draft KURs that the Department expects to approve in due course.

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the assessment phase

An invitation to tender was issued on 30 September 1998 to eight potential bidders for open competition at prime contractor level. The deadline for tenders was the same as that for the four-nation collaborative competition to identify the solution for the FTA requirement (now, A400M). The two competitions were linked and assessed in paralleled, both to consider the most cost-effective solution overall and to ensure that the solution chosen for STSA did not prejudice the FTA competition.

In January 1999 five STSA bids were received: from Boeing (C-17), Air Foyle (Antonov An124-210), IBP (Antonov An124-100), Airbus Transport International (Beluga and a mix of A300 freighters), and Rolls Royce offering a fleet management service of MOD-acquired assets. The competition was terminated in August 1999, because none of the bids offered an acceptable combination of capability and cost.

The DPA continued to work with industry in a competitive environment to seek an off-the-shelf solution to meet the requirement. This work culminated in a Request For Proposals being issued in October 1999. Three proposals were received: Boeing (C-17), Air Foyle (Antonov An 124-100), and Heavylift (Antonov An124-100). The final main gate submission went to the EAC in February 2000.

These proposals, together with those received in response to the FTA competition, received equally careful consideration against the criteria of operational capability, performance, affordability, international and industrial factors and value for money. The Secretary of State for Defence announced on 16 May 2000 that the UK had determined that the best solution to meet the long term FTA requirement was the Airbus A400M, with the short term requirement met by the lease of four C-17 aircraft.

5b. Cost of the assessment phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	0.6	0.08%
Approved Cost at Initial Gate	-	-
Variation	-	

5c. Duration of assessment phase

	Date
Date of Main Gate Approval	May 2000
Target Date for Main Gate Approval	-
Variation (Months)	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	746	785
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	September 2001	December 2001
Forecast ISD at Initial Gate	-	-	-

POST-MAIN GATE PROJECT SUMMARY SHEET

SONAR 2087

Integrated Project Team Responsible:
S2087

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

Submarines remain one of the main threats to maritime forces and Sonar 2087 will significantly enhance the Royal Navy's Anti-Submarine Warfare capability. The new system offers improvements in the ability to detect, classify and track quieter submarines, particularly in littoral waters and at greater ranges.

Sonar 2087 combines active and passive systems and will be stern-mounted on Type 23 Frigates, replacing Sonar 2031 (passive towed array system), where fitted.

Feasibility Studies (FS) were approved in 1994. Two of the three competing companies were then selected to undertake Project Definition (PD) studies, following approving in April 1997. A short period of risk reduction work in 2000 completed the Assessment Phase and preceded the Main Gate submission at the end of that year. Approval was given in January 2001 for up to 16 sets, the total number of Type 23s. A contract for the Demonstration, Manufacture and Support of the first 6 ship sets was awarded to Thomson Marconi Sonar Ltd (now Thales Underwater Systems Ltd) in April 2001. The planned number of ship sets was reduced to 12 during the 2002 planning round. The contract has an option price for the remaining ship sets.

The approved In-Service (ISD) is December 2006, with Initial Operating Capability in December 2007. The forecast date for Full Operating Capability is 2012. All 12 ships are planned to be fitted by 2013.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
Thales Underwater Systems Ltd (formerly Thomson Marconi Sonar Ltd)	Demonstration, Manufacture and Support	Firm price	UK Competition

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	342
Approved Cost at Main Gate	410
Variation	-68
In-year changes in 2001/2002	-26

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Changed Requirement		26	Reduction in planned number of ship sets from 16 to 12 (-£26m).
Risk Differential		42	Difference between the risk allowed for in the most likely (50%) and highest acceptable (90%) estimates at Main Gate (-£42m).
Total		-68	
Net Variation		-68	

2c. Expenditure to date

Expenditure to 31 March 2002 (£m)	37

2d. Years of peak procurement expenditure

2003/2004	2010/2011

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
17.6	14.5	16	12

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	Initial acceptance of Sonar 2087 based on achievement of Key User Requirements 1 and 2.

3b. Performance against approved in-service date

	Date
Current forecast ISD	May 2006
Approved ISD at Main Gate	December 2006
Variation (Months)	-7
In-year changes in 2001/2002	0

3c. Reasons for variation from approved ISD

Factor	Increase	Decrease	Explanation
		7	Difference between the risk allowed for in the most likely (50%) and highest acceptable (90%) estimates at Main Gate (-7 months)
Total		-7	
Net Variation		-7	

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	-	-	-
Other	-	-	-
Total	-	-	

3e. Operational impact of ISD variation

-

SECTION 4: KEY REQUIREMENTS

4a. Performance against approved key requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Detection – Active (Deep Water)	Yes
2	Detection – Active (Shallow Water)	Yes
3	Detection – Passive	Yes
4	Variable Depth Capability	Yes
5	Classification – False Alarm Rate	Yes
6	Tracking – Active Capability	Yes
7	Combat System Integration	Yes
8	Unimpaired Speed	Yes
9	Survivability	Yes
10	Availability	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	None

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the assessment phase

Feasibility Study (FS) approval was given in April 1994 and Project Definition (PD) in April 1997. The options for meeting the requirement were tested at each stage. Alternatives such as off-the-shelf equipment or collaboration were investigated. The scope for trade-offs was assessed and costed proposals for the next phase produced. Parallel contracts were placed with 3 companies in the FS phase. Two were selected to carry out competitive PD studies. A series of measures reflecting budgetary constraints as well as realism delayed the ISD to December 2005. After risk reduction work at the end of the Assessment phase, Main Gate approval was granted in January 2001. The approval included acceptance of performance trade-offs (shortening of the passive array and removal of the torpedo interceptor) and a realistic plan for achieving the approved ISD of December 2006.

5b. Cost of the assessment phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	49	13%
Approved Cost at Initial Gate	52	13%
Variation	-3	

5c. Duration of assessment phase

	Date
Date of Main Gate Approval	January 2001
Target Date for Main Gate Approval	January 1998
Variation (Months)	+36

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	368	410
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	416	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	May 2006	Dec 2006
Forecast ISD at Initial Gate	-	July 2003	-

POST-MAIN GATE PROJECT SUMMARY SHEET

STING RAY LIGHTWEIGHT TORPEDO
Life Extension and Capability Upgrade

Integrated Project Team Responsible:
Torpedoes

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

The Sting Ray lightweight torpedo is the main anti-submarine weapon for ships and aircraft. It entered operational service in 1983 with a planned service-life of around 20 years. To provide an opportunity for international collaboration on a replacement, Sting Ray will remain in-service until around 2025 when it is envisaged that other nations will require replacement lightweight torpedoes. Accordingly, the Sting Ray torpedo needs to be life-extended and its capability enhanced.

The Sting Ray Life Extension (SRLE) programme was approved in May 1995 and a contract for full development was awarded to GEC-Marconi Underwater Systems Group (now BAE SYSTEMS Electronics Ltd) on 10 July 1996. The design is progressing well with the development in water trials due to complete during 2002. Contract Acceptance Trials are planned to complete during 2003.

In February 2001, as a result of a study into a less sensitive warhead for the life-extended Sting Ray, a new Insensitive Munition warhead was included in the SRLE programme. The warhead is required to comply with new Departmental safety policy. Ministerial approval was given for an Assessment Phase for the new warhead in September 2001. Assessment is being undertaken on a variety of options including both a new development and a modified commercial off-the-shelf warhead.

Future milestones: submission for SRLE main production approval in May 2002; place SRLE main production contract by April 2003; complete warhead assessment and decide way forward by early 2004; SRLE in-service date (ISD) of May 2006. There is further expenditure in clear prospect for the SRLE main production contract.

1b. Associated projects

Critical to Achievement of ISD		**Critical to Meet Initial Gate Requirement**	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
BAE SYSTEMS Electronics Ltd. (formerly GEC-Marconi Underwater Systems Group)	Full Development & Pre-Production	Fixed Price	Non-competitive contract with design authority of equipment. No sub-contract competition at first tier level.

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	190
Approved Cost at Main Gate	147
Variation	+43
In-year changes in 2001/2002	+1

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Changed Requirement	13	3	Assessment work on a new Insensitive Munition Warhead, resulting from change in Departmental munitions safety policy (+£12m); Removal of warhead life extension funds (-£3m); Addition of safety case to comply with new Health & Safety regulations for warships (+£1m).
Changed Budgetary Priorities	10		Increase to Interest on Capital due to 12 month in-service date delay (+£8m); Revised estimate for trials activities (+£2m).
Inflation		1	Variation due to revised estimate for contract Variation of Price clauses (-£1m).
Contracting Process	4		Contract price exceeded estimate at approval (+£4m).
Accounting Adjustments and Re-definitions	20		Inclusion of Defence Evaluation and Research Agency (DERA) support previously treated as an intramural charge (+£11m); Re-assessment of DERA support expenditure (+£5m); Derivation of the approved cost on a resource basis (+£4m).
Total	+47	-4	
Net Variation	+43		

2c. Expenditure to date

Expenditure to 31 March 2002 (£m)	131

2d. Years of peak procurement expenditure

2007/2008	2008/2009

2e. Unit production cost

Unit Production Cost (£m)		**Quantities Required**	
at Main Gate	Current	at Main Gate	Current
0.3	0.6	***	***

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	The date when the first 100 production standard weapons have been modified and are ready for issue to an operational unit.

3b. Performance against approved in-service date

	Date
Current forecast ISD	May 2006
Approved ISD at Main Gate	December 2002
Variation (Months)	+41
In-year changes in 2001/2002	0

3c. Reasons for variation from approved ISD

Factor	**Increase (months)**	**Decrease (months)**	**Explanation**
Changed Budgetary Priorities	24		The need to match the departmental programme to available resources in the overall pattern of departmental priorities (+24 months).
Contracting Process	17		Delay due to contract negotiations taking longer than expected (+9 months) and reassessment of programme timescales following negotiations (+8 months).
Total	+41		
Net Variation	+41		

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	19		Additional in-service support of present Sting Ray torpedo (+£19m).
Other		14	Reduced in-service support for updated torpedo (-£14m).
Total	+5		

3e. Operational impact of ISD variation

The in-service delay has enabled additional requirements to be incorporated into the weapon. However, the delay has the potential to cause a capability gap with the older and less effective Sting Ray weapon being retained in service with ongoing consequences for reliability. This capability gap should not be critical. ***

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	Overall Torpedo Effectiveness	Yes
2	Hit Probability	Yes
3	Automobile Performance	Yes
4	Torpedo Counter Countermeasure Capability	Yes
5	Operational Environment	Yes
6	Water Depth	Yes
7	Acoustic Environment Capability	Yes
8	Warhead & Firing Chain	Yes
9	Availability, Reliability & Maintainability	Yes
10	Maintenance & Transport Environment	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	None

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

The equivalent of the Assessment Phase took place within a number of Definition Studies undertaken between 1993 and 1995 under Sting Ray Post-Design Services at a cost of £2.6m. These studies considered six options which formed part of the dossier submitted to the Equipment Approvals Committee for Full Development and Pre-Production (FDPP) approval. Technical, engineering and environmental specifications together with FDPP, production and in-service support cost plans were also produced.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	-	-
Approved Cost at Initial Gate	-	-
Variation	-	

5c. Duration of Assessment Phase

	Date
Date of Main Gate Approval	May 1995
Target Date for Main Gate Approval at Initial Gate	-
Variation (Months)	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	***	***	***
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	-	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	December 2002	-
Forecast ISD at Initial Gate	-	-	-

POST-MAIN GATE PROJECT SUMMARY SHEET

SUCCESSOR IDENTIFICATION FRIEND OR FOE (SIFF)

Integrated Project Team Responsible:
Successor Identification Friend Or Foe (SIFF)

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

The Successor Identification Friend or Foe (SIFF) programme will replace many of the existing IFF systems currently in use with the UK Armed Forces. SIFF will be fitted to some 40 major in-service sea, land and air platform-types to provide a modern, NATO-compatible, secure IFF system, enabling swift and accurate identification of friendly forces.

The Strategic Defence Review endorsed the continuing validity of the SIFF requirement as part of the process of modernisation. It also endorsed the procurement of SIFF for Tornado F3 ahead of the other platform-types, to achieve cost savings and to reduce programme risk through alignment with the aircraft's Capability Sustainment Programme (CSP). An incentivised No Acceptable Price No Contract (NAPNOC) Demonstration and Manufacture (D&M) contract was let in November 1998 with BAE SYSTEMS (formerly British Aerospace (BAe)), the aircraft Design Authority (DA).

In August 2000, Ministers approved the D&M Phase for the SIFF main programme. This phase covers the majority of the platform-types to be fitted with SIFF. Due to the number and diversity of the platform-types, it is not possible to have a single prime contractor to manage the entire programme. Consequently, following competition between BAE SYSTEMS and Raytheon Systems Ltd, a contract was placed with the latter in December 2000 for the supply of the SIFF equipment and its integration into many of the platform-types. For the remaining platform-types, the individual platform DAs would be contracted under NAPNOC arrangements. NAPNOC contracts were let between December 2000 and February 2002 for Rapier, Sea King MKs 4/5, Hercules C130K and Merlin MK 1and also a competitive contract for the UK Air Defence Ground Environment integrated command and control system. Five major contracts (and a number of smaller ones) have still to be let and it is planned that this will have been done by the end of 2004.

Separately, but as part of the overall SIFF project, approval was given for the Demonstration and Manufacture Phase for SIFF for the High Velocity Missile in April 2001. Subsequently a NAPNOC contract was let in June 2001 with Thales Air Defence Ltd as prime contractor, with Thales Communication of France as the main subcontractor.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
Raytheon Systems Ltd	SIFF Main Programme prime contract and responsible for installation and integration of equipment on some 25 platform-types	Firm Price	Competitive (Value ***)
BAE SYSTEMS (formerly British Aerospace Ltd)	Prime contractor for SIFF for Tornado F3	Firm Price	NAPNOC Non-competitive, the value of which amounts to some *** of the Main Programme prime contract.
Thales Air Defence Ltd	Prime contractor for SIFF for HVM	Firm Price	NAPNOC Non-competitive, the value of which amounts to some *** of the Main Programme prime contract.
MBDA Missile Systems (formerly Matra BAe Dynamics UK (Ltd))	Prime contractor for SIFF for Rapier	Firm Price	NAPNOC Non-competitive, the value of which amounts to some *** of the Main Programme prime contract
Lockheed Martin	Prime contractor for SIFF for Merlin MK1	Firm Price	NAPNOC Non-competitive, the value of which amounts to some *** of the Main Programme prime contract

Note: Two other, smaller value SIFF contracts have also been let. Future SIFF contracts include those for Chinook MKs 2&2a, Tornado GR4, Sentry E3D, Lynx MKs 7&9, Type 23 Frigates Command System, the DRYAD CTT5 Trainer and various aircraft simulators.

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	458
Approved Cost at Main Gate	558
Variation	-100
In-year changes in 2001/2002	-15

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Technical Factors		5	Reassessment in level of work required on Approach A platforms (-£1m). Reassessment in level of work required on Approach C platforms (-£1m). Reassessment of risk requirement for Rapier(-£1m). Reassessment of technical content for Tornado F3 (-£2m)
Changed Requirement		62	Removal of platforms from SIFF programme: Harrier GR7/T10 (-£22m), Sea Harrier/Harrier T8 (-£21m), Type 92 and Type 93 Radars (-£17m) and Gazelle (RAF) (-£2m)
Procurement Strategy		6	Savings on HVM by aligning self propelled and lightweight multiple launcher projects at prime contract level (-£6m)
Accounting Adjustments and Re-definitions		13	Increase on Capital correction (-£1m) Reduction in VAT rate on SIFF Main Programme prime contract from 17.5% to 11% (-£6m). Approach C VAT reductions assumed (-£6m).
Risk Differential		14	Difference between the risk allowed for in the most likely (50%) and highest acceptable (90%) estimates at Main Gate (-£14m).
Total		-100	
Net Variation		-100	

2c. Expenditure to date

Expenditure to 31 March 2002 (£m)	116

2d. Years of peak procurement expenditure

2002/2003	2004/2005

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
***	***	1369	1299

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	36 Sea and Air equipments installed set to work and supportable.

3b. Performance against approved in-service date

	Date
Current forecast ISD	February 2004
Approved ISD at Main Gate	April 2004
Variation (Months)	-2
In-year changes in 2001/2002	-2

3c. Reasons for variation from approved ISD

Factor	**Increase**	**Decrease**	**Explanation**
Contracting Process		2	Contract negotiations have resulted in timescale savings.
Total		-2	
Net Variation		-2	

3d. Cost resulting from ISD variation

Type of Cost/Saving	**Cost £m**	**Saving £m**	**Explanation**
Support costs of current equipment	-	-	-
Other	-	-	-
Total	-	-	

3e. Operational impact of ISD variation

-

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	A secure and Electronic Counter Measures-resistant IFF system to succeed (with backwards compatibility) Mk XA. The minimum requirement is MK X11 Mode 4, in accordance with STANAG 4193.	Yes
2	Continuous unrestricted access for UK military aircraft to current and future (Mode S) civil-controlled airspace in Europe.	Yes
3	On each platform type the SIFF system performance shall be no less than the current installed performance.	Yes
4	The SIFF system shall provide a growth path for the acquisition of IFF Mode 5 capability.	Yes
5	The installed SIFF must exhibit high levels of continuous, full system availability and reliability over extended mission cycles.	Yes
6	The SIFF equipment support solution must provide the optimum through-life Sustainment of SIFF capability within the project affordability constraints.	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	None

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the assessment phase

In May 1997, Ministers endorsed the SIFF requirement with an indicative fitting plan and approved an Assessment Phase known as the Integration Study and Planning Phase (ISPP), the main part of which began in 1998. The approval noted than an ISD would be proposed as part of the SIFF Main Programme Main Gate Submission. The procurement strategy involved placing contracts with BAE SYSTEMS (formerly Marconi Electronic Systems Ltd) and Raytheon Systems Ltd as competing potential SIFF equipment suppliers, covering the majority of platform-types to be fitted with SIFF and from the DAs for the remainder. During ISPP, the Department and Industry worked closely together to refine the SIFF requirement and to produce a low risk solution to the programme, with special emphasis on cost integration, machine-man-interfaces and acceptance into service issues.

5b. Cost of the assessment phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	23	5%
Approved Cost at Initial Gate	27	5%
Variation	-4	-

5c. Duration of assessment phase

	Date
Date of Main Gate Approval	August 2000
Target Date for Main Gate Approval	April 1999
Variation (Months)	+16

5d. Cost at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	544	558
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	597	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	April 2004	
Forecast ISD at Initial Gate*	-	-	-

* An ISD was not included in the Initial Gate approval in which it was noted that an ISD would be proposed as part of the SIFF Main Programme Main Gate Business Case.

POST-MAIN GATE PROJECT SUMMARY SHEET

TROJAN & TITAN

Integrated Project Team Responsible:
Engineer Tank Systems (ETS)

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

TROJAN and TITAN are new armoured engineer vehicles to replace the ageing Chieftain engineer vehicle and bridge launcher that are unable to keep pace with the Challenger 2 Main Battle Tanks. TROJAN is designed to open routes through complex obstacles. TITAN is designed to cross gaps of up to 60 metres, laying a selection of close support bridges.

Following Feasibility Studies by 3 companies, which included competitive bids for the next phases, the contract for demonstration and manufacture of 66 vehicles (33 of each type) was awarded to Vickers Defence Systems (VDS) in March 2001.

TROJAN and TITAN are the first heavy armoured engineer vehicles to be purpose built. Previous generations having been modified Main Battle Tanks. Their purpose-designed hulls will provide a step improvement over the Chieftain vehicles in terms of performance, tactical mobility, protection, reliability and Special to Role (STR) equipment, eg excavator and bridge launch mechanism.

Prototype design is due to be completed in August 2002 and a prototype of each vehicle is due to be completed by June 2003.

The approved procurement strategy is based on Progressive Acceptance, which allows performance and reliability cases to be progressively generated throughout the contract.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
Vickers Defence Systems	Demonstration and Manufacture	Firm Price	International Competition

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	357
Approved Cost at Main Gate	407
Variation	-50
In-year changes in 2001/2002	0

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Risk Differential		50	Difference between the risk allowed for in the most likely (50%) and highest acceptable (90%) estimates at Main Gate (-£50m).
Total		-50	
Net Variation		-50	

2c. Expenditure to date

Expenditure to 31 March 2002 (£m)	35

2d. Years of peak procurement expenditure

2003/2004	2004/2005

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
4.6	4	66	66

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	A total of 12 (6 TROJAN, 6 TITAN) delivered, and supportable, to Army Training Readiness Agency (ATRA) and Headquarters Land.

3b. Performance against approved in-service date

	Date
Current forecast ISD	October 2005
Approved ISD at Main Gate	December 2006
Variation (Months)	-14
In-year changes in 2001/2002	0

3c. Reasons for variation from approved ISD

Factor	Increase (months)	Decrease (months)	Explanation
Risk Differential		14	Difference between the risk allowed for in the most likely (50%) and highest acceptable (90%) estimates at Main Gate (-14 months).
Total		-14	
Net Variation		-14	

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	-	-	-
Other	-	-	-
Total	-	-	

3e. Operational impact of ISD variation

-

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	The TROJAN user shall be able to clear vehicle based obstacles from routes.	Yes
2	The TROJAN user shall be able to clear ditch and spoil bank obstacles from routes.	Yes
3	The TROJAN user shall be able to open safe lanes through enhanced pattern minefields, in order to permit the passage of Armoured and Mechanised Fighting echelons.	Yes
4	The TROJAN user shall be able to open safe routes across dry gaps of up to *** across and *** depth.	Yes
5	The TITAN user shall be able to open safe routes over gaps of up to ***	Yes
6	The user of TROJAN and TITAN shall be afforded levels of mine protection at least as high as the in-service Main Battle Tank.	Yes
7	The user of TROJAN and TITAN shall be able to keep station tactically with CR2 equipped Armoured and Mechanised formations in the direct and indirect fire zones.	Yes
8	The user of TROJAN and TITAN requires an operational availability *** for a *** day operating period in the warfighting role.	Yes
9	The user of TROJAN and TITAN shall be able to maintain the required capability in climatic category ***.	Yes
10	TITAN shall be able to launch and recover bridges whilst fitted with Track Width Mineplough (TWMP)	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	None

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

Requirements were endorsed in May 1996 approving a future Armoured Vehicle Royal Engineer (AVRE) and a future Armoured Vehicle Launcher Bridge (AVLB) against an in-service date of 2001 with funding of £2.6M for a feasibility study. The estimated procurement costs were £117.5M.

The Strategic Defence Review (SDR) process and the entry into the competition of the Polish company OBRUM delayed the programme. In July 1998, the EAC endorsed a revised maximum cost of £8.5M for the feasibility phase, and moved the in service date to April 2006. Feasibility Study contracts, to include competitive bids for demonstration and manufacture, were then let to Vickers Defence Systems (VDS), Alvis and OBRUM. When the studies concluded in February 2000 the results offered a wide variety of potential solutions including the conversion of Challenger 1 tanks; new vehicles; modified Challenger 2 vehicles and "off the shelf" Polish engineer tanks with various levels of modification. It was concluded that VDS were offering the most cost effective solution with clear technical and scheduling advantages. VDS were announced as the preferred bidder in August 2000 and Main Gate approval was gained in January 2001.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	8	2.1%
Approved Cost at Initial Gate	3	0.74%
Variation	+5	

5c. Duration of Assessment Phase

	Date
Date of Main Gate Approval	January 2001
Target Date for Main Gate Approval at Initial Gate	December 1998
Variation (Months)	+25

5d. Cost boundaries at Initial Gate and Main Gate Approvals

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	357	407
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	118	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Lowest	Most Likely	Highest
Forecast ISD at Main Gate	-	October 2005	December 2006
Forecast ISD at Initial Gate	-	December 2001	-

POST-MAIN GATE PROJECT SUMMARY SHEET

TYPE 45 DESTROYER

Integrated Project Team Responsible:
Type 45 Destroyer

SECTION 1: ABOUT THE PROJECT

1a. Project description, progress and key future events

The Type 45 is a new class of Anti-Air Warfare Destroyer, a planned class of twelve ships* to replace the Royal Navy's existing Type 42's. The warship is being procured nationally. The T45 will carry the Principal Anti-Air Missile System (PAAMS) which is capable of protecting the vessels and ships in their company against aircraft and missiles, satisfying the Fleet's need for area air defence capability into the 2030s. PAAMS is being procured collaboratively with France and Italy. The Type 45 Defence Procurement Agency project office is responsible for providing PAAMS to the warship Prime Contractor. The warship is being procured nationally.

BAE SYSTEMS Electronics was appointed Prime Contractor for the Type 45 in November 1999 and a contract for Demonstration and First of Class Manufacture (DFM) for the first three ships was placed on December 2000. In July 2001, the Secretary of State announced the approval of a further three Type 45s. Subsequently, in February 2002 a contract was placed with BAE SYSTEMS as the Prime Contractor for the further three Type 45s. It is matched by a parallel commitment by the Prime Contractor to shipbuilders BAE SYSTEMS Marine and Vosper Thornycroft.

The project is progressing satisfactorily; recent changes within the PAAMS programme has ensured alignment with France, Italy, HORIZON project office and UK Type 45, and reduced programme risk substantially. Most recently, Ultra Electronics, teamed with combat system specialists EDO Corporation, have been selected for supplying the Medium Frequency Sonar.

1b. Associated projects

Critical to Achievement of ISD		Critical to Meet Initial Gate Requirement	
Project Title	Forecast ISD	Project Title	Forecast ISD
-	-	-	-

* The Type 45 is a planned class of 12 ships. Approval has, so far, only been given for 6 ships. It is on the approval of 6 ships that the Major Projects Report is presented.

1c. Procurement strategy

Contractor(s)	Contract Scope	Contract Type	Procurement Route
BAE SYSTEMS Electronics Prime Contractor	Full development and production.	Fixed price incentive fee with a maximum price.	Single Source
EUROPAAMS	Full development and production.	Fixed prices to be agreed for the 5 follow on vessels.	Collaborative with France and Italy. The value for the first 6 ships amounts to approximately 60% of the overall value of the Prime Contract.

SECTION 2: PROJECT COSTS

2a. Performance against approved cost

£m (outturn prices)	Procurement Cost
Current Forecast Cost	5279
Approved Cost at Main Gate	5837
Variation	-558
In-year changes in 2001/2002	+29

2b. Reasons for variation from approved cost

Factor	Increase £m	Decrease £m	Explanation
Changed Budgetary Priorities	29		Variation caused by a combination of Equipment Plan Options plus internal adjustments. The Options were: re-profiling of the contract for demonstration and manufacture (approved six-ship programme); re-profiling of the (planned) twelve ship programme; reduce the scope of the PAAMS missile buy; costs of shipbuilders' premium (+£29m).
Risk Differential		587	Difference between the risk allowed for in the most likely (50%) and highest acceptable (90%) estimates at Main Gate (-£587m).
Total	+29	-587	
Net Variation		-558	

2c. Expenditure to date

Expenditure to 31 March 2002 (£m)	487

2d. Years of peak procurement expenditure

2006/2007	2007/2008

2e. Unit production cost

Unit Production Cost (£m)		Quantities Required	
at Main Gate	Current	at Main Gate	Current
726.0	632.7	6	6

SECTION 3: PROJECT TIMESCALE

3a. Definition of in-service date

ISD Definition:	The date by which the First of Class will meet the Customer's minimum operational requirement.

3b. Performance against approved in-service date

	Date
Current forecast ISD	November 2007
Approved ISD at Main Gate	November 2007
Variation (Months)	0
In-year changes in 2001/2002	+6

3c. Reasons for variation from approved ISD

Factor	Increase (months)	Decrease (months)	Explanation
Procurement Strategy	6		Revised procurement strategy due to delays in establishing arrangements with the Prime Contractor and shipbuilders (+6 months).
Risk Differential		6	Difference between the risk allowed for in the most likely (50%) and highest acceptable (90%) estimates at Main Gate (-6 months).
Total	+6	-6	
Net Variation		0	

3d. Cost resulting from ISD variation

Type of Cost/Saving	Cost £m	Saving £m	Explanation
Support costs of current equipment	-	-	-
Other	-	-	-
Total	-	-	

3e. Operational impact of ISD variation

-

SECTION 4: KEY USER REQUIREMENTS

4a. Performance against approved key user requirements

Serial	Key Requirement	Currently forecast to be met (Yes or No)
1	PAAMS The T45 shall be able to protect with a Probability of Escaping Hit of *x*, all units operating within a radius of 6.5km, against up to 8 supersonic sea skimming missiles arriving randomly within *x seconds*.	Yes
2	Force Anti-Air Warfare Situational Awareness. The T45 shall be able to assess the Air Warfare Tactical Situation of 1000 air real world objects against a total arrival and/or departure rate of 500 air real world objects per hour.	Yes
3	Aircraft Control. The T45 shall be able to provide close tactical control to at least 4 fixed wing aircraft, or 4 groups of aircraft in single speaking units, assigned to the force.	Yes
4	Aircraft Operation. The T45 shall be able to operate both one organic Merlin (Anti-Submarine Warfare and Utility variants) and one organic Lynx Mk8 helicopter, although not simultaneously.	Yes
5	Embarked Military Force. The T45 shall be able to operate an Embarked Military Force of at least 30 deployable troops.	Yes
6	Naval Diplomacy. The T45 shall be able to coerce potential adversaries into compliance with the wishes of Her Majesty's Government or the wider international community through the presence of a Medium Calibre Gun System of at least 114mm.	Yes
7	Range. The T45 shall be able to transit at least 3000 nautical miles to its assigned mission, operate for 3 days and return to point of origin, unsupported throughout, within 20 days.	Yes
8	Growth Potential. The T45 capability shall be able to be upgraded to incorporate new capabilities or to enhance extant capabilities through displacement Margins of at least 11.5 %.	Yes
9	Availability. The T45 shall have a 70% availability to contribute to Maritime Operations over a period of at least 25 years, of which at least 35% shall be spent at sea.	Yes
	Percentage currently forecast to be met	100%
	Change since previous MPR	None

4b. Reasons for variation against approved key requirements

Key Requirement	Factor	Explanation
-	-	-

SECTION 5: HISTORY UP TO MAIN GATE APPROVAL

5a. Description of the Assessment Phase

The Type 45 Destroyer programme builds on the Assessment work carried out in Phase 1 of the collaborative HORIZON project, the warship element of the Common New Generation Frigate programme. Following the decision of the three HORIZON partners (France, Italy and the UK) to proceed with PAAMS, but to pursue national warship programmes, BAE SYSTEMS was appointed Prime Contractor for the Type 45 in November 1999. The contract for PAAMS Full Scale Engineering Development and Initial Production was placed in August 1999. Main Gate approval for the warship was achieved in July 2000 and a contract for Demonstration and First of Class Manufacture was placed in December 2000.

5b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost	Proportion of total estimated procurement expenditure
Actual Cost	220	4.0%
Approved Cost at Initial Gate	213	3.9%
Variation	+7	

5c. Duration of Assessment Phase

	Date
Date of Main Gate Approval	July 2000
Target Date for Main Gate Approval at Initial Gate	-
Variation (Months)	-

5d. Cost boundaries at Initial Gate and Main Gate Approvals[*]

£m (outturn prices)	Lowest	Most Likely	Highest
Cost of Demonstration and Manufacture Phase forecast at Main Gate	-	5250	5837
Cost of Demonstration and Manufacture Phase forecast at Initial Gate	-	8198	-

5e. ISD boundaries at Initial Gate and Main Gate Approvals

	Earliest	Most Likely	Latest Acceptable
Forecast ISD at Main Gate	-	May 2007	November 2007
Forecast ISD at Initial Gate	-	December 2002	-

[*] Cost of Demonstration and Manufacture at Initial Gate was based on twelve ships. Main Gate approval is for six ships and the difference relates to this.

PRE-MAIN GATE PROJECT SUMMARY SHEET

BOWMAN

Integrated Project Team Responsible:
Bowman & Land Digitization

SECTION 1: ABOUT THE REQUIREMENT

Bowman will provide the armed forces with a tactical communications system for all three Services in support of land and littoral (sea to shore) operations. It will replace the CLANSMAN combat radio, in service since the mid-1970's and now becoming increasingly obsolete, and the Headquarters infrastructure element of the PTARMIGAN trunk system.

SECTION 2: THE ASSESSMENT PHASE

2a. Description of the Assessment Phase

Bowman was first approved in1988. At this stage, approval for full Development and Production (the equivalent of Main Gate), was expected in 1993 with an ISD of 1995. Feasibility studies were split into two stages, with Feasibility Stage one (FS1) being completed in August 1993. Following an international competition in 1993, contracts were placed with two competing consortia; Yeoman (Siemens Plessey Systems Ltd and Racal) and Crossbow (led by ITT Defence (UK) Ltd), for Feasibility Stage two (FS2) and the first Project Definition Stage (PD1).

FS2 indicated that the risk of procuring and integrating the communications harness for Bowman, known as the Local Area sub System (LAS) (previously Vehicle Integrated Communications and Distribution System), would be best managed by placing the responsibility on the BOWMAN contractors, rather than developing a MoD solution. This change in procurement strategy was approved in February 1997, when approval was also given for Bowman Core Risk Reduction Work.

In November 1996, the two consortia formed a Joint Venture Company (JVC) known as Archer Communications Systems Ltd (ACSL) to bid jointly for the Bowman supply contract. Following a review of the procurement options open to the Department, approval for a revised, single source, procurement strategy for Bowman and the remainder of the Risk Reduction work was granted in March 1997. A risk reduction contract was placed with ACSL in July 1997.

A further package of work (Package 0) estimated at £182M was placed with ACSL in October 1998 to enable them to build on current work to define systems integration requirements and demonstrate technical progress prior to production commitment at Main Gate planned for November 2000.

In July 2000, the Department decided to reject the ACSL interim bid, to remove the company's preferred supplier status, and to re-launch the competition. The Department was not convinced that ACSL could deliver a system that met the requirement in the time required or represented value for money. Achieving an early in-service date was key to the Department's decision. In October 2000, the Equipment Approvals Committee approved further Risk Reduction work with three potential prime contractors (TRW Ltd, Computing Devices Canada Ltd and Thales Defence Ltd) and two key sub-contractors (ITT Defence Ltd and Cogent). These contracts, with a total value of £68M, were placed in November 2000.

An Invitation to Tender for the Bowman requirement was issued to TRW Ltd, Computing Devices Canada Ltd and Thales Defence Ltd in November 2000 and bids were received in February 2001. The selection of Computing Devices Canada Ltd was announced by the Secretary of State on 19 July 2001. The Equipment Approval Committee gave Main Gate approval to the Bowman project on 8 August 2001 and the Bowman Supply and Support contract was signed on 13 September 2001*.

2b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost
Forecast Cost	397
Approved Cost at Initial Gate	130
Variation	+267

2c. Duration of Assessment Phase

	Date
Current forecast date of Main Gate Approval	August 2001
Target date for Main Gate Approval	December 1993
Variation (Months)	+92

2d. Boundaries of future Demonstration and Manufacture phase costs

£m (outturn prices)	Lowest	Most Likely	Maximum	Range
Current forecast cost of Demonstration and Manufacture phase	1966	1993	2146	180
Forecast cost of Demonstration and Manufacture phase at Initial Gate	-	-	-	-
% Change	-	-	-	-

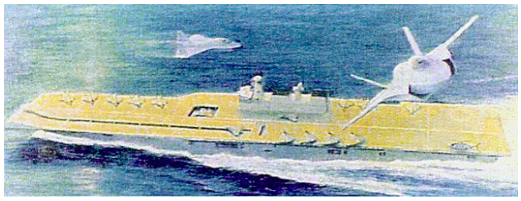
2e. Boundaries of future project in-service dates

	Earliest	Most Likely	Latest	Range
Current forecast ISD	February 2004	March 2004	December 2004	10 months
Forecast ISD at Initial Gate	-	December 1995	-	-
% Change	-	-	-	-

* The project population for MPR2002 was defined at 1 April 2001, before Bowman achieved Main gate approval. Therefore, for MPR2002 purposes, Bowman is reported as a pre-Main Gate project.

PRE-MAIN GATE PROJECT SUMMARY SHEET

FUTURE AIRCRAFT CARRIER (CVF)



Integrated Project Team Responsible:
Future Carrier (CVF)

SECTION 1: ABOUT THE REQUIREMENT

The requirement for the Future Aircraft Carrier (CVF) was endorsed in the Strategic Defence Review (SDR) which identified a continuing need for rapidly deployable forces with the reach and self-sufficiency to act independently of host-nation support. SDR concluded that the ability to deploy offensive air-power would be central to future force projection operations, with carriers able to operate the largest possible range of aircraft in the widest possible range of roles. The current Invincible Class of carriers were designed for Cold War anti-submarine warfare operations. With helicopters and a limited air-defence capability provided by a relatively small number of embarked Sea Harriers, it was judged that this capability would no longer meet future UK requirements. It was therefore decided to replace the Invincible Class with two larger and more capable aircraft carriers able to operate up to 50 aircraft, both fixed-wing and helicopters. CVF's offensive air-power will be provided primarily by the Future Joint Combat Aircraft (FJCA). The carrier air group will also operate the Maritime Airborne Surveillance and Control (MASC) system together with helicopters from all three Services in a variety of roles that could include anti-submarine/anti-surface warfare, attack and support.

SECTION 2: THE ASSESSMENT PHASE

2a. Description of the Assessment Phase

CVF received Initial Gate approval in December 1998 and Invitations to Tender were issued in January 1999. Responses were received in May 1999 from industry teams led by British Aerospace (now BAE SYSTEMS) and Thomson-CSF (now Thales). Following tender evaluation, competitive firm price contracts for the Assessment Phase, each potentially worth some £30m, were awarded to both teams in November 1999. The Assessment Phase was originally broken down into two stages. The first involved the examination of carrier designs, and helped inform the decision in January 2001, to select the US Joint Strike Fighter (JSF) as the option with best potential to meet the FJCA requirement. The second stage was originally intended to involve parallel generic design work on carrier options capable of supporting the operation of JSF, followed, after a decision on JSF variant selection, by more detailed work to finalise the design parameters and reduce technological risk for the carrier option to be taken forward.

The first stage of Assessment completed in June 2001, after which proposals from the contractors for Stage 2 were considered, together with an assessment of their views on the level of work needed to adequately de-risk the programme. The conclusion was that the original approach no longer offered value for money and as a result the Assessment Phase strategy was changed. In a revised and shortened Stage 2, expected to last until November 2002, the competing consortia are concentrating on refining their designs and on taking key trade-off decisions.

Early in 2003, it is expected that a single preferred prime contractor will be announced, which will then work on the third stage of assessment until the award of a Demonstration and Manufacture contract early in 2004. This will allow a seamless transition from Assessment through to Demonstration and Manufacture.

The revised strategy ensures best value for money by focusing the forces of competition at appropriate levels; namely between the candidate primes whilst the designs are refined and key trade-off decisions are made; and then, once one prime has been selected, at the sub-contractor level, to ensure that robust prices are achieved. This revised strategy has increased the cost for the Assessment Phase, as detailed below.

2b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost
Forecast Cost	129
Approved Cost at Initial Gate	118
Variation	+11

2c. Duration of Assessment Phase

	Date
Current forecast date of Main Gate Approval	December 2003
Target date for Main Gate Approval	December 2003
Variation (Months)	0

2d. Boundaries of future Demonstration and Manufacture phase costs

£m (outturn prices)	Lowest	Most Likely	Maximum	Range
Current forecast cost of Demonstration and Manufacture phase	***	***	***	***
Forecast cost of Demonstration and Manufacture phase at Initial Gate	2654	3047	3363	709
% Change	***	***	***	-

2e. Boundaries of future project in-service dates

	Earliest	Most Likely	Latest	Range
Current forecast ISD	***	***	***	***
Forecast ISD at Initial Gate	-	August 2012	-	-
% Change		***	-	-

PRE-MAIN GATE PROJECT SUMMARY SHEET

FUTURE STRATEGIC TANKER AIRCRAFT (FSTA)

Picture not available

Integrated Project Team Responsible:
Future Strategic Transport Aircraft

SECTION 1: ABOUT THE REQUIREMENT

The Future Strategic Tanker Aircraft (FSTA) is planned to replace the air-to-air refuelling (AAR) and some elements of air transport (AT) capability currently provided by the RAF's fleet of VC10 and TriStar aircraft. AAR is a key military capability that provides force multiplication and operational range enhancement for front line aircraft across a range of defence roles and military tasks.

SECTION 2: THE ASSESSMENT PHASE

2a. Description of the Assessment Phase

FSTA was nominated as a potential Private Finance Initiative (PFI) project in 1997 when it was judged that the project could offer better value for money scoped as a service rather than an asset procurement, through the transfer of the risks of ownership to the private sector. Early work included a period of market building and Request for Information (RFI) and Invitation to Submit Outline Proposals (ISOP) phases. These activities provided confidence in the potential to secure a PFI solution.

Following Initial Gate approval in December 2000, the project launched a formal assessment phase designed to confirm whether PFI would offer best value for money. The assessment phase will confirm industry's ability to meet the service requirement, confirm programme timescales and costs, establish the optimum call-off times and readiness levels, determine whether the inclusion of Air Transport capability in the contract will provide value for money and clarify manning requirements and personnel implications.

An Invitation to Negotiate was issued in December 2000; two consortia submitted formal bids in July 2001 and contract negotiations have begun. The consortia are:

- AirTanker Ltd comprising Rolls Royce, EADS, Halliburton, Cobham and Thales.
- Tanker Transport Services Company Ltd comprising BAE Systems, Boeing, Serco & Spectrum Capital.

2b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost
Forecast Cost	6
Approved Cost at Initial Gate	13
Variation	-7

2c. Duration of Assessment Phase

	Date
Current forecast date of Main Gate Approval	November 2002*
Target date for Main Gate Approval	January 2002
Variation (Months)	+10

2d. Boundaries of future Demonstration and Manufacture phase costs‡

£m (outturn prices)	Lowest	Most Likely	Maximum	Range
Current forecast cost of Demonstration and Manufacture phase	11300	12300	13100	1800
Forecast cost of Demonstration and Manufacture phase at Initial Gate	-	12400	13900	1500
% Change	-	-1%	-6%	-

2e. Boundaries of future project in-service dates‡

	Earliest	Most Likely	Latest	Range
Current forecast ISD	January 2008	-	January 2010	24
Forecast ISD at Initial Gate	January 2007	-	January 2009	24
% Change	20%	-	14%	-

* Estimated date at MPR2002 datum point. Subject to review following delays in contract negotiations with both consortia.

† PFI programme cost estimates produced using the PREDICT Risk Analysis tool informed by judgements about costs across the whole period of the PFI contract.

‡ ISD is the point at which the PFI service will provide a deployable military capability with FSTA aircraft fully operational for air-to-air refuelling duties. This will fall some where between introduction of the PFI service and delivery of full service capability and will be optimised against retirement of current fleet assets. The service output to be provided at ISD and the optimum date for achievement is subject to confirmation as part of the Assessment Phase. 3 point estimates of ISD will be endorsed at Main Gate. At Initial Gate, EAC noted that ISD was expected to fall within a window of 2007 to 2009. As a consequence, only Earliest and Latest dates have been entered on the Project Summary Sheet.

PRE-MAIN GATE PROJECT SUMMARY SHEET

FUTURE COMMAND LIAISON VEHICLE (FCLV)

Picture not available

Integrated Project Team Responsible:
Close Armour (CA)

SECTION 1: ABOUT THE REQUIREMENT

The Future Command and Liaison Vehicle (FCLV) will provide protected mobility for Combat, Combat Support and Combat Service Support Forces in the fire direction, reconnaissance, liaison and low level (platoon) command and radio rebroadcast roles. FCLV will have significant utility with some elements operating in the direct fire area and thus requiring a higher Surveillance and Target Acquisition (STA) capability than those mainly operating in the indirect fire area. It will replace the Combat Vehicle Reconnaissance (Tracked), Fighting Vehicle 430, Saxon and Landrover currently used in these roles.

SECTION 2: THE ASSESSMENT PHASE

2a. Description of the assessment phase

The Initial Gate was approved on 24 August 2000. The Assessment phase will: reduce risk through studies and trials; confirm the optimum technological, support and procurement solution – including whether or not the direct and indirect fire operating environments should be satisfied by one or two vehicle types; narrow parameters for time, cost and performance to inform the Main Gate submission; and provide means of down selection to a preferred bidder.

Out of six final bidders for the Assessment Phase three were chosen to compete the Risk Reduction Studies Trials programme. They were, Alvis Vehicles Ltd, Vickers Defence Systems and INSYS (formally known as Hunting Engineering Ltd). Each company has been tasked with proposing a vehicle solution based on Commercial Off-The-Shelf/Modified Commercial Off-The -Shelf to meet the requirement and assessing current and future risks for the progression of the programme through demonstration, manufacture and in-service support phases, including consideration of Contractor Logistic Support options. It is hoped to place a demonstration and manufacture contract in 2003.

2b. Cost of the assessment phase

£m (outturn prices)	**Assessment phase cost**
Forecast Cost	3
Approved Cost at Initial Gate	4
Variation	-1

2c. Duration of assessment phase

	Date
Current forecast date of Main Gate Approval	February 2003
Target date for Main Gate Approval	May 2003
Variation (Months)	-3

2d. Boundaries of future Demonstration and Manufacture phase costs

£m (outturn prices)	Lowest	Most Likely	Maximum	Range
Current forecast cost of Demonstration and Manufacture phase	***	***	***	***
Forecast cost of Demonstration and Manufacture phase at Initial Gate	***	***	***	***
% Change	***	***	***	***

2e. Boundaries of future project in-service dates

	Earliest	Most Likely	Latest	Range
Current forecast ISD	August 2005	October 2005	November 2006	15 months
Forecast ISD at Initial Gate	August 2005	October 2005	November 2006	15 months
Variation (%)	0%	0%	0%	0

PRE-MAIN GATE PROJECT SUMMARY SHEET

GUIDED MULTIPLE LAUNCH ROCKET SYSTEM (GMLRS)

Integrated Project Team Responsible:
Future Artillery Weapon Systems

SECTION 1: ABOUT THE REQUIREMENT

The Guided Multiple Launch Rocket System (GMLRS) will replace unguided MLRS M26 bomblet rockets as they reach the end of their shelf life from 2004. GMLRS rockets will be fired from the Army's MLRS M270 launchers. The requirement is for a rocket which will increase MLRS's range from about 30km to at least 60km and which, in comparison to the current rocket, will be more difficult to detect, and will have reduced impact on the environment. The rocket will use the Global Positioning System and inertial guidance in order to achieve the required accuracy and significantly increase its effectiveness. The payload is expected to consist of bomblets and these will have self-destruct fuzes to address environmental concerns and comply with extant and anticipated legislation. GMLRS will be a modular design, to allow other payloads (such as unitary and smart anti-armour sub-munitions) to be fitted cost effectively.

The increased effectiveness of GMLRS will reduce the number of rockets required to defeat a target. This will allow stocks of GMLRS to be significantly lower than those for the M26 rocket, thus reducing the logistic burden and eventual disposal costs. A decision on final rocket numbers will be taken towards the end of the Assessment Phase, following further assessment of the ability of GMLRS to fulfil the capability. However, a review during 2001/2002 has reduced numbers from 15,000 to 4,500.

SECTION 2: THE ASSESSMENT PHASE

2a. Description of the Assessment Phase

An approval equivalent to Initial Gate was obtained in July 1998 for the UK to participate in a collaborative GMLRS Assessment Phase with the other MLRS Partner Nations (France, Germany, Italy and the US). As part of this phase, and acting on behalf of the Partner Nations, the US Department of Defense (DOD) awarded a prime contract to Lockheed Martin Missiles and Fire Control (LMMFC) in November 1998 to develop a GMLRS carrier rocket. The UK is contributing 12.5% of the cost of this Engineering and Manufacturing Development (EMD) contract. The EMD phase is scheduled to complete in early 2003, having been extended by the DOD from its earlier planned end date, of November 2002. This extension is the main reason for the deferral of Main Gate approval, from December 2002 to July 2003. The aims of EMD are to reduce costs and risk by making use of off-the-shelf components and sub-assemblies, and by maximising the use of sub-contractor competition. All MLRS Partner Nations will have equal rights to the design resulting from the contract, and have expressed a wish to enter into a collaborative production phase.
In parallel with this contract, and to complete Assessment Phase activities, the MLRS Partner Nations are evaluating the production arrangements that could be employed during the subsequent manufacture phase.

2b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost
Forecast Cost	19
Approved Cost at Initial Gate	19
Variation	0

2c. Duration of Assessment Phase

	Date
Current forecast date of Main Gate Approval	July 2003
Target date for Main Gate Approval	December 2002
Variation (Months)	+7

2d. Boundaries of future Demonstration and Manufacture phase costs

£m (outturn prices)	Lowest	Most Likely	Maximum	Range
Current forecast cost of Demonstration and Manufacture phase	184	209	244	60
Forecast cost of Demonstration and Manufacture phase at Initial Gate	399	419	503	104
% Change	-54%	-50%	-51%	-42%

2e. Boundaries of future project in-service dates

	Earliest	Most Likely	Latest	Range
Current forecast ISD	March 2006	March 2007	January 2008	22 months
Forecast ISD at Initial Gate	December 2007	June 2009	December 2010	36 months
% Change	-35%	-35%	-36%	-39%

PRE-MAIN GATE PROJECT SUMMARY SHEET

LIGHT FORCES ANTI-TANK GUIDED WEAPON SYSTEM (LFATGWS)

Picture not available

Integrated Project Team Responsible:
Infantry Guided Weapons (IGW)

SECTION 1: ABOUT THE REQUIREMENT

The Strategic Defence Review (SDR) identified shortcomings in Joint Rapid Reaction Force (JRRF) anti-armour firepower, mobility and protection.

JRFF Light Forces are reliant upon their own organic anti-armour system until the deployment of heavier forces. The system needs to deliver a high rate of accurate fire, with minimal exposure for the gunner, and must be readily man-portable; to achieve this effectively the capability must be delivered for a minimum weight.

For planning purposes, procurement of the LF ATGWS solution was assumed for all Infantry types, pending results of a Balance of Investment study run in parallel with the Assessment Phase. The study recommended providing the same system for Mechanised Infantry, but an alternative for Armoured Infantry.

The equipment fills the capability gap identified by the SDR while replacing the ageing Milan system.

SECTION 2: THE ASSESSMENT PHASE

2a. Description of the Assessment Phase

A Military Off The Shelf (MOTS) procurement is being pursued. The Assessment Phase will evaluate MOTS systems available and establish through competition the best value for money solution to meet the requirement and produce a recommended option to go forward to Main Gate.

Initial Gate Approval was secured in July 2000. A Review Note was subsequently approved in July 2001 to incorporate the Mechanised Infantry requirement. Following the issue of a Request for Proposals in September 2000, a contract was placed with Rafael to enable evaluation of the Spike weapon system, and two Foreign Military Sales (FMS) Cases were implemented with the US DoD to acquire the Javelin weapon system and to obtain the services of the Javelin Joint Venture. These are the only two weapons systems deemed likely to meet the requirements in the necessary timescale.

Main Gate Approval for Manufacture and Support (M&S) will be sought in September 2002 at which point down selection will occur.

2b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost
Forecast Cost	9
Approved Cost at Initial Gate	11
Variation	-2

2c. Duration of Assessment Phase

	Date
Current forecast date of Main Gate Approval	September 2002
Target date for Main Gate Approval	September 2002
Variation (Months)	0

2d. Boundaries of future Demonstration and Manufacture phase costs[*]

£m (outturn prices)	Lowest	Most Likely	Maximum	Range
Current forecast cost of Demonstration and Manufacture phase	***	***	***	***
Forecast cost of Demonstration and Manufacture phase at Initial Gate	***	***	***	***
% Change	***	***	***	***

2e. Boundaries of future project in-service dates

	Earliest	Most Likely	Latest	Range
Current forecast ISD	December 2004	April 2005	June 2005	6 months
Forecast ISD at Initial Gate	December 2004	April 2005	June 2005	6 months
% Change	0	0	0	0

[*] Figures are based on those presented within the Initial Gate Business Case, reflecting the assumption of additional delivery of the Light Forces solution to Armoured and Mechanised Infantry. This assumption has remained extant until 2001/2002, with funding for the requirement specific to Light Forces being subsumed within the larger line of provision.

PRE-MAIN GATE PROJECT SUMMARY SHEET

NEXT GENERATION ANTI-ARMOUR WEAPON (NLAW)

Picture not available

Integrated Project Team Responsible:
Infantry Guided Weapons (IGW)

SECTION 1: ABOUT THE REQUIREMENT

The Strategic Defence Review confirmed the requirement for a short range anti-armour weapon with a range of up to 600 metres as an essential component of the UK's anti-armour capability. The current capability is provided by LAW 80 which is reaching the end of its effective life.

NLAW's primary use will be in close battle to defeat armour. Its secondary use will be to attack defended positions such as bunkers. Owing to the growing urbanisation of warfare, it must be capable of being fired from within buildings. NLAW will be used by the infantry at short ranges (up to 600m) in conjunction with medium range weapons (up to 2000-3000m), but will be the only individual anti-armour weapon for other arms and services.

Operational analysis has indicated that, as a fixed point defence weapon, significant numbers of NLAW will be required in order to ensure there is sufficient coverage of the battlefield and rear areas.

SECTION 2: THE ASSESSMENT PHASE

2a. Description of the Assessment Phase

An Enhanced Off-The-Shelf procurement strategy (EOTS) is being followed for NLAW.

Following approval to issue an Invitation To Tender to conduct Project Definition studies in September 1997, competitive firm price contracts were awarded in October 1999 to Matra BAe Dynamics in the UK and Celsius in Sweden. The delay between approval and contract award was caused by uncertainty over the future of the Medium Range TRIGAT anti-armour programme, and has resulted in slippage to the forecast In-Service Date. Each contract lasted 22 months with delivery of bids for the Demonstration, Manufacture and Support phases in January 2001. The contractors were required to confirm the performance of their baseline system and develop prototype training systems and weapon enhancements needed to meet NLAW requirements.

Risk reduction and trade-off studies have been undertaken and detailed management, milestone and trials plans produced. Collaboration with other countries (US and Sweden) on NLAW has been explored and opportunities for the coming phases have been identified and agreed.

Approval for Demonstration, Manufacture and Support is being sought in Spring 2002*, at which point down selection will occur.

* Main Gate approval was secured in May 2002.

2b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost
Forecast Cost	17
Approved Cost at Initial Gate	18
Variation	-1

2c. Duration of Assessment Phase

	Date
Current forecast date of Main Gate Approval	April 2002
Target date for Main Gate Approval	April 2000
Variation (Months)	+24

2d. Boundaries of future Demonstration and Manufacture phase costs

£m (outturn prices)	Lowest	Most Likely	Maximum	Range
Current forecast cost of Demonstration and Manufacture phase	365	383	422	57
Forecast cost of Demonstration and Manufacture phase at Initial Gate	453	468	588	135
% Change	-19%	-18%	-28%	-58%

2e. Boundaries of future project in-service dates

	Earliest	Most Likely	Latest	Range
Current forecast ISD	August 2006	November 2006	July 2007	11 months
Forecast ISD at Initial Gate	May 2004	June 2005	August 2006	27 months
% Change	55%	27%	14%	-59%

PRE-MAIN GATE PROJECT SUMMARY SHEET

LIGHTWEIGHT MOBILE ARTILLERY WEAPON SYSTEM (GUN) (LIMAWS(G))

Picture not available

Integrated Project Team Responsible:
Future Artillery Weapon Systems

SECTION 1: ABOUT THE REQUIREMENT

Lightweight Mobile Artillery Weapon System (LIMAWS) will provide an indirect fire capability to support light and rapid effect forces. Initial studies showed that the requirement is likely to be best met by a mix of lightweight towed 155mm gun systems (LIMAWS(Gun)), and lightweight rocket launchers (LIMAWS(Rocket)). The two main elements of LIMAWS are currently at different stages – the Gun is in Assessment, whilst the Rocket launcher is in the Concept Phase. Most of the data in this Project Summary Sheet relates to the Gun element.

The LIMAWS(G) requirement was reviewed in March 2001, when it was recognised that a 155mm gun would not satisfy the Customer's entire light artillery requirement. Further work was therefore programmed to assess whether 105mm ammunition with improved lethality, for use with the Army's Light Gun, could fill the remaining capability gap. In February 2002, the entire programme was reviewed, in the light of changed Customer priorities and tighter financial constraints. The result was the deferral of the LIMAWS(G) programme, slipping the In-Service Date (ISD) from 2006 to 2009, and a reduction in the number of guns from 40 to 32. Funds were also earmarked for the procurement of enhanced 105mm ammunition. At the same time, the LIMAWS(R) ISD was brought forward from 2008 to 2007.

The main investment decision (System Main Gate) regarding the appropriate mix of gun and rocket platforms was deferred until June 2004, after completion of the LIMAWS(R) Assessment Phase. This will be followed by a LIMAWS(G) Demonstration and Manufacture approval in May 2006 (Gun Main Gate). This deferral will enable the Department to take into account the outcome of studies regarding the future shape and role of artillery support.

SECTION 2: THE ASSESSMENT PHASE

2a. Description of the Assessment Phase *(LIMAWS(G) only)*

There are several elements to the LIMAWS(G) Assessment Phase, which is based on a systems engineering approach, and aims to ensure that accurate information regarding time, cost, performance, and risk is available for the main investment decision, as follows:

1) Participation in the US Lightweight 155mm Howitzer Engineering and Manufacturing Development Phase, approved in August 1998, at a cost of £4M at 1998/99 prices.
2) Market surveys by QinetiQ (formerly part of the Defence Evaluation and Research Agency (DERA)) of candidate gun platforms and 120mm mortar platforms.
3) Assessment by the Defence Procurement Agency of potential towing and support vehicles.
4) A contract with Royal Ordnance Defence to cover assessment of Vehicle Legislation Compliance, Assisted Ramming/Ammunition Handling, Fire Control System and improved 105mm Ammunition.

A Review Note covering these packages of work was submitted to the Approving Authorities in March 2001, and subsequently approved at a cost of £6M at outturn prices. This approval, together with that at 1) above, forms the Initial Gate baseline.

2b. Cost of the Assessment Phase *(LIMAWS(G) only)*

£m (outturn prices)	Assessment Phase cost
Forecast Cost	8
Approved Cost at Initial Gate	10
Variation	-2

2c. Duration of Assessment Phase *(LIMAWS(G) only)*

	Date
Current forecast date of Main Gate Approval	May 2006
Target date for Main Gate Approval	-
Variation (Months)	-

2d. Boundaries of future Demonstration and Manufacture phase costs *(LIMAWS(G) only)*

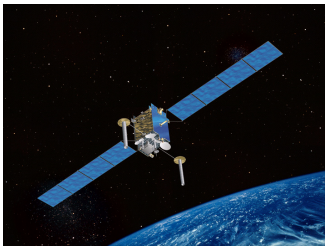
£m (outturn prices)	Lowest	Most Likely	Maximum	Range
Current forecast cost of Demonstration and Manufacture phase	183	193	255	72
Forecast cost of Demonstration and Manufacture phase at Initial Gate	-	-	-	-
% Change	-	-	-	-

2e. Boundaries of future project in-service dates *(LIMAWS(G) only)*

	Earliest	Most Likely	Latest	Range
Current forecast ISD	April 2009	June 2009	July 2010	15 months
Forecast ISD at Initial Gate	-	-	-	-
% Change	-	-	-	-

PRE-MAIN GATE PROJECT SUMMARY SHEET

SKYNET 5



Integrated Project Team Responsible:
Satcom Acquisition

SECTION 1: ABOUT THE REQUIREMENT

Skynet 5 will provide the next generation of flexible and survivable satellite communications services for military use and will replace the Skynet 4 constellation at the end of its predicted life. Robust military satellite communications services are essential to support inter and intra-theatre information exchange requirements and ensure that deployed and mobile forces are not constrained by the need to remain within the range of terrestrial communications.

SECTION 2: THE ASSESSMENT PHASE

2a. Description of the Assessment Phase

After the equivalent of Initial Gate Approval in 1993, Assessment Phase work commenced on Skynet 5 exploring 3 possible solutions to the requirement – TRIMILSATCOM in collaboration with France and Germany, conventional procurement and a Private Finance Initiative (PFI) solution. Evaluation demonstrated that TRIMILSATCOM would be unable to meet the UK's requirements in terms of timescale and cost, whereas a national PFI approach offered the potential to do so. In August 1998, the UK decided not to proceed with TRIMILSATCOM.

In March 1999 competitive PFI Design Study contracts were awarded to Matra-Marconi Space UK (now Astrium) and Lockheed Martin who considered the merits of a range of candidate SATCOM architectures. Department stakeholders assessed the outline PFI proposals, and concluded that the prospects for the success of this approach were good. In July 2000 an Invitation to Negotiate for the PFI Service Delivery Phase was issued to both companies. The PFI Design Studies culminated in January 2001 with proposals from service delivery entities established by Astrium (Paradigm) and Lockheed Martin, BAE SYSTEMS and British Telecommunications (Rosetta).

In July 2001, an extended "Revise and Confirm" (ERAC) was issued covering: terminal requirements, spacecraft cryptosystems and Communications Exchange Afloat within the service delivery boundary, with Best and Final responses received in November 2001. The Main Gate Business Case submission received EAC approval in January 2002*, with Ministerial approval and announcement of Paradigm as the preferred service provider following in February 2002.

* The project population for MPR2002 was defined on 1 April 2001, before the Skynet 5 project achieved Main Gate approval. Therefore, for MPR2002 purposes, Skynet 5 is reported as a pre-Main Gate project

Future milestones include: Placing of Implementation Phase Contract - End 2002. Initial Operational Service - March 2005 (90%). Full Operational Service - March 2008 (90%).

2b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost
Forecast Cost	123
Approved Cost at Initial Gate	113
Variation	+10

2c. Duration of Assessment Phase

	Date
Current forecast date of Main Gate Approval	January 2002
Target date for Main Gate Approval	-
Variation (Months)	-

2d. Boundaries of future Demonstration and Manufacture phase costs

£m (outturn prices)	Lowest	Most Likely	Maximum	Range
Current forecast cost of Demonstration and Manufacture phase	***	***	***	***
Forecast cost of Demonstration and Manufacture phase at Initial Gate	-	-	-	-
% Change	-	-	-	-

2e. Boundaries of future project in-service dates

	Earliest	Most Likely	Latest	Range
Current forecast ISD*	January 2005	February 2005	March 2005	2 months
Forecast ISD at Initial Gate	-	May 2003	-	-
% Change	-	-	-	-

* The definition of ISD (and Initial Operational Service) is Skynet 5 communications services over the Skynet4 constellation of satellites. Full Operational Service date at 50% is August 2007 and 90% is March 2008.

PRE-MAIN GATE PROJECT SUMMARY SHEET

TERRIER

Integrated Project Team Responsible:
Mobility

SECTION 1: ABOUT THE REQUIREMENT

Terrier is a lightly armoured highly mobile general support engineer vehicle optimised for battlefield preparation in the indirect fire zone. It will replace the existing Combat Engineer Tractor providing mobility support (obstacle and route clearance), counter-mobility (digging of anti-tank ditches and other obstacles) and survivability (digging of trenches and Armoured Fighting Vehicle slots). Terrier is being procured by national competition with a planned In Service Date of 2008.

SECTION 2: THE ASSESSMENT PHASE

2a. Description of the Assessment Phase

A funded Feasibility Study for Terrier concluded that the most cost-effective way of meeting the requirement was to develop a new vehicle integrating, where possible, in-service sub-systems and commercial off-the-shelf equipment. Approval was given for a competitive Project Definition phase in August 1998 and firm price contracts were placed in August 1999 with BAE Systems (formerly Royal Ordnance Defence PLC) and Vickers Defence Systems. Both contractors developed detailed designs making extensive use of Computer Aided Design tools, virtual reality modelling, rigs and trials. The capabilities required and constraints imposed by physical limitations, such as rail and air transportability, resulted in very similar technical solutions. Both contractors offered tracked vehicles close in size, weight and mobility to Warrior, having a crew of two and providing protection against small arms, high explosive fragments and mines. An Invitation to Tender (ITT) was issued in February 2001 to both companies which sought detailed proposals and prices for all later phases. The ITT also updated the requirement to reflect Smart Acquisition initiatives such as Progressive Acceptance and innovative Contractor Logistic Support proposals. A Main Gate Business Case is currently being prepared for approval by the Investment Approvals Board. It had originally been planned however, to submit this Business Case in December 2001 but two 'Revise or Confirms' and a 'Best and Final Offer' were raised to resolve a number of issues. The Business Case is expected to be submitted in August 2002.

2b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost
Forecast Cost	17
Approved Cost at Initial Gate	17
Variation	0

2c. Duration of Assessment Phase

	Date
Current forecast date of Main Gate Approval	August 2002
Target date for Main Gate Approval	November 2001
Variation (Months)	+9

2d. Boundaries of future Demonstration and Manufacture phase costs

£m (outturn prices)	Lowest	Most Likely	Maximum	Range
Current forecast cost of Demonstration and Manufacture phase	301	302	311	10
Forecast cost of Demonstration and Manufacture phase at Initial Gate	-	291	-	-
% Change	-	+4%	-	-

2e. Boundaries of future project in-service dates

	Earliest	Most Likely	Latest	Range
Current forecast ISD	June 2008	July 2008	December 2008	6 months
Forecast ISD at Initial Gate	-	December 2007	December 2008	12 months
% Change	-	+9.6	0	-

CANCELLED PRE-MAIN GATE PROJECT SUMMARY SHEET

TACTICAL RECONNAISSANCE ARMOURED COMBAT EQUIPMENT REQUIREMENT (TRACER)

Picture not available

Integrated Project Team Responsible:
TRACER

SECTION 1: ABOUT THE REQUIREMENT

TRACER was to have formed the land-based reconnaissance component of the Information, Surveillance, Target Acquisition and Reconnaissance (ISTAR) capability required to meet the land commander's critical information requirements.

TRACER was to have replaced the ageing Combat Vehicle Reconnaissance (Tracked) which entered service in 1972, be highly mobile and able to gather detailed combat intelligence; to cue and direct offensive action by direct and indirect fires systems, ground attack aircraft and attack helicopters. It was to be capable of operating at varying ranges, in all conditions and with a high degree of survivability. It would have had utility in both high intensity conflict and operations other than war by virtue of its deployability, mobility, presence and deterrent effect.

SECTION 2: THE ASSESSMENT PHASE

2a. Description of the Assessment Phase

The initial Feasibility Study for TRACER was approved in May 1992 and reported in 1994. In July 1995, a cost and risk study was approved to review project cost and address areas of programme risk. As this study neared completion in 1996 it emerged that the requirement for TRACER was in line with the US requirement for a Future Scout and Cavalry System (FSCS).

In July 1998, with the signing of a Memorandum of Understanding, the UK and US formally entered a collaborative Project Definition (PD) phase for TRACER. On 29 January 1999, Firm Price contracts were awarded non-competitively to two UK/US industrial consortia. During the TRACER PD phase, scheduled to last 42 months, the consortia undertook independent work aimed at winning a competition for a single Demonstration and Manufacture contract, which was scheduled to be awarded in early 2003.

In October 2001 the Department took the decision not to proceed to future phases of the programme. However, completion of the project definition work remains a high priority. The use of Integrated Demonstrators as part of a comprehensive Test, Demonstration and Evaluation programme trials will enable the Department to assess the technical maturity of individual technologies and potential integration of those technologies into a deployable platform and provide an insight into their military utility for potential future programmes. The Assessment phase is expected to complete on schedule at the end of July 2002.

2b. Cost of the Assessment Phase

£m (outturn prices)	Assessment Phase cost
Forecast Cost	131
Approved Cost at Initial Gate	130
Variation	+1

2c. Duration of Assessment Phase

	Date
Current forecast date of Main Gate Approval	-
Target date for Main Gate Approval	-
Variation (Months)	0

2d. Boundaries of future Demonstration and Manufacture phase costs

£m (outturn prices)	Lowest	Most Likely	Maximum	Range
Current forecast cost of Demonstration and Manufacture phase	-	-	-	-
Forecast cost of Demonstration and Manufacture phase at Initial Gate	-	-	-	-
% Change	-	-	-	-

2e. Boundaries of future project in-service dates

	Earliest	Most Likely	Latest	Range
Current forecast ISD	-	-	-	-
Forecast ISD at Initial Gate	-	December 2004	-	-
% Change	-	-	-	-

2f. Reasons for Cancellation

The decision to terminate the programme was a joint UK/US decision. For the US their requirement will be met from the new Future Combat System programme.

The UK decision was taken in the light of an emerging wider requirement for deployable, rapid effect forces and the potential cost of the TRACER solution. This new programme is expected to be based on a family concept and include the ISTAR capability, the requirement for which remains extant. It is anticipated that significant technologies from TRACER will be pulled through to meet the ISTAR requirement within the wider rapid intervention capability

Appendix 3 Project Glossary

Post-Main Gate Projects

A400M	Transport aircraft providing tactical and strategic mobility to all three services to replace the remainder of the Hercules fleet.
Advanced Air-launched Anti-armour Weapon (AAAW)	Air-launched missile with a limited stand-off capability to attack armoured vehicles, that will be carried by Harrier GR7, Eurofighter and Tornado GR4 aircraft.
Airborne Stand-off Radar (ASTOR)	Long-range theatre-surveillance and target-acquisition system to detect fixed, static and moving targets, in all weathers by day and night.
Alternative Landing Ship Logistic (ALSL)	New class of ship designed to deploy troops, vehicles and equipment directly into operational areas.
Astute Class Submarine	Nuclear-powered attack submarines to replace the Swiftsure class.
Attack Helicopter (WAH64 Apache)	Version of the United States Army's WAH 64 helicopter equipped with Longbow radar, Hellfire missiles, ground suppression rockets and air-to-air missiles and powered by RTM322 engines.
Beyond Visual Range Air-to-air Missile (BVRAAM)	Air-to-air missile, to be carried by Eurofighter, for engagement of targets at beyond visual range.
Conventionally Armed Stand-off Missile (CASOM)	Air-launched stand-off missile for precision attacks against strategic, tactical and infrastructure targets that will be carried by the Eurofighter and Tornado GR4 aircraft.
Short Term Strategic Airlift (STSA) C-17	Interim heavy airlift capability to satisfy strategic airlift requirement until Future Transport Aircraft enters service later this decade.
Eurofighter	Agile air-superiority fighter with a swing-role, air defence / ground attack capability which will replace the RAF Tornado F3 and Jaguar.
Eurofighter Aircrew Synthetic Training Aids (Eurofighter ASTA)	A ground-based synthetic aircrew training capability to supplement aircraft-based training for the Eurofighter fleet.
Future Joint Combat Aircraft (FJCA)	Multi-role fighter/attack aircraft to replace Royal Navy Sea Harrier and Royal Air Force Harrier GR7.
High Velocity Missile system (HVM)	Very Short Range Air Defence weapon designed to attack armoured helicopters and low-flying aircraft from the ground.
Multi-role Armoured Vehicle (MRAV)	Armoured utility vehicle that will replace the Fighting Vehicle 430 series, Combat Vehicle Reconnaissance (Tracked) and Saxon General War Role vehicles for use in high-intensity conflict, rapid-reaction peace support and humanitarian operations.
Nimrod Maritime Reconnaissance & Attack MK 4 (Nimrod MRA4)	Replacement Maritime Patrol Aircraft for the current fleet of MR2 aircraft, whose primary roles include anti-submarine warfare, anti-surface warfare and search and rescue.
Sonar 2087	Significant enhancement of the Royal Navy's Anti-Submarine Warfare capability, combining active and passive sonar systems and to be stern-mounted on Type 23 Frigates.
Successor Identification, Friend or Foe (SIFF)	Modern, NATO-compatible, secure IFF system, enabling swift and accurate identification of friendly forces.
Sting Ray Lightweight Torpedo life extension	Life-extension and capability-enhancement programme for the StingRay lightweight torpedo to enable it to remain in-service until around 2025.

Trojan and Titan	New armoured engineer vehicles to replace the Chieftain engineering vehicle and bridge launcher. Trojan will open routes through complex obstacles; Titan will cross gaps, laying close-support bridges.
Type 45 Destroyer	New class of Anti-Air Warfare Destroyer to replace the existing Type 42 Destroyer.

Pre-Main Gate Projects

Bowman	Combat net tactical communications system to replace the existing Clansman radio and support battlefield digitisation.
Future Aircraft Carrier (CVF)	Aircraft carrier capable of rapidly deploying forces with the reach and self-sufficiency to act independently of host-nation support. The requirement for carriers with the ability to deploy offensive air power was endorsed in the Strategic Defence Review.
Future Command and Liaison Vehicle (FCLV)	Protected mobility capability for Combat, Combat Support and Combat Service Support Forces.
Future Strategic Tanker Aircraft (FSTA)	Replacement for air-to-air refuelling and some elements of air transport capability.
Guided Multi-Launch Rocket System (GMLRS)	Replacement for unguided MLRS bomblet rockets, with improvement over current performance, to be fired from MLRS launchers.
Light Forces Anti-Tank Guided Weapon System (LFATGWS)	System providing high rate of accurate anti-armour firepower to support light and rapid effect forces, to replace MILAN system.
Lightweight Mobile Artillery Weapon System (LIMAWS)	An indirect fire capability to support light and rapid effect forces.
Next Generation Light Anti-Armour Weapon (NLAW)	Short-range anti-armour weapon to replace LAW 80.
Skynet 5	Satellite communications system to replace the SKYNET 4 constellation at the end of its predicted life.
Terrier	Highly mobile support engineer vehicle for battlefield preparation in the indirect fire zone, to replace Combat Engineer Tractor.

Cancelled Project

Tactical Reconnaissance Armoured Combat Equipment Requirement (TRACER)	Manned, armoured reconnaissance vehicle which was one of the options considered to meet information, surveillance, target acquisition and reconnaissance (ISTAR) requirements.

Appendix 4 Glossary of contractual and acquisition terms

Assessment Phase	The second phase in the acquisition cycle beginning after the Concept Phase and Initial Gate Approval. During the Assessment Phase the Integrated Project Team (IPT) produces a System Requirement Document (SRD) and identifies the most cost-effective technological and procurement solution. Risk is reduced to a level consistent with delivering an acceptable level of performance within tightly controlled time and cost limits. By the end of the Assessment Phase a Business Case will have been assembled for Main Gate approval.
Business Case	The documentation submitted to the Approving Authority at Initial Gate or Main Gate, making the case for proposed expenditure on the next phases of the project.
Cost of Ownership	An annualised representation of the resources consumed directly in the procurement, operation, training, support and maintenance of military equipment at all stages of its life. The Cost of Ownership statement is the costed element of the Though Life Management Plan.
Demonstration and Manufacture Phases	The third and fourth phases in the acquisition cycle, which begin after Main Gate approval, constitute the main investment period and continue until the equipment enters service. During the Demonstration and Manufacture Phases, development risk is progressively eliminated, the ability to produce integrated capability is demonstrated and the solution to the military requirement is delivered within time and cost limits appropriate to this stage.
Equipment Capability Customer	The Customer with responsibility for developing and managing a balanced and affordable equipment programme; including requirements definition; equipment planning; seeking approvals; and authorising acceptance. The Equipment Capability Customer (ECC) also has through-life responsibility for the equipment capability.
Equipment Programme	The Department's budgeting plan for expenditure on the equipment programme. It examines costs over the 10-year plan, and creates and considers options to match the required spend profile and Defence priorities.
Firm Price	An agreed price that is not subject to variation for inflation.
Fixed Price	An agreed price that is subject to agreed variation mechanisms to take account of inflationary and/or exchange rate movements.
Gainsharing	Where the Department and Industry work together to derive mutual beneficial advantage from re-opening and re-negotiating current contracts.
Incremental Acquisition	An approach to acquisition in which successive equipment increments, which are flexible in detail, are planned within a scheme of known overall capability requirement and affordability, with each increment providing quantifiable free-standing military capability.
Initial Gate	The approval point preceding the Assessment Phase. At Initial Gate, a Business Case is put to the Investment Approvals Board to confirm that there is a well-constructed plan for the Assessment Phase that gives reasonable confidence that there are flexible solutions within the time, cost and performance envelope the Customer has proposed.
Interest on Capital	The opportunity cost to the Government of employing money in capital expenditure instead of on alternative investment opportunities. For the public sector, Interest on Capital is charged at 6 per cent of the average capital employed during each year.
Investment Appraisal	A comparison of alternative investment options on a purely financial basis.
Key User Requirements	Requirements or constraints identified from within the wider set of user requirements, assessed as key to the achievement of the mission.
Liquidated Damages	A contractually pre-agreed sum payable by way of compensation in the event of a specific breach of contract (e.g. late delivery).

Main Gate	The approval point between the Assessment Phase and the Demonstration and Manufacture Phases. At Main Gate, a Business Case is presented, which should recommend a single technical and procurement option. By Main Gate, risk should have been reduced to the extent that the Director of Equipment Capability and Integrated Project Team Leader can, with a high degree of confidence, undertake to deliver the project to narrowly defined time, cost (procurement and whole-life) and performance parameters.
NAPNOC (No Acceptable Price No Contract)	The Department's policy for non-competitive pricing, which seeks to replicate the pressures of competitive procurement in which a price is secured at the outset through the tendering process. Under the NAPNOC policy, non-competitive contracts should only be placed when a price has been agreed that reflects what it would cost an efficient contractor to carry out the work. NAPNOC contracts should be priced before a contract is placed.
OCCAR (Organisation Conjointe de Coopération en Matière d'Armement)	A quadrilateral agency for the management of co-operative acquisition programmes. The member nations are the United Kingdom, France, Germany and Italy.
Prime Contractor	A contractor having responsibility for co-ordinating and integrating the activities of a number of sub-system contractors to meet the overall system specification efficiently, economically and to time.
Request for Proposals	A request by the Department for the contractor to supply proposals on how it would meet the requirement or other scope of work.
Technology Demonstrator Programme	A programme designed to demonstrate unproven technology using practical demonstrations, prior to its incorporation into a defence equipment programme.
Technology Readiness Levels	A structured means of measuring and communicating the maturity of technologies within acquisition programmes.
Through-Life Management Plan	The Through-Life Management Plan should bring together key themes of Integrated Project Teams, Systems Engineering and improved commercial practices. An outline Through-Life Management Plan should be produced in the concept stage and maintained throughout the procurement cycle. It will show the full resources needed to meet the objectives of the project and is recognised by all stakeholders.
Whole-Life Costs	The aggregation of the annual Cost of Ownership covering the total resource required to assemble, equip, sustain, operate, and dispose of a specified military capability at agreed levels of readiness, performance and safety.

Appendix 5 Definition of cost, time and performance variation categories

Category	Definition	Used to explain variations in
Technical		
Technical Factors	Variations due to changes in technical ability to deliver project	Time, Cost and Performance
Customer Requirement		
Changed Requirement	Variations due to changes in the customer's requirement for the equipment, flowing from operational reassessment rather than budgetary priority	Time, Cost and Performance
Changed Budgetary Priorities	Variations due to changes in the customer's requirement for equipment, flowing from changed budgetary priorities	Time, Cost and Performance
Economic Conditions		
Inflation	Variations due to changes in inflation assumptions	Cost
Exchange Rate	Variations due to changes in exchange rate assumptions	Cost
Management		
Receipts	Variations due to changes in expectation of receipts, e.g. liquidated damages, commercial exploitation levy	Cost
Contracting Process	Variations due to changes associated with the contractual process, including time taken in contract negotiations and placing contracts, international contract negotiations and effect of contractor bids compared to estimates	Cost and Time
Procurement Strategy	Variations due to changes in overall procurement strategy (e.g. change to collaborative options), or from competitive to single-source	Cost and Time
Reporting Conventions		
Accounting Adjustments and Re-definitions	Variations that do not reflect any substantive change: including imported or exported costs arising from changes in accounting rules and adjustments to reflect changes in the definition of terms	Cost and Time
Risk Differential *(only used by projects with Smart approvals)*	Variations arising from the difference between risk allowed for in the most likely (50 per cent) and highest acceptable (90 per cent) estimates at Main Gate	Cost and Time
Associated Projects		
Change in associated project	Variations due to changes in an associated project e.g. availability of equipment from another project for trials	Cost and Time

Appendix 6 Progress towards developing robust Whole-Life Costs

1 This Appendix provides background to the introduction of Whole-Life Costs and summarises the Department's progress in developing robust Whole-Life Costs since we last reported on this issue in the Major Projects Report 2000[11]. The Department has given a high priority to the task but has found it difficult to produce comprehensive Whole-Life Costs which are sufficiently robust to be published in this year's report. We expect to be able to publish Whole-Life Cost data for the 20 post-Main Gate projects in the Major Projects Report 2003.

2 Whole-Life Costs, as applied to military capability and defence equipment, are the cost to the Department of an equipment throughout its life from concept to disposal. This includes all acquisition and in-service costs such as operation, maintenance, repair, training, modifications and disposal.

3 The Department has chosen to use the Cost of Ownership as its preferred whole-life cost metric and this is the data that will be reported in the Major Projects Report 2003. Cost of Ownership measures the cost of the resources directly and indirectly consumed throughout the life of equipment. The Department has chosen this measure because it allows a comparable annual measurement of performance as well as construction of a lifetime cost figure. By examining changes in the Cost of Ownership over time, the Major Projects Report will show how successful the Department is in driving down costs and provide a baseline against which to assess performance on individual projects and the factors underlying particular successes or failures to reduce costs.

4 Whole-Life Costs are an important concept underpinning Smart Acquisition, one of whose key principles is that equipment investment decisions should reflect the whole-life cost implications rather than focussing solely on the procurement cost. Resources consumed during the in-service phase can represent a significant proportion of the whole-life cost of an equipment. The main benefits of developing and monitoring whole-life cost forecasts are:

i to provide the Department with a better picture of the overall full cost of proposed equipment solutions at the main investment decision point leading to more informed decision-making about whether, for example, to retain or modernise existing equipment or to procure new equipment, and to improve planning, budgeting and management of defence equipment;

ii to enhance the Department's ability to make decisions which trade-off cost and performance within individual equipment projects and between projects in a capability area; and

iii to identify and increase the Department's understanding of the cost drivers for equipment projects leading to target-setting aimed at optimising the whole-life cost of equipment and inventory holdings.

5 To progress its work on Whole-Life Costs the Department established a Whole-Life Costing Project Team in April 2001 within the Defence Logistics Organisation. This team was tasked with delivering the processes, tools, guidance and training to assist Integrated Project Teams, and their stakeholders, across the Department to manage defence equipment capability taking full account of the true whole-life Cost of Ownership. The work of the Whole-Life Costing Project Team has so far included:

i developing a standard Cost of Ownership process template for use by projects to capture cost data from all stakeholders and for producing a full cost of ownership analysis;

ii piloting the template to test and refine it;

iii developing and delivering a training and communications programme including senior manager and practitioner courses, web-based training packages, seminars and briefings with a view to fully engaging all stakeholders including, amongst others, Integrated Project Teams, the Equipment Capability Customer and Front Line Commands;

11 Please refer to the Comptroller & Auditor General's report Major Projects Report 2000, HC970 Session 1999-2000 Appendix 7, Page 175.

iv rolling out the template, initially across the 20 post-Main Gate projects in the Major Projects Report 2002 population and collecting Cost of Ownership data;

v preparing to implement a Cost of Ownership approach across all projects; and

vi providing ongoing support for Integrated Project Teams in producing and using Cost of Ownership information.

6 During the course of piloting the Cost of Ownership template, the Department found that projects held their cost data in a variety of formats (for example, cash or resource-based) from different sources and that projects needed to identify and collect accurate and complete cost data from all relevant stakeholders. Assimilating this data is a considerable task for each project. The template seeks to draw on consistent and reliable sources such as the Combined Operational Effectiveness and Investment Appraisals (COEIAs) that major projects include in their Initial Gate and Main Gate business cases. Project teams are also looking wherever possible to use other authoritative data sources such as Programme Responsibility Matrices, information in the Equipment Programme, Short Term Plan and Departmental and contractor cost models and to apply a rigorous process to converting data from cash to resource terms.

7 In May 2002, the Department wrote to the Committee of Public Accounts to give formal notification of the progress it had made in collecting Whole-Life Cost information. Collection of initial Cost of Ownership data for the 20 post-Main Gate projects in the Major Projects Report 2002 population was completed on time in January 2002. However, the Department's own review of this information indicated that most projects' estimates were still insufficiently robust for inclusion in the Major Projects Report 2002. The National Audit Office continues to work with the Integrated Business Team and other parts of the Department to develop the format for the way in which Cost of Ownership information will be included in the Major Projects Report 2003.