



National Audit Office

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COMPTROLLER AND  
AUDITOR GENERAL**

**HC 489-II  
SESSION 2010–2011**

**15 OCTOBER 2010**

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**Ministry of Defence**

# The Major Projects Report 2010

Appendices and Project Summary Sheets

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National Audit Office

**Ministry of Defence**

# The Major Projects Report 2010

## Appendices and Project Summary Sheets

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Amyas Morse  
Comptroller and  
Auditor General

National Audit Office

13 October 2010

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This report can be found on the National Audit Office website at [www.nao.org.uk/major-projects-2010](http://www.nao.org.uk/major-projects-2010)

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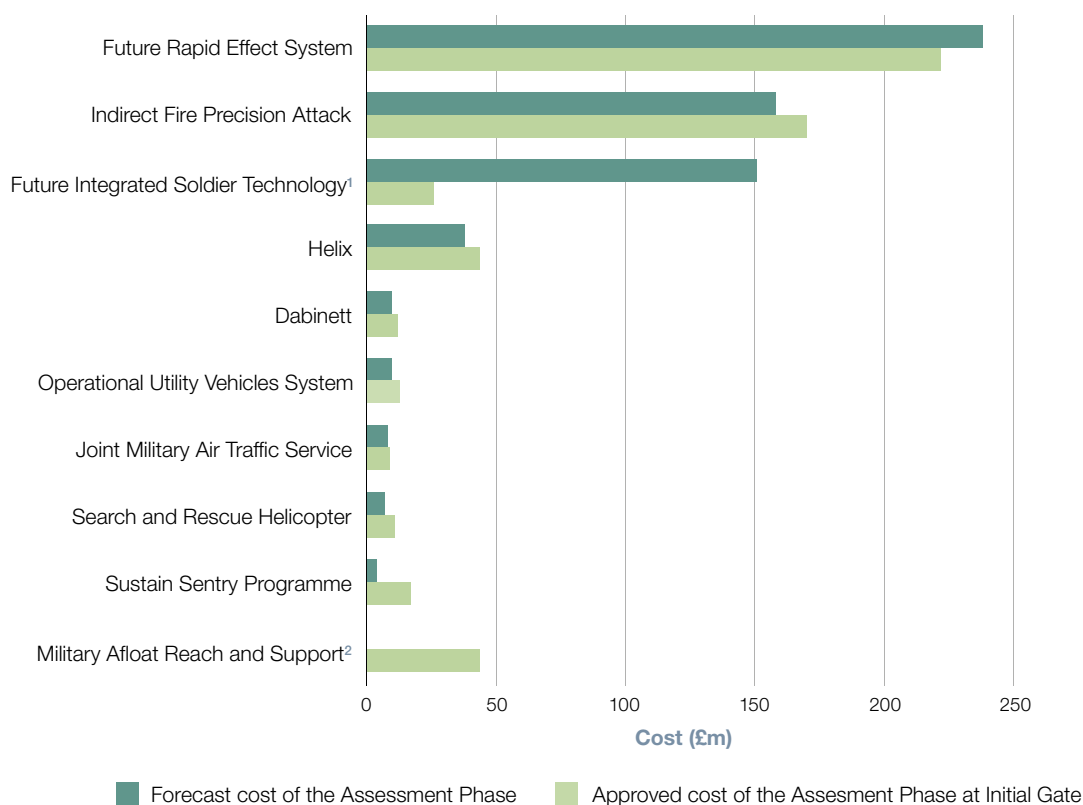
# Appendix Three

## Cost Performance for Assessment Phase Projects

Prior to the main investment decision being made, forecast costs for Demonstration and Manufacture are for internal planning purposes only. Publicly declaring these costs limits the Department's ability to make trade-offs and conclude satisfactory commercial arrangements. These costs are classified but disclosed to the Committee of Public Accounts to maintain public accountability. **Figure 7** shows the approved and forecast cost of each Assessment Phase.

**Figure 7**

Forecast cost of the Assessment Phase



### NOTES

- 1 The forecast cost for Future Integrated Soldier Technology is for Assessment Phases 1-3. The approved costs for Assessment Phase 1 only.
- 2 The forecast cost of the Assessment Phase for the Maritime Afloat, Reach and Support has been classified as the information is commercially sensitive.

Source: National Audit Office analysis of Departmental data

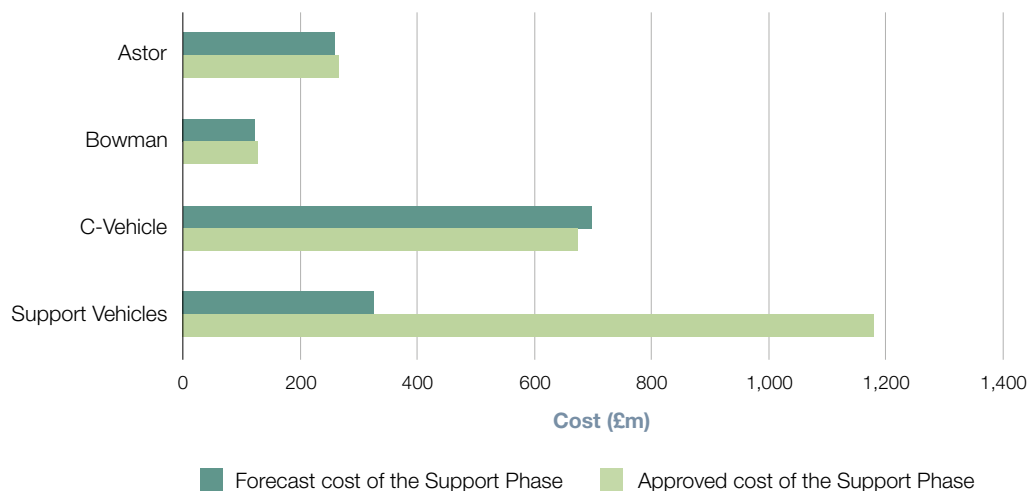
# Appendix Four

## Cost Performance for Support Projects

Although some individual approvals such as C-Vehicles are approved at the 'not to exceed' level, the Department continues to plan on the basis of the 'most likely' or expected cost. Therefore, the approval figures below represent the 'most likely' forecast approved to ensure comparability across each of the support projects. This is calculated by deducting the 'Risk Differential' factor within a support projects' Project Summary Sheet to arrive at the most likely figure (**Figure 8**)

**Figure 8**

Forecast cost of the Support Phase



**NOTES**

- 1 No formal approval was made for in-service Support Costs for the Titan & Trojan engineering tank project at their main investment decision although a Whole Life Cost of £1,051 million was included. Current forecast costs for Demonstration and Manufacture are estimated at £347 million while Support Costs are forecast at £771 million, both of which were validated by the National Audit Office.
- 2 C-Vehicles is a Private Finance Initiative contract, therefore the approval and forecast costs includes both Demonstration and Manufacture, and Support Costs.

Source: National Audit Office analysis of Departmental data

# Appendix Five

## Summary Performance Data for the Wider Population of Projects (Not Validated by the National Audit Office)

**Figure 9**

In-year Cost, Timescale and Performance of the wider population of Projects

Project	Cost		
	Expected cost at main investment decision (£m)	Forecast cost at 31 March 2010 (£m)	In-Year cost variation (£m)
Future Strategic Tanker Aircraft	12,326 <sup>3</sup>	11,917	-46
Type 45 Destroyer	5,000	6,464	0
Queen Elizabeth Class Aircraft Carriers	4,085	5,900	767
Nimrod MRA4	2,813	3,602	-45
A400M	2,628	3,231	-54
Astute Boats 1-3 <sup>4</sup>	2,578	4,041	108
Future Joint Combat Aircraft	2,034	1,827	14
Lynx Wildcat	1,901	1,689	20
Beyond Visual Range Air-to-Air Missile	1,240	1,305	23
Watchkeeper	907	889	-6
Merlin CSP <sup>5</sup>	854	829	-17
JCA – Production Sustainment and Follow On Development (PSFD) phase of the JSF programme	638	621	-17
Advanced Jet Trainer	490	460	3
Typhoon Future Capability Programme	444	445	10
Next Generation Light Anti-Armour Weapon	377	310	0
Advanced Jet Trainer – Ground Based Training Environment	344	344	0
Falcon Increment A	307	270	-15
Terrier	294	322	0
Seawolf MLU	282	315	-2



Expected In-Service Dates at main investment decision	Timescale		Key User requirements Forecast 'To be met'	Performance	
	Forecast In-Service Date at 31 March 2010	In-Year In-Service Date variation (months)		Key User requirements Forecast 'To be met (with risks)'	Key User requirements Forecast 'Not to be met'
May-14	May-14	0	9	0	0
May-07	Jul-10	0	8	1	0
Jul-15	May-16	0	9	0	0
Apr-03	Oct-12	22	4	3	2
Feb-09	Dec-15	0	9	0	0
Jun-05	Jul-10	4	9	0	0
-	-	-	5	2	0
Jan-14	Jan-14	0	15	3	0
Sep-11	Aug-12	0	7	0	0
Jun-10	Feb-11	2	10	0	1
Feb-14	Feb-14	0	10	0	0
-	-	-	0	0	0
Jul-09	Feb-10	-5	9	0	0
Jun-12	Jun-12	0	7	0	0
Nov-06	Apr-09	0	8	0	0
May-10	Jan-11	1	7	0	0
Jun-10	Dec-10	1	8	1	0
Sep-08	Apr-13	0	11	0	0
Sep-04	Jul-09	0	9	0	0

**Figure 9**

In-year Cost, Timescale and Performance of the wider population of projects continued

Project	Cost		
	Expected cost at main investment decision (£m)	Forecast cost at 31 March 2010 (£m)	In-Year cost variation (£m)
Capability Upgrade Strategy (Pilot) <sup>6</sup>	276	276	0
Naval EHF/SHF Satcom Terminals (NEST)	269	182	0
Land Environment Air Picture Provision	146	148	2
Soothsayer	142	202	0
UK Integrated Broadcast Service	134	101	0
Chinook Project Julius	132	136	4
Medium Range Radar	106	106	0
Chinook Mk.3 Reversion Programme	95	93	2
Maritime Composite Training System Phase 1	77	80	0
Cutlass	76	72	-2
Joust	72	72	0
Sting Ray Mod 1 Insensitive Munition Warhead	71	71	0
General Service Respirator	63	63	-0
Falcon Increment C	47	46	0
Surveillance System and Range Finder	47	42	-5
Universal Fire Control System	45	45	0
Advanced Jet Trainer – Operational Capability 2	44	39	0
DNA(2)	40	40	0
Application Migration Project	40	40	0
Mortal – Augusta	36	34	-2
Hilding	32	37	1
Non Signature Rotary Wing	28	28	0
T102	17	16	0
Artillery Fuzing System	12	9	-4
Anti-Structures Munition	12	11	0
Ballistic Sensor Fused Munition <sup>7</sup>	7	6	0
<b>Total</b>	<b>39,782</b>	<b>46,776</b>	<b>739</b>
<b>Average</b>			<b>16</b>

Expected In-Service Dates at main investment decision	Timescale		Key User requirements Forecast 'To be met'	Performance	
	Forecast In-Service Date at 31 March 2010	In-Year In-Service Date variation (months)		Key User requirements Forecast 'To be met (with risks)'	Key User requirements Forecast 'Not to be met'
Feb-13	Nov-12	0	15	0	0
Oct-09	Mar-11	-36	10	0	0
Feb-12	Aug-12	2	8	0	0
Dec-06	Apr-11	0	3	4	2
Jun-11	Feb-11	-4	1	0	0
Sep-11	Sep-11	0	8	0	0
Jun-11	Sep-12	-4	9	0	0
Sep-09	Nov-09	-1	8	0	0
Dec-08	Apr-12	33	6	6	0
Jun-10	Nov-11	-1	8	1	0
Aug-10	Dec-10	4	1	0	0
Aug-13	Aug-13	0	7	0	0
Oct-06	Jul-10	-2	7	0	0
Sep-10	Apr-11	2	8	1	0
Apr-09	Nov-09	0	6	0	0
Sep-11	Nov-11	-1	8	0	0
Apr-12	Apr-12	0	5	0	0
Jan-10	Feb-10	1	9	0	0
Sep-08	Nov-10	0	0	0	0
Sep-09	Nov-09	-1	10	0	0
Aug-08	Oct-10	1	1	0	0
Mar-09	May-09	0	1	0	0
Jul-08	Sep-09	-5	10	0	0
Jun-10	Sep-10	3	10	0	0
Dec-09	Mar-10	0	8	0	0
Sep-11	Mar-12	0	12	0	1
		<b>16</b>	<b>331</b>	<b>25</b>	<b>6</b>
		<b>0</b>	<b>7</b>	<b>1</b>	<b>0</b>

**Figure 9**

In-year Cost, Timescale and Performance of the wider population of projects continued

Project	Cost		
	Expected cost at main investment decision (£m)	Forecast cost at 31 March 2010 (£m)	In-Year cost variation (£m)
<b>Projects that Achieved Main Gate Approval in-year</b>			
CR1.5	168	165	-3
Enhanced Computer Network Defence	9	9	0
Future Integrated Soldier Technology – Main Gate 1a – STA	187	187	0
Puma Life Extension Programme <sup>8</sup>	339	339	0
UKMFTS - Rear Crew Stage 1	62	56	0
C17 (7th Aircraft)	183	183	0
<b>Cancelled Projects in year</b>			
Automatic Test Equipment Initiative	22	22	0

**NOTES**

- 1 This data has not been validated by the National Audit Office.
- 2 The projects/project increments highlighted in green are included within the population examined for the Major Projects Report 2010.
- 3 Private Finance Initiative figure.
- 4 Astute data represents boats 1-3 only.
- 5 Major Projects Report 2010 figure does not include Modified Historic Cost Accounting and depreciation.
- 6 Project has a separate approval for cost of capital.
- 7 Cancelled in Feb 2010 but included as it is a Major Projects Report 2010 project.
- 8 PUMA Life Extension Programme has no declared In-Service Date but a declared Initial Operating Capability and Full Operating Capability. June 2012 is the planned date for the delivery of the first 2 aircraft to the Frontline, which allows training to begin.

Source: Ministry of Defence

Expected In-Service Dates at main investment decision	Timescale		Key User requirements Forecast 'To be met'	Performance	
	Forecast In-Service Date at 31 March 2010	In-Year In-Service Date variation (months)		Key User requirements Forecast 'To be met (with risks)'	Key User requirements Forecast 'Not to be met'
Jun-10	Jun-10	0			
Jan-11	Feb-11	1			
Feb-11	Feb-11	0			
-	-	-			
Mar-10	Mar-10	0			
Mar-11	Mar-11	0			
Nov-88	Nov-88	0			

# Appendix Six

## Project Summary Sheets

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### Assessment Phase Projects

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## **ASSESSMENT PHASE PROJECTS**



**Team Responsible**

Intelligence Surveillance Target Acquisition and Reconnaissance Programme Support Function

**Single point of accountability for Project Capability**

Head of Capability Intelligence Surveillance Target Acquisition and Reconnaissance

**Senior Responsible Officer**

Head of Capability Intelligence Surveillance Target Acquisition and Reconnaissance

**Number of Projects / Increments** 2**Current Status of Projects / Increments**

- **Pre Main Investment Decision**
  - Dabinett Programme Support Office
  - Intelligence, Surveillance, Target Acquisition and Reconnaissance Information Integration & Management project

**A. Section A: The Project****A.1. The Requirement**

The Department requires an effective and efficient end-to-end Intelligence, Surveillance, Target Acquisition and Reconnaissance service. This will provide actionable information and intelligence to inform decision makers through a capability that is interoperable in a joint, inter-agency, and multi-national environment, in support of an agreed range of Military Tasks out to 2035. The Department identified capability gaps in two areas: Direct, Process and Disseminate relating to the integrated delivery of Intelligence; and Deep and Persistent relating to collection of intelligence. The Dabinett Programme was established in order to address these capability gaps and in doing so to significantly improve the efficiency, effectiveness, quality and timeliness of intelligence delivered to the commander primarily by making better use of legacy systems but also through the introduction of new capability across all the Defence Lines of Development.

**Background**

Dabinett was originally scoped as a replacement to the Canberra PR9 aircraft used for tactical reconnaissance and photographic mapping. In 2005 the Acquisition for Network Enabled Capability and Dabinett Programme Integrated Project Team was formed to deliver the project. Lessons identified from theatre at this time, continued to focus on the inefficient use of the Intelligence, Surveillance, Target Acquisition and Reconnaissance inventory. Furthermore, analysis from operations in Iraq indicated that information was already available to answer 80- 90% of the collection requirements raised. This led to more emphasis being placed on Dabinett to improve the Intelligence, Surveillance, Target Acquisition and Reconnaissance process, Direct, Collect, Process and Disseminate rather than merely replacing a tactical reconnaissance and photographic mapping aircraft.

In March 2010 Dabinett was renamed Solomon.

**A.2. The Assessment Phase**

The Programme is in a continuous Assessment Phase that will initiate a number of projects, with their own lifecycles, over three phases to deliver over time the full capability identified for Dabinett.

The first of these projects is the Intelligence, Surveillance, Target Acquisition and Reconnaissance Information Integration & Management project which is currently in its Assessment Phase.

A Through Life Capability Management approach is being used to manage the Dabinett Programme.

**Programme Support**

The £8M over four years allocated to the Dabinett Programme continuous Assessment Phase element has been used to provide technical support to the programme such as:

- a. Undertaking benefits analysis of the programme.
- b. Undertaking effectiveness modelling to support the programme.
- c. Supporting Programme Planning/Optimisation through Capability and Programme

## Investigations.

**A.3. Progress**

Dabinett is currently planned to deliver over three phases.

**Phase 1**

The Intelligence, Surveillance, Target Acquisition and Reconnaissance Information Integration & Management project is the only project in Phase 1 of the Programme. It passed Initial Gate in April 2009. In February 2010 two competitive Assessment Phase contracts were placed with preferred bidder selection expected in late 2010.

**Phase 2**

Phase 2 will provide common Intelligence, Surveillance, Target Acquisition and Reconnaissance enabling services, and implement improvements to Intelligence, Surveillance, Target Acquisition and Reconnaissance information integration, Intelligence, Surveillance, Target Acquisition and Reconnaissance management, and intelligence processing. In February 2010 a decision was taken by the Direct Process and Disseminate Programme Board to divert planned resources from this phase to an Urgent Operational Requirement and other higher priority tasks. This led to a Capability management measure to defer funding for Phase 2 by two years. This has provided an opportunity to re-plan Phases 2 and 3. This re-planning is expected to complete by December 2010.

**Phase 3**

The Deep and Persistent element of Dabinett, previously planned for Phase 3, has been split out from the Direct Process and Disseminate element and will form part of the Air Intelligence Surveillance Target Acquisition and Reconnaissance programme. Phase 3 of Dabinett will therefore only consist of the technology refresh activities.

**A.4. Capability Risks**

The focus of the Dabinett Programme is on improving the efficiency and effectiveness of the Intelligence Surveillance Target Acquisition and Reconnaissance processes and capabilities. Without Dabinett, assets that collect intelligence will continue to be tasked to answer requests for Information and Intelligence that already exist within the intelligence community. Dabinett will meet the de-confliction and prioritisation shortfalls of the current UK Intelligence Surveillance Target Acquisition and Reconnaissance capability.

The delivery of an enhanced End to End UK Intelligence Surveillance Target Acquisition and Reconnaissance capability is fundamental to the success of future military operations. Information and intelligence is essential in all aspects of modern operations and thus provides the bedrock for decision making. Dabinett will ensure that information and intelligence is effectively and efficiently available for exploitation at all levels of command.

**A.5. Associated Projects**

Description	Critical to achievement of IOC	
	Project Title	Forecast IOC
A secure and coherent information infrastructure for Defence	Defence Information Infrastructure (Future) Increment 2c	***

**A.6. Procurement Strategy**

Pre-Main Investment Decision Projects / Increments only	
Description	Procurement Route
Technical support to the Dabinett Continuous Assessment Phase.	Tasks competed through Framework Agreement for Technical Support, a pan-Government arrangement to enable fast and efficient procurement of technical support
Intelligence Surveillance Target Acquisition and Reconnaissance Information Integration & Management Competitive Assessment Phase	Competitive Procurement
Post-Main Investment Decision Projects / Increments only	

DABINET

	Contractor	Contract Scope	Contract Type	Procurement Route
-	-	-	-	-

A.7. **Support Strategy** – not applicable

**B. Section B: Cost**

**B.1. Cost of the Assessment Phase**

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
Dabinett Continuous Assessment Phase (Programme Support Office costs for the first four years)	8	7	-1	-	-
Intelligence Surveillance Target Acquisition and Reconnaissance Information Integration & Management Competitive Assessment	4	3	-1	-	-
<b>Total</b>	<b>12</b>	<b>10</b>	<b>-2</b>	<b>-</b>	<b>-</b>

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Intelligence Surveillance Target Acquisition and Reconnaissance Information Integration & Management Project	***	-	-
Dabinett Phases 2 and 3	***	-	-

B.3. **Cost of the Demonstration and Manufacture Phase** – not applicable

B.4. **Unit production cost** – not applicable

B.5. **Progress against approved Support / Service / PFI Cost** – not applicable

**B.6. Expenditure to date**

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
Assessment Phase (£m)	2	2	4
Demonstration & Manufacture Phase (£m)	0	0	0
Support Phase / Service / PFI Cost (£m)	0	0	0
<b>Total Expenditure (£m)</b>	<b>2</b>	<b>2</b>	<b>4</b>

**C. Section C: Timescale****C.1. Duration of the Assessment Phase**

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Dabinett Continuous Assessment Phase (Programme Support Office costs for the first four years)	-	March 2008	Continuous <sup>1</sup>
Phase 1 - Intelligence Surveillance Target Acquisition and Reconnaissance Information Integration & Management Project	December 2010	April 2009	17

**C.2. Planned / Actual Boundaries for introduction of the Capability**

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
Phase 1 - Intelligence Surveillance Target Acquisition and Reconnaissance Information Integration & Management Project	***		21
Phase 2 and 3 are being re-planned			

**C.3. In-Service Date/Initial Operating Capability** – not applicable**C.4. Full Operating Capability** – not applicable**C.5. Support / Service / PFI Contract** – not applicable**D. Section D: Performance****D.1. Maturity Measures** – not applicable**D.2. Performance against Defence Lines of Development** – not applicable**D.3. Performance against Key Performance Measures** – not applicable

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<sup>1</sup> Approved for the first four years

**Team Responsible**

Dismounted Soldier Systems

**Single point of accountability for Project Capability**

Head of Ground Manoeuvre Capability

**Senior Responsible Officer**

**Number of Projects / Increments**      2

**Current Status of Projects / Increments**

- **Pre Main Investment Decision – Increment 1B**
- **Post Main Investment Decision – Increment 1A**
- **Support Contract - Nil**
- **Other – please provide details - Nil**

**A. Section A: The Project**

**A.1. The Requirement**

The Future Integrated Soldier Technology programme aims to integrate both current and emerging key technologies that British dismounted soldiers require for them to maintain their position at the forefront of capability. The programme will ensure the future soldier has equipment that optimises effectiveness, reduces physical and psychological load, and minimises the effects of combat stress and the risks of human error.

Historically, soldiers have been equipped in a piecemeal manner. The programme will consider the dismounted soldier as a system, and the eight-man section as a virtual platform. This ‘system of systems’ approach, demonstrated successfully during the Concept Phase, will fundamentally improve the capabilities of troops engaged in dismounted close combat. It will deliver an integrated suite of equipment encompassing the broad NATO capability areas of Command, Control, Communications, Computers and Information, lethality, mobility, survivability and sustainability.

**A.2. The Assessment Phase**

Initial Gate approval was achieved in August 2001. Four companies submitted tenders for the Assessment Phase prime contract, two of whom were selected to take part in a competitive planning phase starting in August 2002. The selection of Thales UK Ltd as the Assessment Phase prime contractor was announced on 12 March 2003.

A number of factors caused the duration of the Assessment Phase to be extended. Critical trials planned for Summer 2004 were delayed by three months due to commitment of troops to operations overseas. Problems were encountered on a subsequent major trial held in Autumn 2005, as some systems proved to be short of the required levels of technical readiness and insufficiently robust to allow adequate data to be collected to inform the Main Gate Business Case. Consequently, more time was needed to mature understanding of the requirement and of the final technical solution. Successful Combined Operational Effectiveness and Investment Appraisal trials followed and produced the required data. At the start of 2007/08 work on the main programme was suspended for five months (although the impact on the date of Main Gate was not commensurate) to allow Thales to deliver two Urgent Operational Requirements using technology arising out of Future Integrated Soldier Technology, which have provided an early benefit to troops engaged on current operations.

As a consequence of the problems experienced on the Autumn 2005 trials, a new incremental procurement strategy was adopted, allowing technology to be exploited as it matures, thereby de-risking the programme while not losing sight of the aim of an integrated suite of equipment. Each increment now has its own Main Gate approval, preceded by an Assessment Phase, meaning there is now considerably more Assessment work overall in Future Integrated Soldier Technology than was forecast when only a single Main Gate was envisaged. The first increment was divided into two parallel elements, one addressing the area of Surveillance and Target Acquisition (Increment 1A), the other looking at Command, Control, Communications, Computers and Information (Increment 1B). Further increments are anticipated but have not yet been approved at Initial Gate. The Assessment Phase for the first increment included pre-Main Gate competitions at sub-system level.

## FUTURE INTEGRATED SOLDIER TECHNOLOGY

### A.3. Progress

Main Gate approval for Increment 1A was achieved in July 2009. A contract for the Demonstration and Manufacture phase of Increment 1A (Surveillance and Target Acquisition) was placed with Thales Optronics Ltd on 27 July 2009. Work under this contract is due to be completed by September 2015.

A request for Main Gate approval of Increment 1B was refused by the MOD's Investment Approvals Board in December 2009 due to a lack of allocation of the necessary radio frequency spectrum. As this issue has proved impossible to resolve, and there is no further funding to pursue work in this area, a further submission will be made in July 2010 recommending termination of Increment 1B.

Work on the Assessment Phase of a second increment is expected to commence during 2010, subject to approval.

### A.4. Capability Risks

The individual infantry soldier must contribute to a fully complementary, flexible and balanced capability. The Future Integrated Soldier Technology package will permit the dismounted soldier to conduct core functions, 24 hours a day, both rapidly and effectively, in order to defeat the enemy with the weapon systems at his disposal. The Assessment Phase has demonstrated that a suite of capabilities and technologies are required in order to fill the identified capability gaps. Failure to proceed would perpetuate the capability shortfall and the associated operational risk, while also failing to provide a long term solution to the evolving sophistication of the threat to those personnel engaged in dismounted close combat. As a consequence, increased risk would be incurred when embarking on future operations due to Defence being inadequately prepared to meet emerging threats. The dismounted soldier would therefore be severely disadvantaged through this unplanned approach.

### A.5. Associated Projects – not applicable

### A.6. Procurement Strategy

Pre-Main Investment Decision Projects / Increments only				
Description	Procurement Route			
Increment 1A	Prime contract for Demonstration & Manufacture with Thales Optronics Ltd.			
Increment 1B	A submission will be made in July 2010 to the MOD's Investment Approvals Board recommending termination of Increment 1B.			
Post-Main Investment Decision Projects / Increments only				
	Contractor	Contract Scope	Contract Type	Procurement Route
-	-	-	-	-

### A.7. Support Strategy

#### A.7.1. Support / Service / PFI Contract Strategy

Description				
Increment 1A	The support solution for new to service items is a Contractor Logistic Support Asset Availability Service, under which the contractor provides a specified level of equipment availability, although certain items are treated as commodities and replaced as required. The support contract will commence from the Logistic Support Date and will include spares management and re-supply, obsolescence management, software support, technical documentation, repairs, storage and maintenance.			
Increment 1B	A submission will be made in July 2010 to the MOD's Investment Approvals Board recommending termination of Increment 1B.			
	Contractor	Contract Scope	Contract Type	Procurement Route
-	-	-	-	-

## B. Section B: Cost

### B.1. Cost of the Assessment Phase

Description	Approved	Actual /	Variation	Post-Main Investment
-------------	----------	----------	-----------	----------------------

FUTURE INTEGRATED SOLDIER TECHNOLOGY

	Cost (£m)	Forecast Cost (£m)	(£m)	Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
Increments 1A & 1B	26	39	-	-	-
Increments 2 & 3		112	-	-	-
<b>Total</b>	<b>26<sup>2</sup></b>	<b>151<sup>3</sup></b>	<b>+125</b>	<b>-</b>	<b>-</b>

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Increment 1A	***	-	***
Increment 1B	***	-	***
Increments 2 & 3	***	-	***
<b>Total</b>	<b>***</b>	<b>-</b>	<b>***</b>

**B.3. Cost of the Demonstration and Manufacture Phase** – not applicable

**B.4. Unit production cost** – not applicable

**B.5. Progress against approved Support / Service / PFI Cost** – not applicable

**B.6. Expenditure to date**

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
Assessment Phase (£m)	38	1	39
Demonstration & Manufacture Phase (£m)	-	7	7
Support Phase / Service / PFI Cost (£m)	-	-	-
<b>Total Expenditure (£m)</b>	<b>38</b>	<b>8</b>	<b>46</b>

**C. Section C: Timescale**

**C.1. Duration of the Assessment Phase**

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Increment 1A	July 2009	August 2001	95 months
Increment 1B	***	August 2001	***

**C.2. Planned / Actual Boundaries for introduction of the Capability**

Description	Earliest Forecast /	Budgeted For (Post-Main	Latest Forecast /
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<sup>2</sup> Approval for Assessment Phase 1 only. Due to the incremental nature of this programme, this approval does not include further Assessment Phases.

<sup>3</sup> Represents total forecast cost for Assessment Phases 1-3.

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	Approved	Investment Decision Projects only)	Approved
Increment 1A	January 2011	-	April 2011
Increment 1B	***	-	***

**C.3. In-Service Date/Initial Operating Capability**

**C.3.1. Definition**

Description	In-Service Date/Initial Operating Capability
Increment 1A	A Battle Group equipped, supported and ready to start pre-deployment training.

**C.3.2. Progress against approved Dates** – not applicable

**C.3.3. Timescale variation** – not applicable

**C.3.4. Other costs resulting from Timescale variation** – not applicable

**C.3.5. Operational Impact of In-Service Date/Initial Operating Capability variation** – not applicable

**C.4. Full Operating Capability** – not applicable

**C.5. Support / Service / PFI Contract** – not applicable

**D. Section D: Performance** – not applicable



**Team Responsible**

MEDIUM ARMoured TRACKS TEAM

**Single point of accountability for Project Capability**

Head of Equipment Capability (Ground Manoeuvre)

**Senior Responsible Officer**

Head of Equipment Capability (Ground Manoeuvre)

**Number of Projects / Increments**

**Current Status of Projects / Increments**

- Pre Main Investment Decision – Specialist Vehicle
- Pre Main Investment Decision – Utility Vehicle

**A. Section A: The Project**

**A.1. The Requirement**

The Ministry of Defence has outlined a two pronged approach to meeting its armoured fighting vehicle requirement. In the short term it has an urgent need to upgrade the current fleet. In the longer term it needs to equip United Kingdom Armed Forces with a medium weight capability that would be able to project power world-wide rapidly. Future Rapid Effect System is the response to this longer term requirement.

Future Rapid Effect System will deliver a new, medium weight armoured vehicle fleet with higher levels of deployability and survivability than the current fleet, with the potential to grow its capability as new technology becomes available. The current planning assumption is to deliver over 3,000 vehicles. The original requirement was for 1,757 vehicles but this was increased in 2004 under an equipment programme option when the Total Fleet Requirement had been established.

Future Rapid Effect System will be part of a balanced force consisting of Heavy, Medium and Light brigades giving the ability to deploy forces rapidly with higher levels of firepower, protection and mobility than Light Forces can achieve, but with deployability and agility that cannot be achieved by Heavy Forces. The current threat on operations, particularly from rocket propelled grenades, heavy machine guns and mines/improvised explosive devices, has reinforced the need for adequately protected armoured vehicles.

Future Rapid Effect System will replace the Army's obsolescent Combat Vehicle Reconnaissance (Tracked), Saxon and FV 430 vehicles.

**A.2. The Assessment Phase**

The Future Rapid Effect System fleet will encompass 16 roles. The total capability is expected to comprise five families of vehicles: Utility, Reconnaissance, Medium Armour, Manoeuvre Support and Basic Capability Utility. An incremental approach to capability delivery is envisaged with an Initial Operating Capability comprising the first elements of the Reconnaissance family followed by a phased approach to delivering the full capability in planned increments thereafter.

The initial Assessment Phase was approved in April 2004. This focussed on the Utility Vehicle family, the first group of vehicles that would make up the Initial Operating Capability. A number of competitions were launched to deliver this capability. However, following the December 2008, Equipment Examination the priority for the Future Rapid Effect System shifted from Utility Vehicle to the Scout Vehicle (part of the Reconnaissance family), with Assessment Phase activities focussed on the Specialist Vehicle capability (Reconnaissance and Medium Armour).

The Utility Vehicle expenditure of £133m during the Assessment Phase has supported activities that have developed Future Rapid Effect System requirements. The Department believes this has increased technological maturity and enhanced the project community knowledge; all these aspects have been captured and retained for the future benefit of the programme.

Assessment activities conducted to date indicate that there is a cost benefit in consolidating vehicle families and variants (where feasible), using a Common Base Platform, a base vehicle onto which role specific sub-systems can be incorporated (e.g. cannon, repair, recovery). Industrial studies

## FUTURE RAPID EFFECT SYSTEMS

completed during the Assessment Phase confirmed the viability of a Common Base Platform for the most demanding variants requirements, namely Medium Armour and Scout.

Assessment phase findings concluded that at least two competing (Prime) platform suppliers could develop suitable Modified Off The Shelf solutions.

### A.3. Progress

The Utility Vehicle programme is currently on hold following the Equipment Examination in December 2008 and an option taken as part of the Department's 2009 financial planning round that has deferred all funding for the Utility Vehicle until April 2012.

The Specialist Vehicle element of the Future Rapid Effect System programme continues to make good progress and secured Investment Approvals Board and Ministerial approval in June 2008 for funding to conduct an Assessment Phase.

The Specialist Vehicle Acquisition Strategy was approved in July 2009. The approved approach is to appoint through competition, a prime contractor to deliver the Demonstration, Manufacture and initial In-Service phases of the requirement.

Following the assessment of a Pre Qualification Questionnaire. BAE Systems Global Combat System and General Dynamics UK were issued an Invitation To Tender.

At the conclusion of the tender and approvals process, General Dynamics UK were announced as the preferred bidder on 22 March 2010. At the time of this report, the MOD is in negotiation with General Dynamics UK with the intention of placing a Demonstration Phase contract for Reconnaissance Block 1 and the Common Base Platform.

The Future Rapid Effect System has been recast from a single programme into three constituent programmes; Specialist Vehicle, Utility Vehicle and Manoeuvre Support. The Future Rapid Effect System funding lines have now been split across the three programmes and in future will be reported separately in the MPR.

### A.4. Capability Risks

Strategic Defence Review New Chapter 2002 and Defence White Paper 2003 set out the need for expeditionary focused, balanced and rapidly deployable medium weight forces. Defence Strategic Guidance 2005 directed that medium forces should be based on Armoured Fighting Vehicles optimized for rapid effect, a theme continued in Defence Strategic Guidance 2008.

Future Rapid Effect System will deliver a fleet of new medium weight armoured vehicles which will provide better protection, operational mobility and firepower than light forces; but without the logistic footprint of a heavy force. Future Rapid Effect System forces will be effective across the operational spectrum, conducting operations from peacekeeping to warfighting. Future Rapid Effect System equipped forces will form the backbone of the Land component of the Joint Medium Weight Capability and contribute significantly to the Army's Balanced Force.

Failure to proceed would therefore put at risk the timely provision of a new flexible, rapid intervention capability. Concurrently, those in-service vehicles (e.g. Saxon, Combat Vehicle Reconnaissance (Tracked)) due to be replaced by Future Rapid Effect System would incur increasing support costs and obsolescence.

### A.5. Associated Projects

Description	Critical to achievement of IOC	
	Project Title	Forecast IOC
Future Rapid Effect Systems – Recce Block1/2/3	Common Cannon & Ammunition Project.	May 2013

### A.6. Procurement Strategy

Pre-Main Investment Decision Projects / Increments only	
Description	Procurement Route
Future Rapid Effect System Utility Vehicle	Acquisition Programme with full and open competition

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Future Rapid Effect System Specialist Vehicles	Acquisition Programme with full and open competition			
<b>Post-Main Investment Decision Projects / Increments only</b>				
	<b>Contractor</b>	<b>Contract Scope</b>	<b>Contract Type</b>	<b>Procurement Route</b>
-	-	-	-	-

**A.7. Support Strategy – not applicable**

**B. Section B: Cost**

**B.1. Cost of the Assessment Phase**

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
Utility Vehicle Assessment Phase	113	162	+49		
Specialist Vehicles Assessment Phase	109	76	-33		
<b>Total</b>	<b>222</b>	<b>238</b>	<b>+16</b>		

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Utility Vehicle	***	-	***
Specialist Vehicle	***		***

**B.3. Cost of the Demonstration and Manufacture Phase – not applicable**

**B.4. Unit production cost – not applicable**

**B.5. Progress against approved Support / Service / PFI Cost – not applicable**

**B.6. Expenditure to date**

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
<b>Assessment Phase (£m)</b>	141	45	186
<b>Demonstration &amp; Manufacture Phase (£m)</b>	0	0	0
<b>Support Phase / Service / PFI Cost (£m)</b>	0	0	0
<b>Total Expenditure (£m)</b>	<b>141</b>	<b>45</b>	<b>186</b>

**C. Section C: Timescale**

**C.1. Duration of the Assessment Phase**

Description	Forecast / Actual Date of Main	Date of Initial Gate Approval	Length of Assessment Phase
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FUTURE RAPID EFFECT SYSTEMS

	Gate Approval		(months)
Utility Vehicle	***	May 2004	***
Specialist Vehicle	March 2010	June 2008	21

**C.2. Planned / Actual Boundaries for introduction of the Capability**

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
Utility Vehicle	***	-	***
Specialist Vehicle	***	-	***

**C.3. In-Service Date/Initial Operating Capability – not applicable**

**C.4. Full Operating Capability – not applicable**

**C.5. Support / Service / PFI Contract – not applicable**

**D. Section D: Performance**

**D.1. Maturity Measures – not applicable**

**D.2. Performance against Defence Lines of Development – not applicable**

**D.3. Performance against Key Performance Measures – not applicable**

**Team Responsible**

Helix

**Single point of accountability for Project Capability**

Head of Capability – Intelligence, Surveillance, Target Acquisition and Reconnaissance

**Senior Responsible Officer**

Head of Capability – Intelligence, Surveillance, Target Acquisition and Reconnaissance

**Number of Projects / Increments** 1**Current Status of Projects / Increments**

Pre-Main Investment Decision - Helix

**A. Section A: The Project****A.1. The Requirement**

Project Helix seeks to sustain the UK's airborne electronic surveillance capability, currently provided by the Nimrod R1 aircraft and associated ground elements, against an evolving and increasingly complex target set up to 2025. It will provide a rapidly deployable capability to support operations where it will be able to collect, analyse, fuse and disseminate a coherent and readily interpretable electronic surveillance picture in support of national, joint and coalition operations. This information will support targeting and combat identification.

**A.2. The Assessment Phase**

Whilst the original concept of the Project was for the procurement of a modern mission system to fit into existing Nimrod R1 aircraft, in the run up to Initial Gate approval, other platforms were introduced and have been subject to detailed assessment during development of the Main Gate business case. This assessment also considered ground analysis facilities, training facilities and a support solution to the planned Out of Service Date of 2025.

The Project received Initial Gate approval in August 2003. Eight contractors were invited to participate in a capability-based assessment and three were chosen to go forward to a competitive-based three-stage Assessment Phase in April 2004.

The first stage required the contractors to show their understanding of the requirement, and resulted in a down-select to two contractors in April 2005.

In the second stage the remaining two contractors were required to define the system to meet the capability, proving their design through operational effectiveness modelling. This resulted in a down-select to a preferred contractor in April 2007.

When the down-selected contractor commenced the final stage of the Assessment Phase, a risk reduction exercise, it became evident that the cost of supporting the Nimrod R1, as the planned host platform, was likely to be significantly greater than anticipated.

**A.3. Progress**

Due to this cost escalation a change in strategy was made in 2008 to focus the remainder of the Assessment Phase on an investigation of an alternative to the Nimrod R1 as the host platform. Work was undertaken to obtain a robust performance, time and cost envelope and a Main Gate Business Case was submitted to the Investment Approvals Board in December 2009 recommending procurement of the United States Air Force Rivet Joint System under a Foreign Military Sales arrangement.

After Defence Board consideration of the Project's cost and programme assumptions within the context of the Department's 2010 financial planning round, the Main Gate Business Case was updated through a Review Note and an Addendum. The updated Business Case was approved by the Investment Approvals Board in March 2010.

Signature of the Foreign Military Sales Letter of Offer and Acceptance followed that approval.

As from 1<sup>st</sup> April 2010 Helix will be known as Airseeker.

**A.4. Capability Risks**

Loss of the capability to be provided by Project Helix would remove the UK's ability to conduct theatre-level airborne electronic surveillance in the future. UK forces would be denied the ability to acquire timely intelligence from increasingly complex and rapidly changing electronic sources in the theatre domain. This would significantly reduce the ability to acquire, process and disseminate signals, communications and electronic intelligence to UK and coalition partners. Critically, the principal source of tactical data essential to the nature of current operations would be lost, substantially reducing the ability to conduct effective targeting and information operations.

**A.5. Associated Projects – Not applicable**

**A.6. Procurement Strategy**

Pre-Main Investment Decision Projects / Increments only				
Description	Procurement Route			
Helix	Competitive Assessment Phase - expanded to consider other options.			
Post-Main Investment Decision Projects / Increments only				
	Contractor	Contract Scope	Contract Type	Procurement Route
-	-	-	-	-

**A.7. Support Strategy – Not applicable**

**B. Section B: Cost**

**B.1. Cost of the Assessment Phase**

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
Helix	44	38	-6		
<b>Total</b>	<b>44</b>	<b>38</b>	<b>-6</b>		

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Helix	***		***

**B.3. Cost of the Demonstration and Manufacture Phase – Not applicable**

**B.4. Unit production cost – Not applicable**

**B.5. Progress against approved Support / Service / PFI Cost – Not applicable**

**B.6. Expenditure to date**

Description	Previous expenditure to 31 March	In-year expenditure	Total expenditure to 31 March 2010

HELIX

	2009		
Assessment Phase (£m)	37	1	38
Demonstration & Manufacture Phase (£m)	0	0	0
Support Phase / Service / PFI Cost (£m)	0	0	0
<b>Total Expenditure (£m)</b>	<b>37</b>	<b>1</b>	<b>38</b>

**C. Section C: Timescale**

**C.1. Duration of the Assessment Phase**

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Helix	March 2010	August 2003	79

**C.2. Planned / Actual Boundaries for introduction of the Capability**

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
Helix	***		***

**C.3. In-Service Date/Initial Operating Capability – Not applicable**

**C.4. Full Operating Capability – Not applicable**

**C.5. Support / Service / PFI Contract – Not applicable**

**D. Section D: Performance**

**D.1. Maturity Measures – Not applicable**

**D.2. Performance against Defence Lines of Development – Not applicable**

**D.3. Performance against Key Performance Measures – Not applicable**

## INDIRECT FIRE PRECISION ATTACK

### Team Responsible

Indirect Fire Precision Attack Project Team

### Single point of accountability for Project Capability

Capability (Deep Target Attack)

### Senior Responsible Officer

-

**Number of Projects / Increments**      5

### Current Status of Projects / Increments

- **Pre Main Investment Decision – Loitering Munitions, Guided Shell, Guided Multiple Launcher Rocket System, Large Long Range Rocket**
- **Post Main Investment Decision – Ballistic Sensor Fuzed Munition – cancellation approved by Investment Approvals Board 21 December 2009**

### A. Section A: The Project

#### A.1. **The Requirement**

Indirect Fire Precision Attack will provide, by incremental acquisition, a suite of munitions for indirect precision attack of static, mobile, and manoeuvring targets, extending to ranges in excess of 150 kilometres.

The capability required under Indirect Fire Precision Attack will be delivered through a structured programme of Assessment, Demonstration and Manufacturing phases. To support the incremental nature of the programme an overarching Assessment Phase is providing the evidence to support decisions on individual components via a series of Main Gate Business Cases.

The Assessment Phase is indicating that the Indirect Fire Precision Attack capability is likely to be achieved by a mixture of guided rockets, enhanced artillery shells and Loitering Munitions. They will carry a variety of payloads. Indirect Fire Precision Attack munitions will make use of a number of in-service platforms such as the Multiple Launch Rocket System and the AS90 self-propelled howitzer. The Loitering Munition early capability does not include a platform although the munitions are trailer mounted. Integration into a platform could be part of later Blocks (variants). The mix of munitions procured under the programme will have a range of In-Service dates: this multi-solution approach is being managed through an incremental procurement strategy.

The Main Gate Business Case for the first component, a 155mm Ballistic Sensor Fuzed Munition, was approved in July 2007 with a target in Service Date of September 2011. Cancellation of this project was approved by the Investment Approvals Board on 21 December 2009. This was as a result of technical difficulties resulting in the contractor being unable to achieve an acceptable level of technology maturity within the approved time and cost boundaries. Further information on the cancellation is given in Section E.

The second component is the Loitering Munition. Loitering Munitions can be launched in response to an identified target but can also be flown to re-programmable locations and maintained in a holding pattern until given a target. They are controlled by an operator who will have a real-time image of the intended target and surrounding area providing the ability to control the exact time, attitude and direction of the attack of a static, re-locatable or moving target, including providing a contribution to the formal target identification and confirmation process.

The remaining components are Guided Multiple Launch Rockets, Guided Shell and Large Long Range Rocket.



## A.2. The Assessment Phase

The Initial Gate Business Case for Indirect Fire Precision Attack was approved in May 2001. Following competition using a Capability Based Questionnaire, an Assessment Phase contract was awarded in May 2002 to a consortium of companies led by BAE Systems Strategic Capability Solutions (formerly known as BAE Systems Future Systems). This first Indirect Fire Precision Attack Assessment Phase was designed to provide, and iteratively update, a 'Route Map' to achieving the full Indirect Fire Precision Attack capability with recommendations about the type, quantities and mix of munitions. In line with the approved strategy for an incremental programme, a series of Assessment Phases are planned, each being approved by a separate Review Note. A contract for the second Indirect Fire Precision Attack Assessment Phase was placed with the BAE Systems led consortium in January 2007. This included the Loitering Munition Capability Demonstration programme, which completed in December 2008.

In light of the incremental procurement strategy, procurement of components will be approved via a series of Main Gate Business Cases. After each component receives a Main Gate approval, it will be managed as a separate project in its own right. However, each component will continue to be included in the ongoing operational analysis work, so that the overall mix and quantity of munitions to be procured can be refined as the programme progresses.

A contract for the Demonstration and Manufacture of the first component, Ballistic Sensor Fuzed Munition, was placed with Gesellschaft für Intelligente Wirksysteme GmbH in September 2007 and terminated in February 2010.

The Loitering Munition procurement strategy deviates from the above process in that approval is being sought as part of the Complex Weapons Programme. The capabilities/quantities of this munition are therefore additionally assessed in their contribution to the Complex Weapons portfolio.

## A.3. Progress

Approval for the cancellation of Ballistic Sensor Fuzed Munition was granted by the Investment Approvals Board on 21 December 2009 and the contract was terminated in February 2010

The Demonstration & Manufacture phase for the Loitering Munition was approved by the Investment Approvals Board in March 2010 as part of the Complex Weapons Interim Main Gate 1 submission.

Guided Multiple Launch Rocket System has a proposed first delivery date of June 2018. Guided Shell has an anticipated in service date of 2018 and the Large Long Range Rocket has an assumed in service date of 2020. These dates have changed since Major Project Report 09 due to budgetary factors arising in the 2009/10 planning round.

## A.4. Capability Risks

The impact of not having Indirect Fire Precision Attack is that the Land Component would not have independent capability to attack with precision, targets beyond the range of direct fire weapons such as tanks and anti-tank guided weapons. In this respect Attack Helicopters are considered as direct fire weapons as the helicopter crew have to be able to see the target. This means that the indirect fire systems would only suppress or neutralise enemy forces beyond the range of direct fire weapons by using un-guided munitions. This results in large wastage and a collateral damage risk which must be reduced.

Two key benefits of Indirect Fire Precision Attack are the ability to destroy targets that UK forces could previously only suppress and that UK forces can do so without causing significant collateral damage. That Indirect Fire Precision Attack is fully controlled by the Land Component is important because of the persistence and responsiveness of its' own capabilities. Whilst aircraft can deliver precision weapons against targets beyond the range of direct fire weapons they lack persistence and are generally not responsive; they have to be pre-planned or booked and can only stay on station for a short period.

INDIRECT FIRE PRECISION ATTACK

**A.5. Associated Projects**

Description	Critical to achievement of IOC	
	Project Title	Forecast IOC
-	-	-

**A.6. Procurement Strategy**

Pre-Main Investment Decision Projects / Increments only				
Description	Procurement Route			
Increment 2 – Loitering Munitions	Non-competitive contract – Team Complex Weapons			
Increment 3 – Guided Shell	Not yet known			
Increment 4 – Guided Multiple Launch Rocket System	Non-competitive as already in-service therefore off the shelf buy			
Increment 5 – Large Long Range Rocket	Not yet known			
Post-Main Investment Decision Projects / Increments only				
Description	Contractor	Contract Scope	Contract Type	Procurement Route
Increment 1 – Ballistic Sensor Fuzed Munition	Gesellschaft für Intelligente Wirksysteme GmbH	Demonstration & Manufacture	Firm Price	International Competition

**A.7. Support Strategy**

**A.7.1. Support / Service / PFI Contract Strategy**

Description	
Increment 1 – Ballistic Sensor Fuzed Munition	Support funding is in place but cancellation of this project was approved by the Investment Approvals Board in December 2009.

**B. Section B: Cost**

**B.1. Cost of the Assessment Phase**

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
Project – Indirect Fire Precision Attack (Assessment Phase 1)	24	47	-3		
Project – Indirect Fire Precision Attack (Assessment Phase 2)	26				
Increment 1 – Ballistic Sensor Fuzed Munition	-	-	-		
Increment 2 – Loitering Munitions (Approval 1)	39 <sup>4</sup>	92	-5		

<sup>4</sup> The approved cost figure is allocated from the Initial Gate Approval dated 3 June 2008 for the Complex Weapons programme.

INDIRECT FIRE PRECISION ATTACK

Increment 2 – Loitering Munitions (Approval 2)	58 <sup>5</sup>				
Increment 2a – Loitering Munition Capability Demonstration	23	19	-4		
<b>Total</b>	<b>170</b>	<b>158</b>	<b>-12</b>		

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Increment 1 – Ballistic Sensor Fuzed Munition	117	119	122
Increment 2 – Loitering Munitions	***		

**B.3. Cost of the Demonstration and Manufacture Phase**

Description	Approved Cost (£m)	Actual / Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
Increment 1 – Ballistic Sensor Fuzed Munition	122	10	-112	-
<b>Total</b>	<b>122</b>	<b>10</b>	<b>-112</b>	<b>-</b>

**B.3.1. Cost Variation against approved Cost of the Demonstration & Manufacture Phase**

**B.3.1.1. Ballistic Sensor Fuzed Munition**

Date	Variation (£m)	Factor	Reason for Variation
December 2009	-96	Technical Factors	The Investment Approvals Board approved cancellation of the project due to technical difficulties.
Historic	-13	Technical Factors	Risk reduction work resulted in a reduction in the amount of funding required outside the main contract
Historic	-3	Risk Differential	Difference between risk allowed for in the most likely (50%) and highest acceptable (80%) estimate at Main Gate.
<b>Net Variation</b>	<b>-112</b>		

**B.3.2. Operational Impact of Cost Variations of Demonstration & Manufacture Phase**

Description	
Ballistic Sensor Fuzed Munition	Without BSFM, the Land environment lacks an indirect fire anti-armour capability in some of the most demanding scenarios.

**B.4. Unit production cost – not applicable**

**B.5. Progress against approved Support / Service / PFI Cost**

Description	Approved Cost	Forecast cost	Variation	In-Year Variation
Ballistic Sensor Fuzed Munition	2	0	-2	-2

**B.5.1. Cost Variation against approved Support / Service / PFI Cost**

**B.5.1.1. Increment 1 - Ballistic Sensor Fuzed Munition**

<sup>5</sup> The approved cost figure is allocated from the Review Note Approval dated 23 December 2009 for the Complex Weapons programme.

INDIRECT FIRE PRECISION ATTACK

Date	Variation (£m)	Factor	Reason for Variation
December 2009	-2	Technical	Cancellation of project approved
<b>Total</b>	<b>-2</b>		

**B.5.2. Operational Impact of Support / Service / PFI Cost Variations – not applicable**

**B.6. Expenditure to date**

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
<b>Assessment Phase (£m)</b>	94	61	155
<b>Demonstration &amp; Manufacture Phase (£m)<sup>6</sup></b>	15	-5	10
<b>Support Phase / Service / PFI Cost (£m)</b>	0	0	0
<b>Total Expenditure (£m)</b>	<b>109</b>	<b>56</b>	<b>165</b>

**C. Section C: Timescale**

**C.1. Duration of the Assessment Phase**

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Project – Indirect Fire Precision Attack (Assessment Phase 1)	July 2006 <sup>7</sup>	May 2001	62
Project – Indirect Fire Precision Attack (Assessment Phase 2)	-	July 2006	Ongoing
Increment 1 – Ballistic Sensor Fuzed Munition	July 2007	-	-
Increment 2 – Loitering Munition	April 2010	June 2008	22
Increment 2a – Loitering Munition Capability Demonstration	-	July 2006	-

**C.2. Planned / Actual Boundaries for introduction of the Capability**

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
Increment 1 – Ballistic Sensor Fuzed Munition	Cancelled	Cancelled	Cancelled
Increment 2 – Loitering Munition	-	***	-

**C.3. In-Service Date/Initial Operating Capability**

**C.3.1. Definition**

Description	In-Service Date/Initial Operating Capability
Increment 1 – Ballistic Sensor Fuzed Munition	Cancelled.

<sup>6</sup> The demonstration and manufacture expenditure relates to the Ballistic Sensor Fuzed Munition. This expenditure was classed as Spend on Stock Purchases which does not count against the Department's capital or resource expenditure totals at the point when it occurs but instead, the Department is charged for the cost of the items in the future, when they are used.

<sup>7</sup> Date is Assessment Phase 2 approval, not Main Gate

INDIRECT FIRE PRECISION ATTACK

**C.3.2. Progress against approved Dates**

Description	Approved Date	Actual / Forecast Date	Variation	In-Year Variation
Increment 1 – Ballistic Sensor Fuzed Munition	July 2007	Cancelled	-	-
<b>Total</b>			-	-

**C.3.3. Timescale variation**

**C.3.3.1. Project**

Date	Variation	Factor	Reason for Variation
Historic	+3	Procurement Strategy	Uncertainty over Review Note approval outlining the way forward for this increment.
Historic	+3	Contracting Process	Delay in contract placement
Historic	-6	Risk Differential	Difference between the risk allowed for in the most likely (50%) and highest acceptable (85%) estimate at Main Gate
<b>Net Variation</b>	<b>0</b>		

**C.3.4. Other costs resulting from Timescale variation – not applicable**

**C.3.5. Operational Impact of In-Service Date/Initial Operating Capability variation**

Description	
Increment 1 - Ballistic Sensor Fuzed Munition	Without BSFM, the Land environment lacks an indirect fire anti-armour capability in some of the most demanding scenarios.

**C.4. Full Operating Capability**

**C.4.1. Definition**

Description	Full Operating Capability
Increment 1 – Ballistic Sensor Fuzed Munition	Cancelled

**C.4.2. Progress Report – not applicable**

**C.5. Support / Service / PFI Contract**

**C.5.1. Scope of Support / Service / PFI Contract**

Description	
Increment 1 – Ballistic Sensor Fuzed Munition	Cancelled

**C.5.2. Progress against approved Support / Service / PFI Contract Go-Live Date – not applicable**

**C.5.3. Progress against approved End of Support / Service / PFI Contract Date – not applicable**

**C.5.4. Operational Impact of Support / Service / PFI Support Contract variation – not applicable**

**D. Section D: Performance**

**D.1. Maturity Measures – not applicable**

**D.2. Performance against Defence Lines of Development – not applicable**

**D.3. Performance against Key Performance Measures**

**D.3.1. Increment 1 - Ballistic Sensor Fuzed Munition**

## INDIRECT FIRE PRECISION ATTACK

### D.3.1.1. Performance against Key Performance Measures

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
1	-	The fuze shall be induction settable in accordance with NATO standards		-	Yes
2	-	The maximum range of the munition fired from AS90 39 calibre shall be no less than ***		-	Yes
3	-	The munition's sub-munitions shall individually achieve a kill probability at least *** against main battle tanks under normal conditions		-	Yes
4	-	The munition shall be compatible with the UK I-series charge system		-	Yes
5	-	The munition shall be capable of being fired from the UK in-service AS90 39 calibre platform		-	Yes
6	-	The munition's calibrated fire control model (data), suitably formatted for integration into the NATO standard format, shall be supplied		-	Yes
7	-	The munition's data shall be integrated into Fire Control Application			Yes
8	-	The munition on delivery to service shall, when fired, have a probability of correct dispensing and functioning of all sub munitions of no less than 90%			Yes
9	-	The munition shall be supplied in packaging conforming to the packaging of Ammunition and Explosives standard.			Yes
10		The munition shall be capable of use in the following climatic categories : A2, A3, B1, B2, C0 & C1			Yes
11		Having failed to find a valid target, the sub munitions shall each have a self destruct function			Yes
12		The munition shall be capable of being rendered safe in accordance with UK render safe procedures			Yes
13		The munition shall be Insensitive Munition compliant.			Yes
Percentage currently forecast to be met			0%		
In-Year Change			92%		

### D.3.1.2. Key Performance Measures Variation

Date	Key Measure)	Factor	Reason for Variation
December 2009	13	Technical Factors <sup>8</sup>	Cancellation approved December 2009

### D.3.1.3. Operational Impact of variation

KPM	Date	Status	Operational impact of variation
13	December 2009	Not to be met	Without BSFM, the Land environment lacks an indirect fire anti-armour capability in some of the most demanding scenarios. <sup>9</sup>
<b>Total</b>			

**D.3.2. Support Contract** – not applicable

### E. Section E: Cancellation

<sup>8</sup> See A.5 & A.7

<sup>9</sup> See D3.1

INDIRECT FIRE PRECISION ATTACK

Increment 1 – Ballistic Sensor Fuzed Munition	A Review Note was submitted to the Investment Approvals Board in September 2009 recommending cancellation of this project due to technical difficulties. Approval was given in December 2009.
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## JOINT MILITARY AIR TRAFFIC SERVICES

### Team Responsible

Air Command and Control Systems Delivery Team

### Single point of accountability for Project Capability

Head Equipment Capability – Command, Control & Information Infrastructure

### Senior Responsible Officer

Number of Projects / Increments 1

### Current Status of Projects / Increments

- **Pre Main Investment Decision – Joint Military Air Traffic Services /Assessment Phase 2**

### A. Section A: The Project

#### A.1. The Requirement

The Joint Military Air Traffic Services project seeks to sustain the provision of Air Traffic Management at MOD Airfields and Air Weapons Ranges through the provision of new capability to meet new regulatory airspace management requirements set by the Civil Aviation Authority, addressing equipment obsolescence in the air traffic inventory and through the more efficient delivery of support services. The project will provide air traffic services to military and civilian aircraft arriving at, departing from and operating within the immediate vicinity or confines of, MOD aerodromes (United Kingdom, overseas permanent and deployed) and at air weapons ranges.

#### A.2. The Assessment Phase

The assessment phase of the Joint Military Air Traffic Services project is being conducted in two parts. The first part (Assessment Phase 1) was approved on the 17<sup>th</sup> January 2008. The purpose was to both express the military air traffic services in output terms through the development of an output based specification and to determine the most appropriate and cost effective delivery solution for this service. In addition, the project has captured data on the condition of the existing air traffic control infrastructure (control towers, radar towers, radio masts etc) as well as the number of people employed in supporting the service. Part 1 of the Assessment Phase completed in October 2009 with the submission of a Review Note seeking approval for Part 2.

Part 2 of the Assessment Phase enables formal industry engagement. The intention is to use the competitive dialogue process to determine the preferred bidder and delivery solution for the Joint Military Air Traffic Services within the delivery framework developed during Assessment Phase Part 1.

#### A.3. Progress

A Review Note Industry Engagement was issued in December 2009 seeking approval to initiate formal industry engagement and release of an additional £6M to provide specialist technical support and external assistance to the competitive dialogue process. Approval for Part 2 of the Assessment Phase was given on 22 February 2010.

#### A.4. Capability Risks

Much of the equipment that currently provides air traffic services to MOD airfields and ranges is in excess of 20 years old and is obsolete. Increasing regulation of United Kingdom airspace requires the implementation of new radar surveillance capability. Failure to invest in this capability will ultimately reduce the level of air traffic service provision to these locations. This will reduce the ability of all three Services to train and fly and hence the ability to project air power wherever and whenever it is required.



JOINT MILITARY AIR TRAFFIC SERVICES

**A.5. Associated Projects - Not Applicable**

**A.6. Procurement Strategy**

Pre-Main Investment Decision Projects / Increments only				
Description	Procurement Route			
Project	Public Private Partnership such as Strategic Partnering. Delivery Partner and solution to be sought through competitive dialogue.			
Post-Main Investment Decision Projects / Increments only				
	Contractor	Contract Scope	Contract Type	Procurement Route
-	-	-	-	-

**A.7. Support Strategy**

**A.7.1. Support / Service / PFI Contract Strategy**

Description				
Support Strategy	The current planning assumption is for a full Air Traffic Management Service Provision where the provider determines and is responsible for the composition and delivery of the support element required to maintain the service, with an embedded military core to support deployed operations.			
	Contractor	Contract Scope	Contract Type	Procurement Route
-	-	-	-	-

**B. Section B: Cost**

**B.1. Cost of the Assessment Phase**

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
Assessment Phase 1	3	3	0	-	-
Assessment Phase 2	6	5	-1	-	-
<b>Total</b>	<b>9</b>	<b>8</b>	<b>-1</b>	<b>-</b>	<b>-</b>

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Joint Military Air Traffic Services	***	-	***

**B.3. Cost of the Demonstration and Manufacture Phase - Not Applicable**

**B.4. Unit production cost - Not Applicable**

**B.5. Progress against approved Support / Service / PFI Cost - Not Applicable**

**B.6. Expenditure to date**

JOINT MILITARY AIR TRAFFIC SERVICES

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
Assessment Phase (£m)	2	1	3
Demonstration & Manufacture Phase (£m)	0	0	0
Support Phase/Service/PFI Cost (£m)	0	0	0
<b>Total Expenditure (£m)</b>	<b>2</b>	<b>1</b>	<b>3</b>

**C. Section C: Timescale**

**C.1. Duration of the Assessment Phase**

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Joint Military Air Traffic Services	***	***	***

**C.2. Planned / Actual Boundaries for introduction of the Capability**

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
JMATS Initial Operational Capability	***	-	-

**C.3. In-Service Date/Initial Operating Capability** - Not Applicable

**C.4. Full Operating Capability** - Not Applicable

**C.5. Support / Service / PFI Contract** - Not Applicable

**D. Section D: Performance**

**D.1. Maturity Measures** - Not Applicable

**D.2. Performance against Defence Lines of Development** - Not Applicable

**D.3. Performance against Key Performance Measures** - Not Applicable

**Team Responsible**

AFLOAT SUPPORT

**Single point of accountability for Project Capability**

Head of Capability (Expeditionary Logistics & Support)

**Senior Responsible Officer**

Head of Capability (Expeditionary Logistics & Support)

**Number of Projects / Increments**

**Current Status of Projects / Increments**

- **Pre Main Investment Decision – [Military Afloat Reach and Sustainability]**

**A. Section A: The Project**

**A.1. The Requirement**

The Military Afloat Reach and Sustainability programme will provide afloat logistic support to UK and allied maritime task groups at sea and their amphibious components operating ashore. Although not strictly a one-for-one replacement programme, new vessels will incrementally replace much of the existing Royal Fleet Auxiliary flotilla, as ships enter and leave service respectively.

The Military Afloat Reach and Sustainability capability is designed to support three distinct types of maritime task group: Carrier Strike, Littoral Manoeuvre and Maritime Security. The demands of each differ significantly, but are all composed of three common elements:

**Bulk Consumables** - fuel and potable water which are transferred by hose.

**Non-bulk consumables** - Food, ammunition and general stores. Solid cargo which is transferred in unit loads, either ship to ship or ship to shore.

**Forward Aviation Support** - The provision of helicopter basing and operating facilities to accommodate some of the task group's aircraft or to provide operational flexibility during a campaign.

An early decision was taken to base the system solution on three classes of ship:

**Tanker** - Bulk consumables and Forward Aviation Support for all task groups. Limited non-bulk consumables capacity to support the small Maritime Security groups.

**Fleet Solid Support Ship** - Non-bulk consumables and Forward Aviation Support, optimised for the Carrier Strike group.

**Amphibious Combat Stores Ship** – previously referred to as Joint Sea-Based Logistics Ship - Non-bulk consumables and Forward Aviation Support, optimised for the Littoral Manoeuvre group.

The Military Afloat Reach and Sustainability capability will be in service until around 2047 and as such the solution will be designed to accommodate the requirements of current and known future force structures, including Type 45, the Queen Elizabeth Class aircraft carriers, Joint Combat Aircraft and Future Surface Combatant .

The capability to be provided is essential to the evolving logistic support needs of the Royal Navy. The proposed procurement profile of Military Afloat Reach and Sustainability ships has been matched to this need, the initial focus being on the double-hulled Fleet Tankers which are required in order to comply with International Maritime environmental standards.

**A.2. The Assessment Phase**

The Military Afloat Reach and Sustainability programme received formal approval to enter its Assessment Phase in July 2005 based on an Alliance strategy.

Between March and September 2007, the Military Afloat Reach and Sustainability procurement strategy was reviewed to reflect the need to procure the Tanker element of the programme in order to comply with International Maritime legislation. The Alliance strategy and the competition to choose an Integrator was terminated in May 2007. In December 2007, Ministerial approval was given for a new strategy based on a 'Competitive and Adaptive' approach and an open competition was launched for the design and build of up to

## MILITARY AFLOAT AND REACH SUSTAINABILITY

six Fleet Tankers. In addition, Minister approved the designation and delegation of the Heavy Replenishment at Sea project as a separate Category D project. Fleet Solid Support and Amphibious Combat Stores will now form a separate strategy to be considered with wider UK industrial interests.

The approved budget for the Military Afloat Reach and Sustainability Assessment Phase is **£44m** and the current forecast for the Assessment Phase, including early design and requirement work for Fleet Solid Support and Amphibious Combat Stores vessels is \*\*\* (Tanker\*\*\*, Fleet Solid Support, \*\*\* and Amphibious Combat Stores, \*\*\*).

Due to the planned phased nature of the project, support and oversight for MARS Tankers and further design work on subsequent classes will take place after the MARS Tanker main investment decision, and the current total forecast for this later work is \*\*\*, \*\*\* for MARS Tankers,\*\*\* for Fleet Solid Support and \*\*\*\*for Amphibious Combat Stores vessels) bringing the total expected cost of Assessment work and later design for future classes to \*\*\*

In May 2008, the Secretary of State for Defence announced that four bidders had been shortlisted for the next stage of the competition. They were Navantia (Spain); Fincantieri (Italy), Hyundai Heavy Industries (Republic of Korea) and a consortium led by BVT(UK) with BMT and Daewoo Shipbuilding and Marine Engineering (Republic of Korea). Initial bids were received.

Between May and December 2008 the Department carried out an examination of its equipment programme. As a result of this examination the Secretary of State for Defence announced that there was scope for considering alternative approaches for the Military Afloat Reach and Sustainability programme likely to involve the deferral of the Tanker element. The competition was formally closed in March 2009. A review of the requirements and procurement strategy was undertaken. This review concluded that a more open procurement strategy that considers a range of possible solutions and which take account of current market conditions is more likely to secure best value for money for the MOD.

### **A.3. Progress**

Following Ministerial approval a new competition was launched in October 2009. Following assessment of Pre Qualification Questionnaires six companies have been invited to proceed to the next stage of the competition. The companies are: A&P Group Limited (UK), Daewoo Shipbuilding and Marine Engineering (Republic of Korea), Fincantieri (Italy), Flensburger Schiffbau-Gesellschaft (Germany), Hyundai Heavy Industries (Republic of Korea) and Knutsen OAS(UK) Limited.

### **A.4. Capability Risks**

The Military Afloat Reach and Sustainability programme will deliver future Royal Fleet Auxiliary ships, replacing the current capability, to support the future Royal Navy. Without the support of these ships, the ability of the Royal Navy to carry out global operations will be severely restricted. Double hulled naval tankers are required as soon as is practicable to comply with international maritime legislation; the Royal Fleet Auxiliary currently operates two double hulled tankers and six single hulled tankers under exemption from legislation. All Royal Fleet Auxiliary ships are maintained to UK regulatory and classifications standards; should this certification and classification be withdrawn for single hulled tankers, their operation would cease immediately leading to severe operational limitations on the ability of the Royal Navy to operate worldwide and in anything but the most benign environments. Foreign nations have already begun to deny port access for single hulled tankers and this situation will be exacerbated as a consequence of any environmental incident, MOD shipping related or not. Programming for operations takes account of environmental restrictions as well as limitations on ships due to their material state; for example some of the older ships are unable to operate in colder climates due to the steel in their ageing hulls becoming brittle. These ships will be replaced as the double hulled tanker element of the MARS Programme is delivered.

MILITARY AFLOAT AND REACH SUSTAINABILITY

A.5. Associated Projects – Not applicable

A.6. Procurement Strategy

Pre-Main Investment Decision Projects / Increments only				
Description	Procurement Route			
MARS Tanker	International Competition, Competitive Dialogue			
Post-Main Investment Decision Projects / Increments only				
	Contractor	Contract Scope	Contract Type	Procurement Route
-	-	-	-	-

A.7. Support Strategy – Not Applicable

B. Section B: Cost

B.1. Cost of the Assessment Phase

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
Military Afloat Reach and Sustainability	44	*** <sup>10</sup>	***	-	-
<b>Total</b>	<b>44</b>	<b>***</b>	<b>***</b>	<b>-</b>	<b>-</b>

B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Military Afloat Reach and Sustainability	2782	-	3888

B.3. Cost of the Demonstration and Manufacture Phase – Not applicable

B.4. Unit production cost – not applicable

B.5. Progress against approved Support / Service / PFI Cost – not applicable

B.6. Expenditure to date

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
Assessment Phase (£m)	13	2	15
Demonstration & Manufacture Phase (£m)			
Support Phase / Service / PFI Cost (£m)			
<b>Total Expenditure (£m)</b>	<b>13</b>	<b>2</b>	<b>15</b>

<sup>10</sup> Includes forecasted \*\*\* for post Main Gate Assessment work that is not yet approved. The actual Military Afloat Reach and Sustainability Assessment Phase expenditure is within budget.

MILITARY AFLOAT AND REACH SUSTAINABILITY

**C. Section C: Timescale**

**C.1. Duration of the Assessment Phase**

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Military Afloat Reach and Sustainability	***	July 2005	***

**C.2. Planned / Actual Boundaries for introduction of the Capability**

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
Military Afloat Reach and Sustainability	***	-	***

**C.3. In-Service Date/Initial Operating Capability – not applicable**

**C.4. Full Operating Capability – not applicable**

**C.5. Support / Service / PFI Contract – not applicable**

**D. Section D: Performance – not applicable**

## OPERATIONAL UTILITY VEHICLE SYSTEM

### Team Responsible

General Support Vehicles Project Team

### Single point of accountability for Project Capability

Equipment Capability Expeditionary Logistic Support

### Senior Responsible Officer

CAP ELS – Brig Paul Jaques

**Number of Projects /Increments** 1

### Current Status of Projects / Increments

- **Pre Main Investment – Operational Utility Vehicle System**

#### A. Section A: The Project

##### A.1. The Requirement

The requirement for Operational Utility Vehicle System was reviewed in 2007 by the Army, as lead user, when the need for vehicles with enhanced protection, capacity and mobility was identified. The Single Statement of User Need stated that 'Operational Utility Vehicle System would provide a robust, easily supported system, comprising operational utility vehicles that are able to carry light cargo (up to six tonne) or small groups of personnel, integrate as many special-to-role systems as possible and which can operate in diverse climatic and topographical conditions worldwide, in order to support and contribute to land (including land air) and littoral manoeuvre operations' This capability would be a key supporting enabler for offensive combat operations providing the following roles; unit level logistic cargo vehicle, systems carrier, mobile command, liaison and personnel transport.

##### A.2. The Assessment Phase

Initial Gate was approved 1 July 2008. The Assessment Phase was split into three stages and considered the benefits of mixed fleets and procuring Fitted For But Not With capabilities against the full requirement. Value for Money was demonstrated in the Combined Operational Effectiveness Investment Appraisal.

Assessment Phase 1- Stage one concentrated on fully understanding the User's requirement and developing and demonstrating technologies, systems and system interactions, to mitigate identified risks. The focus of this work was capacity and protection to assist in identifying performance boundaries used to inform the scaling (roles and variants) of the fleet size. In tandem, further analysis was conducted to identify the optimum support solution, whilst cross programme coherence was monitored and maintained. The output from Assessment Phase 1 was to inform the decision as to the scaling of the new Operational Utility Vehicle fleet, and whether any in-service vehicles were needed beyond their current Out of Service Date.

(All Vehicles). Will need to build on the Research & Development in Assessment Phase 1 by using Technology Demonstrators to develop the overall capability, in order to mature the System Requirement Document.

(New vehicles) Invitation(s) to Tender will be run for the 'new' Operational Utility Vehicles System capability (vehicle acquisition and support solution) in mid Assessment Phase 2 to enable initial capability demonstration and assurance testing of reliability and durability, to be conducted in the remainder of Assessment Phase 2 and Assessment Phase 3.

(Update in-service vehicles). If required, the Design Authorities (DAs) will be tasked to develop an upgraded design solution for aspects of the in-service fleet in consultation with subject matter experts. The work to upgrade the fleet would be completed towards the end of Assessment Phase 2 to identify a preferred bidder so that Main Gate (A) approval can be sought to commence manufacture in parallel with Assessment Phase 3.

Assessment Phase 3- Stage 3 will concentrate on demonstration capability and assurance testing to identify a preferred bidder for Main Gate (B).

## OPERATIONAL UTILITY VEHICLE SYSTEM

### A.3. Progress

As announced by Minister for Defence Equipment the Operational Utility Vehicle System programme was deferred for 2 years as part of the Departments 2010 financial planning round. On current assumptions, the competition would re-start in 2012.

### A.4. Capability Risks

Any deployed force operating in the land environment now requires a range of characteristics to operate successfully. Analysis concluded that the current in-service utility vehicle fleet cannot provide the required level of capability in terms of quantity or effectiveness in terms of protection, power and capacity. Changes in legislation emissions and vibration have also led to elements of the utility fleet (Reynolds Boughton 44 and Land Rover Defender vehicles) becoming non-compliant, necessitating modernisation or replacement.

The risk of not procuring the Operational Utility Vehicle System capability is:

Insufficient capacity (overloaded vehicles)

Inadequate protection

Not all the current vehicle fleet can be fitted with communications systems

Mobility limitations

Obsolescence and alignment with other vehicle platforms

Capability Risk mitigation:

On current plans the Operational Utility Vehicle System competition will be restarted in 2012. In the meantime our Armed Forces on operations will use the protected Tactical Support Vehicles ordered under the Urgent Operational Requirement process.

### A.5. Associated Projects – Not Applicable

### A.6. Procurement Strategy

Pre-Main Investment Decision Projects / Increments only				
Description	Procurement Route			
Operational Utility Vehicle System	Competitive Tender			
Post-Main Investment Decision Projects / Increments only				
	Contractor	Contract Scope	Contract Type	Procurement Route
-	-	-	-	-

### A.7. Support Strategy

#### A.7.1. Support / Service / PFI Contract Strategy

Description				
Operational Utility Vehicle System	Support options to be detailed in the Invitation To Tender to which industry will be requested to respond.			
	Contractor	Contract Scope	Contract Type	Procurement Route
-	-	-	-	-

## B. Section B: Cost

### B.1. Cost of the Assessment Phase

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement	Actual Cost as a proportion of total estimated procurement



**OPERATIONAL UTILITY VEHICLE SYSTEM**

				<b>expenditure (%)</b>	<b>expenditure (%)</b>
Operational Utility Vehicle System	13	10	-3	-	-
<b>Total</b>	<b>13</b>	<b>10</b>	<b>-3</b>	<b>-</b>	<b>-</b>

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI**

<b>Description</b>	<b>Lowest Forecast / Approved</b>	<b>Budgeted For (Post-Main Investment Decision Projects only)</b>	<b>Highest Forecast / Approved</b>
Operational Utility Vehicle System	630	-	-

**B.3. Cost of the Demonstration and Manufacture Phase**

<b>Description</b>	<b>Approved Cost (£m)</b>	<b>Actual / Forecast cost (£m)</b>	<b>Variation (£m)</b>	<b>In-Year Variation (£m)</b>
Operational Utility Vehicle System	-	-	-	-
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

**B.3.1. Cost Variation against approved Cost of the Demonstration and Manufacture Phase – Not Applicable**

**B.3.2. Operational Impact of Cost Variations of Demonstration and Manufacture Phase – Not Applicable**

**B.4. Unit production cost – Not Applicable**

**B.5. Progress against approved Support / Service / PFI Cost – Not Applicable**

**B.6 Expenditure to date**

<b>Description</b>	<b>Previous expenditure to 31 March 2009</b>	<b>In-year expenditure</b>	<b>Total expenditure to 31 March 2010</b>
<b>Assessment Phase (£m)</b>	3	2	5
<b>Demonstration &amp; Manufacture Phase (£m)</b>	0	0	0
<b>Support Phase / Service / PFI Cost (£m)</b>	0	0	0
<b>Total Expenditure (£m)</b>	<b>3</b>	<b>2</b>	<b>5</b>

**C. Section C: Timescale**

**C.1. Duration of the Assessment Phase**

<b>Description</b>	<b>Forecast / Actual Date of Main Gate Approval</b>	<b>Date of Initial Gate Approval</b>	<b>Length of Assessment Phase (months)</b>
Operational Utility Vehicle System	December 2010	July 2008	29

**C.2. Planned / Actual Boundaries for introduction of the Capability**

<b>Description</b>	<b>Earliest Forecast / Approved</b>	<b>Budgeted For (Post-Main Investment Decision Projects only)</b>	<b>Latest Forecast / Approved</b>
IG Estimate	***	-	***

**C.3. In-Service Date/Initial Operating Capability – Not Applicable**

OPERATIONAL UTILITY VEHICLE SYSTEM

- C.4. Full Operating Capability – Not Applicable**
- C.5. Support / Service / PFI Contract – Not Applicable**
- D. Section D: Performance – Not Applicable**

## SEARCH AND RESCUE HELICOPTER

### Team Responsible

Search and Rescue Helicopter Project Team

### Single point of accountability for Project Capability

Director (Battlespace Manoeuvre)

### Senior Responsible Officer

Head of Air & Littoral Manoeuvre Capability & Maritime and Coastguard Agency Director of Corporate Support

### Number of Projects / Increments 1

### Current Status of Projects / Increments

- **Pre Main Investment Decision – Search & Rescue Helicopter**

### A. Section A: The Project

#### A.1. The Requirement

Search and Rescue – Helicopter is a joint MOD and Maritime & Coastguard Agency (an Agency of the Department for Transport) programme. It seeks to replace the current Search and Rescue capability, provided around the UK by the Royal Navy and the Royal Air Force, using Sea King Helicopters, and through the Maritime & Coastguard Agency service contract. It is planned to introduce the new service progressively over the coming decade, as the Maritime & Coastguard Agency contract expires and the Sea Kings come to the end of their planned lives. Following MOD and Department for Transport Ministerial approvals to enter Assessment Phase 2, a competition under the PFI, was launched in May 2006 under European Union procurement regulations using the Competitive Dialogue process. Following extensive evaluation over several rounds of bidding, Competitive Dialogue was closed in December 2009, and the Soteria consortium was announced as preferred bidder in February 2010.

#### A.2. The Assessment Phase

The Search and Rescue – Helicopter Assessment Phase was approved in 2 Phases – Assessment Phase 1 and Assessment Phase 2. Assessment Phase 1 considered the range of procurement options as outlined in the Search and Rescue – Helicopter Initial Gate approval, resulting in a recommendation for a joint MOD/Maritime and Coastguard Agency competitive PFI procurement strategy. MOD Ministerial approval for Assessment Phase 2 to implement the joint MOD/Maritime & Coastguard Agency competitive PFI procurement strategy was gained via the Future Rotorcraft Capability Initial Gate Business Case and followed by Department for Transport Ministerial approval of a parallel Business Case. A joint Ministerial announcement of the PFI Procurement Strategy was made in May 2006 and the competition was launched through the Official Journal of the European Union.

Four consortia were short-listed following Assessment of their Pre Qualification Questionnaires (PQQ) in November 2006: Augusta Westland; CHC Scotia Ltd/Thales UK Ltd (now known as “Soteria”); AirKnight (Lockheed Martin UK Ltd/VT Group Ltd/British International Helicopters Ltd); and UK Air Rescue (Bristow Helicopters Ltd/FBH Ltd/Serco Ltd). The Competitive Dialogue with industry formally commenced in February 2007. In October 2007 Augusta Westland withdrew as an independent participant from the competition. Westland Helicopters Ltd was subsequently admitted to the UK Air Rescue consortium in January 2008 following the submission of a Pre Qualification Questionnaire addendum. Industry’s costed solutions for the first round of bidding were submitted in January 2008, and, following the withdrawal, for commercial reasons, of the UK Air Rescue consortia in September 2008, the two remaining consortia submitted their second round bids, against a refined requirement to utilise 12 bases around the UK, in November 2008.

In February 2009, the two consortia issued respective press releases proposing their Search and Rescue – Helicopter aircraft solutions: The Airknight consortia selected a single fleet of Eurocopter EC225s; the Soteria consortia selected a single fleet of Sikorsky S-92s. Both bidders submitted their final proposals in December 2009. The Assessment phase concluded with evaluation of the final round of bids in January 2010, and the Soteria consortium was announced as preferred bidder in February 2010. Assessment phase costs were split in the ratio MOD 2/3 and MCA 1/3. All costs in the PSS are the MOD cost share only.

## SEARCH AND RESCUE HELICOPTER

### A.3. Progress

Since MPR 09 the Assessment phase has concluded with the achievement of Main Gate and the selection of Soteria as preferred bidder for the Search and Rescue – Helicopter PFI contract. An Information note or Review note will be submitted to Department for Transport and MOD approving authorities immediately prior to contract signature, setting the final performance, time and cost parameters of the project. Contract placement is planned for later in 2010.

### A.4. Capability Risks

The UK Search and Rescue organisation is derived from the UK Governments adherence to various National and International maritime conventions dating from 1944 to 1979. Failure to replace the current service would risk contravening this established legal and moral duty. Consequently, the two organisations are combining their aviation acquisition expertise to implement a joint, harmonised replacement for the current service.

### A.5. Associated Projects – Not Applicable

### A.6. Procurement Strategy

Pre-Main Investment Decision Projects / Increments only				
Description	Procurement Route			
Assessment Phase 1	Assessment of five procurement strategy options			
Assessment Phase 2	Competitive PFI			
Post-Main Investment Decision Projects / Increments only				
	Contractor	Contract Scope	Contract Type	Procurement Route
-	-	-	-	-

### A.7. Support Strategy

#### A.7.1. Support / Service / PFI Contract Strategy

Description				
Search & Rescue Helicopter	Under the PFI deal, it is anticipated that the supplier will be responsible for providing support			
	Contractor	Contract Scope	Contract Type	Procurement Route
-	-	-	-	-

## B. Section B: Cost

### B.1. Cost of the Assessment Phase

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
Assessment Phase 1	1.3	0.4	-0.9		
Assessment Phase 2	9.9	6.8	-3.1		
<b>Total</b>	<b>11.2</b>	<b>7.2</b>	<b>-4.0</b>		

## SEARCH AND RESCUE HELICOPTER

### B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Search and Rescue – Helicopter PFI	***		***

**B.3. Cost of the Demonstration and Manufacture Phase – Not Applicable**

**B.4. Unit production cost – Not Applicable**

**B.5. Progress against approved Support / Service / PFI Cost – Not Applicable**

### B.6. Expenditure to date

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
Assessment Phase (£m)	4.6	2.6	7.2
Demonstration & Manufacture Phase (£m)	-	-	-
Support Phase / Service / PFI Cost (£m)	-	-	-
<b>Total Expenditure (£m)</b>	<b>4.6</b>	<b>2.6</b>	<b>7.2</b>

## C. Section C: Timescale

### C.1. Duration of the Assessment Phase

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Assessment Phase 1	August 2005	May 2003	***
Assessment Phase 2	***	August 2005	***

### C.2. Planned / Actual Boundaries for introduction of the Capability

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
Search and Rescue – Helicopter	***		***

### C.3. In-Service Date/Initial Operating Capability

#### C.3.1. Definition

Description	In-Service Date/Initial Operating Capability
Search and Rescue – Helicopter	24 months after contract signature.

**C.3.2. Progress against approved Dates – Not Applicable**

**C.3.3. Timescale variation – Not Applicable**

**C.3.4. Other costs resulting from Timescale variation – Not Applicable**

**C.3.5. Operational Impact of In-Service Date/Initial Operating Capability variation – Not Applicable**

SEARCH AND RESCUE HELICOPTER

- C.4. Full Operating Capability – Not Applicable**
- C.5. Support / Service / PFI Contract – Not Applicable**
  
- D. Section D: Performance – Not Applicable**

**Team Responsible**

Sentry Project Team

**Single point of accountability for Project Capability**

Head of Intelligence, Surveillance, Target Acquisition and Reconnaissance Capability

**Senior Responsible Officer**

Head of Intelligence, Surveillance, Target Acquisition and Reconnaissance Capability

**Number of Projects / Increments**

One

**Current Status of Projects / Increments****Pre Main Investment Decision – Project Eagle****A. Section A: The Project****A.1. The Requirement**

The Royal Air Force's fleet of Sentry [Airborne Early Warning Mk 1] aircraft entered service in 1992 to provide an Airborne Early Warning capability, through extended surveillance for air attack and limited functions to control and direct air operations. During successive operations it was identified that an Air Warning and Control System capability (to carry out surveillance, provide communications and command and control air battles) was required. The lack of an Air Battle Management capability (including the control of defensive and offensive fighter aircraft, management of air-to-air refuelling and coordinating friendly aircraft to ensure their safety of flight) and deficiencies in Electronic Support Measures (sensors for detection of electronic pulses emitted by aircraft, missiles, ground based and maritime radar systems), together with equipment obsolescence, were identified as barriers to providing future Defence capability. Project Eagle was established to meet this Air Battle Management capability need.

During the Assessment Phase of Project Eagle the Sentry Project Team, was unable to identify an affordable programme that would address the requirement. The requirement was then de-scoped to an obsolescence management programme, that would address the increasing obsolescence issues and sustain the current and mandated capability, to be known as the Sustain Sentry Programme. The requirement for the Sustain Sentry Programme is to maintain capability at no less than the current levels, introducing a Mode S Identification Friend or Foe Interrogator (system of aircraft identification) initially and then addressing obsolescence in three areas: Communications; Mission System; and Electronic Support Measures.

**A.2. The Assessment Phase**

The approval of the Project Eagle Initial Gate Business Case endorsed a competitive acquisition strategy and, in January 2005, six potential Prime Contractors were invited to submit proposals to satisfy the Eagle capability and user needs, based on a detailed set of system requirements.

In May 2005, recognising that some elements of the communications systems on the aircraft were forecast to become obsolete, the scope of Project Eagle was amended to include the replacement of those elements. This was approved by the Investment Approvals Board in August 2005.

In May 2006, the Investment Approvals Board noted the Project Review Board's decision to down-select from six to two potential Prime Contractors: Boeing and Lockheed Martin. It was intended that both of these companies would be invited to construct a technical demonstrator for the mission system and refine their earlier proposals for the Electronic Support Measures and communication system replacements. However, in July 2006, following a MoD financial commitment review, the award of contracts for the technical demonstration phase was cancelled. This resulted in the cessation of any further development by Lockheed Martin, whilst Boeing was fortunate in that it was able to continue to develop its system (known as Block 40/45) as part of a separately funded requirement for the United States Air Force.

## EAGLE/SUSTAIN SENTRY

In October 2006, the Eagle Project Board determined that the risks associated with the acquisition of the Boeing solution were acceptable and instructed the Eagle Project Team to cancel the existing competition based procurement strategy and consider the acquisition of the Eagle capability, based on the Boeing solution.

In parallel, during late 2006/early 2007 two funding options were proposed by the project sponsor; one to defer the project by four years and one for two years. The four year deferral option was later withdrawn; primarily because of the adverse affect on Defence capability and the projected cost of maintaining the increasingly obsolescent legacy systems. The two year deferral option was amended to a 'de-scope' option on the basis that it would be possible to change some elements of the UK requirement to take advantage of the Boeing Block 40/45 solution, being taken forward for the United States Air Force. It was considered that this was the only way in which the necessary capability could be acquired and still maintain the planned In-Service Date. The Defence Management Board approved an increased and revised funding profile, in January 2007, and the argument for a single source approach was approved by Review Note to the Investment Approvals Board in March 2007.

During the early part of 2008 Project Eagle was included in a MOD departmental Spending Review Programme that resulted in the recommendation to defer the project by two years. This recommendation was approved at Ministerial level in April 2008.

As part of the same Spending Review, an Option was taken to provide the Sentry aircraft with a Mode S Identification Friend or Foe Interrogation Capability. In January 2009 the Sentry Project Board determined that the Boeing Block 40/45 solution was not affordable. A full capability upgrade was no longer seen as viable and an Option was implemented in Spending Review 2009 that descope Project Eagle. It was apparent that the focus of Sentry activity needed to shift to capability sustainment in order to deliver the Civil Aviation Authority-mandated Mode S Identification Friend or Foe Interrogation update and to address significant obsolescence issues within the aircraft's mission communications fit.

The Mode S Project proceeded to Main Gate independently to meet the Civil Aviation Authority mandated deadline for the introduction of this essential capability, and expenditure of £52.5 M approved by the Defence Equipment and Support Chief of Staff in January 2010. The approved not to exceed In-Service Date is July 2012, the most likely Initial Operating Capability consisting of three aircraft and sufficient trained crews by July 2012 and Full Operating Capability, defined as seven aircraft and all operation crews trained and available for tasking, by October 2012.

### **A.3. Progress**

An Information Note informing the Investment Approvals Board of the change of strategy from Project Eagle to Sustain Sentry was submitted in January 2010. Following the response from the Investment Approvals Board in February 2010, a Business Case Working Group was convened with the Investment Appraisal Board Scrutiny community, it was decided to submit an Initial Gate Business Case rather than a Review Note. This effectively placed the project in Concept Phase, with an Initial Gate submission anticipated in September 2010.

The Sentry Project Team is working with its industrial partner Northrop Grumman to develop the Sustain Sentry Programme plan in terms of capability, time and cost.

Work is continuing with Northrop Grumman to agree the contractual Terms and Conditions for the delivery of the Mode S capability. It is expected that Terms and Conditions of the Mode S Contract will be agreed in July 2010.

### **A.4. Capability Risks**

Loss of the capability to conduct airborne surveillance and airborne command and control would remove the UK's ability to undertake airspace control over UK and overseas territories from the air during times of heightened tension or crisis, eg, in support of Homeland Defence activities. It would also remove the ability to undertake airspace coordination and air superiority operations in support of national and coalition military objectives.

### **A.5. Associated Projects – not applicable**



**A.6. Procurement Strategy**

Pre-Main Investment Decision Projects / Increments only				
Description	Procurement Route			
Project Eagle	Single Source Procurement of Boeing Block 40/45			
Post-Main Investment Decision Projects / Increments only				
	Contractor	Contract Scope	Contract Type	Procurement Route
-	-	-	-	-

**A.7. Support Strategy – not applicable****B. Section B: Cost****B.1. Cost of the Assessment Phase**

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
Project Eagle	17	4	-13	-	-
<b>Total</b>	<b>17</b>	<b>4</b>	<b>-13</b>	<b>-</b>	<b>-</b>

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Project Eagle	144	-	235

**B.3. Cost of the Demonstration and Manufacture (D&M) Phase – not applicable****B.4. Unit production cost – not applicable****B.5. Progress against approved Support / Service / PFI Cost – not applicable****B.6. Expenditure to date**

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
Assessment Phase (£m)	3.3	0.	3.
Demonstration & Manufacture Phase (£m)	-	-	-
Support Phase / Service / PFI Cost (£m)	-	-	-
<b>Total Expenditure (£m)</b>	<b>3.3</b>	<b>0.4</b>	<b>3.7</b>

C. Section C: Timescale

**C.1. Duration of the Assessment Phase**

Description	Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Project Eagle	January 2010 <sup>11</sup>	December 2004	61

**C.2. Planned / Actual Boundaries for introduction of the Capability**

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
Project Eagle	January 2011	-	December 2012 <sup>12</sup>

**C.3. In-Service Date/Initial Operating Capability - not applicable**

**C.4. Full Operating Capability - not applicable**

**C.5. Support / Service / PFI Contract - not applicable**

**D. Section D: Performance - not applicable**

<sup>11</sup> The Information Note submitted and noted in January 2010, informed the Board that Eagle was de-scoped to Sustain Sentry. This effectively ended Eagle, created Sustain Sentry and sent the project back to Concept Phase.

<sup>12</sup> This was the planned latest approved date for Project Eagle. The Not To Exceed date stated in Section A.2 is for Mode S.

## **POST- MAIN GATE PROJECTS**

**Team Responsible**

A400M

**Single point of accountability for Project Capability**

Head of Capability – Expeditionary Logistics &amp; Support

**Senior Responsible Officer****Number of Projects / Increments****Current Status of Project**

- **Post Main Investment Decision - A400M**

**A. Section A: The Project****A.1. The Requirement**

A400M is planned to provide tactical and strategic mobility to all three Services. The required capabilities include: operations from airfields and semi-prepared rough landing areas in extreme climates and all weather conditions by day and night; carrying a variety of equipment including vehicles and troops over extended ranges; air dropping paratroops and equipment; and being unloaded with the minimum of ground handling equipment. The 1998 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 would be met, in the latter part of the first decade of the 21<sup>st</sup> Century, by Future Transport Aircraft. The A400M was selected to meet this requirement. It will replace the remaining Hercules C-130K fleet.

A400M is a collaborative programme involving seven European nations (Belgium, France, Germany, Luxembourg, Spain, Turkey and United Kingdom). The design phase is nearing completion and manufacture activities have commenced. Delivery of the first UK aircraft to the Royal Air Force is expected in 2014.

**A.2. 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 programme (now known as A400M). The Future Large Aircraft '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 Future Large Aircraft. A Request For Proposals was issued to Airbus in September 1997 on behalf of the seven Future Large Aircraft nations (Belgium, France, Germany, Italy, Spain, Turkey and UK). Subsequently, in July 1998, four nations (Belgium, France, Spain and UK) issued a "competitive Request For Proposals" for a Future Transport Aircraft 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 dimensions. This work also led to parallel negotiations and clarification with the three bidders. At the direction of the Equipment Approvals Committee in December 1999, additional work was undertaken to inform the Main Gate submission. On 16 May 2000 the Government announced the decision to procure 25 A400M aircraft to meet the Future Transport Aircraft requirement.

**A.3. Progress**

The very significant programme milestone of the first flight of the prototype A400M took place on 11 December 2009 in Seville. Flight trials continue and, on 9 March 2010, the A400M prototype (MSN001) flew from Seville to Toulouse for the next stages of flight trials. Also of note is the conclusion of the Flying Test Bed trials programme in September 2009.

Nevertheless, the past year has again been challenging for the programme. In November 2008 Airbus announced that first flight may not happen until the second half of 2009 and, in January 2009,

proposed a “new approach” to the programme and announced that they wished to discuss the programme schedule and certain technical characteristics of the aircraft with customers. In March 2009 the UK and its Partner Nations agreed to enter a “standstill” agreement with Airbus Military, the purpose of which was to enable possible options and outcomes for the A400M programme to be discussed without prejudicing the rights of either party under the existing contract. Initially to run for three months from April until the end of June 2009, the “standstill” period was extended to include July. In July 2009 the UK agreed to join Partner Nations in a negotiation phase with Airbus Military to determine the way ahead for the A400M programme. A further “standstill” phase covering the renegotiation period was agreed; initially valid until 31 December 2009, it was subsequently extended to 31 January 2010. During the renegotiation period extensive discussions at official and ministerial level took place between Nations and with Airbus Military and its parent organisations Airbus and EADS. As the renegotiation phase progressed, it became clear that the A400M programme would only remain viable with further investment from Partner Nations. The UK expects to manage this additional funding through a reduction in the number of aircraft (from 25 to not less than 22) it receives. At a Ministerial meeting in Berlin on 5 March 2010 agreement in principle was reached between Partner Nations and EADS on re-baselining the programme. It is now planned that these principles will be embodied in an amended contract, which is expected to be concluded later this year.

The principal factor for the delay to the programme has been its technical complexity. Airbus Military has admitted that it had previously underestimated the challenges of this programme and the Nations’ review of the programme has concluded that there has been poor management and control by the Company. Central to the renegotiation process has been close working between Partner Nations and Airbus Military to review the management and governance structures of the A400M programme.

The programme remains in a volatile and uncertain position whilst negotiations towards a revised contract continue, and the Department plans to carry out a thorough review of the programme later in 2010 when the revised programme is established.

#### A.4. Capability Risks

Not proceeding with this capability would significantly reduce the UK’s net tactical air transport capability due to having to rely solely on C-130J aircraft to provide support to operations after the C-130K aircraft Out of Service Date in 2012. A series of interim measures has been introduced, including enhancements to the availability of the existing C-130J fleet. A study into the possibility of further extending the life of the existing C-130K fleet concluded that this would not represent good value for money.

#### A.5. Associated Projects – Not applicable

#### A.6. Procurement Strategy

Pre-Main Investment Decision Projects / Increments only				
Description	Procurement Route			
Post-Main Investment Decision Projects / Increments only				
	Contractor	Contract Scope	Contract Type	Procurement Route
A400M	Airbus Military Sociedad Limitada	Development, Production and Initial In Service Support	Fixed Price, subject to Variation of Price (VOP)	International Competition

#### A.7. Support Strategy

##### A.7.1. Support Strategy

Description				
	An Assessment Phase for the support strategy is currently underway.			
	Contractor	Contract Scope	Contract Type	Procurement Route
	-	-	-	-

**B. Section B: Cost****B.1. Cost of the Assessment Phase**

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
A400M	2	1	-1	0.06%	0.03%
<b>Total</b>	<b>2</b>	<b>1</b>	<b>-1</b>	<b>0.06%</b>	<b>0.03%</b>

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
A400M	-	2628	2744
<b>Total</b>	<b>-</b>	<b>2628</b>	<b>2744</b>

**B.3. Cost of the Demonstration and Manufacture Phase**

Description	Approved Cost (£m)	Actual / Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
A400M	2744	3231	+487	-54
<b>Total</b>	<b>2744</b>	<b>3231</b>	<b>+487</b>	<b>-54</b>

**B.3.1. Cost Variation against approved Cost of the Demonstration and Manufacture Phase****B.3.1.1.A400M**

Date	Variation (£m)	Factor	Reason for Variation
March 2010	***	Exchange Rate	An In Year gain due to the increase in the value of £ vs € due to the difference between the set planning exchange rate and actual outturn.
March 2010	***	Changed Capability Requirements	A reduction in the need to use the International Training Centre facilities due to programme delays.
March 2010	***	Procurement Processes (International Collaboration)	A change due to programme rebalancing as a result of work undertaken in support of concluding an amended contract.
March 2010	***	Exchange Rate	Loss due to the difference between the set planning exchange rate and forecast outturn.
March 2010	***	Procurement Processes	Revised costing for Mission Planning System due to change from acquisition only to also include support.
March 2010	***	Technical Factors	Increase due to the reassessment of the need for capital spares (two long deployment kits)
Historic	***	Exchange Rate	A loss in 2008/2009 due to the fall

## A400M

			in value of £ vs €
Historic	***	Accounting Adjustments and Re-definitions	An increase in Cost of Capital Charge as a result of programme delays
Historic	***	Changed Capability Requirements	A reduction in the need to use the International Training Centre facilities due to programme delays.
Historic	***	Exchange Rate	An increase on payments for the training service
Historic	***	Accounting Adjustments and Re-definitions	Inclusion of VAT on payments for training service
Historic	***	Technical Factors	Increase due to the reassessment of the need for capital spares.
Historic	***	Changed Capability Requirements	Portable Removable On-Board Inert Gas Generation System fuel tank inerting system.
Historic	***	Inflation	An increase based on latest delivery schedule.
Historic	***	Accounting Adjustments and Re-definitions	Increase due to a revised estimate of the cost of training
Historic	***	Exchange Rate	An increase in 2008/2009
Historic	***	Technical factors	Inclusion of additional airworthiness support to cover aircraft release to service.
Historic	***	Exchange Rate	Variation in 2008/2009
Historic	***	Inflation	An increase in 2008/2009.
Historic	***	Changed Capability Requirements	Reintroduction of one training simulator.
Historic	-77	Accounting Adjustments and Re-definitions	Variation in Cost of Capital Charge due to a revision of accruals in future forecast costs (-£8m). Changes to Cost of Capital Charge and Sunk Costs (-£1m). Correction of previous years treatment of deliveries (+£1m). Transfer from RDEL to CDEL (-£1m). Difference in variation figures due to revision of Cost of Capital Charge (-£42m). Changes in timing of expenditure leading to a variation in Cost of Capital Charge (-£26m)
Historic	-93	Changed Budgetary Priorities	Departmental Reviews have identified savings to programme risks (-£23m). Changed delivery profile from that in the Business Case (-£61m). Minor realism adjustments, includes UK share of Organisation Conjointe de Coopération en matière d'ARmement (OCCAR) Programme Division costs (+£5m), QinetiQ Support costs increased (+£1m), unidentified variance (+£1m). Equipment Programme Measure deleting 1 Simulator (-£20m). Minor realism changes includes Certification, Special To Type equipment and Training

			Facilities (+£7m). Realism reprofile of Development Production Phase contract together with Directed Infra-Red Counter Measures and Cargo Hold Mock-up costs (-£4m) and associated Cost Of Capital charges (+£1m)
Historic	-333	Changed Capability Requirements	Defer UK A400M National Training Facility by 2 years (-£2m). Fuel Tank Inertion System Pipe work (+£6m). Deletion of Centralised Crypto Management Unit requirement (-£12m). Deletion of Civil Pallets Configuration Item (-£5m). Addition of Propeller Brake (+£6m). Option to re-profile Training Facilities for realism (-£1m). Programme measure to move deferred configuration Items back into aircraft delivery profile (-£2m). Reduction in number of aircraft to be equipped with Defensive Aids Sub-System from 25 to 9 (-£238m). Programme option to delete and defer Configuration Items and to slip In Service Date by 12 months. (-£81m). Option bringing the Defensive Aids Sub-System forward onto aircraft 1-9 (+£9m). Delay of programme by 9 months (-£12m) and associated Cost Of Capital changes (+£25m) Deletion of one training simulator (-£23m) and associated Cost Of Capital changes (-£3m)
Historic	+353	Contracting Process	Realism to reflect 3 month delay in 2000/01 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). Contract Effectivity Date slipped from November 2001 - October 2002 (+£149m). Contract Effectivity Date slipped from October 2002 - April 2003 (-£59m). Adjustments in line with increased knowledge of Programme (+£66m). Contract Effectivity Date slipped from April 2003 - May 2003, includes redefinition of Asset Deliveries to align with aircraft delivery schedule (-£30m).
Historic	-11	Exchange Rate	A decrease in 2005/2006 (-£24m). Variation in 2004/2005 (+£39m). Variation in exchange rate assumptions used in the Business Case, 2000/2001, 2001/2002 and 2002/2003 (-£232m). Variation in



			2003/04 (+£222m). Exchange rate changes (-£15m) and associated Cost Of Capital changes (-£1m)
Historic	+12	Inflation	An increase in 2005/2006 (+£14m). An increase in 2004/2005 (+£8m). Changes between inflation rate assumed in the Business Case and yearly inflation indices resulting in a decrease 2000/2001 (-£6m), an increase 2001/2002 (+£6m), a decrease 2002/2003 (-£10m).
Historic	+65	Procurement Strategy	Total number of aircraft ordered by participating nations higher than anticipated, and consequent reduction in Unit Production Cost (-£65m). Subsequent contract renegotiation due to German reduction in offtake (+£130m).
Historic	+88	Technical Factors	Increase in Training costs, figures from industry indicated a shortfall in costing line (+£32m). Realism decrease to Support activities post aircraft delivery (-£3m). Programme realism with regard to costing Technical Publications (-£5m), Special To Type Equipment (-£5m), Aircraft Ground Equipment (-£4m), Government Furnished Equipment/Facilities (-£7m) and Codification of equipment/spares (-£1m). Training Needs Analysis identified the need for funding increase; Develop & Build Facilities (+£11m), Initial Training (+£7m), Develop & Build Training Devices (+£6m), and Develop & Build Training Facilities (-£3m). Identification of UK only certification requirements (+£6m). Costing realism in line with better programme understanding including adjustment for actual sunk costs (-£6m). Costing re-adjusted with understanding of future programme – Certification (-£15m), Government Furnished Equipment (+£4m), Support (+£4m). Re-profiling deliveries for realism Build Facilities (-£1m), Initial Provision Spares (-£5m), Deployment Kits (-£1m). Reduction in the requirement for government procured items. (-£46m). Improved understanding of programme requirement for Initial Provision Spares (+£83m), Deployment Kits (-£1m), Initial Training (-£13m) and Mission Planning & Restitution System (-£10m) Growth in estimates for training and Government Furnished Facilities (+£57m) and associated Cost Of

			Capital changes (+£4m).
Historic	-116	Risk Differential	Difference between the risk allowed for in the most likely (50%) and the approved figures at Main Gate.
<b>Net Variation</b>	<b>+487</b>		

### B.3.2. Operational Impact of Cost Variations of Demonstration and Manufacture Phase

Description	
-	-

### B.4. Unit production cost

Description	Unit production costs (£m)		Quantities required	
	At Main Investment Decision	Currently	At Main Investment Decision	Currently
A400M	***	***	25	22

### B.5. Progress against approved Support / Service / PFI Cost – Not applicable

### B.6. Expenditure to date

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
Assessment Phase (£m)	1	0	1
Demonstration & Manufacture Phase (£m)	856	74	930
Support Phase / Service / PFI Cost (£m)	-	-	-
<b>Total Expenditure (£m)</b>	<b>857</b>	<b>74</b>	<b>931</b>

## C. Section C: Timescale

### C.1. Duration of the Assessment Phase

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
A400M	May 2000	July 1997	34

### C.2. Planned / Actual Boundaries for introduction of the Capability

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
A400M		February 2009	December 2009

### C.3. In-Service Date

#### C.3.1. Definition

Description	In-Service Date
A400M	In Service Date defined as delivery of the seventh aircraft with Strategic Military Aircraft Release and Support arrangements.

#### C.3.2. Progress against approved Dates

Description	Approved Date	Actual / Forecast Date	Variation	In-Year Variation
A400M	December 2009	March 2015	+63	-9

#### C.3.3. Timescale variation

**C.3.3.1. A400M**

Date	Variation	Factor	Reason for Variation
March 2010	***	Procurement Processes (International Collaboration)	A change due to programme rebalancing.
Historic	***	Technical Factors	Updated programme estimate based upon A400M Task Force outputs and Air Support Cluster assessment
Historic	***	Technical Factors	Updated programme proposal received from Airbus Military, including revised production approach
Historic	***	Technical Factors	Programme delays affecting engine and first flight
Historic	***	Technical Factors	Reflects latest delay and risk assessment beyond first flight
Historic	+9	Technical Factors	Contractor delay to aircraft delivery
Historic	+16	Changed Budgetary Priorities	Change in the Customer's requirement flowing from changed budgetary priorities.
Historic	+9	Procurement Strategy	Delay in bringing contract into effect as a result of delayed approvals in Germany.
Historic	-10	Risk Differential	Difference between the risk allowed for in the most likely (50%) and the approved figures at Main Gate.
<b>Net Variation</b>	<b>+63</b>		

**C.3.4. Other costs resulting from Timescale variation**

Description	Date	£m (+ Cost / - Saving)	Factor	Reason for expenditure or saving
Short Term Plan	Historic	+41		Life extension of C-130K aircraft
<b>Total</b>		<b>+41</b>		

**C.3.5. Operational Impact of In-Service Date/Initial Operating Capability variation**

Description	
A400M	The revised forecast A400M In Service Date no longer aligns with the C130K Out of Service Date of 2012. This increases the pressure on existing tactical airlift capability from 2012 to 2015. Interim measures to mitigate this include action to increase the availability of the remaining C130J fleet.

**C.4. Full Operating Capability – Not applicable****C.5. Support / Service / PFI Contract – Not applicable****D. Section D: Performance****D.1. Maturity Measures****D.1.1. A400M**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
Commercial	<i>Measures under development</i>			
Financial				

Project Management				
System Readiness	-	-	-	System Readiness levels are not currently mandated for approvals.
Technology Readiness	-	-	-	Readiness levels were not required when this project passed through Main Gate.

## D.2. Performance against Defence Lines of Development

Not required for pre-Main Investment Decision Projects				
Line of Development	Description	Forecast		
		To be met	At Risk	Not to be met
1. Equipment	22 A400M aircraft, mission planning and ground support systems.	Yes	Yes	
2. Training	UK A400M training solution, including interim use of the International Training centre in Seville.	Yes		
3. Logistics	In Service Support contract.	Yes	Yes	
4. Infrastructure	A400M infrastructure projects, including an electronic warfare facility at RAF Waddington and necessary modifications at the Main Operating Base, RAF Brize Norton.	Yes	Yes	
5. Personnel	Formation of squadrons and related Service personnel.	Yes		
6. Doctrine	Agreed capability milestones, including aerial delivery and tactical operation concepts.	Yes		
7. Organisation	A400M is being overseen by Strategic Mobility (Air) Project Board & Future Brize Project Board.	Yes		
8. Information	Integration of the mission planning (including electronic warfare) and ground support systems into wider MOD operational and logistic support structures.	Yes		
Percentage currently forecast to be met		100		
In-Year Change		-		

### D.2.1.1. Defence Lines of Development Variation

Date	Line of Development	Factor	Reason for Variation
March 2010	Equipment	Technical Factors	Reflects potential impact of the re-baselined programme, and that an amended contract is still to be concluded.
March 2010	Logistics	Technical Factors	Reflects potential impact of depth maintenance facility risk on delivery of logistic support solution.
March 2010	Infrastructure	Technical Factors	Reflects that the Support Assessment Phase is still underway.
Historic	Equipment	Technical Factors	Updated programme proposal received from Airbus Military, including revised production approach.
Historic	Infrastructure	Technical Factors	Reflects latest delay and the wider Future Brize Norton study.

**D.3. Performance against Key Performance Measures****D.3.1. A400M****D.3.1.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
01	1, 2, 6, 8.	Deployment Capability.	Yes		
02	1.	Payload.	Yes		
03	1.	Environmental Operating Envelope.	Yes		
04	1, 6.	Tactical Operations.	Yes		
05	1, 6, 8.	Navigation Performance.	Yes		
06	1.	Communication System.	Yes		
07	1.	Defensive Aids Suite.	Yes		
08	1, 2, 6.	Aerial Delivery.	Yes		
09	2, 5, 7.	Crew Composition.	Yes		
Percentage currently forecast to be met			100		
In-Year Change			-		

**D.3.1.2. Key Performance Measures Variation – Not applicable****D.3.1.3. Operational Impact of variation – Not applicable****D.3.2. Support Contract – Not applicable**

## ASTUTE CLASS SUBMARINES

### Team Responsible

Submarine Production

### Single point of accountability for Project Capability

Capability Deterrent and Underwater

### Senior Responsible Officer

Director Submarines

Number of Projects / Increments 7

### Current Status of Projects / Increments

- Post Main Investment Decision – Astute Boats 1-3
- Post Main Investment Decision – Astute Boat 4
- Pre Main Investment Decision – Astute Boat 5
- Pre Main Investment Decision – Astute Boat 6
- Post Main Investment Decision – Astute Support Boats 1-3
- Post Main Investment Decision – Astute Class Training Service Boats 1-3
- Post Main Investment Decision – Astute Class Training Service Boats 4-7

### A. Section A: The Project

#### A.1. The Requirement

The military requirement is for up to 8 Astute Class Submersible Ship Nuclear to replace the existing Swiftsure and Trafalgar Classes of nuclear powered attack submarine.

Astute Class submarines are required to perform a range of military tasks; these unique requirements are combined within the Astute design to provide global reach, endurance, covertness, sustained high speed and the ability to conduct unsupported operations in hostile environments.

#### A.2. The Assessment Phase

In June 1991 (equivalent of Initial Gate) approval was given to proceed with a programme of studies at an estimated cost of £6m (1991/1992 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 Submersible Ship Nuclear and a further approval of £2m (1992/1993 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 £24m (at 1993/1994 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 were awarded to both bidders, GEC Marconi (now BAE Systems (Submarine Solutions)) and Vickers Shipbuilding and Engineering Ltd.

GEC-Marconi was identified as MOD's preferred bidder in December 1995. Using the policy of No Acceptable Price No Contract, a Prime Contract was placed in March 1997 for the design, build and in service support of the first three of the Class.

#### A.3. Progress

BAE Systems disclosed during 2002 significant delay and projected cost overrun. An agreement between the Department and BAE Systems was reached in February 2003 reducing risk from the production of Boats 2 and 3, and placed new incentives on the company to perform. The Department agreed to increase funding by around £430 million, against an increased contribution by the company of £250 million. An amendment to the Boat 1 contract was signed in December 2003 with Boat 1 continuing on a revised Target Cost Incentive Fee arrangement; Boats 2 and 3 continued on ascertained expenditure (actual cost incurred) pending later pricing .

After the submission of a Review Note in 2007, a further £580m increase was agreed. This was coupled with increased inflationary costs and some programme scheduling assumptions at the Barrow site not being borne out. All the programme's revised anchor milestones continue to be met

## ASTUTE CLASS SUBMARINES

and new project management disciplines were implemented. This included agreeing a Target Cost Incentive Fee with a maximum price for each of Boats 2 and 3.

A Review Note was submitted to the Investment Approvals Board seeking re-approval of Boat 1's In Service Date, the implications of this on the remainder of the Astute Class Programme are under investigation, and was the subject of a separate Review Note in late 2009. Approval was given in December 2007 for long leads items for Boat 5, at a cost of £494M.

Approval for procurement of Boat 4 was given in May 2007

Boat 1, the first of the Astute Class was launched in June 2007. On completion of initial trials Boat 1 returned to the Devonshire Dock Hall for outfitting, which included the installation of the reactor core. During 2008 several technical issues arose, which were compounded by the ten year gap between the Vanguard and Astute Classes and the erosion of the skilled resource at Barrow. Additional resources were applied to the Astute Programme to minimise the impact, but the resolution of the issues has introduced a ten month delay to Boat 1's In Service Date.

Boat 1, First of Class, sailed from Barrow-in-Furness on 15 November 2009 and into her homeport of HM Naval Base Clyde on 20 November 2009. Boat 1 is now conducting an extensive period of First of Class sea trials prior to formally handing over to the Royal Navy.

During 2009 Boat 1 experienced further technical difficulties completing commissioning and Power Range Testing of her Nuclear Power Plant; resolution of which was slowed by lack of Nuclear Suitably Qualified & Experienced Personnel in Industry. Power Range Tasking completed in October 2009 and, following demonstration of crew readiness, Boat 1 sailed for sea trials in November 2009 (4.5 months late to plan). Early sea trials exposed technical problems that have required modifications before recommencing sea-trials in February 2010.

The In service Date for Boat 1 is now expected in July 2010 on completion of further trials.

Boat 2 started the early stages of reactor systems commissioning during 2009. As resource for this work is common Boat 2 has experienced significant delays in year as a result of this resource being retained on Boat 1. Progress on Boat 3 and initial build of Boat 4 has been less affected by delays to Boat 1.

A savings measure option was taken in 2009 to remove £139M of funding from Astute Boats 2-7 in years 2009/10 to 2012/13. These savings result in delayed delivery of Boats 2-4, which are already in build and defer build start dates and the procurement of long lead items for Boats 5-7. As a consequence of this, cost growth occurs in later years as reported in more detail in MPR 09.

There is a risk that the Astute Class Training Service costs could increase over the next year, due to an increased scope of work against Boat 4 with knock on effects to Boats 5-7. This increase cannot yet be quantified but will be the subject of a Review Note over the next year and any increase will be reported in MPR 2011.

Astute has successfully completed full power range testing and deep dive.

### **A.4. Capability Risks**

Delivery of Boat 1 is critical to attack submarine's readiness profile. Boat 1's delay will result in the delayed introduction of improved capability over current classes. The Astute Class will also de-risk capability essential for an affordable Successor deterrent programme.

### **A.5. Associated Projects**

Description	Critical to achievement of IOC	
	Project Title	Forecast IOC
Boats 1-3	Swiftsure & Trafalgar Class Update Final Phase	2004
Boat 4	-	-
Boat 5	-	-
Boat 6	-	-

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A.6. Procurement Strategy

Pre-Main Investment Decision Projects / Increments only				
Description	Procurement Route			
Boats 1-3	-			
Boat 4	-			
Boat 5	-			
Boat 6	-			
Post-Main Investment Decision Projects / Increments only				
	Contractor	Contract Scope	Contract Type	Procurement Route
Boats 1-3	BAE Systems (Submarine Solutions) (formerly BAE Systems Electronics Ltd – Astute Class Project and BAE Systems Astute Class Ltd)	Demonstration to In-Service	Boat One – Target Cost Incentive Fee Boats Two & Three – Target Cost Incentive Fee with Maximum Prices	United Kingdom Competition
Boat 4	BAE Systems (Submarine Solutions)	Boat 4 and Design for Cost Reduction for Boats 4 to 7	Limit of Liability for 1 <sup>st</sup> three years of seven year build programme. Working towards Inclusion of Target Costs Incentive Fee for whole Boat 4. A Revised procurement strategy for remainder of Astute Class is under development as a component of Submarine Enterprise Performance Programme.	Single Source
Boat 5	BAE Systems (Submarine Solutions)	Boat 5 Long Lead items & Initial Build		Single Source
Boat 6	BAE Systems (Submarine Solutions)	Boat 6 Long Lead Items	Limit of Liability placed for Minimum Long Lead Items Scope of Work	Single Source



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**A.7. Support Strategy**

**A.7.1. Support / Service / Private Finance Initiative Contract Strategy**

<b>Description</b>				
<p>The Initial Astute Support Solution was approved in July 2006; it follows a traditional support model, but recognises Astute's differences and introduces additional arrangements as appropriate. Provision has been made to employ the build contractor (BAE Systems) as the Astute Technical Authority, MOD will be the Approving Authority, and Nuclear Propulsion Project Team is responsible for the Nuclear Steam Raising Plant. MOD Equipment Project Teams will support specific equipments with Head of In-Service Submarine maintaining a Platform focus and providing the flotilla wide single point of contact for Navy Command. Maintenance at the waterfront will be conducted under existing Warship Support Modernisation Initiative arrangements.</p> <p>The Astute Class Training Service is a Private Finance Initiative contract, initially approved for 36 years to provide Astute specific training to the Royal Navy for Boats 1-3. Approval was given in 2007, to extend to a 38 year contract, to cover the life of Boat 4.</p>				
	<b>Contractor</b>	<b>Contract Scope</b>	<b>Contract Type</b>	<b>Procurement Route</b>
Technical Authority Support Contract	BAE Systems	Provision of Technical Authority services	Firm Price	Single Source
Astute Class Training Service Boats 1-3	FAST Training Services Limited; 47.5% owned by BAE Systems, 47.5% owned by L-3 MAPPS and 5% owned by VT Group.	Training	Private Finance Initiative	Competitive tender
Astute Class Training Service Boat 4	FAST Training Services Limited; 47.5% owned by BAE Systems, 47.5% owned by L-3 MAPPS and 5% owned by VT Group.	Training	Private Finance Initiative	Single Source

**B. Section B: Cost**

**B.1. Cost of the Assessment Phase**

<b>Description</b>	<b>Approved Cost (£m)</b>	<b>Actual / Forecast Cost (£m)</b>	<b>Variation (£m)</b>	<b>Post-Main Investment Decision Projects only</b>	
				<b>Approved cost as a proportion of total estimated procurement expenditure (%)</b>	<b>Actual Cost as a proportion of total estimated procurement expenditure (%)</b>
Boats 1-3	33	29	-4	1%	1%
Boat 4	-	-	-	-	-
<b>Total</b>	<b>33</b>	<b>29</b>	<b>-4</b>	<b>1%</b>	<b>1%</b>

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**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / Private Finance Initiative**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Boats 1-3	2431	2578	2730
Boat 4	1460	1524	1610
Boat 5	695	774	855
Boat 6	304	328	351

**B.3. Cost of the Demonstration and Manufacture Phase**

Description	Approved Cost (£m)	Actual / Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
Boats 1-3	2578	4041	+1463	+108
Boat 4	1610	1567	-43	-22
Boat 5	855	735	-120	-120
Boat 6	351	334	-17	-17
<b>Total</b>	<b>5394</b>	<b>6677</b>	<b>+1283</b>	<b>-51</b>

**B.3.1. Cost Variation against approved Cost of the Demonstration & Manufacture Phase**

**B.3.1.1. Boats 1-3**

Date	Variation (£m)	Factor	Reason for Variation
March 2010	+22	Technical Factors	Prime contract increases (a mixture of overheads, materials and labour). (+£31m). Non Prime decrease (a mixture of combat systems, nuclear power management, safety platform and design and other non construction costs) (-£9m).
March 2010	+79	Accounting Adjustments and Re-definitions	Notional cost of capital increase due to revised cost and delivery profiles.
December 2009	-2	Receipts	Increase in receipt for Shipbuilders Relief (-£2m).
November 2009	+9	Budgetary Factors	A savings option, Defer Successor (Future Deterrent) In Service Date and modify the build programme of later Astute hulls, was taken in Planning Round 2010 which increases the cost of Astute Boats 1-3 by £9m
Historic	+40	Technical Factors	Prime increases (a mixture of labour, materials, sub-contractors and risk/indemnity/warranty and other construction costs) (+£76m). Non Prime decrease (a mixture of combat systems, nuclear power management, safety platform and design and other non construction costs) (-£36m).
Historic	+3	Receipts	Reduction in receipt for Shipbuilders Relief (+£3m).
Historic	+87	Budgetary Factors	A savings option was taken in the 2009 Planning Round which removed £139M of funding over the

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			4 years from 2009/10 from the Astute Boats 2-7 build programme, the consequent programme slippage results in additional cost growth in later years of £539m. Of this, £87m relates to boats 1-3.
Historic	-3	Accounting Adjustments and Re-definitions	Cost of capital reduction as the result of cost variances reported in March 2009 (-£3m).
Historic	-192	Accounting Adjustments and Re-definitions	Increase in shipbuilders relief (-£12m). Cost of Capital effect of adding in creditors and accruals estimates for 2007/08 onwards (-£7m). Re-costing of Non-Attributable items since MPR06 (Items not Included in the original approval) (+£51m). Overall increase in Cost of Capital due to cost growth In CDEL, changed profile and delivery values (+£65m). Shipbuilders Relief (-£58m) and Sunk cost corrections (-£3m) made in project account. Decommissioning and Decontamination costs (-£1m). Reallocation of Pension cost increases since MPR05 (-£5m). Overall reduction in Interest on Capital due to changed delivery profile and values (-£16m). Re-costing of Non-Attributable items since MPR07 (i.e. those items not included in original approval) (+£28m). Shipbuilders Relief correction (+£6m). Variation in cost of capital charge in March 2008 due to revised cost and delivery profiles (+£8m). Recosting of Non-Attributable items since MPR05 (items not included in the original approval) (+£29m). Removal of items wrongly attributed to Astute Approval in previous years (-£11m). Decrease reflects difference between anticipated resource profile at approval and current profile (Equipment Plan 2001) (-£74m). Removal of Astute Class Training Service costs that have been incorrectly included in previous MPRs – training not part of original Astute Main Gate approval (-£62m). Difference in variation figures due to revision of Cost of Capital Charge (-£89m). Removal of items wrongly attributed to Astute Approval in previous Years (-£41m). Variation in Cost of Capital charge due to revised cost and delivery profiles.
Historic	+257	Changed Capability Requirement	Includes change to fore end design, completion of land attack missile capability and improved

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			tactical data link capability (+£32m). Additional Capability originally part of Astute second buy which has been brought forward into the first buy (+£225m).
Historic	+39	Procurement Process	BAE Systems to forego any incentive payments on Boat One(-£13m). Reduction in Warranty to be provided by BAE Systems from three years to one year (-£3m). Planned Contract Amendments (+£55m).
Historic	+40	Inflation	Variation between anticipated rates for GDP and Variation on Price on contract (sunk costs only) (+£14m). Correction in previous Variation on Price calculation – incorrect split between labour and materials (+£26m).
Historic	+1084	Technical Factors	Cost of Capital reduction in respect of removal of Sustainability Costs (-£23m). Sustainability costs of maintaining submarine build capability removed (-£204m). Impact on Cost of Capital of Boat 3 Delivery advance of one year due to compressed sea trials (-£30m). Option E07UW178S – capability reduction to a 7 Boat Astute Programme, taken in Equipment Plan 2007 (-£29m). Option E07UW601S – compress Astute class Boats1-3 sea trials programme, taken in EP07 (-£3m). Cost Growth from Review Year 06 to EP07. Materials (+£164m), Labour (+£68m), GDP (+£65m), Risk (+£50m), Profit (+£7m), Non-Prime (-£66m), Overhead (-£12m), Shipbuilder Relief (+£58m). Cost growth in provision of some elements of nuclear safety cases (+£17m). Departmental review identified savings opportunities within other elements of nuclear safety cases (-£20m). Increase in cost as a result of the reassessment of risk, specifically, Team Leader challenge in MPR05 (+£123m). Cost increase identified as part of the Integrated Project Team's internal review in 2005/06 Prime Contract Overheads (+£97m), Prime Contract Materials (+£61m), Prime Contract Labour (+£26m) and unallocated cost growth (+£21m). Changes in throughput assumptions between MPR05 and MPR06 (-£73m). Reduced Requirement for Technology Insertion post MPR05 (CDEL -£17m, cost of capital (-£1m). Prime Contract pricing assumptions and changes to

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			costing (+£19m). Reassessment of risk (+£51m). Reduction of risk on Sonar 2076 programme (-£16m). Re-costing of land attack missile interface & integration (+£5m). Re-costing of External communications (+£5m). Increase in overall BAE Systems base costs (shipyard and sub contracts) reflecting a re-estimate as well as cost of delay (+£571m). Increase in risk provision owing to technical complexity (+£152m). Changed cost reflecting Astute Agreement of February 2003 (+£52m). Re-assessment of overhead rates used in costing (-£36m). Man-hour reduction on Prime contract (-£20m). Removal of Risk funding post Boat 3 delivery (-£2m). Expenditure not apportionable to specific elements of the programme due to 2007 budgeting baseline being overstated which has subsequently been corrected (+£25m). Prime increase (+£27m). Non Prime decrease (-£28m).
<b>Net Variation</b>	<b>+1463</b>		

**B.3.1.2. Boat 4**

Date	Variation (£m)	Factor	Reason for Variation
March 2010	-26	Technical Factors	Prime contract decrease. (A mixture of labour overheads, materials and VAT). (-£25m). Non Prime contract decrease. (A mixture of Combat systems and Nuclear. (-£1m).
March 2010	-6	Accounting Adjustments and Re-definitions	Cost of capital decrease as the result of the above cost variances (-£6m).
November 2009	+10	Budgetary Factors	A savings option to defer Successor (Future Deterrent) In Service date and modify the build programme of later Astute hulls, was taken in Planning Round 2010 which increases the cost of Boats 4-7 by £322m. Of this, £10m relates to Boat 4.
Historic	+102	Budgetary Factors	A savings option was taken in the 2009 Planning Round which removed £139M of funding over the 4 years from 2009/10 from the Astute Boats 2-7 build programme, the consequent programme slippage results in additional cost growth in later years of £539m. Of this, £102m relates to boat 4.
Historic	-5	Accounting Adjustments and Re-definitions	Cost of capital reduction as the result of above cost variances (-£5m).
Historic	+19	Technical Factors	Increase in Build, Nuclear Plant and Safety costs (+£19m).

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Historic	-51	Receipt	VAT Receipt relating to sunk costs (-£51m).
Historic	-86	Risk Differential	The difference between the risk allowed for in the most likely (50%) and highest acceptable (90%).
<b>Net Variation</b>	<b>-43</b>		

**B.3.1.3. Boat 5**

Date	Variation (£m)	Factor	Reason for Variation
November 2009	+11	Budgetary Factors	A savings option to defer Successor (Future Deterrent) In Service date and modify the build programme of later Astute hulls, was taken in Planning Round 2010 which increases the cost of Boats 4-7 by £322m. Of this, £11m relates to Boat 4.
March 2010	-15	Budgetary Factors	Reduction in the expected cost of Boat 5 reactor core.
March 2010	-33	Budgetary Factors	The variance of £32m generated between the expected cost outturn of Boat 5 and the relevant Boat 5 approval results from the Boat re-design activities, an element of which have been approved against Boats 4 and 5, as a batch solution, but are contracted for solely against Boat 4. As the re-design work is a batch solution BAE have not been able to provide costs on a Boat by Boat basis which would align with separate IAB approvals. Sunk Costs have therefore been scored against the Boat 4 within the Submarine Project Team accounts which has created the variation between outturn boat costs and boat approval for Boat 5.
March 2010	-2	Accounting Adjustments and Re-definitions	Cost of capital decrease as the result of above cost variances.
March 2010	-81	Risk Differential	The difference between the risk allowed for in the most likely (50%) and highest acceptable (90%).
<b>Net Variation</b>	<b>-120</b>		

**B.3.1.4. Boat 6**

Date	Variation (£m)	Factor	Reason for Variation
March 2010	-2	Budgetary Factors	Revised estimate of cost of the Nuclear Reactor Core for Astute Boat 6.
March 2010	+8	Accounting Adjustments and Re-definitions	Cost of Capital increase due to re-valuation of closing net assets against the Boat 6 Nuclear Reactor Core
March 2010	-23	Risk Differential	The difference between the risk allowed for in the most likely (50%) and highest acceptable (90%) against the Boat 6 Long Lead items.
<b>Net Variation</b>	<b>-17</b>		

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### B.3.2. Operational Impact of Cost Variations of Demonstration & Manufacturing Phase

Description	
Boats 1-3	-
Boat 4	-
Boat 5	-
Boat 6	-

### B.4. Unit production cost

Description	Unit production costs (£m)		Quantities required	
	At Main Investment Decision	Currently	At Main Investment Decision	Currently
Boats 1-3	-	-	3	3
Boat 4	1610	1567	1	1

### B.5. Progress against approved Support / Service / Private Finance Initiative Cost

Description	Approved Cost	Forecast cost	Variation	In-Year Variation
Initial Astute Support Solution	331	273	-58	-25
Astute Class Training Service Boats 1-3	182	588	+406	-3
Astute Class Training Service Boat 4	260	267	+7	+7

#### B.5.1. Cost Variation against approved Support / Service / Private Finance Initiative Cost

##### B.5.1.1. Initial Astute Support Solution

Date	Variation (£m)	Factor	Reason for Variation
March 2010	-25	Technical Factors	Cost reduction due to not needing to support boats as a result of slippage. (-£25m).
Historic	-18	Technical Factors	Cost reduction due to not needing to support boats as a result of slippage. (-£18m).
Historic	-15	Accounting Adjustments and Re-definitions	Cost of capital charge decrease resulting from changed delivery profiles. (-£15m).
<b>Net Variation</b>	<b>-58</b>		

#### B.5.2. Cost Variation against approved Increment A

##### B.5.2.1. Astute Class Training Service Boats 1-3

Date	Variation (£m)	Factor	Reason for Variation
March 2010	-1	Technical Factors	Re-assessment of costs. (-£1m).
March 2010	-2	Budgetary Factors	Reduction in amount of recoverable VAT due to re-assessment of costs. (-£1m).
Historic	+357	Technical Factors	Re-assessment of costs for training/policy changes.(+£14m). Re-alignment of Astute Class Training Service to the revised Astute Boat Programme and extending the contract from 25 to 36 years. (+£343m).
Historic	+83	Budgetary Factors	Addition of recoverable VAT to ensure that the forecast cost is consistent with the approved cost.
Historic	-31	Risk Differential	The difference between the risk

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		allowed for in the most likely (50%) and the highest (90%) estimates approved at Main Gate..
<b>Net Variation</b>	<b>+406</b>	

### B.5.2.2 Astute Class Training Service Boat 4

Date	Variation (£m)	Factor	Reason for Variation
March 2010	+7	Technical factors	Re-assessment of Private Finance Initiative costs. (+£5m). Extension of FAST Training Services Ltd infrastructure costs. (+£3m). Other minor decreases. (-£1m)
<b>Net Variation</b>	<b>+7</b>		

### B.5.3. Operational Impact of Support / Service / Private Finance Initiative Cost Variations

Description	
Programme / Project	-

### B.6. Expenditure to date

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
Assessment Phase (£m)	29	0	29
Demonstration & Manufacture Phase (£m)	3560	585	4145
Support Phase/Service/Private Finance Initiative Cost (£m)	97	48	145
Total Expenditure (£m)	3686	633	4319

## C. Section C: Timescale

### C.1. Duration of the Assessment Phase

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Boats 1-3	March 1997	June 1991	69
Boat 4	May 2007	-	-

### C.2. Planned / Actual Boundaries for introduction of the Capability

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
Boats 1-3	-	June 2005	-
Boat 4	February 2015	August 2015	103 months from contract signature <sup>13</sup>
Boat 5	-	-	-
Boat 6	-	-	-

### C.3. In-Service Date/Initial Operating Capability

<sup>13</sup> The main contract for Boat 4 has not yet been signed. When it is, the approved date will be shown, along with any variation in forecast in service date for Boat 4.



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**C.3.1. Definition**

Description	In-Service Date/Initial Operating Capability
Boats 1-3	<b>In Service Date definition:</b> Contract Acceptance Schedule Stage 1 (safe operation and start of operational work up)
Boat 4	<b>Original In Service Date definition:</b> Platform and Weapons acceptance against all requirements as defined within the Astute Class Through Life Management Plan, issue 6 dated April 2006. <b>MPR 09 definition:</b> Boat 4 Operational Handover to Fleet <b>Reason for change:</b> To align In Service Date with asset being utilised by Navy Command.
Boat 5	-
Boat 6	-

**C.3.2. Progress against approved Dates**

Description	Approved Date	Actual / Forecast Date	Variation	In-Year Variation
Boats 1-3	June 2005	July 2010	+61	+4
Boat 4	103 months from contract signature	December 2016	0	0
Boat 5	-	-	<b>0</b>	<b>0</b>
Boat 6	-	-	<b>0</b>	<b>0</b>
<b>Total</b>	-	-	<b>+61</b>	<b>+4</b>

**C.3.3. Timescale variation**

**C.3.3.1. Boats 1-3**

Date	Variation	Factor	Reason for Variation
November 2009	+4	Technical Factors	Technical and programme difficulties with Boat 1 First of Class undertaking trials for the first time in 17 years.
Historic	+10	Technical Factors	Further delays have occurred during Astute (Boat 1) testing and commissioning phase. These were caused by technical factors the rapid resolution of which was hampered by the lack of skilled personnel with recent submarine testing and commissioning experience.
Historic	+47	Technical Factors	Risk analysis, taking into account opportunities to reduce construction time, predicts most likely In-Service Date of November 2008 (-1 month). Risk analysis, taking in to account opportunities to reduce construction time, predicts a most likely In-Service Date of December 2008 (-1 month). Exceptional difficulties arose with the introduction of a computer aided design system, the availability of trained staff and project management (+43 months). Effect of technical problems assessed a six month slip in In-Service Date (completion of the first phase of sea trials) (+6

ASTUTE CLASS SUBMARINES

			months).
<b>Net Variation</b>	<b>+61</b>		

**C.3.3.2. Boat 4**

Date	Variation	Factor	Reason for Variation
-	-	-	-
<b>Net Variation</b>	-		

**C.3.3.3. Boat 5**

Date	Variation	Factor	Reason for Variation
-	-	-	-
<b>Net Variation</b>	-		

**C.3.3.4. Boat 6**

Date	Variation	Factor	Reason for Variation
-	-	-	-
<b>Net Variation</b>	-		

**C.3.4. Other costs resulting from Timescale variation**

Description	Date	£m (+ Cost / - Saving)	Factor	Reason for expenditure or saving
Support costs and current equipment	-	-	-	Costs from this delay have been factored and subsumed into the Department's revised assessment of Force Level Requirements.
Other	-	-	-	Costs from this delay have been factored and subsumed into the Department's revised assessment of Force Level Requirements.
<b>Total</b>	-	-		

**C.3.5. Operational Impact of In-Service Date/Initial Operating Capability variation**

Description	
Boats 1-3	The Astute delay will result in the delayed introduction of improved capability over current classes; such as improved detection, greater weapon load and increased availability. Since these delays the Department has fully considered the plans for submarine capability in the light of this and many other factors.
Boat 4	Reduced ability to fulfil Fleet tasking.
Boat 5	-
Boat 6	-

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### C.4. Full Operating Capability

#### C.4.1. Definition

Description	Full Operating Capability
Boats 1-3	FOC will be declared following Operational Workup and agreement on any outstanding requirements / Defect and Deficiency Database issues post Contract Acceptance Schedule Stage 2.
Boat 4	FOC will be declared following Operational Workup and agreement on any outstanding requirements / Defect and Deficiency Database issues post Contract Acceptance Schedule Stage 2.
Boat 5	FOC will be declared following Operational Workup and agreement on any outstanding requirements / Defect and Deficiency Database issues post Contract Acceptance Schedule Stage 2.
Boat 6	FOC will be declared following Operational Workup and agreement on any outstanding requirements / Defect and Deficiency Database issues post Contract Acceptance Schedule Stage 2.

#### C.4.2. Progress Report

Description	Full Operating Capability
Boats 1-3	-
Boat 4	-
Boat 5	-
Boat 6	-

### C.5. Support / Service / Private Finance Initiative Contract

#### C.5.1. Scope of Support / Service / Private Finance Initiative Contract

Description	
Initial Astute Support Solution	The BAE Systems contracted element of the Initial Astute Support Solution provides Design Management of the Astute Platform; maintenance of the Safety Case, configuration management of the design including design change and maintenance of the Certificate of Design.
Astute Class Training Service	The Astute Class Training Service is a Private Finance Initiative contract to provide Astute specific team and individual training to the Royal Navy for Boats 1-3. Approval was given in 2007, to extend to a 38 year contract, to cover the life of Boat 4.

#### C.5.2. Progress against approved Support / Service / Private Finance Initiative Contract Go-Live Date

Description	Approved Date	Actual Date	Variation (month)	In-Year Variation (month)
Initial Astute Support Solution	August 2007	May 2007	-3	0
Astute Class Training Service Boats 1-3	February 2004	March 2008	+49	0
Astute Class Training Service Boat 4	December 2013	July 2012	-18	0

##### C.5.2.1. Go-Live Date Variation – Initial Astute Support Solution

Date	Variation	Factor	Reason for Variation
Historic	-3	Risk Differential	The difference between the risk allowed for in the most likely (50%) and highest acceptable (90%)
<b>Net Variation</b>	<b>-3</b>		

##### C.5.2.2. Go-Live Date Variation – Astute Class Training Service Boats 1-3

Date	Variation	Factor	Reason for Variation
Historic	+50	Technical Factors	Re-alignment of Astute Class

**ASTUTE CLASS SUBMARINES**

			Training Service to the revised Astute Boat Programme.
Historic	-1	Risk Differential	The difference between the risk allowed for in the most likely (50%) and highest acceptable (90%)
<b>Net Variation</b>	<b>+49</b>		

**C.5.2.3. Go-Live Date Variation – Astute Class Training Service Boats 1-4**

Date	Variation	Factor	Reason for Variation
Historic	-18	Changed requirement	To offset the risk of design changes, increased training throughput and to ensure retention of key supplier resources.
<b>Net Variation</b>	<b>-18</b>		

**C.5.3. Progress against approved End of Support / Service / Private Finance Initiative Contract Date**

Description	Approved Date	Actual Date	Variation	In-Year Variation
Initial Astute Support Solution Project	December 2012	December 2012	0	0
Astute Class Training Service Boats 1-3	September 2026	September 2037	+132	0
Astute class Training Service Boat 4	September 2039	September 2039	0	0

**C.5.3.1. End of Contract Date Variation**

Date	Variation	Factor	Reason for Variation
Historic	+72	Technical Factors	Re-alignment of Astute Class Training Service to the revised Astute Boat Programme.
Historic	+60	Procurement Processes	Decision to extend contract by 5 years to obtain better value for money.
<b>Net Variation</b>	<b>+132</b>		

**C.5.4. Operational Impact of Support / Service / Private Finance Initiative Support Contract variation**

Description	
Boats 1-3	-
Boat 4	-
Boat 5	-
Boat 6	-

**D. Section D: Performance**

**D.1. Maturity Measures**

**D.1.1. Boats 1-3**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
Commercial	<i>Measures under development</i>			
Financial				
Project Management				
System Readiness	1-9	-	-	System Readiness levels are not currently mandated for approvals
Technology Readiness	1-9	-	-	Readiness Levels were not

ASTUTE CLASS SUBMARINES

				required when this project passed through Main Gate
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**D.1.2. Boat 4**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
Commercial	<i>Measures under development</i>			
Financial				
Project Management				
System Readiness	1-9	-	-	System Readiness levels are not currently mandated for approvals
Technology Readiness	1-9	-	-	Readiness Levels were not measured when this project passed through Main Gate

**D.2. Performance against Defence Lines of Development**

Not required for pre-Main Investment Decision Projects				
Line of Development	Description	Forecast		
		To be met	At Risk	Not to be met
01 Equipment	The provision of the platform and equipment/systems to meet the user requirement.	Yes	-	-
02 Training	Delivery of trained submarine crew and support personnel, by the enduring provision of sufficient and suitable facilities, training media and instructors.	Yes	Yes	-
03 Logistics	Capability being sustained in order that Astute Class can meet allocated military tasks in peacetime, conduct a transition to war and operate effectively in time of conflict.	Yes	-	-
04 Infrastructure	How Astute Class will operate and interface with naval real estate such as dockyards, ammunition facilities, pilots and ranges.	Yes	-	-
05 Personnel	The provision of trained people. Acceptance of the manning solution will be a staged process.	Yes	-	-
06 Doctrine	Expression of the principles by which military forces guide their actions and is a codification of how activity is conducted today.	Yes	-	-
07 Organisation	The Forces Structures component of Military Capability for Astute is measured against the number of vessels in the class and their readiness state against the requirement of the Royal Naval Plan	Yes	-	-
08 Information	The provision of a coherent development of data, information and knowledge requirements for capabilities and all processes designed to gather and handle data.	Yes	-	-
Percentage currently forecast to be met		100%		
In-Year Change		-		

## ASTUTE CLASS SUBMARINES

### D.2.1.1. Defence Lines of Development Variation

Date	Line of Development	Factor	Reason for Variation
March 2010	Training	Technical Factors	Training is at risk due to the extent of Boat design changes and the potential impact of these changes to Astute Class Training Service. Mitigation is that Astute Class Training course delivery has been prioritised to meet the known requirement and essential safety training updates are being optimised with the training delivery.
December 2009	Logistics	Technical Factors	Logistics no longer considered at risk. Boat programme slippage has allowed logistics to catch up.
Historical	Logistics	Technical Factors	Risk remains to the support solution during the Transition phase from manufacture into service and in providing the initial provision of spares to the first of class.

### D.3. Performance against Key Performance Measures

#### D.3.1. Boats 1-3

##### D.3.1.1. Performance against Key Performance Measures

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
01	1 to 7	Weapon system effectiveness	Yes	-	-
02	1 to 7	Sonar performance	Yes	-	-
03	1, 3	Hull strength (survivability)	Yes	-	-
04	1,2,3,5	Top speed	Yes	-	-
05	1, 3	Endurance	Yes	-	-
06	1,2,3,4,5,8	Acoustic signature	Yes	-	-
07	3, 5	Complement	Yes	-	-
08	1 to 8	Land attack capability	Yes	-	-
09	1 to 8	Special forces capability	Yes	-	-
Percentage currently forecast to be met			100%		
In-Year Change			0		

##### D.3.1.2. Key Performance Measures Variation – Not applicable

##### D.3.1.3. Operational Impact of variation – Not applicable

#### D.3.2. Boat 4

##### D.3.2.1. Performance against Key Performance Measures

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
01	1,2,4,5,6,7,8	Intelligence and Surveillance	Yes	-	-
02	1,2,3,4,5,8	Interoperability	Yes	Yes	-

**ASTUTE CLASS SUBMARINES**

03	1,2,3,4,5,6,8	Sustained Global Reach	Yes	-	-
04	1 to 8	Theatre Mobility	Yes	-	-
05	1 to 8	Mission Flexibility	Yes	-	-
06	1 to 8	Force and Power Projection	Yes	-	-
07	1 to 8	Battlespace Dominance	Yes	Yes	-
08	1,2,3,5,8	Survivability	Yes	Yes	-
09	1 to 5	Generation	Yes	-	-
10	1,3,8	Through Life Adaptability	Yes	-	-
Percentage currently forecast to be met			100%		
In-Year Change			-		

**D.3.2.2. Key Performance Measures Variation**

Date	Key Measure)	Factor	Reason for Variation
March 2010	Interoperability	Technical Factors	Three complementary projects (Naval Extremely/Super High Frequency Satcom Terminal, Spearfish Upgrade and Astute Capability Sustainment Programme) are still awaiting HM Treasury approval to proceed placing 3 Astute KPMs at risk.
March 2010	Battlespace Dominance	Technical Factors	Three complementary projects (Naval Extremely/Super High Frequency Satcom Terminal, Spearfish Upgrade and Astute Capability Sustainment Programme) are still awaiting HM Treasury approval to proceed placing 3 Astute KPMs at risk.
March 2010	Survivability	Technical Factors	Three complementary projects (Naval Extremely/Super High Frequency Satcom Terminal, Spearfish Upgrade and Astute Capability Sustainment Programme) are still awaiting HM Treasury approval to proceed placing 3 Astute Boat 4 KPMs at risk.

**D.3.2.3. Operational Impact of variation**

KPM	Date	Status	Operational impact of variation
-	-	-	-
-	-	-	-
<b>Total</b>		-	

**D.3.3. Support Contract – Not applicable**

## BEYOND VISUAL RANGE AIR-TO-AIR MISSILE

### Team Responsible

Beyond Visual Range Air-to-Air Missile

### Single point of accountability for Project Capability

Head of Capability - Theatre Airspace

### Senior Responsible Officer

N/A

Number of Projects / Increments 1

### Current Status of Projects / Increments

- Pre Main Investment Decision – N/A
- Post Main Investment Decision – Beyond Visual Range Air-to-Air Missile
- Support Contract – N/A
- Other – please provide details – N/A

### A. Section A: The Project

#### A.1. The Requirement

The Beyond Visual Range Air-to-Air Missile system (the selected equipment is the Meteor system) will provide Typhoon with the capability to combat projected air-to-air threats and sustain air superiority throughout the life of the aircraft. The integration of Meteor onto Typhoon forms part of the project, with a current Initial Operating Capability of 2015.

Until Meteor is integrated, Typhoon will be armed with the Advanced Medium Range Air-to-Air Missile, acquired from Raytheon Missile Systems.

Key features of the Beyond Visual Range Air-to-Air Missile requirement include stealthy launch, enhanced kinematics (giving increased stand-off and disengagement ranges, a better ability to engage and destroy highly agile manoeuvring targets), a large no-escape zone and robust performance against countermeasures.

This is a collaborative programme with: Germany, Spain and Italy (for Typhoon), Sweden (for Gripen) and France (for Rafale).

#### A.2. The Assessment Phase

On 2 October 1995, Minister (Defence Procurement) gave approval for the issue of an Invitation to Tender for Beyond Visual Range Air-to-Air Missile. The Invitation to Tender was issued on 5 December 1995. Two bids were received; one from a consortium led by Matra BAe Dynamics UK Ltd (now MBDA 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 phase was approved and contracts were placed on both bidders for a period of one year, with results to be technically and operationally assessed before a final decision was made. Both Project Definition & Risk reduction contracts were let in August 1997 and revised bids were received in May 1998. Due to the complexity of the Beyond Visual Range Air-to-Air Missile assessment, the need to accommodate the requirements of the Prospective Partner Nations and the need to go for 'Best and Final' Offers (primarily as a result of a 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 announced that the Matra BAe Dynamics Meteor missile had been selected.



## BEYOND VISUAL RANGE AIR-TO-AIR MISSILE

### A.3. Progress

The contract for the demonstration, manufacture and support of Meteor was placed with MBDA UK Ltd on 23 December 2002. To date only the UK has committed to production; however the contract includes production options that can be exercised by partner nations during the demonstration phase and all nations have stated that they are planning towards committing to production by the end of 2010.

The Meteor programme has progressed from the development standard of missile, to a near-production variant, and has started a comprehensive proving programme consisting of modelling, ground trials, air carriage trials and guided firings, the first of which was completed during June 2009. These activities will generate the evidence against which the missile will be accepted up to the end of the Development programme.

Eurofighter GmbH were given authorisation in July 2009 to begin preliminary Typhoon missile carriage and release work, the first step towards full integration. The full integration as part of a wider enhancement package is being developed in support of achieving In-Service Date 2 in 2015, with a priced proposal received and being evaluated.

### A.4. Capability Risks

The Meteor capability is required to replace the current AIM-120 Advanced Medium Range Air-to-Air Missile whose capability falls significantly below that of Meteor. The procurement of the Advanced Medium Range Air-to-Air Missile was a temporary solution to provide Typhoon's anti-air capability for the period between Typhoon Operational Employment Date (June 2007) and Meteor In-Service Date. Whilst the continued use of the Advanced Medium Range Air-to-Air Missile is not expected to affect peacetime air policing, the survivability and capability of Typhoon in almost all operational roles will be compromised by non-delivery of Meteor. It will also necessitate an extension to the life of existing Advanced Medium Range Air-to-Air Missile missiles beyond the currently supported date, and will introduce a risk that stock levels will be insufficient to meet the operational needs. Should Meteor integration slip, there will be a need to address any gap in the Advanced Medium Range Air-to-Air Missile capability.

### A.5. Associated Projects

Description	Critical to achievement of IOC	
	Project Title	Forecast IOC
Typhoon	Typhoon Future Capability Programme 2	July 2015

### A.6. Procurement Strategy

Pre-Main Investment Decision Projects / Increments only				
Description	Procurement Route			
-	-			
Post-Main Investment Decision Projects / Increments only				
	Contractor	Contract Scope	Contract Type	Procurement Route
Beyond Visual Range Air-to-Air Missile	MBDA UK Ltd (Meteor)	Demonstration (all 6 nations) and Manufacture (United Kingdom only at present)	Firm price up to June 2007 (Demonstration), Firm Price up to June 2006 (Manufacture), Fixed Price thereafter subject to Variation of Price	International competition
Advanced Medium Range Air-to-Air Missile	Raytheon Missile Systems (Advanced Medium Range Air-to-Air Missile)	Manufacture to In-Service	Firm price	Non-competitive

**A.7. Support Strategy**

**A.7.1. Support / Service / PFI Contract Strategy**

Description	Contractor	Contract Scope	Contract Type	Procurement Route
It is currently envisaged that Meteor will be supported through Contractor Logistic Support arrangements, covering Post Design Services, Repairs and Surveillance and Life Extension. The final agreed strategy is dependent upon the outcome of the reliability trials within the development programme and information and decisions from the Meteor Partner Nations. The current forecast is that these inputs will be available in time to inform a support strategy submission to the approval authorities in during 2011.				
-	-	-	-	-

**B. Section B: Cost**

**B.1. Cost of the Assessment Phase**

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
Beyond Visual Range Air-to-Air Missile	14	20	+6	1%	2%

**B.2. Planned / Actual Cost Boundaries for Demonstration & Manufacture Phase / PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Beyond Visual Range Air-to-Air Missile	1198	1240	1362

**B.3. Cost of the Demonstration and Manufacture Phase**

Description	Approved Cost (£m)	Actual / Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
Beyond Visual Range Air-to-Air Missile	1362	1305	-57	+23

**B.3.1. Cost Variation against approved Cost of the Demonstration & Manufacture Phase**

**B.3.1.1. Beyond Visual Range Air-to-Air Missile**

Date	Variation (£m)	Factor	Reason for Variation
October 2009	-13	Technical Factors	Re-assessment of Meteor Integration (-£4m). Re-assessment in UK Technical Support / GFE (-£8m).
August 2009	+13	Accounting Adjustments and Re-definitions	Benefit of achieving Prime Contract Milestones at reduced VAT rate (-£2m). Difference in variation due to revision of Cost of Capital charge (+£15m).
August 2009	+23	Exchange Rate	Change in Euro and Krona exchange rate on Meteor Prime Contract (+22m). Revaluation of

BEYOND VISUAL RANGE AIR-TO-AIR MISSILE

Date	Variation (£m)	Factor	Reason for Variation
			foreign currency assumptions on provision of Target service in support of Meteor Firing trials (+1m).
Historic	+3	Exchange Rate	Change in Euro exchange rate on Meteor Prime Contract (+3m)
Historic	+48	Accounting Adjustments and Re-definitions	Change in assumption in regard to recovery of VAT (+£9m), Derivation of approved cost on resource basis (-£4m), Difference in variation due to revision of Cost of Capital charge (-£11m). Correction of treatment in Contracted Out Services VAT from previous years to align with Main Gate Approval (+£3m). Revision of Cost of Capital charge due to revised delivery profile (+£51m).
Historic	-72	Changed Budgetary Priorities	In consultation with the customer the decision has been taken to examine capability trade-offs while Realignment and Integration proposals are being matured and assessed against the requirement (-£36m). Effect of Equipment Planning 05 Options: reduce Meteor numbers (-£55m), decision taken not to upgrade AIM-120B Advanced Medium Range Air-to-Air Missiles to C-standard (-£65m). Re-costing of UK Technical Support requirements in addition to Memorandum Of Understanding commitments (+£3m). Re-costing of Meteor Integration (-£1m). Increases for Insensitive Munitions (+£9m). Missiles & Ancillary Equipment in Support of Typhoon Integration (+£6m). Surveillance & Life Extension (+£5m). Initial Spares (+£3m). Container Development (+£1m). Container Production (+£1m). Support to Typhoon Integration (+£2m). Revised deliveries of Meteor Missiles (+£12m). Container Logistics Support for Meteor (+£7m). Production Investment (+£1m). Trial Ranger (+£11m). Increase in Unit Production Cost for Advanced Medium Range Air-to-Air Missile missiles (MPR03 +£25m; MPR04 +£15m). Surveillance Spares for Advanced Medium Range Air-to-Air Missile (+£1m). UK share of Government Furnished Equipment (+£6m). Decrease for Service Evaluation Trials for Meteor (-£7m). Integration of Meteor onto Typhoon (-£9m), Production of Meteor Telemetred Operational Missiles (-£1m), In Service Reliability Demonstration

BEYOND VISUAL RANGE AIR-TO-AIR MISSILE

Date	Variation (£m)	Factor	Reason for Variation
			exchange rate on Meteor Technical Support contracts (£1m). .
Historic	-120	Changed Requirement	UK share of additional common requirement (+£2m), additional requirement for Dual Date Link (+£6m), additional containers required for Meteor (+£2m), refurbishment of existing Advanced Medium Range Air-to-Air Missiles (-£16m). Re-costing of Meteor Missile Additional Acquisition (-£2m). Reduction in missile numbers to minimum contractual commitments (-£53m). Reassessment of In Service Evaluation Trials for Meteor (-£19m). Re-assessment of Meteor Integration (-£40m).
Historic	+55	Change in associated project	UK support to Development Guided Firing campaign on Gripen (+£6m). UK support to Tornado F3 Alternative trials platform (+£3m). UK share of "Realignment" programme due to the non-availability of Typhoon aircraft for Meteor Development Trials programme (+£46m).
Historic	-16	Contracting Process	UK's share of MBDA revalidation of prices caused by delay in contract placement (+£6m). Revalidation to reflect prices within Advanced Medium Range Air-to-Air Missile contract (-£14m), and effect of revalidation on Cost of Capital Charge (-£8m)
Historic	+30	Exchange Rate	Change in Euro exchange rate on Meteor prime (+£29m). Change in Dollar exchange rate on Advanced Medium Range Air-to-Air Missile (-£11m). Revaluation of foreign currency assumptions on current and future Advanced Medium Range Air-to-Air Missile contracts (+£9m). Revaluation of foreign currency assumptions on Meteor Prime Contract (+£3m).
Historic	+114	Procurement Strategy	Revaluation of UK's share of Government Furnished Equipment/ Government Furnished Facilities requirements (-£20m). Additional funding required for integration of AIM-120C Advanced Medium Range Air-to-Air Missiles onto Typhoon (+£82m). Gripen Trial (+£2m). Realism measure on funding for integration of AIM-120C Advanced Medium Range Air-to-Air Missiles onto Typhoon (-£65m). Decrease in UK's share of Development (-£30m). Increase of UK's share of development through transfer of

BEYOND VISUAL RANGE AIR-TO-AIR MISSILE

Date	Variation (£m)	Factor	Reason for Variation
			work share from Germany (+£31m) and UK share of Government Furnished Equipment (+£1m). UK share of Memorandum Of Understanding Technical Support requirements (+£2m). UK share of Memorandum Of Understanding Government Furnished Equipment requirements (+£7m). Revised Variation of Price associated with deliveries of Meteor Missiles (+£27m). Reduction in technical support to Advanced Medium Range Air-to-Air Missile (-£5m). Prime Contractor supporting Typhoon Integration Programme (+£20m). UK contractual commitment to pre-production activities (+£5m). Cost associated with UK's contractual commitment to minimum Production quantities (+£57m).
Historic	-122	Risk Differential	Difference between the risk allowed for in the most likely (50%) and the highest acceptance (90%) estimates at Main Gate (-£129m), Variation due to revised approval figures (+£7m).
<b>Total</b>	<b>-57</b>		

**B.3.2. Operational Impact of Cost Variations of Demonstration & Manufacture Phase**

Description	
-	-

**B.4. Unit production cost**

Description	Unit production costs (£m)		Quantities required	
	At Main Investment Decision	Currently	At Main Investment Decision	Currently
Beyond Visual Range Air-to-Air Missile	1.0	2.1	***	***

**B.5. Progress against approved Support / Service / PFI Cost – Not Applicable**

**B.6. Expenditure to date**

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
<b>Assessment Phase (£m)</b>	20	-	20
<b>Demonstration &amp; Manufacture Phase (£m)</b>	541	136	677
<b>Support Phase / Service / PFI Cost (£m)</b>	-	-	-
<b>Total Expenditure (£m)</b>	<b>561</b>	<b>136</b>	<b>697</b>

BEYOND VISUAL RANGE AIR-TO-AIR MISSILE

**C. Section C: Timescale**

**C.1. Duration of the Assessment Phase**

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Beyond Visual Range Air-to-Air Missile	May 2000	October 1995	55

**C.2. Planned / Actual Boundaries for introduction of the Capability**

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
Beyond Visual Range Air-to-Air Missile (Original In-Service Date)	June 2010	September 2011	August 2012
Beyond Visual Range Air-to-Air Missile (In-Service Date 2)	February 2015	July 2015	July 2015

**C.3. In-Service Date/Initial Operating Capability**

**C.3.1. Definition**

Description	In Service Date/Initial Operating Capability
Beyond Visual Range Air-to-Air Missile	<p><b>Original In-Service Date Definition:</b> Achievement of an operational capability with *** missiles and supporting infrastructure. At MPR 2007 forecast In-Service Date was August 2013, against the approved In-Service Date at Main Gate of August 2012.</p> <p>The In-Service Date definition was redefined in 2008, following a review of the programme to reflect a two-stage approach to delivering the capability, as follows:</p>
Beyond Visual Range Air-to-Air Missile	<p><b>In-Service Date 1: (Platform Ready):</b> A fully developed missile standard ready for delivery and platform integration, having demonstrated achievement of In-Service Date 1 Key Performance Measures</p>
Beyond Visual Range Air-to-Air Missile	<p><b>In-Service Date 2: Initial Operating Capability (Typhoon Meteor Capability):</b> The first Front Line Unit is declared Operational with at least *** missiles and having demonstrated achievement of In-Service Date 2 Key Performance Measures.</p>

**C.3.2. Progress against approved Dates**

Description	Approved Date	Actual / Forecast Date	Variation	In-Year Variation
Original In-Service Date	August 2012	August 2013	+12	-
In-Service Date 1	August 2012	August 2012	0	0
In-Service Date 2	July 2015	July 2015	0	0
<b>Total</b>			<b>0</b>	<b>0</b>

**C.3.3. Timescale variation**

**C.3.3.1. Beyond Visual Range Air-to-Air Missile — variations against original In-Service Date definition**

Date	Variation	Factor	Reason for Variation
Historic	+15	Change in associated project	Typhoon integration delays cannot be absorbed and uncertainty over Typhoon Future Capability Programme (+15 months).

## BEYOND VISUAL RANGE AIR-TO-AIR MISSILE

Historic	+8	Contracting Process	Slippage caused by delays in placing contract (+11 months). Reassessment of opportunities arising from Meteor Realignment activities, to reduce the duration of firing trial campaigns and to de-risk transition from Demonstration to Production phases (-3 months).
Historic	-11	Risk Differential	Difference between the risk allowed for in the most likely (50%) and the highest (90%) estimates approved at Main Gate (-11 months).
Net Variation	+12		

### C.3.4. Other costs resulting from Timescale variation

Description	Date	£m (+ Cost / - Saving)	Factor	Reason for expenditure or saving
Change in associated project	Historic	+5	Change in associated project	Extension to the life of the current Advanced Medium Range Air-to-Air Missile variant until integration of Meteor onto Typhoon is achieved (+£5m).
<b>Total</b>	-	+5		

### C.3.5. Operational Impact of In-Service Date/Initial Operating Capability variation

Description	
Beyond Visual Range Air-to-Air Missile	Extended reliance on the current AIM-120 Advanced Medium Range Air-to-Air Missile. The capability of the latter falls significantly below that of Meteor: its procurement was a temporary solution to provide Typhoon with an anti-air capability for the period between Typhoon Operational Employment Date and Meteor In-Service Date. Whilst the In-Service Date delay is not expected to affect peacetime air policing, the survivability and capability of Typhoon in almost all operational roles would be compromised by an extended delay. A staged transfer from Advanced Medium Range Air-to-Air Missile to Meteor is necessary owing to the latter's delivery profile, and hence use of Advanced Medium Range Air-to-Air Missile by Typhoon extends beyond Meteor In-Service Date. There is some risk that part of the Advanced Medium Range Air-to-Air Missile stocks will not endure until the revised In-Service Date and hence we may fall below the minimum required stockpile liability, although this cannot be confirmed at present.

## C.4. Full Operating Capability

### C.4.1. Definition

Description	Full Operating Capability
Beyond Visual Range Air-to-Air Missile	The full exploitation of the Meteor capabilities by the Typhoon platform. This includes a two way datalink, a full six-missile fit and the full use of Meteor symbology and cockpit functionality.

### C.4.2. Progress Report

Description	Full Operating Capability
Beyond Visual Range Air-to-Air Missile	The option of proceeding to Full Operating Capability will be considered in due course in the light of further threat analysis

## C.5. Support / Service / PFI Contract – not applicable

**D. Section D: Performance**

**D.1. Maturity Measures**

**D.1.1. Beyond Visual Range Air-to-Air Missile**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
Commercial	<i>Measures under development</i>			
Financial				
Project Management				
System Readiness	-	-	-	Main Gate was prior to the requirement to monitor readiness levels
Technology Readiness	-	-	-	

**D.2. Performance against Defence Lines of Development**

Not required for pre-Main Investment Decision Projects				
Line of Development	Description	Forecast		
		To be met	At Risk	Not to be met
9. Equipment	Integrated Meteor missile, support eqpt	Yes		
10. Training	Industry led training for in-service users	Yes		
11. Logistics	Industrial support for in-service use	Yes		
12. Infrastructure	Defence Estate prepared to support	Yes		
13. Personnel	Supply of sufficient qualified personnel	Yes		
14. Doctrine	Principles for capability employment	Yes		
15. Organisation	Establishing organisational relationship	Yes		
16. Information	Identifying data, information, knowledge	Yes		
Percentage currently forecast to be met		100%		
In-Year Change		N/A		

**D.2.1.1. Defence Lines of Development Variation – not applicable**

**D.3. Performance against Key Performance Measures**

**D.3.1. Beyond Visual Range Air-to-Air Missile**

**D.3.1.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
01	Information	Multiple Target Capability	Yes		
02	Doctrine	Kill Probability	Yes		
03	Doctrine	Enhanced Typhoon Survivability	Yes		
04	Equipment	Typhoon Compatibility	Yes		
05	Logistics	Minimum Air Carriage Life	Yes		
06	Logistics	Reliability	Yes		
07	Logistics	Support	Yes		
Percentage currently forecast to be met			100%		
In-Year Change			0		

**D.3.1.2. Key Performance Measures Variation – not applicable**

**D.3.3. Support Contract – not applicable  
Team Responsible**



Networks Team

**Single point of accountability for Project Capability**

CAP CCII (Command, Control & Information Infrastructure)

**Senior Responsible Officer**

Darrell Midgley

**Number of Projects / Increments      2**

**Current Status of Projects / Increments**

- **Post Main Investment Decision – Falcon Increment A  
– Falcon Increment C**

**A. Section A: The Project**

**A.1. The Requirement**

Falcon will provide the comprehensive deployable communication systems that are needed at all levels of command and will operate in conjunction with systems such as Bowman, Cormorant, Skynet 5 and with allies' communication and information systems. It will not duplicate the capability of existing systems, but will be the high capacity system that binds together tactical communications in a theatre of operations as an integral part of the plans for Networked Enabled Capability. Falcon will replace, incrementally, a number of current systems, in particular Ptarmigan and RAF Transportable Telecommunications System/Deployable Local Area Network

The programme comprises a number of increments of which only Increments A and C are reflected in MPR. Increment A will provide a tactical formation level secure communication system for the High Readiness Force (Land) and the Allied Rapid Reaction Corps. It will enable units to be deployed rapidly to areas of crisis, thereby allowing the UK to remain a pivotal member of the Allied Rapid Reaction Corps. The system will be modular and upgradeable, incorporating much off the shelf technology that will ease management of obsolescence throughout its service life. Increment C, providing capability for Royal Air Force deployed operating bases, is the same equipment as contracted under Falcon Increment A. Falcon Increment A will require significantly less manpower to operate than the system being replaced.

**A.2. The Assessment Phase**

Increment A of the Falcon programme gained Initial Gate approval in July 2002, following an extended Concept Phase that considered two key options: buy off the shelf technology (Bowman and Cormorant) or buy new capability. It was concluded that a new capability was required. Marconi Selenia (now Selex) and BAE Systems Insyte were selected for the 15 month Assessment Phase contract and to compete for the Demonstration and Manufacture Phase prime contract for Increment A. The Assessment Phase contracts concentrated on reducing the risk in the proposals for the Demonstration and Manufacture phase, including demonstration of components and subsystems to achieve an acceptable, affordable, low risk solution. In addition, Whole Life Cost estimates were refined. Bidders' proposals for the Demonstration and Manufacture phase were submitted on 31 March 2004.

The procurement strategy endorsed at Initial Gate comprised four increments: Increment A provided for High Readiness Force (Land) and the Allied Rapid Reaction Corps; Increment B for UK divisions and brigades under armour; Increment C for Royal Air Force deployed operational bases; and Increment D for littoral warfare and deep support, including higher mobility. Increment D was then an unfunded aspiration.

During the later stages of the Assessment Phase in 2004/2005, a savings option removed funding from the first two years of the Demonstration and Manufacture phase, resulting in a review of the incremental procurement strategy. Two options were considered. The first was for a single programme that effectively would have combined all three funded increments. This would have necessitated the project returning to pre-Initial Gate status and delayed the ISD by up to four years. This option was adopted as the planning assumption and reflected in MPR 2005. The second option was for the delivery of "early capability" that would provide for one medium scale deployment by 2010. It would utilise the savings option funding profile and exploit the existing contractor bids for Increment A. This option was explored and found to be viable.

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In July 2005, approval was given to the further in-depth exploration of the second option and the selection of BAE Systems Insyte as the preferred bidder for Falcon Increment A. A programme was developed in conjunction with the preferred bidder that was affordable within the available funding. Falcon Increment C achieved Main Gate approval in July 2007 and was added as a Falcon Increment A contract amendment in September 2007.

### A.3. Progress

Following Main Gate approval for Increment A in March 2006, the Demonstration and Manufacture contract was awarded to BAE Systems Insyte. The majority of the system has been developed to a high degree of maturity and the system validation and verification process started, but there have been delays to the voice telephony sub-system and the cryptographic sub-system, which have had a consequential delay to the whole contract. The Equipment Acceptance Trial, a key milestone in the system's development, was completed successfully and reported as a pass with caveats in November 2009. Falcon Phase 2, which is in the early concept stage and is thus not covered by the MPR, is subject to a financial planning round 2010 Option, this option being a re-profile and would result in a delay to Phase 2 In Service Date by one year.

Under the Director Information Systems and Services, Falcon is being considered as a potential candidate to satisfy an element of the technical architecture of current operations. This initiative has resulted in a joint MOD/BAE Systems Insyte study as to the feasibility of Falcon to satisfy this requirement.

As of April 2010, Falcon was approved as a funded Urgent Operational Requirement at £55M in preparation for deployment to Afghanistan. An Information Note on the programme changes is in course of issue and will be reflected in MPR 2011.

### A.4. Capability Risks

Falcon Increment A and Increment C will deliver secure one-to-one voice and wideband data networks to deployed forces, including Headquarters Allied Rapid Reaction Corps, Divisional and Brigade Headquarters and unit level command posts and Deployed Operating Bases. Without this capability Land and Air Forces will be unable to execute effective command and control. In addition, Falcon Increment A and Increment C will also provide wideband data coverage for vital intelligence gathering platforms such as Airborne Stand Off Radar, Land Environment Air Picture Provision and Watchkeeper. Without the wideband data network delivered under Falcon this intelligence information will not be delivered to the key decision makers in a timely fashion. Falcon Increment C will also support the increased data requirements of new aircraft such as Typhoon and will allow them to operate from Deployed Operating Bases.

### A.5. Associated Projects – Not Applicable

### A.6. Procurement Strategy

Pre-Main Investment Decision Projects / Increments only				
Description	Procurement Route			
-	-			
Post-Main Investment Decision Projects / Increments only				
	Contractor	Contract Scope	Contract Type	Procurement Route
Increment A	BAE Systems Insyte	Demonstration and Manufacture	Firm price	UK competition
Increment C	BAE Systems Insyte	Demonstration and Manufacture	Firm price	Single Source

### A.7. Support Strategy

#### A.7.1 Support / Service / PFI Contract Strategy

Description	

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The support strategy is based on a Contractor Logistic Support agreement with firm prices for the first four years from Initial Operating Capability. Fixed prices have been secured for a further five years after this period for both Increments A and C.

	Contractor	Contract Scope	Contract Type	Procurement Route
Increment A	BAE Systems Insyte	Capability and Availability	Firm price for first 4 years	As part of main competition
Increment C	BAE Systems Insyte	Capability and Availability	Firm price for first 4 years	Single Source

**B. Section B: Cost**

**B.1. Cost of the Assessment Phase**

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
Increment A	30	31	+1	9.5%	9.8%
Increment C	-	-	-	-	-
<b>Total</b>	<b>30</b>	<b>31</b>	<b>+1</b>	<b>9.5%</b>	<b>9.8%</b>

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Increment A	290	307	324
Increment C	42	47	50

**B.3. Cost of the Demonstration and Manufacture Phase**

Description	Approved Cost (£m)	Actual / Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
Increment A	324	270	-54	-15
Increment C	50	46	-4	0
<b>Total</b>	<b>374</b>	<b>316</b>	<b>-58</b>	<b>-15</b>

**B.3.1. Cost Variation against approved Cost of the Demonstration and Manufacture Phase**

**B.3.1.1. Increment A**

Date	Variation (£m)	Factor	Reason for Variation
February 2010	-1	Accounting Adjustments and Re-definitions	Decrease in the Cost of Capital Charge due to re-profiling of Asset Deliveries and Creditors and Accruals.
May 2009	-14	Budgetary Factors	A Financial Planning Round 2009 Option was implemented which reduced risk funding for Increments A & C.

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Historic	+2	Technical Factors	Latest assessment of deliveries, for Falcon A, leading to an increase in Cost of Capital.
Historic	-8	Changed Capability Requirements	This is due to the Commitments Regime decision not to commit to Defence Information Infrastructure (Future) integration during 2008/09.
Historic	+1	Accounting Adjustments and Re-definitions	Correction of treatment in Contracted Out Services VAT from previous years to align with Main Gate Approval
Historic	-5	Budgetary Factors	Assessment of later years' risk mitigation budget yielded a reduction in 2011/12 (-£4m). Reduction in Risk Mitigation funding in 2008/09 to ensure overall Falcon Increment A affordability within Equipment Programme 07 (-£1m).
Historic	-3	Changed Capability Requirements	Vehicle Military Engineering Programme for Falcon vehicles was transferred in 2006/07 to Joint Electronic Surveillance Integrated Project Team (-£1m). Vehicle Military Engineering Programme for Falcon vehicles was transferred 2005/06 to Joint Electronic Surveillance Integrated Project Team (-£2m).
Historic	-7	Procurement Process	Condition of Main Gate Financial Approval was any planned accrual in 2005/06 that could not be achieved could not be slipped into subsequent financial years (-£7m).
Historic	-2	Technical Factors	Costs saved due to Falcon Vehicle change identified by contract study
Historic	-17	Risk Differential	Difference between the risk allowed for in the most likely (50%) and highest acceptable (80%) estimates at Main Gate.
<b>Net Variation</b>	<b>-54</b>		

**B.3.1.2. Increment C**

Date	Variation (£m)	Factor	Reason for Variation
Historic	-1	Accounting Adjustments and Re-definitions	Reduction of In-Year expenditure against Control Total
Historic	-3	Risk Differential	Difference between the risk allowed for in the most likely (50%) and highest acceptable (80%) estimates at Main Gate.
<b>Net Variation</b>	<b>-4</b>		

**B.3.2. Operational Impact of Cost Variations of Demonstration and Manufacture Phase**

Description	
Increment A	A Financial Planning Round 2009 option to remove 40% of uncommitted risk funding allocated to the Falcon project has been taken. This has removed £14M across years 1 – 4, without any risks being retired; however the current financial risk exposure calculations are representative of the remaining risk budget.

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Increment C	As above for Increment A.
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**B.4. Unit production cost N/A**

**B.5. Progress against approved Support / Service / PFI Cost**

Description	Approved Cost	Forecast cost	Variation	In-Year Variation
Increment A	82	70	-12	-
Increment C	18	18	0	-

**B.5.1. Cost Variation against approved Cost**

**B.5.1.1. Project**

Date	Variation (£m)	Factor	Reason for Variation
Historic	-12	Accountancy adjustments and re-definitions	Correction of treatment in Contracted Out Services VAT to align with Main Gate approval
<b>Net Variation</b>	<b>-12</b>		

**B.5.2. Cost Variation against approved Increment A – Not Applicable**

**B.5.2.1. Project – Not Applicable**

**B.5.3. Operational Impact of Support / Service / PFI Cost Variations – Not Applicable**

**B.6. Expenditure to date**

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
Assessment Phase (£m) Incr A only	31	-	31
Demonstration & Manufacture Phase (£m) Incr C	128	44	172
Support Phase / Service / PFI Cost (£m)	-	-	-
<b>Total Expenditure (£m)</b>	<b>159</b>	<b>44</b>	<b>203</b>

**C. Section C: Timescale**

**C.1. Duration of the Assessment Phase**

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Increment A	March 2006	July 2002	44
Increment C	July 2007	-	-

**C.2. Planned / Actual Boundaries for introduction of the Capability**

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
Increment A	October 2009	June 2010	February 2011
Increment C	May 2010	September 2010	March 2011

**C.3. In-Service Date/Initial Operating Capability**

**C.3.1. Definition**

Description	In-Service Date
Increment A	This is defined as the minimum scaling to provide wide and local area

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	deployable communications that will support a non-enduring medium scale UK framework nation land deployment short of war fighting.
Increment C	This is the minimum scaling to provide local area deployable communications to support a non enduring medium scale peace keeping RAF deployment on one austere and one bare base

**C.3.2. Progress against approved Dates**

Description	Approved Date	Actual / Forecast Date	Variation	In-Year Variation
Increment A	February 2011	December 2010	-2	+1
Increment C	March 2011	April 2011	+1	+2

**C.3.3. Timescale variation**

**C.3.3.1. Increment A**

Date	Variation	Factor	Reason for Variation
October 2009	+1	Technical Factors	Impacting risks associated with Falcon Management System Software maturity.
Historic	+5	Technical Factors	Delays in development of voice telephony and Encryption sub-systems.
Historic	-8	Risk Differential	Difference between the risk allowed for in the most likely (50%) and the highest acceptable (90%) estimates at Main Gate.
<b>Net Variation</b>	<b>-2</b>		

**C.3.3.2. Increment C**

Date	Variation	Factor	Reason for Variation
June 2009	+2	Technical Factors	Impacting risks associated with crypto delays in the validation process.
Historic	+5	Technical Factors	Delays in development of voice telephony and Encryption sub-systems.
Historic	-6	Risk Differential	Difference between the risk allowed for in the most likely (50%) and the highest acceptable (90%) estimates at Main Gate.
<b>Net Variation</b>	<b>+1</b>		

**C.3.4. Other costs resulting from Timescale variation – Not Applicable**

**C.3.5. Operational Impact of In-Service Date/Initial Operating Capability variation – Not Applicable**

**C.4. Full Operating Capability**

**C.4.1. Definition**

Description	Full Operating Capability
Increment A	This is defined as the scaling and functionality that will enable the Allied Rapid Reaction Corps to conduct war fighting operations as a High Readiness Force (Land)
Increment C	This is the capability to support two medium scale RAF deployments as declared in the Planning Round 3rd Order Assumptions, one of which is enduring

**C.4.2. Progress Report**

Description	Full Operating Capability
Increment A	The project is at the stage of releasing design to production in order that production can commence. Production is required for the System Field Trial and Initial Operating Capability; these are the milestones that are presently being monitored and reported on by the Production and fielding Working Group.
Increment C	The project is at the stage of releasing design to production in order that production can commence. Production is required for the System Field Trial and Initial Operating Capability; these are the milestones that are presently being monitored and reported on by the Production and fielding Working Group.

**C.5. Support / Service / PFI Contract**

**C.5.1. Scope of Support / Service / PFI Contract**

Description	
Increment A	Contractor Logistics Support providing for a minimal agreed level of System Availability
Increment C	Contractor Logistics Support providing for a minimal agreed level of System Availability

**C.5.2. Progress against approved Support Contract Go-Live Date**

Description	Approved Date	Actual Date	Variation (month)	In-Year Variation (month)
Increment A	February 2011	December 2010	-2	+1
Increment C	March 2011	April 2011	+1	+2

**C.5.2.1. Go-Live Date Variation**

**C.5.2.2.1. Increment A**

Date	Variation	Factor	Reason for Variation
October 2009	+1	Technical Factors	Impacting risks associated with Falcon Management System Software maturity.
<b>Net Variation</b>	<b>+1</b>		

**C.5.2.2.2. Increment C**

Date	Variation	Factor	Reason for Variation
October 2009	+2	Technical Factors	Impacting risks associated with Falcon Management System Software maturity.
<b>Net Variation</b>	<b>+2</b>		

**C.5.3. Progress against approved End of Support Contract Date**

Description	Approved Date	Actual Date	Variation	In-Year Variation
Increment A	December 2018	December 2018	0	0
Increment C	December 2018	December 2018	0	0

**C.5.3.1. End of Contract Date Variation – Not Applicable**

**C.5.4. Operational Impact of Support / Service / PFI Support Contract variation – Not Applicable**

**D. Section D: Performance**

**D.1. Maturity Measures**

**D.1.1. Increment A**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
Commercial	<i>Measures under development</i>			
Financial				
Project Management				
System Readiness	1-9	4	8	Equipment Acceptance Trial completed
Technology Readiness	1-9	6	8	Equipment Acceptance Trial completed

**D.1.2. Increment C**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
Commercial	<i>Measures under development</i>			
Financial				
Project Management				
System Readiness	1-9	4	8	EAT completed
Technology Readiness	1-9	6	8	EAT completed

**D.2. Performance against Defence Lines of Development**

**Increment A**

Not required for pre-Main Investment Decision Projects				
Line of Development	Description	Forecast		
		To be met	At Risk	Not to be met
Equipment	Delivery of suitable equipment to Head Quarters Land Forces in order to meet user requirements.	Yes	Yes	-
Training	Sufficient Conversion Training and Steady State Training in order to allow Head Quarters Land Forces to deliver the correct level operational capability.	Yes	Yes	-
Logistics	Delivery of a robust support package in order to allow Head Quarters Land Forces to operate equipment at sufficient readiness levels.	Yes	Yes	-
Infrastructure	Head Quarters Land Forces to ensure adequate garaging/storage facilities and work services are in place to meet equipment delivery schedule.	Yes	-	-
Personnel	Head Quarters Land Forces have sufficient personnel in place to deliver the Falcon capability.	Yes	-	-
Doctrine	Head Quarters Land Forces have the relevant concepts and doctrine in place to support the deployment of the Falcon capability.	Yes	-	-
Organisation	Head Quarters Land Forces have the relevant organisational structures in place in order to effectively deploy and manage the Falcon capability.	Yes	-	-
Information	Head Quarters Land Forces ensure the	Yes	-	-



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	relevant documentation and briefing material is in place to support the Falcon capability.			
Interoperability	Networks Team is to ensure the equipment, procedures and documentation is in place to allow the Falcon capability to interoperate with other key Global Information Infrastructure network systems and the key Information Systems reliant on Falcon.	Yes	Yes	-
Percentage currently forecast to be met		100%		
In-Year Change		0		

Increment C

Not required for pre-Main Investment Decision Projects				
Line of Development	Description	Forecast		
		To be met	At Risk	Not to be met
Equipment	Delivery of suitable equipment to Head Quarters Land Forces in order to meet user requirements.	Yes	Yes	-
Training	Sufficient Conversion Training and Steady State Training in order to allow Head Quarters Land Forces to deliver the correct level operational capability.	Yes	Yes	-
Logistics	Delivery of a robust support package in order to allow Head Quarters Land Forces to operate equipment at sufficient readiness levels.	Yes	Yes	-
Infrastructure	Head Quarters Land Forces to ensure adequate garaging/storage facilities and work services are in place to meet equipment delivery schedule.	Yes	-	-
Personnel	Head Quarters Land Forces have sufficient personnel in place to deliver the Falcon capability.	Yes	-	-
Doctrine	Head Quarters Land Forces have the relevant concepts and doctrine in place to support the deployment of the Falcon capability.	Yes	-	-
Organisation	Head Quarters Land Forces have the relevant organisational structures in place in order to effectively deploy and manage the Falcon capability.	Yes	-	-
Information	Head Quarters Land Forces ensure the relevant documentation and briefing material is in place to support the Falcon capability.	Yes	-	-
Interoperability	Networks Team is to ensure the equipment, procedures and documentation is in place to allow the Falcon capability to interoperate with other key Global Information Infrastructure network systems and the key Information Systems reliant on Falcon.	Yes	Yes	-
Percentage currently forecast to be met		100%		
In-Year Change		0		

**D.2.1.1. Defence Lines of Development Variation  
Increment A**

Date	Line of Development	Factor	Reason for Variation
March 2010	Equipment	Technical Factors	Crypto Evaluation Programme risk to the delivery of the Falcon System and delays to Falcon Management System for Factory Acceptance Testing.
March 2010	Training	Technical Factors	Issues with the development of the training solution in time for the delivery of Conversion Training.
March 2010	Logistics	Technical Factors	Issues with the development of the Interactive Electronic Technical Publications in time for contracted milestones
March 2010	Interoperability	Technical Factors	Emerging requirements from Defence Information Infrastructure (Future Deployed) and other Microsoft based Information Systems requires a change to the Falcon network in order to allow the correct passage of data. This risk was identified and appropriate risk funding was allocated to mitigate, however, the MOD Commitments Constraint Regime decided not to implement the risk mitigation.
Historic	Equipment	Technical Factors	Programme slips in the delivery of the Falcon Encryption System, Voice Over Internet Protocol system and Management System for Factory Acceptance.
Historic	Training	Changed Capability Requirements	Issues with the capacity and resourcing plan for Falcon Steady State Training solution do not meet the perceived requirement.
Historic	Interoperability	Technical Factors	Emerging requirements from Defence Information Infrastructure (Future Deployed) and other Microsoft based Information Systems requires a change to the Falcon network in order to allow the correct passage of data. This risk was identified and appropriate risk funding was allocated to mitigate, however, the MOD Commitments Restraint Regime decided not to implement the risk mitigation.

**D.2.1.2 Increment C**

Date	Line of Development	Factor	Reason for Variation
March 2010	Organisation	Changed Capability Requirements	HQ AIR Intro Working Group stood up in October 2009 resulting in DLOD no longer being at risk.
March 2010	Equipment	Technical Factors	Crypto Evaluation Programme risk to the delivery of the Falcon System and delays to Falcon Management System for Factory Acceptance Testing have resulted

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			in a lack of user confidence in the overall programme to deliver on time.
March 2010	Training	Changed Capability Requirements	There is neither an accepted training plan nor a plan to ensure that the training meets either contracted solutions or Front Line Command aspirations. Actions are in-hand from Capability Integration Working Group and from the Training Working Group.
March 2010	Logistics	Changed Capability Requirements	The current Contracted Logistic Support facilities may be insufficient to meet both Falcon and Cormorant requirements. Spares provision for Increment C may not meet the RAF utilisation.
March 2010	Interoperability	Technical Factors	Emerging requirements from Defence Information Infrastructure (Future Deployed) and other Microsoft based Information Systems requires a change to the Falcon network in order to allow the correct passage of data. This risk was identified and appropriate risk funding was allocated to mitigate, however, the MOD Commitments Control Regime decided not to implement the risk mitigation.
Historic	Equipment	Technical Factors	Programme slips in the delivery of the Falcon Encryption System, Voice Over Internet Protocol system and Management System for factory acceptance trails have resulted in a lack of user confidence in the overall programme to deliver on time.
Historic	Training	Changed Capability Requirements	There is neither an accepted training plan nor a plan to ensure that the training meets either contracted solutions or Front Line Command aspirations. Actions are in-hand from Capability Integration Working Group and from the Training Working Group.
Historic	Organisation	Changed Capability Requirements	The current manning levels do not allow RAF to fully man all Falcon installations when deployed and this may be a formal requirement once the security requirements of falcon are fully understood.
Historic	Interoperability	Technical Factors	Emerging requirements from Defence Information Infrastructure (Future Deployed) and other Microsoft based Information Systems requires a change to the Falcon network in order to allow the correct passage of data. This risk was identified and appropriate risk funding was allocated to mitigate, however, the MOD Commitments Restraint Regime decided not to implement the risk mitigation.

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**D.3. Performance against Key Performance Measures**

**D.3.1. Increment A**

**D.3.1.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
01	Doctrine Organisation Information	Falcon shall meet the Information Exchange Requirements of its User communities	Yes	-	-
02	Equipment	Falcon shall have the mobility necessary to support its User communities	Yes	-	-
03	Equipment	Falcon shall be sufficiently flexible so resources can be proportionally matched to the scale of effort required during all phases of an operation	Yes	-	-
04	Equipment Information	Falcon shall support the passage of secure information at a level appropriate to its protective marking	Yes	-	-
05	Equipment Training Doctrine Organisation Information	Falcon managers shall be able to manage all aspects of a Falcon deployment in an efficient, timely and effective manner in order to meet the needs of the User	Yes	-	-
06	Doctrine Information	Falcon Users shall be able to exchange information between co-operating forces in Joint and Combined operations without disruption to the conduct of operations	Yes	-	-
07	Training Personnel Organisation	Falcon shall minimise the manpower and training burden in order to provide efficient support to operations	Yes	-	-
08	Equipment	Falcon shall survive in a hostile physical and electronic environment	Yes	Yes	-
09	Logistics Infrastructure	Falcon shall be sustainable on operations	Yes	-	-
Percentage currently forecast to be met			100%		
In-Year Change			0		

**D.3.1.2 Increment C**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
01	Doctrine Organisation Information	Falcon shall meet the Information Exchange Requirements of its User communities	Yes	-	-
02	Equipment	Falcon shall have the mobility necessary to support its User communities	Yes	-	-
03	Equipment	Falcon shall be sufficiently flexible so resources can be proportionally matched to the scale of effort required during all phases of an operation	Yes	-	-
04	Equipment Information	Falcon shall support the passage of secure information at a level appropriate to its protective marking	Yes	-	-
05	Equipment Training Doctrine Organisation	Falcon managers shall be able to manage all aspects of a Falcon deployment in an efficient, timely and effective manner in order to meet the needs of the User	Yes	-	-

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	Information				
06	Doctrine Information	Falcon Users shall be able to exchange information between co-operating forces in Joint and Combined operations without disruption to the conduct of operations	Yes	-	-
07	Training Personnel Organisation	Falcon shall minimise the manpower and training burden in order to provide efficient support to operations	Yes	-	-
08	Equipment	Falcon shall survive in a hostile physical and electronic environment	Yes	Yes	-
09	Logistics Infrastructure	Falcon shall be sustainable on operations	Yes	-	-
Percentage currently forecast to be met			100%		
In-Year Change			0		

**D.3.1.2. Key Performance Measures Variation Increments A and C**

Date	Key Measure	Factor	Reason for Variation
January 2010	KPM 6	Technical Factors	This MPR09 risk has been mitigated by a Contract amendment. This delivered enhanced reference equipment and infrastructure to the Land Systems Reference Centre.
Historic	KPM 8	Technical Factors	In order to mitigate against the interoperability issues described above it may be necessary to operate Falcon with a larger Maximum Transfer Unit size. The result of this increase in Maximum Transfer Unit size will have a detrimental effect on Falcon's ability to work in a hostile electronic environment.
Historic	KPM 6	Technical Factors	Emerging requirements from Defence Information Infrastructure (Future Deployed) and other Microsoft based Information Systems requires a change to the Falcon network in order to allow the correct passage of data. This risk was identified and appropriate risk funding was allocated to mitigate, however, the MOD Commitments Restraint Regime decided not to implement the risk mitigation.
Historic	KPM 8	Technical Factors	In order to mitigate against the interoperability issues described above it may be necessary to operate Falcon with a larger Maximum Transfer Unit size. The result of this increase in Maximum Transfer Unit size will have a detrimental effect on Falcon's ability to work in a hostile electronic environment.

FALCON

**D.3.1.3. Operational Impact of variation**

<b>KPM</b>	<b>Date</b>	<b>Status</b>	<b>Operational impact of variation</b>
KPM 6	January 2010	Technical Factors	Falcon Interoperability risks can now be fully addressed using this enhanced reference equipment.
KPM 8	January 2010	At Risk	The survivability of the network radio paths will now be degraded in order to allow Microsoft based Information Systems to use Falcon as a transit network.
KPM 6	Historic	At Risk	The MOD Commitments Regime decision not to go ahead with the Defence Information Infrastructure (Future Deployed) Interoperability upgrade effectively doubles the amount of deployable infrastructure which units will have to deploy.
KPM 8	Historic	At Risk	The survivability of the network radio paths will now be degraded in order to allow Microsoft based Information Systems to use Falcon as a transit network.

**D.3.2. Support Contract – Not Applicable**

**D.3.3. Support Contract – Not Applicable**

## FUTURE STRATEGIC TANKER AIRCRAFT

### Team Responsible

Future Strategic Tanker Aircraft Project Team

### Single point of accountability for Project Capability

Head of Capability (Expeditionary Logistics & Support)

### Senior Responsible Officer

Head of Capability (Expeditionary Logistics & Support)

Number of Projects : 1

### Current Status of Projects / Increments

- **Post Main Investment Decision – Future Strategic Tanker Aircraft**

#### A. Section A: The Project

##### A.1. The Requirement

The Future Strategic Tanker Aircraft Service is planned to replace the Air-to-Air Refuelling and the passenger Air Transport capability currently provided by the Royal Air Force's fleet of VC10 and TriStar aircraft. Air-to-Air Refuelling is a key military capability that significantly increases the operational range and endurance of front line aircraft across a range of Defence roles and military tasks.

##### A.2. The Assessment Phase

Future Strategic Tanker Aircraft was nominated as a potential Private Finance Initiative project in 1997. An Assessment Phase, designed to confirm whether PFI would offer best value for money, was launched following Initial Gate approval in December 2000.

The Assessment Phase confirmed industry's ability to meet the service requirement, programme timescales and costs and determined that the inclusion of passenger Air Transport capability in the contract would represent value for money. It also clarified the manning and personnel implications.

##### A.3. Progress

The Main Gate Business Case was submitted to the Investment Approval Board in January 2007 and was approved in May 2007. In March 2008 a 27 year PFI contract was signed.

The final Approval envelope for Future Strategic Tanker Aircraft was set by the Investment Approval Board in June 2008.

The Investment Approval Board approved Contract Not To Exceed cost remains at £10.5Bn. In addition there will be Front Line Command manpower and support costs leading to a total cost of £12.7Bn.

The Main Operating Base will be located at RAF Brize Norton and the site preparation has been completed on time. This work had to be completed before construction of the new infrastructure could commence and was a key milestone for AirTanker Ltd's progress. The infrastructure work is on track.

The first set of wings was rolled out on time in February 2009 at Broughton. The first A330-200 aircraft successfully completed its maiden flight in June 2009 and was delivered to the Airbus Military facility at Getafe, Spain in July 2009; the second aircraft joined it in September 2009. Both aircraft are currently being converted for their FSTA role; work is progressing to plan and test flying is due to commence in September 2010.

An aircraft Test Readiness Review is scheduled for May 2010. The delivery of the first aircraft into service is expected in October 2011.

A technical feasibility study into aircraft self protection measures has been produced by AirTanker, and the outcome is being considered. If this option is exercised it will result in additional cost.

FUTURE STRATEGIC TANKER AIRCRAFT

**A.4. Capability Risks**

The Future Strategic Tanker Aircraft (FSTA) programme will provide the Royal Air Force (RAF) with a reliable, safe and efficient Air to Air refuelling and Air Transport, service for 24 years.

Future Strategic Tanker Aircraft Air-to-Air Refuelling aircraft will be required to extend the range and reach of many of the UK's frontline Fast Jet fleets by refuelling them on route to an operational theatre. Without Future Strategic Tanker Aircraft, a significant gap will appear in the UK's strategic deployment and tactical strike capabilities. The primary role for the Future Strategic Tanker Aircraft will be Air-to-Air Refuelling and the objective of these operations is to enhance the combat effectiveness by extending the range, payload or endurance of receiver aircraft where and when it is most needed. Strategic air refuelling supports the deployment of forces to theatre whilst tactical or theatre air refuelling provides mission support to units active in an operational theatre.

The Future Strategic Tanker Aircraft is planned to replace the Air-to-Air Refuelling capability and passenger Air Transport capability provided by the RAFs VC10 and TriStar fleets.

The first civilian VC10 entered service in the 1960s and these were converted to Air-to-Air refuelling tankers at various dates between 1980 and 1996. The aircraft has ageing and outdated technology, and the risks to maintaining reliability and value for money have grown and ultimately it will not be possible to sustain capability. The TriStars first entered airline service in the early 1970s and converted to their current tanker and tanker/freight roles between 1983 and 1987. These aircraft are not considered to be supportable beyond the middle of the next decade.

**A.5. Associated Projects – not applicable**

**A.6. Procurement Strategy**

Pre-Main Investment Decision Projects / Increments only				
Description	Procurement Route			
-	-			
Post-Main Investment Decision Projects / Increments only				
	Contractor	Contract Scope	Contract Type	Procurement Route
Future Strategic Tanker Aircraft	Air Tanker Ltd.	Service Delivery	PFI	Competitive Tender

**A.7. Support Strategy**

**A.7.1. Support / Service / PFI Contract Strategy**

Description				
Future Strategic Tanker Aircraft	Future Strategic Tanker Aircraft is an innovative PFI programme that will provide an Air-to-Air Refuelling and passenger Air Transport service. The contract will provide a comprehensive and integrated service solution, based on new Airbus A330 aircraft modified to provide Air-to-Air Refuelling capability. It will include the provision of purpose designed training and maintenance facilities at RAF Brize Norton, together with through life training, maintenance and support.			
	Contractor	Contract Scope	Contract Type	Procurement Route
Future Strategic Tanker Aircraft	AirTanker Ltd.	Service Delivery	PFI	Competitive Tender



FUTURE STRATEGIC TANKER AIRCRAFT

**B. Section B: Cost**

**B.1. Cost of the Assessment Phase**

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
Future Strategic Tanker Aircraft	13	38	+25	0.12%	0.32%

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Future Strategic Tanker Aircraft	12,126	12,326	12,536

**B.3. Cost of the Demonstration and Manufacture (D&M) Phase – not applicable**

**B.4. Unit production cost**

Description	Unit production costs (£m) <sup>14</sup>		Quantities required	
	At Main Investment Decision	Currently	At Main Investment Decision	Currently
Future Strategic Tanker Aircraft	-	-	14	14

**B.5. Progress against approved Support / Service / PFI Cost**

Description	Approved Cost	Forecast cost	Variation	In-Year Variation
Future Strategic Tanker Aircraft	12,536	11,917	-619	-46

**B.5.1. Cost Variation against approved Support / Service / PFI Cost**

**B.5.1.1. Project**

Date	Variation (£m)	Factor	Reason for Variation
January 2010	-38	Accounting adjustments and redefinitions	Correction of IRDEL double accounting.
January 2010	-8	Accounting adjustments and redefinitions	Reduction in costs associated with instrumentation of aircraft in support of FSTA clearance trials.
Historic	-63	Accounting adjustments and redefinitions	Forecast based on expected levels of usage and fuel costs modelled in accordance with Front Line Command estimates.
Historic	-300	Accounting adjustments and redefinitions	Method for costing Military equipment obsolescence and change in law costs amended from using actual figures to a risk based assessment.

<sup>14</sup> The Future Strategic Tanker Aircraft Main Gate Business Case provides an approval against a contract Not To Exceed cost. The contract is based against provision of service and no reference to the unit production cost is provided within the Main Gate Business Case.

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Historic	-50	Accounting adjustments and redefinitions	Correction of Defensive Aids Suite balance sheet treatment to include RDEL reduction across the contract period.
Historic	-20	HM Treasury Reserve	Deployed operating costs subject to reimbursement from HM Treasury Reserve.
Historic	-20	Technical Factors	Improved definition of the technical requirements relating to integration and support of Communication and Information systems.
Historic	+90	Accounting adjustments and redefinitions	Revised assessment of potential risk opportunities such as refinancing.
Historic	-210	Risk Differential	Risk differential between Main Gate approval at 50% and 90% confidence.
<b>Net Variation</b>	<b>-619</b>		

### B.5.2. Operational Impact of Support / Service / PFI Cost Variations – not applicable

### B.6. Expenditure to date

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
Assessment Phase (£m)	38	0	38
Demonstration & Manufacture Phase (£m)	-	-	-
Support Phase / Service / PFI Cost (£m)	4	6	10
<b>Total Expenditure (£m)</b>	<b>42</b>	<b>6</b>	<b>48</b>

## C. Section C: Timescale

### C.1. Duration of the Assessment Phase

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Future Strategic Tanker Aircraft	May 2007	December 2000	77

### C.2. Planned / Actual Boundaries for introduction of the Capability

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
Future Strategic Tanker Aircraft	January 2014	May 2014	November 2014

### C.3. Initial Operating Capability/In Service Date

#### C.3.1. Definition of Initial Operating Capability/In Service Date

Description	Definition of Initial Operating Capability/In Service Date
Future Strategic Tanker Aircraft	<u>Initial Operating Capability</u> Introduction to Service (ITS) + 18 months is the definition of IOC in the Future Strategic Tanker Aircraft programme. This is the point when one operational Air-to-Air Refuelling aircraft will be available with Wing Pod and Centreline Fuselage Refuelling Unit.

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	<p><b>In Service Date</b>                  At the point of Air-to-Air Refuelling In Service Date there will be the capability to provide at least 9 Future Strategic Tanker Aircraft capable of refuelling operations simultaneously with any two of Air-to-Air Refuelling-probe-equipped Fast Jets. Five of the nine Future Strategic Tanker Aircraft will be able to transfer fuel to large aircraft during day/night.</p>
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**C.3.2. Progress against approved Dates**

Description	Approved Date	Actual / Forecast Date	Variation	In-Year Variation
Future Strategic Tanker Aircraft	November 2014	May 2014	-6	-

**C.3.3. Timescale variation**

**C.3.3.1. Project**

Date	Variation	Factor	Reason for Variation
Historic	-6	Risk Differential	Difference between the risk allowed for the most likely (50%) and the Not to Exceed (70%) estimates at Main Gate.
<b>Net Variation</b>	<b>-6</b>		

**C.3.4. Other costs resulting from Timescale variation – not applicable**

**C.3.5. Operational Impact of In-Service Date/Initial Operating Capability variation – not applicable**

**C.4. Full Operating Capability**

**C.4.1. Definition**

Description	Full Operating Capability
Future Strategic Tanker Aircraft	The Full Operating Capability is when all the Future Strategic Tanker aircraft are accepted into service, the complete service available for use and the User Requirement Document met.

**C.4.2. Progress Report**

Description	Full Operating Capability
Future Strategic Tanker Aircraft	On track

**C.5. Support / Service / PFI Contract**

**C.5.1. Scope of Support / Service / PFI Contract**

Description	
Future Strategic Tanker Aircraft	-

**C.5.2. Progress against approved Support / Service / PFI Contract Go-Live Date**

Description	Approved Date	Actual Date	Variation (month)	In-Year Variation (month)
Future Strategic Tanker Aircraft	March 2008	March 2008	-	-

**C.5.2.1. Go-Live Date Variation – not applicable**

**C.5.3. Progress against approved End of Support / Service / PFI Contract Date**

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Description	Approved Date	Actual Date	Variation	In-Year Variation
Future Strategic Tanker Aircraft	March 2035	March 2035	-	-

**C.5.3.1. End of Contract Date Variation – not applicable**

**C.5.4. Operational Impact of Support / Service / PFI Support Contract variation – not applicable**

**D. Section D: Performance**

**D.1. Maturity Measures**

**D.1.1. Project**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
Commercial	<i>Measures under development</i>			
Financial				
Project Management				
System Readiness	1-9	8	8	The assurance assessment is based on the average component readiness level. The lowest level was 2.
Technology Readiness	1-9	8	8	The assurance assessment is based on the average component readiness level. The lowest level was 2.

**D.2. Performance against Defence Lines of Development**

Not required for pre-Main Investment Decision Projects				
Line of Development	Description	Forecast		
		To be met	At Risk	Not to be met
17. Equipment	All aircraft will be modified to conduct the required roles, but specific equipment will only be added as required to meet the tasking. All aircraft will be two-point tankers, of these only seven will be three-point capable, with five centre-line systems being available for use. Aircraft will be fitted for a Defensive Aids Suite.	Yes	Yes	-
18. Training	A comprehensive training service will be delivered by AirTanker as a key part of the contract. Aircrew will undergo type-related training on the A330 with additional Air-to-Air Refuelling role training conducted by military instructors. Ground crew will be trained to European Aviation Safety Agency standards and hold type-related licenses.	Yes	-	-
19. Logistics	Logistics support for the fleet will be controlled by AirTanker as part of the service-delivery contract.	Yes	-	-
20. Infrastructure	A new hangar with bays for two A330 aircraft is being built at RAF Brize Norton, including maintenance bays and workshops. A training facility	Yes	-	-

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	including a flight simulator will be housed in another complex nearby.			
21. Personnel	Flight deck crews comprising military and military sponsored reserve will be trained, together with Mission Systems Operators. There will be cabin crew, ground crew and operations support personnel.	Yes	-	-
22. Doctrine	The solution meets the requirement identified within the Concept of Use.	Yes	-	-
23. Organisation	The aircraft service will build up gradually from Introduction to Service to Air-to-Air Refuelling In Service Date.	Yes	-	-
24. Information	AirTanker Services will provide a bespoke Information Technology system to interface with current MOD Information Technology systems.	Yes	-	-
Percentage currently forecast to be met		100%		
In-Year Change		-		

**D.2.1.1. Defence Lines of Development Variation**

Date	Line of Development	Factor	Reason for Variation
March 2010	Equipment	Technical Factors	Development of avionics packages falling behind schedule. Increased resources have been identified as a mitigation strategy to ensure DLOD will be achieved.
March 2010	Personnel	Technical Factors	Engineer training manpower to be made available. Line of development no longer at risk.
March 2010	Logistics	Technical Factors	A series of workshops has identified processes to ensure support solution will be in place and no major risks have been identified. Line of development no longer at risk.
March 2010	Information	Technical Factors	Progress on interfaces has been made and no major risks have been identified. Line of development no longer at risk .
Historic	Logistics	Technical Factors	Development of the detailed, practical aspects of the logistic support solution has identified areas of risk between contractor and MOD. These risk areas are being mitigated through logistic workshops and engagement with AirTanker to identify processes and solutions where required.
Historic	Personnel	Technical Factors	First ground crew go into training in December 2010. The manpower Establishment Is to be in place by no later than July 2009 to allow for Candidates to be selected. Meetings are timetabled to progress this work.
Historic	Information	Technical Factors	A short term, manual, interface has been agreed between the Authority and AirTanker tasking and operations Information Technology

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			systems. In the longer term an Application Programming Interface needs to be set up to allow direct communication between the 2 systems and the road-map to this solution is to be developed.
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**D.3. Performance against Key Performance Measures**

**D.3.1. Future Strategic Tanker Aircraft – not applicable**

**D.3.2. Support Contract**

**D.3.2.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
KUR 01	Equipment	The User shall be able to utilise Future Strategic Tanker Aircraft to refuel all receiver aircraft cleared to operate with Future Strategic Tanker Aircraft.	Yes	-	-
KUR 02	Equipment	The system shall be capable of transporting personnel and their associated personal equipment and freight	Yes	-	-
KUR 03	Equipment	The User shall be able to utilise an air system that is airworthy and meets all appropriate regulations, both military and civilian, at all times.	Yes	-	-
KUR 04	Logistics	The User shall be able to operate the air system world-wide, in both Air-to-Air Refuelling and passenger Air Transport Roles.	Yes	-	-
KUR 05	Equipment/ Information	The User shall have the capability to interoperate with appropriately configured aircraft in a manner necessary to carry out the required function.	Yes	-	-
KUR 06	Doctrine	The system shall meet the readiness requirements to provide sufficient capability to support the Military Tasks laid down in the RAF Management Plan.	Yes	-	-
KUR 07	Logistics	The User shall be able to utilise an air system that is fully supportable (including maintenance, spares, manpower, facilities and support equipment) at the rates of effort specified, both at the Main Operating Base and when deployed world-wide at all times.	Yes	-	-
KUR 08	Logistics	The system shall be capable of providing the required level of operational capability at all times.	Yes	-	-
KUR 09	Training	The User shall be able to	Yes	-	-

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		acquire and maintain the necessary skills to utilise the system across the spectrum of operation.			
Percentage currently forecast to be met			100%		
In-Year Change			-		

**D.3.2.2. Key Performance Measures Variation – not applicable**

**D.3.2.3. Operational Impact of variation– not applicable**

**Team Responsible**

Joint Combat Aircraft Team

**Single point of accountability for Project Capability**

Head of Capability (Deep Target Attack)

**Senior Responsible Officer**

Head of Capability (Deep Target Attack)

**Number of Projects / Increments** 2**Current Status of Projects / Increments**

- **Post Main Investment Decision** – System Development and Demonstration, Production, Sustainment and Follow on Development

**A. Section A: The Project****A.1. The Requirement**

Following the 1998 Strategic Defence Review, UK participation in the Concept Demonstration Phase of the programme and significant analysis, the US Joint Strike Fighter was selected to meet the Joint Combat Aircraft requirement for Carrier Strike. A tailored Main Gate demonstration approval was obtained in January 2001 for participation in the System Development and Demonstration phase to the value of £1,300M, along with £600M for related non-System Development and Demonstration work, leading to signature that month by UK and United States governments of the System Development and Demonstration Memorandum of Understanding. The selection of Lockheed Martin as the Joint Strike Fighter air system prime contractor included a teaming agreement with Northrop Grumman and BAE Systems to collectively form Team Joint Strike Fighter. Two separate and competitive propulsion contracts were awarded to Pratt and Whitney for the F135 engine and General Electric/Rolls Royce Fighter Engine Team for the F136 engine. Whilst other partners joined the programme at Level 2 and 3 entry arrangements, only United States and UK requirements have driven the System Development and Demonstration baseline solution.

In September 2002 the UK selected the Short Take Off and Vertical Landing Joint Strike Fighter variant to meet the requirement. A review of the Joint Strike Fighter Programme and the viability of the Short Take Off and Vertical Landing design was completed in January 2005. It concluded that a successful programme of weight reduction initiatives and other performance enhancements had restored confidence that the Short Take Off and Vertical Landing design should remain the UK's planning assumption. A further review by the Investment Approvals Board in July 2006 confirmed this decision.

On 12 December 2006 Minister of State for Defence Equipment and Support signed the Production Sustainment and Follow-on Development Memorandum of Understanding, which was the first of four Main Gates planned for the introduction to Service of Joint Combat Aircraft. In March 2009, approval was given for Phase 2 of the Joint Combat Aircraft incremental strategy, for participation in joint Initial Operational Test & Evaluation with the United States Services. This will allow the UK to fully understand and influence the Joint Strike Fighter programme as it moves into a new phase.

Two Key User Requirements remain at risk:

**KUR04 - Mission Performance:** In July 2006 the Investment Approvals Board directed that Ship-borne Rolling and Vertical Landing should be included in future development of the Joint Combat Aircraft design to mitigate the risk to the Vertical Land Bring Back capability. Ship-borne Rolling Vertical Landing is now being taken forward within the Joint Strike Fighter programme under UK leadership.

**KUR03 – Range;** Based on modelling and simulation results, the range capability for Joint Strike Fighter Short Take Off and Vertical Landing is approaching the specified target set for UK requirements based on UK Operating scenarios. However, this potential shortfall is based primarily on modelling with very limited experience in actual flight test. Further flight testing is planned to gain an accurate assessment of this potential problem and mitigation actions will be developed accordingly.



**A.2. The Assessment Phase**

Approval was obtained in November 1996 to enter the Concept Demonstration Phase on the Joint Strike Fighter programme under a Memorandum of Understanding signed in December 1995. The phase began in November 1996 with two competing United States Prime Contractors (Boeing and Lockheed Martin) designing and flying demonstration aircraft on which the selection of the preferred bidder was based. A tailored Main Gate demonstration approval was obtained in January 2001 for participation in the System Development and Demonstration phase. The phase completed in October 2001 with the announcement of Lockheed Martin as the successful bidder. Studies into alternative options to Joint Strike Fighter to meet the requirement were also conducted but were rejected on cost effective grounds. The options were US F/A18E aircraft, French Rafale M, a “navalised” Eurofighter Typhoon and an advanced Harrier.

**A.3. Progress**

On 18 March 2009, the UK Secretary of State for Defence announced the approval to purchase three Short Take Off and Vertical Landing variants of Joint Strike Fighters for Operational Test and Evaluation. The UK placed requirements on the US Department of Defense for the procurement of these aircraft with associated support and training equipment, and the first two aircraft are already on the production line at Lockheed’s factory in Fort Worth, Texas. On the 26 January 2010, Sqn Ldr Steve Long became the first UK military pilot to fly the aircraft when he conducted a test flight at Patuxant River in Maryland, USA. On 18 March 2010 the Short Take Off and Vertical Landing variant demonstrated significant progress in fully meeting capability by successfully completing its first vertical landing at US Naval Air Field Patuxant River. As a result of a recent senior Department of Defense review of the programme several key changes have been implemented including a delay to the completion of the System, Development and Demonstration phase by one year to November 2014. As the UK has a fixed contribution to the System Development and Demonstration phase the UK is protected from any cost increases that this delay has generated. However it is currently unclear how the programme review will impact jet production costs although the main impact is expected to be outside of the current commitment to Operational Test & Evaluation. For MPR10 the latest US Department of Defense estimates have been used to determine Production forecast against approval. The Joint Combat Aircraft Project Team are currently working to a planning assumption that up to 150 jets will be procured. However both this number and the formal setting of an In Service Date are subject to the Strategic Defence and Security Review.

**A.4. Capability Risks**

This capability provides the UK with a fifth generation expeditionary air to ground, air to air and Intelligence, Surveillance, Target Acquisition And Reconnaissance capability to satisfy the 1998 Strategic Defence Review requirement for a carrier capable Joint Combat Aircraft. Without this capability the UK will be unable to meet its Combat Air and Carrier Strike requirements and be unable to support ground forces in multi threat environments at a time and place of the Government’s choosing.

**A.5. Associated Projects**

Description	Critical to achievement of IOC	
	Project Title	Forecast IOC
Joint Combat Aircraft	Queen Elizabeth Class (Future Aircraft Carrier)	2016 and 2018

**A.6. Procurement Strategy**

Pre-Main Investment Decision Projects / Increments only				
Description	Procurement Route			
-	-			
Post-Main Investment Decision Projects / Increments only				
	Contractor	Contract Scope	Contract Type	Procurement Route
System Development & Demonstration	Lockheed Martin	System Development and Demonstration	Cost plus award fee, subject to a maximum price.	Competitive International collaboration procurement. UK participation through

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				Memorandum of Understanding agreement. (Note: the contract is placed by the US Department of Defense with Lockheed Martin.)
Production, Sustainment & Follow on Development	Lockheed Martin	Initial Operational Test & Evaluation Aircraft	Cost plus award fee, subject to a maximum price.	Competitive International collaboration procurement. UK participation through Memorandum of Understanding agreement. (Note: the contract is placed by the US Department of Defense with Lockheed Martin.)

**A.7. Support Strategy – Not Applicable**

**B. Section B: Cost**

**B.1. Cost of the Assessment Phase**

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
Joint Combat Aircraft	150	144	-6	6.1%	5.9%
<b>Total</b>	150	144	-6	6.1%	5.9%

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
System Development & Demonstration	1971	2034	2236
Production, Sustainment & Follow on Development	504	638	638

**B.3. Cost of the Demonstration and Manufacture Phase**

Description	Approved Cost (£m)	Actual / Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
System Development & Demonstration	2236	1827	-409	+14
Production, Sustainment & Follow on Development	638	621	-17	-17
<b>Total</b>	<b>2874</b>	<b>2448</b>	<b>-426</b>	<b>-3</b>

**B.3.1. Cost Variation against approved Cost of the Demonstration & Manufacture Phase****B.3.1.1. System Development & Demonstration**

Date	Variation (£m)	Factor	Reason for Variation
March 2010	+37	Exchange Rate	<b>MPR2010</b> In year 2009/10 Exchange Rate variance (+£12m). Exchange rate variance 2010/11 to 2013/14 (+£25m).
March 2010	-23	Budgetary Factors	Cost reductions and re-profiling of UK National requirements (-£15m), correction of effect of System Development & Demonstration Contribution non-financial contributions (+£1m), revision of Operational Test & Evaluation contribution (-£2m), reduced forecast for Ship-borne Rolling Vertical Landing risk mitigation (-£5m), Cost of Capital variance (-£2m).
Historic	-100	Exchange Rate	<b>MPR2009</b> In year 2008/09 Exchange rate variance (+£4m). Exchange rate variance 2009/10 to 2013/14 (+£2m). <b>MPR08:</b> System Development and Demonstration contribution against MPR07 Versus MPR08 Exchange rate: 2007/08 (-£12m), 2008/09 to 13/14 (-£6m). <b>MPR07:</b> Exchange rate against profile until 2013 (-£11m). Change in dollar/pound exchange rate ( <b>MPR06</b> +£9m; <b>MPR05</b> -£181m; <b>MPR04</b> -£85m; <b>MPR03</b> -£9m; <b>MPR02</b> +£189m).
Historic	+253	Budgetary Factors	<b>MPR09: In year out turn against forecast</b> – Risk mitigation action leading to minimal level of unforeseen activities emerging (-£10m), Ship Borne Rolling Vertical Landing (-£8m) due to overestimate of the work required at this stage of the programme, slippage in the integration of JCA with the Future Aircraft Carriers (-£6m) due to slower than anticipated progress, correction of in year System Development & Demonstration Contribution (+£2m). <b>Re-profiling of future years</b> - comprising of Ship Borne Rolling and Vertical Landing –

		<p>reassessment of the funding required to return the aircraft with a higher payload (-£1m), updated assessment of the expected implementation work supporting the Autonomic Logistics Information System – a global system for all maintenance and spares for Joint Strike Fighter (-£2m). An increase due to Joint Safe Escape – the ability to deploy weapons safely (+£1m) which was not previously explicitly forecast, refinement of Risk mitigation funding for future years (-£4m), Reduction of Safety Case – a requirement to ensure the aircraft is fit to fly (-£2m) due to the cost to the UK being reduced by the contribution of partner nations. <b>Cost of Capital Charge (+£3m)</b> - variance as a result of above (+£3m).</p> <p><b>MPR08:</b> In year out turn against forecast – including minor changes for 2007/08 (-£14m). UK non System Development and Demonstration National work; Changes to reflect realism: UK Precision Guided Bomb (-£7m), Carrier Variant Future integration (+£1m) and Operational Test and Evaluation (-£7m). Maturation of risk identified since Equipment Plan 07: Autonomic Logistic Information System (+£5m), Conformity European markings (+£6m), Re-assessment of risk (+£6m). Re-assessment of Main programme expenditure: Mission Support (+£2m), Reprogramming (+£10m), Bowman (+£4m). Planning Round 08 Option not included in Equipment Plan07 (-£7m). Cost of Capital charge as a result of above realignment (-£5m).</p> <p><b>MPR07:</b> Re-assessment of UK National Work - attributable cost which include: UK integration costs: (-£94m), Block 3 weapons adjusted to reflect the latest costing from Prime contractor (+£7m), Safety Case now defined to prepare for contract placement in 2007/08 (+£11m) and re-assessment of risk provision (-£87m). Break out from re-assessment from risk provision above which are: UK basing integration &amp; testing (+£5m), Identification of Operational Test &amp; Evaluation costs (+£26m). Outturn for 2006/07 versus Forecast (-£6m). Increase in Cost of Capital Charge resulting from change of</p>
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			<p>planning assumption on delivery of Intangible assets (+£48m).                  Adjustment for realism in the cost of the UK non- System Development and Demonstration work resulting from a deeper review of the estimates originally provided by the US (+£43m).                  Fewer UK studies than originally planned (MPR02 -£1m; MPR03 (-£6m)).                  Costs benefits gained from use of existing Advance Short Range Air to Air Missile stocks for Joint Combat Aircraft trials (-£6m). Fewer weapon studies undertaken in year (-£1m).                  Improved project support strategy (-£3m). Better understanding of the integrated nature and requirements of the aircraft systems (+£384m).  <b>MPR06:</b> Re-profile of UK National Work to mitigate increase in Exchange Rate. Main Drivers are Interoperability (-£1m), Capital Studies (-£1m), UK Integrated Helmet Mounted Display System (-£1m) and Carrier Vessel Future Integration (-£3m). Re-profile of later years Follow on Development (-£3m).  <b>MPR05:</b> Reassessment of Dstl &amp; QinetiQ tasking (-£10m). Correction of contingency estimates due to weight risks in MPR04 (-£15m).</p>
<p>Historic</p>	<p>+12</p>	<p>Accounting Adjustments and Re-definitions</p>	<p><b>MPR07:</b> The Integrated Project Team conducted a review of the project work schedule which has given the team sufficient certainty to include more accurate accruals for the duration of the project (-£10m). Accounting Adjustment made in MPR06 now reflected in re-profiling of programme (-£2m). Interest on capital correction (MPR02 +£46m; MPR03 -£12m). New Defence Procurement Agency requirement to include Price Forecasting Group costs within the equipment plan (+£1m). Additional interest on capital from new Defence Procurement Agency IT accrual methodology (+£1m). Accounting reclassification of feasibility studies (-£2m). Difference in variation figures due to revision of Cost of Capital Charge (-£16m).  <b>MPR06:</b> Change of accounting treatment for System Development and Demonstration contributions. (+£19m) re-profile of 2005/06 accrual into later years. (-£18m) removal of 2005/06 accrual.</p>

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			Reconciliation of accrual (+£1m). <b>MPR05:</b> Re profiling of UK specific tasks (+£3m). Adjustment of treatment of Cost of Capital Charges calculation (+£1m).
Historic	-499	Changed Capability Requirements	<b>MPR06:</b> Reviews of the external missile systems for Joint Combat Aircraft resulted in the removal of the requirement for integrating internally mounted Brimstone (-£41m), Paveway II and III (-£1m) capabilities and some internal configurations of the Advanced Short Range Air-to-Air Missile (-£49m). Further UK participation in the Joint Integrated Test Force to reflect UK acceptance into service strategy (+£20m). <b>MPR05:</b> Provision for Alternate Helmet Mounted Display System removed (-£40m). Reassessment of 2004/05 forecast expenditure (-£12m). Review of miscellaneous requirement including Exchange of Letters Risk Provision (-£40m), design of UK Specific Support (-£3m), Environmental Protection (-£3m) and Autonomic Logistic Information System interoperability (-£6m). Block IV weapons as a result of JSF programme re-alignment (-£368m) and associated increase Cost of Capital charge (+£44m).
Historic	+113	Technical Factors	<b>MPR07:</b> Re-alignment of programme now included in Development - Ship-borne Rolling and Vertical Landing (+£55m). <b>MPR05:</b> Reduction of Risk line as a result of programme delays (-£29m). <b>MPR 04:</b> Re-examination of risk within the overall programme. (+£87m).
Historic	-202	Risk Differential	Difference between the risk allowed for in the most likely (50%) and the approved figures at Main Gate (-£213m). Variation due to revised approval figures (+£11m).
<b>Net Variation</b>	<b>-409</b>		

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**B.3.1.2. Production, Sustainment & Follow-on-Development**

Date	Variation (£m)	Factor	Reason for Variation
March 2010	+31	Foreign Exchange	<b>MPR2010:</b> Exchange Rate variation (+£31m).
March 2010	-£18	Budgetary Factors	Cost of Capital (-£15m), correction of Composite Share Ratio (UK contribution to shared partner costs) from MPR09 (-£3m).
March 2010	-£30	Procurement Processes	Improved understanding of production cost data related specifically to Operational Test & Evaluation aircraft (-£30m).
<b>Net Variation</b>	<b>-17</b>		

**B.3.2. Operational Impact of Cost Variations of Demonstration & Manufacture Phase**

Description	
Joint Combat Aircraft	Nil

**B.4. Unit production cost**

The Joint Combat Aircraft Project Team are currently working to a planning assumption that up to 150 jets will be procured. However, this number is subject to the Strategic Defence and Security Review.

**B.5. Progress against approved Support / Service / PFI Cost – not applicable**

**B.6. Expenditure to date**

**System Development & Demonstration**

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
<b>Assessment Phase (£m)</b>	144	0	144
<b>Demonstration &amp; Manufacture Phase (£m)</b>	1,313	188	1,501
<b>Support Phase / Service / PFI Cost (£m)</b>	-	-	-
<b>Total Expenditure (£m)</b>	<b>1,457</b>	<b>188</b>	<b>1,645</b>

**C. Section C: Timescale**

**C.1. Duration of the Assessment Phase**

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Joint Combat Aircraft	January 2001	- <sup>2</sup>	-

**C.2. Planned / Actual Boundaries for introduction of the Capability – not applicable<sup>15</sup>**

**C.3. In-Service Date/Initial Operating Capability**

**C.3.1. Definition**

Description	In-Service Date/Initial Operating Capability
Joint Combat Aircraft	Initial Operating Capability - 6 embarked aircraft at Readiness Level 2 (2-5 days notice to move) – to align with the US acquisition framework

<sup>15</sup> The In Service Date approval will be sought as part of the incremental Production Approval strategy.

<sup>2</sup> Rather than passing an Initial Gate, JCA has used a tailored Main Gate strategy.

	and definitions.
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**C.3.2. Progress against approved Dates – not applicable**

**C.3.3. Timescale variation – not applicable**

**C.3.4. Other costs resulting from Timescale variation – not applicable**

**C.3.5. Operational Impact of In-Service Date/Initial Operating Capability variation – not applicable**

**C.4. Full Operating Capability**

**C.4.1. Definition**

Description	Full Operating Capability
Joint Combat Aircraft	Yet to be defined.

**C.4.2. Progress Report – not applicable**

**C.5. Support / Service / PFI Contract – not applicable**

**D. Section D: Performance**

**D.1. Maturity Measures**

**D.1.1. Joint Combat Aircraft**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
Commercial	<i>Measures under development</i>			
Financial				
Project Management				
System Readiness		5/6	5/6	
Technology Readiness	1-9	6/7	6/7	

**D.2. Performance against Defence Lines of Development**

Not required for pre-Main Investment Decision Projects				
Line of Development	Description	Forecast		
		To be met	At Risk	Not to be met
1 Equipment	36 Force Elements @ Readiness	Yes	-	-
2 Training	Sufficient trained and available personnel	Yes	-	-
3 Logistics	Successful integration of Joint Strike Fighter support solution into UK and Joint Supply Chain	Yes	Yes	-
4 Infrastructure	Completion of Main Operating Base Lossiemouth	Yes	-	-
5 Personnel	Sufficient suitable personnel available for training and support	Yes	-	-
6 Doctrine	Doctrine in place	Yes	-	-
7 Organisation	Suitable command structures in place to support US based Initial Operational Test and Evaluation and Operational Conversion Unit, as well as UK Main Operating Base, Queen Elizabeth Class Carriers and Forward Operating Base operations.	Yes	-	-
8 Information	Integration of JCA into UK Ground Information Infrastructure.	Yes	Yes	-



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Percentage currently forecast to be met	100%
In-Year Change	0

**D.2.1.1. Defence Lines of Development Variation**

Date	Line of Development	Factor	Reason for Variation
Historic	Logistics	Budgetary Factors	Insufficient Maritime Intra-Theatre Lift to support Joint Combat Aircraft aboard Queen Elizabeth Class Carriers
Historic	Information	Technical Factors	UK Ground Information Infrastructure may be unable to support the requirements of Joint Combat Aircraft Information Systems

**Performance against Key Performance Measures**

**D.2.2. Joint Combat Aircraft**

**D.2.2.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
01		Survivability	Yes	-	-
02		Interoperability	Yes	-	-
03		Combat Radius	Yes	Yes	-
04		Mission Performance	Yes	Yes	-
05		Mission reliability	Yes	-	-
06		Logistic footprint	Yes	-	-
07		Sortie Generation	Yes	-	-
Percentage currently forecast to be met			100%		
In-Year Change			0		

**D.2.2.2. Key Performance Measures Variation**

Date	Key Measure	Factor	Reason for Variation
March 10	KPM 03	Technical Factors	Based on modelling and simulation results, the range capability for JSF STOVL is approaching the specified target set for UK requirements based on UK Operating scenarios. However, this potential shortfall is based primarily on modelling with very limited experience in actual flight test. Further flight testing is planned to gain an accurate assessment of this potential problem and mitigation actions will be developed accordingly.
March 10	KPM 06	Technical Factors	This KUR represents a measure of the amount of support equipment required to allow JCA to be deployed on operations. As the JSF system design has matured, the amount and design of equipment required for deployment in support of JCA has reduced to

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			below the contractually specified requirement.
Historic	KPM 04	Technical Factors	The Short Take Off element of KUR 04 (based on Invincible Class Carriers not Future Aircraft Carrier) will be changed in the ongoing KUR review, although current projections indicate robust Short Take Off performance from Future Aircraft Carrier. Weight challenges and propulsion system integration issues place the Vertical Landing Bring Back element of KUR 04 at increased risk; the Integrated Project Team has commenced programme action to amend the System Development and Demonstration contract to satisfy a requirement to undertake Ship-borne Rolling Vertical Landing.
Historic	KPM 06	Technical Factors	Subject to intensive programme action by Prime Contractor. Funded design options that significantly reduce risk have been identified and further changes will be considered in due course.

**D.2.2.3. Operational Impact of variation**

KPM	Date	Status	Operational impact of variation
KPM 03	March 10	At Risk	Inability to strike some targets at the extreme range capability of aircraft and weapon system.
KPM 04	March 09	At Risk	Severely limits the operational effectiveness of the platform and result in high waste of weapons
KPM 06	March 09	At Risk	Limits the use of JCA within medium scale operations
<b>Total</b>			

**D.2.3. Support Contract – not applicable**

**Team Responsible**

Lynx Wildcat

**Single point of accountability for Project Capability**

Head of Capability (Air and Littoral Manoeuvre) – Battlefield Reconnaissance Helicopter Requirement

Head of Capability (Above Water Effects) – Surface Combatant Maritime Rotorcraft Requirement

**Senior Responsible Officer**

Capability Manager (Battlespace Manoeuvre)

**Number of Projects / Increments**

**Current Status of Projects / Increments**

- **Pre Main Investment Decision – Nil**
- **Post Main Investment Decision – Lynx Wildcat Battlefield Reconnaissance Helicopter and Lynx Wildcat Surface Combatant Maritime Rotorcraft**
- **Support Contract - Nil**
- **Other – please provide details - Nil**

**A. Section A: The Project**

**A.1. The Requirement**

The Lynx Wildcat capability was developed to meet the requirements for a dedicated small helicopter for use in both the land (Battlefield Reconnaissance Helicopter Requirement) and maritime (Surface Combatant Maritime Rotorcraft Requirement) environments to replace the current Lynx fleet which is reaching its life end. Lynx Wildcat is a single-source, combined helicopter procurement programme with Westland Helicopters Ltd which follows More Effective Contracting principles. Project approval is for 80 aircraft, with funding for 62 held by the Integrated Project Team.

**A.2. The Assessment Phase**

Initial Gate approval was given in December 2001 for the Battlefield Light Utility Helicopter and in September 2002 for the Surface Combatant Maritime Rotorcraft. Following review under the Future Rotorcraft Programme the Battlefield Light Utility Helicopter requirement matured into the Battlefield Reconnaissance Helicopter requirement.

**Battlefield Light Utility Helicopter:**

The Assessment Phase benchmarked Westland Helicopter Ltd's Lynx Wildcat proposal against alternative off-the-shelf solutions from other potential suppliers, and required the company to demonstrate the necessary level of performance to successfully deliver the Demonstration & Manufacture phase.

**Surface Combatant Maritime Rotorcraft:**

A single tender contract was placed with Westland Helicopter Ltd to develop and de-risk their Lynx Wildcat proposal to meet the Surface Combatant Maritime Rotorcraft requirement in conjunction with the approved Battlefield Light Utility Helicopter programme.

**Procurement Strategy:**

Two procurement strategies were considered. The first was to run a competition and second, to pursue the Westland Helicopter Lynx Wildcat proposal on a single tender basis - with an option to switch from single tender to competition should the Assessment Phase indicate that the Lynx Wildcat solution was unlikely to be cost effective. The second strategy was the selected one.

The result of the Assessment Phase considered the Lynx Wildcat to be the most likely of the options to deliver the required capability by the In Service Date. This gave the benefit of maintaining industrial capability in the UK. Hence a single tender approach was judged most likely to offer both the best technical solution and best value for money overall.

The Assessment Phase successfully de-risked a number of key requirements, including secure communications, mission systems and engine certification. Furthermore, Westland Helicopter Ltd's

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Super Lynx 300 export programme demonstrated their capability to insert new T-800 engines, glass cockpit and avionics into the Lynx aircraft.

**A.3. Progress**

Within the Department the aircraft are to be known as Wildcat Mk1 (Army Helicopter) and Wildcat Mk1 (Helicopter Maritime Attack).

The Demonstration & Manufacture contract was let in June 2006 to deliver 70 aircraft: 40 Battlefield Reconnaissance Helicopters for the Army and 30 Surface Combatant Maritime Rotorcraft for the Navy with costed options for five more platforms of each type. Preliminary, Interim, Air Vehicle and Air Vehicle & Mission Systems Critical Design Reviews were successfully achieved in January 2007, October 2007, April 2008 and August 2009 respectively. The first airframe was delivered to the Westland build line in November 2008 and a successful `First Flight` was achieved in November 2009 in accordance with the schedule contracted in June 2006. Significant future milestones are: Support & Training approval in late 2010 and Contract Award in early 2011. The Equipment Examination concluded that reductions could be realised in procurement costs if the quantities were reduced to 34 Battlefield Reconnaissance Helicopters and 28 Surface Combatant Maritime Rotorcraft, with the impact on delivered capability minimised through introducing design changes to achieve greater versatility between the two aircraft variants. The protracted period of uncertainty surrounding the project ended in December 2008 with the Ministerial announcement confirming that the project would proceed to full scale production. A Planning Round 2010 Option was run to address the legislative and safety requirement to fit all combat aircraft including helicopters with fuel system survivability measures.

Through-life training & support solutions are to be developed as part of the project. An Information Note was approved in July 2007 to submit the Support Solution Review Note in September 2009. Approval was also given for the Training Service Initial Gate Business Case in August 2007 based on the 4-stage PFI Treasury Approval process. While investigating alternative ways to deliver the Lynx Wildcat capability during the Equipment Examination, the opportunity to deliver reduced through life costs was identified. A Review Note was submitted to the Investment Approvals Board in December 2008 and approved in January 2009, detailing a new strategy to explore a single source, integrated Support Solution and Training Delivery Service through the aircraft manufacturer, AgustaWestland and reflects a revised recommendation submission date to the Investment Approvals Board in late 2010, leading to a potential contract award in early 2011. Logistic Support and Ready for Training dates remain unchanged and are planned for December 2011 and January 2013 respectively.

**A.4. Capability Risks**

These projects provide ongoing light helicopter capability in the land, maritime & littoral environments, beyond the out of service dates of the current Lynx helicopter fleet and introduce an enhanced maritime & littoral attack capability. The reduction in aircraft quantities arising from the Equipment Examination is predicated upon a more versatile design solution allowing both aircraft variants to be utilised across a wider range of roles and environments, but with some minor trade-off against the achieved performance. This will place a greater necessity on the need to manage the two variants within a common in-service framework with commonality within the Defence Lines of Development

**A.5. Associated Projects – Not Applicable**

**A.6. Procurement Strategy**

Pre-Main Investment Decision Projects / Increments only				
Description	Procurement Route			
-	-			
Post-Main Investment Decision Projects / Increments only				
	Contractor	Contract Scope	Contract Type	Procurement Route
Lynx Wildcat	Westland Helicopters Ltd, Yeovil	Demonstration to manufacture	Target cost incentive fee with a maximum price	Non-competitive

**A.7. Support Strategy**

**A.7.1. Support / Service / PFI Contract Strategy**

Description				
-	-			
-	-			
	Contractor	Contract Scope	Contract Type	Procurement Route
Lynx Wildcat	Westland Helicopters Ltd, Yeovil	In-Service Training and Support	To Be Confirmed	Non-competitive

**B. Section B: Cost**

**B.1. Cost of the Assessment Phase**

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
Project	59	57	-2	3.5%	3.4%
<b>Total</b>	<b>59</b>	<b>57</b>	<b>-2</b>	<b>3.5%</b>	<b>3.4%</b>

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Project	1760	1901	1966

**B.3. Cost of the Demonstration and Manufacture Phase**

Description	Approved Cost (£m)	Actual / Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
Project	1966	1689	-277	+20
<b>Total</b>	<b>1966</b>	<b>1689</b>	<b>-277</b>	<b>+20</b>

**B.3.1. Cost Variation against approved Cost of the Demonstration & Manufacture Phase**

**B.3.1.1. Lynx Wildcat**

Date	Variation (£m)	Factor	Reason for Variation
March 2010	+12	Accounting Adjustments and Re-definitions	Due to changes in the funding profile of the project the cost of capital charge has increased.
March 2010	+10	Changed Capability Requirement	Planning Round 2010 Option – Rotary Wing – Fuel System Survivability Measures
December 2009	-2	Accounting Adjustments and Re-definitions	The level of risk which has materialised has not been as great as anticipated within the Main Gate Business Case.
Historic	-8	Budgetary Factors	Lynx Wildcat programme cost reduction related to funding re-profiling within Helicopter Cluster

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Historic	-194	Budgetary Factors	Planning Round 2009 Option – Lynx Wildcat descope and reduce numbers from 80 to 62
Historic	-40	Budgetary Factors	Reduced cost of capital as a result of Option and changes in cost profile between current and future years
Historic	+8	Accounting Adjustments and Re-definitions	Increase in cost of capital due to reprofiling of lifetime expenditure, delivery schedule, updated accrual model and subsequent capitalisation of RDEL costs approved at Main Gate.
Historic	+2	Changed Budgetary Priorities	Increased cost of capital due to increased year end outturn ahead of schedule.
Historic	-65	Risk Differential	Difference between the risk allowed for in the most likely (50%) figure and highest acceptable (Not to Exceed) estimates at Main Gate.
<b>Net Variation</b>	<b>-277</b>		

**B.3.2. Operational Impact of Cost Variations of Demonstration & Manufacture Phase**

Description	
Lynx Wildcat	The reduction in aircraft quantities arising from the Equipment Examination is predicated upon a more versatile design solution allowing both aircraft variants to be utilised across the range of Battlefield Reconnaissance Helicopter and Surface Combatant Maritime Rotorcraft roles and environments, but with some minor trade-off against the achieved performance. This will place a greater necessity on the need to manage the two variants within a common in-service framework with commonality within the Defence Lines of Development.

**B.4. Unit production cost**

Description	Unit production costs (£m)		Quantities required	
	At Main Investment Decision	Currently	At Main Investment Decision	Currently
Project – Battlefield Reconnaissance Helicopter	12.7	13.3	45	34
Project – Surface Combatant Maritime Rotorcraft	13.7	13.6	35	28
Increment A – Training Simulators	46.8	32.3	2	2

**B.5. Progress against approved Support / Service / PFI Cost – Not Applicable**

**B.6. Expenditure to date**

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
<b>Assessment Phase (£m)</b>	<b>57</b>	<b>-</b>	<b>57</b>
<b>Demonstration &amp; Manufacture Phase (£m)</b>	<b>322</b>	<b>133</b>	<b>455</b>
<b>Support Phase / Service / PFI Cost (£m)</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Total Expenditure (£m)</b>	<b>379</b>	<b>133</b>	<b>512</b>

**C. Section C: Timescale**

**C.1. Duration of the Assessment Phase**

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Lynx Wildcat – Battlefield Reconnaissance Helicopter	June 2006	December 2001	54
Lynx Wildcat – Surface Combatant Maritime Rotorcraft	June 2006	September 2002	45

**C.2. Planned / Actual Boundaries for introduction of the Capability**

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
Lynx Wildcat – Battlefield Reconnaissance Helicopter	May-2013	January-2014	August-2014
Lynx Wildcat – Surface Combatant Maritime Rotorcraft	May-2014	January-2015	August-2015

**C.3. In-Service Date/Initial Operating Capability**

**C.3.1. Definition**

Description	In-Service Date/Initial Operating Capability
Lynx Wildcat – Battlefield Reconnaissance Helicopter	In Service Date is defined as 4 force elements at readiness to deploy on a small scale focussed intervention operation.
Lynx Wildcat – Surface Combatant Maritime Rotorcraft	In Service Date is defined as one deployable aircraft with logistic support, trained aircrew and groundcrew in place.

**C.3.2. Progress against approved Dates**

Description	Approved Date	Actual / Forecast Date	Variation	In-Year Variation
Lynx Wildcat – Battlefield Reconnaissance Helicopter	August 2014	January 2014	-7	0
Lynx Wildcat – Surface Combatant Maritime Rotorcraft	August 2015	January 2015	-7	0

**C.3.3. Timescale variation**

**C.3.3.1. Battlefield Reconnaissance Helicopter**

Date	Variation	Factor	Reason for Variation
Historic	0	Procurement Strategy	Since Main Gate, Project advised that the new Treasury 4 Gate Approval process for candidate PFI projects needed to be adopted. This process had the potential to add one year to the procurement timescale for the Synthetic Training Service. Sufficiently trained aircrew are required before In Service Date can be declared and it was considered prudent to declare an In Service Date slip of 3 months while mitigation work matured. (+3) Flight Simulation and Synthetic Trainers Integrated Project Team Lynx Wildcat Training Services Initial

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			Gate Business Case was approved by the Investment Approvals Board in August 2007. The required mitigation activity has been completed and has brought the Training Service In Service Date in line with the In Service Date and the three months recovered.(-3)
Historic	-7	Risk Differential	Difference between the risk allowed for in the most likely (50%) figure and highest acceptable (Not to Exceed) estimates at Main Gate.
<b>Net Variation</b>	<b>-7</b>		

**C.3.3.2. Surface Combatant Maritime Rotorcraft**

Date	Variation	Factor	Reason for Variation
Historic	0	Procurement Strategy	Since Main Gate, Project advised that the new Treasury 4 Gate Approval process for candidate PFI projects needed to be adopted. This process had the potential to add one year to the procurement timescale for the Synthetic Training Service. Sufficiently trained aircrew are required before In Service Date can be declared and it was considered prudent to declare an In Service Date slip of 3 months while mitigation work matured. (+3) Flight Simulation and Synthetic Trainers Integrated Project Team Future Lynx Training Services Initial Gate Business Case was approved by the Investment Approvals Board in August 2007. The required mitigation activity has been completed and has brought the Training Service In Service Date in line with the In Service Date and the three months recovered.(-3)
Historic	-7	Risk Differential	Difference between the risk allowed for in the most likely (50%) figure and highest acceptable (Not to Exceed) estimates at Main Gate.
<b>Net Variation</b>	<b>-7</b>		

**C.3.4. Other costs resulting from Timescale variation – Not Applicable**

**C.3.5. Operational Impact of In-Service Date/Initial Operating Capability variation – Not Applicable**

**C.4. Full Operating Capability**

**C.4.1. Definition**

Description	Full Operating Capability
Lynx Wildcat – Battlefield Reconnaissance Helicopter	Sufficient aircraft and trained crews to generate the required number of sustainable Force Elements at Readiness; the Battlefield Reconnaissance Helicopter is compliant with the endorsed threshold



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	User Requirement Document and the legacy Lynx Marks 7 and 9 are no longer required to contribute any element of support to the delivery of Land or Littoral Manoeuvre Capability
Lynx Wildcat – Surface Combatant Maritime Rotorcraft	Sufficient, sustainable trained crews and aircraft to generate the required number of Force Elements at Readiness; the Surface Combatant Maritime Rotorcraft is compliant with the endorsed threshold User Requirement Document and the legacy platform is no longer required to contribute any element of Maritime Capability

**C.4.2. Progress Report**

Description	Full Operating Capability
Lynx Wildcat – Battlefield Reconnaissance Helicopter	FOC was undefined at Main Gate. Subsequently work has generated the current working definition. Work continues to define the scope of the Bowman Data interface requirement which is to be delivered at FOC.
Lynx Wildcat – Surface Combatant Maritime Rotorcraft	FOC was undefined at Main Gate. Subsequently work has generated the endorsed definition.

**C.5. Support / Service / PFI Contract – Not Applicable**

**D. Section D: Performance**

**D.1. Maturity Measures**

**D.1.1. Lynx Wildcat**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
Commercial	<i>Measures under development</i>			
Financial				
Project Management				
System Readiness	-	3	-	The 'Last Years Assessment' represent the assessment at main gate, as reported in MPR2009. No further assessments have been made and so the 'Current Years Assessment' is not reported.
Technology Readiness	1-9	7	-	The 'Last Years Assessment' represent the assessment at main gate, as reported in MPR2009. No further assessments have been made and so the 'Current Years Assessment' is not reported.

**D.1.2. Increment A**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
Commercial	<i>Measures under development</i>			
Financial				
Project Management				
System Readiness	-	-	-	-
Technology Readiness	1-9	-	-	-

**D.2. Performance against Defence Lines of Development**

<b>Not required for pre-Main Investment Decision Projects</b>				
<b>Line of Development</b>	<b>Description</b>	<b>Forecast</b>		
		<b>To be met</b>	<b>At Risk</b>	<b>Not to be met</b>
1. Equipment	Progress as reported elsewhere in PSS	Yes	-	-
2. Training	Training technical proposal received from contractor.	Yes	Yes	-
3. Logistics	Support technical proposal received from contractor	Yes	Yes	-
4. Infrastructure	Assessing infrastructure options and funding	Yes	Yes	-
5. Personnel	Force Structure guidance provided. In Service Teams developing.	Yes	-	-
6. Doctrine	At mature draft stage	Yes	-	-
7. Organisation	Force Structure guidance provided. Joint in nature & proceeding at Yeovilton.	Yes	-	-
8. Information	Investigating dependency on infrastructure options.	Yes	-	-
Percentage currently forecast to be met		100%		
In-Year Change		0		

**D.2.1.1. Defence Lines of Development Variation**

<b>Date</b>	<b>Line of Development</b>	<b>Factor</b>	<b>Reason for Variation</b>
March 2010	Training	Procurement Processes	Training proposal lacks pricing information & uncertainty from contractor as to when this will be available. Risk in meeting approvals timescales due to Election/summer recess.
March 2010	Logistics	Procurement Processes	Support proposal lacks pricing information & uncertainty from contractor as to when this will be available. Risk in meeting approvals timescales due to Election/summer recess.
March 2010	Infrastructure	Budgetary Factors	Wildcat Infrastructure team now formed and managing implementation. Funding issues remain. Approvals timelines coincident with Election and may lead to planning blight.
March 2010	Personnel	Changed Capability Requirements	Force Structure guidance now provided and levels of manning identified.
Historic	Infrastructure	Budgetary Factors	Full infrastructure requirement not yet clear: Awaiting Detailed proposal for training and logistics (support solution). Awaiting clarity on funding availability.
Historic	Personnel	Changed Capability Requirements	Manning process agreed. Awaiting personnel Requirement from Organisation and Training Line of Development.

**D.3. Performance against Key Performance Measures**

**D.3.1. Battlefield Reconnaissance Helicopters**

**D.3.1.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
01	-	The user requires a manned rotorcraft capable of independent and co-operative, intelligent action, which provides commanders with a sustainable, timely, responsive and accurate, enduring Intelligence, Surveillance, Target Acquisition and Reconnaissance capability at long range across the full spectrum of conflict.	Yes	-	-
02	-	The user requires the capability to acquire, designate targets and direct the full spectrum of joint fires via network enabled communications.	Yes	-	-
03	-	The user shall be provided with a capability that is available for the required sustained level of operational effect.	Yes	-	-
04	-	The user shall be able to deliver operational capability with a high likelihood of survival.	Yes	-	-
05	-	The user shall be provided with a capability that can interoperate with relevant military and civil authorities	Yes	-	-
06	-	The user shall have a capability that can operate within defined natural and man-made environmental conditions.	Yes	-	-
07	-	The user shall be provided with a capability that can operate from both land and sea bases to target areas on land or sea.	Yes	-	-
08	-	The user shall be provided with a capability that can be deployed worldwide	Yes	Yes	
Percentage currently forecast to be met			100%		
In-Year Change			0		

**D.3.1.2. Key Performance Measures Variation**

Date	Key Measure	Factor	Reason for Variation
Historic	08	Budgetary Factors	One of the five elements of this KPM (self-deploy) has been traded-out by the Equipment Examination.

**D.3.1.3. Operational Impact of variation**

KPM	Date	Status	Operational impact of variation
08	Historic	-	There is a minimal operational impact from this KPM trade, in that only a small number of the mission scenarios are affected. Should funding be identified at a later date, this capability could be re-introduced to the design solution.

**D.3.2. Surface Combatant Maritime Rotorcraft**

**D.3.2.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
01	-	The user requires a manned rotorcraft capable of independent and co-operative, intelligent action, which provides commanders with a sustainable, timely, responsive and accurate, enduring Intelligence, Surveillance, Target Acquisition and Reconnaissance capability at long range across the full spectrum of conflict.	Yes	Yes	-
02	-	The user requires the capability to acquire, designate targets and direct the full spectrum of joint fires via network enabled communications.	Yes	-	-
03	-	The user shall be able to autonomously and co-operatively attack using appropriate rapid and flexible fires with the joint battlespace.	Yes	-	-
04	-	The user requires a vertical lift capability to deploy and support joint forces, as operationally effective units, from land or sea bases.	Yes	-	-
05	-	The user shall be provided with a capability that is available for the required sustained level of operational effect.	Yes	-	-
06	-	The user shall be able to deliver operational capability with a high likelihood of survival.	Yes	-	-
07	-	The user shall be provided with a capability that can interoperate with relevant military and civilian authorities	Yes	-	-
08	-	The user shall have a capability that can operate within defined natural and man-made environmental conditions	Yes	-	-
09	-	The user shall be provided with a capability that can operate from both land and sea bases to target areas on land or sea.	Yes	-	-
10	-	The user shall be provided with a capability that can be deployed worldwide	Yes	Yes	-
Percentage currently forecast to be met			100%		
In-Year Change			0		

**D.3.2.2. Key Performance Measures Variation**

Date	Key Measure)	Factor	Reason for Variation
Historic	01	Budgetary Factors	Equipment Examination has put `at risk` the surveillance/reach element of this KPM.
Historic	10	Budgetary Factors	One of the five elements of this KPM (self-deploy) has been traded-out by the Equipment Examination.
Historic	01	Technical Factors	One of the ten elements of this KPM is considered to be at risk. The contracted position, with respect to the installed radar detection performance, does not meet the KPM. Work is ongoing between the Integrated Project Team and Augusta Westland to evaluate the extent of the shortfall

**D.3.2.3. Operational Impact of variation**

KPM	Date	Status	Operational impact of variation
01	Historic	-	There is a minimal operational impact from this KPM trade, in that only a small number of the mission scenarios are affected. Should funding be identified at a later date, this capability could be re-introduced to the design solution.
10	Historic	-	There is a minimal operational impact from this KPM trade, in that only a small number of the mission scenarios are affected. Should funding be identified at a later date, this capability could be re-introduced to the design solution.
01	Historic	-	There is a minimal operational impact from this variation, in that only a small number of the mission scenarios are affected. The shortfall is balanced by Improvements in other aspects of performance.
<b>Total</b>		-	

**D.3.3. Support Contract – Not Applicable**

**Team Responsible**

Merlin Capability Sustainment Programme

**Single point of accountability for Project Capability**

Merlin

**Senior Responsible Officer**

Equipment Capability (Deterrent & Underwater Capability)

**Number of Projects / Increments**      1

**Current Status of Projects / Increments**

- **Post Main Investment Decision – Merlin Capability Sustainment Programme**

**A. Section A: The Project**

**A.1. The Requirement**

The Merlin Capability Sustainment Programme will update 30 Merlin Mk1 aircraft to overcome existing and forecast obsolescence within the Weapon System Avionics to ensure sustainment of the required capability until the planned Out of Service Date (2029). The converted aircraft will be known as the Merlin Mk2.

**A.2. The Assessment Phase**

Following approval of the Merlin Capability Sustainment Programme Initial Gate Business Case, the Assessment Phase contract was placed in June 2003. The main Assessment Phase activities comprised:

- Analysis of the User Requirements and development of a consolidated set of system requirements in the form of a Systems Requirements Document.
- Production of System and Sub-System design requirements, and seeking initial costed proposals from potential suppliers.
- Conducting trade-off studies to identify the best value solution where options exist.
- Developing a coherent plan for Merlin Capability Sustainment Programme, aligned to other existing and planned Merlin programmes.
- Undertaking Integrated Test, Evaluation and Acceptance planning.
- Identification of the risks to the Merlin Capability Sustainment Programme, and the identification and implementation of mitigation action to reduce the impact to an acceptable level.
- Produce documentation and costed proposals for the Demonstration and Manufacture Phase.
- Undertaking initial Integrated Logistic Support activities to define a solution compliant with the evolving Support Solution Envelope.

**Future Rotorcraft Capability Review**

During the Assessment Phase, MOD embarked on a review of all future rotorcraft requirements under the title of the Future Rotorcraft Capability review. The Demonstration & Manufacture Proposal that had been provided by Industry and the associated business case were produced before the impact of the Future Rotorcraft Capability review was known. The Merlin Capability Sustainment Programme was reviewed as part of the wider Future Rotorcraft Capability programme. The Future Rotorcraft Capability programme determined that the balance of financial investment over the first four years of the Equipment Programme between Merlin Capability Sustainment Programme and Lynx Wildcat should be on a 50/50, 30/70, 30/70, 30/70 basis respectively.

To allow Industry to continue critical path activity and to support the reprogramming activities resulting from Future Rotorcraft Capability, the Future Rotorcraft Capability programme provided Transition Phase funding (six months) to the Merlin Integrated Project Team for an extension to the Assessment Phase contract.

A further transition phase (six months) was required to again sustain programme momentum, align it with wider Future Rotorcraft Capability requirements and maintain programme viability during the approvals process.

**A.3. Progress**

The programme remains on track, following successful completion of the Training System Design Reviews (April and September 2009). The production of the trials aircraft has commenced and is on track for first flight in January-March 2011.

**A.4. Capability Risks**

The Merlin Mk1 is responsible for delivering protection to the Royal Navy's fleet from sub surface threats. It also provides a significant contribution to their overall situational awareness both above and below the water. The programme is designed to sustain the capability out to the current Out of Service Date. Without this programme the ability to detect sub-surface threats would be reduced or if the obsolescence issues were addressed through an alternate strategy (piecemeal approach) lead to a large increase in Through Life Costs.

**A.5. Associated Projects – not applicable**

**A.6. Procurement Strategy**

Pre-Main Investment Decision Projects / Increments only				
Description	Procurement Route			
Project	Single tender with Lockheed Martin (Merlin Mk1 prime contractor)			
Post-Main Investment Decision Projects / Increments only				
	Contractor	Contract Scope	Contract Type	Procurement Route
Merlin Capability Sustainment Programme	Lockheed Martin Aero Systems Integration Corporation (Significant (60% by value) sub-contract with AgustaWestland, Yeovil)	Demonstration and Manufacture	Firm price until 2010, then fixed price subject to Variation of Price	Non-competitive prime but ~60% competition at sub contract level (across both Prime and AgustaWestland contracts)

**A.7. Support Strategy**

The support strategy of the Merlin Mk2 will be the same as that employed for the current UK Merlin (Mk1 & Mk3), namely Integrated Merlin Operational Support contract. Integrated Merlin Operational Support is a whole life aircraft availability contract that is priced by flying hours within a defined band with incentives to generate fit-for purpose aircraft to the Front Line. There are five key elements of the Integrated Merlin Operational Support Service:

- Service Management
- Aircraft Provision
- Materiel Support
- Technical Support
- Training

It is a 25 year contract (commenced in 2006) and priced in five year tranches. The current pricing period has an approval of \*\*\*. While providing support to the majority of the Merlin helicopter, there are exclusions, namely the engines and other common use items that are supported elsewhere.

**A.7.1. Support / Service / PFI Contract Strategy**

Description				
-	-			
	Contractor	Contract Scope	Contract Type	Procurement Route
Merlin Capability Sustainment Programme	AgustaWestland (Yeovil)	Delivery of flying hours to	Firm Price	Single Tender

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	primed, with a Lockheed Martin sub contract	the UK's Merlin Helicopter forces.		
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**B. Section B: Cost**

**B.1. Cost of the Assessment Phase**

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
Merlin Capability Sustainment Programme	19	17	-2	2%	2%
Transition Phase for Future Rotorcraft Capability	10	10	0	1%	1%
<b>Total</b>	<b>29</b>	<b>27</b>	<b>-2</b>	<b>3%</b>	<b>3%</b>

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Merlin Capability Sustainment Programme	828	837	840

**B.3. Cost of the Demonstration and Manufacture Phase**

Description	Approved Cost (£m)	Actual / Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
Merlin Capability Sustainment Programme	840	829	-11	-1
<b>Total</b>	<b>840</b>	<b>829</b>	<b>-11</b>	<b>-1</b>

**B.3.1. Cost Variation against approved Cost of the Demonstration & Manufacture Phase**

**B.3.1.1. Merlin CSPt**

Date	Variation (£m)	Factor	Reason for Variation
March 2010	-1	Technical Factor	Reduction in outturn costs arising from reduced impact of inflation as a result of earlier than planned completion of work.
Historic	-3	Technical Factor	Reduction in outturn costs arising from reduced impact of inflation as a result of earlier than planned completion of work.
Historic	+1	Accounting Adjustments and Re-definitions	Increase in Cost of Capital due to earlier completion of work.
Historic	-6	Accounting Adjustments and Re-definitions	Delivery of intangible development expenditure now coincides with the first production aircraft delivery. Previously it had been with the fifth aircraft, a year later (-£6m).
Historic	+1	Budgetary	£15m of CDEL funding was



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		Factors	brought forward during Equipment Programme 07 which has resulted in a subsequent increase in the Cost of Capital (+£1m).
Historic	-3	Risk Differential	Difference between the risk and uncertainty allowed for in the 50% confidence and the approved Not To Exceed figures at Main Gate.
<b>Net Variation</b>	<b>-11</b>		

**B.3.2. Operational Impact of Cost Variations of Demonstration & Manufacture Phase**

Description	
-	-

**B.4. Unit production cost**

Description	Unit production costs (£m)		Quantities required	
	At Main Investment Decision	Currently	At Main Investment Decision	Currently
Project	10	9	30	30

**B.5. Progress against approved Support / Service / PFI Cost – not applicable**

**B.6. Expenditure to date**

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
<b>Assessment Phase (£m)</b>	27	0	27
<b>Demonstration &amp; Manufacture Phase (£m)</b>	208	104	312
<b>Support Phase / Service / PFI Cost (£m)</b>			
<b>Total Expenditure (£m)</b>	235	104	339

**C. Section C: Timescale**

**C.1. Duration of the Assessment Phase**

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Merlin Capability Sustainment Programme	March 2006	May 2003	34

**C.2. Planned / Actual Boundaries for introduction of the Capability**

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
Merlin Capability Sustainment Programme	Aug13	Feb 14	Sep 14

**C.3. In-Service Date/Initial Operating Capability**

**C.3.1. Definition**

Description	In-Service Date/Initial Operating Capability
Merlin Capability Sustainment Programme	The Operational Capability of the delivered aircraft shall be such that Commander-in-Chief Fleet (advised by Combined Test Team) are able to declare that Merlin Capability Sustainment Programme is ready for

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	operational deployment in the specified roles. A cumulative total of at least six Merlin Capability Sustainment Programme aircraft delivered to Royal Naval Air Station Culdrose. Logistic support available to enable the operation and maintenance of all the delivered aircraft. Sufficient trained personnel to achieve required capability.
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**C.3.2. Progress against approved Dates**

Description	Approved Date	Actual / Forecast Date	Variation	In-Year Variation
Merlin Capability Sustainment Programme	September 2014	February 2014	-7	-

**C.3.3. Timescale variation**

**C.3.3.1. MERLIN CSP**

Date	Variation	Factor	Reason for Variation
Historic	-7	Risk Differential	Difference between the risk and uncertainty allowed for in the 50% confidence and the approved Not To Exceed figures at Main Gate
<b>Net Variation</b>	<b>-7</b>		

**C.3.4. Other costs resulting from Timescale variation – not applicable**

**C.3.5. Operational Impact of In-Service Date/Initial Operating Capability variation – not applicable**

**C.4. Full Operating Capability**

**C.4.1. Definition**

Description	Full Operating Capability
Merlin Capability Sustainment Programme	

**C.4.2. Progress Report**

Description	Full Operating Capability
Merlin Capability Sustainment Programme	Programme remains on track

**C.5 Support / Service / PFI Contract – not applicable**

**D. Section D: Performance**

**D.1. Maturity Measures**

**D.1.1. Merlin CSP**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
Commercial	<i>Measures under development</i>			
Financial				
Project Management				
System Readiness	1-9	3	5	
Technology Readiness	1-9	7	7	

**D.2. Performance against Defence Lines of Development**

Not required for pre-Main Investment Decision Projects		
Line of	Description	Forecast

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Development		To be met	At Risk	Not to be met
1. Equipment	Delivery of required equipment (aircraft and ground equipment)	Yes		
2. Training	Delivery of trained people, including training systems	Yes		
3. Logistics	Delivery of necessary support products to enable Logistics Support Date to be met	Yes		
4. Infrastructure	Delivery of necessary changes to extant infrastructure to support the required capability	Yes		
5. Personnel	Delivery of sufficient people (aircrew and maintainers) to support capability	Yes		
6. Doctrine	Update Mk1 Concepts & Doctrine to reflect capability delivered through Mk2	Yes		
7. Organisation	Review/update organisation to reflect changes caused by introduction of Mk2	Yes		
8. Information	Manage information and interface to data providers/users, including interface to Defence Information Infrastructure.	Yes		
Percentage currently forecast to be met		100%		
In-Year Change		0%		

**D.2.1.1. Defence Lines of Development Variation**

Date	Line of Development	Factor	Reason for Variation
March 2010	Training & Personnel	Budgetary Factors	A number of mitigation measures have been implemented that have reduced the risk. This includes a phased closure approach and additional factory training to ensure sufficient trained people are available to support the required force elements at readiness.
Historic	Training & Personnel	Budgetary Factors	Affordability decision taken prior to contract award meant that the ability to train Mk1 personnel concurrently with conversion of the training facilities to the Mk2 standard was not possible. This gives rise to the risk that trained personnel will not be available to sustain Mk1 capability to its out of service and develop those required for Mk2. A number of mitigation activities are underway to minimise the impact of this risk.

**D.3. Performance against Key Performance Measures**

**D.3.1. Merlin CSP**

**D.3.1.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
01	1, 5	Attack. The user shall be able to neutralise confirmed Anti-submarine Warfare Threats.	Yes		
02	1, 2	Deployable Search and Rescue (Maritime Only).	Yes		

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		The user shall be able to conduct naval Search and Rescue.			
03	1, 3	Environment. The user shall be able to operate in environments world-wide.	Yes		
04	1, 5	Find. The user shall be able to acquire situational awareness of the Under Water Effect and Above Water Effect.	Yes		
05	1, 8	Interoperability. The user shall be able to exchange tactical information between authorities and units.	Yes		
06	1, 5	Lift. The user shall be able to move personnel and material over land and sea.	Yes		
07	2, 3	Logistical. The user shall be able to easily logistically support the Merlin Capability Sustainment Programme.	Yes		
08	1, 5	Operational Availability. The user shall be able to have Available Force Elements at a time and place as required to complete the mission.	Yes		
09	1, 4	Operational Locations. The solution shall be able to operate to and from host platforms when required.	Yes		
10	1, 2	Survivability. The user shall have force elements capable of surviving in hostile and warfighting environments.	Yes		
Percentage currently forecast to be met			100%		
In-Year Change			0%		

**D.3.1.2. Key Performance Measures Variation – not applicable**

**D.3.1.3. Operational Impact of variation- not applicable**

**D.3.2. Support Contract – not applicable**

**Team Responsible**

Nimrod Maritime Reconnaissance and Attack Mk4

**Single point of accountability for Project Capability**

Head of Deterrent and Underwater Capability

**Senior Responsible Officer**

Head of Deterrent and Underwater Capability

**Number of Projects** 1

**Current Status of Project**

- **Post Main Investment Decision – Nimrod Maritime Reconnaissance & Attack Mk4**

**A. Section A: The Project**

**A.1. The Requirement**

The Nimrod Maritime Reconnaissance and Attack Mk4 will replace the current Nimrod Maritime Reconnaissance Mk2 as the new maritime patrol aircraft. Nimrod Maritime Reconnaissance and Attack Mk4 will provide significantly enhanced Anti-Submarine and Anti-Surface Warfare capability through improved aircraft and sensor performance, a greater degree of system integration, better Human Machine Interface design and a substantial improvement in availability and supportability.

**A.2. The Assessment Phase**

In November 1992, the Equipment Approvals Committee approved a Request for Information exercise whereby 17 companies were invited to provide responses to the draft Replacement Maritime Patrol Aircraft Staff Requirement. Following analysis of the industry responses, the Equipment Approvals Committee endorsed the requirement and approved an Invitation to Tender phase whereby four companies (BAE Systems, 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 Systems' Nimrod 2000 (later to be re-designated Nimrod Maritime Reconnaissance and Attack Mk4) offer was approved by Equipment Approvals Committee and Ministers in July 1996. This was the equivalent of Main Gate approval.

**A.3. Progress**

The Nimrod Maritime Reconnaissance and Attack Mk4 contract for the design, development and production of 21 aircraft was placed with BAE Systems in 1996, following an international competition. The contract was re-negotiated in mid 1999 and again in early 2002 – when the Department reduced the number of aircraft from 21 to 18. Continued technical and resource problems led to a further review of the programme and in February 2003 the Department reached an agreement with BAE Systems to change the fixed price contract to a Target Cost Incentive Fee contract for Design and Development, which included manufacture of three trials aircraft, and an option for a further fifteen production aircraft. Pending definition of a satisfactory design standard, series production activities were limited to those activities vital to the preservation of the essential skill sets within BAE Systems and its supply chain. Flight trials commenced in August 2004.

In July 2004, studies determined that the capability of the Nimrod Maritime Reconnaissance and Attack Mk4 would enable the maritime reconnaissance requirement to be met with a fleet of about 12 aircraft and the number to be procured has been reduced accordingly. A further review of the programme identified increased production costs and that the In Service Date for the capability would need to be delayed in order to make the programme affordable within Departmental funding constraints. A business case seeking authorisation of commitment to full production was approved in May 2006, and the contract was amended to re-introduce the production requirements in July 2006. As part of the approval process the project's original Key Requirements were redefined and endorsed as Key Performance Measures by the Investment Approval Board and a revised definition of the In Service Date was approved. Affordability issues identified in Spring 2008 resulted in a further

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reduction in the number of aircraft from 12 to 9. In December 2009 Secretary of State for Defence announced that the introduction of the Nimrod Maritime Reconnaissance and Attack Mk4 would be delayed as one of a range of measures aimed at reprioritising Defence Expenditure to focus on current operations. Consequently the In Service Date has been delayed by 22 months to October 2012.

**A.4. Capability Risks**

Loss of the capability offered by the Nimrod Maritime Reconnaissance and Attack Mk4 would have an adverse effect on the protection of the strategic nuclear deterrent, the provision of which is one of the Ministry of Defence's Standing Strategic Tasks. In addition, the maintenance of the integrity of the UK through detection of hostile air and sea craft would be compromised.

**A.5. Associated Projects – not applicable.**

**A.6. Procurement Strategy**

Pre-Main Investment Decision Projects / Increments only				
Description	Procurement Route			
-	-			
Post-Main Investment Decision Projects / Increments only				
	Contractor	Contract Scope	Contract Type	Procurement Route
Nimrod Maritime Reconnaissance and Attack Mk4	BAE Systems, Warton	Design and Development	Target Cost Incentive Fee16	Prime Contractor International competition
Nimrod Maritime Reconnaissance and Attack Mk4	BAE Systems, Warton	Production	Target Cost Incentive Fee1	Prime Contractor

**A.7. Support Strategy**

The Nimrod Maritime Reconnaissance and Attack Mk4 support strategy is currently in the Assessment Phase and the proposed solution is being revised to address the impact of the financial planning round 2010 measure which removed £110M of funding from the project in order to reprioritise Defence expenditure. A series of contracts were placed with BAE Systems to fund the development of the support solution and to maintain continuity in the build up of support services prior to the aircraft beginning flying training with the RAF from mid 2010.

**B. Section B: Cost**

**B.1. Cost of the Assessment Phase**

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
Nimrod Maritime Reconnaissance and Attack Mk4	4	5	+1	0.1	0.1
<b>Total</b>	<b>4</b>	<b>5</b>	<b>+1</b>	<b>0.1</b>	<b>0.1</b>

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Nimrod Maritime Reconnaissance and Attack Mk4	-	2813	-

**B.3. Cost of the Demonstration and Manufacture Phase**

Description	Approved Cost (£m)	Actual / Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
Nimrod Maritime Reconnaissance and Attack Mk4	2813	3602	+789	-45
<b>Total</b>	<b>2813</b>	<b>3602</b>	<b>+789</b>	<b>-45</b>

**B.3.1. Cost Variation against approved Cost of the Demonstration and Manufacture Phase****B.3.1.1. Nimrod Maritime Reconnaissance and Attack Mk4**

Date	Variation (£m)	Factor	Reason for Variation
February 2010	-28	Technical Factors	Reduction in costs due to early completion of Flight Trials Programme (-£13m), decrease in Design Authority Support (-£15m) and Rig Support (-£15m), contractors revised estimate of VAT liability (-£7m) offset by increase in Essential Acceptance Tasks (+£17m). Increased Cost of Capital Charge due to both revised delivery date (+£3m) and revised expenditure profile (+£2m).
February 2010	-17	Accounting Adjustments and Re-definitions	Departmental Review identified savings with a reclassification of termination spares expenditure (-£17m)
Historic	+45	Technical Factors	Cost growth offset by the removal of the conversion of the 3 development aircraft to production standard, giving net increase. Deletion of the conversion of the 3 development aircraft to production standard (-£76m), extension of the Flight Trial Programme (+£22m), Corrosion on Nimrod Maritime Reconnaissance 2 donor components (+£42m), Provision for changes to the aircraft (+£35m), Provision for Operational Test & Evaluation fallout (+£18m), increase to risk funding (+£6m) and other Design & Development decrease (-£2m).
Historic	-370	Accounting Adjustments and Re-definitions	Woodford under-recovery of overhead double counted in Equipment Plan 2007 as already included in Company cost forecast (-£7m). An adjustment of the Historic calculation of the Cost of Capital charge (-£32m). Increase in

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			<p>costs owing to the creation of a trading fund for the Communications Electronic Security Group 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 MPR01, reflecting the availability of more accurate data (+£29m). Changes caused by the conversion of internal accounting system to full resource basis (-£26m). Difference in variation due to revision of Cost of Capital charge (-£22m). Departmental Review - identified savings with a reclassification of termination spares expenditure (-£176m) and resulting reduction in Cost of Capital charge (-£35m). Departmental Review identified savings from reduced Cost of Capital charge from early delivery to the customer (-£69m). Departmental Review – identified savings from reclassification of Adaptable Aircraft costs (-£4m) and reclassification of Consumable Stock (-£7m). MPR05 transposition error (-£3m).</p>
Historic	-27	Changed Budgetary Priorities	<p>Reduction in Risk provision (MPR00 -£17m; MPR02 -£17m). Contractor forecast was greater than advised in MPR05 resulting in increased Cost of Capital charge (+£7m).</p>
Historic	-80	Changed Requirement	<p>Reduction from 18 aircraft to 12 (-£155m) and associated reduction in Cost of Capital Charge (-£10m). Reduction from 21 to 18 aircraft; MPR02 saving of £114m less estimated termination costs of £70m; MPR03 further savings identified in 2003 planning process (-£16m). Additional commitments as part of the Heads of Agreement (+£35m). Additional costs for assessment of enhanced capability as part of the Agreement announced on 19 February 2003 (+£10m). As a consequence of the Agreement, QinetiQ requirement extended (+£40m). Reduction in cost of assessment of enhanced capability (-£5m). Contract change requirements (+£70m). Reduction in Government Furnished Equipment requirement (-£5m).</p>
Historic	+24	Contracting Process	<p>Reduction in Risk provision (-£56m); and reductions following the renegotiation of contract</p>



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			<p>(-£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). Additional costs relating to the agreement announced on 19 February 2003 for Design and Development Target Cost Fee (+£132m). Increased cost in light of company contract quality price for production and associated analysis of revised costing for October 2005 Investment Approvals Board Review Note (+£70m). Overhead recoveries (+£14m), Initial Logistics Support (+£8m), VAT liability on Design &amp; Development support (+£5m), Increase to Management Reserve identified in the Departmental Review (+£5m). Departmental Review – identified savings from a reclassification of overheads (-£11m), reduction of contractor fee and production costs (-£10m), provision for reduced spares (-£13m), VAT exemption (-£33m), reductions for Initial Logistics Support (-£8m), reduced manpower requirements (-£22m), cancellation of spares (-£3m), and reduced Cost of Capital charge (-£7m).</p>
Historic	+41	Inflation	Variation in Inflation assumptions (+£41m).
Historic	-7	Receipts	Forecast recovery of Liquidated Damages (-£46m) less those to be foregone as part of the Agreement announced on 19 February 2003 (+£39m).
Historic	+1,208	Technical Factors	<p>Interest on Capital recalculated based upon Equipment Plan 2007 profile and reduction in Management Reserve (-£4m). Review of Equipment Plan 2007 estimates &amp; schedule as a result of risk realisation Stability Augmentation System/Stall Identification Device has led to increased coherence in the programme resulting in a lower requirement for Management Reserve (-£5m). Increased Production Cost (+£229m) and increased Cost of Capital Charge linked to cost change and delay in delivery programme (+£183m). Increase in Defence Evaluation and Research Agency estimate (+£13m). Reduction in the study requirements (-£6m); slower</p>

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			technical progress than originally envisaged, particularly with wing mass, leading to reduced Cost of Capital charge (-£9m). Reduced Cost of Capital charge linked to reduction in aircraft numbers (-£2m); additional costs relating to the Agreement of February 2003 (+£359m). Increased Programme costs (+£348m). Costs of converting the 3 development aircraft to the production standard. (+£50m). Extension of the Flight Trials Programme (+£20m). Embodiment of the Stability Augmentation System (+£20m). Associated increase in Cost of Capital (+£12m).
<b>Net Variation</b>	<b>+789</b>		

**B.3.2. Operational Impact of Cost Variations of Demonstration and Manufacture Phase – not applicable.**

**B.4. Unit production cost**

Description	Unit production costs (£m)		Quantities required	
	At Main Investment Decision	Currently	At Main Investment Decision	Currently
Nimrod Maritime Reconnaissance and Attack Mk4	-	-	21	9

**B.5. Progress against approved Support / Service / PFI Cost – not applicable.**

**B.6. Expenditure to date**

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
Assessment Phase (£m)	5	-	5
Demonstration & Manufacture Phase (£m)	3197	166	3363
Support Phase / Service / PFI Cost (£m)			
<b>Total Expenditure (£m)</b>	<b>3202</b>	<b>166</b>	<b>3368</b>

**C. Section C: Timescale**

**C.1. Duration of the Assessment Phase**

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Nimrod Maritime Reconnaissance and Attack Mk4	July 1996	-	-

**C.2. Planned / Actual Boundaries for introduction of the Capability**

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
Nimrod Maritime Reconnaissance and Attack Mk4	-	April 2003	-

### C.3. In Service Date /Initial Operating Capability

#### C.3.1. Definition

Description	In Service Date/Initial Operating Capability
Nimrod Maritime Reconnaissance and Attack Mk4	<p><b>Initial Operating Capability :</b></p> <p><b>MPR10 Definition :</b> Current Initial Operating Capability definition is delivery of 5 aircraft to the Royal Air Force and the training of 6 crews. The Nimrod Maritime Reconnaissance &amp; Attack Mk4 force is to be capable of sustaining a standing patrol of 7 days.</p> <p><b>Reason for Change:</b> Departmental reprioritisation of Defence expenditure reflecting the financial planning round 2010 option taken.</p> <p><b>MPR09 Definition:</b> Provision of 4 aircraft and 4 combat ready crews</p> <p><b>Reason for Change:</b> To reflect the reduction in the fleet from 12 to 9. This will remove the 5<sup>th</sup> (non-deployable) aircraft from the programme</p> <p><b>MPR07 Definition:</b> Provision of 5 aircraft (4 deployable) and 6 combat ready crews.</p> <p><b>Reason for Change:</b> Secretary of State announced in July 2004, post Medium-Term Work Strand studies, a reduction in the number of Nimrod Maritime Reconnaissance and Attack Mk4 aircraft to be procured from 18 to about 12</p> <p><b>MPR04 Definition:</b> (Part of the 19th February 2003 Agreement with the Company): Delivery of the sixth production standard aircraft to the Royal Air Force.</p> <p><b>Reason for Change:</b> To reflect the reduction in the fleet from 21 to 18 agreed in 2002; six aircraft represents one squadron.</p> <p><b>Original Initial Operating Capability Definition:</b> Delivery of 7th production standard aircraft to Royal Air Force.</p>

#### C.3.2. Progress against approved Dates

Description	Approved Date	Actual / Forecast Date	Variation	In-Year Variation
Nimrod Maritime Reconnaissance and Attack Mk4	April 2003	October 2012	+114	+22
<b>TOTAL</b>			<b>+114</b>	<b>+22</b>

#### C.3.3. Timescale variation

##### C.3.3.1. Nimrod Maritime Reconnaissance and Attack Mk4

Date	Variation	Factor	Reason for Variation
December 2009	+22	Budgetary Factors	Introduction into service delayed by Departmental reprioritisation of Defence expenditure in financial planning round 2010.
Historic	+92	Technical Factors	Manufacturing Phase extended as a consequence of essential changes emerging from the Flight

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			<p>Trials: MPR08 +3 months</p> <p>Difference between forecast date reported in MPR99 based on 1999 re-approval at 90% confidence and forecast date reported in MPR00 based on the current plan at 50% confidence (-3 months).</p> <p>To make overall programme affordable within Departmental funding constraints (MPR05 +12 months).</p> <p>Resource and Technical factors at BAE Systems leading to programme slippage: MPR04 +6 months MPR03 +40 months MPR02 +11 months MPR00 +23 months</p>
<b>Net Variation</b>	<b>+114</b>		

**C.3.4. Other costs resulting from Timescale variation**

Description	Date	£m (+ Cost / - Saving)	Factor	Reason for expenditure or saving
Other	February 2010	-110	Budgetary Factors	The Secretary of State's statement to reprioritise the Defence budget resulted in a reduction in Nimrod Maritime Reconnaissance and Attack Mk4 support costs in the period April 2010 to March 2012, with -£60m in Year1 & - £50m in Year2. The Nimrod Maritime Reconnaissance Mk2 was withdrawn from service in March 2010 therefore no additional run-on costs were incurred.
Support costs of current equipment	Historic	+344	Technical Factors	Additional costs of running on Nimrod Maritime Reconnaissance Mk2.

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Other	Historic	-150	Technical Factors	Reduction in Nimrod Maritime Reconnaissance and Attack Mk4 support costs in same period.
<b>Total</b>		<b>+84</b>		

**C.3.5. Operational Impact of ISD /Initial Operating Capability variation**

Description	
Nimrod Maritime Reconnaissance and Attack Mk4 <b>ISD Variation</b>	The consequence of the Nimrod Maritime Reconnaissance and Attack Mk4 ISD slip, post the Nimrod Maritime Reconnaissance Mk2 Out-of-Service Date of March 2010, is that a capability gap will be endured. During this period, elements of the capability will be satisfied by other assets such as Merlin helicopters and Hercules aircraft, plus a minimal capability in the areas of Search and Rescue, Anti-Submarine Warfare and Maritime Counter Terrorism provided by Nimrod Maritime Reconnaissance and Attack Mk4.

**C.4. Full Operating Capability**

**C.4.1. Definition**

Description	Full Operating Capability
Nimrod Maritime Reconnaissance and Attack Mk4	Not defined at Main Gate. Measure previously developed for MPR09 not yet defined following the introduction of the measure which delayed the ISD to October 2012.

**C.4.2. Progress Report – not applicable.**

**C.5. Support / Service / PFI Contract - not applicable.**

**D.**

**D.1. Maturity Measures**

**D.1.1. Project**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
Commercial	<i>Measures under development</i>			
Financial				
Project Management				
System Readiness	-	-	-	Readiness levels were not required when this project passed through Main Gate for Demonstration & Manufacture. No (re)assessment is required at Main Gate for Support.
Technology Readiness	-	-	-	System Readiness levels are not currently mandated for approvals.

**D.2. Performance against Defence Lines of Development**

<b>Not required for pre-Main Investment Decision Projects</b>				
<b>Line of Development</b>	<b>Description</b>	<b>Forecast</b>		
		<b>To be met</b>	<b>At Risk</b>	<b>Not to be met</b>
1. Equipment	Aircraft Development & Production	Yes	Yes	-
2. Training	Aircrew & Ground crew Training	Yes	-	-
3. Logistics	Aircraft Support	Yes	Yes	-
4. Infrastructure	Facility refurbishment & new facility construction at the Aircraft's Main Operating Base.	Yes	-	-
5. Personnel	Military & Civilian manning	Yes	-	-
6. Doctrine	Military best practice, tactics & techniques	Yes	-	-
7. Organisation	Military organisational force structure	Yes	-	-
8. Information	Mission ready Data	Yes	Yes	-
Percentage currently forecast to be met		100%		
In-Year Change		-		

**D.2.1.1. Defence Lines of Development Variation**

<b>Date</b>	<b>Line of Development</b>	<b>Factor</b>	<b>Reason for Variation</b>
February 2010	Equipment	Technical Factors	Production quality issues have introduced some minor delays into the early aircraft delivery schedule but this will not impact the In-Service Date target of the number of aircraft. However, risk remains in the achievement of KUR 3.
December 2009	Training	Changed Budgetary Priorities	The measure to slow the introduction into service has eased pressure on the training programme. Fewer aircraft flying hours will be achieved in Financial Years 2010/2011 and 2011/2012 and training will require increased usage of the synthetic training facility.
December 2009	Logistics	Changed Budgetary Priorities	The reduction of the Support Solution budget by £60m in Year 1 and £50m in Year 2 has necessitated a complete de-scoping and redesign of the Support Solution. This activity will not complete until July 2010. Proposed flying rates have been reduced to compensate for the decrease in support funding. There is a risk associated with being able to maintain continuity during the support build up phase.
December 2009	Infra structure	Changed Budgetary Priorities	Refurbishment work at the Main Operating Base is progressing to schedule and is largely complete. These facilities will support the aircraft until 2014 when the first "C-check" depth maintenance is scheduled to commence. Although funding for the additional facilities has been identified, further work is

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			required to determine the exact nature of the check and the infrastructure required to support the work. This is not a risk to ISD.
December 2009	Personnel	Changed Budgetary Priorities	Early Out-of-Service Date of Maritime Reconnaissance Mk2 (March 2010) has eased personnel availability pressures. Although other programmes are competing for Maintainers it is anticipated that adequate personnel will be available by ISD.
December 2009	Doctrine	Changed Budgetary Priorities	The programme delay has increased the period available to conduct Operational Test & Evaluation Sorties in order to generate evidence for Key Performance Measure. Acceptance and Tactics Manual development purposes.
December 2009	Information	Changed Budgetary Priorities	Although Maritime Reconnaissance & Attack Mk4 Electronic Support Measures Pre-Flight Messaging has already been generated, concerns exist that the de-scoped Support Solution would lead to a reduction in Electronic Warfare Rig Support, affecting the ability to implement modifications to Electronic Support Measures Pre-Flight Messaging in future. Options are therefore currently being considered to include Electronic Warfare Rig support within the de-scoped Support Solution.
Historic	Equipment	Technical Factors	The Design & Development flight trials programme may impact the Aircraft Production schedule if retrospective design changes are required.
Historic	Training	Technical Factors	Risks to the timely delivery of MRA4 training have been partly minimised by early use of the first 'Production Standard' Aircraft for training purposes before the in-service flying phase begins. This is required because there is insufficient time to train the requisite number of crews before the In-Service Date milestone.
Historic	Logistics	Changed Budgetary Priorities	The Support Strategy is under review, with the aim of introducing an optimised incremental approach in order to meet programme resource challenges. Continuity phase support contracts are being put in place to de-risk support build up activities.
Historic	Infrastructure	Changed Budgetary Priorities	Contract work for Refurbishment of facilities at the Main Operating Base is progressing to schedule. However, the Infrastructure DLOD is within the scope of the Support

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			Strategy Review.
Historic	Personnel	Changed Budgetary Priorities	Pending the outcome of the Support Strategy review it will be necessary to utilise more MoD personnel than originally planned for 2009-2012 in training and support roles to substitute for Contractor manpower.
Historic	Doctrine	Technical Factors	The potential insertion of software fixes resulting from the flight trials programme introduces a risk that the Aircraft will not perform as expected during Operational Evaluation sorties.
Historic	Organisation	Technical Factors	The Nimrod Force has started the process of Force Re-structuring to meet the requirements for Nimrod MRA4 entering operational service. However recruitment delays may impact the maintenance squadron.

**D.3. Performance against Key Performance Measures**

**3.1 Nimrod Maritime Reconnaissance and Attack Mk4**

Nimrod Maritime Reconnaissance and Attack Mk4 is a legacy project and its original approval did not include Key Performance Measures. Key Performance Measures have since been retrospectively developed from first principles to comply with latest Smart Acquisition guidelines; they were endorsed by the Investment Approval Board in June 2006.

**D.3.1.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
01	-	Maritime Counter Terrorism	Yes	-	-
02	-	Search & Detect (Under Water Effect)	Yes	-	-
03	-	Submarine Attack	Yes	Yes	-
04	-	Search & Detect (Above Water Environment)	Yes	-	-
05	-	Tactical Interoperability	Yes	-	-
06	-	Mission Completion	Yes	Yes	-
07	-	Maritime Presence	Yes	Yes	-
08	-	Operations in Hostile Environment	-	-	Yes
09	-	Environmental Operating Conditions	-	-	Yes
Percentage currently forecast to be met			78%		
In-Year Change			-11%		

**D.3.1.2. Key Performance Measures Variation**

Date	Key Measure	Factor	Reason for Variation
February 2010	KUR 01	Changed Requirement	Communications Requirements for post-2010 Maritime Counter Terrorist operations were previously unclear causing uncertainty as to whether the aircraft baseline fit would be adequate or, if not, the extent of any required change. These Requirements have since been clarified by a need to install additional role-fit specialist radios. Installation is expected in 2011 therefore the KUR is no longer at



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			risk.
February 2010	KUR 02	Technical Factors	The programme delay now allows adequate time for Operational Test and Evaluation to be conducted to demonstrate compliance with the KUR.
February 2010	KUR 03	Technical Factors	There is a technical risk associated with the ability to drop stores. Additionally the abandonment of end-to-end testing of the weapon system (including live weapon drop) affects the ability to assure performance
February 2010	KUR 04	Technical Factors	The programme delay now allows adequate time for Operational Test and Evaluation to be conducted to demonstrate compliance with the KUR.
February 2010	KUR 06	Technical Factors	The reduction of the Support Solution budget by £60m in Year 1 and £50m in Year 2 has necessitated a complete de-scoping and redesign of the Support Solution. There is a risk associated with being able to maintain continuity during the support build up phase. It is assumed that funding will return to its required level in Year 3.
February 2010	KUR 07	Technical Factors	Risks are easing concerning potential flight-time limitations (caused by airframe issues), that resulted in a reduction in maximum permissible fuel loads. A risk remains that an adequate support solution will not be in place to sustain 24 hour operations.
February 2010	KUR 08	Changed Requirement/ Technical Factors	Nimrod Self-defence capability was specified against 1996 requirements, which are no longer valid. Whilst the aircraft does not meet that specification this was because attainment was not pursued as it was not considered relevant in the post 2010 environment. Recognition that Key User Requirement 8 is unattainable with current funding has precipitated further funding drawdown from the Defensive Aid Sub System support budget, thereby removing any chance that the Key User Requirement could be met by ISD. Addressing the shortfall in Key User Requirement 8 will have to constitute a new requirement.
February 2010	KUR 09	Technical Factors	Risk driven by the need to repeat tests covering minimum and maximum temperature operations. Earlier tests failed to deliver the limits sought and there is need to repeat these tests, now that

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			modifications have occurred. Pressure on the flight test programme deferred repeat testing, the tests were re-programmed but the financial pressures and the associated severe cut in flying hours resulting from the PR10 option have necessitated their removal.
Historic	KUR 01	Technical Factors	Solutions to problems related to Electronic Support Measures, Radar and Electro Optical Surveillance Detection System will be resolved within the Design & Development programme. The Contractor has an active recovery programme in place which is reviewed on a monthly basis. Additionally, further technical issues could emerge as more of the systems start to be operated together. Overall, there is a high probability that the Key User Requirement will be classified as on track by ISD.
Historic	KUR 02	Technical Factors	Solutions to problems related to Electronic Support Measures, Radar and Electro Optical Surveillance Detection System will be resolved within the Design & Development programme. The Contractor has an active recovery programme in place which is reviewed on a monthly basis. Additionally, further technical issues could emerge as more of the systems start to be operated together. Overall, there is a high probability that the Key User Requirement will be classified as on track by ISD.
Historic	KUR 03	Technical Factors	Solutions to the problems related to Electronic Support Measures, Radar and Electro Optical Surveillance Detection System will be resolved within the Design & Development programme. The Contractor has an active recovery programme in place which is reviewed on a monthly basis. Additionally, further technical issues could emerge as more of the systems start to be operated together. Overall, there is a high probability that the Key User Requirement will be classified as on track by ISD .
Historic	KUR 04	Technical Factors	The required Mission System performance may not be assured prior to ISD.
Historic	KUR 06	Technical Factors	Solutions to problems related to Electronic Support Measures, Radar and Electro Optical Surveillance Detection System will

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			<p>be resolved within the Design &amp; Development programme. The Contractor has an active recovery programme in place which is reviewed on a monthly basis. Additionally, further technical issues could emerge as more of the systems start to be operated together. Overall, there is a high probability that the Key User Requirement will be classified as on track by ISD.</p>
Historic	KUR 08	Technical Factors	<p>Technical and financial issues now resolved surrounding procurement of Electronic Warfare Rig thereby allowing aircraft to operate with a self-defence capability. Business Case with Investment Appraisal under compilation. Procurement schedule being determined; anticipate Key User Requirement compliance when schedule and risks clearly identified. Electronic Warfare Rig on contract with effect from 30 September 2006. Delivery expected January 2010 (50%), March 2010 (90%); BAE Systems have been incentivised to deliver within 2009 to meet Air Warfare Centre's requirement for a rigs' availability 12 months prior to ISD. Recognition of assessment of Key User Requirement has been agreed with Nimrod Capability Working Group. The Electronic Warfare Rig procurement is proceeding ahead of its contracted timescales. However, the commissioning of the new facility at the Thomson Building at Royal Air Force Waddington, which combines the A400M facility requirement, is currently several months behind schedule; Defence Estates will provide a full 3-point estimate for the build programme in May 2008. Electronic Support Measure and Radar issues are being addressed; see comments against Key User Requirement 1. Defensive Aids Sub System has 3 identified issues which require planning and funding. The Key User Requirement is considered at risk, since satisfaction of Key User Requirement 8 will be determined by the environment in which the fleet operates. Any additional requirements such as use/types of flares etc will be new requirements and will need to attract discrete funding for both equipment and for the extension of the programme.</p>

## D.3.1.3. Operational Impact of variation

KPM	Date	Status	Operational impact of variation
KUR 08	June 2010	Not to be met	Nimrod self defence was specified against 1996 requirements which are no longer valid. Re-definition of the KUR is in hand but this will constitute a new requirement.
KUR 09	April 2010	Not to be met	Current limitations would preclude deployment to areas of extremes in temperature. General intent but no current plans to address the issue.
KUR 01	Historic	At Risk	Solution in hand; technical risk assessed as low/medium. Impact would be inability of Nimrod Maritime Reconnaissance and Attack MK4 to fully support Maritime Counter Terrorism operations in support of security tasks related to Integrity of the UK.
KUR 02	Historic	At Risk	Risk assessed as low; unable to confirm KUR achievement until post Operational Test and Evaluation in 2010. Impact would relate to support to tasks related to the Strategic Deterrent..
KUR 03	Historic	At Risk	Risk assessed as low; unable to confirm KUR achievement until post Operational Test and Evaluation in 2010. Impact would relate to support to tasks related to the Strategic Deterrent.
KUR 04	Historic	At Risk	Risk assessed as low; unable to confirm KUR achievement until post Operational Test and Evaluation in 2010. Impact would relate to support to security tasks related to Integrity of the UK and the Strategic Deterrent.
KUR 06	Historic	At Risk	Operational impact of variation will not be defined until the Support Solution review is completed. It is likely that a trade-off will be required between cost and assurance against aircraft availability. Any risk to aircraft availability may have an operational impact
KUR 07	Historic	At Risk	Risk and extent of impact uncertain at present; ongoing investigations. Impact would relate to Nimrod Maritime Reconnaissance and Attack MK4 endurance.
KUR 08	Historic	Not to be met	Aircraft self-defence capability would impact upon ability to operate the Nimrod Maritime Reconnaissance and Attack MK4 in a threat environment.

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KUR 09	Historic	At Risk	Risk assessed as low, with possibility that Nimrod Maritime Reconnaissance and Attack MK4 might be unable to be operated in extremes of hot/cold if final clearances not achieved.
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**D.3.3 Support Contract – not applicable**

## QUEEN ELIZABETH AIRCRAFT CARRIERS

### Team Responsible

CAPITAL SHIPS

### Single point of accountability for Project Capability

HEAD OF ABOVE WATER CAPABILITY

### Senior Responsible Officer

CAPABILITY MANAGER PRECISION ATTACK

Number of Projects / Increments 1

### Current Status of Projects / Increments

- **Post Main Investment Decision – QUEEN ELIZABETH CLASS**

#### A. Section A: The Project

##### A.1. The Requirement

The requirement for the Queen Elizabeth Class was endorsed in the 1998 Strategic Defence Review which identified a continuing need for rapidly deployable forces with the reach and self-sufficiency to act independently of host-nation support. The Strategic Defence Review 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. This analysis was further endorsed by the New Chapter work of 2002 and the Defence White Paper in December 2003. The current Invincible Class of carriers was 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 United Kingdom requirements. It was therefore decided to replace the Invincible Class with two larger and more capable aircraft carriers. The class's offensive air power will be provided primarily by the Joint Combat Aircraft. The Joint Force Air Group is an air group comprising of a mix of aircraft, tailored to the mission need; it will typically consist of both fixed and rotary-winged aircraft including joint air assets e.g. Joint Combat Aircraft.

##### A.2. The Assessment Phase

The Class received Initial Gate approval in December 1998 and Invitations to Tender were issued in January 1999. Following tender evaluation, competitive firm price contracts for the Assessment Phase, each potentially worth some £30m, were awarded to BAE Systems and Thales UK in November 1999. Initially, the Assessment Phase was broken down into two stages. The first involved the examination of several carrier designs, and helped inform the decision in January 2001 to select the United States Joint Strike Fighter as the option with best potential to meet the Joint Combat Aircraft requirement. Stage 1 completed in June 2001, following 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. After careful consideration, the conclusion was reached that the original two-stage approach no longer offered value for money and the Assessment Phase strategy was changed.

The competitive second stage was revised and shortened (completing in November 2002) and enabled the competing contractors to concentrate on refining their designs and taking key trade-off decisions. An innovative Continuous Assessment process was used throughout to evaluate the contractors' performance which led to the conclusion that an alliance approach involving BAE Systems, Thales UK and the Department represented the best approach to Future Aircraft Carrier. The innovative Alliance procurement strategy enabled the full exploitation of the resources and strengths of the alliance participants with the shared objective of improving on agreed performance targets and was announced in January 2003. A third stage of assessment was therefore taken forward on this basis to further increase the maturity of the design and determine the alliancing strategy for Future Aircraft Carrier. Stage 3 completed in March 2004.

In July 2004, the Assessment Phase was extended into Stage 4 to further mature the design and carry out risk reduction work, to ensure that the best technical & procurement solution was achieved.

## QUEEN ELIZABETH AIRCRAFT CARRIERS

Alliancing principles were agreed with BAE Systems and Thales UK and further developed with the selection in February 2005 of Kellogg, Brown & Root UK Ltd as an additional participant in the Alliance. The timescale for completing the design and risk reduction work was further extended in August 2005 (into Stage 5) although this did not result in any additional cost to the programme. The Assessment Phase completed at the end of January 2006 at a revised total cost of £331m<sup>17</sup>, (following receipt of Interim Cost Certificates<sup>18</sup> from the alliance participants). Final Assessment Phase figure will be confirmed upon receipt of Final Cost Certificates.

### A.3. Progress

Following direction from the Investment Approvals Board, the project has adopted an incremental approach to Main Gate approval with the Demonstration and Manufacturing Phases being divided into two sequential Main Gate approval points. The first phase (Demonstration), which included expanding the alliance to include Babcock Engineering Services and VT Shipbuilding, was approved by the Investment Approvals Board and Treasury in December 2005. The total cost of the Demonstration Phase (excluding Indirect Resource Departmental Expenditure Limit, but including non recoverable VAT) was approved at £297m (not to exceed). The Demonstration Phase activity completed in mid 2008 with total expenditure to 31<sup>st</sup> March of £266m. The second and final Main Gate approval, to proceed with the Manufacturing Phase of the project was announced by Secretary of State on 25<sup>th</sup> July 2007 at a not to exceed cost of £3900m including the capitalised Assessment Phase costs and Demonstration Phase costs.

In March 2006, the UK agreed a Memorandum of Understanding that provides for the supply to France of a common baseline design data pack to enable French industry to bid for the design, manufacture and support of one Future Aircraft Carrier (France). France has paid an initial entry fee and contributed to the costs of the UK Demonstration Phase.

At the time of the Main Gate in 2007, the build strategy called for one of the Lower Blocks to be constructed at the BAE Systems Submarines yard in Barrow-In-Furness. BAE Systems needed to build a new facility - the Central Assembly Shop - in order to accommodate the construction of the block. It was envisaged at the time that the facility would also be beneficial to the future submarine programme. MOD authorised BAE Systems to begin site work in June 2007. In July 2008 the Alliance Management Board agreed to the reallocation of Lower Block 3 to the A&P Tyne yard on a 'best for project' basis and in December 2008 the Aircraft Carrier Alliance formally instructed BAE Systems to terminate the contract and fully justify any incurred costs. It was hoped that the work carried out in Barrow would be of use to the future submarine programme, however this did not come to fruition which led to a write-off of £8m in Financial Year 2009-10.

Following Main Gate approval the project moved into the Engineering Transition Phase, an extension of the Demonstration Phase to encompass the period prior to contract signature. On 3<sup>rd</sup> July 2008 a contract was signed with BVT Surface Fleet for the manufacture of the two carriers together with signature of an Alliance Agreement with all members of the alliance.

On 11 December 2008, Ministers announced the outcome of MOD's Equipment Examination including the intention to re-profile the Queen Elizabeth Class project to meet near term priorities and improve the scope of alignment with the Joint Combat Aircraft programme. The re-profiling measure removed £450M from years 1 to 4 and delayed In Service Dates by 1 and 2 years. The cost estimates of the impact of the Examination on the project were approved by the MOD in February 2010.

The first cut of steel took place in July 2009 at the Govan shipyard in Glasgow, and manufacture is underway in five UK shipyards: Babcock Rosyth and Appledore, BAE System Govan, Portsmouth and A&P Tyne. This work will expand to the final shipyard in 2010. Current In Service Date estimates are May 2016 for HMS Queen Elizabeth and December 2018 for HMS Prince Of Wales.

<sup>17</sup> See Section B1.4. This is the total capital expenditure and associated Cost of Capital charge. This will be incurred until the first Ship is delivered.

<sup>18</sup> Cost certificates are produced by contractors, and are required by the MOD in support of a contract condition Pricing on Ascertained Costs; Post Costing; and Target Cost Incentive Fee Pricing. This is either to assist in the pricing of a contract or to verify costs incurred. The contractor must provide sufficient information to demonstrate costs and incurred and prices paid are fair and reasonable.

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During 2009 a number of significant milestones were achieved: completion of No.1 dock at Rosyth; delivery of an upper deck section from Appledore to Rosyth; delivery of the Highly Mechanised Weapon Handling System and the delivery of Emergency Diesel Generators. In addition the preparations and equipment procurement have proceeded with equipment sub-contracts placed to date in excess of £1000m, at the close of the Financial Year in March the bow of the Queen Elizabeth departed from Appledore for Rosyth.

The Aircraft Carrier Alliance acknowledged that there was a requirement to reduce costs at the time of contract award on the basis that concerted management action in the early years of the project would allow this to reduce. In the event, the disruption caused by initial recosting activity and then the Equipment Examination prevented successful delivery of the originally planned cost reduction - as this would not be achieved, MoD considered it prudent to formally recognise this in its revised estimate.

At the end of March 2010 the Final Target Cost figure for the Queen Elizabeth Class was estimated to be £5254m, giving a total forecast cost of £5900m including associated cost of capital. Negotiations are ongoing and the contractual Final Target Cost is due to be agreed with the Aircraft Carrier Alliance by December 2010.

### A.4. Capability Risks

The Class is, together with Joint Combat Aircraft, Maritime Airborne Surveillance & Control and Maritime Auxiliary Replenishment Ships, an essential element of the Carrier Strike programme: the ability to project air power from the sea and capable of projecting the full level of medium scale offensive air effort and precision strike from the sea. Medium scale is defined as a deployment of brigade size or equivalent for warfighting or other operations. An example would be our contribution to the NATO-led Intervention Force in Bosnia.

Joint Combat Aircraft Maritime capability depends on the Queen Elizabeth Class to achieve Carrier Strike.

Risks associated with the final achievement and successful delivery of Carrier Strike are held and managed by Senior Responsible Officer (Carrier Strike) and managed on his behalf by the 1\* Carrier Strike Co-ordination Group. The Individual Project Teams manage risks to the timely delivery of their component parts of this larger capability but not the final outcome. Queen Elizabeth Class Risks are managed via the standard risk process with any holistic Carrier Strike issues being elevated through standard Through Life Capability Management route.

### A.5. Associated Projects

Description	Critical to achievement of IOC	
	Project Title	Forecast IOC
Queen Elizabeth Class Infrastructure Project	Queen Elizabeth Class Infrastructure Project	2015
Harrier GR7/9 FOC Flying trials	Harrier GR7/9 FOC Flying trials	2016
Defence Information Infrastructure	Defence Information Infrastructure	2010/2011
Medium Range Radar	Medium Range Radar	2012
Queen Elizabeth Class In-Service Support Solution	Carrier In Service Support	2015



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**A.6. Procurement Strategy**

Pre-Main Investment Decision Projects / Increments only				
Description	Procurement Route			
Queen Elizabeth Class In Service Support	To be determined			
Post-Main Investment Decision Projects / Increments only				
	Contractor	Contract Scope	Contract Type	Procurement Route
Queen Elizabeth Class	BAE Systems Insyte/ Thales/ Kellogg Brown & Root (KBR)/ VT Shipbuilding/ Babcock Support Services / BAE Systems Marine	Demonstration Phase	Target cost incentive (subsequently, from July 2007 the Engineering Transition Stage as cost reimbursement)	Non- competitive
	BVT Surface Fleet Thales/ BAE Systems Marine/ BAE Systems Insyte/ Babcock Marine	Manufacturing Phase	Target cost incentive	Non- competitive

**A.7. Support Strategy**

**A.7.1. Support / Service / PFI Contract Strategy**

Description				
Queen Elizabeth Class	<p>Support deliverables are those elements which are required for the MOD and the Carrier In-Service Support Solution provider to be able to operate and support the Queen Elizabeth Class safely and efficiently beyond Contract Acceptance Date, these will be procured in the main via the Queen Elizabeth Class manufacturing contract on an incremental basis as the support requirements are progressively matured.</p> <p>A programme of work known as the Carrier In-Service Support Solution project to develop and implement a value for money and affordable contracting for performance arrangement to deliver support from the point at which each of the two ships are delivered off contract by the Aircraft Carrier Alliance. The In Service Support project is split into 4 key phases: assessment, demonstration, mobilisation and support delivery. The first of these is the Support Assessment Phase due to complete by the end of 2010. The work is being undertaken jointly between the MOD and Aircraft Carrier Alliance.</p>			
	Contractor	Contract Scope	Contract Type	Procurement Route
Support Assessment Phase	Aircraft Carrier Alliance Industrial Participants	Assessment Phase in increments	Cost reimbursable moving to Target cost.	Non-competitive

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**B. Section B: Cost**

**B.1. Cost of the Assessment Phase**

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
Queen Elizabeth Class	118	331	+213	1.9%	5.4%
<b>Total</b>	<b>118</b>	<b>331</b>	<b>+213</b>	<b>1.9%</b>	<b>5.4%</b>

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Queen Elizabeth Class	3664	4085	4359

**B.3. Cost of the Demonstration and Manufacture (D&M) Phase**

Description	Approved Cost (£m)	Actual / Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
Queen Elizabeth Class	4359	<b>5900</b>	+1541	+767
<b>Total</b>	<b>4359</b>	<b>5900</b>	<b>+1541</b>	<b>+767</b>

**Cost Variation against approved Cost of the D&M Phase**

**B.3.1.1. Project**

Date	Variation (£m)	Factor	Reason for Variation
January 2010	+190	Budgetary Factors	Refinement of cost estimate connected to the Equipment Examination (+£190m).
January 2010	+35	Budgetary Factors	An £8M reduction on inflation following refinement of estimates against additional costs of £43M for Government Furnished Equipment.
January 2010	+337	Budgetary Factors	At the time of contract award in 2008, there was a cost challenge of £337M which was expected to be fully reduced through cost reduction measures. The impact of slowing down the programme prevented these from being delivered.
January 2010	+117	Technical Factors	Various factors including: growth in the Bill of Materials and the impact of build strategy changes.
January 2010	+88	Budgetary Factors	The increases of £679m will attract additional IRDEL.
Historic	-37	Accounting Adjustments and Re-definitions	Impact on IRDEL of removal of Assessment Phase Costs from Demonstration and Manufacture phase forecast.
Historic	+234	Budgetary Priorities	The increases of £674m and £250m will attract additional

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			IRDEL.
Historic	+674	Budgetary Priorities	Financial Planning Round 2009 resulted in an option that constrained the Queen Elizabeth Class in the first 4 years, this will cause cost growth of £674m over the life of the project.
Historic	-51	Budgetary Priorities	Decrease in cost of capital resulting from the +£250m variation and re-profiling of project spend.
Historic	+250	Inflation	The Queen Elizabeth Class contracted Initial Target Cost is set at April 2006 economic conditions exposing the MOD to inflation fluctuations. The current procurement contracts were placed during a period of high inflation and, despite the current economic downturn, forecasts covering the whole of the projects life indicated it was prudent to allow for an additional £250m CDEL.
Historic	-22	Accounting Adjustments and Re-definitions	Correction to error in original IRDEL calculation.
Historic	-274	Risk Differential	Difference between the approved not to exceed figure (70%) and the approved forecast (50%) at Main Gate.
<b>Net Variation</b>	<b>+1541</b>		

**B.3.2. Operational Impact of Cost Variations of D&M Phase – Not Applicable**

**B.4. Unit production cost**

Description	Unit production costs (£m)		Quantities required	
	At Main Investment Decision	Currently	At Main Investment Decision	Currently
Queen Elizabeth	-	4267	1	1
Prince of Wales	-	987	1	1

**B.5. Progress against approved Support / Service / PFI Cost – Not Applicable**

**B.6. Expenditure to date**

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
Assessment Phase (£m)	302	4	306
Demonstration & Manufacture Phase (£m)	567	490	1057
Support Phase / Service / PFI Cost (£m)	-	-	-
<b>Total Expenditure (£m)</b>	<b>869</b>	<b>494</b>	<b>1363</b>

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**Section C: Timescale**

**C.1 Duration of the Assessment Phase**

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Queen Elizabeth Class	December 2005	December 1998	84

**C.2 Planned / Actual Boundaries for introduction of the Capability**

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
Queen Elizabeth Class	April 2015	July 2015	October 2015

**C.3 In-Service Date/Initial Operating Capability**

**C.3.1 Definition**

Description	In-Service Date
Queen Elizabeth Class	<p><u>In Service Date</u> Queen Elizabeth Class In Service Dates will be declared by the Customer when the ship is ready to proceed to a full test of the operational capability of the vessel at sea.</p> <p><u>Initial Operating Capability</u> Initial Operating Capability is expected to be declared once the vessel has successfully completed Tier 1 Operational Sea Training and the Operational Readiness Inspection.</p> <p>Operational Sea Training consists of two key phases: Tier 1 – Basic sea safety and survival at the platform level. Training as an individual and collectively to be safe to operate the platform in any condition. Tier 2 – More comprehensive training as a unit to include the basic war-fighting capabilities and more complex emergencies.</p>

**C.3.1.2. Progress against approved Dates**

Description	Approved Date	Actual / Forecast Date	Variation	In-Year Variation
Queen Elizabeth Class	October 2015	May 2016	+7	0

**C.3.2 Timescale variation**

**C.3.2.1. Project**

Date	Variation	Factor	Reason for Variation
Historic	+12	Budgetary Priorities	Ministerial announcement that Queen Elizabeth and Prince Of Wales In Service Dates will be delayed as a result of the Financial Planning Round 2009 option
Historic	-2	Budgetary Priorities	Industry and Capital Ship current estimates are that the current schedule contains sufficient flexibility to allow for mitigating actions to be taken.
Historic	-3	Risk Differential	Difference between the approved not to exceed figure (70%) and the approved forecast (50%) at

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			Main Gate.
<b>Net Variation</b>	<b>+7</b>		

**C.3.3. Other costs resulting from Timescale variation**

Description	Date	£m (+ Cost / - Saving)	Factor	Reason for expenditure or saving
Maritime Equipment Systems	Historic	+6	Budgetary Priorities	Ministerial announcement that Queen Elizabeth Class In Service Dates will be delayed as a result of the Financial Planning Round 2009 option
Communication Situation Awareness	Historic	+3	Budgetary Priorities	
Naval Electronic Warfare	Historic	+2	Budgetary Priorities	
T45 Overhead	Historic	+63	Budgetary Priorities	
CVS Run-on Costs	Historic	+49	Budgetary Priorities	
<b>Total</b>	<b>-</b>	<b>+123</b>		

**C.3.4. Operational Impact of In-Service Date**

Description	
Queen Elizabeth Class	The potential shortfall in this capability is mitigated by the extension of the current Invincible Class of carriers and additional work being carried out to optimise platform availability for Carrier Strike (delivery of full offensive air effort, at medium scale, from the sea) and Littoral Manoeuvre, e.g. amphibious landings.

**C.4. Full Operating Capability**

**C.4.1. Definition**

Description	Full Operating Capability
Queen Elizabeth Class	The Full Operational Capability will be largely determined by the combination of Joint Force Air Group elements and the Queen Elizabeth Class Incremental Acquisition Plan. Full Operating Capability will therefore be defined once the Joint Combat Aircraft and Maritime Airborne Surveillance & Control delivery programmes and the Initial Approved Plan are agreed. Full Operating Capability will allow Queen Elizabeth Class to have an embarked Joint Force Air Group and a level of capability equivalent to that declared at Main Gate.

**C.4.2. Progress Report – Not Applicable**

**C.5. Support / Service / PFI Contract – Not Applicable**

**Section D: Performance**

**D.1.1 Maturity Measures**

**D.1.1 Project**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
Commercial	<i>Measures under development</i>			
Financial				
Project Management				
System Readiness	1-9	6	6	The first Main Gate detailed the Technological and System readiness and identified that it was sufficiently mature to proceed. However, at the time Technological and System Readiness Levels as a metric were not used. The maturity levels are unchanged from the previous MPR.
Technology Readiness	1-9	7	7	

**D.1.2. Increment A – Not Applicable**

**D.2. Performance against Defence Lines of Development**

Not required for pre-Main Investment Decision Projects				
Line of Development	Description	Forecast		
		To be met	At Risk	Not to be met
Equipment	Delivery of 2 Queen Elizabeth Class Carriers to the required Performance Specification.	Yes		
Training	Provision of individual and collective training both ashore and afloat for Queen Elizabeth Class Carriers that delivers the appropriate level of Operational Capability to meet the Readiness Profiles in the Naval Data Book.	Yes		
Logistics	Provision of Support Solution that enables the operational movement and maintenance of Queen Elizabeth Class Carriers.	Yes		
Infrastructure	Provision of support infrastructure and facilities in the MOD estate to support Queen Elizabeth Class Carriers and their associated equipments and personnel.	Yes	Yes	
Personnel	Provision of sufficient, correctly trained and suitably equipped personnel available to participate in commissioning, trials and handover of the ship, then subsequent operation of the ships in service.	Yes		
Doctrine	Provision of framework of practices and procedures to derive the greatest benefit from using the Queen Elizabeth Class Carriers in a range of operations	Yes		

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	and scenarios.			
Organisation	Establish a robust and deliverable command structure for Queen Elizabeth Class Carriers with correctly qualified personnel in place in time to support the programme	Yes		
Information	Coherent development of data, information and knowledge requirements for Queen Elizabeth Class Carriers and all processes designed to gather, handle data and exploit information and knowledge.	Yes		
Percentage currently forecast to be met		100		
In-Year Change		0		

**D.2.1. Defence Lines of Development Variation**

Date	Line of Development	Factor	Reason for Variation
January 2010	Infrastructure	Technical Factors	Early cost estimates exceed provision, necessitating further investigation of options to ensure an affordable position.
January 2010	Information	Technical Factors	The risks associated with the integration of Joint Combat Aircraft and the Queen Elizabeth Class has been addressed by the Equipment DLoD Steering and Integration Group. Analysis of the interface issues between the aircraft and the ship has been conducted and significant progress has been made in addressing the issues identified. As a result, the integration risk is now assessed as low.
Historic	Information	Technical Factors	Information DLoD remains at risk due to uncertainty over the resolution of Joint Combat Aircraft integration into UK Global Information Infrastructure.

**D.3. Performance against Key Performance Measures**

**D.3.1. Project**

**D.3.1.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
KUR 1	All	Interoperability – Queen Elizabeth class shall be able to operate with joint/combined forces to deliver a medium scale offensive air effort for power projection, focused intervention and peace enforcement operations	Yes		
KUR 2		Integration – Queen Elizabeth class shall be able to integrate with all elements of joint/combined forces necessary to conduct Strike operations and support 'agile mission groups'	Yes		
KUR 3		Availability – Queen Elizabeth class shall provide one platform at High Readiness for its principal role of Carrier Strike at medium scale and at Very	Yes		

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		High readiness for CS small scale focused intervention			
KUR 4		Deployability – Queen Elizabeth class shall be able to deploy for the operations in the core regions as defined in Defence Strategic Guidance 05	Yes		
KUR 5		Sustainability – Queen Elizabeth class shall be able to conduct deployments away from port facilities for operations lasting 9 months continuously and support air operations for up to 70 days	Yes		
KUR 6		Aircraft Ops – Queen Elizabeth class shall be able to deploy the full medium scale offensive air effort	Yes		
KUR 7		Survivability – Queen Elizabeth class shall achieve a high probability of protection, survival and recoverability against both natural incidents and those threats identified in the Defence Intelligence Scale Threat Statement (Oct 04)	Yes		
KUR 8		Flexibility – The Queen Elizabeth class shall be able to operate and support the full range of defined aircraft and be adaptable such that it could operate air vehicles which require assisted launch/recovery	Yes		
KUR 9		Versatility – Queen Elizabeth class shall be able to deploy agile Mission groups	Yes		
Percentage currently forecast to be met				100	
In-Year Change				0	

**D.3.1.2 Key Performance Measures Variation – Not Applicable**

**D.3.1.3. Operational Impact of variation – Not Applicable**

**D.3.3. Support Contract – Not Applicable**



## TORNADA CAPABILITY UPGRADE STRATEGY (PILOT)

### Team Responsible

Tornado Team

### Single point of accountability for Project Capability

Director Equipment Capability Deep Theatre Attack

### Senior Responsible Officer

-

### Number of Projects / Increments

Tornado Capability Upgrade Strategy (Pilot) provides a single integrated Demonstration, Manufacturing and In-service phase for three capabilities that will be delivered in two work packages. Secure Communications on Tornado and integration of Precision Guided Bomb will be delivered as Capability A. Tactical Information Exchange Capability will be delivered as Capability B.

### Current Status of Projects / Increments

- **Post Main Investment Decision - Capability Upgrade Strategy (Pilot) – Capability A and B**

### A. Section A: The Project

#### A.1. The Requirement

Tornado Capability Upgrade Strategy (Pilot) addresses growing shortfalls in the RAF's ability to operate in the Network Enabled environment and achieve interoperability with Coalition partners while delivering precision effect.

The requirement is in three parts.

Secure Communications on Tornado aims to provide a jam resistant secure line of sight communications capability that is interoperable with NATO partners.

Integration of Precision Guided Bomb fulfils the requirement for an all-weather precision attack capability that was identified following operations in Kosovo and Iraq.

Tactical Information Exchange Capability will provide a digital messaging facility in addition to the current voice only capability to increase overall mission effectiveness.

#### A.2. The Assessment Phase

In May 2006, Initial Gate Business Case Approval was given to proceed with an Assessment Phase designed to establish and develop an alternative procurement option for delivering the Tornado GR4/4A requirements for the aircraft integration of Tactical Information Exchange Capability, Precision Guided Bomb and Secure Communications On Tornado (previously called Secure Communications for Aircraft as a core programme). The approval authorised a £1M MOD commitment.

Subsequently, In August 2007, a Review Note approved an extended Assessment Phase as a result of delays to the Main Gate Business Case and increased the approved funding to £12M. The Main Gate Business Case was submitted in December 2007. An independent Investment Appraisal indicated savings of £56M by combining individual capability projects under a common project.

#### A.3. Progress

Following Main Gate Approval in December 2007 the contract was placed with BAE Systems. A number of milestones have been reached within the project, the most pertinent being as follows:

Capability A has passed both the Preliminary and Customer Design Reviews and the first Trial Installation aircraft was completed in February 2010. The second Trial Installation aircraft is due to complete in May 2010 with the first two aircraft to have Capability A embodied being accepted into the Combined Maintenance Unit at Marham in October 2010.

## TORNADA CAPABILITY UPGRADE STRATEGY (PILOT)

Capability B has passed the Preliminary Design Review and is due Customer Design Review in August 2010. The first Trial Installation aircraft is due to complete in November 2011.

### A.4. Capability Risks

Tornado Capability Upgrade Strategy (Pilot) will address growing shortfalls in Tornado mission effectiveness through secure, Network Enabled information exchange; smart weapon integration and provide a sustainable solution for current operations.

### A.5. Associated Projects – Not applicable

### A.6. Procurement Strategy

Pre-Main Investment Decision Projects / Increments only				
Description	Procurement Route			
-	-			
Post-Main Investment Decision Projects / Increments only				
	Contractor	Contract Scope	Contract Type	Procurement Route
Tornado Capability Upgrade Strategy (Pilot)	BAE Systems (Operations)	Design, manufacture and embodiment of modifications on the Tornado GR4/4A	Firm Priced	Non-competitive

### A.7. Support Strategy

#### A.7.1. Support / Service / PFI Contract Strategy

Description				
Tornado Capability Upgrade Strategy (Pilot)	Post In Service Date, in-service support will be transferred to, and managed within, the Availability Transformation Tornado Aircraft Contract.			
	Contractor	Contract Scope	Contract Type	Procurement Route
-	-	-	-	-

## B. Section B: Cost

### B.1. Cost of the Assessment Phase

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
Tornado Capability Upgrade Strategy (Pilot)	1	12	+11	0.3%	4%
<b>Total</b>	<b>1</b>	<b>12</b>	<b>+11</b>	<b>0.3%</b>	<b>4%</b>

### B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
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**TORNADA CAPABILITY UPGRADE STRATEGY (PILOT)**

Tornado Capability Upgrade Strategy (Pilot)	299	301	303
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**B.3. Cost of the Demonstration and Manufacture Phase**

Description	Approved Cost (£m)	Actual / Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
Tornado Capability Upgrade Strategy (Pilot)	301	<b>303</b>	+2	+2
<b>Total</b>	<b>301</b>	<b>303</b>	<b>+2</b>	<b>+2</b>

**B.3.1. Cost Variation against approved Cost of the Demonstration & Manufacture Phase**

**B.3.1.1. Project**

Date	Variation (£m)	Factor	Reason for Variation
March 2010	+3	Accounting Adjustments and Re-definitions	Increase in cost of capital charge as a result of refining the Asset Delivery Schedule
March 2010	-1	Procurement Processes	Reduction in contract costs for Design and Manufacture phase against original estimate
<b>Net Variation</b>	<b>+2</b>		

**B.3.2. Operational Impact of Cost Variations of Demonstration & Manufacture Phase**

Description	
Tornado Capability Upgrade Strategy (Pilot)	No impact on the delivery of the capability

**B.4. Unit production cost**

Description	Unit production costs (£m)		Quantities required	
	At Main Investment Decision	Currently	At Main Investment Decision	Currently
Tornado Capability Upgrade Strategy (Pilot)	3	3	96	96

**B.5. Progress against approved Support / Service / PFI Cost**

Description	Approved Cost	Forecast cost	Variation	In-Year Variation
Tornado Capability Upgrade Strategy (Pilot)	85	74	-11	0

**B.5.1. Cost Variation against approved Support / Service / PFI Cost**

**B.5.1.1. Tornado CUS(P)**

Date	Variation (£m)	Factor	Reason for Variation
March 2010	+1	Accounting Adjustments and Re-definitions	The increase is due to Cost of Capital Charge in the approval being based on Net Book Value whilst the reporting framework for MPR calculates Cost of Capital on Gross Book Value.
March 2010	-1	Procurement Processes	Reduction in contract costs for Support Phase
December 2007 (Historic)	-11	Accounting Adjustments and Re-definitions	The approval figure included a provision for depreciation of £11m which is not included within the reporting framework for MPR.
<b>Net Variation</b>	<b>-11</b>		

TORNADA CAPABILITY UPGRADE STRATEGY (PILOT)

**B.5.2. Operational Impact of Support / Service / PFI Cost Variations**

Description	
Tornado Capability Upgrade Strategy (Pilot)	No impact on the delivery of the capability

**B.6. Expenditure to date**

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
Assessment Phase (£m)	12		12
Demonstration & Manufacture Phase (£m)	82	63	145
Support Phase / Service / PFI Cost (£m)	1	3	4
<b>Total Expenditure (£m)</b>	<b>95</b>	<b>66</b>	<b>161</b>

C. Section C: Timescale

**C.1. Duration of the Assessment Phase**

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Tornado Capability Upgrade Strategy (Pilot)	December 2007	May 2006	19

**C.2. Planned / Actual Boundaries for introduction of the Capability**

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
Tornado Capability Upgrade Strategy (Pilot)	November 2012	February 2013	March 2013

**C.3. In-Service Date/Initial Operating Capability**

**C.3.1. Definition**

Description	In-Service Date/Initial Operating Capability
Tornado Capability Upgrade Strategy (Pilot)	In Service Date defined as six aircraft embodied with Capability A and B and limited system acceptance as defined by the sponsor

**C.3.2. Progress against approved Dates**

Description	Approved Date	Actual / Forecast Date	Variation	In-Year Variation
Tornado Capability Upgrade Strategy (Pilot)	March 2013	November 2012	-4	0

**C.3.3. Timescale variation**

**C.3.3.1. Tornado CUS(P)**

Date	Variation	Factor	Reason for Variation
December 2007 (Historic)	-4	Procurement Processes	On contract award the Panavia Service Release Recommendation milestone plus Military Aircraft Release Recommendation, leading to subsequent Military Aircraft Release, was 4 months ahead of the 70% Not To Exceed date in Main Gate Business Case (March 2013)
<b>Net Variation</b>	<b>-4</b>		

TORNADA CAPABILITY UPGRADE STRATEGY (PILOT)

**C.3.4. Other costs resulting from Timescale variation – Not applicable**

**C.3.5. Operational Impact of In-Service Date/Initial Operating Capability variation – Not applicable**

**C.4. Full Operating Capability**

**C.4.1. Definition**

Description	Full Operating Capability
Tornado Capability Upgrade Strategy (Pilot)	No formal definition currently exists for Full Operating Capability.

**C.4.2. Progress Report – Not applicable**

**C.5. Support / Service / PFI Contract**

**C.5.1. Scope of Support / Service / PFI Contract**

Description	
Tornado Capability Upgrade Strategy (Pilot)	Post ISD, in-service support will be transferred to, and managed within, the Availability Transformation Tornado Aircraft Contract.

**C.5.2. Progress against approved Support / Service / PFI Contract Go-Live Date – Not applicable**

**C.5.3. Go-Live Date Variation – Not applicable**

**C.5.4. Progress against approved End of Support / Service / PFI Contract Date – Not applicable**

**C.5.5. Operational Impact of Support / Service / PFI Support Contract variation – Not applicable**

**D. Section D: Performance**

**D.1. Maturity Measures**

**D.1.1. Tornado CUS(P)**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
Commercial	<i>Measures under development</i>			
Financial				
Project Management				
System Readiness		-	-	No assessment made as part of original approval process
Technology Readiness		-	-	No assessment made as part of original approval process

**D.2. Performance against Defence Lines of Development**

Not required for pre-Main Investment Decision Projects				
Line of Development	Description	Forecast		
		To be met	At Risk	Not to be met
25. Equipment	Provision of Secure Communications on Tornado, Precision Guided Bomb and Tornado Information Exchange Capability on Tornado GR4	Yes		
26. Training	Provision of trained to aircrew, groundcrew, cryptographic staff and Combined Maintenance Unit staff	Yes		

**TORNADA CAPABILITY UPGRADE STRATEGY (PILOT)**

27. Logistics	Provision of Integrated Logistics Support Plan	Yes		
28. Infrastructure	No infrastructure upgrades required in delivering Capability Upgrade Strategy (Pilot)	-		
29. Personnel	No of personnel required to operate post Capability Upgrade Strategy (Pilot) remains unchanged.	-		
30. Doctrine	Provision of amendments to extant Tornado Concept and Doctrine publications	Yes		
31. Organisation	No change to organisational structures will take place due to Capability Upgrade Strategy (Pilot)	-		
32. Information	Provision of operational, engineering, logistics, training, security and legal information	Yes		
Percentage currently forecast to be met		100%		
In-Year Change		0%		

**D.2.1.1. Defence Lines of Development Variation - Not applicable**

**D.3. Performance against Key Performance Measures**

**D.3.1. Tornado CUS(P)**

**D.3.1.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
UR3	Equipment	The user shall be provided with a near-real-time, secure and electronic counter measures resistant Tactical Information Exchange Capability that supports exchange of tactical data and targeting information with similarly equipped surface based, ground based and airborne units.	Yes	Yes	
UR121	Equipment	The user shall be provided with a Tactical Information Exchange Capability that supports the exchange of tactical digital information when operating line-of-sight from other similarly equipped surface based, ground based and airborne units.	Yes	Yes	
UR20	Equipment	The user shall be provided with a Tactical Information Exchange Capability that enables the exchange of current target information with command and control, peer and subordinate units.	Yes	Yes	
UR21	Equipment	The user shall be provided with a Tactical Information Exchange Capability that supports the digital exchange of positional and identification information as an aid to combat identification.	Yes		
UR22	Equipment	The user shall be provided with a Tactical Information Exchange Capability that warns aircrew of the position and nature of current threats.	Yes	Yes	
UR36	Equipment	The user shall be provided with a Tactical Information Exchange Capability that enables dynamic re-tasking by command and control units.	Yes		

TORNADA CAPABILITY UPGRADE STRATEGY (PILOT)

UR240	Logistics	The user shall be provided with a Tactical Information Exchange Capability that is introduced into service with sufficient logistical support, spares, test equipment and trained personnel to ensure it operable and maintainable through-life.	Yes		
UR53	Interoperability	The user shall be provided with a Tactical Information Exchange Capability that is interoperable with Joint, NATO and Coalition forces.	Yes	Yes	
UR208	Equipment	The user shall be provided with a Tactical Information Exchange Capability that is capable of operation throughout the full operational envelope and range of sorties by the host platform without loss of capability through Tactical Information Exchange Capability system failure with a probability of success of 98%.	Yes		
Tor5	Equipment	The user shall be provided with an Information Security compliant line-of-sight voice communications capability.	Yes		
Tor13	Equipment	The user shall be provided with a capability that retains all functionality other than encryption and decryption, should the cryptographic devices or its keys be absent from the system.	Yes		
Tor14	Equipment	The user shall be provided with a capability that is able to exchange intelligible speech.	Yes		
Tor 35	Interoperability	The user shall be provided with a capability that is interoperable (clear, fixed frequency and Information Security compliant line-of-sight communications) with platforms, formations, organizations and agencies suitably equipped with NATO compatible communications systems, as identified in the Information Exchange Requirements.	Yes		
Tor44	Equipment	The user shall be provided with a Secure Communications on Aircraft capability that can operate without system failure throughout the host platforms operating environment and not affect the sortie generation rate.	Yes		
Tor60	Logistics	The user shall be provided with a capability that is supported using an Integrated Logistics Support methodology.	Yes		
1	Equipment	The Over Target Requirement against targets like those in the generic list within the User Requirement Document shall be no greater than that which can be achieved using Mk 82 bombs able to withstand impact velocities up to 250 metres per second delivered with an accuracy of 15 metre.	Yes		
3	Equipment	The user shall be able to achieve the Over Target Requirement in all-weathers.	Yes		
4	Equipment	The user shall be able to achieve the Over Target Requirement 24 hours a day (day or night).	Yes		
20	Equipment	The user shall be able to programme the weapon with new target coordinates in	Yes		

TORNADA CAPABILITY UPGRADE STRATEGY (PILOT)

		the air prior to release.			
5	Equipment	The user shall be able to deliver Precision Guided Bombs from Tornado GR4/4A.	Yes		
13	Equipment	The user shall be able to achieve the effect at the target without causing greater damage to collateral objects than would be created by a Mk 82 bomb delivered with an accuracy of 15m.	Yes		
37	Equipment	The weapon shall have a 75% probability of successfully completing a mission at any stage during its life.	Yes		
Percentage currently forecast to be met			100 %		
In-Year Change			-		

**D.3.1.2. Key Performance Measures Variation**

Date	Key Measure	Factor	Reason for Variation
March 2010	UR20	Changed Capability Requirements	Current embodiment of Link 16 Tactical Information Exchange Capability utilises an interface that currently rounds target location error to the nearest 63 feet. Recently, link interfaces have been enhanced to minimise that error to 3 feet. Designated point of impact should where possible transpose minimal error.
September 2009	UR53	Changed Capability Requirements	United States led requirement change to achieve future interoperability with future combat aircraft led to firmware configuration change request from the customer to ensure future interoperability with NATO partners.
February 2009 (historic)	UR3	Technical Factors	When purchasing Commercial Off The Shelf equipment, Tactical Data Link Integrated Project Team made assumptions on immature future security standards that has subsequently led to difficulties with security accreditation.
February 2008 (historic)	UR121	Technical Factors	This Key User Requirement flowed down from Tactical Data Link IPT requirements document providing pan-platform desire to achieve information transfer, 300nm line-of-sight. Unachievable on Tornado aircraft due to constraints of airframe design.
February 2008 (historic)	UR22	Technical Factors	This Key User Requirement flowed down from Tactical Data Link IPT requirements document providing pan-platform desire to achieve information transfer, 300nm line-of-sight. Unachievable on Tornado aircraft due to constraints of airframe design.



TORNADA CAPABILITY UPGRADE STRATEGY (PILOT)

**D.3.1.3. Operational Impact of variation**

KPM	Date	Status	Operational impact of variation
UR53	March 2010		Without the implementation of the United States led Military Standard revision the system is potentially inoperable with some other users. The extent of the interoperability issues will not be understood until the Systems Engineering Information Group construct an interoperability matrix based upon the declared Tornado GR4 firmware standard
<b>Total</b>		-	

**D.3.2. Support Contract – Not applicable**

## TYPE 45 DESTROYER

### Team Responsible

Destroyers Team

### Single point of accountability for Project Capability

Head of Above Water Capability

### Senior Responsible Officer

-

**Number of Projects / Increments** 1

### Current Status of Projects / Increments

- **Pre Main Investment Decision** – N/A
- **Post Main Investment Decision** – Type 45 Six Ship Design & Build
- **Support Contract** –
  1. Type 45 Initial Spares (Industrial Investment and Long Lead spares).
  2. Type 45 Full Support
- **Other – please provide details** – N/A

### A. Section A: The Project

#### A.1. **The Requirement**

The Type 45 is a new class of six Anti-Air Warfare Destroyers, to replace the capability provided by the Royal Navy's existing Type 42s. The warship is being procured nationally. The Type 45 will carry the Principal Anti-Air Missile System 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. The Principal Anti-Air Missile System is being procured collaboratively with France and Italy. The Destroyers Team is responsible for providing the Principal Anti-Air Missile System to the warship Prime Contractor.

#### A.2. **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 United Kingdom) to proceed with the Principal Anti-Air Missile System, but to pursue national warship programmes, BAE Systems was appointed Prime Contractor for the Type 45 in November 1999. The contract for the Principal Anti-Air Missile System 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.

#### A.3. **Progress**

BAE Systems Electronics was appointed Prime Contractor for the Type 45 in November 1999 and a contract for Demonstration and First of Class Manufacture for the first three ships was placed in December 2000. A contract for a further three Type 45 hulls was placed with the Prime Contractor in February 2002. The ships are being built under sub-contract by BAE Systems Surface Fleet Ltd. The Demonstration & Manufacture contract was amended to reflect the Investment Approvals Board Six-Ship Approval gained in August 2007. This change has introduced a staged acceptance process for each ship which commences with Acceptance off Contract, thereby giving control of the vessel to the MOD to undertake a further period of trials and acceptance activity leading to the declaration of In-Service Date. It was announced in June 2008 that as part of the Department's 2008 Planning Round the decision was taken not to take up the option to proceed with Type 45 Ships 7 and 8.

The past year has seen significant progress in the manufacture of the six ships. All ships are now in production. The first ship, HMS Daring was commissioned into the Royal Navy in July 2009. A contract for up to seven years of Support for Type 45 was awarded to BAE Systems Surface Ships Ltd in September 2009. The fifth Type 45, Defender, was launched in October 2009. The second ship (Dauntless) was Accepted off Contract from the Prime Contractor in December 2009. Test firings of the Principal Anti-Air Missile System took place in May and November 2009. These test firings did not meet all of their planned trials objectives.

## TYPE 45 DESTROYER

During the Department's 2010 Planning Round a decision was taken to amend the production programme of Aster Missiles. This decision deferred production of some missiles, reducing costs in early years, but adding £46M to the overall cost of the Principal Anti-Air Missile System programme. However, the effect of other Planning Round decisions and the benefits accrued through the good progress of the Ship programme, mean that the result is no overall cost growth of the T45 programme.

### A.4. Capability Risks

In order for a force of ships to operate safely at sea and project power onto the land, it has to reduce its susceptibility to attack from the air. The current generation of anti-air warfare capability (Type 42 Destroyer) has already been extended beyond its design life and is now rapidly approaching its out of service date. The Type 45 Destroyer will ensure that UK maritime forces retain a sufficiently robust capability to counter the growing threat from the air for the next 25 years. Without the Type 45, the UK would be severely limited in its ability to operate maritime forces in all but the most benign environments. There would also be a significant shortfall in the number of ships available to deploy world-wide in support of wider British interests, fulfilling roles from defence diplomacy to disaster relief to crisis intervention.

### A.5. Associated Projects – Not applicable

### A.6. Procurement Strategy

Pre-Main Investment Decision Projects / Increments only				
Description	Procurement Route			
-	-			
Post-Main Investment Decision Projects / Increments only				
	Contractor	Contract Scope	Contract Type	Procurement Route
Type 45 Warship	BAE Systems Surface Ships Ltd (BAE Systems Electronics Ltd Farnborough)	Full development and production	Target Cost Incentive Fee Shareline	Single source
Principal Anti-Air Missile System	EURO PAAMS	Full scale engineering development and initial production including missiles for initial use.	Fixed price	Collaborative with France and Italy
Principal Anti-Air Missile System	EURO PAAMS	Follow-on ships production	Fixed price for five follow-on equipments	Collaborative with France and Italy
Principal Anti-Air Missile System	EUROSAM & UKAMS <sup>19</sup>	Production of missiles	Fixed price	Collaborative with France and Italy through Organisation Conjointe de Coopération en matière d'Armement

### A.7. Support Strategy

There are 3 broad layers to Type 45 Destroyer support:

<sup>19</sup> UKAMS is a wholly owned company of MBDA

## TYPE 45 DESTROYER

a. Interim Support (Support to Stage 2 Trials) covers the period from the First of Class (HMS Daring) Acceptance off Contract to In-Service Date. The change to ship acceptance approved as part of wider programme re-approval in August 2007 advances the date that the First of Class is accepted off contract, consequently requiring interim support arrangements to be put in place until In-Service Date. Funding for Interim Support was approved under the Six Ship Approval and costs are reported against the Demonstration & Manufacture phase costs for Type 45, hence this element is not reported further within the Support section. The Interim support contract will complete at In-Service Date for HMS Daring. For the other five Type 45s support to Stage 2 Trials will be provided under the Full Support contract, although, as above, funding was approved under the Six Ship Approval and costs are reported against the Demonstration & Manufacture phase costs for Type 45.

b. Type 45 Initial Spares (Industrial Investment and Long Lead spares). Purchase of long-lead spares and industrial mobilisation activities for which contracts need to be placed ahead of the Type 45 Full Support Solution (see c. below) in order to be available for In-Service Date. The Approval did not set any Time limits for contract end dates, therefore only progress against Cost boundaries is reported within the Support section.

c. Full Support. Phase 1 of the long term support strategy is the delivery of a Class wide Type 45 Support Solution through a single source incentivised contract with BAE Systems Surface Fleet Ltd as the support integrator for Type 45. Support will then migrate into the Surface Ship Support Programme (SSSP). The Full Support contract for the warship (the Phase 1 work described above) was placed in September 2009. It includes the activities to establish the support solution infrastructure and team and then to provide up to 7 years In-Service support. Support to the Principal Anti-Air Missile System (PAAMS) will be provided by a separate single source incentivised contract with MBDA (UK). Negotiations for this contract are ongoing.

### A.7.1. Support / Service / PFI Contract Strategy

Description				
	Contractor	Contract Scope	Contract Type	Procurement Route
Type 45 Initial Spares	BAE Systems Surface Ships Ltd	Purchase of Long lead time spares and Industrial Mobilisation activities	Mix of fixed and firm price	Single source
Type 45 Full Support	BAE Systems Surface Ships Ltd	Up to seven years' of Support for Type 45 Platform Equipments and some complex equipment	Target Cost Incentivised Fee (TCIF)	Single Source

## B. Section B: Cost

### B.1. Cost of the Assessment Phase

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)

TYPE 45 DESTROYER

Type 45 Destroyer	213	232	+19	3.2%	3.5
<b>Total</b>	213	232	+19	3.2%	3.5

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Type 45 Destroyer	-	5000	5475

**B.3. Cost of the Demonstration & Manufacture Phase**

Description	Approved Cost (£m)	Actual / Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
Type 45 Destroyer	5475	6464	+989	-
<b>Total</b>	5475	6464	+989	-

**B.3.1. Cost Variation against approved Cost of the Demonstration & Manufacture Phase**

**B.3.1.1. Type 45 Destroyer**

Date	Variation (£m)	Factor	Explanation
March 2010	-17	Procurement Processes	Benefit of on time contractual delivery of Ships 1 & 2
March 2010	-3	Procurement Processes	In-year underspend (-£9M), resulting in slippage of work (+£6M).
March 2010	+2	Budgetary Factors	Planning Round decisions and adjustments in 2009 (+£2M)
March 2010	-40	Budgetary Factors	Planning Round decisions and adjustments in 2010 (-£40M).
March 2010	-8	Accounting Adjustments and Re-definitions	Benefit of reduced Cost of Capital charges for early Ship delivery (-£8M).
March 2010	+20	Exchange Rate	Principal Anti-Air Missile System FOREX increase, In-year (+£14M) and in Planning Round 2010 (+£7M), but reduced FOREX related iRDEL (-£1M)
March 2010	+46	Budgetary Factors	Principal Anti-Air Missile System Programme re-alignment of Aster Missile production schedule in Planning Round 2010
Historic	-46	Technical Factors	Benefits of earlier delivery of Platforms through reduced trials support costs (-£30M) & reduced cost of capital charges (-£20M), but offset by an increase in programme costs identified through the annual financial planning process (+£4M).
Historic	+44	Exchange Rate	Increase in the Principal Anti-Air Missile System in-year costs due to Exchange Rate (+£23M) and an increase in the Principal Anti-Air Missile System Planning Round 2009 costs for Exchange Rate (+£21M).
Historic	+2	Inflation	Additional Type 45 Ship costs due to higher than anticipated escalation of contractual Variation

TYPE 45 DESTROYER

Date	Variation (£m)	Factor	Explanation
Historic	-49	Accounting Adjustments and Re-definitions	<p>On Price (VOP) indices (+£2M).</p> <p>As a direct result of a move of ship build from Barrow to Clyde, in line with Maritime Industrial Strategy principles, there has been an increase in overheads for the 'Six Ship Proposal' price that is not directly attributable to this project (-£78m). Reduction in cost of capital (-£9m) due to lower than expected cash expenditure in 2005/06 (closing accrual higher than estimated). Transfer to Maritime Training Systems Integrated Project Team (-£35m) and associated Cost of Capital (-£1m). Difference in variation figures due to revision of Cost of Capital Charge (-£24m). Adjustment to previous years Cost of Capital figures due to system error (+£98m).</p>
Historic	-38	Changed Budgetary Priorities	<p>Equipment Programme 2007 savings measure to reduce the quantity of the Principal Anti-Air Missile System missiles (-£30m). A combination of Equipment Plan Options plus internal adjustments, and Cost of Capital. The Options were: re-profiling of the contract for demonstration and manufacture (approved six-ship programme); re-profiling of the (planned) twelve ship programme; reducing the scope of the Principal Anti-Air Missile System missile buy and costs of shipbuilders' premium (+£91m). Increases to the Principal Anti-Air Missile System contract and additional funding and increases in delay and dislocation money (+£177m). Incremental Acquisition Programme re-profiling and Incremental Acquisition Programme upgrade deleted (-£238m). Equipment Plan Options re-profiling costs for ships five and six and deferring ships seven and eight (+£2m) and the associated Cost of Capital (+£12m). Correction to forecast: costs wrongly attributed to ships seven &amp; eight (+£26m). The Principal Anti-Air Missile System increased cost of Longbow mooring (+£4m). Cost of Capital associated with estimated cost growth of ship Batch 2 reported at MPR04 (+£54m). Cost of Capital relating to the Principal Anti-Air Missile System increased cost (exchange rate) and re-profiling (+£10m).</p>

TYPE 45 DESTROYER

Date	Variation (£m)	Factor	Explanation
			Savings in ships capability (performance) to bring costs back to Equipment Programme 2005 baseline; Combat Systems risk provision (-£60m), Whole Life Support (support solution study) (-£21m) and Incremental Acquisition Programme (-£64m). Revised estimate of Westinghouse Rolls-Royce 21 engine concept/assessment phase (-£1m).
Historic	+1460	Contracting Process	Estimated increase in ship build cost based on an assessment of the 'Six Ship Proposal' price from the Prime Contractor (+£462m). Estimated increase in ship build cost (+£184m) and associated cost of capital (+£18m). Costs omitted from Equipment Programme 2005 and MPR05 relating to increase in ship build cost (+£52m) and associated cost of capital (+£5m). Higher than expected costs for the Principal Anti-Air Missile System Production Equipment (+£124m). Corrections to Warship costs (+£13m). Expected increase in costs of elements of batch two ships which are yet to be negotiated (+£250m). Corrections and adjustments to forecast costs (+£97m). The Principal Anti-Air Missile System missiles reinstated (+£173m). Increase in Cost of Capital due to corrections to Principal Anti-Air Missile System (+£82m).
Historic	+55	Exchange Rate	Pound to Euro rate worse than originally forecast (+£47m). The Principal Anti-Air Missile System exchange rate (impact of rate at Equipment Programme 2005) (+£8m).
Historic	+36	Technical Factors	Issues arising from migrating from Skynet 4 to Skynet 5 and to implement system growth (+£3m). Increase in Cost of Capital resulting from In-Service Date slippage (+£33m).
Historic	-475	Risk Differential	Difference between the risk allowed for in the most likely (50%) and highest acceptable (90%) estimates at Main Gate (-£506m). Increase in risk due to re-calculation of Cost of Capital (+£31m).
Net Variation	+989		

TYPE 45 DESTROYER

**B.3.2. Operational Impact of Cost Variations of Demonstration & Manufacture Phase**

Description	
Type 45 Destroyer	Request for additional funding through planning round.

**B.4. Unit production cost**

Description	Unit production costs (£m)		Quantities required	
	At Main Investment Decision	Currently	At Main Investment Decision	Currently
Type 45 Destroyer	582	651	6	6

**B.5. Progress against approved Support / Service / PFI Cost**

Description	Approved Cost	Forecast cost	Variation	In-Year Variation
Type 45 Initial Spares	14	14	0	0
Type 45 Full Support	968	958	-10	-10

**B.5.1. Cost Variation against approved Support / Service / PFI Cost**

**B.5.1.1. Type 45 Destroyer**

Date	Variation (£m)	Factor	Reason for Variation
March 2010	-4	Contracting Process	The impact of agreeing and placing support contracts at a lower cost than originally estimated.
March 2010	-6	Contracting Process	Steady state spares holdings are now forecast to be less than those assumed in the Main Investment Decision Approval.
<b>Net Variation</b>	<b>-10</b>		

**B.5.2. Operational Impact of Support / Service / PFI Cost Variations**

Description	
T45 Full Support	No operational impact is expected as the reduced spares holdings will still allow the Ships to meet their required operational availability.

**B.6. Expenditure to date**

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
Assessment Phase (£m)	232	0	232
Demonstration & Manufacture Phase (£m)	4794	509	5303
Support Phase / Service / PFI Cost (£m)	8	57	65
Total Expenditure (£m)	5034	566	5600

**C. Section C: Timescale**

**C.1. Duration of the Assessment Phase**

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
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TYPE 45 DESTROYER

Type 45 Destroyer	July 2000	July 1991	108 <sup>20</sup>
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**C.2. Planned / Actual Boundaries for introduction of the Capability**

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
Type 45 Destroyer	-	May 2007	November 2007

**C.3. In-Service Date/Initial Operating Capability**

**C.3.1. Definition**

Description	In-Service Date/Initial Operating Capability
Type 45 Destroyer	The date to which the First of Class will meet the Customer's minimum operational requirement.

**C.3.2. Progress against approved Dates**

Description	Approved Date	Actual / Forecast Date	Variation	In-Year Variation
Type 45 Destroyer	November 2007	July 2010	+32	0
<b>Total</b>			+32	0

**C.3.3. Timescale variation**

**C.3.3.1. Type 45 Destroyer**

Date	Variation (months)	Factor	Explanation
Historic	-4	Technical Factors	Retirement of programme risk (e.g. 2 successful Principal Anti-Air Missile System missile firings, Daring Accepted off Contract) now reflected in latest Timescale Risk Analysis which indicated In-Service Date achievable 4 months earlier than previously anticipated.
Historic	+24	Procurement Processes	Longer than expected design phase plus an acknowledgement that a number of other factors which had impacted earlier in the programme had injected unrecoverable delay. These factors were principally related to delays in agreeing the original industrial strategy; problems associated with managing parallel and dependant development programmes and a better understanding of the programme to deliver In-Service Date. (MPR02 +6 months; MPR04 +18 months).
Historic	+18	Technical Factors	Latest Timescale Risk Analysis founded on data from Six Ship

<sup>20</sup> This aligns with the derived date for Initial Gate above. Type 45 is a legacy project building on the Assessment work carried out in phase 1 of the collaborative Horizon Project..

TYPE 45 DESTROYER

Date	Variation (months)	Factor	Explanation
			<p>Proposal from BAE Systems (+11 months). Refinement of timescale risk analysis shows that there are a number of opportunities in the programme which support a most likely date of December 2009. Principal among these is the opportunity for parallel working that is not yet fully exploited within industry's plan and the potential to use the second ship to demonstrate elements of First of Class capability (-1 month). Impact of slippage to SAMPSON programme and measures taken to mitigate the full impact of that delay (+3 months). Assessment based on full timescale risk analysis (conducted jointly with BAE Systems) which gave a most likely date of March 2010, based on baseline programme. Agreement reached with company and Customer 1, however, on how Stage 2 trials programme can be de-scoped thereby giving a Most Likely date of October 2009 (+ 2 months). Latest assessment based on timescale risk analysis of most up to date programme reflecting de-scoping of trials programme (+3 months).</p>
Historic	-6	Risk Differential	Difference between the risk allowed for in the most likely (50%) and the highest acceptable (90%) estimate at Main Gate (-6 months).
Net Variation	+32		

**C.3.4. Other costs resulting from Timescale variation**

Description	Date	£m (+ Cost / - Saving)	Factor	Reason for expenditure or saving
Type 45 Destroyer	Historic	- 4		Improved estimate as a result of recent studies
Type 45 Destroyer	Historic	+2		Additional maintenance periods required to run-on Type 42 Destroyer for 11 months <sup>21</sup>

<sup>21</sup> Relates to slippage in In-Service Date of Type 45 First of Class only, to align with the definition of In-Service Date at Section 3a.

## TYPE 45 DESTROYER

Type 45 Destroyer	Historic	+1	Additional maintenance periods required to run-on Type 42 Destroyer for 7 months.
Type 45 Destroyer	Historic	+196	Additional Type 42 run-on costs due to Type 45 slippage.
<b>Total</b>		<b>+195</b>	

### C.3.5. Operational Impact of In-Service Date/Initial Operating Capability variation

Description	
Type 45 Destroyer	Delay in In-Service Date further extends the period before a capability to defeat multiple attacks by sea-skimming missiles will be available, as well as the capability for Royal Navy escorts to provide tactical control of combat aircraft.

### C.4. Full Operating Capability

#### C.4.1. Definition

Description	Full Operating Capability
Type 45 Destroyer	Full Operating Capability will occur when all systems are at Full System Acceptance, the Principal Anti-Air Missile System Full Capability has been delivered and all environmental trials are complete. For Ship 1 Full Operating Capability will occur after In-Service Date.

#### C.4.2. Progress Report – Not applicable

### C.5. Support / Service / PFI Contract

#### C.5.1. Scope of Support / Service / PFI Contract

Description	
Type 45 Initial Spares	Contract for purchase of Long lead time spares and Industrial Mobilisation activities
Type 45 Full Support	Up to seven years' of Support for Type 45 Platform Equipments and some complex equipments

#### C.5.2. Progress against approved Support / Service / PFI Contract Go-Live Date

Description	Approved Date	Actual Date	Variation (month)	In-Year Variation (month)
Type 45 Initial Spares	June 2008	June 2008	0	0
Type 45 Full Support	April 2009	September 2009	5	5

##### C.5.2.1. Go-Live Date Variation

Date	Variation	Factor	Reason for Variation
Type 45 Initial Spares	-	-	-
Type 45 Full Support	5	Procurement Processes	5 month delay in placing Full Support Contract caused by extended contract negotiations and legal review of proposed Contract
<b>Net Variation</b>	<b>+5</b>		

#### C.5.3. Progress against approved End of Support / Service / PFI Contract Date

Description	Approved Date	Actual Date	Variation	In-Year Variation
Type 45 Initial Spares	-	-	-	-
Type 45 Full Support	November	-	-	-

TYPE 45 DESTROYER

	2017		
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**C.5.3.1. End of Contract Date Variation – Not applicable**

**C.5.4. Operational Impact of Support / Service / PFI Support Contract variation**

Description	
Delay in placing Type 45 Full Support contract	The delay in placing the support contract resulted in reducing the contract mobilisation period. There is no operational impact to HMS Daring as the ship is not due to enter service until July 2010. The Ship is not planned to deploy operationally until 2011.

**D. Section D: Performance**

**D.1. Maturity Measures**

**D.1.1. Type 45 Destroyer**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
Commercial	<i>Measures under development</i>			
Financial				
Project Management				
System Readiness	-	-	-	Main Investment Decision Approval achieved prior to the introduction of System Readiness Levels
Technology Readiness	-	-	-	Main Investment Decision Approval achieved prior to the introduction of Technology Readiness Levels -

**D.2. Performance against Defence Lines of Development**

Not required for pre-Main Investment Decision Projects				
Line of Development	Description	Forecast		
		To be met	At Risk	Not to be met
33. Equipment	Type 45 Platform including the Principal Anti-Air Missile System	Yes	Yes	
2 Training	Provision of First of Class and Steady State Training for: Weapons Engineer; Marine Engineer; Warfare and the Principal Anti-Air Missile System. Also provision of Collective Training	Yes	Yes	
3 Logistics	Investment Approval Board Submission; Unit Maintenance Management System; Tech. Docs.; Initial Provision Lists and First Outfit; Tooling; Support Data Pack; Support Solution Envelope; Principal Anti-Air Missile System & Long Range Radar; Information Management System	Yes	Yes	
4 Infrastructure	Appropriate facilities for Type 45 to be available at the following: Her Majesty's Naval Base Portsmouth; Her Majesty's Naval Base Devonport; Her Majesty's Naval Base Clyde; Defence Storage and Distribution Agency Gosport	Yes	Yes	
5 Personnel	Provision of Manpower (the crew) for all 6 ships	Yes		
6 Doctrine	Enable Type 45 to undertake assigned	Yes		

TYPE 45 DESTROYER

	operations.; Enable Type 45 Air Defence activity; Tactical advice for use of the Principal Anti-Air Missile System Command and control, Aster missile system and Combat Management System; Capability upgrades are enabled through platform life			
7 Organisation	Maintenance of Type 45 In-Service Date and Type 42 paying off plan.	Yes		
8 Information	Included within the Equipment Defence Lines of Development for Type 45	Yes		
Percentage currently forecast to be met		100%		
In-Year Change		0		

**D.2.1.1. Defence Lines of Development Variation**

Date	Line of Development	Factor	Reason for Variation
January 10	Equipment	Technical Factors	The key remaining risk is against Aster missile reliability. Investigation continues through the tri-national Principal Anti-Air Missile System programme, mitigation includes further test firings and a UK salvo firing in June 2010.
January 10	Training	Technical Factors	The key remaining risk is the delivery of steady state training for Marine Engineering, Sea Viper and Warfare Maritime Composite Training System. Steady state training should be available during 2011, but this is currently being mitigated through interim training measures.
January 10	Logistics	Technical and Commercial Factors	The key remaining risk is that the Sea Viper In-Service Support Contract will not be in place for HMS Daring In-Service Date. This affects the availability of HMS Daring's Sea Viper system, which is being mitigated by interim contractual arrangements. A further consequence of the Aster missile reliability issue is the availability of the Aster missile stockpile. This risk is to be tolerated until a revised delivery profile is received from the Sea Viper programme, at which time further mitigation may be possible.
January 10	Infrastructure	Technical Factors	The key remaining risk is the ability to maintain the Aster missile stockpile. This requires provision of a dedicated UK Missile Maintenance Installation which is due to be installed within Defence Storage and Distribution Agency Gosport and available in 2014. This risk, which is based on missile shelf life, is to be tolerated with careful stockpile management as reworked missiles are delivered.

TYPE 45 DESTROYER

Historic	Equipment	Technical Factors	The key remaining risk is the testing and integration of the Principal Anti-Air Missile system. This will be mitigated through further test firings and Naval Weapons Sea Trials during 2009.
Historic	Training	Technical Factors	The key remaining risk is the timely delivery of Marine Engineering shored-based training for Dauntless. This is being mitigated through the delivery of customised courses making use of training material already produced for Daring's crew, augmented by the increased use of onboard training.
Historic	Infrastructure	Technical Factors	The key remaining risk is the timely provision of an Aster capable missile loading facility in Portsmouth. The late provision of this facility would be mitigated by the use of alternative missile loading facilities at either Marchwood Military Port near Southampton or Glen Mallen near Glasgow.

**D.3. Performance against Key Performance Measures**

**D.3.1. Type 45 Destroyer**

**D.3.1.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
01		<b>Principal Anti-Air Missile System.</b> The Type 45 shall be able to protect with a Probability of Escaping Hit of {w}, all units operating within a radius of {x}, against up to {y} supersonic sea skimming missiles arriving randomly within {z} seconds.	Yes	Yes	-
02		<b>Force Anti-Air Warfare Situational Awareness.</b> The Type 45 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	-	-
03		<b>Aircraft Control.</b> The Type 45 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	-	-
04		<b>Aircraft Operation.</b> The Type 45 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	-	-
05		<b>Embarked Military Force.</b> The Type 45 shall be able to operate an Embarked Military Force of at least 30 deployable troops.	Yes	-	-
06		<b>Naval Diplomacy.</b> The Type 45 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	-	-
07		<b>Range.</b> The Type 45 shall be able to transit at	Yes	-	-

TYPE 45 DESTROYER

		least 3000 nautical miles to its assigned mission, operate for 3 days and return to point of origin, unsupported throughout, within 20 days.			
08		<b>Growth Potential.</b> The Type 45 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	-	-
09		<b>Availability.</b> The Type 45 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%		
In-Year Change			0		

D.3.1.2. Key Performance Measures Variation

Date	Key Measure)	Factor	Reason for Variation
January 2010	KUR1	Technical Factors	Most recent Principal Anti-Air Missile System test firings did not meet all of their planned objectives. The key remaining risk is therefore against Aster missile reliability. Investigation continues through the tri-national Principal Anti-Air Missile System programme.
Historic	KUR 2	Technical Factors	When MPR07 was compiled the extant version of Combat Management System software had insufficient capability to fully satisfy Key User Requirements 2 and 3. The decision was made during MPR08 reporting period to upgrade the Combat Management System software, which increased functionality and fully satisfied Key User Requirements 2 and 3.
Historic	KUR 2	Changed Budgetary Priorities	Revised programme to achieve earliest possible In-Service Date leads to a lower level of Combat Management System functionality at In-Service Date.
Historic	KUR 3	Technical Factors	When MPR07 was compiled the extant version of Combat Management System software had insufficient capability to fully satisfy Key User Requirements 2 and 3. The decision was made during MPR08 reporting period to upgrade the Combat Management System software, which increased functionality and fully satisfied Key User Requirements 2 and 3.
Historic	KUR 3	Changed Budgetary Priorities	Revised programme to achieve earliest possible In-Service Date leads to a lower level of Combat Management System functionality at In-Service Date.
Historic	KUR 4	Technical Factors	Integrated Project Team & Director of Equipment Capability agreed to conduct "First of Class Flying Trials" with a Merlin. This will remove the expectation that at In-Service Date only Lynx capability

TYPE 45 DESTROYER

			will have been demonstrated. Ability to operate Lynx but not Merlin will be demonstrated by Full Operating Capability In-Service Date. Merlin will be demonstrated beyond In-Service Date
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**D.3.1.3. Operational Impact of variation**

KPM	Date	Status	Operational impact of variation
KUR1	January 2010	At Risk	None. HMS Daring is not due to enter service until July 2010. The Ship is not planned to deploy operationally until 2011.

**D.3.2. Support Contract**

**D.3.2.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
01		<b>Attributable Ship Availability Factor.</b> An overall assessment of the ability of the class of ships to undertake their planned operational tasks.	Yes	-	-
02		<b>Ship Material State.</b> An assessment, conducted prior to operational training, of the actual condition of the equipment on each ship.	Yes	-	-
03		<b>Safety Performance.</b> A measure of the number of safety items whose mitigation plans or completion dates are overdue.	Yes	-	-
04		<b>Maintenance Clearance Rate.</b> A measure of the number of outstanding Maintenance Items at the end of formal maintenance opportunities.	Yes	-	-
05		<b>Support Service Responsiveness.</b> A measure of the number of requests for support that are overdue for closure beyond their agreed target date.	Yes	-	-
06		<b>Sustainability/Continuous Improvement.</b> A measure of the work undertaken to improve the support service through a Continuous Improvement programme aimed at reducing support costs and/or increasing Ship availability.	Yes	-	-
Percentage currently forecast to be met			100%		
In-Year Change			0		

**D.3.2.2. Key Performance Measures Variation – Not applicable**

**D.3.2.3. Operational Impact of variation – Not applicable**



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### Team Responsible

Typhoon

### Single point of accountability for Project Capability

Head of Capability (Theatre Airspace)

### Senior Responsible Officer

Head of Capability (Theatre Airspace)

**Number of Projects / Increments**      3

### Current Status of Projects / Increments

- **Post Main Investment Decision** – Typhoon platform, Typhoon Future Capability Programme
- **Support Contract** – Typhoon Support

## A. Section A: The Project

### A.1. The Requirement

#### **Typhoon**

Typhoon, formerly known as Eurofighter, is an agile multi-role combat aircraft. Originally designed primarily, but not exclusively, for air superiority the aircraft is also capable of delivering a precision ground attack capability. Typhoon has the flexibility to respond to the uncertain demands of the current strategic environment and is progressively replacing the Tornado F3 and Jaguar aircraft.

The aircraft is being developed, produced and supported in a collaborative project with Germany, Italy and Spain. The project is managed on behalf of the four partner nations by the NATO Eurofighter and Tornado Management Agency. To date, contracts have been placed for the RAF to receive 160 aircraft in three tranches. Typhoon support is being delivered through the letting of long-term contracts against five areas of support.

#### **Typhoon Future Capability Programme**

The Typhoon Future Capability Programme will provide enhancements to the Typhoon aircraft, both in the air-to-air and air-to-surface roles, to sustain the RAF's Typhoon fleet's multi-role capabilities.

The first phase of the Future Capability Programme, under a contract signed in March 2007, will integrate Paveway IV and the Litening III Laser Designator Pod onto Tranche 2 aircraft from 2012 as well as interoperability upgrades without which those aircraft will be neither compliant with new civil airspace regulations nor interoperable with key coalition allies. It will also provide the Human Machine Interface for Multi-Role operations, allowing Typhoon to fulfil air-to-air and air-to-surface operations with the current, planned and projected weapons.

The second phase of the Future Capability Programme is planned as part of the MOD's Future Defence Programme announced in December 2009.

### A.2. The Assessment Phase

#### **Typhoon**

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 Typhoon demonstration activities completed by the UK before development: the Experimental Aircraft Programme, an airframe programme primarily aimed at proving the feasibility of the Typhoon 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.

#### **Typhoon Future Capability Programme**

The approval process for Typhoon Tranche 2 noted the intention to develop the capability of the aircraft through life and envisaged an incremental route to the acquisition of future capability

## TYPHOON

enhancements. The Assessment Phase found technology and integration were not a major challenge and that risks mostly pertained to the commercial and industrial aspects of the programme. These have been addressed and the MOD approvals process for the project was accelerated to combine Initial Gate, including the cost already incurred during the Assessment Phase, and Main Gate in order to maximise efficiency across the four Partner Nations.

### A.3. Progress

Typhoon has been in service with the RAF since 2003 and commenced operational duties for the first time in June 2007 when it assumed Quick Reaction Alert responsibility for defence of UK airspace. Deployable Air Defence operational status was achieved on 1 January 2008, which enables Typhoon to deploy worldwide on air-to-air missions. Typhoon was declared to NATO in the deployable Air Defence – Advanced role on 1 April 2008. Typhoon assumed Quick Reaction Alert responsibility for defence of South Atlantic Islands airspace in September 2009, taking over from Tornado F3.

The existing advanced air-to-air missile capability on Tranche 1 aircraft has been complemented by the integration of an initial precision air-to-surface capability, which was declared combat ready by the RAF in July 2008. This air-to-surface capability enabled declaration of multi-role status and is in advance of more comprehensive air-to-surface capability through the Typhoon Future Capability Programme for Tranche 2 aircraft.

Deliveries of Tranche 2 aircraft commenced in October 2008. The original Typhoon fleet numbers required (232 aircraft) were established in the 1990s. Current fleet planning and assumptions to meet defence requirements have determined the aircraft numbers and capabilities now required (160 aircraft). The contract for the third Tranche, signed in July 2009, represents the best solution for the UK in balancing current military requirement and international obligations against affordability. The UK has retained the option to order further aircraft. Deliveries of Tranche 3 aircraft are scheduled to start in 2013.

The Typhoon Availability Service contract with BAE Systems, signed in March 2009 formally commenced in September 2009. The Engine Availability Service contract with Rolls-Royce was signed in December 2009. These contracts are part of the strategy to transform support arrangements through partnering with UK industry.

### A.4. Capability Risks

Typhoon is intended to be a cornerstone of UK air defence and the aircraft will be pivotal to the delivery of Standing Home Commitments. Having replaced Jaguar in the ground attack role and with future reductions in other aircraft types planned, loss of Typhoon would reduce the UK's ground-attack and air superiority capabilities.

### A.5. Associated Projects – not applicable

### A.6. Procurement Strategy

Pre-Main Investment Decision Projects / Increments only				
Description	Procurement Route			
-	-			
Post-Main Investment Decision Projects / Increments only				
Description	Contractor	Contract Scope	Contract Type	Procurement Route
Typhoon	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. Following a breach of the Limit of Contractor Liability	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.

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			provisions the price elements for Airframe and equipments have been converted to a Limit of Liability cost reimbursement without profit.	
Typhoon	Eurojet Turbo GmbH Engine consortium comprising: Avio (formerly FIAT Avio), ITP, MTU, Rolls Royce	Development	Firm Price (Avio, ITP, MTU) Fixed Price (Rolls-Royce) for propulsion systems	Non-competitive but with international sub-contract competitive elements, the value of which amounts to some 10% of overall value of the Prime Contract.
Typhoon	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 UK Aircraft (Fixed prices for production of 1 <sup>st</sup> and 2 <sup>nd</sup> 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.
Typhoon	Eurojet Turbo GmbH Engine consortium (see details under development above).	Production Investment/ Production	Overall Maximum Prices for Production Investment and Production of Engines for all 232 UK aircraft,. Firm Price (Avio, ITP, MTU) Fixed Price (Rolls-Royce) for Tranche 1, Tranche 2 and Tranche 3 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.
Typhoon Future Capability Programme	Eurofighter GmbH Airframe consortium comprising: Alenia, BAE Systems, EADS(CASA),	Design, development, demonstration, qualification and production clearance of the first batch of	Overall Max Price to be converted to UK Firm Price	Collaborative. Non-competitive but with international competitive sub-contract elements.

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	EADS(Deutschland)	enhancements		
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**A.7. Support Strategy**

Typhoon's partnered support strategy was originally approved in 2000. Its principles were reinforced by the results of a 2004 Support Review.

The partnered support strategy – referred to as Typhoon Future Support - will be delivered through the letting of long-term contracts against five areas of support: for the Typhoon Availability Service on BAE Systems; for the propulsion availability service on Rolls-Royce; for Avionics (Spares Provisioning and Component Repair) via the NATO Eurofighter and Tornado Management Agency; and for international Technical Support Services, also via the NATO Eurofighter and Tornado Management Agency. Valuable experience has already been gained through the letting of incremental contracts to transform Typhoon support, the first of which was the initial phase of the engine availability contract with Rolls-Royce in 2005.

Description	Contractor	Contract Scope	Contract Type	Procurement Route
Typhoon Availability Service	BAE Systems	Support	Target Cost plus Incentive Fee	Non-competitive
Engine Availability Service	Rolls Royce	Support	Target Cost plus Incentive Fee	Non-competitive
Spares Provisioning	Eurofighter GmbH and Eurojet GmbH	Support	Fixed Price	International Non-competitive based on commitments under Memoranda of Understanding, with international workshare of sub-contracting also determined by those Memoranda
Component Repair	Eurofighter GmbH and Eurojet GmbH	Support	Fixed Price	International Non-competitive based on commitments under Memoranda of Understanding, with international workshare of sub-contracting also determined by those Memoranda
Technical Support Services	Eurofighter GmbH and Eurojet GmbH	Support	Fixed Price	International Non-competitive based on commitments under Memoranda of Understanding,

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				with international workshare of sub-contracting also determined by those Memoranda
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**B. Section B: Cost**

**B.1. Cost of the Assessment Phase**

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
Typhoon	87	78	-9	0.5%	0.4%
Typhoon Future Capability Programme	44	44	0	9%	9%
<b>Total</b>	<b>131</b>	<b>122</b>	<b>-9</b>	<b>9.5%</b>	<b>9.4%</b>

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Typhoon	-	16671	-
Typhoon Future Capability Programme	372	444	458

**B.3. Cost of the Demonstration and Manufacture Phase**

Description	Approved Cost (£m)	Actual / Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
Typhoon	16671	20182	+3511	+2656
Typhoon Future Capability Programme	458	445	-13	+9
<b>Total</b>	<b>17129</b>	<b>20627</b>	<b>+3498</b>	<b>+2665</b>

**B.3.1. Cost Variation against approved Cost of the Demonstration & Manufacture Phase**

**B.3.1.1. Typhoon**

Date	Variation (£m)	Factor	Reason for Variation
July 2009	+68	Exchange Rate	Changes to planning round assumptions for foreign exchange rates together with the associated impact on cost of capital
July 2009	-70	Technical Factors	Reassessment of Development cost (-£70m). Reassessment of Production cost (-4m). Cost of Capital resulting from changes (+£4m).

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July 2009	+2658	Budgetary Factors	Inclusion of Tranche 3 Aircraft contract (+£2531m) and associated Cost of Capital (+126m). <sup>22</sup>
Historic	+60	Exchange Rate	Changes to planning round assumptions for exchange rates and weakening of the Pound against the Euro and US Dollar during 2008/09 together with the associated impact on cost of capital
Historic	-72	Technical Factors	Reassessment of Development cost (-£83m). Reassessment of Production cost (+£36m). Cost of Capital resulting from reduced CDEL (-£25m).
Historic	-42	Budgetary Factors	Saving measures taken in PR09 (-£38m) Cost of Capital resulting from reduced CDEL (-£4m).
Historic	-131	Budgetary Factors	Reduced provision for modifications (-£123m). Reduced quantity of Role Equipment (-£5m). Cost of Capital resulting from reduced CDEL and accrual profile (-£3m).
Historic	-4	Technical Factors	Development revised cost (+£55m) as a result of revised assessment of change proposals and risk. Tranche 1 production revised cost (+£50m) as a result of refined assessment of retrofit programme and interoperability modifications. Tranche 2 production revised cost (-£5m) as a result of revised assessment of change proposals. Revised assessment of UK contribution to Eurofighter, EuroJet and NATO Eurofighter and Tornado Management Agency admin costs (+£18m). Cost of Capital resulting from changes to CDEL, asset delivery and accrual profiles identified in Planning Round 08, IRDEL (-£122m).
Historic	+53	Inflation	More accurate calculation of inflation based on advice from NATO Eurofighter and Tornado Management Agency (+£53m)
Historic	-18	Exchange rate	Revised Euro Rate advised for Planning Round 08 (-£18m).
Historic	-36	Technical Factors	Re-assessment of Tranche 2 estimated cost (-£418m), Revised assessment of Tranche 2 aircraft production contract (+£385m), Revised assessment for cost of Tranche 2 engine production contract (-£45m), Revised provision for future changes to production standards (-£35m), Revised estimate for retrofitting early Tranche 1 aircraft to final production standard

<sup>22</sup> Expenditure in 08/09 on Typhoon Tranche 3 was for long-lead items which was approved prior to Main Gate. This has been included in In-Year change so as not to contradict MPR09 which did not include the Tranche 3 project.

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			(+£37m), Revised estimate for the precision air to ground capability (+£42m), Reduction in value of Role equipment required for multi role Squadrons (-£17m), Revised assessment of cost of NATO Eurofighter and Tornado Management Agency and industry management fees (+£25m), Reduction in forecast for cost of release to service support (-£10m).
Historic	-482	Procurement Process	Transfer to Future Capability Programme.
Historic	+442	Technical Factors	Interest on Capital due to revised cost and profiling of cost and deliveries
Historic	+13	Technical Factors	Interest on Capital due to reprofiling of consumption and delivery
Historic	+65	Technical Factors	Correction of omission of transferred cost in MPR05 calculation
Historic	+19	Procurement Process	Industry restructuring.
Historic	-1355	Changed Capability Requirement	Removal of provision for new weapons and Tranche 1 to Tranche 2 retrofit to create separate Typhoon Future Capability project ; subject to approval by Investment Approvals Board (-£377m). Separation of Tranche 3 (-£978m).
Historic	+1506	Technical Factors	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 capabilities (+£140m). Additional Cost of Capital Charge plus further price variation due to slippage in the programme (+£610m). Reassessment of the cost of developing aircraft Enhanced Operational Capability and the production of Tranches 2 & 3 aircraft (most notably the reduced scope for savings due to learning curve efficiency gains) (+£320m). Slower than expected technical progress reducing asset balances thereby reducing Cost of Capital Charge (-£45m). 9 Month deferral of beneficial use date (+£132m Cost of Capital Charge).
Historic	+290	Changed Capability Requirement	Provision for integration of new weapons and sensors not contained within original approval (includes Conventionally Armed Stand-Off Missile, Advanced Anti-Armour Weapon, Low-Level Laser Guided Bomb, thermal imaging

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			airborne laser designator) (+£239m) & the retrofit of Tranche 1 aircraft to Tranche 2 standard (+£117m). Deletion of requirements for gun (-£32m), 1500L fuel tank (-£16m), CRV7 Rocket (-£2m) & Air Launched Anti Radiation Missile (-£21m). Conventionally Armed Stand-Off Missile integration assets (+£5m).
Historic	-13	Budgetary Factors	Reprofiling of expenditure, reducing asset balances and thereby reducing Cost of Capital Charge (-£5m). Transfers to other budgets (-£8m).
Historic	-103	Inflation	Changes in inflation assumptions since approval: development (+£205m) and production (-£308m).
Historic	-114	Exchange Rate	Changes in exchange rate assumptions since approval (-£114m).
Historic	-52	Procurement Process	Reprofiling and adjustment of anticipated Tranches 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 QinetiQ/Dstl test facilities in support of the development trials programme (+£5m).
Historic	+413	Procurement Process	German withdrawal from certain equipments (+£106m). Reorientation Development Assurance Programme to bridge gap between Development and Production Investment (+£28m); extension of Integrated Logistic Support programme (+£45m); Eurofighter/Eurojet GmbH management costs (+£30m); contract price increases (+£87m); risk provision (+£117m).
Historic	+416	Accounting Adjustments & Re-definitions	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 Cost of Capital Charge resulting from changes in accounting treatment of the delivery of assets (+£27m). A redefinition of Beneficial Use of Typhoon has resulted in the Defence Procurement Agency incurring additional 1 year's Cost of Capital Charge on development expenditure (+£222m). Difference



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		in variation figures due to revision of Cost of Capital Charge (£-92m).
<b>Net Variation</b>	<b>+3511</b>	

**B.3.1.2. Typhoon Future Capability Programme**

Date	Variation (£m)	Factor	Reason for Variation
July 2009	+9	Exchange Rate	Changes to planning round assumptions for foreign exchange rates together with the associated impact on cost of capital
Historic	+7	Exchange Rate	Changes to planning round assumptions for exchange rates and weakening of the Pound against the Euro and US Dollar during 2008/09 together with the associated impact on cost of capital
Historic	-7	Technical Factors	Reduction in cost due to reprofiling of activity into later years reflecting latest programme forecast.
Historic	-8	Technical Factors	Reduction in CDEL achieved at contract negotiation (-£2m). Reduction in Cost of Capital due to reduced CDEL and more robust forecast accrual (-£6m)
Historic	-14	Risk Differential	Difference between the risk allowed for in the most likely (50%) and the highest acceptable (not to exceed) estimates at Main Gate
<b>Net Variation</b>	<b>-13</b>		

**B.3.2. Operational Impact of Cost Variations of Demonstration & Manufacture Phase**

Description	
Typhoon	None
Typhoon Future Capability Programme	None

**B.4. Unit production cost**

Description	Unit production costs (£m)		Quantities required	
	At Main Investment Decision	Currently	At Main Investment Decision	Currently
Typhoon	-	73.2	232	160
Typhoon Future Capability Programme <sup>23</sup>	-	-	-	-

**B.5. Progress against approved Support / Service / PFI Cost**

Description	Approved Cost	Forecast cost	Variation	In-Year Variation
Typhoon	13100	13100	0	0

**B.5.1. Cost Variation against approved Support / Service / PFI Cost – not applicable**

**B.5.2. Cost Variation against approved Increment A – not applicable**

**B.5.3. Operational Impact of Support / Service / PFI Cost Variations – not applicable**

<sup>23</sup> The project has been classified as a Development programme and as such there is no Unit Production Cost

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**B.6. Expenditure to date**

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
<b>Assessment Phase (£m)</b>	122	0	122
<b>Demonstration &amp; Manufacture Phase (£m)</b>	13468	1213	14681
<b>Support Phase / Service / PFI Cost (£m)</b>	2552	454	3006
<b>Total Expenditure (£m)</b>	16142	1667	17809

**C. Section C: Timescale**

**C.1. Duration of the Assessment Phase**

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Typhoon	November 1987	(Legacy Project) Pre SMART	-
Typhoon Future Capability Programme	January 2007	Combined Initial and Main Gate approval	-

**C.2. Planned / Actual Boundaries for introduction of the Capability**

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
Typhoon	-	December 1998	-
Typhoon Future Capability Programme	January 2012	June 2012	June 2012

**C.3. In-Service Date/Initial Operating Capability**

**C.3.1. Definition**

Description	In-Service Date/Initial Operating Capability
Typhoon	In-Service Date - Date of Delivery of first aircraft to the RAF Initial Operating Capability – When Squadron Pilots begin training they start to contribute to Defence capability
Typhoon Future Capability Programme	In-Service Date - Delivery to the RAF of autonomous precision Air-to-Surface military capability in 12 Tranche 2 aircraft Initial Operating Capability – The same as In-Service Date

**C.3.2. Progress against approved Dates**

Description	Approved Date	Actual / Forecast Date	Variation	In-Year Variation
Typhoon	December 1998	June 2003	+54	0
Typhoon Future Capability Programme	June 2012	June 2012	0	0
<b>Total</b>			<b>+54</b>	<b>0</b>

**C.3.3. Timescale variation**

**C.3.3.1. Project**

Date	Variation	Factor	Reason for Variation
Historic	+32	Technical Factors	Resulting from the application of complex technologies required to

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			enable the equipment to meet the original Staff Requirement (+32 months).
Historic	+22	Procurement Process	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).
<b>Net Variation</b>	<b>+54</b>		

**C.3.4. Other costs resulting from Timescale variation**

Description	Date	£m (+ Cost / - Saving)	Factor	Reason for expenditure or saving
Support costs of current equipment	Historic	+1075	-	Cost of running on Tornado and Jaguar.
Other	Historic	-861	-	Estimated support costs for Typhoon not incurred.
<b>Total</b>		<b>+214</b>		

**C.3.5. Operational Impact of In-Service Date/Initial Operating Capability variation**

Description	
Typhoon	<p>Key improvements in capability not realised until revised ISD are:</p> <ul style="list-style-type: none"> <li>i) Agility and all altitude performance;</li> <li>ii) Autonomous detection, identification and multiple engagement of air to air targets;</li> <li>iii) Human computer interface to reduce operator workload;</li> <li>iv) Multi role capability;</li> <li>v) Survivability through superior airframe and equipment performance;</li> <li>vi) Low mean time between failure.</li> </ul> <p>The 54 month delay has been mitigated to a small extent by compressing the entry into service period, but the net effect is a delay of four years.</p>

**C.4. Full Operating Capability**

**C.4.1. Definition**

Description	Full Operating Capability
Typhoon	A declaration by Head of Capability (Theatre Airspace) that the full strength Military Capability has been achieved.
Typhoon Future Capability Programme	A declaration by Head of Capability (Theatre Airspace) that Swing-role military capability has been achieved.

**C.4.2. Progress Report**

Description	Full Operating Capability
Typhoon	On track
Typhoon Future Capability Programme	On track

**C.5. Support / Service / PFI Contract**

**C.5.1. Scope of Support / Service / PFI Contract**

TYPHOON

Description	
Typhoon Availability Service	Aircraft platform availability service integrating on-shore support activities with the outputs of mandated international contracts
Engine Availability Service	National engine spares inclusive availability contract with international support contracts
Spares Provisioning	International spares provisioning contract under the terms established in Memoranda of Understanding.
Component Repair	International component repair contract under the terms established in Memoranda of Understanding.
Technical Support Services	International contract for the provision of technical support services and advice under the terms established in Memoranda of Understanding.

**C.5.2. Progress against approved Contract Go-Live Date – not applicable**

**C.5.3. Progress against approved Contract Date – not applicable**

**C.5.4. Operational Impact of Contract variation – not applicable**

**D. Section D: Performance**

**D.1. Maturity Measures**

**D.1.1. Typhoon**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
Commercial	<i>Measures under development</i>			
Financial				
Project Management				
System Readiness	-	-	-	System Readiness levels were not required when this project passed through Main Gate and are therefore not measured.
Technology Readiness	1-9	-	-	Technology Readiness levels were not required when this project passed through Main Gate and are therefore not measured..

**D.1.2. Typhoon Future Capability Programme**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
Commercial	<i>Measures under development</i>			
Financial				
Project Management				
System Readiness	-	-	-	System Readiness levels were not required when this project passed through Main Gate and are therefore not measured.
Technology Readiness	1-9	-	-	Technology Readiness levels were not required when this project passed through Main Gate and are therefore not measured.

**D.2. Performance against Defence Lines of Development**

Not required for pre-Main Investment Decision Projects				
Line of Development	Description	Forecast		
		To be met	At Risk	Not to be met

TYPHOON

34. Equipment	Delivery of Typhoon platform, Typhoon Future Capability Programme and associated weapons.	Yes		
35. Training	The timely provision of suitably qualified and experienced personnel to deliver Defence outputs, now and in the future.	Yes	Yes	
36. Logistics	The provision of maintenance and support to the Typhoon fleet, including the operation of support activities such as supply chain.	Yes		
37. Infrastructure	The acquisition, development, management and disposal of all fixed, permanent buildings and structures, land, utilities and facility management services in support of the Typhoon capability.	Yes		
38. Personnel	The timely provision of sufficient, capable and motivated personnel to deliver the Typhoon capability, now and in the future.	Yes	Yes	
39. Doctrine	Doctrine is an expression of the principles by which military forces guide the use of Typhoon.	Yes		
40. Organisation	Relates to the operational and non-operational organisational relationships of people. It typically includes military force structures, MOD civilian organisational structures and Defence contractors providing support.	Yes		
41. Information	The timely provision of sufficient, capable IT and information systems to deliver Typhoon capability. It includes the production and validation of all mission support data for Operations, Trials and Training.	Yes	Yes	
Percentage currently forecast to be met		100%		
In-Year Change				

**D.2.1.1. Defence Lines of Development Variation**

Date	Line of Development	Factor	Reason for Variation
March 2010	Information	Changed Capability Requirements	Generation and validation of mission data for elements of the weapon system continues to lag aircraft development. With mission data production reliant on interim industry equipment, additional future investment will be required.
April 2009	Training	Budgetary Factors and Technical Factors	A Planning Round 2009 measure restricted the Annual Flying Task resource available to support flying training for Front Line pilots, capping the deliverable capability; pilots are now resourced to ensure minimum safe sustainable flying rate. Eurofighter Aircrew Synthetic Training Aids also failed to deliver software upgrades to programme timescales; synthetic multi-role training capability has been delayed as a result.

TYPHOON

2009/2010	Equipment	Redefinition	The Equipment DLOD is not now considered "At Risk" as the previous assessment was based on an in-year perspective, rather than a forecast of progress towards achieving Full Operating Capability.
2009/2010	Logistics	Redefinition	The Logistics DLOD is not now considered "At Risk" as the previous assessment was based on an in-year perspective, rather than a forecast of progress towards achieving Full Operating Capability.
2009/2010	Personnel	Budgetary Factors	Generation of sufficient technical manpower to fulfil the combined requirements of the Typhoon Availability Service and those necessary to man the front line could not be met, largely due to a global shortfall of aircraft engineering technicians.
Historic	Equipment	Budgetary Factors	There are currently insufficient resources available at the right time to integrate weapons systems, such as BVRAAM, onto the Typhoon platform.
Historic	Training	Changed Capability Requirements	The requirement to provide additional training as a result of exports has adversely affected the UK's Typhoon training capacity.
Historic	Logistics	Changed Capability Requirements	The requirement to provide additional spares provisioning as a result of exports has adversely affected the UK's ability to deliver full logistics support.
Historic	Logistics	Changed Capability Requirements	The equipment required to generate, verify and validate mission dependent data for elements of the weapons system lags aircraft development by up to 2 years and is currently not fit for purpose. Therefore, mission dependent data production is reliant on interim industry equipment which does not permit validation or verification testing of this data to MOD quality assurance standards until January 2010 at the earliest. Mitigations are in place to manage this risk against Typhoon's tasks over the next 3 years, but this area will require further investment as Typhoon's tasks grow in accordance with extant Planning Assumptions.

TYPHOON

**D.3. Performance against Key Performance Measures**

**D.3.1. Typhoon**

**D.3.1.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
01	Equipment	Take off Distance	Yes	-	-
02	Equipment	Landing Distance	-	-	Yes
03	Equipment, Training, Logistics, Personnel	Attributable Failures per 1000 Flying Hours	Yes	-	-
04	Equipment, Logistics	Life (Flying Hours)	Yes	-	-
05	Equipment	Sustained Minimum Turn Radii at Sea Level, Max Reheat	Yes	-	-
06	Equipment	Maximum speed at sea level	Yes	-	-
07	Equipment	Maximum speed at 36,000 ft	Yes	Yes	-
08	Equipment	Acceleration Time at Sea level from 200 knots to Mach 0.9	Yes	-	-
09	Equipment	Instantaneous Turn Rate Sea Level, Max Reheat	Yes	-	-
10	Equipment	Sustained Turn Rate at Mach 0.9 at 5000ft, Max Dry	Yes	-	-
Percentage currently forecast to be met			90%		
In-Year Change			0		

**D.3.1.2. Key Performance Measures Variation**

Date	Key Measure	Factor	Reason for Variation
Historic	KUR 07	Technical Factors	Industry flight trials to extend the aircraft performance envelope have identified acoustic vibration within the engine intake which is causing the intake to resonate at very high speeds. This has potential long term fatigue implications. Trials are ongoing by Eurofighter GmbH as part of the main development contract.
Historic	KUR 02	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.

**D.3.1.3. Operational Impact of variation – not applicable**

TYPHOON

**D.3.2. Typhoon Future Capability Programme**

**D.3.2.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
01	All	To engage a defined set of targets.	Yes		
02	All	To complete Air Policing duties.	Yes		
03	All	To maintain Typhoon rates of effort.	Yes		
04	All	To satisfy Communications and Information Systems interoperability requirements.	Yes		
05	All	To complete a mission in zero visibility.	Yes		
06	All	To complete the mission from zero to bright sunlight.	Yes		
07	All	To maintain the Typhoon supportability.	Yes		
Percentage currently forecast to be met			100%		
In-Year Change			-		

**D.3.2.2. Key Performance Measures Variation – not applicable**

Operational Impact of variation – not applicable

**D.3.3. Support Contract**

**D.3.3.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
1.	Logistics	Forward Available Fleet: Measured as a percentage of the average number of available Forward Available Fleet aircraft against the planned number of Forward Available Fleet aircraft for the accounting period	Yes	-	-
2.	Logistics	Operational Aircraft: Measured as the number of operational aircraft within the appropriate readiness timescale.	Yes	-	-
3.	Training	Pilots: Measured as the percentage of productive pilots available for tasking against the planned number of pilots for the accounting period.	Yes	-	-
Percentage currently forecast to be met			100%		
In-Year Change			-		

**D.3.3.2. Key Performance Measures Variation – not applicable**

D.3.3.3. Operational Impact of variation – not applicable



## UNITED KINGDOM MILITARY FLYING TRAINING SYSTEM

### Team Responsible

United Kingdom Military Flying Training System (UKMFTS)

### Single point of accountability for Project Capability

Head of Capability (Theatre Airspace)

### Senior Responsible Officer

AMP Air Marshal Simon Bryant

### Number of Projects / Increments

1/11

### Current Status of Projects / Increments

- 1 Pre-Main Investment Decision  
(Advanced Jet Trainer (AJT) Interim Support Solution)
- 5 Post-Main Investment Decision  
(Training System Partner, Advanced Jet Trainer design, development and production, Advanced Jet Trainer Operational Capability 2, Combined Headquarters (Cat D), Rear Crew Training Stage 1)
- 0 Support Contracts (see above)
- 5 Other, please provide details  
A Number of Enablers (Elementary Flying Training, Rear Crew Stage 2, Rotary Wing, Basic Trainer, Multi-Engine Pilot training) are yet to proceed to Initial Gate stage

## A. Section A: The Project

### A.1. The Requirement

United Kingdom Military Flying Training System will deliver a coherent, flexible and integrated flying training capability catering for the needs of the Royal Navy, the Royal Air Force and the Army Air Corps. The flying training system takes aircrew from initial training through elementary, basic and advanced flying training phases to their arrival at their designated operational aircraft. The current system is at risk of being unable to deliver the required quantity and quality of aircrew to meet the input standard for the Operational Conversion Units. The existing training platforms are approaching the end of their useful lives and include outdated systems that are unable to prepare trainees for current and future front line aircraft. The current system is based on a number of separate contractual arrangements for the provision of equipment and support. Consequently the system is piecemeal, difficult to manage and inefficient. It also introduces significant delays due to lengthy training programmes and gaps between courses.

The focus for United Kingdom Military Flying Training System is to achieve a holistic system based on capability and service delivery; it is not solely about the provision of aircraft platforms. It also offers an opportunity to modernise the flying training processes for all three Services, realise efficiencies and, since training is currently spread across several organisations, take advantage of potential economies of scale.

#### Advanced Jet Trainer

The MOD requires an Advanced Jet Trainer for pre-operational training of fast-jet pilots. This task is currently fulfilled by the Hawk TMk1 aircraft, which will need to be replaced in the tactical weapons training role from 2010 onwards. The full range of skills required for aircrew to fly front-line aircraft cannot now be gained using the current Advanced Jet Trainer, so more training on operational aircraft has to be undertaken. The introduction of Typhoon and the future Joint Combat Aircraft exacerbates this training gap such that the required standard for Typhoon aircrew is not achievable with Hawk TMk1.

The Advanced Jet Trainer is the Fast Jet element of the wider UK Military Flying Training System programme and will deliver capabilities including: a modern glass cockpit environment, an avionics suite compliant with latest airspace legislation, an embedded training system that simulates front-line

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sensors and weapons and a flexible and upgradeable mission system. Support, Infrastructure and a Ground Based Training Environment will also be provided. Advanced Jet Trainer is contracted for in such a way to ensure that it can be subsumed within the main UK Military Flying Training System contract at a later date.

### A.2. The Assessment Phase

Four possible procurement options were identified at Initial Gate. The Do-nothing option was discounted. The Do Minimum option would not deliver the required quality and quantity of students in the correct timescales. The remaining options, Public Private Partnership/Private Finance Initiative and Smart Conventional, were tested in a Convergence Phase which concluded that the adoption of a Public Private Partnership Contractual Partnering model would best harness the collective skills of MOD and industry by utilising a mix of Private Finance Initiative and conventional procurement to deliver a coherent and flexible system of systems.

This option envisaged the appointment of a Training System Partner to work with the MOD over the life of the project to deliver incrementally the total aircrew training requirement. The strategy was approved by Investment Approvals Board in February 2005. An Invitation To Negotiate was issued to three consortia in March 2005; the bids were received in August 2005. The Main Gate Business Case (Stage 1) was approved by Investment Approvals Board and Ascent was announced as Preferred Bidder in November 2006. The United Kingdom Military Flying Training System Main Gate (Stage 2) submission in the form of an Information Note was submitted in December 2007. This was approved by Minister (Defence Equipment and Support) and Treasury in February 2008. The Training System Partner Contract was signed in May 2008.

Additional assessment work will be required post-Main Gate for the different training platforms that will be acquired incrementally. These increments will be subject to further approvals.

Contract award for the United Kingdom Military Flying Training System was May 2008. The head lease for the Military Flying Training System Headquarters Building was signed 17<sup>th</sup> April 2008.

#### Advanced Jet Trainer

At Initial Gate (December 2002) Advanced Jet Trainer was a component of United Kingdom Military Flying Training System. Within the £39m approved for United Kingdom Military Flying Training System assessment, £2m related to Advanced Jet Trainer and a PFI approach was assumed. In July 2003 a Ministerial Direction was given to conventionally procure Hawk 128 from BAE Systems.

In 2003 a £31m Risk Reduction Contract was placed with BAE Systems to cover risk reduction activities to October 2003. BAE Systems continued to work at risk on Assessment Phase activities up to November 2004 when approval was given for a combined Assessment & Development Phase based on an incremental approach at a Not To Exceed price of £196m and a Not To Exceed completion date of August 2008; the Assessment Phase element of this approval was around £75m. A Design and Development Contract was let to BAE Systems in December 2004.

Main Gate approval was achieved in August 2006 for a Not To Exceed figure of £497m at 80% confidence, compared to Initial Gate approval of £611m at 90%. This approval set the aircraft build standard, definition of In-Service Date, Key Performance Measures and aircraft numbers.

In May 2008 a contract was placed with BAE Systems to extend the initial demonstration and manufacturing phases to deliver the incremental capability (Operational Capability 2). The upgrade is primarily a software upgrade that adds synthetic simulation for radar, advanced air-to-air and air-to-ground missiles and surface to air missile threats.

Initial support contracts were placed in Jul 2008, August and December 2009 with BAE Systems to provide support capability for the aircraft at RAF Valley until December 2010. The In-Service Support Contract for the period to March 2014 was placed on the 31 March 2010.

### A.3. Progress

#### United Kingdom Military Flying Training System

Following award of the Training System Partner Contract the next phase of the programme was the provision of a training capability for the Royal Navy Observers – Rear Crew Training Stage 1. A Review Note was submitted in November 2007 seeking approval to issue the Invitation to Negotiate, this was approved in December 2007. In May 2009 the Main Gate Business Case was submitted and approved subject to caveats in relation to In Year Affordability and Safety and Environmental

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assurances. An Information Note was submitted in July 2009 confirming resolution of the caveats and the contract was subsequently awarded in July 2009.

**Advanced Jet Trainer**

Operational Capability 0 was completed by BAE Systems in August 2008 and Release to Service was achieved in April 2009. Initial Spares have been delivered to RAF Valley, maintainers and conversion training for pilots completed and BAE Systems delivered the first production aircraft in February 2009. The Operational Capability 2 development programme is progressing to plan. Minister approved the In Service Support Review Note in January 2010 with HM Treasury and Commitment approval received in March 2010

**A.4. Capability Risks**

The current training system is unable to train aircrew to the standard required, or to provide sufficient aircrew to meet manning requirements. Unless the training system is equipped to provide the skills needed, operational effectiveness will be seriously degraded. With legacy training aircraft fast approaching their Out of Service Date there is a belief that the current system will not be able to sustain the front line in the long term. Financial provision made in 2010 to maintain coherency has demonstrated that support costs to extend current platforms are more expensive. The Advanced Jet Trainer (Increment A) delivers the Phase 4 fast jet training element into the United Kingdom Military Flying Training System project. There is a dependency on the United Kingdom Military Flying Training System Project for the provision of Ground Based Training Environment to achieve Advanced Jet Trainer Initial Operating Capability.

**A.5. Associated Projects – not applicable**

**A.6. Procurement Strategy**

<b>Pre-Main Investment Decision Projects / Increments only</b>				
<b>Description</b>	<b>Procurement Route</b>			
United Kingdom Military Flying Training System – Assessment Phase	Competition			
Increment E – Rear Crew Stage 2	-			
Increment F – Multi-Engine	-			
Increment G – Basic Trainer	-			
Increment H – Rotary Wing	-			
Increment J – Elementary Flying Training	-			
<b>Post-Main Investment Decision Projects / Increments only</b>				
	<b>Contractor</b>	<b>Contract Scope</b>	<b>Contract Type</b>	<b>Procurement Route</b>
Increment A - Advanced Jet Trainer	BAE Systems, Warton	Assessment and Demonstration	Target Cost Incentive Fee	No Acceptable Price No Contract
Increment A - Advanced Jet Trainer	BAE Systems, Warton	Manufacture to In-Service	Target Cost Incentive Fee	No Acceptable Price No Contract
Increment B – Advanced Jet Trainer Operational Capability 2	BAE Systems, Warton	Demonstration to Manufacture	Target Cost Incentive Fee	No Acceptable Price No Contract
Increment C – Training System Partner (United Kingdom Military)	Ascent (consortium Lockheed Martin & VT Group)	Assessment to In Service	PFI	Competition

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Flying Training System)				
Increment D – Rear Crew Stage 1	Ascent	Manufacture to In service	Conventional	Competition

**A.7. Support Strategy**

	Contractor	Contract Scope	Contract Type	Procurement Route
United Kingdom Military Flying Training System	-	-	-	-
Increment A – Advanced Jet trainer (Interim Support)	BAE Systems Salmesbury	Contract placed in July 2008 to provide shakedown flying (flight testing of the aircraft under operational conditions to ensure fit for purpose) and to manage the Initial Provision of Spares package	Firm price	Under existing Hawk Integrated Operational Support contract
Increment A – Advanced Jet trainer (Interim Support)	BAE Systems Salmesbury	Contract placed in August 2009 to conduct shakedown flying and syllabus development until December 2009 by which time Approval should be achieved.	Firm Price to be subsumed within Target Cost Incentive Fee	Placed under existing Hawk Integrated Operational Support contract which will be subsumed into the main In Service Support Contract.
Increment A – Advanced Jet Trainer (interim support)	BAE Systems Salmesbury	Contract placed in December 2009 to conduct shake down flying and syllabus development until December 2010.	Firm price to be subsumed within Target Cost Incentive Fee	Placed under existing Hawk Integrated Operational Support contract which will be subsumed into the main In Service Support Contract
Increment A – Advanced Jet Trainer	BAE Systems Salmesbury	HM Treasury and Commitment approval received and the Contract was placed on 31 March 2010 for In Service Support to March 2014 incorporating previous Interim Support arrangements.	Firm Price to be subsumed within Target Cost Incentive Fee	Single source
Increment B – Advanced	-		-	

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Jet Trainer Operational Capability 2			-		-
Increment C – Training System Partner (United Kingdom Military Flying Training System Headquarters)	VT Support Services	Provision of Headquarters building	Lease		VT hold Head Lease, MOD have licence to underlet.
Increment D – Rear Crew Stage 1	Support is Included in main contract.			-	-
Increment E – Rear Crew Stage 2	-	-		-	-
Increment F – Multi-Engine	-	-		-	-
Increment G – Basic Trainer	-	-		-	-
Increment H – Rotary Wing	-	-		-	-
Increment J – Elementary Flying Training	-	-		-	-

**B. Section B: Cost**

**B.1. Cost of the Assessment Phase**

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
United Kingdom Military Flying Training System	39	31	-8	-	-
Increment A - Advanced Jet Trainer	75	75	-	14%	14%
Increment B – Advanced Jet Trainer Operational Capability 2	2	2	-	-	-
Increment C – Training System Partner	-	-	-	-	-
Increment D – Rear Crew Stage 1	-	-	-	-	-
Increment E – Rear Crew Stage 2	-	-	-	-	-
Increment F – Multi-Engine	-	-	-	-	-
Increment G – Basic Trainer	-	-	-	-	-
Increment H – Rotary Wing	-	-	-	-	-
Increment J – Elementary Flying Training	-	-	-	-	-
<b>Total</b>	<b>116</b>	<b>108</b>	<b>-8</b>	<b>14%</b>	<b>14%</b>

**B.2. Planned/Actual Cost Boundaries for Demonstration and Manufacture Phase/PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved

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United Kingdom Military Flying Training System	6608	-	7662 <sup>24</sup>
Increment A - Advanced Jet Trainer	472	490	497
Increment B – Advanced Jet Trainer Operational Capability 2	39	43	43
Increment C – Training System Partner (Advanced Jet Trainer – Ground based training Environment)	340	344	344
Increment D – Rear Crew Stage 1	75	75	80
Increment E – Rear Crew Stage 2	-	-	-
Increment F – Multi-Engine	-	-	-
Increment G – Basic Trainer	-	-	-
Increment H – Rotary Wing	-	-	-
Increment J – Elementary Flying Training	-	-	-

**B.3. Cost of the Demonstration and Manufacture Phase**

Description	Approved Cost (£m)	Actual / Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
United Kingdom Military Flying Training System	-	-	-	-
Increment A - Advanced Jet Trainer	497	460	-37	++2
Increment B - Advanced Jet Trainer Operational Capability 2	43	39	-4	-
Increment C – Training System Partner (Advanced Jet Trainer – Ground based training Environment)	344	344	0	0
Increment D – Rear Crew Stage 1	75	73	-2	-2
Increment E – Rear Crew Stage 2	-	-	-	-
Increment F – Multi-Engine	-	-	-	-
Increment G – Basic Trainer	-	-	-	-
Increment H – Rotary Wing	-	-	-	-
Increment J – Elementary Flying Training	-	-	-	-
<b>Total</b>	<b>959</b>	<b>916</b>	<b>-43</b>	<b>0</b>

**B.3.1. Cost Variation against approved Cost of the Demonstration and Manufacture Phase**

**B.3.1.1. United Kingdom Military Flying Training System – not applicable**

**B.3.1.2. Increment A - Advanced Jet Trainer**

Date	Variation (£m)	Factor	Explanation
March 2010	+2	Accounting Adjustments & Redefinitions	Increase in Cost of Capital Charge resulting from slippage in delivery profile
Historic	-9	Accounting Adjustments & Redefinitions	Completion of design and development contract (Operational Capability 0) activities at less than forecast (-£6m) adjustment to Indirect RDEL (-£5m) from MPR08 and minor changes to other cost estimates (+£2m)

<sup>24</sup> This approval represents the whole life costs for the wider project, as agreed at the main investment decision, less the amount allocated to the individual increments in later approvals.

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Historic	-8	Technical Factors	Changes between Production Contract Award and Planning round submission, including changes to production support estimates (-£4m), transfer of risk to UK Military Flying Training System (-£8m), increase in demonstration costs (+£2m) and changes in Cost of Capital (-£1m). Additional Assessment work on an enhancement capability, Operational Capability 2. Including design and development contract increases (+£4m), support costs increases (+£1m) and reduction in the cost of capital (-£2m).
Historic	-15	Procurement Processes	Change in BAE Systems labour rates from approval to the agreed contract price as a result of the agreement of rates between the MoD and BAE Systems.
Historic	-7	Risk Differential	Difference between the risk allowed for in the most likely (50%) and the highest acceptable (80%) estimates at Main Gate.
<b>Net Variation</b>	<b>-37</b>		

**B.3.1.3. Increment B – Advanced Jet Trainer Operational Capability 2**

Date	Variation (£m)	Factor	Reason for Variation
Historic	-1	Technical Factors	Reduction in Contractor estimate for security accreditation
Historic	-2	Accounting Adjustments & Re-definitions	Approved Budgetary Level included the maximum value. As Operational Capability 2 is a Target Cost Incentive Fee arrangement the forecast reflects the target value.
Historic	-1	Accounting Adjustments & Re-definitions	Reduction in project costs reflecting Approval Authority change to Approved Budgetary level (to £43m)
<b>Net Variation</b>	<b>-4</b>		

**B.3.1.4. Increment C – Training System Partner – not applicable**

**B.3.1.5. Increment D – Rear Crew Stage 1**

Date	Variation (£m)	Factor	Reason for Variation
March 2010	-2	Exchange Rate	Reduction resulted from final contracted values impacted by changes in the US dollar exchange rate.
<b>Net Variation</b>	<b>-2</b>		

**B.3.1.6. Increment E – Rear Crew Stage 2 – not applicable**

**B.3.1.7. Increment F – Multi Engine – not applicable**

**B.3.1.8. Increment G – Basic Trainer – not applicable**

**B.3.1.9. Increment H – Rotary Wing – not applicable**

**B.3.1.10. Increment J – Elementary Flying Training – not applicable**

**B.3.2. Operational Impact of Cost Variations of the Demonstration and Manufacture Phase – not applicable**

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**B.4. Unit production cost**

Description	Unit production costs (£m)		Quantities required	
	At Main Investment Decision	Currently	At Main Investment Decision	Currently
United Kingdom Military Flying Training System	-	-	-	-
Increment A - Advanced Jet Trainer	13	13	28	28
Increment B – Advanced Jet Trainer Operational Capability 2	-	-	-	-
Increment C – Training System Partner (Advanced Jet Trainer – Ground based training Environment)	-	-	-	-
Increment D – Rear Crew Stage 1	-	-	-	-
Increment E – Rear Crew Stage 2	-	-	-	-
Increment F – Multi-Engine	-	-	-	-
Increment G – Basic Trainer	-	-	-	-
Increment H – Rotary Wing	-	-	-	-
Increment J – Elementary Flying Training	-	-	-	-

**B.5. Progress against approved Support/Service/ PFI Cost**

Description	Approved Cost	Forecast cost	Variation	In-Year Variation
United Kingdom Military Flying Training System	-	-	-	-
Increment A - Advanced Jet Trainer	173	164	-9	-3
Increment B - Advanced Jet Trainer Operational Capability 2	-	-	-	-
Increment C – United Kingdom Military Flying Training System (Training System Partner and Headquarters)	307	306	-1	
Increment D – Rear Crew Stage 1	-	-	-	-
Increment E – Rear Crew Stage 2	-	-	-	-
Increment F – Multi-Engine	-	-	-	-
Increment G – Basic Trainer	-	-	-	-
Increment H – Rotary Wing	-	-	-	-
Increment J – Elementary Flying Training	-	-	-	-
<b>Total</b>	<b>480</b>	<b>470</b>	<b>-10</b>	<b>-3</b>

**B.5.1. Cost Variation against approved Support/Service/ PFI Cost**

**B.5.1.1. United Kingdom Military Flying Training System – not applicable**

**B.5.1.2 Increment A – Advanced Jet Trainer**

Date	Variation (£m)	Factor	Reason for Variation
March 2010	-2	Accounting adjustments & redefinitions	Rounding up of approval figure (-1m). Cost of Capital Charge Less than approved (-1m)
March 2010	-1	Budgetary Factors	Actual figure less than forecast (-1m).
Historic	-5	Technical Factors	Provision for BAE Systems accrual not required



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Historic	-1	Technical Factors	Reduction in contract cost at the point of incorporation
<b>Net Variation</b>	<b>-9</b>		

**B.5.1.3 Increment B – Advanced Jet Trainer Operational Capability 2 – not applicable**

**B.5.1.4 Increment C – United Kingdom Military Flying Training System (Training System Partner and Headquarters)**

Date	Variation (£m)	Factor	Reason for Variation
Historic	+2	Procurement Process	Option to delay infrastructure rebuild leads to additional costs being built in for future years
Historic	-1	Technical Factors	Costs to refurbish building ready for occupation, less than forecast
Historic	-2	Procurement Process	Delays in securing the building
<b>Net Variation</b>	<b>-1</b>		

**B.5.1.5 Increment D – Rear Crew Stage 1 –not applicable**

**B.5.1.6 Increment E – Rear Crew Stage 2 – not applicable**

**B.5.1.7 Increment F – Multi Engine – not applicable**

**B.5.1.8 Increment G – Basic Trainer – not applicable**

**B.5.1.9 Increment H – Rotary Wing – not applicable**

**B.5.1.10 Increment J – Elementary Flying Training – not applicable**

**B.5.2. Operational Impact of Support/Service/PFI Cost Variations – not applicable**

**B.6. Expenditure to date**

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
Assessment Phase (£m)	104	1	105
Demonstration & Manufacture Phase (£m)	428	96	524
Support Phase / Service / PFI Cost (£m)	21	31	52
<b>Total Expenditure (£m)</b>	<b>553</b>	<b>128</b>	<b>681</b>

**C. Section C: Timescale**

**C.1. Duration of the Assessment Phase**

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
United Kingdom Military Flying Training System	July 2013	September 2003	118
Increment A – Advanced Jet Trainer	August 2006	November 2004	21
Increment B – Advanced Jet Trainer Operational Capability 2	February 2008	November 2004	39
Increment C – Training System Partner (Advanced Jet Trainer Ground Based Training Environment – Ready For Training Use (RFTU) 1 & 2)	February 2008	September 2003	53
Increment D – Rear Crew Stage 1	May 2009	December 2007	17
Increment E – Rear Crew Stage 2	-	-	-
Increment F – Multi Engine	-	-	-

UNITED KINGDOM MILITARY FLYING TRAINING SYSTEM

Increment G – Basic Trainer	-	-	-
Increment H – Rotary Wing	-	-	-
Increment J – Elementary Flying Training	-	-	-

**C.2. Planned / Actual Boundaries for introduction of the Capability**

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
United Kingdom Military Flying Training System	-	-	-
Increment A – Advanced Jet Trainer	December 2008	May 2009	February 2010
Increment B – Advanced Jet Trainer Operational Capability 2	-	-	-
Increment C – Training System Partner (Advanced Jet Trainer Ground Based Training Environment – RFTUs 1 & 2)	-	-	July 2010
	-	-	September 2010
Increment D – Rear Crew Stage 1	June 2011	Jul 2011	September 2011
Increment E – Rear Crew Stage 2	-	-	-
Increment F – Multi Engine	-	-	-
Increment G – Basic Trainer	-	-	-
Increment H – Rotary wing	-	-	-
Increment J – Elementary Flying Training	-	-	-

**C.3. In Service Date/Initial Operating Capability**

**C.3.1. Definition**

Description	In Service Date/Initial Operating Capability
United Kingdom Military Flying Training System	-
Increment A –Advanced Jet Trainer	<p>In Service Date is defined as the date where Hawk 128 can be used for the development of the future Phase 4 training syllabus. This will require Initial Logistic Support Date to be achieved, delivery of 4 aircraft to Operational Capability 0 standard, 6 pilots converted to type and at least a Part Task Trainer.</p> <p>Initial Operational Capability is defined as the point where the first ab-initio student training on Hawk-128 can commence. This will require In Service Date plus delivery of the Ground Based Training Environment (2 Full Mission Simulators), Full Syllabus Development complete, sufficient Instructors trained, and Squadron /Maintenance Infrastructure delivered and accepted</p>
Increment B – Advanced Jet Trainer Operational Capability 2	Operational Capability 2 is an incremental part of the design and development of the Hawk T Mk2. As a software upgrade to the aircraft systems, Operating Capability 2 has no specific In Service Date but instead contributes to the overall Full Operating Capability of the Hawk T Mk 2.
Increment C – United Kingdom Military Flying Training System (Advanced Jet Trainer Ground Based Training Environment)	There are two approved Advanced Jet Trainer Ground Based Training Environment Ready For Training Use dates. Ready For Training Use 1 is for provision of Full Mission Simulator 1, and Ready For Training Use 2 is for the provision of Full Mission Simulator 2. Ready For Training Use 2 contributes to the Initial Operating Capability of Increment A.
Increment D – Rear Crew Stage 1	Initial Training Capability equates to In Service Date and is the point in the programme where the Rear Crew Trainer 2B Contractor is ready to commence the instructor training phase.

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	Initial Course Capability equates to Initial Operating Capability and is the point in the programme where the Rear Crew Trainer 2B Contractor is ready to commence the operational phase.
Increment E – Rear Crew Stage 2	-
Increment F – Multi Engine	-
Increment G – Basic Trainer	-
Increment H – Rotary Wing	-
Increment J – Elementary Flying Training	-

**C.3.2. Progress against approved Dates**

Description	Approved Date	Actual / Forecast Date	Variation	In-Year Variation
United Kingdom Military Flying Training System	-	-	-	-
Increment A - Advanced Jet Trainer	February 2010	February 2010	0	-5
Increment B - Advanced Jet Trainer Operational Capability 2	-	-	-	-
Increment C – United Kingdom Military Flying Training System (Advanced Jet Trainer Ground based training Environment)	July 2010 <sup>25</sup>	January 2011	+6	+9
	September 2010	March 2011	+6	+4
Increment D – Rear Crew Stage 1	September 2011	November 2011	+2	+2
Increment E – Rear Crew Stage 2	-	-	-	-
Increment F – Multi Engine	-	-	-	-
Increment G – Basic Trainer	-	-	-	-
Increment H – Rotary Wing	-	-	-	-
Increment J – Elementary Flying Training	-	-	-	-

**C.3.3. Timescale variation**

**C.3.3.1. United Kingdom Military Flying Training System – not applicable.**

**C.3.3.2. Increment A - Advanced Jet Trainer**

Date	Variation (months)	Factor	Explanation
December 2009	-5	Technical Factors	Variation as a result of mitigation actions by Training System Partner to meet Ready For Training Use requirements.
Historic	+8	Technical Factors	Re-planning by Training System Partner of Ready For Training Use dates for Ground Based Training Environment as a result of delay in Training System Partner Contract

<sup>25</sup> Forecast dates realigned to match the definitions approved at Main Investment Decision rather than those reported against in MPR09. There are 2 simulators hence the reason for 2 dates.

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			Award.
Historic	+4	Technical Factors	Risk increase in late delivery of a dependency resulting in a 4 month slip to the ISD noted at Main Gate.
Historic	-7	Risk Differential	Difference between the risk allowed for in the most likely (50%) and highest acceptable (80%) estimates at Main Gate.
<b>Net Variation</b>	<b>0</b>		

**C.3.3.3. Increment B – Advanced Jet Trainer Operational Capacity 2 – not applicable**

**C.3.3.4. Increment C Ready for Training Uses Date 1– United Kingdom Military Flying Training System (Advanced Jet Trainer Ground based training Environment)**

Date	Variation	Factor	Reason for Variation
March 2010	+9	Procurement Processes	Ready for Training Use structure has evolved from 2 milestones to 5. The variation, while still reporting the same activity, reflects alignment of the forecast delivery date to the revised milestones rather than those reported in MPR09.
Historic	+8	Procurement Processes	Re-planning by Training System Partner of Ready For Training Use 1 for Ground Based Training Environment as a result of delay in Training System Partner Contract Award.
Historic	-6	Risk Differential	Difference between the risk allowed for in the most (50%) and highest acceptable (70%) dates for Ground Based Training Environment Ready For Training Use 1 at Main Gate Business Case.
<b>Net Variation</b>	<b>+6</b>		

**C.3.3.5. Increment C Ready for Training Uses Date 2– United Kingdom Military Flying Training System (Advanced Jet Trainer Ground based training Environment)**

Date	Variation	Factor	Reason for Variation
March 2010	+4	Procurement Processes	Ready for Training Use structure has evolved from 2 milestones to 5. The variation, while still reporting the same activity, reflects alignment of the forecast delivery date to the revised milestones rather than those reported in MPR09.
Historic	+8	Procurement Processes	Re-planning by Training System Partner of Ready For Training Use 2 for Ground Based Training Environment as a result of delay in Training System Partner Contract Award.
Historic	-11	Risk Differential	Difference between the risk allowed for the mostly likely (50%) and highest acceptable (75%) dates for Ground Based Training Environment Ready For Training Use 2 at Main Gate Business Case.
<b>Net Variation</b>	<b>+6</b>		

**C.3.3.6. Increment D – Rear Crew Stage 1**

Date	Variation	Factor	Reason for Variation
January 2010	+2	Technical factors	Delay in delivery of aircraft resulting from Federal Aviation Authority requirements
<b>Net Variation</b>	<b>+2</b>		

**C.3.3.7. Increment E – Rear Crew Stage 2 – not applicable**

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**C.3.3.8. Increment F – Multi Engine – not applicable**

**C.3.3.9. Increment G – Basic Trainer – not applicable**

**C.3.3.10. Increment H – Rotary Wing – not applicable**

**C.3.3.11. Increment J – Elementary Flying Training – not applicable**

**C.3.4. Other costs resulting from Timescale variation**

Description	Date	£m (+ Cost / - Saving)	Factor	Reason for expenditure or saving
United Kingdom Military Flying Training System	-	-	-	-
Increment A - Advanced Jet Trainer	Historic	-4	Procurement Processes	Reflects the anticipated change in BAE Systems estimates for supporting Hawk 128
Increment A - Advanced Jet Trainer	Historic	+4	Budgetary Factors	Additional cost of further support to Hawk TMk1 Training Fleet
Increment B - Advanced Jet Trainer Operational Capability 2	-	-	-	-
Increment C – United Kingdom Military Flying Training System (Advanced Jet Trainer Ground based training Environment)	-	-	-	-
Increment D – Rear Crew Stage 1	-	-	-	-
Increment E – Rear Crew Stage 2	-	-	-	-
Increment F – Multi Engine	-	-	-	-
Increment G – Basic Trainer	-	-	-	-
Increment H – Rotary Wing	-	-	-	-
Increment J – Elementary Flying Training	-	-	-	-
<b>Total</b>	-	<b>0</b>	-	-

**C.3.5. Operational Impact of In Service Date/Initial Operating Capability variation**

Description	
United Kingdom Military Flying Training System	-
Increment A - Advanced Jet Trainer	There is no operational impact as the Hawk TMk1 Out of Service Date has been extended such that the continuity of flying training will be maintained.
Increment B - Advanced Jet Trainer Operational Capability 2	-
Increment C – United Kingdom Military Flying	-

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Training System (Advanced Jet Trainer Ground based training Environment)	
Increment D – Rear Crew Stage 1	-
Increment E – Rear Crew Stage 2	-
Increment F – Multi Engine	-
Increment G – Basic Trainer	-
Increment H – Rotary Wing	-
Increment J – Elementary Flying Training	-

**C.4. Full Operating Capability**

**C.4.1. Definition**

Description	Full Operating Capability
United Kingdom Military Flying Training System	-
Increment A - Advanced Jet Trainer	Full Operating Capability will occur when all student courses are being trained on the Hawk-128 aircraft at the Operational Capability 2 standard.
Increment B - Advanced Jet Trainer Operational Capability 2	Full Operating Capability will occur when all student courses are being trained on the Hawk-128 aircraft at the Operational Capability 2 standard.
Increment C – United Kingdom Military Flying Training System (Advanced Jet Trainer Ground based training Environment)	No approved definition.
Increment D – Rear Crew Stage 1	Ready For Training Use Full course Capability equates to Full Operating Capability and is when the full training service commences.
Increment E – Rear Crew Stage 2	-
Increment F – Multi Engine	-
Increment G – Basic Trainer	-
Increment H – Rotary Wing	-
Increment J – Elementary Flying Training	-

**C.4.2. Progress Report – not applicable**

**C.5. Support/Service/PFI Contract**

**C.5.1. Scope of Support/Service/PFI Contract**

Description	
United Kingdom Military Flying Training System	-
Increment A - Advanced Jet Trainer	To provide shakedown flying (flight testing of the aircraft under operational conditions to ensure fit for purpose) and management of Initial Spares package
Increment B - Advanced Jet Trainer (Operational Capability 2)	-
Increment C – United Kingdom Military Flying	To provide a combined headquarters building for MOD and Ascent (the Training System Partner)

UNITED KINGDOM MILITARY FLYING TRAINING SYSTEM

Training System (Training System Partner and Headquarters)	
Increment D – Rear Crew Stage 1	To provide Royal Naval Observer Training ensuring the capability continuation during transition to the full tri-service Rear Crew Training under the Training System Partner contract.
Increment E – Rear Crew Stage 2	-
Increment F – Multi Engine	-
Increment G – Basic Trainer	-
Increment H – Rotary Wing	-
Increment J – Elementary Flying Training	-

**C.5.2. Progress against approved Support/Service/PFI Contract Go-Live Date**

Description	Approved Date	Actual Date	Variation (month)	In-Year Variation (month)
United Kingdom Military Flying Training System	-	-	-	-
Increment A - Advanced Jet Trainer (Initial Support)	-	July 2008	-	-
Increment B - Advanced Jet Trainer Operational Capability 2	-	-	-	-
Increment C – United Kingdom Military Flying Training System (Training System Partner and Headquarters)	March 2008	November 2008	+8	-
Increment D – Rear Crew Stage 1	-	-	-	-
Increment E – Rear Crew Stage 2	-	-	-	-
Increment F – Multi Engine	-	-	-	-
Increment G – Basic Trainer	-	-	-	-
Increment H – Rotary Wing	-	-	-	-
Increment J – Elementary Flying Training	-	-	-	-

**C.5.2.1. Increment C Go-Live Date Variation**

Date	Variation	Factor	Reason for Variation
Historic	+8	Procurement Processes	Negotiations for a Headquarters Building lease were delayed when the Landlord opted to negotiate with a higher bidder.
<b>Net Variation</b>	<b>+8</b>		

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**C.5.3. Progress against approved End of Support/Service/PFI Contract Date**

Description	Approved Date	Actual Date	Variation	In-Year Variation
United Kingdom Military Flying Training System	-	-	-	-
Increment A - Advanced Jet Trainer	-	-	-	-
Increment B - Advanced Jet Trainer Operational Capability 2	-	-	-	-
Increment C – United Kingdom Military Flying Training System (Training System Partner and Headquarters)	March 2013	November 2013	+8	-
Increment D – Rear Crew Stage 1	-	-	-	-
Increment E – Rear Crew Stage 2	-	-	-	-
Increment F – Multi Engine	-	-	-	-
Increment G – Basic Trainer	-	-	-	-
Increment H – Rotary Wing	-	-	-	-
Increment J – Elementary Flying Training	-	-	-	-

**C.5.3.1. End of Contract Date Variation**

Date	Variation	Factor	Reason for Variation
United Kingdom Military Flying Training System	-	-	-
Increment A - Advanced Jet Trainer	-	-	-
Increment B - Advanced Jet Trainer Operational Capability 2	-	-	-
Increment C – United Kingdom Military Flying Training System (Training System Partner and Headquarters)	+8	Procurement Processes	Negotiations for a Headquarters Building lease were delayed when the Landlord opted to negotiate with a higher bidder.
Increment D – Rear Crew Stage 1	-	-	-
Increment E – Rear Crew Stage 2	-	-	-
Increment F – Multi Engine	-	-	-
Increment G – Basic Trainer	-	-	-
Increment H – Rotary Wing	-	-	-
Increment J – Elementary Flying Training	-	-	-
<b>Net Variation</b>	<b>+8</b>		



**C.5.4. Operational Impact of Support/Service/PFI Support Contract variation – not applicable**

**D. Section D: Performance**

**D.1 Maturity Measures**

**D.1.1 United Kingdom Military Flying Training System – not applicable**

**D.1.2 Increment A – Advanced Jet Trainer**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
Commercial	<i>Measures under development</i>			
Financial				
Project Management				
System Readiness	1-9	Level 8	9	
Technology Readiness	1-9	Level 4	8	

**D.1.3 Increment B – Advanced Jet Trainer Operational Capability 2**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
Commercial	<i>Measures under development</i>			
Financial				
Project Management				
System Readiness	1-9	Level 3	7	
Technology Readiness	1-9	Level 4	7	

**D.1.4 Increment C – Training System Partner – not applicable**

**D.1.5 Increment D – Rear Crew Stage 1**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
Commercial	<i>Measures under development</i>			
Financial				
Project Management				
System Readiness	1-9	-	4	-
Technology Readiness	1-9	-	5	-

**D.1.6 Increment E – Rear Crew Stage 2 – not applicable**

**D.1.7 Increment F – Multi Engine – not applicable**

**D.1.8 Increment G – Basic Trainer – not applicable**

**D.1.9 Increment H – Rotary Wing – not applicable**

**D.1.10 Increment J – Elementary Flying Training – not applicable**

**D.2. Performance against Defence Lines of Development**

Line of Development	Description	Forecast		
		To be met	At Risk	Not to be met
1. Equipment	Aircraft, Initial Provisioning Ground Support Equipment, Ground Based Training Environment	Yes	-	-
2. Training	Training Service Provider on contract	Yes	-	-
3. Logistics	Spares and maintenance support	Yes	-	-
4. Infrastructure	Involves Authority dependencies at RAF Valley, RNAS Culdrose & RAF Barkston Heath	Yes	-	-

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5.	Personnel	Management of the transition period where there will be an overlap of the legacy and new flying training systems, placing additional demands on Instructors, to ensure sufficient instructor hours are available.	Yes	-	-
6.	Doctrine	Concept Employment and Concept Use documentation in place. Concept Operations in production. These documents form the basis of the provision of flying training services such as the development of the flying training strategy.	Yes	-	-
7.	Organisation	Agreement of the division of responsibility between the military instructors and those provided by Ascent as part of the contract.	Yes	-	-
8.	Information	Defence Information Infrastructure (Future)	Yes	-	-
Percentage currently forecast to be met			100%		
In-Year Change					

**D.2.1.1. Defence Lines of Development Variation**

Date	Line of Development	Factor	Reason for Variation
Historic	Equipment	Technical	Data drop (Technical information to support development of Ground based training Environment) delays from BAE Systems

**D.3. Performance against Key Performance Measures**

**D.3.1. United Kingdom Military Flying Training System**

**D.3.1.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
1	-	United Kingdom Flying Training System shall be able to design the training for selected Tri-Service personnel to meet defined standards.	Yes	Yes	-
2	-	United Kingdom Flying Training System shall be able to inculcate Tri-Service personnel with military ethos throughout their periods of training.	Yes	Yes	-
3	-	United Kingdom Flying Training System shall be able to provide for progressive implementation of new training systems without any shortfall to the required throughput of trained aircrew to the Operational Conversion Units	Yes	Yes	-
4	-	United Kingdom Flying Training System shall be able to deliver trained selected Tri-Service personnel to Operational Conversion Units who meet the required input standards.	Yes	Yes	-
5	-	United Kingdom Flying Training System shall be able to deliver trained selected Tri-Service personnel to Operational Conversion Units in the required quantities.	Yes	Yes	-
6	-	United Kingdom Flying Training System shall be able to deliver trained selected Tri-Service personnel to Operational Conversion Units in the required timescales.	Yes	Yes	-
7	-	United Kingdom Flying Training System shall be	Yes	Yes	-

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		able to reallocate the capacity of the system to react to requirement changes at minimum cost and time.			
8	-	United Kingdom Flying Training System shall be able to ensure the system is sustainable for a period of at least 25 years from the date of Initial Service Provision.	Yes	Yes	-
Percentage currently forecast to be met			100%		
In-Year Change			-		

**D.3.1.2. Key Performance Measures Variation**

Date	Key Measure	Factor	Reason for Variation
Historic	-	-	Work to develop realistic and achievable plans for the remainder of the United Kingdom Military Flying Training System increments is on-going. Risk will remain against all the system-wide KPMs until these plans are fully mature.

**D.3.1.3. Operational Impact of variation – not applicable**

**D.3.2. Increment A - Advanced Jet Trainer**

**D.3.2.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
01		The System shall be powered by a jet engine or engines	Yes	-	-
02		The System platform shall incorporate primary flying controls that are fully operable from both cockpits.	Yes	-	-
03		The System platform shall incorporate a Stores Management System to allow the selection, firing/release and jettison of simulated weapon.	Yes	-	-
04		The System platform shall present Artificial Intelligence radar data to allow search, location, tracking and engagement of real, simulated and synthetic airborne targets.	Yes	-	-
05		The System platform shall perform representative Basic Fighter Manoeuvres.	Yes	-	-
06		The System platform shall complete a low level evading route of at least 45 mins at a speed of at least 420 knots.	Yes	-	-
07		The System platform shall present automatic steering for planned attacks on surface targets involving target position correction in-flight and updating of the targeting system to ensure accurate attacks.	Yes	-	-
08		To the maximum extent possible, the System shall embody technology transparency in order to accommodate Platform upgrades without redesign of functionally unrelated areas.	Yes	-	-
09		The platform shall be Reliable and Maintainable.	Yes	-	-
Percentage currently forecast to be met			100%		
In-Year Change					

**D.3.2.2 Key Performance Measures Variation**

Date	Key Requirement	Factor	Explanation
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UNITED KINGDOM MILITARY FLYING TRAINING SYSTEM

March 2010	4	Technical Factors	At Main gate the KPMs were endorsed noting that the operational capability of the aircraft would be delivered incrementally. Last year KPM 4 was forecast not to be met as financial approval was still outstanding on Operational Capability 2. This has since been received and KPM 4 is currently forecast to be met.
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**D.3.2.3. Operational Impact of variation – not applicable**

**D.3.3 Increment B – Advanced jet trainer Operational capability 2**

**D.3.3.1 Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
SR961	-	The system platform present threats from simulated airbourne emitters generated by “real” aircraft on a Radar Warning Receiver display with associated visual & audio warnings	Yes	-	-
SR1003	-	The system platform shall select simulated radar guided missiles via a Short Message Service interface	Yes	-	-
SR962	-	The system shall represent the effects of correct radar countermeasure employment by causing the attacking radar or systm to break lock	Yes	-	-
03	-	The System platform shall incorporate a Stores Management System to allow the selection, firing/release and jettison of simulated weapon.	Yes	-	-
04 <sup>26</sup>	-	The System platform shall present Artificial Intelligence radar data to allow search, location, tracking and engagement of real, simulated and synthetic airborne targets.	Yes	-	-
Percentage currently forecast to be met			100%		
In-Year Change			-		

**D.3.3.2 Key Performance Measures Variation**

Date	Key Measure	Factor	Reason for Variation
March 2010	4	Technical Factors	At main gate the KPMs were endorsed noting that the operational capability of the Aircraft would be delivered incrementally. Last year KPM 4 was forecast not to be met as financial approval was still outstanding on Operational Capability 2. This has since been received and KPM 4 is currently forecast to be met.

**D.3.3.3 Operational Impact of variation – not applicable**

**D.3.4 Increment C – Training System Partner – not applicable**

**D.3.5 Increment D – Rear Crew Stage 1**

**D.3.5.1 Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
KUR 1a	-	United Kingdom Military Flying Training System shall be able to design the training for selected Service Personnel, undertaking Rear Crew to meet defined standards.	Yes	-	-
KUR 2a	-	United Kingdom Military Flying Training System shall be able to provide for progressive	Yes	-	-

<sup>26</sup> D.3.3.1 Advanced Jet Trainer Operational Capability 2 KPMs 03 & 04 are the same as those reported against in D.3.2.1 Advanced Jet Trainer KPMs 03 & 04

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		implementation of new training systems without any shortfall to the required throughput of trained Rear Crews to the Operating Conversion Units.			
KUR 3a	-	United Kingdom Military Flying Training System shall be able to deliver trained ab-initio students to Operating Conversion Units.	Yes	-	-
KUR 4a	-	United Kingdom Military Flying Training System shall be able to deliver trained instructors.	Yes	-	-
KUR 5a	-	United Kingdom Military Flying Training System shall be able to deliver miscellaneous courses/flying.	Yes	-	-
KUR 6a	-	United Kingdom Military Flying Training System shall be able to interoperate with the overall training pipeline.	Yes	-	-
Percentage currently forecast to be met			100%		
In-Year Change			n/a		

**D.3.6 Increment E – Rear Crew Stage 2 – not applicable**

**D.3.7 Increment F – Multi engine – not applicable**

**D.3.8 Increment G – Basic Trainer – not applicable**

**D.3.9 Increment H – Rotary Wing – not applicable**

**D.3.10 Increment J – Elementary Flying Training – not applicable**

## WATCHKEEPER

### Team Responsible

Unmanned Air Systems Delivery Team

### Single point of accountability for Project Capability

Head of Capability (Intelligence, Surveillance, Target Acquisition & Reconnaissance)

### Senior Responsible Officer

Head of Capability (Intelligence, Surveillance, Target Acquisition & Reconnaissance)

Number of Projects / Increments 1

### Current Status of Projects / Increments

- Post Main Investment Decision - 1
- Support Contract - 1

## A. Section A: The Project

### A.1. The Requirement

Watchkeeper will provide the operational commander with a 24 hour, all weather, intelligence, surveillance, target acquisition and reconnaissance capability supplying accurate, timely and high quality imagery to support decision making. The system will consist of unmanned air vehicles, sensors, data links and ground control stations. Watchkeeper is planned to be delivered through an incremental programme to allow the system to benefit from both existing and developing sensors and air vehicle technology.

### A.2. The Assessment Phase

Watchkeeper is a consolidation of the Sender and Spectator projects. Initial Gate approval was received for Sender in November 1999 and approval for a joint Assessment Phase for both projects was given in July 2000.

The acquisition strategy has been based on selecting Unmanned Air Vehicle systems to suit a defined capability requirement rather than an air vehicle-centred approach. Through evaluation and system concept demonstration, the Assessment Phase has driven down technical and schedule risks and derived the whole life costs associated with the proposed options. User and System Requirements were identified and revalidated. Trade-off activity was undertaken, taking full account of the impact across all Lines of Development and supported by balance of investment studies.

Alternative acquisition options have been considered. PPP/PFI was not deemed appropriate for the provision of a tactical capability deployed in theatre, due to the potential risks to contractor personnel and the required levels of availability as well as legal implications. Collaboration was explored during the early stages of the Assessment Phase, but it was not possible to align requirements. There is continuing dialogue with and between allied nations on matters of requirement definition, technology, operational experience and acquisition. The need for significant system integration with the emerging Network Enabled Capability requirements led the then Defence Procurement Agency and the potential contractors to adopt an incremental approach to delivery. This approach also supports the Force Readiness Cycle which provides for a phased uplift of capability at discrete intervals.

Opportunities to enhance Watchkeeper beyond the Full Operating Capability have been considered during the Assessment Phase and will inform future investment decisions.

Following a competitive process, Thales (UK) was announced as preferred bidder in July 2004. The programme completed the Assessment Phase of the acquisition cycle in July 2005, when Main Gate approval was given to proceed to the Demonstration and Manufacture phase.

### A.3. Progress

In July 2005, following an international competition, Thales (UK) was awarded the Watchkeeper Demonstration and Manufacture phase contract as prime contractor. Major project milestones completed to date include the System Design Review in December 2005, the Preliminary Design Review in July 2006 and the Critical Design Review of the air vehicle in December 2006. The System Critical Design Review was conducted in May 2007 and finalised in September 2007 with the completion of the de-icing Critical Design Review.

Watchkeeper's maiden flight took place on 16 April 2008 in Israel and was followed by the successful achievement of the Automatic Take Off & Landing System demonstration in July 2008. Stage 2 flight

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trials concluded in Israel in March 2009. The Watchkeeper Training facility at 32 Regiment, Larkhill was commissioned in September 2009. Automatic Take Off & Landing System maturity flights were concluded during Stage 3 flight trials during November 2009. The programme has experienced technical issues where the Automatic Take Off & Landing System software development and integration have impacted the programme timescales. Also, the necessary safety and airworthiness evidence needed for Stage 4 flight trials has delayed UK test and evaluations at Parc Aberporth in South Wales. Watchkeeper Initial Contractor Logistic Support contract was signed January 2010.

### A.4. Capability Risks

Watchkeeper replaces the capability previously provided by Phoenix Unmanned Air Vehicle which reached it's Out of Service Date in April 2008. The Hermes 450 Unmanned Air Vehicle has been contracted on a service based provision to provide continued capability and cover an Urgent Operational Requirement in Iraq and Afghanistan prior to Watchkeeper being delivered into Service, this has subsequently moved to a UOR in Afghanistan. If the capability is not acquired, UK forces in Multi National Division (South East) will face a critical shortfall in the provision of formation level persistent Intelligence, Surveillance, Target Acquisition & Reconnaissance.

### A.5. Associated Projects

Description	Critical to achievement of IOC	
	Project Title	Forecast IOC
Watchkeeper	Bowman and Common Battlefield Application Toolset, Digitisation Battlespace Land Infrastructure and Platform Battlefield Information System Application Programme 5	2008

### A.6. Procurement Strategy

Pre-Main Investment Decision Projects / Increments only				
Description	Procurement Route			
-	-			
Post-Main Investment Decision Projects / Increments only				
	Contractor	Contract Scope	Contract Type	Procurement Route
Watchkeeper	Thales Defence Ltd, Weybridge	Demonstration to Manufacture	Firm Price	International competition
Watchkeeper	UAV Tactical Systems Limited, Leicester	Demonstration to Manufacture	Firm Price	Non Competitive

### A.7. Support Strategy

#### A.7.1. Support / Service / PFI Contract Strategy

Description				
Watchkeeper	Watchkeeper Through Life Support – Phase 1			
	Contractor	Contract Scope	Contract Type	Procurement Route
Watchkeeper	Thales Defence Ltd, Weybridge	Contractor Logistic Support	Firm Price	International Competition

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**B. Section B: Cost****B.1. Cost of the Assessment Phase**

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
Watchkeeper	52	65	+13	6%	7%
<b>Total</b>	<b>52</b>	<b>65</b>	<b>+13</b>	<b>6%</b>	<b>7%</b>

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Watchkeeper	881	907	920

**B.3. Cost of the Demonstration and Manufacture Phase**

Description	Approved Cost (£m)	Actual / Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
Watchkeeper	920	889	-31	-6
<b>Total</b>	<b>920</b>	<b>889</b>	<b>-31</b>	<b>-6</b>

**B.3.1. Cost Variation against approved Cost of the Demonstration & Manufacture Phase****B.3.1.1. Watchkeeper**

Date	Variation (£m)	Factor	Reason for Variation
March 2010	-1	Budgetary Factors	Reductions in Contract Change Proposal requirements.
March 2010	-2	Budgetary Factors	Reductions in costs due to VAT decrease from 17.5% to 15% till Dec 09.
March 2010	-3	Accounting Adjustments and Re-definitions	Reduction of Cost Of Capital figure due to accrual re-profiling.
Historic	-1	Accounting Adjustments and Re-definitions	Reduction of Cost Of Capital figure due to accrual re-profiling.
Historic	-2	Budgetary Factors	Option taken to change Watchkeeper runway from hardened to grass surface
Historic	+2	Changed Budgetary Factors	Increase in Cost due to re-profiling of funding as result of Options.
Historic	-10	Accounting Adjustments and Re-definitions	Reduction in Cost of Capital figure due to a revision in accruals included within the forecast cost.(-5m) Reduction in Cost of Capital figure due to re-profiling of funding as result of Options.(-5m)
Historic	-1	Change in associated project	Delay in start date of Defence Estates tasks into 2007/08.
Historic	-13	Risk Differential	Difference between the risk allowed for in the most likely (50%) and highest acceptable (70%) estimates at Main Gate.
<b>Net Variation</b>	<b>-31</b>		



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### B.3.2. Operational Impact of Cost Variations of Demonstration & Manufacture Phase

Description	
Watchkeeper	The Option was taken to use the existing grass strip at Upavon rather than build a purpose built runway for Watchkeeper. Repetitive use of a grass strip during take-off and landing, whilst training, will increase air vehicle fatigue. Regular deployment to an airfield with a hardened strip and adjacent range facilities such as Boscombe Down or Aberporth is planned to minimise this impact.

### B.4. Unit production cost

Description	Unit production costs (£m)		Quantities required	
	At Main Investment Decision	Currently	At Main Investment Decision	Currently
Watchkeeper	1	1	54	54

### B.5. Progress against approved Support / Service / PFI Cost

Description	Approved Cost	Forecast cost	Variation	In-Year Variation
Watchkeeper	55	55	-	-

#### B.5.1. Cost Variation against approved Support / Service / PFI Cost – not applicable

#### B.5.2. Operational Impact of Support / Service / PFI Cost Variations – not applicable

### B.6. Expenditure to date

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
Assessment Phase (£m)	65	0	
Demonstration & Manufacture Phase (£m)	416	139	555
Support Phase / Service / PFI Cost (£m)		5	5
<b>Total Expenditure (£m)</b>	<b>481</b>	<b>144</b>	<b>625</b>

## C. Section C: Timescale

### C.1. Duration of the Assessment Phase

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Watchkeeper	July 2005	November 1999	68

### C.2. Planned / Actual Boundaries for introduction of the Capability

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
Watchkeeper	February 2010	June 2010	February 2011

### C.3. In-Service Date/Initial Operating Capability

#### C.3.1. Definition

Description	In-Service Date/Initial Operating Capability
Watchkeeper	One sub-unit trained and equipped to support a Medium Scale of Effort deployment.

#### C.3.2. Progress against approved Dates

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Description	Approved Date	Actual / Forecast Date	Variation	In-Year Variation
Watchkeeper	February 2011	February 2011	0	+2

**C.3.3. Timescale variation**

**C.3.3.1. Watchkeeper**

Date	Variation	Factor	Reason for Variation
February 2010	-2	Technical Factors	Re-baseline programme schedule and revised Training and Deployment Plan
October 2009	+1	Technical Factors	The main issues are the production of safety and airworthiness evidence to obtain the UK Military Flight Trials Permit the demonstration the maturity of the Automatic Take Off and Landing System and issuing a baseline version of the Client Server Software
September 2009	+2	Technical Factors	Emerging issues on Military Flight Trials Permit evidence, Automatic Take Off & Landing System maturity and software development
April 2009	+1	Technical Factors	Risk reduction and trials results
Historic	+2	Procurement Strategy	Impact of Israeli conflict being assessed
Historic	-1	Technical Factors	Risk Mitigation and Technology Readiness Level improvement emanating from trials programme
Historic	+1	Technical Factors	Increased risk to software programme and impact of Israel Conflict
Historic	-1	Technical Factors	Improved progress with trials in Israel
Historic	-3	Technical Factors	De-risked Initial Operating Capability agreement has now been contracted
Historic	+1	Technical Factors	Delays to trials programme in Israel
Historic	+1	Technical Factors	Delays to trials in Israel
Historic	-1	Technical Factors	Reduced duration of Technical Field Trials has reduced risk on Trials Programme.
Historic	+2	Technical Factors	Trials delays in Israel.
Historic	-1	Technical Factors	Continued risk Mitigation has improved the forecast .....
Historic	-1	Procurement Strategy	Agreement to provide underpinning design data has reduced airworthiness and Release To Service risks
Historic	+7	Technical Factors	Changes to the planned trials site have caused delays to Trials and Evaluation (+9m) Alternative Trials arrangements now contracted(-2m)
Historic	-8	Risk Differential	Difference between the risk allowed for in the most likely (50%) and highest acceptable (90%) estimates at Main Gate.
<b>Net Variation</b>	<b>0</b>		

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**C.3.4. Other costs resulting from Timescale variation – not applicable**

**C.3.5. Operational Impact of In-Service Date/Initial Operating Capability variation – not Applicable**

**C.4. Full Operating Capability**

**C.4.1. Definition**

Description	Full Operating Capability
Project	The complete provision of capability to support 1 large scale War-fighting operation of duration 6 months, or a scale of effort of 2 concurrent operations (1 X medium scale Peace Enforcement, 1 medium scale Peace Keeping [1 duration 6 months and 1 enduring]) in different operational theatres, both across the full spectrum of natural and environmental conditions.

**C.4.2. Progress Report**

Description	Full Operating Capability
Watchkeeper	On target to deliver Full Operating Capability in 2013

**C.5. Support / Service / PFI Contract**

**C.5.1. Scope of Support / Service / PFI Contract**

Description	
Watchkeeper	Watchkeeper Through Life Support – Phase 1

**C.5.2. Progress against approved Support / Service / PFI Contract Go-Live Date**

Description	Approved Date	Actual Date	Variation (month)	In-Year Variation (month)
Watchkeeper	January 2010	January 2010	0	-

**C.5.2.1. Go-Live Date Variation – not applicable**

**C.5.3. Progress against approved End of Support / Service / PFI Contract Date**

Description	Approved Date	Actual Date	Variation	In-Year Variation
End of Watchkeeper Through Life Support – Phase 1	May 2013	May 2013	0	-

**C.5.3.1. End of Contract Date Variation – not applicable**

**C.5.4. Operational Impact of Support / Service / PFI Support Contract variation – not applicable**

**D. Section D: Performance**

**D.1. Maturity Measures**

**D.1.1. Watchkeeper**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
Commercial	<i>Measures under development</i>			
Financial				
Project Management				
System Readiness	-	-	-	System Readiness levels

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				are not currently mandated for approvals
Technology Readiness	1-9	5-7	7	-

**D.2. Performance against Defence Lines of Development**

Not required for pre-Main Investment Decision Projects				
Line of Development	Description	Forecast		
		To be met	At Risk	Not to be met
1. Equipment	<ul style="list-style-type: none"> <li>Initial Operating Capability Key User Requirements met</li> <li>Initial Operating Capability Key System Requirements met</li> <li>Initial Operating Capability aspects of Integrated Test &amp; Evaluation &amp; Acceptance completed</li> <li>Whole life Costs within 90% approved figure</li> <li>Release to Service &amp; Safety Case achieved</li> <li>Initial Operating Capability achieved at planned In Service Date (90% confidence figure) or earlier</li> </ul>	Yes	Yes	-
2. Training	<ul style="list-style-type: none"> <li>Training System requirement identified and appropriate funding in place to deliver it.</li> <li>Training System in place to support Conversion and Steady State Training</li> <li>High confidence that training infrastructure will be available to support conversion and Initial Operating Capability.</li> <li>Short Term Plan costs identified and Top Level Budget funding arranged.</li> <li>Training strategy and plan agreed</li> </ul>	Yes	Yes	-
3. Logistics	<ul style="list-style-type: none"> <li>Repair policy and line/levels of repair identified</li> <li>Level of Contractor Logistic Support identified</li> <li>Supply support procedure identified</li> <li>Short term Plan costs being refined – Short Term Plan 07 bid.</li> <li>Support Solutions Envelope compliant.</li> <li>Impact of Tactical Party Vehicle on Integrated Logistic Support lines identified.</li> <li>Reliability and Maintainability tests have been successfully completed.</li> <li>Support readiness reviews have been successfully held.</li> <li>Logistic Support Data has been declared.</li> </ul>	Yes	Yes	-
4. Infrastructure	<ul style="list-style-type: none"> <li>Watchkeeper Unit(s) estate defined - plans for new works.</li> <li>Estate ready for Initial Operating Capability.</li> <li>Short Term Plan costs identified</li> </ul>	Yes	Yes	-

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	and agreed.			
5. Personnel	<ul style="list-style-type: none"> <li>• Watchkeeper manpower pool identified and confirmed.</li> <li>• High confidence manpower will be in place to meet Initial Operating Capability.</li> <li>• Short Term Plan costs identified and Top Level Budget funding responsibility agreed.</li> <li>• Manning plan implemented to ensure provision of appropriate manpower for Initial Operating Capability.</li> </ul>	Yes	Yes	-
6. Doctrine	<ul style="list-style-type: none"> <li>• Watchkeeper ConUse developed and a writing plan has been confirmed for progression to final version</li> <li>• Watchkeeper ConUse evaluated &amp; issued</li> <li>• Tactics Techniques and Procedures evaluated &amp; issued</li> </ul>	Yes	-	-
7. Organisation	<ul style="list-style-type: none"> <li>• 32 Regiment Royal Artillery's manpower establishment table agreed by stakeholders.</li> <li>• Establishment endorsed and promulgated.</li> <li>• Appropriate vehicles identified and their provision agreed.</li> </ul>	Yes	-	-
8. Information	<ul style="list-style-type: none"> <li>• Information Exchange Requirements defined and agreed.</li> <li>• Secure, robust communications to support Information Exchange Requirements agreed.</li> <li>• Interface to Bowman and Fire Control Battlefield Information Systems Application agreed.</li> <li>• System configuration and information formats allow connectivity and interoperability (Joint and Multi National).</li> </ul>	Yes	Yes	-
Percentage currently forecast to be met		100%		
In-Year Change		0%		

**D.2.1.1. Defence Lines of Development Variation**

Date	Line of Development	Factor	Reason for Variation
March 2010	Information	Technical Factors	Modified solution for exchanging data with Bowman incorporated into Watchkeeper Demonstration, Manufacture and Initial Support contract and hence system design. Watchkeeper imagery product changed to more widely interoperable standards and theatre-specific communications and imagery-dissemination infrastructure de-risking work undertaken to ensure smooth transition from Hermes 450 Urgent Operational Requirement. Solution for an Interface Unit for use with existing Remote Viewing Terminals is under development and aimed at

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			being on contract by end February 2010 with initial delivery end 2010. The ability to securely provide Watchkeeper collected information to Joint UK and Multi National databases, in order to interoperate with other Intelligence Surveillance Target Acquisition & Reconnaissance Systems, is being taken forward with the Attacker project.
January 2010	Logistics	Contracting Process	The Contract Logistic Support contract with the Watchkeeper Prime Contract Management Organisation has been approved by the Investment Appraisal Board and the contract was let in January 2010.
November 2009	Equipment	Technical Factors	Technical maturity has been further compounded by the immaturity of both the client server software (which also impacts upon test and evaluation) and the Automatic Take Off and Landing System. The start of the trials programme in the UK has been impacted by the lack of safety and airworthiness evidence presented by Thales. A trials mitigation strategy, aimed at recovering the situation is under review
September 2009	Training	Technical Factors	Course development did not start to schedule in September 2009 as it is dependent upon the successful review and delivery of the data modules and Client Server Software. Delivery of both of these has been subject to delays.
June 2009	Infrastructure	Technical Factors	Runway options progressing with plans to use both Upavon (tactical strip) and Boscombe Down (tarmac strip). Change proposal for additional airspace over Salisbury Plain Training Area commenced through Public Consultation prior to formal submission to Director Air Policy.
Historic	Equipment	Technical Factors	Testing and evaluation of the contractor deliverable system is at risk for a number of reasons, but the current phase of trials is due for completion on schedule. The contributing risks include recent activities in Israel and resources dedicated to test and evaluation by sub contractors not being as they should to ensure delivery of scheduled test and evaluation. Issues are further compounded by the maturity of the client server software (which impacts upon test and evaluation). Trials mitigation strategy is under review. Mitigation action for the

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			software was taken as part of the overall De-risking Initial Operating Capability package.
Historic	Training	Technical Factors	Training facility building in place with internal infrastructure being integrated for delivery on time. User revised conversion programme agreed with Thales. Course development remains an area of concern and is dependent upon the successful review and delivery of the data modules
Historic	Logistics	Contracting Process	The scope of the Contract Logistic Support contract is currently under negotiation. However the Project Team is confident that a solution will be reached and contract placed with the Prime Contractor.
Historic	Infrastructure	Technical Factors	Technical accommodation available. Runway options progressing with plans to use both Upavon (tactical strip) and Boscombe Down (tarmac strip). Change proposal for additional airspace over Salisbury Plain Training Area going through Public Consultation.
Historic	Information	Technical Factors	The requirement to disseminate Watchkeeper product across the battlespace has grown beyond the capacity of Bowman. There is now a need to interoperate with the deployed UK Core network (Defence Information Infrastructure Future Deployed, Defence Information Infrastructure Current Deployed, Falcon, Cormorant, Reacher) to allow exploitation via the Dabinett program and Urgent Operational Requirements that will provide early capability such as Attacker. This is put at risk by dependency on other programmes as well as a required change to the Watchkeeper approach to exchange of information. The need to ensure that Watchkeeper Full Motion Video will be accessible by Remote Video Terminal users is being addressed by a Planning Round enhancement option to achieve initial delivery by the forth quarter of 2010.

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**D.3. Performance against Key Performance Measures**

**D.3.1. Watchkeeper**

**D.3.1.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
01		Watchkeeper shall have at least a 95% probability of detecting all 5 of 5 static NATO standard tank targets within an open area of 4 km <sup>2</sup> in no more than 8 minutes.	Yes	-	-
02		In support of unit operations Watchkeeper shall have at least a 95% probability of identifying all 5 of 5 static NATO standard tank targets within a 4 km <sup>2</sup> area within 30 minutes of receipt of tasking.	Yes	-	-
03		To concurrently support two Medium Scale operations (one of 6 months duration and one enduring), Watchkeeper shall provide imagery and imagery intelligence concurrently to at least 8 Headquarters comprising a total of at least 10 Tasking Users throughout the battlespaces of 2 disparate operational theatres.	Yes	-	-
04		Watchkeeper shall satisfy its tasking, world-wide, day and night, under climatic conditions A2, A3, B1, B2, B3, C0 and C1 as defined in Defence Standard 00-35 and Defence Standard 00-970.	Yes	-	-
05		Watchkeeper shall satisfy its tasking, world-wide, day and night, on surface targets located at up to 4000m altitude Above Mean Sea Level International Standard Atmosphere.	Yes	-	-
06		Watchkeeper shall be transportable by two C130J Mk 4 to support theatre entry force operations for one Battlefield Misson.	Yes	-	-
07		Watchkeeper shall not constrain the tactical mobility of its Users.	Yes	-	-
08		Watchkeeper shall satisfy its tasking for 24 hours per day for a period of at least 14 days with an Operational Availability of at least 85%.	Yes	-	-
09		Watchkeeper shall enable training for War fighting Operations.	Yes	-	-
10		Watchkeeper shall exchange data with Bowman and dependent Battlefield Information System Applications to at least NATO interoperability level 3 (seamless sharing of data).	-	-	Yes
11		Watchkeeper shall provide the location of static targets to within an absolute targeting error not exceeding 10 m in the horizontal circular error (at 90% confidence levels).	Yes	-	-
Percentage currently forecast to be met			91%		
In-Year Change			-		

**D.3.1.2. Key Performance Measures Variation**

Date	Key Measure	Factor	Reason for Variation
March 2010	KPM 11	Technical Factors	No longer considered at risk - Quantities of Electro Optical/Infra-Red sensors with laser range finders have now been re-negotiated at nil additional cost, to the satisfaction of all.
Historic	KPM 10	Technical Factors	The data exchange in the KUR is of



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			a tactical nature (i.e. reports on tasking, intelligence, airspace etc), rather than Unmanned Air Vehicle control at NATO Interoperability level 3 which is not required or sensible and requires amendment – the revised KUR is currently on target to be met.
Historic	KPM 11	Technical Factors	Quantities of Electro Optical/Infra-Red sensors with laser range finders require re-negotiation. Minor risk, expected to be resolved for Initial Operating Capability.

**D.3.1.3. Operational Impact of variation**

<b>KPM</b>	<b>Date</b>	<b>Status</b>	<b>Operational impact of variation</b>
KPM 10	March 2009	Not to be met	No operational impact
<b>Total</b>		-	

**D.3.2. Support Contract – not applicable**

## **SUPPORT PROJECTS**

**Team Responsible**

Airborne STand Off Radar project team

**Single point of accountability for Project Capability**

Head of Intelligence, Surveillance, Target Acquisition & Reconnaissance Capability

**Senior Responsible Officer**

Head of Intelligence, Surveillance, Target Acquisition & Reconnaissance Capability

**Number of Projects / Increments 1****Current Status of Projects**

- **Support Contract - Airborne STand Off Radar**

**A. Section A: The Project****A.1. The Requirement**

Airborne STand Off Radar provides 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 five air platforms, each with a radar sensor, and eight ground stations. There is a planned mid-life update from 2015/2016 onwards.

**A.2. The Assessment Phase**

In 1989 a Technology Demonstration Programme worth £12M (at 1999/2000 prices) was agreed with MOD Research Establishments which are now incorporated in QinetiQ. This feasibility work ran for two years and demonstrated that the concepts used in Airborne STand Off Radar were practicable. A move into Project Definition 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 Project Definition programme were let in February 1995. After assessment of the Project Definition proposals it was considered that the optimum solution would be to invite the two consortia to submit Best and Final Offers 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 of invitations to the two Project Definition consortia to submit Best and Final Offers in September 1997, programming decisions were taken which delayed the availability of funding, particularly in the early years. As a result the planned In Service Date for the Airborne STand Off Radar capability was delayed by 15 months. During the Best and Final Offer phase, a decision was taken to consider a third bid based upon the US Joint Surveillance Target Attack Radar System upgrade programme known as the Radar Technology Insertion Programme. As a result various unsolicited revisions to the bids were received during the assessment process, further delaying the planned In Service Date by 14 months. Approval for the implementation phase was given after down selection in June 1999.

**A.3. Progress**

The Prime Contract was awarded to Raytheon Systems Limited in December 1999 for the full demonstration and manufacture of the system. The contract also covers the provision of ten years contractor logistic support. All five air platforms and eight ground stations have been delivered to the user and the In Service Date was achieved in November 2008. Airborne STand Off Radar is currently in theatre supporting Operation Herrick.

**A.4. Capability Risks**

Loss of the capability provided by Airborne STand Off Radar project team would remove the UK's ability to conduct long-range all-weather theatre surveillance and target acquisition against mobile,

fixed and static targets. This would deny UK and coalition forces deployed on Operation Herrick important intelligence information necessary to prosecute effectively operations.

**A.5. Associated Projects** – not applicable

**A.6. Procurement Strategy**

Post-Main Investment Decision Projects / Increments only				
Description	Contractor	Contract Scope	Contract Type	Procurement Route
Airborne STand Off Radar	Raytheon System Limited	Demonstration and Manufacture	Firm price	International Competition
Airborne STand Off Radar	Sub-contractor - Bombardier Aerospace	Manufacture	Firm price	International Competition

**A.7. Support Strategy**

**A.7.1. Support / Service / PFI Contract Strategy**

Description	Contractor	Contract Scope	Contract Type	Procurement Route
Airborne STand Off Radar	Raytheon Systems Limited	Contractor Logistic Support	Firm price	International Competition

**B. Section B: Cost**

**B.1. Cost of the Assessment Phase**

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
Airborne STand Off Radar	12	13	+1	1%	1%
<b>Total</b>	<b>12</b>	<b>13</b>	<b>+1</b>	<b>1%</b>	<b>1%</b>

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Airborne STand Off Radar		914	

**B.3. Cost of the Demonstration and Manufacture Phase**

Description	Approved Cost (£m)	Actual / Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
Airborne STand Off Radar	914	1019	+105	+3
<b>Total</b>	<b>914</b>	<b>1019</b>	<b>+105</b>	<b>+3</b>

**B.3.1. Cost Variation against approved Cost of the Demonstration & Manufacture Phase**

## B.3.1.1. Airborne stand off radar

Date	Variation (£m)	Factor	Reason for Variation
February 2010	-1	Technical Factors	Deliveries re-profiled.
January 2010	+4	Technical Factors	Increase in cost of work to bring last aircraft to final build standard. (+£4m).
Historic	-2	Accounting Adjustments and Re-definitions	Cost of Capital Charge adjusted from MPR 2005.
Historic	+26	Technical Factors	Agreement to contract for an initial release to service (+£26m),
Historic	+9	Technical Factors	Completion of initial build standardisation of first 4 aircraft and improved U/VHF communications (+£9m).
Historic	+7	Technical Factors	Increase due to a number of engineering change requests identified as critical to In Service (+£6m). Increase due to transfer of funding from resources to capital and increase in project costs (+£4m). Government Furnished Equipment requirement (-£3m),
Historic	+18	Technical Factors	Programme delays affecting deliveries resulting in change to the Cost of Capital Charge
Historic	+5	Technical Factors	Increase due to further assessment of programme following delays to the programme.
Historic	-1	Exchange Rate	Net movement in £/\$ exchange rates since MPR 05.
Historic	+23	Technical Factors	Programme delays affecting deliveries resulting in change to the Cost of Capital Charge
Historic	-8	Accounting Adjustments and Re-definitions	Reduction due to identification of Contracted Out Services VAT element (-£8m)
Historic	-11	Exchange Rate	Changes in £/\$ exchange rate due to programme delays.
Historic	-18	Exchange Rate	Changes in £/\$ exchange rates within the Equipment Plan.
Historic	+8	Technical Factors	Early delivery of facilities and one aircraft and two ground stations (-£4m), late delivery of intangibles, one aircraft and two ground stations (+£12m).
Historic	-5	Changed Requirement	Deletion of requirement to be fitted 'for but not with' Air-to-Air refuelling (-£12m), reduction in costs for Government Furnished Equipment (-£5m), incorporation of a number of improvements primarily for improved biological chemical protection (+£8m), Bowman de-risk (+£1m), UHF Satcom (+£3m), additional provision for trials (+£4m), and reduction in requirement for project support (-£4m).
Historic	+60	Exchange Rate	Changes in £/\$ exchange rates
Historic	-6	Contracting Process	Delay in contract award and reduced costs during Best and

ASTOR

			Final offers and contract negotiation (-£16m), reassessment of project support costs (-£2m), requirement for additional Technical Documentation (+£9m), additional costs associated with satellite communication and ground stations (+£2m), and additional costs for Bowman/Mission Support System (+£1m).
Historic	-3	Accounting Adjustments and Re-definitions	Derivation of the approved cost on resource basis (-£2m), difference in variation figures due to revision of Cost of Capital Charge (-£1m).
Net Variation	+105		

**B.3.2. Operational Impact of Cost Variations of Demonstration & Manufacture Phase**

Description	
-	-

**B.4. Unit production cost**

Description	Unit production costs (£m)		Quantities required	
	At Main Investment Decision	Currently	At Main Investment Decision	Currently
Airborne STand Off Radar - Air Platform	65	76	5 aircraft	5 aircraft
Airborne STand Off Radar - Ground Platform	13	15	8 ground stations	8 ground stations

**B.5. Progress against approved Support / Service / PFI Cost**

Description	Approved Cost	Forecast cost	Variation	In-Year Variation
Airborne STand Off Radar	265	260	-5	+3

**B.5.1. Cost Variation against approved Support / Service / PFI Cost**

**B.5.1.1. Airborne STand Off Radar**

Date	Variation (£m)	Factor	Reason for Variation
March 2010	-1	Technical Factors	A number of small activities delayed due to resource issues.
July 2009	+4	Changed Capability Requirements	Due to programme supporting Operation Herrick additional funding required for capital spares and providing additional contractor support.
July 2009	-4	HM Treasury Reserve	Recovery of additional costs incurred in support of current operations
April 2009	+3	Exchange Rate	Changes in £/\$ exchange rates
April 2009	+1	Budgetary Factors	Costs to address obsolescence management issues.
Historic	-1	Exchange Rate	Changes in £/\$ exchange rates
Historic	-7	Accounting Adjustments and Re-definitions	Funding did not commence until 2005/2006; original profile in 1998 had funding commencing in 1999/2000.
<b>Net Variation</b>	<b>-5</b>		

**B.5.2. Operational Impact of Support / Service / PFI Cost Variations**

Description	
-	-

**B.6. Expenditure to date**

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
Assessment Phase (£m)	13	0	13
Demonstration & Manufacture Phase (£m)	1010	6	1016
Support Phase / Service / PFI Cost (£m)	48	23	71
<b>Total Expenditure (£m)</b>	<b>1071</b>	<b>29</b>	<b>1100</b>

**C. Section C: Timescale****C.1. Duration of the Assessment Phase**

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Airborne STand Off Radar	June 1999	September 1993	+69

**C.2. Planned / Actual Boundaries for introduction of the Capability**

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
Airborne STand Off Radar		June 2005	September 2005

**C.3. In-Service Date/Initial Operating Capability****C.3.1. Definition**

Description	In-Service Date/Initial Operating Capability
Airborne STand Off Radar	<p><u>In Service Date</u></p> <p>The availability in service of two air platforms and two ground stations, together with a corresponding support capability and provision of sufficient trained manpower.</p> <p><u>Initial Operating capability</u></p> <p>The availability in service of two air platforms, two ground stations, four combat ready crews and two tactical ground stations.</p>

**C.3.2. Progress against approved Dates**

Description	Approved Date	Actual / Forecast Date	Variation	In-Year Variation
In Service Date	September 2005	November 2008	+38	-

**C.3.3. Timescale variation****C.3.3.1. Airborne STand Off Radar**

Date	Variation	Factor	Reason for Variation
Historic	+1	Technical Factors	Slippage of one equipment item delayed declaration of the In Service Date until November 2008.

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Historic	+19	Technical Factors	Technical problems understanding the users' training programme and ongoing work to address radar and mission system.
Historic	+4	Technical Factors	Technical difficulties with the radar, requirement verification and slippage in the test programme.
Historic	+4	Technical Factors	Further refinement of the schedule in preparation for the Review Note submission showed the In Service Date forecast needed further revision.
Historic	+8	Technical Factors	Schedule analysis confirmed that the In Service Date could not be achieved following problems with radar build
Historic	+2	Technical Factors	Technical difficulties with the Radar delayed the start of the flight trials of the first Airborne STand Off Radar aircraft.
<b>Net Variation</b>	<b>+38</b>		

**C.3.4. Operational Impact of In-Service Date/Initial Operating Capability variation**

Description	
Airborne STand Off Radar	<p><u>In Service Date</u></p> <p>Airborne STand Off Radar is a new capability and as such the In Service Date variation did not impact on operations. The build up of manpower in the Airborne Stand Off Radar squadron has been halted and some personnel may have been posted for career development reasons before they commence their training. Although the first Airborne Stand Off Radar training course commenced in January 2005, this was focusing on familiarisation with the current software.</p>

**C.4. Full Operating Capability**

**C.4.1. Definition**

Description	Full Operating Capability
Airborne STand Off Radar	Full Operating Capability is defined as four Aircraft, two Operational Level Ground Stations, six Tactical Ground Stations and eight Combat Ready Crews.

**C.4.2. Progress Report**

Description	Full Operating Capability
Airborne STand Off Radar	Full Operating Capability is planned to be achieved by September 2011 against criteria agreed by the Airborne STand Off Radar Project Board.

**C.5. Support / Service / PFI Contract**

**C.5.1. Scope of Support / Service / PFI Contract**

Description	
Airborne STand Off Radar	The support contract covers Contractor Logistics Support services provided by the contractor during the in-service Support phase of the project. These services include engineering, design, supply and training packages.

**C.5.2. Progress against approved Support / Service / PFI Contract Go-Live Date**

Description	Approved Date	Actual Date	Variation (month)	In-Year Variation (month)
Airborne STand Off Radar	June 2006	June 2006	-	-



**C.5.2.1. Go-Live Date Variation** – not applicable

**C.5.3. Progress against approved End of Support / Service / PFI Contract Date**

Description	Approved Date	Actual Date	Variation	In-Year Variation
Airborne STand Off Radar	September 2016	September 2016	-	-

**C.5.3.1. End of Contract Date Variation** – not applicable

**C.5.4. Operational Impact of Support / Service / PFI Support Contract variation** – not applicable

**D. Section D: Performance**

**D.1. Maturity Measures** – not applicable

**D.2. Performance against Defence Lines of Development**

Not required for pre-Main Investment Decision Projects				
Line of Development	Description	Forecast		
		To be met	At Risk	Not to be met
4: Equipment	Provision of Air, Ground, Support & Training segments as components of a complete Airborne STand Off Radar system capability.	Yes		
4: Training	Individual & collective training of personnel to provide, employ, operate & maintain all elements of the Airborne STand Off Radar system.	Yes		
4: Logistics	The means for maintaining & supporting the condition of equipment & personnel providing the Airborne STand Off Radar system capability.	Yes		
4: Infrastructure	A Main Operating Base providing facilities for the management, development, maintenance, operation & deployment of the Airborne STand Off Radar system capability.	Yes		
4: Personnel	Sufficient, capable and motivated personnel from all services with appropriate skills to employ, operate & maintain the Airborne STand Off Radar system capability.	Yes		
4: Doctrine	Conceptual underpinning, guidance, & high level procedures for effective employment of the Airborne STand Off Radar system capability as part of a layered, system-of-systems approach to Intelligence, Surveillance, Target Acquisition and Reconnaissance.	Yes		
4: Organisation	A joint service unit of Air, Ground, and Support elements, with Contractor Logistic Support & training support.	Yes		
4: Information	Relevant & timely collection, processing & dissemination of information in response to tasking.	Yes		
Percentage currently forecast to be met		100%		
In-Year Change				

**D.2.1.1. Defence Lines of Development Variation – Not applicable**

**D.3. Performance against Key Performance Measures<sup>27</sup>**

**D.3.1. Airborne Stand Off Radar**

**D.3.1.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
1	Equipment/Doctrine	<b>Detect:</b> Detect static & moving items of interest on land from the air in order to inform decision-making at operational & tactical level for the conduct of operations on land.	Yes		
2	Equipment/Doctrine	<b>Track:</b> Track a located item of interest from the air in order to inform decision-making at operational and tactical level for the conduct of operations on land.	Yes		
3	Equipment/Information	<b>Information:</b> The user shall be able to exploit gathered information.	Yes		
4	Equipment/Information	<b>Disseminate:</b> The User shall have the means with which to disseminate information and intelligence to military and civilian organisations, platforms, systems, and applications in a manner necessary to carry out the function producing the required capability	Yes	Yes	
5	Equipment	<b>Direct:</b> Direct the Airborne STand Off Radar Capability	Yes		
6	Equipment/Information	<b>Interoperability:</b> The User shall have the capability to interoperate with organisations, platforms, systems, and applications in a manner necessary to utilise the Airborne STand Off Radar Capability.	Yes		
7	Equipment/Logistics	<b>Availability:</b> The User requires the availability of Force Elements @ Readiness necessary to provide the Airborne STand Off Radar Capability to conduct and sustain operations.	Yes	Yes	
8	Equipment	<b>Move Over Strategic Distances By Air:</b> The User requires that the capability shall be able to be moved by air over strategic distances within Readiness criteria	Yes		
9	Equipment/Logistics	<b>Maintain Equipment Condition:</b> The User requires that the Airborne STand Off Radar Capability be supported and sustained by the appropriate support solution.	Yes		
Percentage currently forecast to be met			100%		
In-Year Change			0%		

<sup>27</sup> The Key Requirements which were used for Pre In Service Date have now been replaced by Key User Requirements due to the programme being post In Service Date

**D.3.1.2. Key Performance Measures Variation**

Date	Key Measure	Factor	Reason for Variation
January 2010	Disseminate	Technical Factors	Some limitations relating to Global and Beyond Line of Sight communications. Overall, current perceived operational limitations associated with this Key Performance Measure reflect the absence of suitable Communication Information System to which the Sentinel System was designed, built and has demonstrated interoperability. The system needs time to readapt to the changed environment, which it is doing through both Urgent Operational Requirement and core funded activity. Current limitations do not directly prevent dissemination activities; they only reduce efficiency and introduce delay.
January 2010	Availability	Technical Factors	One aircraft has yet to be fitted to the latest build standard although this is funded for 2010/11. Contract negotiation is in progress and the task is on schedule to meet Full Operational Capability. Set-up time of the mobile Ground Stations currently fails to meet the target set although the planned Wideband Datalink replacement activity will improve this.

**D.3.1.3. Operational Impact of variation**

KPM	Date	Status	Operational impact of variation
-	-	-	-
<b>Total</b>			

**D.3.2. Support Contract**

**D.3.2.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
Design Support Services	Logistics	Availability of Design Support Services (Quarterly Review)	Yes	Yes	
Engineering Support Services	Logistics	Availability of Engineering Support Services (Quarterly Review)	Yes	Yes	
Training Support Services	Training	Availability of Training Services (Quarterly Review)	Yes		
Supply Support Services	Logistics	Availability of Spares to Agreed Levels (Quarterly Review)	Yes		
Percentage currently forecast to be met			100%		
In-Year Change					

**D.3.2.2. Key Performance Measures Variation**

<b>Date</b>	<b>Key Measure</b>	<b>Factor</b>	<b>Reason for Variation</b>
March 2010	Design Support Services	Technical Factors	Contractor Logistic Support management for the quarter at March 2010 was assessed as marginal.
March 2010	Engineering Support Services	Technical Factors	Contractor Logistic Support management for the quarter at March 2010 was assessed as marginal.

**D.3.2.3. Operational Impact of variation**

<b>KPM</b>	<b>Date</b>	<b>Status</b>	<b>Operational impact of variation</b>
-	-	-	-
<b>Total</b>			

**Team Responsible**

Bowman and Tactical Communications &amp; Information Systems Delivery Team

**Single point of accountability for Project Capability**

Command Control Information Infrastructure - Capability

**Senior Responsible Officer**

Deputy Chief of Defence Staff - Capability (Senior Responsible Owner for Network Enabled Capability)

**Number of Projects / Increments****Current Status of Project**

- **Support Contract – Long Term Support Strategy Increment 1**

**A. Section A: The Project****A.1. The Requirement**

The Bowman and Common Battlefield Application Toolset, Digitisation Battlespace Land Infrastructure and Platform Battlefield Information System Application programme ( hereafter referred to as the programme) provides a secure tactical voice and data communications system for all three Services in support of land, littoral and air manoeuvre operations. It replaced the Clansman combat radio system and the Headquarters infrastructure element of the Ptarmigan trunk system. The programme comprises of a series of incremental upgrades.

**A.2. The Assessment Phase**

Bowman was first approved in 1988, when it was expected to have the equivalent of Main Gate in 1993 and In-Service Date in 1995. After Feasibility Stage 1 in 1993, contracts were placed with two competing consortia for Feasibility and Project Definition Stages. In 1996 the two competing consortia formed a joint venture company and were awarded contracts for further risk reduction work prior to Main Gate, then planned for November 2000.

In July 2000, in order to meet the requirement, the Department rejected the consortia bid and re-launched the competition which was won by General Dynamics UK Ltd in July 2001. The Equipment Approvals Committee gave Main Gate approval in August 2001. In September 2001 General Dynamics United Kingdom Ltd was awarded the Bowman Supply and Support contract as prime contractor, and conducted its own competition among sub-contractors.

**A.3. Progress**

On the basis of Brigade scale operational field trials, Bowman achieved its In Service Date on 26 March 2004. In 2005, the first converted brigade deployed to Iraq on Operation Telic, with a core Bowman capability alongside its residual Clansman capability. During 2005/2006 both Operation Telic and Operation Herrick converted fully from Clansman to Bowman.

During 2005, a review of the programme provided the opportunity to better ensure that it would deliver a capability consistent with the MOD's vision of achieving Network Enabled Capability. Upgrade "4F" which began in 2005, provided secure voice and limited data capability with conversion of over 13,000 vehicle platforms completed by November 2009. Upgrade "5" with improved data capability, has delivered capability which, following extensive user trialling, achieved Full Systems Acceptance on 2 April 2009 and is currently being fielded across Defence. Continued operational experience indicates that Bowman is delivering critical operational capability. The original Bowman contract in 2001 only provided for limited support, therefore until funding allowed a longer term support solution and to prevent loss of capability, a number of contracts were approved in 2006 to meet and sustain levels of support required for Operations. These contracts bridged the period up to April 2009, when the Approval for Stage 1 of a separate Longer Term Support solution came into effect (see Section A.7.1).

**A.4. Capability Risks**

Bowman and Common Battlefield Application Toolset, Digitisation Battlespace Land Infrastructure and Platform Battlefield Information System Application programme is the principal Land, Air Manoeuvre and Littoral Tactical Command and Control capability, enabling the planning and execution of operations at all levels at or below Divisional level. Without this programme the Armed Forces would be unable to undertake any form of land-based operations, including current operations.

**A.5. Associated Projects - not applicable****A.6. Procurement Strategy**

Post-Main Investment Decision Projects			
Contractor	Contract Scope	Contract Type	Procurement Route
General Dynamics United Kingdom Ltd	Demonstration and Manufacture	Firm price	International Competition

**A.7. Support Strategy****A.7.1. Support Contract Strategy**

Description				
The approved Long Term Support Strategy Increment One covers the period April 2009 – March 2011 and comprises :	<p><b>Logistics (Maintenance &amp; Supply).</b> Provided via Forward and Depth maintenance concepts, with supply of spares through the Purple Gate at the Defence Storage and Distribution Centre Bicester. In-depth repair is provided by the original equipment manufacturers under commercial arrangements put in place by General Dynamics UK Ltd</p> <p><b>Design Services.</b> Used to analyse underlying problems from incident trends in the Field (identified through Service Management below) and develop solutions. Operates proactive obsolescence management at the component, product and system level through the supply chain. Finally, maintains and where appropriate improves system safety and security accreditation</p> <p><b>Service Management.</b> Bowman is software intensive and provides information based services to the user. The Information Technology Infrastructure Library Service Management Framework has been adopted to implement processes for Incident Management, Problems Management, Release, Change Management and Configuration Control.</p> <p><b>Logistic Information System.</b> Uses existing logistic information systems. The Bowman Asset Configuration Management System is a bespoke system developed to address a gap in configuration management in the Land environment. This gap is planned to be filled by an enhancement to Joint Asset Management and Engineering Solutions (Land Increment two in the 2012 to 2014 timeframe, at which point the Bowman Asset Configuration Management System will be withdrawn.</p>			
Long Term Support Strategy Increment Two	PR08 Funding restraints meant that a Through Life Capability Funding model could not be approved at that time. As a result of funding approved in PR10 a Main Gate approval will be sought in 2010 for a longer term sustainment package. Plans to transform the support solution in line with a Contracting for Availability model will depend on the future funding profile of the programme.			
	Contractor	Contract Scope	Contract Type	Procurement Route
	General Dynamics United Kingdom (GD(UK))	Support	Prime Contract	Single Source

**B. Section B: Cost****B.1. Cost of the Assessment Phase**

Description	Approved Cost (£m)	Actual Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
Bowman	130	397	+267	6.1%	16.5%

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Bowman	1874	1898	2041

**B.3. Cost of the Demonstration and Manufacture Phase**

Description	Approved Cost (£m)	Actual / Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
Bowman	2041	2082	+41	+42
<b>Total</b>	2041	2082	+41	+42

**B.3.1. Cost Variation against approved Cost of the Demonstration and Manufacture Phase****B.3.1.1. Bowman**

Date	Variation (£m)	Factor	Reason for Variation
August 2009	+23	Changed Requirement	Reduced estimates of Bowman equipment to be transferred to other projects
April 2009	-2	Budgetary Factors	Adjustment for equipment procured under other approval budgets
April 2009	+21	Budgetary Factors	Changes to fielding plan arising from operational tempo
February 2009 (Historic)	+4	Budgetary Factors	Extended conversion facilities due to platform unavailability and additional equipment required for changes to platform design
March 2008 (Historic)	+27	Accounting Adjustments and Re-definitions	Increase in Cost of Capital Charge from extended conversion facilities and slippage to Support vehicle and fielding programmes with resultant delay to final deliveries.
Historic	-2	Contracting Process	Revised prices as a result of activities completing at a lesser cost than originally estimated.
Historic	-8	Changed Requirement	Items acquired under contract now provided as new requirements to other projects
Historic	+2	Accounting Adjustments and Re-definitions	Increase in Cost of Capital Charge arising from mis-stated closing balance in previous MPR
Historic	-6	Changed Budgetary Requirements	Funding brought forward to reflect contractor progress. Cost of Capital Charge reductions

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			(-£6m).
Historic	+120	Technical Factors	Technical requirements revaluated (+£90m). Associated reprofile of funding and asset balances resulted in increased Cost of Capital Charge (+£30m).
Historic	-29	Changed Requirement	Additional Technical requirements not scoped as part of the original supply and support contract (+£61m). Technical support requirements not originally included in Main Gate approval (+£10m). Additional Technical requirements not covered under terms of Supply and Support contract (+£16m). Removal of requirements to be accounted for as separate projects (-£17m). Estimated impact of Total Fleet requirements (-£17m). Additional Technical requirements not covered under terms of Supply and Support contract (+ £5m). Items acquired under contract now provided as new requirements to other projects (-£73m). Support related activity incorrectly included in forecast (£-14m).
Historic	+15	Contracting Process	Revised prices for Global Positioning System Modules (+£3m). Difference between approved D&M cost at Main Gate and Contract Price (+£12m).
Historic	+8	Procurement Strategy	Contract Incentivisation for achieving key events leading to ISD (+£8m).
Historic	+11	Accounting Adjustments and Re-definitions	Cost of Capital Charge reduced due to accounting for deliveries ahead of programmed profile.(- £17m). Figure adjusted following error of +£5m in MPR05. Reprofile of funding and asset balances resulted in increased Cost of Capital Charge (+£23m). COSVAT adjustment (+£5m)
Historic	-143	Risk Differential	Difference between the risk allowed for in the most likely (50%) and the highest acceptable (90%) estimates at Main Gate (-£143m). Figure adjusted following error of - £5m in MPR05.
<b>Net Variation</b>	<b>+41</b>		

**B.3.2. Operational Impact of Cost Variations of the Demonstration and Manufacture Phase – not applicable**

**B.4. Unit production cost**

Description	Unit production costs (£m)		Quantities required	
	At Main Investment Decision	Currently	At Main Investment Decision	Currently
Bowman	-	-	48000 radios of varying type	42000 radios of varying type



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**B.5. Progress against approved Support/ Service/ PFI Cost**

Description	Approved Cost	Forecast cost	Variation	In-Year Variation
Bowman/Bowman and Common Battlefield Application Toolset, Digitisation Battlespace Land Infrastructure and Platform Battlefield Information System Application programme Long Term Support Strategy Increment 1	127	122	-5	-5

**B.5.1. Cost Variation against approved Support/ Service/ PFI Cost**

**B.5.1.1. Bowman**

Date	Variation (£m)	Factor	Reason for Variation
March 2010	-2	Procurement Processes	Non emergent risks identified in Main Gate Business Case
March 2010	-1	Accounting Adjustments and Re-definitions	Cost of Capital Charge reduced due to applied depreciation on Capital Spares purchased
March 2010	-2	Changed Capability Requirements	Revised Capital Spares requirement
June 2009	-4	HM Treasury Reserve	Reclaimed Conflict Prevention Fund expenditure
May 2009	+4	Changed Capability Requirements	Repair expenditure on Operations
<b>Net Variation</b>	<b>-5</b>		

**B.5.2. Operational Impact of Support /Service/PFI Cost Variations – not applicable**

**B.6. Expenditure to date**

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
Assessment Phase (£m)	397	-	397
Demonstration & Manufacture Phase (£m)	2145	10	2155
Support Phase (£m)	-	57	57
<b>Total Expenditure (£m)</b>	<b>2542</b>	<b>67</b>	<b>2609</b>

**C. Section C: Timescale**

**C.1. Duration of the Assessment Phase**

Description	Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Bowman	August 2001	-	-

**C.2. Actual Boundaries for introduction of the Capability**

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
Bowman	February 2004	March 2004	December 2004

**C.3. In-Service Date**

**C.3.1. Definition**

Description	In-Service Date
Bowman	A Brigade Headquarters, two mechanized battalions

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	and support troops capable of engaging in Operations Other than War
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**C.3.2. Progress against approved Dates**

Description	Approved Date	Actual Date	Variation	In-Year Variation
Bowman	December 2004	March 2004	-9	-

**C.3.3. Timescale variation**

**C.3.3.1. Bowman**

Date	Variation	Factor	Reason for Variation
Historic	-9	Risk Differential	Difference between the risk allowed for in the most likely (50%) and the highest acceptable (90%) estimates at Main Gate
<b>Net Variation</b>	<b>-9</b>		

**C.3.4. Other costs resulting from Timescale variation – not applicable**

**C.3.5. Operational Impact of In-Service Date/Initial Operating Capability variation – not applicable**

**C.4. Full Operating Capability – not applicable**

**C.5. Support Contract**

**C.5.1. Scope of Support Contract**

Description	
Long Term Support Strategy Increment 1	<p><b>Design Services Technical Authority including;</b></p> <ul style="list-style-type: none"> <li>• Security Process Documentation</li> <li>• Safety Cases, Notices and Database for Safety Issues</li> <li>• Technology Reviews</li> </ul> <p><b>Supply Support Services including:</b></p> <ul style="list-style-type: none"> <li>• Inventory Optimisation, Attrition Spares, Services and Warehousing;</li> <li>• Storage, Services and manning associated with Operations</li> <li>• Demand Management and Forecasting;</li> <li>• Inventory/Catalogue Management</li> </ul> <p><b>Field Engineer Services including;</b></p> <ul style="list-style-type: none"> <li>• Product, Platform &amp; System Support;</li> <li>• System of Systems failure analysis</li> <li>• Support of Units prior to and return from operations</li> </ul> <p><b>Sustainment Integrated Logistic Support including;</b></p> <ul style="list-style-type: none"> <li>• Supply chain characteristics for the calculation of optimised spares quantities</li> <li>• Produce the Bowman Integrated Electronic Technical Publication</li> <li>• Outputs from the sustainment activities to determine a Through Life Support package</li> </ul> <p><b>Sustainment Information Services including.</b></p> <ul style="list-style-type: none"> <li>• Logistic Support Analysis</li> <li>• On-Line Logistics Information System Helpdesk</li> <li>• Field Support</li> </ul>

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	<p><b>Support to User exercises and trials. Engineering Change Training including;</b></p> <ul style="list-style-type: none"> <li>• Training Needs/Option/Gap Analysis;</li> <li>• Production and maintenance of courseware;</li> <li>• Update the Authority's trainers</li> </ul> <p><b>Maintenance Services including;</b></p> <ul style="list-style-type: none"> <li>• Level 3 and Level 4 repairs</li> <li>• Full screening of all returned equipment at one Point of Entry</li> </ul> <p><b>Design Services within Support. including;</b></p> <ul style="list-style-type: none"> <li>• Test and Reference Engineering</li> <li>• Incident Reporting, Service Desk provision</li> <li>• Support Engineering, Obsolescence Management</li> </ul>
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**C.5.2. Progress against approved Support Contract Go-Live Date**

Description	Approved Date	Actual Date	Variation (month)	In-Year Variation (month)
Long Term Support Strategy Increment One	April 2009	April 2009	-	-

**C.5.2.1. Go-Live Date Variation** – not applicable

**C.5.3. Progress against approved End of Support Contract Date**

Description	Approved Date	Actual Date	Variation	In-Year Variation
End of Long Term Support Strategy Increment One	31 March 2011	31 March 2011	-	-

**C.5.3.1. End of Contract Date Variation** – not applicable

**C.5.4. Operational Impact of Support Contract variation** – not applicable

**D. Section D: Performance**

**D.1. Maturity Measures**

**D.1.1. Bowman**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
Commercial	<i>Measures under development</i>			
Financial				
Project Management				
System Readiness	N/A	-	-	-
Technology Readiness	N/A	-	-	-

**D.2. Performance against Defence Lines of Development**

Line of Development	Description	Forecast		
		To be met	At Risk	Not to be met
50. Equipment	Sustain Bowman and Common Battlefield Application Toolset, Digitisation Battlespace Land Infrastructure and Platform Battlefield Information System Application programme capability through the	Yes	-	-

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	delivery of equipment updates and upgrades as necessary.			
51. Training	Sustain a Bowman and Common Battlefield Application Toolset, Digitisation Battlespace Land Infrastructure and Platform Battlefield Information System Application programme training programme that delivers the necessary outputs (numbers and level of training) to meet force readiness requirements.	Yes	-	-
52. Logistics	Meet in-service equipment availability metrics, through support processes, that are necessary to meet force readiness requirements.	Yes	-	-
53. Infrastructure	Sustain Bowman and Common Battlefield Application Toolset, Digitisation Battlespace Land Infrastructure and Platform Battlefield Information System Application programme -specific infrastructure to enable training, support and equipment development activities.	Yes	-	-
54. Personnel	Ensure sufficient numbers of correctly trained Bowman and Common Battlefield Application Toolset, Digitisation Battlespace Land Infrastructure and Platform Battlefield Information System Application programme users, including for training and system development, are available to meet force readiness requirements.	Yes	-	-
55. Doctrine	Have in place documentation explaining how Bowman and Common Battlefield Application Toolset, Digitisation Battlespace Land Infrastructure and Platform Battlefield Information System Application programme will be used to deliver operational effect.	Yes	-	-
56. Organisation	Ensure operational and non-operational organisations and governance processes are in place to deliver Bowman and Common Battlefield Application Toolset, Digitisation Battlespace Land Infrastructure and Platform Battlefield Information System Application programme capability.	Yes	-	-
57. Information	Provision of data, information and knowledge necessary to deliver the Bowman and Common Battlefield Application Toolset, Digitisation Battlespace Land Infrastructure and Platform Battlefield Information System Application programme capability.	Yes	-	-
Percentage currently forecast to be met		100%		
In-Year Change		-		

**D.2.1.1. Defence Lines of Development Variation –not applicable**

**D.3. Performance against Key Performance Measures**

BOWMAN

D.3.1. Bowman

D.3.1.1. Performance against Key Performance Measures

KUR	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
1	Equipment	Secure Voice.	Yes		-
2	Equipment	Secure Data.	Yes		-
3	Equipment	Automatic Position Location, Navigation and Reporting service.	Yes		-
4	Equipment	Security.	Yes		-
5	Equipment	Ease of Use.	Yes		-
6	Equipment	Provide automated system management enabling support to the full spectrum of operations.	Yes		-
7	Equipment	Data Communications Infrastructure.	Yes		-
8	Equipment	Support the Common Infrastructure for Battlefield Information Systems concept and provide a common operating environment for Digitization Stage 2.	Yes		-
9	Equipment	Allow the free-flow of data and voice within and between vehicles, groups of stationary vehicles, and other systems.	Yes		-
-10	Equipment	Provide a secure and robust tactical internet service making efficient use of limited bandwidth.	Yes		-
11	Equipment	Bowman is to support current operational C2 doctrine, practice, deployment and battle procedure.	Yes		-
12	Equipment	Bowman is to provide interfaces to other key battlefield communication systems used at the tactical level	Yes		-
13	Equipment	Bowman equipment is to meet a level of survivability consistent with its physical environment and mission criticality for 95% of users in 95% of likely climatic conditions.	Yes		-
14	Equipment	Make effective, robust use of the Electro-Magnetic Spectrum without degrading other systems.	Yes		-
15	Equipment	Bowman is to provide working installations in all platforms designated as containing Bowman equipment, except for ships, Westland Attack 64 and Lynx helicopters for which equipment is to be provided but not installed.	Yes		-
16	Equipment	Health and Safety.	Yes		-
17	Logistics	Supportability	Yes		-
18	Training	Training	Yes		-
19	Equipment	Bowman is to supply sufficient scales of equipment and services to meet the needs of those forces taking part in or supporting land operations, as structures at End of Supply.	Yes		-
Percentage currently met			100%		
In-Year Change			-		

D.3.1.2. Key Performance Measures Variation

Date	Key Measure	Factor	Comment
Historic	KUR 1 – Secure Voice	Technical Factors	Recovered from ‘at risk’ in MPR07. The technical solution for voice

BOWMAN

			arbitration was successfully tested, trialled and accepted into service.
Historic	KUR 12 – Interoperability	Technical Factors	Recovered from 'at risk' in MPR07. New technical solution successfully tested, trialled and delivered into service.
Historic	KUR 12 – Interoperability	Technical Factors	New solution agreed and developed to meet the performance standard. To be trialled during operational field trials
Historic	KUR 1 – Secure Voice	Technical Factors	User continues to experience voice/voice arbitration interference. Technical solution, whilst tested in the laboratory, will be tested at scale during operational field trials.

**D.3.1.3. Operational Impact of variation** – not applicable

**D.3.2. Support Contract**

**D.3.2.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
1	3	Supply Support – 90% spares availability	Yes	-	-
2	1	Incident Reporting	Yes	-	-
3	8	Service Desk satisfaction & response times	Yes	-	-
4	1	Regular Obsolescence reviews	Yes	-	-
Percentage currently forecast to be met			100%		
In-Year Change			-		

**D.3.2.2. Key Performance Measures Variation** – not applicable

**D.3.2.3. Operational Impact of variation** – not applicable

**Team Responsible**

Service Provision Project Team

**Single point of accountability for Project Capability**

Head of Capability (Expeditionary Logistic Support)

**Senior Responsible Officer**

Capability Manager (Battlespace Manoeuvre)

**Number of Projects / Increments****Current Status of Projects / Increments**

- **Support Contract – C Vehicle PFI**

**A. Section A: The Project****A.1. The Requirement**

The armed forces require a range of support vehicles to support both peacetime and wartime operations. The previous C Vehicle fleet comprised over 4000 items of 150 types such as rough terrain earthmoving equipment, specialist engineer construction plant as well as field material handling equipment. These are held at varying degrees of military readiness and are capable of undertaking a wide range of combat support, logistic and construction tasks. The majority of the fleet is Commercial Off The Shelf, which has been modified to meet the military requirement. The fleet suffered in part from low availability due to heavy use whilst other elements of the fleet were only required for infrequent contingencies and were consequently under utilised. These arrangements were far from ideal and a PFI solution was agreed to address this issue.

**A.2. The Assessment Phase**

Initial gate approval was granted in November 2000 based on Pre Qualification Questionnaire documentation from six consortia. Three short-listed contenders were chosen to receive the Invitation to Negotiate released in March 2001. Throughout this period a process called 'convergence' was used to acquaint industry with the requirement and also to gain feedback on alternative solutions. The Invitation To Negotiate responses were assessed against specified criteria. At this time, the three contenders reduced to two, as two bidders combined to propose a consolidated bid. A further round of Revise and Confirm offers was requested in May 2002 with responses from the two consortia (Amey Lex Consortia and Fastex) in June 2002.

The evaluation of the two bids (ALC and FastEx) against the Public Sector Comparator was completed in early 2003 before final submission of the Main Gate Business Case to the Investment Approvals Board in March 2003. Whilst awaiting the Investment Appraisals Board and Ministerial decision, no interaction could take place with the bidders, however specific elements of the requirement were reviewed to address any inconsistencies and implement additional risk reduction measures. This process led to the revised Preferred Bidder documentation published in December 2003. At the time of announcing the Main Gate decision to proceed with ALC, it was also recognised that a funding gap had been created by the constraint placed in the used of IRDEL (non-cash) by HM Treasury. The funding requirements were discussed with ALC as the initial part of the contracts negotiations and with the Directors Equipment Capability (Ground Manoeuvre and Expeditionary Logistics and Support).

**A.3. Progress**

The contract was signed on 10 June 2005 with ALC (SPC) Limited. The Operational Feasibility Test was successfully completed and In-Service Date declared on 31 March 2006. The remainder of the Implementation Rollout Phases were all completed on time leading to Full Service Commencement in May 2006. Through fleet management the C Vehicle Fleet today comprises 2,111 items of 150 types. The Equipment Refurbishment and Replacement Programme schedule has been amended in some areas since contract commencement to ensure best value for money is achieved.

## C VEHICLE PFI

C Vehicles are currently deployed to Afghanistan, and were also used in Operation Telic. 225 assets are currently on Operations. C Vehicle equipment was also used to provide a temporary bridge over the River Derwent at Workington in Cumbria following the floods in November 2009.

This year over 60 new cranes and 33 truck mounted loaders have been introduced under the Equipment Refurbishment and Replacement Programme.

We are currently assessing the value for money of bringing Air Command and Navy Command into C Vehicles. However, no business case has yet been raised in support of this.

Outside of the PFI, the MoD has purchased protected vehicles as part of an Urgent Operational Requirement for use on operations. The in service support for these vehicles is being provided by the PFI contractor, ALC. The first Urgent Operational Requirement procured 31 pieces of Protected Plant equipment and these have been deployed to operations. The second Urgent Operational Requirement provides an uplift in numbers to the original capability as well as 12 Self Loading Dump Trucks and this is currently in the process of being delivered.

### A.4. Capability Risks

The C Vehicle Capability is required in order to provide the services with the means to carry out combat support, logistic and construction tasks in all climatic and geographical environments and across the spectrum of conflict. In particular C Vehicles provide mobility support to enable route construction and opening; survivability support, to enable the construction of protection and field defences; sustainability support, to enable the offloading of logistic supplies and to assist the construction of infrastructure facilities.

### A.5. Associated Projects – not applicable

### A.6. Procurement Strategy

Post-Main Investment Decision Projects / Increments only				
Description	Contractor	Contract Scope	Contract Type	Procurement Route
C Vehicle PFI	ALC (SPC)	Competitive – International	Firm price for five years, then fixed price subject to variation of price	PFI

### A.7. Support Strategy

#### A.7.1. Support / Service / PFI Contract Strategy

Description				
C Vehicle PFI	The PFI Contract with ALC runs until 2021.			
Description	Contractor	Contract Scope	Contract Type	Procurement Route
C Vehicle PFI	ALC (SPC)	Competitive – International	Firm price for 5 years, then fixed price subject to variation of price	PFI



C VEHICLE PFI

**B. Section B: Cost**

**B.1. Cost of the Assessment Phase**

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
C Vehicle PFI Assessment Phase	4	3	-1	0.6%	0.4%
<b>Total</b>	<b>4</b>	<b>3</b>	<b>1</b>	<b>0.6%</b>	<b>0.4%</b>

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
C Vehicle PFI	669	674	714

**B.3. Cost of the Demonstration and Manufacture Phase – not applicable<sup>28</sup>**

**B.4. Unit production cost**

Description	Unit production costs (£m)		Quantities required	
	At Main Investment Decision	Currently	At Main Investment Decision	Currently
C Vehicle PFI	-	-	-	-

**B.5. Progress against approved Support / Service / PFI Cost**

Description	Approved Cost	Forecast cost	Variation	In-Year Variation
C Vehicle PFI	714	697	-17	+4

**B.5.1. Cost Variation against approved Support / Service / PFI Cost**

**B.5.1.1. Project**

Date	Variation (£m)	Factor	Reason for Variation
March 2010	+10	Inflation	Original assumption at contract commencement was that the inflation rate is 2%. PR10 assumption is that the indexation rate is 2.79% using the latest available RPI and Average Earnings Index data and the contractual formula for yearly indexation calculation
March 2010	-6	Change in Capability Requirements	Original assumption at contract commencement was that activity level would be 100%. PR10 assumed that activity levels would be 95% in years one and two
March 2010	+3	Change in Capability Requirements	Increased usage due to providing equipment to support operations
March 2010	-3	HM Treasury	Money claimed back from Conflict

<sup>28</sup> As C Vehicles is a PFI project all costs are reflected in section B.5

C VEHICLE PFI

		Reserve	Prevention Fund/HM Treasury Reserve.
Historic	-6	Budgetary Factors	Available funding was reduced for C Vehicles as part of the Departmental spending review and as a result Land Command suppressed demand in order to remain within the new limits. £6m was saved in 2008/2009
Historic	-2	Budgetary Factors	Available funding was reduced for C Vehicles as part of the Departmental spending review and as a result Land Command suppressed demand in order to remain within the new limits. £2m was saved in 2007/2008
Historic	-2	Change in Capability Requirements	Available funding was reduced for C Vehicles as part of the Departmental spending review and as a result Land Command suppressed demand in order to remain within the new limits. £2m was saved in 2006/2007
Historic	+3	Change in Capability Requirements	Increased usage due to providing equipment to support operations
Historic	-3	HM Treasury Reserve	Money claimed back from Conflict Prevention Fund/HM Treasury Reserve.
Historic	+2	Change in Capability Requirements	Increased usage due to providing equipment to support operations
Historic	-2	HM Treasury Reserve	Money claimed back from Conflict Prevention Fund/HM Treasury Reserve.
Historic	+16	Contracting Process	The requirement to provide support was reduced in line with the June 2005 contract award date which delayed the transfer of operational equipment until 2006/2007. Management of the requirement with ALC and stakeholders lead to a cost reduction (-£2m) against that which had been originally identified. The cost was reduced following the final negotiations leading to the agreed contract price (-£6m). The set-up costs and ongoing project costs for project were also reviewed in line with the contract obligations the estate, Management Information Systems and consultant support (+£2m) and the payment to other agencies for estate costs (-£1m). Realism to reflect delay in contract award (+£5m), re-scoping of project specific items (+£4m) and review of fixed price risk (+£2m). Adjustments in line with improved identification of MOD requirements during January–March 2005 in support of the PFI Service Provider including set-up costs for the Management Information System (+£2m), estates provision (+£1m) and initial service support (+£9m).
Historic	+13	Accounting Adjustments and Re-definitions	External assistance (+£2m). Transfer of resource expenditure following change in policy for PFI programmes (+£56m). Change to treatment for transfer of existing fleet from MOD to Service

C VEHICLE PFI

			Provider (-£40m). Bid process re-definition (-£5m).
Historic	-40	Risk Differential	Difference between the risk allowed for in the most likely (50%) and the highest acceptable (90%) estimates at Main Gate.
<b>Net Variation</b>	<b>-17</b>		

**B.6. Expenditure to date**

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
Assessment Phase (£m)	3	0	3
Demonstration & Manufacture Phase (£m)	0	0	0
Support Phase / Service / PFI Cost (£m)	138	37	175
<b>Total Expenditure (£m)</b>	<b>141</b>	<b>37</b>	<b>178</b>

**C. Section C: Timescale**

**C.1. Duration of the Assessment Phase**

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
C Vehicle PFI	December 2003	November 2000	37 months

**C.2. Planned / Actual Boundaries for introduction of the Capability**

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
C Vehicle PFI	July 2005	October 2005	April 2006

**C.3. In-Service Date/Initial Operating Capability**

**C.3.1. Definition**

Description	In-Service Date/Initial Operating Capability
C Vehicle PFI	In Service Date Completion of Operational Feasibility Test and has been certified by Directors Equipment Capability (Ground Manoeuvre) as acceptable

**C.3.2. Progress against approved Dates**

Description	Approved Date	Actual / Forecast Date	Variation	In-Year Variation
Full Service Commencement	April 2006	March 2006	-1	0

**C.3.3. Timescale variation**

**C.3.3.1. Project**

Date	Variation (months)	Factor	Explanation
Historic	0	Technical Factors	The live operational test has been successfully completed by ALC and the process of validating the result (and lessons learnt) has been completed within March 2006 (-1

**C VEHICLE PFI**

			month Whilst the peacetime service is being rolled out successfully, there is still a requirement for ALC to pass a live operational test. Current operational commitments and the resource intensive roll out will result in the test taking place in late March 06. The audit and approval process will therefore take place in early April 2006 (+1 month).
Historic	+3	Contracting Process	Extended negotiations surrounding the final project issues (+1 month). Effect of Standardisation of PFI Contracts version 3 review and extended re-negotiations (+2 months).
Historic	+2	Changed Budgetary Priorities	Delay caused by HM Treasury constraint on transfer of resource expenditure for the PFI service. Directors of the Equipment Capability agreed to proceed until completion of the internal funding process in September 2004.
Historic	-6	Risk Differential	Difference between the risk allowed for in the most likely (50%) and the highest acceptable (90%) estimates at Main Gate.
<b>Net Variation</b>	<b>-1</b>		

**C.3.4. Other costs resulting from Timescale variation** – not applicable

**C.3.5. Operational Impact of In-Service Date/Initial Operating Capability variation** – not applicable

**C.4. Full Operating Capability**

**C.4.1. Definition**

Description	Full Operating Capability
C Vehicle PFI	Full Operating Capability is the same as In Service Date

**C.4.2. Progress Report**

Description	Full Operating Capability
- C Vehicle PFI	Capability progressing as per contract

**C.5. Support / Service / PFI Contract**

**C.5.1. Scope of Support / Service / PFI Contract**

Description	
C Vehicle PFI	Whole fleet management of C Vehicle Capability This incorporates the provision of equipment, transportation of equipment to a designated location and repair and maintenance

**C.5.2. Progress against approved Support / Service / PFI Contract Go-Live Date**

Description	Approved Date	Actual Date	Variation (month)	In-Year Variation (month)
Full Service Commencement	April 2006	March 2006	-1	0

**C.5.2.1. Go-Live Date Variation**

C VEHICLE PFI

Date	Variation (months)	Factor	Explanation
Historic	0	Technical Factors	The live operational test has been successfully completed by ALC and the process of validating the result (and lessons learnt) has been completed within March 2006 (-1 month) Whilst the peacetime service is being rolled out successfully, there is still a requirement for ALC to pass a live operational test. Current operational commitments and the resource intensive roll out will result in the test taking place in late March 06. The audit and approval process will therefore take place in early April 2006 (+1 month).
Historic	+3	Contracting Process	Extended negotiations surrounding the final project issues (+1 month). Effect of Standardisation of PFI Contracts version 3 review and extended re-negotiations (+2 months).
Historic	+2	Changed Budgetary Priorities	Delay caused by HM Treasury constraint on transfer of resource expenditure for the PFI service. Directors of the Equipment Capability agreed to proceed until completion of the internal funding process in September 2004...
Historic	-6	Risk Differential	Difference between the risk allowed for in the most likely (50%) and the highest acceptable (90%) estimates at Main Gate.
<b>Net Variation</b>	<b>-1</b>		

**C.5.3. Progress against approved End of Support / Service / PFI Contract Date**

Description	Approved Date	Actual Date	Variation	In-Year Variation
C Vehicle PFI	June 2021	June 2021	-	-

**C.5.3.1. End of Contract Date Variation** – not applicable

**C.5.4. Operational Impact of Support / Service / PFI Support Contract variation** – not applicable

**D. Section D: Performance**

**D.1. Maturity Measures**

**D.1.1. Project**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
Commercial	<i>Measures under development</i>			
Financial				
Project Management				
System Readiness	-	-	-	C Vehicle is already being delivered.
Technology Readiness	1-9	-	-	C Vehicle is already being delivered.

**D.2. Performance against Defence Lines of Development**

Not required for pre-Main Investment Decision Projects				
Line of Development	Description	Forecast		
		To be met	At Risk	Not to be met
58 Equipment	Not detailed in Main Gate approval	Yes		
59 Training		Yes		
60 Logistics		Yes		
61 Infrastructure		Yes		
62 Personnel		Yes		
63 Doctrine		Yes		
64 Organisation		Yes		
65 Information		Yes		
Percentage currently forecast to be met		100%		
In-Year Change				

**D.2.1.1. Defence Lines of Development Variation** – not applicable**D.3. Performance against Key Performance Measures****D.3.1. Project** – not applicable**D.3.2. Support Contract****D.3.2.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
01		<b>Deployment and Recovery:</b> The User requires strategic, operational and tactical deployability of the capability using current in-service and planned transport systems.	Yes		
02		<b>Mobility:</b> The User requires the ability to utilise C Vehicles to undertake: Obstacle breaching: Route clearance: Support to bridging operation: Road construction and maintenance: Snow & ice clearance: Beach opening and Bomb disposal	Yes		
03		<b>Survivability:</b> The User requires the ability to utilise C Vehicles to: Dig in armour, inf, artillery and HQs: Harden buildings: Construct deception and concealment earthworks	Yes		
04		<b>Sustainability Operations:</b> The User requires the capability to utilise C Vehicles to: Handle stores: Outload to stockpiles: Operate quarries: Construct BFIs: Clear derelict buildings: Construct water points	Yes		
05		<b>Air Support:</b> The User requires the capability to utilise C Vehicles to provide and repair aircraft operating surfaces and essential air support facilities.	Yes		
06		<b>Readiness:</b> The User requires the C Vehicle capability to be available to meet the readiness criteria of units and formations.	Yes		
07		<b>Availability:</b> The system shall achieve an Asset Delivery Availability of 100%, with an	Yes	Yes	

C VEHICLE PFI

		asset Intrinsic Availability of at least 90%.			
08		<b>Maintenance Regime:</b> The Service Provider must have a scheduled and unscheduled maintenance regime in place and have the ability to support the capability as far forward as is operationally practical.	Yes		
09		<b>Spares:</b> The arrangements for the provision and delivery of spares must be compatible with in-service systems.	Yes		
10		<b>Training:</b> The Service Provider must ensure that military manpower is appropriately trained to operate and maintain the supplied equipment on operations and in peacetime.	Yes		
Percentage currently forecast to be met			100%		
In-Year Change			0%		

**D.3.2.2. Key Performance Measures Variation**

Date	Key Measure	Factor	Reason for Variation
March 2007	KUR07 Availability	Technical Factors	Spares performance at Full Service Commencement was insufficient to satisfy the Asset Availability KUR07 for equipment on operations. Corrective action has been taken and significant improvement has been made but further work is still required. Notwithstanding that the contractual KPI(6) relating to this element is being achieved.

**D.3.2.3. Operational Impact of variation – not applicable**

**Team Responsible**

General Support Vehicles

**Single point of accountability for Project Capability**

Head of Equipment Capability, Expeditionary and Logistics Support

**Senior Responsible Officer**

Cap ELS – Brig Paul Jaques

**Number of Projects / Increments**

**Current Status of Projects / Increments**

- **Support Contract – Support Vehicle**

**A. Section A: The Project**

**A.1. The Requirement**

The Support Vehicle programme is procuring the future tri-service cargo and recovery vehicles that will increase the military material lift/distribution and recovery capabilities. The programme is procuring a fleet of vehicles consisting of 42 variants but effectively based around the Light, Medium and Heavy Cargo Vehicles (6, 9 and 15 tonne respectively), the 7,000 litre Unit Support Tanker, the Recovery Vehicle and the Recovery Trailer. These vehicles will replace the in-service 4, 8 and 14 tonne cargo vehicles and the three in-service recovery vehicle types.

**A.2. The Assessment Phase**

There was no Assessment Phase. The Support Vehicles programme had origins in the Future Cargo Vehicle and the Future Wheeled Recovery Vehicle projects. These were launched as potential Private Finance Initiative programmes in August 1998 and September 1999, respectively. The Future Cargo Vehicles project progressed through Pre-Qualification and Outline Proposal stages with five bidders short-listed. An Initial Gate Business Case was drafted in December 1999, but was not submitted for approval because it did not demonstrate value for money.

Further work was requested to identify areas for further innovation, and also to develop a 'smart' Public Sector Comparator. Work continued to produce a more robust case but it became clear that confidence in Private Finance Initiative procurement was unlikely to improve. The decision was taken in March 2001 to replace the Private Finance Initiative procurement strategy with a conventional strategy and hold a fresh competition. Furthermore the Future Cargo Vehicles and Future Wheeled Recovery Vehicle programmes were merged into a single procurement and preceded directly to the main investment decision which was secured in November 2001. The project bypassed the Assessment Phase because it was concluded that the technologies were mature and as the Department had, during the Private Finance Initiative phase of the project, acquired a detailed knowledge of the commercial vehicle sector, the risks were low. It was also necessary to avoid further delays in order to maintain industrial interest in the requirement. The time and cost boundaries were set at Main Gate and following an advertisement placed in the MOD Contracts Bulletin, a short-list of six prime contractors was drawn up.

**A.3. Progress**

The contract to procure 5,165 vehicles was signed on 31 March 2005 and this original contract was extended by a further 2,077 vehicles in July 2006. These extra vehicles were ordered following a comprehensive Investment Appraisal (and Review Note approval) which demonstrated it to be considerably cheaper to buy new vehicles rather than run on the rest of the in-service fleet.

The total Support Vehicle Programme provides 6,928 Cargo Vehicles, 288 Recovery Vehicles and 69 Recovery trailers, replacing a fleet of just under 15,000 in-service vehicles.

The first 6, 9 and 15 Tonne prototype (quantity 14) vehicles were produced and underwent formal Military trials, on schedule, in 30 October 2006.

The In-Service Date is in 2 stages – the In-Service Date for 161 Cargo Vehicles was achieved, one month early, in June 2007 and the In-Service Date for eight Recovery Vehicles plus two Recovery Trailers was declared in February 2008.



## Support Vehicle

3707 vehicles are in-service (end of March 10), a number of which have been delivered to theatre to support current operations. Under the Urgent Operational Requirements process £25.4M has been used to produce an Enhanced Palletised Load System (a modified variant of the 15T SV) to provide a protected vehicle with a palletised load and container handling facility to meet a capability gap. A further £16.7M has been used to up-rate the protection systems employed by the vehicles to counter the escalating threat levels.

Further support to operations via the Urgent Operational Requirements process has resulted in £57.2 being approved to procure additional Enhanced Palletised Load System vehicles and increase the Support Vehicle Theatre Entry Standard fleet to meet operational demand and raise the protection levels afforded by the original Support Vehicle and Enhanced Palletised Load System Theatre Entry Standard fleets procured previously.

### A.4. Capability Risks

The Support Vehicle programme is procuring the tri-service Cargo, Unit Support Tanker and Recovery Vehicles to improve military lift/distribution and recovery capability. It will replace the in-service 4, 8 and 14 Tonne cargo vehicles, the cargo trailer fleet and the in-service recovery vehicles. For cost reasons the quantity of vehicles finally purchased will not be capable of fully supporting Defence Strategic Guidance 2008 Medium Scale enduring, Medium Scale non-enduring and Small Scale non-enduring concurrent commitments - this risk has been accepted by the MOD.

The risks of not procuring the Support Vehicle capability are:

1. The increased costs of running on the obsolescent in-service fleet.
2. The obsolescent in-service fleet does not have the capability to provide the required levels of protection to troops in theatre.

### A.5. Associated Projects – not applicable

### A.6. Procurement Strategy

Pre-Main Investment Decision Projects / Increments only				
Description	Procurement Route			
-	-			
Post-Main Investment Decision Projects / Increments only				
	Contractor	Contract Scope	Contract Type	Procurement Route
Support Vehicle	MAN Truck and Bus UK Ltd, (Previously known as MAN ERF UK Ltd)	Demonstration to In-Service	Firm Price for the first 5 years, then Fixed Price subject to Variation of Price	International Competition

### A.7. Support Strategy

#### A.7.1. Support Strategy

Description				
Contractor Logistic Support				
	Contractor	Contract Scope	Contract Type	Procurement Route
Support Vehicle	MAN Truck and Bus UK Ltd, (Previously known as MAN ERF UK Ltd)	Demonstration to In-Service	Firm Price for the first 5 years, then Fixed Price subject to Variation of Price	International Competition

**B. Section B: Cost****B.1. Cost of the Assessment Phase**

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement expenditure (%)	Actual Cost as a proportion of total estimated procurement expenditure (%)
Support Vehicle	-	-	-	-	-
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Support Vehicle	1180	1367	1641

**B.3. Cost of the Demonstration and Manufacture Phase**

Description	Approved Cost (£m)	Actual / Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
Support Vehicle	1641	1282	-359	+10
<b>Total</b>	<b>1641</b>	<b>1282</b>	<b>-359</b>	<b>+10</b>

**B.3.1. Cost Variation against approved Cost of the Demonstration & Manufacture Phase**

Date	Variation (£m)	Factor	Reason for Variation
March 2010	-4	Unknown	The NAO has been unable to validate this figure or categorise the reason for the variance as a clear audit trail supporting the value could not be provided by the Department
March 2010	+11	Budgetary Factors	Development of increased level of Armour Blast Protection (+£11M)
March 2010	+3	Accounting Adjustments and Re-definitions	Increase in Cost of Capital charge due to re-profile and slippage of asset deliveries profile
Historic	-55	Accounting Adjustments and Re-definitions	The cost of warranty, previously included in Demonstration and Manufacture costs, has been transferred to in-service costs (-£64m). Derivation of approved cost on a resource basis (-£4m). Difference in variation figures due to revision of Cost of Capital Charge from 6 to 3.5% (+£13m).
Historic	-70	Budgetary Factors	Funding for Seating Kits returned to programme (+£9m). Removal of the procurement of new Seating Kits (-£10m). Removal of Bowman Installation Kits from the programme in 2002/03 (-£33m). Change of vehicle Mix (+£20m).

Support Vehicle

			Option taken in 2002/03 to slip In-Service Date & Compress delivery (+£40m). Reduced Milestone Payments (-£104m). Reduced consultancy costs (-£1m). Option taken to reduce Recovery Vehicles by quantity 75 (-£48m) and changed deliveries profile (-£5m). Better estimates of industry costs (+£52m). Change in Cost of Capital Charge due to revised accruals profile (+£10m).
Historic	+36	Changed Capability Requirement	A saving of £19m achieved through negotiation when reducing the number of Recovery vehicles, previously forecast at £18m (-£1m). Addition of Bowman Installation Kits (+£70m). Additional Seating Kits (+£10m). Future revenue spend increased to bring project support requirements into line with the revised programme (+£3m). Reduction in Support Vehicles (Cargo) requirement from the Main Gate approved quantity of 8,231 to 6,928 Support Vehicles(Cargo), together with a reduction in, and re-profiling of, future Capital spend (-£28m). Department review resulting in reduction of Recovery Vehicles and Seating Kits (-£18m).
Historic	-6	Technical Factors	Department trials have been integrated with the contractor's trials resulting in progressive acceptance, reduced trials costs and reducing the amount of technical risk funding in future years of the project.
Historic	-274	Risk Differential	Difference between the risk allowed in the most likely (50%) and highest acceptable (90%) estimate at Main gate (-£275m). Variation due to revised approval figures (+£1m).
<b>Net Variation</b>	<b>-358</b>		

**B.3.2. Operational Impact of Cost Variations of Demonstration & Manufacture Phase**

Description	
Support Vehicle	Increase in Armour Blast Protection provides better level of protection to vehicle occupants from mine blast and other fragmentation devices.

**B.4. Unit production cost**

Description	Unit production costs (£m)		Quantities required	
	At Main Investment Decision	Currently	At Main Investment Decision	Currently
Cargo Vehicle	***	***	8,231	6,928
Recovery Vehicle	***	***	389	288
Recovery Trailer	***	***	69	69

Support Vehicle

**B.5. Progress against approved Support / Service / PFI Cost**

Description	Approved Cost	Forecast cost	Variation	In-Year Variation
Support Vehicle	1180	326 <sup>29</sup>	-854	+3

**B.5.1. Cost Variation against approved Support / Service / PFI Cost**

Date	Variation (£m)	Factor	Reason for Variation
March 2010	+2	Unknown	The NAO has been unable to validate this figure or categorise the reason for the variance as a clear audit trail supporting the value could not be provided by the Department
March 2010	+1	Accounting Adjustment and Redefinitions	Correction of sunk costs due to mis-bookings (-£12M). CosVat Correction (+£11M). Increase in cost of capital due to re-profile (+2M).
Historic	-	Changed Requirement	No variation has been entered because the original Business Case was based on a traditional type support solution at estimated cost of £1180M. In 2005 the strategy adopted was a Contracted Logistic Support arrangement with an estimated cost of £324M. The two approaches are entirely different and a cost comparison is not feasible.
<b>Net Variation</b>	<b>+3</b>		

**B.5.2. Operational Impact of Support / Service / PFI Cost Variations – not applicable**

**B.6. Expenditure to date**

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
<b>Assessment Phase (£m)</b>			
<b>Demonstration &amp; Manufacture Phase (£m)</b>	483	265	748
<b>Support Phase / Service / PFI Cost (£m)</b>	30	33	63
<b>Total Expenditure (£m)</b>	<b>513</b>	<b>298</b>	<b>811</b>

**C. Section C: Timescale**

**C.1. Duration of the Assessment Phase**

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Support Vehicle	July 2001	-	-

**C.2. Planned / Actual Boundaries for introduction of the Capability**

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision)	Latest Forecast / Approved

<sup>29</sup> The NAO has been unable to fully validate this figure as a clear audit trail supporting the value could not be provided by the Department.

Support Vehicle

		<b>Projects only)</b>	
Support Vehicle	November 2004	September 2005	April 2006

**C.3. In-Service Date/Initial Operating Capability**

**C.3.1. Definition**

Description	In-Service Date/Initial Operating Capability
Support Vehicle	<p><u>In Service Date</u></p> <p>Achievement of an operational capability with 161 Cargo Vehicles, eight Recovery Vehicles and two Recovery Trailers with the appropriate supporting through-life package.</p> <p><u>Initial Operating Capability</u></p> <p>No Initial Operating Capability parameters were defined within the original Business Case. Various Initial Operating Capability definitions were agreed with the Customer as the project progressed. These include Cargo Variant ready for Training which was achieved in June 2007.</p>

**C.3.2. Progress against approved Dates**

Description	Approved Date	Actual / Forecast Date	Variation	In-Year Variation
Support Vehicle	April 2006	February 2008	+22	0

**C.3.3. Timescale variation**

Date	Variation	Factor	Reason for Variation
Historic	+2	Technical Factors	Increased time given to all bidders to finalise their technical solution (+1 month). Time added to review the technical solutions and the need to revise the support strategy (+1 month).
Historic	+17	Contracting Process	Unanticipated second round of tendering required to address commercial risks, costs, performance & time efficiencies (+2 months). Additional time required by bidders to prepare, and the MOD to evaluate, the second round bids (+5 months). Time necessary to prepare and evaluate unanticipated third round of bidding and change to fielding plan/In-Service date (+5 months). Time necessary for approvals and contractual negotiations (+5 months).
Historic	+10	Changed Budgetary Priorities	Planning measure to reduce Support Vehicles Recovery Vehicle quantities from 389 to 314 and delay first deliveries until February 2008.
Historic	-7	Risk Differential	Change in risk (time) allowed between the most likely (50%) and the highest acceptable (90%) estimates at Main Gate.
<b>Net Variation</b>	<b>+22</b>		

Support Vehicle

**C.3.4. Other costs resulting from Timescale variation**

Description	Date	£m (+ Cost / - Saving)	Factor	Reason for expenditure or saving
Support costs	March 2003	+29	Procurement Processes	The cost of running on the legacy fleet.
<b>Total</b>		<b>+29</b>		

**C.3.5. Operational Impact of In-Service Date/Initial Operating Capability variation**

Description	
Support Vehicles	The delayed In-Service Date has resulted in the life of the current equipment being extended, leading to additional support costs and a delay in fielding an increased operational capability.

**C.4. Full Operating Capability**

**C.4.1. Definition**

Description	Full Operating Capability
Support Vehicle	All Support Vehicles delivered and Defence Lines of Development in place, Front Line Commands equipped with vehicles. Support Vehicle assets deployed to theatre wholly replacing current in-service assets (Operational Equipment Tables replaced)

**C.4.2. Progress Report**

Description	Full Operating Capability
Support Vehicle	On track

**C.5. Support / Service / PFI Contract**

**C.5.1. Scope of Support / Service / PFI Contract**

Description	
Support Vehicle	The provision of Capital Spares, Warranties, Complete Equipment Schedule, Training Aids, Post Design Services, Publications, Training Courses, Contractor Logistic Support and Repair of Major Assemblies.

**C.5.2. Progress against approved Support / Service / PFI Contract Go-Live Date**

Description	Approved Date	Actual Date	Variation (month)	In-Year Variation (month)
Support Vehicle	January 2008	January 2008	0	0

**C.5.2.1. Go-Live Date Variation – not applicable**

**C.5.3. Progress against approved End of Support / Service / PFI Contract Date**

Description	Approved Date	Actual/Forecast Date	Variation	In-Year Variation
Support Vehicle	March 2034	March 2034	-	-

**C.5.3.1. End of Contract Date Variation – not applicable**

**C.5.4. Operational Impact of Support / Service / PFI Support Contract variation – not applicable**

**D. Section D: Performance**

**D.1. Maturity Measures**

**D.1.1. Project**

Maturity Area	Maturity Scale	Last Years Assessment	Current Assessment	Comments
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Support Vehicle

Commercial	<i>Measures under development</i>			
Financial				
Project Management				
System Readiness		Not Assessed	Not Assessed	System Readiness levels are not currently mandated for approvals.
Technology Readiness	1-9	Not Assessed	Not Assessed	Readiness levels were not required when this project passed through Main Gate.

**D.1.2. Increment A**

**D.2. Performance against Defence Lines of Development**

Not required for pre-Main Investment Decision Projects				
Line of Development	Description	Forecast		
		To be met	At Risk	Not to be met
1 Equipment	Determine mix and number of vehicles, and their fit of Bowman radio, armour, weapon mount and IT/maintenance links.	Yes		
2 Training	Training needs analysis, real estate options and training gap between conversion and steady state training identified.	Yes	-	-
3 Logistics	Clarification required over who will conduct Level 4 Maintenance and District Load Maintenance.	Yes	-	-
4 Infrastructure	Conduct surveys of the potential impact on Defence Estates and undertake any infrastructure works required. Also ensure maintenance policy for Unit Support Tanker is in place.	Yes	-	-
5 Personnel	This line of development is not currently measured.	-	-	-
6 Doctrine	Support Vehicle Doctrine and Concepts of Use to be produced.	Yes	-	-
7 Organisation	Understand the organisational impact of the introduction of Support Vehicle and changing systems from the current to the Support Vehicle fleet.	Yes	-	-
8 Information	Unit briefings/visits to be conducted prior to roll-out of equipment. There is an aspiration to form a 'Fielding Team' in order to assist with the briefings/visits.	Yes	-	-
Percentage currently forecast to be met		100%		
In-Year Change		0%		

**D.2.1.1. Defence Lines of Development Variation**

Date	Line of Development	Factor	Reason for Variation
March 2010	Equipment	Procurement Processes	Funding has been transferred from the Support Vehicle project team to fund the additional cab fittings for Bowman radios.
Historic	Equipment - Bowman Fitted for Radio fit.	Procurement Processes	Funding has not yet been transferred from the Support Vehicle project team to fund the additional cab fittings for Bowman radios.

## Support Vehicle

### D.3. Performance against Key Performance Measures<sup>30</sup>

#### D.3.1. Support Vehicle (Cargo and Recovery)

##### D.3.1.1. Performance against Key Performance Measures

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
01	Equipment	The Support Vehicle Recovery and Support Vehicle Cargo shall be capable of meeting the Defence Planning Assumptions	-	-	Yes
02	Equipment	Capable of operating in world-wide climatic conditions	-	-	Yes <sup>31</sup>
03	Equipment	Compatible with existing and planned replenishment systems	Yes	-	-
04	Equipment	Capable of completing a 48 hour Battlefield Mission without replenishment	Yes	-	-
05	Equipment	Able to communicate with other units in their formation	Yes	-	-
06	Equipment	Capable of strategic deployment including by sea	Yes	-	-
Percentage currently forecast to be met			67%		
In-Year Change			-		

##### D.3.1.2. Key Performance Measures Variation

Date	Key Measure	Factor	Reason for Variation
Historic	KPM 01	Budgetary Factors	Relaxed requirement as a result of capability/cost trade off.
Historic	KPM 02	Budgetary Factors	Relaxed requirement as a result of capability/cost trade off.

##### D.3.1.3. Operational Impact of variation – not applicable

#### D.3.2. Support Vehicle (Cargo Only)

##### D.3.2.1. Performance against Key Performance Measures

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
07	Equipment	Capable of completing required Battlefield Mission	Yes	-	-
08	Equipment	Deployable in its operational state by air	Yes	-	-
09	Equipment	Capable of operating within the same parameters as other vehicles classified	Yes	-	-

<sup>30</sup> There are 26 KPMs overall; the MPR contains an abbreviated list for simplicity.

<sup>31</sup> This KPM represents two Key Performance Measures, one for the Cargo vehicle and one for the Recovery vehicle. Both KPMs are forecast not to be met, and as a result this is counted twice in the MPR analysis



Support Vehicle

		as Medium Mobility			
Percentage currently forecast to be met			100%		
In-Year Change			0%		

**D.3.2.2. Key Performance Measures Variation** – not applicable

**D.3.2.3. Operational Impact of Variation** – not applicable

**D.3.3. Support Vehicle (Recovery only)**

**D.3.3.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
10.	Equipment	The Land, Littoral and Air components shall have the capability to recover bogged, damaged and broken down wheeled and light A vehicles and provide the lift capability to the repair process in order to return them to operational use.	Yes	-	-
11.	Equipment	Capable of recovering military vehicles in an operational environment (including tactical operations throughout day & night).	Yes	-	-
12.	Equipment	Capable of lifting engines and main assemblies as part of the operational repair process.	Yes	-	-
13.	Equipment	Capable of manoeuvring engines and main assemblies as part of the operational repair process.	Yes	-	-
14.	Equipment	Capable of moving solo over the same terrain, within the same timeframe, as the B vehicles it supports.	Yes	-	-
15.	Equipment	Capable of recovering casualty vehicles from point of failure to a place of repair.	Yes	-	-
Percentage currently forecast to be met			100%		
In-Year Change			-		

**D.3.3.2. Key Performance Measures Variation** – not applicable

**D.3.3.3. Operational Impact of Variation** – not applicable

**D.3.4 Support Contract**

**D.3.4.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
1	Equipment	Performance against specified reliability targets for each vehicle type. (Specified as number of miles between mission failures).	Yes		
2	Logistics	Re-provision of all discrete spares, complete equipment schedules and Support and Test Equipment (95% of items delivered within contractually agreed delivery times).	Yes		
3	Logistics	Repair Turnaround Times. (95% of estimates and repairs achieved within contractually agreed turnaround time).	Yes		
4	Equipment	Capital Equipment Repair Service turnaround times. (98% of estimates and repairs	Yes		

Support Vehicle

		achieved within the agreed timeframe).			
5	Equipment	Post Design Services (98% of task quotes and tasks completed within contractually agreed timeframe)	Yes		
6	Logistics	Configuration Control and Data Management (99% of all agreed or known changes to documentation to be completed within contractual timeframes)	Yes		
7	Equipment	Warranty Claims (95% of all Parts and Labour warranty claims to be processed within 30 days of receipt).	Yes		
Percentage currently forecast to be met			100%		
In-Year Change			-		

**D.3.4.2. Key Performance Measures Variation** – not applicable

**D.3.4.3. Operational Impact of variation** – not applicable

**Team Responsible**

Platforms Team, Combat Tracks Group, Director Land Environment
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**Single point of accountability for Project Capability**

Capability Ground Manoeuvre
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**Senior Responsible Officer**

Head of Capability Ground Manoeuvre
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**Number of Projects** One**Current Status of Projects**

- **Support: Trojan and Titan**

**A. Section A: The Project****A.1. The Requirement**

The project delivered new vehicles to provide an armoured engineer capability to meet the Army's requirements, namely: Titan which is an armoured bridge-layer, and Trojan which is an armoured obstacle breaching vehicle. They have replaced the Chieftain vehicles which were over 30 years old, and are the first purpose-built engineer vehicles to be procured since the Second World War. They are based on the Challenger 2 hull and are as well protected, mobile and reliable. They have a variety of specialist equipments to provide effective engineer support for armoured and armoured-infantry units.
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**A.2. The Assessment Phase**

The Trojan & Titan project was endorsed, pre-Smart Procurement, by Staff Targets (Land) 4093 and 4094 in May 1996. The approval noted the intention to move directly into Demonstration and Manufacture following the Feasibility Study. This was delayed due to the 1998 Strategic Defence Review but it was completed in February 2000 with Vickers Defence Systems being selected, through competitive tender as the preferred bidder for the Demonstration & Manufacture phase. The Feasibility Study options were considered for technical risk and requirement compliance and the Vickers Defence Systems Challenger 2 option was deemed the lowest risk.
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**A.3. Progress**

The Demonstration & Manufacture contract was let in March 2001 with the first production vehicle (of 66) delivered in October 2005. In Service Date was achieved on Batch 1 vehicles in October 2006. Alvis acquired Vickers Defence Systems in 2002 and BAE Systems took over the procurement contract from Alvis-Vickers in 2004. The original procurement strategy and Main Gate Business Case did not include an Initial Operating Capability. However, as the In Service Date did not provide a deployable military capability it was proposed by Director Capability Integration (Army), in December 2006, to introduce an Initial Operating Capability. The definition of Initial Operating Capability was promulgated in January 2007.
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Acceptance of Batches 2-4, via Reliability Trials, has been achieved and the Batch Test 5 trials are ongoing (due to complete in June 2010). Initial Operating Capability for Trojan was declared in August 2007, but Initial Operating Capability for Titan has been delayed due to technical problems with the bridge launching mechanism and the Nuclear Biological and Chemical/Environmental Control System. This is now scheduled for June 2010.

Post-In Service Date, BAE Systems has had to do significant technical re-development work which has led to delays to the Project. However, as this is a fixed price contract there have been minimal increased costs to MOD whilst BAE Systems has incurred substantial additional costs. BAE Systems is to be commended for its willingness to complete this work, without re-course to the contract, despite the losses it has incurred.

On successful conclusion of Batch Test 5 the Final Acceptance Build Standard will be agreed with BAE Systems, and all 66 platforms will then be upgraded to Final Acceptance Build Standard by BAE

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Systems. This is a significant package of work which will be carried out at BAE Systems' factory in Newcastle; the current completion date for this is February 2012. Full Operating Capability will be declared when the all vehicles have been upgraded to Final Acceptance Build Standard.

Three Trojans (at Batch 5 standard) were deployed to Afghanistan in January 2010 in support of Operation Moshtarak.

**A.4. Capability Risks**

There is a requirement to procure a complementary pair of Armoured Engineer vehicles to provide effective close mobility, counter-mobility and survivability support to current and future armoured and armoured infantry ground manoeuvre formations. Trojan and Titan have replaced their Chieftain-based predecessors that could not keep up with other armoured assets that are 2 generations younger. The Chieftain platforms were unreliable, difficult to support and restricted the tempo of armoured operations. In order to introduce timely capability, the Trojans and Titans have been procured in 5 batches with reliability growth trials conducted on each batch prior to the batch entering service. Trojan and Titan are key components of a coherent ground manoeuvre capability.

**A.5. Associated Projects** - not applicable.

**A.6. Procurement Strategy**

Post-Main Investment Decision Projects / Increments only				
	Contractor	Contract Scope	Contract Type	Procurement Route
Trojan & Titan	BAE Systems (Vickers Defence System)	Demonstration & Manufacture	Firm Price	Competitive

**A.7. Support Strategy**

**A.7.1. Support / Service / PFI Contract Strategy**

Description				
Trojan & Titan	The Trojan & Titan support strategy is similar to Challenger 2's, due to the high degree of commonality between the platforms.			
	Contractor	Contract Scope	Contract Type	Procurement Route
To reduce risk for the MOD it was decided to adopt a single source route with BAE Systems as the prime contractor. BAE Systems owns the depth repair data and deals directly with the manufacturers of the sub-contracted repairable items.	BAE Systems	In-service	Repair Enabling Arrangement	Single source
Trojan & Titan were added to the existing contract that the Challenger 2 project had with Multipart.	Multipart	In-service	Target Cost Incentive Fee	Competitive

**B. Section B: Cost**

**B.1. Cost of the Assessment Phase**

Description	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)	Post-Main Investment Decision Projects only	
				Approved cost as a proportion of total estimated procurement	Actual Cost as a proportion of total estimated procurement

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				expenditure (%)	expenditure (%)
Cost of Assessment Phase	3	8	+5	0.9%	2.3%
<b>Total</b>	3	8	+5	0.9%	2.3%

**B.2. Planned / Actual Cost Boundaries for Demonstration and Manufacture Phase / PFI**

Description	Lowest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Highest Forecast / Approved
Cost Boundaries		349	398

**B.3. Cost of the Demonstration and Manufacture (D&M) Phase**

Description	Approved Cost (£m)	Actual / Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
Cost of Demonstration and Manufacture	398	347 <sup>32</sup>	-51	+5
<b>Total</b>	398	347	-51	+5

**B.3.1. Cost Variation against approved Cost of the Demonstration & Manufacture Phase**

**B.3.1.1. Project**

Date	Variation (£m)	Factor	Reason for Variation
March 2010	+2	Accounting Adjustments and Re-definitions	Increase in Cost of Capital Charge due to re-profiling of costs and deliveries
March 2010	+2	Technical Factors	BAE Systems support to conduct emerging works identified during Final Acceptance Build Standard upgrade programme
March 2010	+1	Technical Factors	Modifications required to protect front of Trojan from fragmentation damage during mineploughing operations.
November 2008	+1	Changed Requirement	Additional spares to support the Final Acceptance Build Standard upgrade programme
April 2008	+1	Technical Factors	Additional Contractor support for Batch Tests 4 and 5. The MOD requires support to ensure compliance with the technical aspects of the contracted requirements. This qualified technical support is not available from MOD resources so AES Defence Ltd has been contracted to do it.
August 2007	+1	Changed Requirement	Additional BAE Systems support to Batch Tests 3-5
April 2007	+1	Changed Requirement	Additional Integrated support requirements. These include additional ancillaries, publications and changes to the training aids.
April 2007	+2	Technical Factors	Additional technical support from BAE Systems arising from technical challenges

<sup>32</sup> The cost figure includes £16m relating to the transfer of equipment into the Titan & Trojan project. Insufficient evidence was available for the NAO to validate the value of the equipment at the time of transfer.

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Historic	+7	Technical Factors	Increase in Cost of Capital Charge due to re-profiling of costs and deliveries due to programme delays
Historic	-2	Accounting Adjustments and Re-definitions	Actual spend in 2004-2005 lower than forecast
Historic	-4	Accounting Adjustments and Re-definitions	Reclassification of element of spares costs to consumables
Historic	+2	Changed Requirement	Increased cost of Bowman integration
Historic	-1	Contracting Process	Under spend against Support & Test Equipment provision
Historic	-1	Contracting Process	Deletion of requirement to convert prototype vehicles
Historic	+5	Changed Requirement	£4M increase in forecast costs through Bowman associated delays. £1M for contract amendment
Historic	-18	Accounting Adjustments and Re-definitions	Decrease in Cost of Capital Charge due to re-profiling of costs and deliveries
Historic	-50	Risk differential	Difference between the risk allowed for in the most likely (50%) and the highest acceptable (90%) estimates at Main Gate. Includes subsequent recalculation of approval figures for change in Cost of Capital to 3.5%
<b>Net Variation</b>	<b>-51</b>		

**B.3.2. Operational Impact of Cost Variations of Demonstration & Manufacture Phase**

Description	
Trojan & Titan	There has been no operational impact due to the cost variation of Demonstration & Manufacture Phase.

**B.4. Unit production cost**

Description	Unit production costs (£m)		Quantities required	
	At Main Investment Decision	Currently	At Main Investment Decision	Currently
Trojan & Titan	3	3	66	66

**B.5. Progress against approved Support / Service / PFI Cost**

Description	Approved Cost	Forecast cost <sup>1</sup>	Variation	In-Year Variation
Trojan and Titan	<sup>2</sup>	771	-	-

**B.5.1. Cost Variation against approved Support / Service / PFI Cost - not applicable**

<sup>1</sup> **Assumptions.**

- Support costs only include the main equipment support contracts' costs. The support costs from the other non-equipment lines of development (training, people etc) have not been included.
- Several of these contracts are for the common Challenger items; which are also found on Challenger 2 and Challenger Armoured Repair and Recovery Vehicle. The Trojan & Titan costs have been calculated using actual and forecast track mileage; the overall contract costs have been apportioned accordingly.

<sup>2</sup> Although an estimate of Whole Life Costs of £1051m was included in the Main Gate Business Case, no formal approval was made in respect of in-service support costs.

**B.5.2. Operational Impact of Support / Service / PFI Cost Variations - not applicable****B.6. Expenditure to date**

Description	Previous expenditure to 31 March 2009	In-year expenditure	Total expenditure to 31 March 2010
Assessment Phase (£m)	8	-	8
Demonstration & Manufacture Phase (£m)	332	7	339
Support Phase / Service / PFI Cost (£m)	7	5	12
<b>Total Expenditure (£m)</b>	<b>347</b>	<b>12</b>	<b>359</b>

**C. Section C: Timescale****D.****D.1. Duration of the Assessment Phase**

Description	Forecast / Actual Date of Main Gate Approval	Date of Initial Gate Approval	Length of Assessment Phase (months)
Trojan and Titan	January 2001	May 1996	56

**D.2. Planned / Actual Boundaries for introduction of the Capability**

Description	Earliest Forecast / Approved	Budgeted For (Post-Main Investment Decision Projects only)	Latest Forecast / Approved
Trojan and Titan	October 2005	October 2006	December 2006

**D.3. In-Service Date****D.3.1. Definition**

Description	In-Service Date
Trojan & Titan	<p><b>Project In Service Date</b> A total of 12 equipments (six Trojan &amp; six Titan) delivered, and supportable, to the Army Training and Recruiting Agency and HQ Land Command.</p> <p><b>Project Initial Operating Capability:</b></p> <p>a. A total of three Titan and three Trojan have been delivered to a Close Support Engineer Squadron.</p> <p>b. The crews for these six vehicles have undergone individual conversion training.</p> <p>c. A Close Support Engineer Squadron has completed a Collective Training Level 3 exercise.</p> <p>d. Maintainers have been trained to undertake Level 2 and 3 repair and maintenance which includes the delivery of Publications and Support and Test Equipment.</p> <p>e. A robust spares support package remains in place.</p>

**D.3.2. Progress against approved Dates**

Description	Approved Date	Actual/ Forecast	Variation	In-Year Variation
Trojan & Titan	December 2006	October 2006	-2	-

**C.3.3 Timescale variation**

**C.3.3.1 In Service Date**

Date	Variation	Factor	Reason for Variation
Historic	+5	Contracting Process	This is the result of further delays in the Bowman integration process which has impacted on production build timescales.
Historic	+2	Contracting Process	Production and Bowman delays
Historic	+3	Changed Requirement	Independent risk assessment of delays due to Bowman.
Historic	+2	Changed Requirement	Forecast revised due to decision to fit Bowman and manufacturing problems as assessed by independent risk assessor.
Historic	-14	Risk Differential	Difference between the risk allowed for in the most likely (50%) and the highest acceptable (90%) estimates at Main Gate.
<b>Net Variation</b>	<b>-2</b>		

**C.3.4 Other costs resulting from Timescale variation**

Description	Date	£m (+ Cost / - Saving)	Factor	Reason for expenditure or saving
Trojan & Titan	Historic	+1	Technical Factors	Additional costs of running on in service vehicles by Tank Systems Support IPT
Trojan & Titan	Historic	+4	Technical Factors	Claim submitted by BAES in respect of Bowman delays. Value written off in Financial Year 2005/2006.
<b>Total</b>		<b>+5</b>		

**C.3.5 Operational Impact of In-Service Date variation**

Description	
Trojan & Titan	Historic – no operational impact.

**D.4. Full Operating Capability**

**D.4.1. Definition**

Description	Full Operating Capability
Trojan & Titan	<p>The following definition has been approved by all the relevant stakeholders:</p> <ul style="list-style-type: none"> <li>a. Initial Operating Capability declared (encompassing Logistic Support Date)</li> <li>b. Full Operating Capability level of reliability achieved</li> </ul>



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	<p>c. 100% System Acceptance achieved (less any agreed non-compliance issues)</p> <p>d. 66 vehicles delivered and supportable to Head Quarters Land Forces (in accordance with the current Fielding Plan)</p> <p>e. All vehicles upgraded to Final Acceptance Build Standard</p> <p>f. 1 &amp; 3 (UK) Divisions each able to crew, deploy and sustain a single engineer regiment's complement of Trojan and Titan.</p> <p>Head Quarters Land Forces agreed that the completion of the Final Acceptance Build Standard upgrade programme is a pre-requisite of Full Operating Capability.</p>
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**D.4.2. Progress Report**

**D.4.3.**

Description	Full Operating Capability
Trojan & Titan	Full Operating Capability will not be achieved until the end of the Final Acceptance Build Standard upgrade programme which is currently planned for March 2012. This has slipped due to technical problems on both platforms; which have delayed Batch Test 5 and the declaration of Final Acceptance Build Standard.

**C.5 Support / Service / PFI Contract**

**C.5.1 Scope of Support Service / PFI Contract**

Description	
Trojan & Titan	<p>The Trojan &amp; Titan main contract included the following deliverables:</p> <ul style="list-style-type: none"> <li>• Spares</li> <li>• Publications</li> <li>• Training</li> <li>• Support &amp; Test Equipment</li> </ul>

**C.5.2 Progress against approved Support / Service / PFI Contract Go-Live Date**

Description	Approved Date	Actual Date	Variation (month)	In-Year Variation (month)
Logistic Support Date was not included in the Main Gate Approval, however, the Integrated Test Evaluation and Acceptance Plan gave a date of August 2005 (50%). At the declaration of In Service Date, BAE Systems's failure to deliver the complete support solution was noted and the expectation that it would be delivered by March 2007. Logistic Support Date was eventually declared in August 2007	-	August 2007	-	-

**C.5.2.1 Go-Live Date Variation** - not applicable

**C.5.3 Progress against approved End of Support / Service / PFI Contract Date** - not applicable.

**E. Section D: Performance**

**E.1.Maturity Measures****E.1.1. Project**

Maturity Area		Maturity Scale	Last Year's Assessment	Current Assessment	Comments
Commercial		<i>Measures under development</i>			
Financial					
Project Management					
System Readiness		1-9	8	9	
Technology Readiness	Trojan	1-9	7	9	Trojan has completed missions in an operational environment and can be considered to be at Technology Readiness Level 9
	Titan		7	8	

**E.2.Performance against Defence Lines of Development**

Not required for pre-Main Investment Decision Projects				
Line of Development	Description	Forecast		
		To be met	At Risk	Not to be met
66 Equipment	Not detailed in Main Gate approval	Yes		
67 Training		Yes		
68 Logistics		Yes	Yes	
69 Infrastructure		Yes		
70 Personnel		Yes		
71 Doctrine		Yes		
72 Organisation		Yes		
73 Information		Yes		
Percentage currently forecast to be met		100%		
In-Year Change				

**E.2.1.1. Defence Lines of Development Variation**

Date	Line of Development	Factor	Reason for Variation
January 2010	Logistics	Changed Capability Requirements	The deployment of three Trojans to Afghanistan in January 2010 has required a significant in-theatre spares pack. These spares are at the latest batch standard, which has reduced the availability of several key spares for the project's other activities (mainly reliability trialing and the upgrading of older platforms). Additional spares are being purchased to reduce the risk but some of these have long lead-times.

**E.3.Performance against Key Performance Measures****E.3.1. Project****E.3.2.**

**E.3.2.1. Performance against Key Performance Measures**

KPM	LOD	Description	Forecast		
			To be met	At Risk	Not to be met
UR53	E/P/T	The Trojan user shall be able to clear obstacles from routes	Yes		
UR63	E/P/T	The Trojan user shall be able to clear ditch and spoil bank obstacles from routes	Yes		
UR77	E/P/T	The Trojan user shall be able to open safe lanes through enhanced pattern minefields, in order to permit the passage of Armoured and Mechanised forces	Yes		
UR85	E/P/T	The Trojan user shall be able to open safe routes across dry gaps of up to 7m across and 2 m depth.	Yes		
UR117	E/P/T	The Titan user shall be able to open safe routes over gaps of up to 60m	Yes		
SR1856	E	The Titan shall be able to launch and recover bridges whilst fitted with the Track Width Mine Plough	Yes		
UR146	E	The user shall be afforded levels of mine protection at least as high as the in-service Main Battle Tank	Yes		
UR172	E/P/T	The user shall be able to keep station tactically with Challenger 2 equipped Armoured and Mechanised formations in the direct and indirect fire zones	Yes		
UR202	E/L	The user requires an operational availability of 95% for a 30 day operating period in the warfighting role	Yes		
UR254	E/P/L /T	The user shall be able to maintain the required capability while operating in climatic category A1	Yes		
Percentage currently forecast to be met			100%		
In-Year Change					

**E.3.2.2. Key Performance Measures Variation** – not applicable

**E.3.2.3. Operational Impact of variation** – not applicable

**E.3.3. Support Contract** – not applicable

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