National Audit Office

Report
by the Comptroller
and Auditor General

Ministry of Defence

Major Projects Report 2014 and the Equipment Plan 2014 to 2024

Appendices and project summary sheets

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Report by the Comptroller and Auditor General

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Sir Amyas Morse KCB
Comptroller and Auditor General
National Audit Office

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Contents

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Appendix Five

Definitions and classifications of cost, time and performance causal factors

These classifications represent a broad categorisation of cost, time and performance variations in the project summary sheet. The Department attributes these categories to time, cost and performance variations in the project summary sheet. We validate the appropriate use of each category. These categories are grouped into three broad headings:

- corporate decisions, that is decisions that are taken at the top of the Department by senior management or ministers;
- project/technical issues reflect variations at a lower project level; and
- macro-economic or accounting adjustments, mainly resulting from changes the Department makes in assumptions regarding exchange rates and inflation.

Three categories (receipts, changes in associated projects and HM Treasury reserve) do not fit within these classifications. Variations attributed to these are often relatively small.

Corporate decisions	
Changed Capability Requirement	Variations due to changes in the customer's requirement for the equipment, flowing from operational reassessment rather than budgetary factors or because of support to current operations.
Budgetary Factors	Variations due to changes in the customer's requirement for equipment, flowing from changed budgetary priorities.
Project or technical issues	
Technical Factors	Variations which are due to changes in technical ability to deliver the project.
Procurement Processes	Variations due to changes associated with the contractual process including time taken in contract negotiations and placing contracts, effect of comparing contractor bids to estimates and variations due to changes in overall procurement strategy, e.g. change to collaborative options, or from competitive to single source.
Procurement Processes – International Collaboration	As above, but relating to international contract negotiations.
Contracting Process (not included from 2009 onwards)	Variations due to changes associated with the contractual process, including time taken in contract negotiations and placing contracts, international contract negotiations and effect of comparing contractor bids with estimates.
Macro-economic or accounting adjustments	
Inflation	Variations due to changes in inflation assumptions.
Exchange Rate	Variations due to changes in exchange rate assumptions.
Accounting Adjustments and Redefinitions	Variations that do not reflect any substantive change, and result from changes to accounting rules, or adjustments to reflect changes in defining terms.
Other (not classified into the three broad headings)	
Receipts	Variations due to changes in expectation of receipts, e.g. liquidated damages, commercial exploitation levy.
Change in Associated Project	Variations due to changes in an associated project e.g. availability of equipment from another project for trials.
HM Treasury Reserve	Recovery of additional costs incurred in support of current operations.

Appendix Six

Project summary sheets

Post-Main-Gate projects

Assessment phase projects

Concept phase projects

Post-Main-Gate projects

A400M

Project Name		
A400M		
Team Responsible		
A400M		
Senior Responsible Owner	**Date Appointed**	**Planned end date**
Air Commodore Jon Ager	25 April 2013	
Project/Increment Name	**Current Status of Projects / Increments**	
A400M	Post-Main Investment Decision	
Training Service	Post-Main Investment Decision	

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 21st 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, Luxemburg, 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 aging C-130K Hercules fleet, in part by procuring 25 C-130J's from Lockheed Martin and in addition, subject to certain conditions, by re-joining 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 (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. Project History

On 18 May 2000 the Investment Approvals Board approved the acquisition of 25 A400M aircraft with an In Service Date of December 2009. Following the submission of a Review Note, on 8 May 2003 the Investment Approvals Board revised the In Service Date to December 2011 and defined it as being the delivery of the seventh UK A400M aircraft. This change was necessary due to delays in the German Parliamentary approvals process which had prevented signature of the multinational contract; approval was finally granted on 21 May and, on 27 May 2003, the A400M Development and Production Phase contract (including the UK order for 25 aircraft) was signed by OCCAR on behalf of the six partner nations.

On 27 May 2006 the Investment Approvals Board granted Initial Gate approval and the A400M In Service Support Assessment Phase commenced.

On 26 June 2008 the first complete A400M aircraft was rolled out from the Airbus Military Final Assembly Line facility in Seville.

On 25 September 2008 Airbus announced a delay to the first flight of the A400M prototype aircraft and, on 25 November, announced that it could further slip until the "second half" of 2009. On 27 November, Airbus Military briefed the A400M Programme Board (the senior multinational governance body) on its progress with reassessing the aircraft delivery schedule.

A400M

On 17 December 2008 the first flight of the A400M Flying Test Bed (an adapted C-130 aircraft) to undertake testing of the specially designed TP-400 turbo prop engine developed for A400M took place in Cambridge.

On 19 December 2008, Airbus Military sent a revised production schedule to OCCAR and, on 9 January 2009, Airbus Military proposed a "new approach" to the A400M programme and sought negotiations with partner nations.

On 12 March 2009 a meeting of A400M partner nation defence ministers (at which the UK was represented by the Secretary of State) agreed to a "standstill agreement" with Airbus Military. This enabled discussions about options and possible outcomes for the A400M programme to take place whilst the rights of all parties under the original contract were protected. A period of intensive negotiation, combined with a thorough review of all aspects of the programme, then followed.

On 11 December 2009 the first flight of MSN001 (the first A400M prototype aircraft) took place in Seville.
On 12 March 2010 the Investment Approvals Board reapproved the UK A400M programme with a revised In Service Date of 2015.

On 29 March 2010 in a Written Ministerial Statement the Secretary of State informed Parliament that agreement had been reached between A400M partner nations and Airbus Military on the future of the programme. Heads of Terms had been agreed that would form the basis for the negotiation of an amended contract (including the decision to amend the UK order from 25 to 22 aircraft). On 31 March 2010 the Heads of Terms were signed on behalf of partner nations by OCCAR with Airbus Military.
On 8 April 2010 the first flight of MSN002 (the second prototype aircraft) took place in Seville, followed on 9 July 2010 by the first flight of MSN003 (the third prototype), also in Seville.

On 19 October 2010 the Strategic Defence and Security Review announcement stated that A400M would be a key element of the RAF future air transport fleet. It also announced the bringing forward of the Hercules C-130J Out of Service Date from 2030 to 2022.

On 5 November 2010 the substantive contract amendment (which included revised aircraft production and delivery schedules) was agreed by partner nations' representatives and sent for national staffing and approval prior to signature. The UK had already achieved reapproval in March.

On 20 December 2010 the first flight of MSN004 (fourth prototype aircraft) took place in Seville.
On 7 April 2011 the amended Development and Production Phase contract was signed by OCCAR (on behalf of partner nations) with Airbus Military. This included the revised UK order of 22 aircraft.
Investigation work into the causes of engine problems encountered in June 2011 during flight trials have concluded and solutions have been developed. Although this caused some disruption to the flight trials programme, this is not expected to have any significant impact on the aircraft production schedule.
The first flight of MSN006 (the fifth and final prototype aircraft) took place on 20 December 2011 in Seville.

Although the A400M is a military transport aircraft, its design will be predominantly civil certified with additional military certification as necessary. Following evaluation of evidence produced by the multinational flight trials programme, the European Aviation Safety Agency granted a restricted Type Certificate to A400M on 30 April 2012.

The UK A400M training service achieved Main Gate approval in July 2012, and it is now reported as a separate increment to the main A400M programme and measured against its own Main Gate approval. Consequently the original Main Gate approval which, in addition to aircraft acquisition included elements of initial training and initial in service support, no longer represents an accurate baseline. As a result, the constituent elements of the original A400M platform Main Gate approval (achieved in 2000) have been separated out and the A400M “Budgeted For” and “Highest Approved” figures (section B2 and B3, respectively) have been adjusted to reflect this change. Although the overall Demonstration and Manufacture forecast figure being reported in section B3 has come down, previously validated variations which remain within the scope of the original platform (aircraft acquisition) Main Gate approval will continue to be reported against this element of the programme, so that a consistent measure of project performance against the initial baseline is maintained.

Additionally, in anticipation of the achievement of UK A400M in service support Main Gate approval later this year, these elements of the original Main Gate approval have also been extracted.

At the Farnborough International Air Show in July 2012 the Prime Minister announced that an order for the first UK A400M full flight simulator had been agreed.

On 4 March 2013 Minister (Defence, Equipment, Support and Technology) announced that two further contracts relating to the A400M programme had been placed. The Training Service Support Contract will provide a specialist training school for personnel who will operate, support and maintain the A400M. A separate contract for the development, manufacture and installation of modifications required to operate the large aircraft infrared countermeasures defensive aids system when flying in hostile environments has also been let.

Following the conclusion of all of the required flight trials activity, the European Aviation Safety Agency granted a full Type Certificate to A400M on 13 March 2013.

A.4. In-Year Progress

On 31 July 2013 the partner nations granted type acceptance at the initial operating clearance for the A400M Atlas aircraft, paving the way for the delivery of the first aircraft, to France, which occurred in early August. Delivery of the second A400M Atlas, also to France, took place in November 2013. These are important way markers in the multinational aircraft production and delivery programme, as was the retirement from the flight trials programme of the first prototype aircraft, MSN001, in late November. These significant events have helped provide further evidence of the capability and design maturity of this new aircraft; in support of this, the multinational flight trials programme had amassed over 6,000 flying hours by the end of March 2014.

On 3 December 2013 the Defence Board agreed to exchange two aircraft production slots with France, meaning that the UK would now receive two of its order of 22 A400M Atlas aircraft earlier than had previously been planned. Nevertheless, UK aircraft deliveries are still forecast to commence in the latter part of 2014.

On 30 January 2014 the Investment Approvals Committee retrospectively approved the UK contribution to the Export Levy Facility (reported in the Major Projects Report 2013) and, consequently, increased the approved budget for the UK A400M Atlas aircraft acquisition programme by the same amount. However, as the Major Projects Report compares performance against the original approval, and the Export Levy Facility was not within the scope of that approval, the “Budgeted For” and “Highest Approved” figures in this year’s report (section B2 and B3) remain unchanged.

The A400M In Service Support Main Gate business case was submitted to the Investment Approvals Committee in February 2014, however, at the end of March 2014 it was awaiting final endorsement and approval by Ministers and Her Majesty’s Treasury. As a consequence, In Service Support has not been reported as an increment in this year’s report. Approval of the business case is anticipated early in the next financial year meaning that In Service Support will be included in next year’s report.

On 6 November 2013 the planned Review Note to include the Cargo Hold Trainer in the Training Service was approved. This increased the approval for the Training Service by £24M from £502M to £526M and, consequently, the “Approved Cost” figure (section B4) has been revised to reflect this new limit. This device will be procured through the A400M Development and Production Phase contract with Airbus Military under a contract amendment signed on 15 November 2013.

The A400M Schoolhouse at RAF Brize Norton, being procured under the A400M Training Service Support Contract with A400M Training Services Limited, was completed on schedule and accepted off contract on 28 March 2014.

A.5. Capability Risks

Not proceeding with this capability would significantly reduce the UK's tactical air transport capability due to having to rely solely on C-130J aircraft to provide support to operations after the C-130K Out of Service Date in 2013. Furthermore, not proceeding would mean that the UK will not have any tactical air transport capability after 2022, (the revised Out of Service Date for the C-130J declared in the Strategic Defence and Security Review) and less than the planned for Strategic lift capability, as it would be dependant solely on the current fleet of eight C-17 aircraft.

The achievement of Type Certificate has significantly derisked the programme, and is another major step towards achieving a deliverable aircraft. Future capability risks include the ongoing development of military functionality, the delivery of an appropriate support solution and the provision of trained crews to match aircraft deliveries. These risks are well understood and work is ongoing to undertake effective mitigation activity.

A.6. Associated Projects – N/A

A.7. Procurement Strategy

Project/Increment Name	Contractor	Contract Scope	Contract Type	Procurement Route
A400M	Airbus Military Sociedad Limitada (AMSL)	Development, Production and Initial In Service Support.	Fixed Price, subject to Variation of Price (VOP)	Competitive - International

A.8. Support Strategy

Description
Training The UK A400M Training Service achieved Main Gate approval in July 2012 (augmented by a planned Review Note in November 2013) and will now be reported as a separate increment. The A400M Training Service will be provided as follows: a. Training for an initial cadre of all User Groups is being undertaken at the International Training Centre using the A400M training courses offered by AMSL; b. UK-specific courses for all User Groups are being developed by Authority personnel, with some contractor support; c. An 'A400M Schoolhouse' has been established at RAF Brize Norton that will ultimately comprise 2 x Full Flight Simulators, 1 x Cargo Hold Trainer - Enhanced, 1 x LoadMaster WorkStation Trainer, 1 x Cockpit Maintenance Operations Simulator and a suite of Computer Based Training equipment. d. Three Part Task Trainers will be provided at Brize Norton for use by 3rd User Group (3UG) personnel; e. Aircrew instruction will be provided by Authority personnel with limited support from contractor instructors; maintenance instruction will be provided by contractor personnel; 3UG instruction will be provided by Authority personnel; f. Training equipment and the Schoolhouse infrastructure will be contractor-maintained and supported. **In-Service Support** An Assessment Phase for in service support is currently underway. Subject to Main Gate approval (see Section A.4 above), this will be reported separately in MPR 14.

Project/Increment Name	Contractor	Contract Scope	Contract Type	Procurement Route
Training Service	Airbus Military Sociedad Limitada	Development and Production of Training Aids	Fixed Price, subject to Variation of Price (VOP)	Competitive - International
Training Service	A400M Training Services Limited	Provision of infrastructure and support of Training Aids	Fixed Price, subject to Variation of Price (VOP)	Single Source

B. Section B: Cost

B.1. Cost of the Assessment Phase

Project/Increment Name	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)
A400M	2	1	-1
Training Service	1	1	0
Total (£m)	**3**	**2**	**-1**

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

Project/Increment Name	Lowest Approved (£m)	Budgeted For (£m)	Highest Approved (£m)
A400M	-	2238	2339

B.3. Cost of the Demonstration and Manufacture Phase

Project/Increment Name	Budgeted for Cost (£m)	Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
A400M	2238	2752	+ 514	- 57
Total (£m)	**2238**	**2752**	**+ 514**	**- 57**

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

B.3.1.1 A400M

Date	Variation (£m)	Category	Reason for Variation
October 2013	-14	Inflation	A reduction to the future provision for variation of price due to the delivery of two aircraft earlier than previously scheduled.
July 2013	-43	Exchange Rate	A reduction due to changes in the MoD central planning assumption on the £ : € exchange rate.
Historic	-2	Procurement Processes	A reduction in the cost of the design and development work required to enable UK A400M aircraft to operate the defensive aids system.
Historic	-8	Technical Factors	A reduction in the forecast cost of the fuel tank inerting system
Historic	+2	Technical Factors	An increase due to the refinement of the mission planning system requirement
Historic	+3	Technical Factors	An increase due to the need to ensure future interoperability of cryptographic components.
Historic	+30	Technical Factors	An increase due to an increased requirement for UK specific trials and evaluation work in support of aircraft entry into service
Historic	-8	Procurement Processes	A reduction due to re-pricing.
Historic	-10	Technical Factors	Reduced Defensive Aids hardware device procurement following the drawdown of other aircraft platforms in the 2010 Strategic Defence and Security Review.

A400M

Historic	-5	Technical Factors	Changes to Integration contingency
Historic	+1	Technical Factors	Increased cost of OCCAR management Agency
Historic	+3	Technical Factors	Increased cost of integrating equipment to the A400M Platform. (+£3M) DASS (-£3M) Mission Planning System, Technical Support (+£3M)
Historic	+175	Procurement Processes - International Collaboration	UK contribution to the multinational Export Levy Facility provided to EADS by A400M partner nations.
Historic	***	Changed Capability Requirements	A Planning Round 2011 Option to swap an early delivery aircraft with one due to be delivered later to ensure that the whole fleet has the same specification.
Historic	***	Procurement Processes - International Collaboration	A Planning Round 2011 Option to re-profile payments to align them with the revised delivery schedule agreed in the six nation international collaborative contract (***) and associated risk (***).
Historic	***	Procurement Processes - International Collaboration	A change due to a realignment of payments with the revised programme schedule agreed in the six nation international collaborative contract.
Historic	***	Exchange Rate	Foreign Exchange increases due to changes in planning assumptions.
Historic	***	Inflation	An increase due to changes in inflation assumptions in the 2011 Planning Round.
Historic	***	Accounting Adjustments and Re-definitions	Removal of Indirect RDEL (Foreign Exchange) in accordance with a change in Departmental policy.
Historic	***	Accounting Adjustments and Re-definitions	Removal of Cost of Capital due to Clear line of Sight policy implemented by HM Treasury.
Historic	***	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.
Historic	***	Procurement Processes - International Collaboration	A change due to programme rebalancing as a result of work undertaken in support of concluding an amended contract.
Historic	***	Exchange Rate	Loss due to the difference between the set planning exchange rate and forecast outturn.
Historic	***	Procurement Processes	Revised costing for Mission Planning System due to change from acquisition only to also include support.
Historic	***	Exchange Rate	A loss in 2008/2009 due to the fall in value of £ vs €
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.

A400M

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	-77	Budgetary Factors	Departmental Reviews have identified savings to programme risks (-£20m). 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). Realism re-profile of Development Production Phase contract together with Directed Infra-Red Counter Measures and Cargo Hold Mock-up costs (-£3m)
Historic	-329	Changed Capability Requirements	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). 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). Delay of programme by 9 months (-£12m), Option bringing the Defensive Aids Sub-System forward onto aircraft 1-9 (+£9m).
Historic	+345	Procurement Processes	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 (+£58m). Contract Effectivity Date slipped from April 2003 - May 2003, includes redefinition of Asset Deliveries to align with aircraft delivery schedule (-£30m).
Historic	-8	Exchange Rate	A decrease in 2005/2006 (-£21m). Variation in 2004/2005 (+£35m). Variation in exchange rate assumptions used in the Business Case, 2000/2001, 2001/2002 and 2002/2003 (-£206m). Variation in 2003/04 (+£198m). Exchange rate changes (-£14m)

Historic	+10	Inflation	An increase in 2005/2006 (+£12m). An increase in 2004/2005 (+£7m). 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 (-£9m).
Historic	+65	Procurement Processes	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 off take (+£130m).
Historic	+1	Technical Factors	Programme realism with regard to costing Technical Publications (-£5m); Identification of UK only certification requirements (+£6m).
Historic	-27	Technical Factors	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), Mission Planning & Restitution System (-£10m)
Net Variation (£m)	**+ 514**		

B.3.2 Operational Impact of Cost Variations of Demonstration & Manufacture Phase – N/A

B.4 Progress against approved Support / Training / PFI Cost

Project/Increment Name	Approved Cost (£m)	Forecast cost (£m)	Variation (£m)	In-year Variation (£m)
Training Service	526	526	0	0

B.4.1 Cost Variation against approved Support / Training / PFI Cost

B.4.1.1 Training Service – N/A

B.4.1.2 Increment A – N/A

B.4.2 Operational Impact of Support / Training / PFI Cost Variations – N/A

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2013 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2014 (£m)
Assessment Phase	1	0	1
Demonstration & Manufacture Phase	942	288	1230
Support Phase / Service / PFI Cost	76	71	147
Total Expenditure	**1019**	**360**	**1378**

On 6 November 2013 the planned Review Note to include the Cargo Hold Trainer in the Training Service was approved. This increased the approval for the Training Service by £24M from £502M to £526M. Consequently, the “Approved Cost” figure (section B4) has been revised to reflect this new limit.

C. Section C: Time

C.1 Length of the Assessment Phase

Project/Increment Name	Date of Initial Investment Decision Approval	Actual Date of Main Investment Decision Approval	Length of Assessment Phase (months)
A400M	July 1997	May 2000	34

C.2 Planned / Actual Boundaries for In Service Date or Initial Operating Capability

Project/Increment Name	Earliest Approved	Budgeted For	Latest Approved
A400M		February 2009	December 2009

C.3 In-Service Date/Initial Operating Capability

C.3.1 Definition

Project/Increment Name	In-Service Date/Initial Operating Capability
A400M	In-Service Date defined as delivery of the seventh aircraft with Military Aircraft Release and Support arrangements.

C.3.2 Progress against approved Dates

Project/Increment Name	Approved Date	Actual / Forecast Date	Variation (+/-months)	In-Year Variation (+/- months)
A400M	February 2009	March 2015	73	0

C.3.3 Timescale variation

C.3.3.1 A400M

Date	Variation (+/- months)	Category	Reason for Variation
Historic	***	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 aircraft 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	Budgetary Factors	Change in the Customer's requirement flowing from changed budgetary priorities.
Historic	+9	Procurement Processes	Delay in bringing contract into effect as a result of delayed approvals in Germany.
Net Variation (+/- months)	**+/-**		

C.3.4 Other costs resulting from Timescale variation

Project/Increment Name	Date	£m (+ Cost / - Saving)	Category	Reason for expenditure or saving
A400M	Historic	+41		The Department has extended the service life of the Hercules C-130K until the end of 2012.
Total		**+41**		

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

Project/Increment Name	Operational Impact
A400M	The revised forecast A400M In Service Date no longer aligns with the C-130K Out of Service Date of 2013. This increases the pressure on existing tactical airlift capability from 2013 to 2015. Interim measures to mitigate this include action to increase the availability of the remaining C-130J fleet.

C.4 Full Operating Capability – N/A

C.5 Support / Training / PFI Contract

C.5.1 Scope of Support / Training / PFI Contract

Project/Increment Name	Description
Training Service	Provision and support of the A400M Schoolhouse, support of training equipment, provision of instructors and course design personnel.

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

Project/Increment Name	Approved Date	Actual Date	Variation (+/- months)	In-year Variation (+/- months)
Training Service	February 2013	February 2013	0	0

C.5.2.1 Go-Live Date Variation – N/A

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

Project/Increment Name	Approved Date	Actual Date	Variation (+/- months)	In-Year Variation (+/- months)
Training Service	March 2030	March 2030	0	0

C.5.3.1 End of Contract Date Variation – N/A

C.5.4 Other costs resulting from Support Cost variation – N/A

C.5.5 Operational Impact of Support / Training / PFI Support Contract variation

D. Section D: Performance

D.1 Sentinel Score

Current score	Last years score	Comments
82 Green	79 Amber	Change due to the approval of the Export Levy Facility, and to a reassessment of the earned value management information provided by the prime contractor.

D.2 Performance against Defence Lines of Development (DLOD)

Line of Development	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1. Equipment	22 A400M aircraft, mission planning and ground support systems	Yes	
2. Training	UK A400M training solution, including interim use of the International Training Centre in Seville.	Yes (with risks)	
3. Logistics	In-Service Support contract.	Yes (with risks)	
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	
5. Personnel	Formation of squadrons and related Service personnel	Yes (with risks)	
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 (with risks)	
Currently forecast (with risks)		8 (4)	0
Last year's forecast (with risks)		8 (4)	0

D.2.1 Defence Lines of Development Variation

Date	DLOD	Category	Reason for Variation
March 2014	Infrastructure	Technical Factors	Reflects that the In Service Support Assessment Phase has concluded and that the necessary interim support infrastructure is in place for the expected first aircraft delivery in September 2014.
March 2014	Personnel	Technical Factors	Due to potential deficiencies in the number of aircrew with the required competencies to undertake instructional duties.
Historic	Information	Technical Factors	Due to ongoing Airbus redesign of aircraft Ground Support Systems and security accreditation pressures

Historic	Equipment	Technical Factors	Reflects that the amended contract includes revised aircraft production and delivery schedules.
Historic	Training	Technical Factors	Reflects that the Training Service Assessment Phase is still underway.
Historic	Equipment	Technical Factors	Reflects potential impact of the re-baselined programme, and that an amended contract is still to be concluded.
Historic	Logistics	Technical Factors	Reflects potential impact of depth maintenance facility risk on delivery of logistic support solution.
Historic	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 (KPM)

D.3.1 A400M

D.3.1.1 Performance against Key Performance Measures (KPM)

KPM	DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1	1,2,6,8	The A400M fleet must be capable of the deployment of 4200 tonnes of freight over 3200 nm in a 7-day period.	Yes	
2	1	A400M must be capable of carrying a payload of 32,000kg.	Yes	
3	1	A400M is to be capable of operating by day or by night, in all weather conditions commensurate with world wide Air Transport operations.	Yes	
4	1,6	A400M is to be capable of autonomous operations from semi-prepared surfaces with a runway length of 3500 ft.	Yes	
5	1,6,8	A400M is to have a self-contained, non-radiating navigation system. The navigation system's performance is to be compatible with low-level and aerial delivery operations world-wide.	Yes	
6	1	A400M is to meet mandatory interoperability requirements for civil General Air Traffic operations and UK military operations.	Yes	
7	1	A Defensive Aids Suite is required.	Yes	
8	1,2,6	A400M is to be capable of aerial delivery of paratroops, vehicles and stores.	Yes	
9	2,5,7	A400M is to be capable of being operated on routine Strategic and Tactical missions by a Combat Ready crew comprising of two Pilots and one Air Loadmaster. For more demanding	Yes	

		Tactical scenarios, a requirement for a third flight deck crewmember will be acceptable.		
Currently forecast (with risks)			9 (0)	0
Last year's forecast (with risks)			9 (0)	0

D.3.1.2 Key Performance Measures Variation – N/A

D.3.1.3 Operational Impact of variation – N/A

D.4 Support Contract

D.4.1 Project/Increment

D.4.1.1 Performance against Key Performance Measures (KPM)

KPM	DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
KUR 1	1, 2, 4	The User shall have A400M training by Capability Milestone 4 (Initial deployment Capability) that is able to react at short notice to changing environments and operational demands.	Yes (with risks)	
KUR 2	1, 2, 4, 6	The User shall be able to train sufficient numbers of aircrew to maintain the required readiness states and have the knowledge and skills to utilise the A400M in accordance with UK operational requirements across its entire spectrum of operations by Capability Milestone 8 (Full Operational Capability).	Yes	
KUR 3	1, 2, 3, 4, 6	The User shall be able to train sufficient numbers of support personnel to maintain the required readiness states and have the knowledge and skills to utilise the A400M in accordance with UK operational requirements across its entire spectrum of operations by Capability Milestone 8 (Full Operational Capability).	Yes	
KUR 4	1, 2, 3, 4, 6	The User shall be able to train Maintenance Personnel and Aircraft Ground Engineers, including Survival Equipment Fitters and Weapons Technicians, to provide Forward and Depth engineering support to the A400M, to meet UK operational requirements, by Capability Milestone 8 (Full Operational Capability).	Yes	
KUR 5	1, 2, 3, 4, 6	The User shall be able to train Air Despatch, Airborne Delivery, Air Movements, Aeromedical and other personnel to meet UK operational requirements.	Yes	

KUR 6	1, 2, 6, 8	For all aircraft upgrades or modifications to the aircraft through to out-of-service date, the Users shall be provided with a capability to update synthetic training hardware, software and documentation to accurately reflect all changes or upgrades in the real aircraft equipment and software programs.	Yes (with risks)	
Currently forecast (with risks)			6 (2)	0
Last year's forecast (with risks)			6 (2)	0

D.4.1.2 Key Performance Measures Variation

Date	Key Performance Measure	Category	Reason for Variation
Historic	1	Technical Factors	Initial Assessment. Reflects current status of progress against the plan to meet this KPM, which is in its early stages.
Historic	6	Technical Factors	Initial Assessment. Reflects the risk that it might not prove practicable for the Training Solution to replicate a future aircraft modification or amendment to live training procedures.

D.4.1.3 Operational Impact of variation - N/A

ASTUTE CLASS SUBMARINES

Project Name		
Astute Class Submarines		
Team Responsible		
Submarine Production		
Senior Responsible Owner	**Date Appointed**	**Planned end date**
Commodore Richard Stokes (Nuclear Capability)	19 June 2012	
Project/Increment Name	**Current Status of Projects / Increments**	
Astute Boats 1 -3	Post-Main Investment Decision	
Astute Boat 4	Post-Main Investment Decision	
Astute Boat 5	Post-Main Investment Decision	
Astute Boat 6	Post-Main Investment Decision	
Astute Boat 7	Post-Main Investment Decision	
Initial Astute Support Solution	Post-Main Investment Decision	
Astute Class Support	Post-Main Investment Decision	
Astute Class Training Service Boats 1-3	Post-Main Investment Decision	
Astute Class Training Service Boat 4	Post-Main Investment Decision	

A. Section A: The Project

A.1. The Requirement

The military requirement is for up to 8 Astute Class nuclear powered attack submarines to replace the existing Trafalgar Class.

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 £6 million (1991/1992 prices) to define the Batch 2 Trafalgar Class Submarine (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 (SSN) and a further approval of £2 million (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 £24 million (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 Maritime-Submarines) 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 initial in service support of the first three of the Class.

A.3. Project History

Please refer to previous MPRs for historical data on the Astute Class Programme.

Approvals

On 20 July 2011 Her Majesty's Treasury approved revised time and costs for Boats 1 to 4 and approved Main Build for Boat 5, Initial Build for Boat 6 and Long Lead Items for Boat 7. At this time the Investment Approvals Committee also approved In-Service Dates for Boats 5, 6 and 7. On 8 June 2012 Her Majesty's Treasury approved the whole Astute Programme (Boats 1 – 7) and corresponding Astute Support Solution.

Boat 1 HMS ASTUTE

In June 2011 HMS ASTUTE successfully completed the UK phase of Contractor Sea Trials. While on a comprehensive sea trials programme in US waters the submarine successfully completed the first of class British Tomahawk Land Attack Missiles Firing Trials, final Spearfish deep discharge trials and underwater Magnetic Silencing; returning to Her Majesty's Naval Base Clyde in March 2012 to commence Base Maintenance Period number 6. As a further element of the First of Class sea trials programme HMS ASTUTE has been fitted with a Payload Bay which has now been proven and demonstrated its additional capability.

Boat 2 AMBUSH

Boat 2 AMBUSH was launched and lowered in to the basin outside of the Devonshire Dock Hall on 6 January 2011. The submarine successfully completed her first test dive in the shipyard's basin in early October 2011. Boat 2 HMS AMBUSH exited the shipyard in Barrow-in-Furness on 15 September 2012 and undertook the initial platform proving phase of Contractors Sea Trials through to December 2012. Following a maintenance period at Her Majesty's Naval Base Clyde, the submarine completed the second, Capability Proving Sea Trial phase at the end of July 2013. HMS AMBUSH reached Contract Acceptance Stage 1 Platform Demonstration, on 14 December 2012 from which point it has been managed as an In-Service Submarine under MOD rather than contractor direction. HMS Ambush was formally commissioned into the Royal Navy at HMNB Clyde on 1 March 2013.

Boat 3 ARTFUL continues construction in the Devonshire Dock Hall at Barrow and is making good progress with Diesel Generator Trials successfully completed in August 2011. It is anticipated that ARTFUL will leave the Devonshire Dock Hall in 2013 and exit Barrow approximately 12 months later to commence sea trials. A delay in supply of key Nuclear Steam Raising Plant components and a shortfall in volume of construction and outfit work against the plan has prevented scheduled Core Load from being achieved. A number of performance improvement activities have been put in place by the contractor to ensure that the programme remains on track to achieve Operational Handover in 2015.

Boat 4 AUDACIOUS; all hull and casing units have been moved to the Devonshire Dock Hall and a number of the internal equipment modules have also been shipped inside the respective units. First phase of reactor loop build was successfully completed and Main Propulsion Machinery Package shore trials have begun (pre-shipping). Two key pressure hull unit-to-unit welds have commenced. The Whole Boat Contract, which introduced revised management arrangements and more robust terms aimed at driving delivery, was signed 1 November 2012. The Command Deck Module was integrated into Sub Unit 6/7 in December 2012.

Boat 5 ANSON had her 'keel laid' on 13 October 2011, at a traditional keel laying ceremony where the Minister for International Security Strategy, Gerald Howarth unveiled a section of her hull. The submarine has continued the open outfit stage in the Devonshire Dock Hall with some fabrication continuing in the New Assembly Shop.

Boats 6 and 7
Further tranches of material have been procured for Boat 6 and procurement of long lead items for boat 7 have commenced. Following receipt of Whole Programme approval in June 2012 the programme has pursued a number of opportunities to batch buy materials for boats 5-7, delivering cost savings to the programme and protecting the later boats from the potential impact of material shortfalls.

ASTUTE CLASS TRAINING SERVICE

The Astute Class Training Service (ACTS) has provided training for the ships companies of both HMS ASTUTE and AMBUSH and commenced training for the crew of ARTFUL. On 15 February 2012 the Investment Approvals Committee approved the Astute Class Training Service Boat 4 Information Note which articulated a revised funding approach for the ACTS Boat 4 change delivering a saving against the 2007 Astute Class Training Service Boat 4 approval. The training service provider, FAST, have submitted their bid for the addition of training for Boat 4 crews from May 2015.

SUPPORT

SMP's revised approval sought to extend the principles and structure of the Initial Astute Support Solution model to Operational Handover (plus 3 months) for each of the 7 submarines. The additional 3 months post Operational Handover is to capture any residual transition costs that fall beyond the Operational Handover milestone for each submarine. The Astute support solution continues to mature as further experience is gained from sea. Both HMS ASTUTE and HMS AMBUSH have been successfully maintained through intensive trials periods and further action is underway to ensure that appropriate arrangements are in place to support the submarines as they progress towards operational deployments.

A.4. In-Year Progress

Approvals

Following whole Astute Programme approval in 2012, an annual Information Note is submitted each summer to provide an update on status of the Programme. The 2013 Information Note was submitted to IAC 29 July 2013. The Astute build, support and training programmes remain within their extant approvals. Boat 1 - HMS ASTUTE.

On 25 April 2013, HMS ASTUTE achieved Operational Handover (the scheduling authority transferred to the Royal Navy). This was followed by a short maintenance period to enable Force Generation prior to operational tasking. HMS ASTUTE is now deployed on operations.

Boat 2 - HMS AMBUSH
HMS AMBUSH achieved Operational Handover on 26 June 2013
Following a maintenance period at Her Majesty's Naval Base Clyde, the submarine continued with a second, Capability Proving Sea Trial phase which completed at the end of July 2013. The vessel is currently undertaking a Base Maintenance Period prior to operational tasking later in 2014.

Boat 3 - ARTFUL
ARTFUL continues construction in the Devonshire Dock Hall at Barrow-in-Furness. A delay in supply of key Nuclear Steam Raising Plant components and a shortfall in volume of construction and outfit work completed against the plan prevented Core Load and Launch from being achieved against the baseline milestones. Core Load eventually completed in September 2013 and preparations are in hand for ARTFUL to exit the Devonshire Dock Hall and enter the water in May 2014. Exit Barrow is scheduled to occur approximately 12 months after Launch with the submarine undertaking a focussed sea trials package prior to Operational Handover in autumn 2015. ARTFUL was formally named on 20 September 2013.

Boat 4 - AUDACIOUS
Construction and outfit of AUDACIOUS continues in the Devonshire Dock Hall, with the submarine having entered the 'closed outfit' phase in April 2013 (on completion of the final unit butt-weld). There has been a significant increase in test and commissioning activities over the last 12 months. Electrical Switch Board Operations completed in October 2013, while installation of Thin Flank Array modules has commenced and is progressing ahead of schedule. Forthcoming milestones include commencement of Diesel Generator Trials (May 2014) and Primary Circuit Initial Fill (September 2014).

Boat 5 - ANSON
ANSON has continued its 'open outfit' phase with the largest Unit 6/7 (Accommodation and Command Unit) and the Forward End Construction having been delivered to the Devonshire Dock Hall in September 2013 and December 2013 respectively. Fabrication of the Aft End Construction completed in March 2014; this is currently undergoing non-destructive examination in the New Assembly Shop. Areas of focus for the next 12 months include completion of the Unit 4/5 butt-weld by September 2014.

Boat 6 - AGAMEMNON
AGAMEMNON's keel was laid in a formal ceremony on 18 July 2013 in the Devonshire Dock Hall which was attended by Minister (Defence Equipment & Support). Fabrication continues in the New Assembly Shop.

Boat 7 - Unnamed
Procurement of long lead items for Boat 7 has commenced. As reported in MPR 13, the programme has pursued a number of opportunities to batch buy materials for Boats 5-7, delivering cost savings to the programme and protecting the later Boats from the potential impact of material shortfalls; this opportunity has allowed steel for Boat 7 to be cut early in January 2014.

ASTUTE CLASS TRAINING SERVICE
The Astute Class Training Service (ACTS) has continued to provide training for ships companies of HMS ASTUTE, HMS AMBUSH and ARTFUL. Commercial agreement has been reached with the training service provider, FAST, to secure the necessary changes to the service to allow for the delivery of training for Boat 4 crews from July 2015.

SUPPORT
The Astute support solution continues to mature as further experience is gained from sea time. Current focus is to optimise support arrangements to support HMS Astute through her first operational deployment and prepare for HMS Ambush's deployment later in 2014.

FOUNDATION CONTRACT
The MOD's 2010 Strategic Defence and Security Review (SDSR) plan to save at least £900M from the costs of the submarine programme to 2021 under the Submarine Enterprise Performance Programme (SEPP), resulted in a Foundation Contract with BAES M-S being signed on 17 July 2013 committing the company to a share of the total £900M efficiency savings, through performance improvement, totalling at least £386M over an 8 year period.

A.5. Capability Risks

Delivery of HMS ASTUTE is critical to the submarine's readiness profile. HMS ASTUTE'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.6. Associated Projects

Project/Increment Name	Forecast In Service Date / Initial Operating Capability	Approval Status
Swiftsure & Trafalgar Class Update Final Phase	2004	In- Service

A.7. Procurement Strategy

Project/Increment Name	Contractor	Contract Scope	Contract Type	Procurement Route
Astute Boats 1 -3	BAE Systems Maritime-Submarines (formerly BAE Systems (Submarine Solutions) and 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	Competitive - UK
Astute Boat 4	BAE Systems Maritime-Submarines	Boat 4 and Design for Cost Reduction for Boats 4 to 7	Target Cost Incentive fee with maximum price.	Single Source
Astute Boat 5	BAE Systems Maritime-Submarines	Boat 5 Long Lead items & Initial Build	Limit of Liability placed for Minimum Long Lead Items Scope of Work	Single Source
Astute Boat 6	BAE Systems Maritime-Submarines	Boat 6 Long Lead Items	Limit of Liability placed for Minimum Long Lead Items Scope of Work	Single Source
Astute Boat 7	BAE Systems Maritime-Submarines	Boat 7 Long Lead Items	Limit of Liability placed for Minimum Long Lead Items Scope of Work	Single Source

A.8. Support Strategy

Description
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, with the Nuclear Propulsion Project Team responsible for the Nuclear Steam Raising Plant. MOD Equipment Project Teams will support specific equipments with Head of In-Service Submarine (Head of Submarine Production up to Operational Handover) maintaining a Platform focus and providing the flotilla wide single point of contact for Navy Command. Astute Class Maintenance at the waterfront will be conducted under existing Warship Support Modernisation Initiative arrangements. The Astute Class Training Service is a Private Finance Initiative contract, initially approved for 36 years to provide Astute Class 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. Approval for later Boats will be considered during FY14/15 as part of the option set for the delivery of a coherent training solution led by Submarine Training Capability Programme. The revised approach was included as part of the whole programme approval in June 2011. MPR13 reports against the Astute Support Solution approved by HM Treasury in May 2012. The principles and funding to the Initial Support Solution is provided by the Submarine Production team and transfers to In-service project teams at an appropriate point.

Project/Increment Name	Contractor	Contract Scope	Contract Type	Procurement Route
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	PFI	Competitive Tender
Astute Class Training Service Boats 4-7	FAST Training Services Limited; 47.5% owned by BAE Systems, 47.5% owned by L-3 MAPPS and 5% owned by VT Group	Training	PFI	Single Source

B. Section B: Cost

B.1. Cost of the Assessment Phase

Project/Increment Name	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)
Astute	33	29	-4
Total (£m)	**33**	**29**	**-4**

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

Project/Increment Name	Lowest Approved (£m)	Budgeted For (£m)	Highest Approved (£m)
Astute Boats 1 -3	-	2233	-
Astute Boat 4	1224	1279	1351
Astute Boat 5	1369	1464	1467
Astute Boat 6	-	1579	-
Astute Boat 7	-	1642	-

B.3. Cost of the Demonstration and Manufacture Phase

Project/Increment Name	Budgeted for Cost (£m)	Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
Astute Boats 1 -3	2233	3433	+1200	+19
Astute Boat 4	1279	1492	+213	-12
Astute Boat 5	1464	1365	-99	-30
Astute Boat 6	1579	1515	-64	+5
Astute Boat 7	1642	1669	+27	+61
Total (£m)	**8197**	**9474**	**+1277**	**+43**

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

B.3.1.1 Astute Boats 1 -3

Date	Variation (£m)	Category	Reason for Variation
March 2014	+8	Technical Factors	Funding added to accommodate the additional requirement for a Third Payload Bay for the Astute class.
March 2014	+25	Accounting Adjustments and Re-definitions	The plan included the periodic release of a historic accrual that resulted in the budget being suppressed by £25M. This accrual was removed during the previous FY and hence, the release was not delivered.

March 2014	-13	Technical Factors	Prime: Recalculation of Batch 1 profit rates resulted in a the recovery of profit from BAE (£21M); Minor variations to Ship Builder Relief recovery +£1M; Increased labour, overhead and materials requirements as a result of delays to Boat 3 exiting the Dock-hall +£14M; Non-Prime: under performance against an optimistic baseline primarily on Combat Systems Under Ice, and minor costing uncertainty (£6M).
Historic	+86	Technical Factors	Prime contract increase (+£73m a mixture of labour, overheads and risk). Past optimism in BAES capacity to spend up to their annual forecasts that has resulted in provisions needing to be carried forward. Non prime increases of (+£13m). Non prime consists of a mixture of nuclear site safety, combat systems and other non construction costs.
Historic	-58	Accounting Adjustments and Re-definitions	Re-adjustment of Sunk Costs for BAES labour material overhead and profit costs following on from NAO Audit post MPR12.
Historic	-30	Budgetary Factors	Submarine Enterprise Performance Programme saving Option
Historic	-43	Technical Factors	Prime contract decreases (a mixture of overheads, material and labour). (-£36m). Non Prime decreases (a mixture of combat systems, nuclear power management, safety platform and design and other non construction costs). (-£7m)
Historic	+1	Receipts	Shipbuilders Relief not claimed in forecast year 2011/12 (£1m)
Historic	-5	Receipts	Change in profile of Shipbuilders Relief. (-£5m)
Historic	-17	Technical Factors	Prime contract decreases (a mixture of overheads, material and labour). (-£18m). Non Prime decreases (a mixture of combat systems, nuclear power management, safety platform and design and other non construction costs). (+£1m)
Historic	+6	Technical Factors	Prime contract increases (a mixture of overheads, materials and labour). (+£6m).
Historic	+28	Budgetary Factors	Non Prime increases (a mixture of combat systems, nuclear power management, safety platform and design and other non construction costs) (+28m). This is as a result of aligning the Non Prime costs to the revised deferred build programme issued under Planning Round 2011 option.

Historic	+144	Budgetary Factors	An option was taken during the 2011 Planning Round to defer the Successor In-Service Date and modify build delivery rate. Astute build "drumbeat" was revised to match Successor revised In-Service Date. (+£144m).
Historic	+1	Technical Factors	Cost of HMS Astute's grounding incident. (+£1m).
Historic	-412	Accounting Adjustments and Re-definitions	Removal of Cost of Capital due to Clear Line of Sight policy implemented by HM Treasury (-£412m).
Historic	+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).
Historic	-2	Receipts	Increase in receipt for Shipbuilders Relief (-£2m).
Historic	+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 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	-23	Accounting Adjustments and Re-definitions	Increase in shipbuilders relief (-£12m). Re-costing of Non-Attributable items since MPR06 (Items not Included in the original approval) (+£51m). Shipbuilders Relief (-£58m) and Sunk cost corrections (-£3m) made in project account. Decommissioning and Decontamination costs (-£1m).

Historic	+47	Accounting Adjustments and Re-definitions	Reallocation of Pension cost increases since MPR05 (-£5m). Re-costing of Non-Attributable items since MPR07 (i.e. those items not included in original approval) (+£28m). Shipbuilders Relief correction (+£6m). Re-costing 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)
Historic	-177	Accounting Adjustments and Re-definitions	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). Removal of items wrongly attributed to Astute Approval in previous Years (-£41m).
Historic	+257	Changed Capability Requirements	Includes change to fore end design, completion of land attack missile capability and improved 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 Processes	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	+115	Technical Factors	Sustainability costs of maintaining submarine build capability removed (-£204m). 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).

Historic	+272	Technical Factors	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. Prime Contract pricing assumptions and changes to costing (+£19m). Reassessment of risk (+£51m). Reduction of risk on Sonar 2076 programme (-£16m).
Historic	+751	Technical Factors	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).
Net Variation (£m)	**+1200**		

B.3.1.3 Astute Boat 4

Date	Variation (£m)	Category	Reason for Variation
March 2014	+4	Technical Factors	In Year increase in the Boat 4 Prime costs caused by increases in Labour (+£16m) and (+£3m) MoD held payment retentions and minor adjustments (+£2m). This has been offset by decreases in Materials requirement and cost (-£11.6m), Risk (-£5.4m), Profit (-£0.2m).

March 2014	-16	Technical Factors	In Year decrease in Non Prime Costs driven by Retirement of Risk (-£8.6m), Combat Systems (-£0.6m), ACTS (-£0.3m), Nuclear Continuous Improvement (-£3.3m), RDEL Legal Support (-£1.6m) and other (-£2.4m).
March 2014	-1	Budgetary Factors	Decrease in Planning Years for Boat 4 Prime costs caused by SEPP Saving BAES-AST-015b Platform Materials (£0.979m), offset by an increase in later years in ACTS Data Exchange Costs.
Historic	+6	Accounting Adjustments and Re-definitions	Accelerated Depreciation against BAES Enterprise Resource Planning System (Project Genesis). (+£6m).
Historic	+11	Technical Factors	Increase in BAES build forecast for financial year 12/13 driven by labour, overheads, material and profit (+£11m).
Historic	-29	Technical Factors	Decrease in financial year 12/13 costs driven by non BAES forecast consisting of nuclear power management (-£4m), risk (-£15m), Barrow costs (-£3m), combat systems (-£4m) and other (-£3m)
Historic	+84	Technical Factors	Increase in BAES build ABC13 costs driven by labour, overheads & material (+£70m). Non prime increases (a mixture of combat systems, nuclear power management, platform safety and other non construction costs) (+£14m).
Historic	-12	Budgetary Factors	Submarine Enterprise Performance programme savings in respect of platform materials savings, combat systems savings and Rolls Royce material savings (-£12m).
Historic	-4	Accounting Adjustments and Re-definitions	Re-adjustment of Sunk Costs for BAES labour, material, overhead and profit costs following on from NAO Audit post MPR12 (-£4m).
Historic	+51	Technical Factors	Increase driven by changes to the Prime data (Labour, Overheads, Material) (+£51m)
Historic	-7	Technical Factors	A decrease in 11/12 Forecast of Outturn Year due to Combat Systems (-£4m), Platform (-£3m), Core H9 (-£2m) offset by an increase in Prime Contract for Baseband Coherency (+£2m).
Historic	+56	Budgetary Factors	An option was taken during the 2011 Planning Round to defer the Successor In-Service Date and modify build delivery rate. Astute build drumbeat was revised to match Successor revised In-Service Date. (+£56m)

Historic	+15	Technical Factors	Prime contract increase, a mixture of labour overheads, materials and VAT (+£20m). Non Prime contract decrease, a mixture of Electric Boat, Government Furnished Materiel and Nuclear (-£5m).
Historic	-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).
Historic	+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	+19	Technical Factors	Increase in Build, Nuclear Plant and Safety costs (+£19m).
Historic	-51	Receipts	VAT Receipt relating to sunk costs (-£51m).
Net Variation (£m)	**+213**		

B.3.1.4 Astute Boat 5

Date	Variation (£m)	Category	Reason for Variation
March 2014	-6	Technical Factors	Decreases In Year in Non Prime Costs driven by Nuclear Negotiations on Main Coolant Pumps (-2.8m), retirement of PM Risk (-1.8m), and other (-1m)
March 2014	-21	Technical Factors	Decrease In Year in Boat 5 Prime Costs driven by Labour Decreases (-14.5m), Profit (-4m), Retention (-1.6) and other (-0.4m)
March 2014	-3	Budgetary Factors	Decrease in Prime Costs within the ABC Years driven by SEPP Saving BAES-AST-015b Platform Materials (-1.5m) and Risk Reprofiling (-1.09m).
Historic	-47	Technical Factors	Decrease in the ABC13 costs driven by BAES labour, overheads and material (-£25m), and non BAES costs decrease driven by nuclear safety, platform design, risk and government furnished materiel. (-£22m)
Historic	+9	Accounting Adjustments and Re-definitions	Accelerated Depreciation against BAES Enterprise Resource Planning System (Project Genesis). (+£9m).

Historic	-5	Technical Factors	Decrease in financial year 12/13 final outturn costs driven by decrease in BAES labour, material and overheads (-£2m), nuclear safety (-£3m).
Historic	-14	Budgetary Factors	Submarine Enterprise Performance programme savings in respect of platform materials savings, combat systems savings and Rolls Royce material savings. (-£14m).
Historic	-2	Accounting Adjustments and Re-definitions	Re-adjustment of Sunk Costs following on from NAO Audit post MPR12 (-£2m).
Historic	+55	Technical Factors	Prime data increase in future years against pre approval baseline profile, driven by a mixture of labour, overheads and materials (+£55m).
Historic	+21	Technical Factors	Prime data increase in FY11/12 against pre approval baseline profile, driven by a mixture of labour, overheads and materials (+£21m).
Historic	-50	Receipts	VAT receipt relating to sunk costs (-£50m).
Historic	+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 5.
Historic	-15	Budgetary Factors	Reduction in the expected cost of Boat 5 reactor core.
Historic	-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 has been approved against Boats 4 and 5, as a batch solution, but is 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.
Net Variation (£m)	**-99**		

B.3.1.5 Astute Boat 6

Date	Variation (£m)	Category	Reason for Variation
March 2014	-4	Technical Factors	In Year decreases in Boat 6 Prime Costs driven by a decrease in expected Manpower caused by Boat 5 remaining in the New Assembly Shop longer than expected, holding onto Labour which should have been released to Boat 6 (-22m). Profit reduction (-3m). This has been offset by an increase in the Boat 6 Materials (+5m), Risk (+7m), Project Kirke (+7m) ,and Non Prime (+1m)
March 2014	+9	Budgetary Factors	RC&I Transfer (+9m) to Nuclear Propulsion IPT
March 2014	+1	Technical Factors	In Year Non Prime Cost increases in the Nuclear area due to increases in the Refurbishment of the Main Coolant Pumps (+2.3m) offset by a decrease in the Nuclear Site Safety apportionment Costs (-1.2m)
March 2014	-1	Budgetary Factors	Decrease in Prime Costs within the ABC Years driven by SEPP Saving BAES-AST-015b (-2m) and an increase caused by a smoothing of Risk within the Prime Costs (+1m)
Historic	-25	Technical Factors	Decrease in costs for financial year 12/13 for BAES labour, overhead and material (-£27m). Increase in nuclear power management (+£2m).
Historic	-17	Receipts	VAT Receipt relating to sunk costs (-£17m).
Historic	+11	Accounting Adjustments and Re-definitions	Accelerated Depreciation against BAES Enterprise Resource Planning System (Project Genesis) (+£11m).
Historic	-8	Accounting Adjustments and Re-definitions	Re-adjustment of Sunk Costs following on from NAO Audit post MPR12.
Historic	-15	Technical Factors	Additional Whole Boat Approval of £947m granted in June 2012 by HM Treasury. The costed increase in BAES labour, overheads and material was £874m and Non BAES cost was £58m. The result is a net decrease against approval of -£15m.
Historic	-11	Budgetary Factors	Impact of Option taken against the Astute Batch 2 Programme to reprofile costings. The £11m has come back into the programme but outside of the time line of the existing Boat 6 Approval.
Historic	-2	Technical Factors	Prime data decrease in FY11/12 against pre- approval baseline profile, driven by a mixture of labour, overheads and materials (-£2m).
Historic	-1	Budgetary Factors	Revised estimate of cost of the Nuclear Reactor Core for Astute Boat 6. (-£1m).

Historic	+1	Accounting Adjustments and Re-definitions	Removal of Cost of Capital due to Clear Line of Sight policy implemented by HM Treasury (+£1m).
Historic	-2	Budgetary Factors	Revised estimate of cost of the Nuclear Reactor Core for Astute Boat 6 (-£2m)
Net Variation (£m)	**-64**		

B.3.1.5 Astute Boat 7

Date	Variation (£m)	Category	Reason for Variation
March 2014	+63	Technical Factors	In Year Increases in Prime Costs of +69m due in part to the bring forward of the cut steel date by 3 months, batch saving opportunities which brought money into year and the Bring Forward of Materials strategy. Subsequent profit increase (+5m), contribution to Project Kirke (+6m), P2P system error being corrected in FY14/15 (+10.6m). These increases were offset by the raising of a debtor to recover VAT following the cut steel milestone.
March 2014	+0.1	Technical Factors	In Year increases in non prime costs for the Boat 7 contribution to Nuclear Site Safety.
March 2014	-2	Budgetary Factors	Increase in the ABC Years due to the Risk Smoothing exercise offset by a decrease from the SEPP Saving BAES-AST-015b (-2m).
Historic	+2	Technical Factors	Increase in costs relating to financial year 12/13 for BAES labour, overhead and material (+£4m) offset by reduction in Risk (-£2m).
Historic	+13	Accounting Adjustments and Re-definitions	Accelerated Depreciation against BAES Enterprise Resource Planning System (Project Genesis) (+£13m).
Historic	-24	Technical Factors	Additional Whole Boat Approval of £1316m granted in June 2012 by HM Treasury. The costed increase in BAES labour, overheads and material was £1,221m and non BAES Costs was £71m. This results in a net decrease against approval of -£24m.
Historic	-25	Budgetary Factors	Impact of Option taken against the Astute Boats 4-7 to reprofile costings. The £25m has come back into the programme but outside of the time line of the existing Boat 7 Approval.
Net Variation (£m)	**+27**		

B.3.2 Operational Impact of Cost Variations of Demonstration & Manufacture Phase – N/A

ASTUTE CLASS SUBMARINES

B.4 Progress against approved Support / Training / PFI Cost

Project/Increment Name	Approved Cost (£m)	Forecast cost (£m)	Variation (£m)	In-year Variation (£m)
Initial Astute Support Solution	190	144	-46	0
Astute Class Support	590	521	-69	-27
Astute Class Training Service Boats 1-3	151	686	+535	+35
Astute Class Training Service Boat 4	260	93	-167	-98
Total (£m)	**1191**	**1444**	**+253**	**-90**

B.4.1 Cost Variation against approved Support / Training / PFI Cost

B.4.1.1 Initial Astute Support Solution

Date	Variation (£m)	Category	Reason for Variation
Historic	-3	Technical Factors	Cost reduction due to re assessment of the cost of supporting boats. (-£3m).
Historic	-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).
Net Variation (£m)	**-46**		

B.4.1.2 Astute Class Support

Date	Variation (£m)	Category	Reason for Variation
March 2014	2	Accounting Adjustments	Sunk Cost Changes as a result of changes in the agreed Astute & Ambush CAS1 & OH Dates.
March 2014	-6	Procurement Processes	Lower than planned Capital Spares expenditure on Audacious as a result of Commercial delays in placing a Contract through which to purchase the spares.
March 2014	0.2	Accounting Adjustments	In Year Variation caused purely by the change in the agreed Astute & Ambush CAS1 & OH dates causing a change in the apportionment of last years costs.
March 2014	-3	Budgetary Factors	In Year Variance caused by movement in the total support project including SEPP Savings, Accounting Adjustments and reduced purchasing which are then apportioned through to the MPR approval.

March 2014	-16	Accounting Adjustments and Re-definitions	During MPR13 there was no formal cost data available for FY23/24 and as such, the remaining approvals values were used for this period. MPR14 is based on ABC14 which includes FY23/24 and as such, the figures are now a bottom up cost estimate.
March 2014	-4	Budgetary Factors	Minor movement across the planning round across numerous lines based on revised assumptions by the Project Managers.
Historic	-42	Technical Factors	Change in cost is based on more realistic estimates due to experience gained in supporting HMS Astute and HMS Ambush since contract acceptance and consists of a mixture of capital spares, post design service, information systems and technical support.
Net Variation (£m)	**-69**		

B.4.1.2 Astute Class Training Service Boats 1-3

Date	Variation (£m)	Category	Reason for Variation
March 2014	+21	Technical Factors	PFI estimate changes based on updates to costs previously recovered from FOST (£15M); and variation in COS VAT adjustment to reflect the above changes (£6M).
March 2014	+12	Inflation Factors	PFI estimate changes based on updated actual indexation, cost modelling and minor requirement change (£12m).
March 2014	+0.5	Budgetary Factors	Escalation rates within the contract higher than the 2.5% within the budget.
March 2014	+2	Accounting Adjustments	Corrections of historic liabilities (incorrect accrual reversals) and in year errors.
Historic	-1	Technical Factors	Reduction in risk costs (-£2m). Reduction in estimates for future change costs (-£1m). Increase in PFI estimates (+£2m).
Historic	-4	Technical Factors	Reduction in FAST infrastructure costs (-£4m).
Historic	-4	Technical Factors	Reduction in cost for risk associated with assumptions for training throughput (-£4m).
Historic	+10	Technical Factors	Re-alignment of training to the latest Astute class programme (+£10m).
Historic	+2	Budgetary Factors	Increase in amount of recoverable VAT due to re-assessment of costs. (+£2m).
Historic	+4	Technical Factors	Re-assessment of costs relating to risk, future changes to Astute Class Training Service training and infrastructure (+£4m).

Historic	+41	Budgetary Factors	An option was taken during the 2011 Planning Round to defer the Successor In-Service Date and modify build delivery rate. Astute build "drumbeat" was revised to match Successor revised In-Service Date which impacts on Astute training (+£41m).
Historic	+15	Budgetary Factors	Increase in amount of recoverable VAT due to re-assessment of costs (+£4m). VAT rate increase to 20% (+£11m).
Historic	-1	Technical Factors	Re-assessment of costs (-£1m).
Historic	-2	Budgetary Factors	Reduction in amount of recoverable VAT due to re-assessment of costs (-£2m).
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.
Net Variation (£m)	**+535**		

B.4.1.2 Astute Class Training Service Boat 4

Date	Variation (£m)	Category	Reason for Variation
March 2014	-96	Procurement Processes	Reduction in PFI funding requirements as a result of the change of strategy from a "bank funded" classical PFI solution, to a "direct funded" solution - the change eliminated the interest charge element of the forward costs. Minor descoping also impacted the cost forecast.
March 2014	-4	Technical Factors	Descoping and delays to the agreement of the Boat 4 contract resulted in lower than planned expenditures.
March 2014	2	Technical Factors	Minor revisions to the cost plans for external advice (driven by the protracted negotiation period) and other minor training requirement changes.
Historic	+2	Technical Factors	Re-assessment Boat 4 initial acquisition risk (£2m), capability evolution changes (-£2m), generic training equipment and other Boat 4 training changes (£2m).
Historic	-32	Technical Factors	Reduction of Boat 4 PFI costs following stringent review of the requirement and reduction in a number of FAST costs embedded within the PFI contract (-£32m).

Historic	+19	Accounting Adjustments and Re-definitions	Addition of Boat 4 risk costs from financial year 23/24 onwards.
Historic	+3	Changed Capability Requirements	Extension of requirement for external advisors.
Historic	+2	Technical Factors	Re-assessment of initial Boat 4 acquisition risk.
Historic	-4	Technical Factors	Reduction in direct capital procurement costs for Boat 4 (-£4m).
Historic	-117	Changed Capability Requirements	Reduction in requirement (-£117m).
Historic	+3	Technical Factors	Re-assessment of infrastructure costs and refinement of Fleet training requirements (+£3m).
Historic	+48	Budgetary Factors	An option was taken during the 2011 Planning Round to defer the Successor In-Service Date and modify build delivery rate. Astute build drumbeat was revised to match Successor revised In-Service Date which impacts on Astute training. (+£48m).
Historic	+7	Technical Factors	Re-assessment of Private Finance Initiative costs (+£5m). Extension of FAST Training Services Ltd infrastructure costs (+£3m). Other minor decreases (-£1m).
Net Variation (£m)	**-167**		

B.4.2 Operational Impact of Support / Training / PFI Cost Variations – N/A

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2013 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2014 (£m)
Assessment Phase	29	0	29
Demonstration & Manufacture Phase	4990	598	5588
Support Phase / Service / PFI Cost	305	26	331
Total Expenditure	**5324**	**624**	**5948**

C. Section C: Time

C.1 Length of the Assessment Phase

Project/Increment Name	Date of Initial Investment Decision Approval	Actual Date of Main Investment Decision Approval	Length of Assessment Phase (months)
Astute Boats 1 -3	June 1991	March 1997	69
Astute Boat 4	-	May 2007	-
Astute Boat 5	-	June 2011	-
Astute Boat 6	-	June 2011	-
Astute Boat 7	-	June 2011	-

C.2 Planned / Actual Boundaries for In Service Date or Initial Operating Capability

Project/Increment Name	Earliest Approved	Budgeted For	Latest Approved
Astute Boats 1 -3	-	June 2005	-
Astute Boat 4	February 2015	August 2015	103 months from contract signature
Astute Boat 5	May 2020	August 2020	April 2021
Astute Boat 6	February 2022	May 2022	January 2023
Astute Boat 7	December 2023	March 2024	November 2024

C.3 In-Service Date/Initial Operating Capability

C.3.1 Definition

Project/Increment Name	In-Service Date/Initial Operating Capability
Astute Boats 1 -3	**Original In Service Date definition**: Contract Acceptance Schedule Stage 1 (safe operation and start of operational work up) **MPR2011 Definition:** Successful completion of deep dive and full power trials. **Reason for Change:** In-Service Date has been declared on successful completion of deep dive and full power trials and demonstrates that the submarine can operate safely and independently in the operational environment. HMS Astute is now a valuable training asset for Navy Command. There was also financial and commercial benefit to MoD removing the link between contract acceptance and In-Service Date.
Astute Boat 4	**Original In Service Date definition:** Platform and Weapons acceptance against all requirements as defined within the Astute Class Through Life Management Plan, issue 6 dated April 2006. **MPR 2009 definition:** Boat 4 Operational Handover to Fleet **Reason for change**: To align In Service Date with asset being utilised by Navy Command.
Astute Boat 5	Operational Handover to Fleet
Astute Boat 6	Operational Handover to Fleet
Astute Boat 7	Operational Handover to Fleet

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C.3.2 Progress against approved Dates

Project/Increment Name	Approved Date	Actual / Forecast Date	Variation (+/-months)	In-Year Variation (+/- months)
Astute Boats 1 -3	June 2005	April 2010	58	0
Astute Boat 4	August 2015	January 2018	29	0
Astute Boat 5	August 2020	August 2020	0	0
Astute Boat 6	May 2022	May 2022	0	0
Astute Boat 7	March 2024	March 2024	0	0

C.3.3 Timescale variation

C.3.3.1 Astute Boats 1 -3

Date	Variation (+/- months)	Category	Reason for Variation
Historic	-3	Technical Factors	Re-definition of In-Service Date approved by the Investment Appraisals Board, giving retrospective achievement date of In-Service Date from July 2010 to April 2010. (-3 months).
Historic	+4	Technical Factors	Technical and programme difficulties with Boat 1 First of Class undertaking trials for the first time in 17 years. (+4 months).
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. (+10 months).
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 months).
Net Variation (+/- months)	**+58**		

C.3.3.2 Astute Boat 4

Date	Variation (+/- months)	Category	Reason for Variation
Historic	+13	Budgetary Factors	An option was taken during the 2011 Planning Round to defer the Successor In-Service Date and modify build delivery rate. Astute build drumbeat was revised to match Successor revised In-Service Date which impacts on Astute Operational Handover dates.
Historic	+16	Budgetary Factors	A savings option was taken in the 2009 Planning Round which removed funding from Boats 2-7 build programme leading to delayed delivery dates, 16 months delay is attributed to Boat 4. This variation was not shown in MPR10 as the project was not measuring against the 50% date at that time.
Net Variation (+/- months)	**+29**		

C.3.3.3 Astute Boat 5 – N/A

C.3.3.4 Astute Boat 6 – N/A

C.3.3.5 Astute Boat 7 – N/A

C.3.4 Other costs resulting from Timescale variation

Project/Increment Name	Date	£m (+ Cost / - Saving)	Category	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.
Total		**0**		

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

Project/Increment Name	Operational Impact
Astute Boats 1 -3	The Astute delay resulted 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.
Astute Boat 4	Reduced ability to fulfil Fleet tasking.

C.4 Full Operating Capability

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C.4.1 Definition

Project/Increment Name	Full Operating Capability	Progress to date
Astute Boats 1 -3	FOC will be declared when the Submarines are available for operational tasking i.e. following achievement of Operational Handover, generation and operational work up by Navy Command.	Boats 1 & 2 have achieved Operational Handover to Navy Command April 2013 and June 2013 respectively.
Astute Boat 4	FOC will be declared when the Submarine is available for operational tasking i.e following achievement of Operational Handover, generation and operational work up by Navy Command.	-
Astute Boat 5	FOC will be declared when the Submarine is available for operational tasking i.e following achievement of Operational Handover, generation and operational work up by Navy Command.	-
Astute Boat 6	FOC will be declared when the Submarine is available for operational tasking i.e following achievement of Operational Handover, generation and operational work up by Navy Command.	-
Astute Boat 7	FOC will be declared when the Submarine is available for operational tasking i.e following achievement of Operational Handover, generation and operational work up by Navy Command.	-

C.5 Support / Training / PFI Contract

C.5.1 Scope of Support / Training / PFI Contract

Project/Increment Name	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 Support	The BAE Systems contracted element of the 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 / Training / PFI Contract Go-Live Date

C.5.2.1 Go-Live Date Variation

Project/Increment Name	Approved Date	Actual Date	Variation (+/- months)	In-year Variation (+/- months)
Initial Astute Support Solution	May 2007	May 2007	0	0
Astute Class Support	April 2011	April 2011	0	0
Astute Class Training Service Boats 1-3	January 2004	March 2008	+50	0
Astute Class Training Service Boat 4	December 2013	May 2015	+17	0

C.5.2.2 Initial Astute Support Solution - N/A

C.5.2.3 Astute Class Support - N/A

C.5.2.4 Astute Class Training Service Boats 1 - 3

Date	Variation (+/- months)	Category	Reason for Variation
Historic	+50	Technical Factors	Re-alignment of Astute Class Training Service to the revised Astute Boat Programme.
Net Variation (+/- months)	**+50**		

C.5.2.5 Astute Class Training Service Boat 4

Date	Variation (+/- months)	Category	Reason for Variation
Historic	+13	Budgetary Factors	Aligning Boat 4 crew joining and training dates with Boat 4 delivery post Planning Round 2011 Option delay.
Historic	+22	Technical Factors	2nd Manoeuvring Room Trainer procurement no longer required in advance of Boat 4 due to greater understanding of the impact of Reactor Control & Indication update on Boats 1-3 training and decision to direct fund Astute Class Training Service capital expenditure through the PFI, months to align delivery of 2nd MRT with crew joining date and training need for Boat 4 (+ 22 months).
Historic	-18	Changed Capability Requirements	To offset the risk of design changes, increased training throughput and to ensure retention of key supplier resources.
Net Variation (+/- months)	**+17**		

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

Project/Increment Name	Approved Date	Actual Date	Variation (+/- months)	In-Year Variation (+/- months)
Initial Astute Support Solution	December 2012	March 2011	-21	0
Astute Support	Boat 7 Operation Handover plus 3 months	Boat 7 Operation Handover plus 3 months	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 – N/A

C.5.3.2 Initial Astute Support Solution – N/A

Date	Variation (+/- months)	Category	Reason for Variation
Historic	-21	Accounting Adjustments and Re-definitions	Reduction is due to redefinition and timeline of the Astute Initial Support Solution which has now been superseded by the revised Astute Class support approval which started in April 2011.
Net Variation (+/- months)	**-21**		

C.5.3.3 Astute Support – N/A

C.5.3.4 Astute Class Training Service Boats 1-3

Date	Variation (+/- months)	Category	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.
Net Variation (+/- months)	**+132**		

C.5.3.5 Astute Class Training Service Boat 4 – N/A

C.5.4 Other costs resulting from Support Cost variation – N/A

C.5.5 Operational Impact of Support / Training / PFI Support Contract variation – N/A

D. Section D: Performance

D.1 Sentinel Score

Current score	Last years score	Comments
85 Green	75 Green	Sentinel Scores for Boats 1 – 3
85 Green	NA	Sentinel Scores for Boats 4 - 7

D.2 Performance against Defence Lines of Development (DLOD)

Line of Development	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1. Equipment	The provision of the platform and equipment/systems to meet the user requirement.	Yes	
2. Training	Delivery of trained submarine crew and support personnel, by the enduring provision of sufficient and suitable facilities, training media and instructors.	Yes	
3. 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	
4. Infrastructure	How Astute Class will operate and interface with naval real estate such as dockyards, ammunition facilities, pilots and ranges.	Yes	
5. Personnel	The provision of trained people. Acceptance of the manning solution will be a staged process.	Yes	
6. Doctrine	Expression of the principles by which military forces guide their actions and is a codification of how activity is conducted today.	Yes	
7. 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	
8. 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	
Currently forecast (with risks)		8	0
Last year's forecast (with risks)		7 (1)	1

D.2.1 Defence Lines of Development Variation

Date	DLOD	Category	Reason for Variation
March 2014	Organisation	Technical Factors	As at 31 March 2014, following the Operational Handover of HMS ASTUTE and HMS AMBUSH to the Royal Navy in 2013, the requirement for 7 operational SSNs (iaw Royal Navy Plan) has been met.
Historic	Training	Technical Factors	It is now assessed that the Training Capability for Boats 1-3 will be met. In the past 12 months a recovery plan has been instigated to address the shortfalls reported in March 2010. This action is now making significant progress such that it is now expected that the requirement will be met.
Historic	Equipment	Technical Factors	Equipment is considered to be at risk. The technical challenge of commissioning the capability is beginning to affect the schedule for the delivery of the entire Astute capability.
Historic	Organisation	Budgetary Factors	The Department's Equipment Procurement Plan balancing measures in the 2009, 2010, and 2011 Planning Rounds have deferred the delivery of the 7 Astute class boats such that the planned readiness as required by the Naval Plan cannot be met.
Historic	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.
Historic	Logistics	Technical Factors	Logistics no longer considered at risk. Boat programme slippage has allowed logistics to catch up.
Historic	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 (KPM)

D.3.1 Astute Boats 1-3

D.3.1.1 Performance against Key Performance Measures (KPM)

KPM	Related DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1	1 to 7	Weapon system effectiveness	Yes	
2	1 to 7	Sonar performance	Yes	
3	1,3	Hull strength (survivability)	Yes	
4	1,2,3,5	Top speed	Yes	
5	1,3	Endurance	Yes	
6	1,2,3,4,5, 8	Acoustic signature	Yes	
7	3,5	Complement	Yes	
8	1 to 8	Land attack capability	Yes	
9	1 to 8	Capability dependencies	Yes	
Currently forecast (with risks)			9 (0)	0
Last year's forecast (with risks)			8 (0)	1

D.3.1.2 Key Performance Measures Variation

Date	KPM	Category	Reason for Variation
March 2014	Top Speed	Technical Factors	The outstanding KPM against speed has now been met.
Historic	Capability dependencies	Technical Factors	Limited suitably qualified and experienced personnel were available and have commissioned the support facilities
Historic	Capability dependencies	Technical Factors	Limited suitably qualified and experienced personnel available to commission the support facilities.
Historic	Top Speed	Technical Factors	Full speed trials have been undertaken and the results are subject to ongoing analysis and discussion with BAES. Further trials maybe required to confirm Top Speed.

D.3.1.3 Operational Impact of variation – N/A

D.3.2 Astute Boat 4

D.3.2.1 Performance against Key Performance Measures (KPM)

KPM	Related DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1	1,2,4,5,6, 7,8	Intelligence and Surveillance	Yes	
2	1,2,3,4,5, 8	Interoperability	Yes	
3	1,2,3,4,5, 6,8	Sustained Global Reach	Yes	
4	1 to 8	Theatre Mobility	Yes	
5	1 to 8	Mission Flexibility	Yes	
6	1 to 8	Force and Power Projection	Yes	
7	1 to 8	Battlespace Dominance	Yes	

8	1,2,3,5,8	Survivability	Yes	
9	1 to 5	Generation	Yes	
10	1,3,8	Through Life Adaptability	Yes	
Currently forecast (with risks)			10 (0)	0
Last year's forecast (with risks)			10 (0)	0

D.3.2.2 Key Performance Measures Variation

Date	KPM	Category	Reason for Variation
Historic	Interoperability. Battlespace Dominance. Survivability	Technical Factors	Following last year's report, HM Treasury funding approval has been received for both the Naval Extremely/Super High Frequency Satcom Terminal and Astute Capability Sustainment Programme projects.
Historic	Intelligence and Surveillance	Technical Factors	Communication and Radar integrated solution are now funded and in the Boat 4 baseline.
Historic	Intelligence and Surveillance	Technical Factors	Technical challenges with installing Communication and Radar Electronic Support Measures (CESM and RESM) capability.
Historic	Interoperability Battlespace Dominance Survivability	Technical Factors	Since last year's report, funding has been provided for the Spearfish Upgrade. Funding approval from HM Treasury for both the Naval Extremely/Super High Frequency Satcom Terminal and Astute Capability Sustainment Programme projects remain outstanding.
Historic	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 Boat 4 Key Performance Measure at risk.
Historic	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 Boat 4 Key Performance Measures at risk.
Historic	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 Key Performance Measures at risk.

D.3.2.3 Operational Impact of variation

Date	KPM	Forecast	Operational impact of variation
Historic	2,7,8	At Risk	Without resolution there could be reduced operational effectiveness, employability and survivability against more capable threats.

D.3.3 Astute Boat 5

D.3.3.1 Performance against Key Performance Measures (KPM)

KPM	Related DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1	1,2,4,5,6, 7,8	Intelligence and Surveillance	Yes	
2	1,2,3,4,5, 8	Interoperability	Yes	
3	1,2,3,4,5, 6,8	Sustained Global Reach	Yes	
4	1 to 8	Theatre Mobility	Yes	
5	1 to 8	Mission Flexibility	Yes	
6	1 to 8	Force and Power Projection	Yes	
7	1 to 8	Battlespace Dominance	Yes	
8	1,2,3,5,8	Survivability	Yes	
9	1 to 5	Generation	Yes	
10	1,3,8	Through Life Adaptability	Yes	
Currently forecast (with risks)			10 (0)	0
Last year's forecast (with risks)			10 (3)	0

D.3.3.2 Key Performance Measures Variation

Date	KPM	Category	Reason for Variation
Historic	Interoperability	Technical Factors	Naval Extremely/Super High Frequency Satcom Terminal approved by HM Treasury (December 2011), Astute Capability Sustainment Programme still awaiting HM Treasury approval to proceed, however even though some elements are being pursued separately, three Astute Boat 4 Key Performance Measures still remain at risk for Boat 5.
Historic	Battlespace Dominance	Technical Factors	Naval Extremely/Super High Frequency Satcom Terminal approved by HM Treasury (December 2011), Astute Capability Sustainment Programme still awaiting HM Treasury approval to proceed, however even though some elements are being pursued separately, three Astute Boat 4 Key Performance Measures still remain at risk for Boat 5.

Historic	Survivability	Technical Factors	Naval Extremely/Super High Frequency Satcom Terminal approved by HM Treasury (December 2011), Astute Capability Sustainment Programme still awaiting HM Treasury approval to proceed, however even though some elements are being pursued separately, three Astute Boat 4 Key Performance Measures still remain at risk for Boat 5.

D.3.3.3 Operational Impact of variation

Date	KPM	Forecast	Operational impact of variation
Historic	2,7,8	At Risk	Without resolution there could be reduced operational effectiveness, employability and survivability against more capable threats.

D.3.4 Astute Boat 6

D.3.4.1 Performance against Key Performance Measures (KPM)

KPM	Related DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1	1,2,4,5,6, 7,8	Intelligence and Surveillance	Yes	
2	1,2,3,4,5, 8	Interoperability	Yes	
3	1,2,3,4,5, 6,8	Sustained Global Reach	Yes	
4	1 to 8	Theatre Mobility	Yes	
5	1 to 8	Mission Flexibility	Yes	
6	1 to 8	Force and Power Projection	Yes	
7	1 to 8	Battlespace Dominance	Yes	
8	1,2,3,5,8	Survivability	Yes	
9	1 to 5	Generation	Yes	
10	1,3,8	Through Life Adaptability	Yes	
Currently forecast (with risks)			10 (0)	0
Last year's forecast (with risks)			10 (0)	0

D.3.4.2 Key Performance Measures Variation – N/A

D.3.4.3 Operational Impact of variation – N/A

D.3.5 Astute Boat 7

D.3.5.1 Performance against Key Performance Measures (KPM)

KPM	Related DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1	1,2,4,5,6, 7,8	Intelligence and Surveillance	Yes	
2	1,2,3,4,5, 8	Interoperability	Yes	
3	1,2,3,4,5, 6,8	Sustained Global Reach	Yes	
4	1 to 8	Theatre Mobility	Yes	
5	1 to 8	Mission Flexibility	Yes	
6	1 to 8	Force and Power Projection	Yes	
7	1 to 8	Battlespace Dominance	Yes	
8	1,2,3,5,8	Survivability	Yes	
9	1 to 5	Generation	Yes	
10	1,3,8	Through Life Adaptability	Yes	
Currently forecast (with risks)			10 (0)	0
Last year's forecast (with risks)			10 (0)	0

D.3.5.2 Key Performance Measures Variation – N/A

D.3.5.3 Operational Impact of variation – N/A

D.4 Support Contract – N/A

COMPLEX WEAPONS

Project Name		
Complex Weapons Pipeline		
Team Responsible		
Team Complex Weapons		
Senior Responsible Owner	**Date Appointed**	**Planned end date**
Dr Dai Morris FMC-WECA-Head	9 May 2013	
Project/Increment Name	**Current Status of Projects / Increments**	
Fire Shadow	Post-Main Investment Decision	
Brimstone 2	Post-Main Investment Decision	
Sea Ceptor Demonstration & Manufacture	Post-Main Investment Decision	
SPEAR Capability 2 Spiral Development	Pre-Main Investment Decision	
SPEAR Capability 3	Pre-Main Investment Decision	
Future Local Area Air Defence System (Land)	Pre-Main Investment Decision	
Future Anti Surface Guided Weapon (Heavy)	Post-Main Investment Decision	
Future Anti Surface Guided Weapon (Light)	Post-Main Investment Decision	

A. Section A: The Project

A.1. The Requirement

The Team Complex Weapons initiative is based on meeting the UK's enduring requirement to have battle winning military capability through the use of Complex Weapons; to be assured that the weapons will perform as expected; and to retain the ability to develop leading edge Complex Weapons technologies. Within this context, the initiative aims to deliver:

(a) Improved, adaptable and flexible Complex Weapons (Missiles and associated systems) that can be shaped to meet current and future military capability needs;

(b) Freedom of Action and Operational Advantage in our Complex Weapons through a sustained indigenous industrial construct.

A.2. The Assessment Phase

In April 2008 an Initial Gate submission was made to the Investment Approvals Board for the Complex Weapons Sector. This was approved in June 2008. The Business Case sought approval to enter a non-competitive Assessment Phase with Team Complex Weapons. The Assessment Phase was designed to test the viability of UK Sovereign acquisition of Complex Weapons through a modular and funding pipeline approach that offered greater value for money. This was consistent with the Defence Industrial Strategy in maintaining operational sovereignty of UK Complex Weapons and sustaining UK industry's specialist capabilities.

Initial work considered a number of options, ranging from non-competitive based around Team Complex Weapons, to full open competition. The options were assessed on their ability to meet military capability, operational sovereignty and value for money measured against the draft Concept of Analysis. The analysis strongly indicated that the continued use of competition would progressively erode the MOD's ability to secure affordable and effective military capability and restrict future choice and decision making.

A.3. Project History

The Team Complex Weapons proposition is founded on the Defence Industrial Strategy that set out the UK's intent to preserve operational sovereignty of its Complex Weapons. The first step in assessing the viability of a UK sovereign acquisition was a non-competitive Assessment Phase which was approved by the Investment Approvals Board (Initial Gate June 2008). This covered risk reduction work to develop solutions to meet the Future Anti-Surface Guided Weapon (FASGW), Loitering Munition; Storm Shadow Capability Enhancement Programme (SSCEP); Future Local Area Air Defence System (FLAADS); and Selected Precision Effects at Range (SPEAR) programmes. Review Note 1 (March 2009) sought approval of a second tranche of money to continue the Assessment Phase and Review Note 2 (November 2009) sought approval for funds to conclude the Assessment Phase and to address the questions raised by the Investment Approvals Board (July/October 2009). The Assessment Phase concluded that the preferred option was a long term partnering model based on bilateral arrangements with the Team Complex Weapons Prime Contractors.

With the Strategic Defence Review on the horizon Interim Main Gate 1 (March 2010) proposed entering into a shorter term Interim Portfolio Management Agreement (PMA-I) with MBDA UK. It also sought approval for expenditure to meet only immediate Complex Weapons requirements specifically:

Loitering Munition (Fire Shadow) (Demonstration & Manufacture);
SPEAR Capability 2 Block 1 (Demonstration & Manufacture) (now Brimstone 2);
Future Local Area Air Defence System (Assessment Phase);
SPEAR Capability 2 Block 2 (now Spiral Development) (Assessment Phase); and
SPEAR Capability 3 (Assessment Phase)

Brimstone 2

Significant technical issues (e.g. propellant cracking and liner de-bonding) on the Vulcan rocket motor, manufactured by Roxel, were discovered in January 2012. In the following March a Red Team review commenced which increased confidence in the Roxel solution passing the testing environment and achieving first use capability by November 2015. To monitor Roxel's progress a series of Risk Gate reviews were established, which was a prerequisite before seeking Investment Approvals Committee Approval for the programme.

In order to mitigate the risk on operations in Afghanistan and other potential operations, resulting from the delay to the programme, the Defence Board approved a Decision Point 2 Option for a further buy of Dual Mode Seeker (non Insensitive Munition) Brimstone missiles. This additional buy was jointly funded by MOD and MBDA UK Ltd.

Sea Ceptor

The Main Gate Business Case for FLAADS Maritime Demonstration Phase (Interim Main Gate 2) was submitted to the IAC in April 2011 and was approved in December 2011. FLAADS Maritime was later officially named Sea Ceptor and is referred to as such throughout the PSS.

Seeker Critical Design Review was held on 22 August 2012 with the Defence Science and Technology Laboratory which demonstrated seeker readiness for air carriage trials. A Guided Firing Readiness Review (Significant Milestone) was conducted on 27 June 2012 and the deliverable was accepted by the Project Team by 30 September 2012. Critical Design Review commenced on 19 March 2013 with performance aspects completed in the second half of 2013.

The MBDA schedule risk analysis conducted in February 2013 concluded that the 50% date for T23 Full Operating Capability In Service Date in 2016 was within 3 weeks of the approved baseline. The Project Team conducted risk mitigation and further analysis in order to close this variance. MBDA's project schedule has been refined from 2,000 to 8,000 lines of detail since April 2011, as part of routine Demonstration Phase business, bringing significantly greater granularity to task elements.

Future Anti-Surface Guided Weapon

Interim Main Gate 3 was the third of the submissions and concerned approval for the Future Anti-Surface Guided Weapon (Heavy) Demonstration and Manufacture Phase. The Business Case was presented to Equipment Capability Secretariat on 9 January 2012 and was considered by the Investment Approvals Committee on 18 January. On 31 January Director General Finance approved the case, with a caveat that negotiations should be concluded with France before 31 March 2012. Bi-laterals continued, but by 28 March when Chief Secretary to the Treasury wrote to the MOD, discussions had not been concluded and as such Chief Secretary to the Treasury approved the case, subject to receiving French national approval. Approval from France was not immediately forthcoming and the Project sought reapproval.

A.4. In-Year Progress

Brimstone 2

The Brimstone 2 programme has made significant progress in year. Development trials to demonstrate flight software and seeker improvements successfully took place in the United States during September-October 2013; the seeker and flight software development work is now complete. The trial was a key demonstration of capability and achieved direct hits on a variety of static and moving targets. Later in the year the first Tornado firing using the Roxel Insensitive Munition rocket motor was accomplished at Aberporth. Qualification of both energetic sub-systems (warhead and rocket motor) continue to progress without any failures and the rocket motor has now passed the previous failure points. This evidence, along with substantial supporting investigations and reports, has led to the satisfactory closure of the Rocket Motor Recovery Programme that was enacted after the initial technical issues in January 2012.

Sea Ceptor (Demonstration and Manufacture)

The two planned Instrument Firings of the Common Anti-Air Modular Missile were completed successfully in April 2013. Approval of the Manufacture Phase and contract award with MBDA were achieved in September 2013. The Critical Design Review was completed in November 2013.

Future Local Area Air Defence System (Land) Initial Gate

The FLAADS (Land) Initial Gate Business Case was submitted to the Investment Approvals Committee (IAC) in October 2013 and was approved by the IAC on 21 January 2014. Subsequently an amendment was made to the Through Life Enabling Contract to include this tranche of work with MBDA.

Future Anti-Surface Guided Weapon (Heavy)

The FASGW(H)/ANL (Anti Navire Léger (Light Anti Ship)) Concept and Assessment Phase concluded in December 2011 and following UK Approval to proceed to the Demonstration and Manufacture it was anticipated that a contract for FASGW(H) Demonstration and Manufacture would be let in Quarter 1 of 2012. However, owing to a change of Government in France, a Strategic Defence and Security Review (termed “Livre Blanc”) was initiated resulting in France withdrawing its immediate support to FASGW(H)/ANL pending the outcome of the “Livre Blanc” process. Consequently the FASGW(H)/ANL Demonstration and Manufacture contract was not placed with the prime contractor MBDA. The “Livre Blanc” process concluded in April 2013 and France confirmed its commitment to the FASGW(H)/ANL project. Following a period of intense negotiations a contract was placed with MBDA for the Joint Programme on 26 March 2014.

Future Anti-Surface Guided Weapon (Light)

The FASGW(L) Demonstration and Manufacture Business Case was submitted to the Investment Approvals Committee on 15 October 2013. On 23 January 2014 the case was approved by Chief Secretary to the Treasury. Contractual negotiations are still ongoing with Thales.

Brimstone Support USE

The Business Case for the continuation of the Brimstone In-Service Support phase was submitted on 17 September 2013 to Head of Defence Portfolio & Approvals Secretariat and approved on 3 October 2013. A five year contract was let in the same month. This included a short transition period with Full Service delivered from June 2014.

A.5. Capability Risks

Interim Main Gate 1

Brimstone 2 - replaces the legacy Brimstone missile's energetics and airframe with a new Insensitive Munitions (IM) compliant warhead, rocket motor and an upgraded seeker and airframe. Brimstone 2 will replace the Dual Mode Seeker Brimstone capability currently in service with the Royal Air Force and will be integrated onto Tornado GR4 and is intended for integration on Typhoon. Spear Capability 3 is a new 100kg class weapon. This capability will be the primary air-to-ground armament for the Joint Combat Aircraft (JCA)/F-35B Joint Strike Fighter from 2022, and optimised for internal carriage. Spear Capability 3 will provide the means to destroy/defeat a wide range of targets at range, including mobile and re-locatable targets, in all weathers day and night, in complex environments under tight Rules of Engagement.

Sea Ceptor

Sea Ceptor will provide increased capability over Sea Wolf that addresses the capability shortfall identified in the 2009 Capability Above Water capability audits. Sea Ceptor is the only candidate to fill the capability gap that is both affordable and will meet the Key User Requirements within the required timescales.

Future Local Area Air Defence System (Land) – is planned to replace the Rapier ground based air defence capability at its Out-Service-Date at the end of the decade.

Future Anti-Surface Guided Weapon (Heavy) and (Light)

FASGW will provide the Royal Navy with a missile enabling the Surface Combatant Maritime Rotorcraft (SCMR), the Wildcat HMA Mk 2, to complete its full range of intended missions against target sets in the maritime and littoral environments. FASGW(H) will replace current capability provided by Lynx Mk 8 helicopters armed with Sea Skua missiles and FASGW(L) will address a deficit in the current anti-surface capability. ***

Brimstone USE

Brimstone is currently supported by MBDA UK and other contractors under a limited scope of In Service Support activities and a Contractor Logistic Support contract which expires on 30 September 13. The existing support solution for Brimstone is insufficient to meet the revised requirements and as such, the expiry of the current support contract is seen as an opportunity to revise the support arrangements to meet the updated requirement. Contracting for the In Service Support requirement with MBDA represents an opportunity to transition to a full Asset Availability Service support solution. It addresses the lessons learned during operations in Libya to deliver greater availability at appropriate readiness levels to the user by transitioning support to the contractor.

A.6. Associated Projects

Project/Increment Name	Forecast In Service Date / Initial Operating Capability	Approval Status
Tornado GR4	Brimstone 2 - Missile In Service Date – Nov 15	In Service
Lightning II	SPEAR Cap 3 - Expected prior to Joint Combat Aircraft Present Assumed Service Entry	Post Main Gate
Type 23	FLAADS Maritime – Nov 16	In Service
Wildcat	FASGW(H) and FASGW(L) – Oct 20	Post Main Gate

A.7. Procurement Strategy

Pre-Main Investment Decision Projects / Increments				
Project/Increment Name	**Contractor**	**Contract Scope**	**Contract Type**	**Procurement Route**
SPEAR Capability 2 Spiral Development	MBDA UK	Pre-Main Gate	Prime Contractor	Non-Competitive - UK
SPEAR Capability 3	MBDA UK	Pre-Main Gate	Prime Contractor	Non-Competitive - UK
Future Local Area Air Defence System (Land)	MBDA UK	Pre-Main Gate	Prime Contractor	Non-Competitive - UK

Post-Main Investment Decision Projects / Increments				
Project/Increment Name	**Contractor**	**Contract Scope**	**Contract Type**	**Procurement Route**
Fire Shadow	MBDA UK	Demonstration to Manufacture	Prime Contractor	Non-Competitive - UK
Brimstone 2	MBDA UK	Demonstration to Manufacture	Prime Contractor	Non-Competitive - UK
Sea Ceptor Demonstration & Manufacture	MBDA UK	Demonstration to Manufacture	Prime Contractor	Non-Competitive - UK
Future Anti-Surface Guided Weapon (Heavy)	MBDA UK	Demonstration to Manufacture	Prime Contractor	Non-Competitive - UK
Future Anti-Surface Guided Weapon (Light)	Thales	Demonstration to Manufacture	Prime Contractor	Non-Competitive - UK

A.8. Support Strategy

Description
The current support approach is through individual contracts for each weapon type, e.g. Storm Shadow, Advanced Short Range Air to Air Missile, etc. The intent is to secure a long term arrangement for each project under the Unified Support Environment with MBDA. This aims to secure financial benefits across the Programme in the in-service support of Weapons Systems. This will be achieved through common approaches, methods and tools, common requirements and the re-structuring of how support is delivered in industry. Brimstone is the first project that has been contracted using the Unified Support Environment approach, with Storm Shadow and Advanced Short Range Air to Air Missile (ASRAAM) to follow in Financial Year 14/15. Additional systems will be added at later dates.

Project/Increment Name	Contractor	Contract Scope	Contract Type	Procurement Route
Unified Support Environment	MBDA UK	Manufacture to In Service	Prime Contractor	Non-Competitive - UK

B. Section B: Cost

B.1. Cost of the Assessment Phase

Project/Increment Name	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)
Complex Weapons Assessment Phase	239	236	-3
SPEAR Capability 3, SPEAR Capability 2 Block 2 and Sea Ceptor Assessment Phase Elements	145	145	0
Future Local Area Air Defence System (Land)	40	40	0
Total (£m)	**424**	**421**	**-3**

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

Project/Increment Name	Lowest Approved (£m)	Budgeted For (£m)	Highest Approved (£m)
Fire Shadow	-	246	-
Brimstone 2			
Sea Ceptor Demonstration & Manufacture	-	850	-
Future Anti-Surface Guided Weapon (Heavy)	379	392	460
Future Anti-Surface Guided Weapon (Light)	293	311	336

B.3. Cost of the Demonstration and Manufacture Phase

Project/Increment Name	Budgeted for Cost (£m)	Forecast cost (£m	Variation (£m)	In-Year Variation (£m)
Fire Shadow	246	257	+11	+10
Brimstone 2				
Sea Ceptor Demonstration & Manufacture	850	849	-1	0
Future Anti-Surface Guided Weapon (Heavy)	392	391	-1	-1
Future Anti-Surface Guided Weapon (Light)	311	306	-5	-5
Total (£m)	**1799**	**1803**	**+4**	**+4**

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

B.3.1.1 Fire Shadow & Brimstone 2

Date	Variation (£m)	Category	Reason for Variation
March 14	+10	Technical Factors	A significant amount of work was undertaken in 13/14 to establish a revised schedule for the Project. This has now been agreed and has been included in a Review Note that will be staffed in 14/15. Despite the delays, the overall cost of Brimstone 2 with the Prime Contractor (MBDA) has not increased. However, non-Prime costs have continued to be incurred. Some of these additional costs fell in 13/14 (£2M) with a further £8M anticipated in future years.
Historic	+3	Technical Factors	In MPR 12 Team Complex Weapons was anticipating spending circa £3m in financial year 12/13 on Brimstone 2. Delays in the Project meant this money was not spent. The money should have been rolled forward in the Planning Round, but was not and as such the previous figure was understated by £3m.
Historic	+1	Technical Factors	Seeker handover trials originally planned for the UK could not be carried out in time and had to be conducted in the US with an increase in cost of £1m.
Historic	-3	Capability Trading	Fire Shadow and Brimstone 2 are both in the Demonstration & Manufacture phase and have a combined approval of £196m (£96m +£100m). Spend on these two projects totals £243m giving a variance of +£47m. This would suggest that the Interim Main Gate 1 approval has been breached, however, in February 2009, prior to the Complex Weapons Pipeline approval, Team Complex Weapons received approval for Brimstone Insensitive Munition – £67m. The Project spent £17m on Brimstone Insensitive Munition and transferred the remainder (£50m) to Brimstone 2, to form part of the pipeline funding. When this additional approval is added to that in Interim Main Gate 1 (£196m) the combined approval is £246m. This gives overall approvals headroom of circa £3m.
Net Variation (£m)	**+11**		

B.3.1.2 Sea Ceptor Demonstration & Manufacture

Date	Variation (£m)	Category	Reason for Variation
Historic	-1	Technical Factors	Of the £541m approved under Interim Main Gate 2, £483m is committed via a firm price contract with MBDA. The remaining £58m is for Non-prime activities, that is Contracts let with companies other than MBDA. These Contracts will be raised over the remaining period of the project and will not necessarily be firm price agreements. As such these costs are subject to change and the Project's current forecast is that there will be a slight underspend against approval of £1m.
Net Variation (£m)	**-1**		

B.3.1.3 Future Anti-Surface Guided Weapon (Heavy)

Date	Variation (£m)	Category	Reason for Variation
March 2014	-1	Exchange Rate	The financial model that was used to support the business case was costed at £1 to 1.15 Euro. The actual exchange rate for payments in 13/14 was £1 to 1.20 Euros which generated the bulk of the reduction.
	+/-		
Net Variation (£m)	**-1**		

B.3.1.4 Future Anti-Surface Guided Weapon (Light)

Date	Variation (£m)	Category	Reason for Variation
March 2014	-5	Procurement Processes	At the beginning of the Project a detailed, risk adjusted costing was produced. This identified a number of risks which were included in the costing. These risks have been reviewed and as a result the cost uncertainty budget has been reduced (-£9M). This is offset by some small costs increases across the rest of the budget (+£4M).
	+/-		
Net Variation (£m)	**-5**		

B.3.2 Operational Impact of Cost Variations of Demonstration & Manufacture Phase – N/A

B.4 Progress against approved Support / Training / PFI Cost

Project/Increment Name	Budgeted for Cost (£m)	Forecast cost (£m	Variation (£m)	In-Year Variation (£m)
Brimstone Unified Support Contract	42	42	0	0

B.3.1.3 Brimstone Unified Support Contract – N/A

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2013 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2014 (£m)
Assessment Phase	343	35	378
Demonstration & Manufacture Phase	398	158	556
Support Phase / Service / PFI Cost	0	5	5
Total Expenditure	**741**	**198**	**939**

C. Section C: Time

C.1 Length of the Assessment Phase

Project/Increment Name	Date of Initial Investment Decision Approval	Actual Date of Main Investment Decision Approval	Length of Assessment Phase (months)
Complex Weapons	June 2008	April 2010	22
Future Local Area Air Defence System (Land)	January 2014	July 2015 (forecast)	18 (forecast)

C.2 Planned / Actual Boundaries for In Service Date or Initial Operating Capability

Project/Increment Name	Earliest Approved	Budgeted For	Latest Approved
Fire Shadow	-	March 2012	-
Brimstone 2	July 2012	October 2012	December 2012
Sea Ceptor Demonstration & Manufacture	July 2016	November 2016	May 2018
Future Anti-Surface Guided Weapon (Heavy)	April 2020	October 2020	October 2022
Future Anti-Surface Guided Weapon (Light)	April 2020	October 2020	October 2022

C.3 In-Service Date/Initial Operating Capability

C.3.1 Definition

Project/Increment Name	In-Service Date/Initial Operating Capability
Fire Shadow	**Original definition:** The project will deliver 25 safe and useful munitions in March 2012 (50%). These will form a start-up capability for current operations. **MPR 2012 definition:** These definitions are not applicable yet given the incremental acquisition approach. In Service Date and Initial Operating Capability would likely occur in later increments and be subject to definition and approvals at an appropriate time. However, an initial batch of weapons systems was delivered, on time, in March 2012. These were demonstrated in June 2012 and while the success rate was lower than desired, performance of the hardware met the Fire Shadow key performance measures. **Reason for change:** The Senior Responsible Owner took a decision not to deploy the weapon for testing in Afghanistan as the capability was not sufficiently mature. It could therefore not meet its In-Service Date for use in Afghanistan so it has been re-defined.
Brimstone 2	First Use In Service Date is the minimum usefully deployable military capability; provides 200 missiles with at least 10 Air Carriage Hours, and a Clearance with Limited Evidence (CLE) for deployment on Tornado GR4. *A First Use capability is expected to be available from November 2015.* Initial Operating Capability provides 200 missiles with at least 80 Air Carriage Hours and full Release to Service for deployment on Tornado GR4. *This capability is expected to be available from May 2016*.

Sea Ceptor Demonstration & Manufacture	In Service Date is the date on which there is sufficient evidence across all Defence Lines Of Development to allow the Front Line Command to take control of the system. More specifically, In Service Date is achieved with successful completion of acceptance activities which includes completion of the first Type 23 platform integration and trials, including firings. For Sea Ceptor D Initial Operating Capability will coincide with the In Service Date.
Future Anti-Surface Guided Weapon (Heavy)	In Service Date is defined as *** trained crew and *** FASGW modified Wildcat Helicopter Maritime Attack[1] capable of being operationally deployed on-board either a Type 23 or Type 45 warship with *** ships out-load of FASGW weapons[2]. Defence Lines of Development, including logistic, engineering and mission support shall be available to support a six month deployment.
Future Anti-Surface Guided Weapon (Light)	In Service Date is defined as *** trained crew and *** FASGW modified Wildcat Helicopter Maritime Attack[3] capable of being operationally deployed on-board either a Type 23 or Type 45 warship with *** ships out-load of FASGW weapons[4]. Defence Lines of Development, including logistic, engineering and mission support shall be available to support a six month deployment.

C.3.2 Progress against approved Dates

Project/Increment Name	Approved Date	Actual / Forecast Date	Variation (+/-months)	In-Year Variation (+/- months)
Fire Shadow	March 2012	-	-	-
Brimstone 2	October 2012	November 2015	+37	-
Sea Ceptor Demonstration and Manufacture	November 2016	November 2016	-	-
Future Anti-Surface Guided Weapon (Heavy)	October 2020	October 2020	-	-
Future Anti-Surface Guided Weapon (Light)	October 2020	October 2020	-	-

C.3.3 Timescale variation

C.3.3.1 Fire Shadow – N/A

[1] Capable of meeting the endorsed Surface Combatant Maritime Rotorcraft missions requiring FASGW, as detailed in Surface Combatant Maritime Rotorcraft Key User Requirement 2.2 including Offensive Maritime Surface Warfare, Defensive Maritime Surface Warfare and Coastal Suppression.
[2] Should excessive divergence occur between FASGW(L) and FASGW(H), and an opportunity remains to deliver Capability from one without the other, then the definition of In Service Date will revert to FASGW(H) only.
[3] Capable of meeting the endorsed Surface Combatant Maritime Rotorcraft missions requiring FASGW, as detailed in Surface Combatant Maritime Rotorcraft Key User Requirement 2.2 including Offensive Maritime Surface Warfare, Defensive Maritime Surface Warfare and Coastal Suppression.
[4] Should excessive divergence occur between FASGW(L) and FASGW(H), and an opportunity remains to deliver Capability from one without the other, then the definition of In Service Date will revert to FASGW(L) only.

C.3.3.2 Brimstone 2

Date	Variation (+/- months)	Category	Reason for Variation
Historic	+9	Technical Factors	Further technical issues with the TDW Warhead and with the Roxel (UK) Rocket Motor. Warhead; Redesign and modelling the consistency of penetration of the TDW Warhead lead to warhead consistency firings and UK design review to be scheduled for May 2013; the aim of the review is to close out outstanding design review actions originally planned for March 2011. Rocket Motor; The risk gate based approach for the Roxel (UK) rocket motor risk reduction testing encountered a setback when a fire occurred at the Roxel (UK) site and the Health and Safety Executive took control of key test and inspection facilities. Revision of Schedule Risk Analysis for the project to support a Review Note, due submission Q4 2013; Initial Operating Capability calculated as November 2015.
Historic	+5	Technical Factors	Technical issues with Warhead and Rocket Motor; reported in Interim Main Gate 2.
Historic	+23	Technical Factors	Further technical issues with the Warhead and significant technical issues with Roxel manufactured Rocket Motor. A minor performance concession has been agreed to assist in resolving the technical issue with the Rocket Motor.
Net Variation (+/- months)	**+37**		

C.3.3.3 Sea Ceptor Demonstration & Manufacture – N/A

C.3.3.4 Future Anti-Surface Guided Weapon (Heavy) – N/A

C.3.3.5 Future Anti-Surface Guided Weapon (Light) – N/A

C.3.4 Other costs resulting from Timescale variation

Project/Increment Name	Date	£m (+ Cost / - Saving)	Reason for expenditure or saving
Brimstone 2	Historic	14	**Technical Factors** In March 2011 Dual Mode Seeker Brimstone assets were deployed on operations in Libya. This significantly increased the assumed consumption rate, due to an increase in operational firings and Air Carriage Hours. Given this increased consumption and assuming current consumption rates on operations in Afghanistan, the current stockpile of Dual Mode Seeker Brimstone will be exhausted by March 2014. This, combined with the currently estimated 24 month slip to the Brimstone 2 project, leaves the Royal Air Force with a capability gap until the planned end of UK commitment to operations in Afghanistan in December 2014. It also leaves the UK with a gap on any potential near-term contingent operations, which require a low collateral, precision strike capability. As a result of these emerging capability gaps, a Decision Point 2 option, to provide *** Dual Mode Seeker Brimstone, was considered [and approved] by the Defence Board on 19 October 2012. This additional buy was jointly funded by MOD and MBDA UK Ltd.
Total		**+14**	

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

Project/Increment Name	Operational Impact
Brimstone 2	Delays to project Initial Operating Capability have been mitigated by Decision Point 2 Option, providing a follow-on buy of Dual Mode Seeker Brimstone Urgent Operational Requirement standard missiles.

C.4 Full Operating Capability

COMPLEX WEAPONS

C.4.1 Definition

Project/Increment Name	Full Operating Capability	Progress to date
Fire Shadow	Full Operating Capability requirement under revision as part of wider Indirect Fire Precision Attack Programme.	The incremental approach has delivered an End- to- End Capability Demonstration which was successful in yielding information and understanding that will be used to inform Departmental planning on the way forward- not just in relation to Fire Shadow, but the whole Indirect Fire Precision Attack Project.
Brimstone 2	Full Operating Capability is defined as: full stockpile on Brimstone 2 delivered, all platforms modified to utilise its full capability, sufficient trained air and ground crews, full in-service support solution in place.	Seeker and flight software development work is now complete. Rocket Motor Recovery Programme complete and successful first Tornado firing using the IM rocket motor. Qualification of both energetic sub-systems (warhead and rocket motor) almost complete. Manufacturing programme started. Training packages in development and Support Solution identified.
Sea Ceptor Demonstration & Manufacture	As for Initial Operating Capability but with all remaining Type 23 Frigates (x12) fitted and a full missile stockpile (*** total warshot incl initial ***) delivered.	(i) Achievement of Demonstration Phase Contract Award to deliver First of Class Platform - December 2011. (ii) Successful completion of the System Preliminary Design Review - March 2012. (iii) Successful completion of Instrumented Firings – April 2013 (iv) Manufacture Phase contract awarded for Rest of Class ship sets and initial Common Anti Air Modular Missile buy – September 2013 (v) Successful completion of the Critical Design Review – November 2013
Future Anti-Surface Guided Weapon (Heavy)	FASGW Full Operating Capability assumes that all the requirements of Initial Operating Capability have been met and the capability is compliant with the endorsed threshold User Requirement Document. It is defined as *** crews and *** aircraft to generate the required number of FASGW capable Wildcat Force Elements at Readiness to support the Committed and Responsive Forces. It requires *** Destroyers/Frigates to have been modified and capable of	FASGW(H) Demonstration and Manufacture on contract 26th March 2014

	delivering Wildcat FASGW operations with all appropriate in-service Royal Fleet Auxiliaries capable of resupplying sufficient munitions to meet the FASGW requirements of the Royal Navy Plan. The munitions stockpile is sufficient to meet the agreed FASGW Third Order Assumption quantities for *** Destroyers/Frigates and the Main Operating Base requirements.	
Future Anti-Surface Guided Weapon (Light)	FASGW Full Operating Capability assumes that all the requirements of Initial Operating Capability have been met and the capability is compliant with the endorsed threshold User Requirement Document. It is defined as *** crews and *** aircraft to generate the required number of FASGW capable Wildcat Force Elements at Readiness to support the Committed and Responsive Forces. It requires *** Destroyers/Frigates to have been modified and capable of delivering Wildcat FASGW operations with all appropriate in-service Royal Fleet Auxiliaries capable of resupplying sufficient munitions to meet the FASGW requirements of the Royal Navy Plan. The munitions stockpile is sufficient to meet the agreed FASGW(L) Third Order Assumption quantities for *** Destroyers/Frigates and the Main Operating Base requirements.	FASGW(L) Demonstration and Manufacture planned to be on contract May 2014 FASGW Demonstration and Manufacture Contract for Wildcat integration to follow-on.

C.5 Support / Training / PFI Contract

C.5.1 Scope of Support / Training / PFI Contract

Project/Increment Name	Description
Brimstone Unified Support Contract	Brimstone Weapon System Support (USE) is a pathfinder project to assess whether a common Asset Availability Service is an appropriate solution for the provision and support across TCW. The aim of Brimstone USE, together with Advanced Short Range Air to Air Missile (USE) & Storm Shadow (USE) was to test the approach across different weapons, determine if the savings claimed could actually be achieved and if the service meets our needs.

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

Project/Increment Name	Approved Date	Actual Date	Variation (+/- months)	In-year Variation (+/- months)
Brimstone Unified Support Contract	October 2013	October 2013	-	-

C.5.2.1 Go-Live Date Variation – N/A

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

Project/Increment Name	Approved Date	Actual Date	Variation (+/- months)	In-Year Variation (+/- months)
Brimstone Unified Support Contract-1	September 2018	September 2018	-	-

C.5.3.1 End of Contract Date Variation – N/A

C.5.4 Other costs resulting from Support Cost variation – N/A

C.5.5 Operational Impact of Support / Training / PFI Support Contract variation – N/A

D. Section D: Performance

D.1 Sentinel Score

Current score	Last years score	Comments
Fire Shadow	N/A	
Brimstone 2 – 72 AMBER	78 AMBER	Lower sentinel score caused by missing a declared project Anchor Milestone (Completion of Warhead Qualification). This activity was deliberately paused so that data obtained from the Environmental Data Gathering Trials could be used to determine a more realistic Air Carriage Vibration testing spectrum. It was not on the critical path and this delay has not affected the project end date.
Sea Ceptor - 86 GREEN / AMBER	82 GREEN	The increased score is the net result of completion of Earned Value Management re-baselining, improvement in key staff turnover and increased time elapsed since the last formal 3-Point Estimate of project duration.
Future Anti-Surface Guided Weapon (Heavy) - 90 GREEN	N/A	
Future Anti-Surface Guided Weapon (Light) - 85 GREEN	N/A	

D.2 Performance against Defence Lines of Development (DLOD)

D.2.1 Fire Shadow – N/A

D.2.1.1 Performance against Defence Lines of Development

D.2.1.2 Defence Lines of Development Variation

D.2.2.1 Brimstone 2

Line of Development	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1. Equipment	Spiral development of Dual Mode Brimstone. Insensitive Munition Development	Yes	
2. Training	Training provided for in-service users	Yes	
3. Logistics	Support provided for in-service use	Yes	
4. Infrastructure	Infrastructure sufficient to support stockpile at readiness.	Yes	
5. Personnel	Supply of sufficient qualified personnel	Yes	
6. Doctrine	Principles for capability employment	Yes	
7. Organisation	No change to organisation required.	Yes	
8. Information	Data handling and transmission sufficient.	Yes	
Currently forecast (with risks)		8 (0)	0
Last year's forecast (with risks)		8 (1)	0

D.2.2.2 Defence Lines of Development Variation

Date	DLOD	Category	Reason for Variation
Historic	Equipment	Technical Factors	Significant technical difficulties experienced with Rocket Motor and Warhead Development are being managed to minimise the impact on cost and time.

D.2.3.1 Sea Ceptor D&M

Line of Development	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1. Equipment	Delivery, installation and acceptance of First of Class system	Yes	
2. Training	Delivery of Operator training solution through Maritime Composite Training System and maintainer training through Computer based training solution.	Yes	
3. Logistics	Industrial In-service support solution in place	Yes	
4. Infrastructure	Defence Munitions processing capability in place.	Yes	
5. Personnel	Supply of sufficient qualified personnel	Yes	
6. Doctrine	Principles for capability employment	Yes	
7. Organisation	Organisation in place to exploit capability.	Yes	
8. Information	information interfaces defined, proven and accredited	Yes	
Currently forecast (with risks)		8 (0)	0
Last year's forecast (with risks)		8 (0)	0

D.2.3.2 Defence Lines of Development Variation – N/A

D.2.3.1 Future Anti-Surface Guided Weapon (Heavy)

Line of Development	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1 Equipment	Clearance for the operation of FASGW(H) on an embarked Wildcat. One ship outload, role equipment and test sets available. Ability to generate FASGW(H) munitions for capability build up.	Yes	
2 Training	Aircrew, maintainers and ships personnel able to deploy operationally with FASGW(H) on board surface ships.	Yes	
3 Logistics	Logistic Support Date Achieved In service support arrangements in place to support deployment of a ships flight with weapons.	Yes (with risks)	

4	Infrastructure	Main Operating Base infrastructure to support transition plan. First ship cleared to receive and operate FASGW(H) Cleared to store, process and deliver FASGW(H) to front line.	Yes	
5	Personnel	Aircrew, maintainers and ships personnel available to deploy operationally with FASGW(H). Support provision personnel in place.	Yes	
6	Doctrine	Standard Operating Procedures and tactics sufficiently mature to support operational deployment of FASGW(H).	Yes	
7	Organisation	Organisation capable of operations.	Yes	
8	Information	Information linkages between weapon, aircraft, ship and shore in place to support operational deployment	Yes	
	Currently forecast (with risks)		8 (1)	#
	Last year's forecast (with risks)		N/A	N/A

D.2.3.2 Defence Lines of Development Variation – N/A

D.2.4.1 Future Anti-Surface Guided Weapon (Light)

Line of Development		Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1	Equipment	Clearance for the operation of FASGW(L) on an embarked Wildcat. One ship outload, role equipment and test sets available. Ability to generate FASGW(L) munitions for capability build up.	Yes	
2	Training	Aircrew, maintainers and ships personnel able to deploy operationally with FASGW(L) on board surface ships.	Yes	
3	Logistics	Logistic Support Date Achieved In service support arrangements in place to support deployment of a ships flight with weapons.	Yes (with risks)	
4	Infrastructure	Main Operating Base infrastructure to support transition plan. First ship cleared to receive and operate FASGW(L) Cleared to store, process and deliver FASGW(L) to front line.	Yes	
5	Personnel	Aircrew, maintainers and ships personnel available to deploy operationally with FASGW(L). Support provision personnel in place.	Yes	
6	Doctrine	Standard Operating Procedures and tactics sufficiently mature to support operational deployment of FASGW(L).	Yes	
7	Organisation	Organisation capable of operations.	Yes	
8	Information	Information linkages between weapon, aircraft, ship and shore in place to support operational deployment	Yes	

Currently forecast (with risks)	8(1)	#
Last year's forecast (with risks)	N/A	N/A

D.2.4.2 Defence Lines of Development Variation – N/A

D.3 Performance against Key Performance Measures (KPM)

D.3.1 Fire Shadow – N/A

D.3.1.1 Performance against Key Performance Measures (KPM)

D.3.1.2 Key Performance Measures Variation

D.3.1.3 Operational Impact of variation

D.3.2 Brimstone 2

D.3.2.1 Performance against Key Performance Measures (KPM)

KPM	DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
KUR1, UR 1.1	Equipment	The User requires a capability that is effective against the specified target set at the stipulated max range.	Yes	
KUR2, UR 1.4	Equipment	The User requires a weapon that can achieve a lethal effect against a wide variety of target types.	Yes	
KUR3, UR 1.7	Equipment	The User requires the ability to engage targets in complex scenarios with a high degree of confidence that only the intended targets will be engaged.	Yes	
KUR4, UR 1.9	Equipment	The User requires a single weapon to be able to effectively prosecute moving / manoeuvring targets.	Yes	
KUR5, UR 1.14	Equipment	The user requires the ability to engage targets in environments where collateral damage issues exist	Yes	
KUR7, UR 1.16	Equipment Information	The User requires that data be provided to Dstl to enable the Theatre Command Structure to complete Collateral Damage Assessment as part of the target clearance process for pre-planned missions.	Yes	
KUR10, UR 1.46	Equipment	The User requires a capability that allows an engagement to be aborted after launch.	Yes	
KUR 11, UR 2.1	Operational and Logistical	The User requires the all-up-round to be compliant with the external profile, mass and Centre of Gravity (including tolerances) for the specified in-service weapon warhead	Yes	
KUR 12, UR 3.27	Operational and Logistical	The User requires that the warhead be compatible with the in-service components and equipment associated with legacy weapons as stated	Yes	
Currently forecast (with risks)			9 (0)	0
Last year's forecast (with risks)			9 (0)	0

D.3.2.2 Key Performance Measures Variation

Date	KPM	Category	Reason for Variation
Historic	KUR1, UR 1.1. The User requires a capability that is effective against the specified target set at the stipulated max range.	Technical Factors	Batch 5 (Dec 12) & 6 Warhead proof and tandem firings successfully completed May 13 to prove consistency; further tandem firings are planned Sept 13 to provide additional evidence. Rocket motor design meets max range requirement but the design is still to be proven through the rocket motor recovery programme and qualification.
Historic	KUR3, UR 1.7. The User requires the ability to engage targets in complex scenarios with a high degree of confidence that only the intended targets will be engaged.	Technical Factors	Analysis of the Seeker Quarry Trial in Feb 13, conducted to optimise Dual-Mode software, is ongoing and subsequent seeker performance modelling was validated through the DEV 2 trial in Sep/Oct 13.
Historic	KUR4, UR 1.9. The User requires a single weapon to be able to effectively prosecute moving / manoeuvring targets.	Technical Factors	Analysis of the Seeker Quarry Trial in Feb 13, conducted to optimise Dual-Mode software, is ongoing and subsequent seeker performance modelling was validated through the DEV 2 trial in Sep/Oct 13 but is subject to Investment Approvals Committee Review Note approval.
Historic	KUR4, UR 1.9; The User requires a single weapon to be able to effectively prosecute moving / manoeuvring targets.	Technical Factors	Analysis of the Seeker Quarry Trial in February 2013, conducted to optimise Dual-Mode software, is on-going and subsequent seeker performance modelling was validated through the DEV 2 trial in Sep/Oct 2013 but is subject to Investment Approvals Committee Review Note approval. The Urgent Operational Requirement weapon configuration on which Brimstone 2 is based was not formally assessed under trials conditions due to the rapid timescales.

D.3.2.3 Operational Impact of variation – N/A

D.3.3 Sea Ceptor D&M

D.3.3.1 Performance against Key Performance Measures (KPM)

KPM	DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
KUR 1	Equipment Doctrine	The User shall be able to neutralise the Air Threats targeting the Host Platform.	Yes	
KUR 2	Equipment Doctrine	The User shall be able to neutralise the Air Threats targeting the Defended Asset.	Yes	
KUR 3	Equipment Doctrine	The User shall be able to neutralise the Stand-off Air Threat.	Yes	
KUR 4	Equipment Doctrine	The User shall be able to Control the Engagement.	Yes	
KUR 5	Equipment	The User shall be able to utilise in Environmental Conditions.	Yes	
KUR 6	Equipment Information	The User shall integrate to the Host Platform.	Yes	
KUR 7	Information	The Communication and Information System interoperability elements of the solution to this User Requirement Document shall be acquired in accordance with MOD Communication and Information System policy.	Yes	
KUR 8	Personnel Organisation	The User shall utilise with available manning.	Yes	
KUR 9	Training	The User shall be trained to Utilise.	Yes	
KUR 10	Logistics Equipment	The User shall complete missions without Critical Failure	Yes	
Currently forecast (with risks)			10 (0)	0
Last year's forecast (with risks)			10 (0)	0

D.3.3.2 Key Performance Measures Variation – N/A

D.3.3.3 Operational Impact of variation – N/A

D.3.4 Future Anti-Surface Guided Weapon (Heavy)

D.3.4.1 Performance against Key Performance Measures (KPM)

KPM	DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
UR40	Equipment Information	The Command Information System interoperability elements of the solution to this User Requirements Document shall be acquired in accordance with MOD Command Information System policy.	Forecast to be met	
UR48	Equipment Training	The user shall be provided with a capability that allows deployment in existing and planned magazines on surface vessels:	Forecast to be met	
UR50	Equipment Training Logistics	The User shall be provided with a capability that achieves {Mission Kill} against {***}, as described in Table 9	Forecast to be met	
UR65	Equipment Training Logistics	The User shall achieve {Mission Kill} against multiple {***} targets with 1 {Wildcat} outload.	Forecast to be met	

UR7	Equipment	The User shall be provided with a capability that operates from {Wildcat}.	Forecast to be met	
Currently forecast (with risks)			5	0
Last year's forecast (with risks)			N/A	N/A

D.3.4.2 Key Performance Measures Variation – N/A

D.3.4.3 Operational Impact of variation – N/A

D.3.5 Future Anti-Surface Guided Weapon (Light)

D.3.5.1 Performance against Key Performance Measures (KPM)

KPM	DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
UR40	Equipment Information	The Command Information System interoperability elements of the solution to this User Requirements Document shall be acquired in accordance with MOD Command Information System policy.	Forecast to be met	
UR48	Equipment Training	The user shall be provided with a capability that allows deployment in existing and planned magazines on surface vessels:	Forecast to be met	
UR52	Equipment Training Logistics	The User shall be provided with a capability that achieves {Mission Kill} against Large {***}, as described in Table 8 .	Forecast to be met	
UR64	Equipment Training Logistics	The User shall achieve {Mission Kill} against multiple {***} with 1 {Wildcat} outload.	Forecast to be met	
UR7	Equipment	The User shall be provided with a capability that operates from {Wildcat}.	Forecast to be met	
Currently forecast (with risks)			5	0
Last year's forecast (with risks)			N/A	N/A

D.3.5.2 Key Performance Measures Variation – N/A

D.3.5.3 Operational Impact of variation – N/A

D.4 Support Contract – Brimstone Weapon System Support - USE

D.4.1.1 Performance against Key Performance Measures (KPM)

KPM	DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
	Logistic Support	Brimstone WSS – USE Initial Service Capability - April 14	Met	
	Logistic Support	Brimstone WSS – USE Full Service Capability – July 14	Forecast (with minor risk)	
Currently forecast (with risks)			1(1)	0
Last year's forecast (with risks)			N/A	N/A

D.4.1.2 Key Performance Measures Variation – N/A

D.4.1.3 Operational Impact of variation – N/A

CORE PRODUCTION CAPABILITY

Project Name		
Core Production Capability		
Team Responsible		
Nuclear Propulsion Project Team		
Senior Responsible Owner	**Date Appointed**	**Planned end date**
Commodore J Corderoy [1] (NP-Hd)	24 April 2014	Autumn 2016
Project/Increment Name	**Current Status of Projects / Increments**	
Core Production Capability	Post-Main Investment Decision	

[1] Appointed SRO on the 24th April 2014 replacing Commodore R Stokes.

A. Section A: The Project

A.1. The Requirement

To maintain a naval reactor Core Production Capability (CPC) to support the UK's nuclear submarine flotilla. All Royal Navy submarine propulsion nuclear reactor cores have been manufactured at the Rolls-Royce (RR) Raynesway site.

To conduct nuclear operations on the Raynesway Site, Rolls-Royce Marine Power Operations Limited is 'Licensed' formally by the Health and Safety Executive (Office for Nuclear Regulation) as required by the Nuclear Installations Act. As the nuclear site licensee, Rolls-Royce Marine Power Operations Limited has a legal requirement to undertake a Periodic Review of Safety every 10 years, with the last review completing in 2012. The Periodic Review of Safety requires the Licensee to review the activities conducted on the site and the hazards arising from them and compare with relevant good practice. The 2002 Periodic Review of Safety identified that the current facilities, constructed in the late 1950s have a number of shortcomings against relevant good nuclear and environmental standards. The continuation of nuclear operations to support the submarine programme post 2012 requires capital investment to meet the latest standards.

The technological and manufacturing capability to produce submarine reactor cores has traditionally been sustained through successive contracts for their production. With the introduction of long life cores and the reduction in the submarine flotilla size the numerical requirement for cores has reduced.
The Strategic Defence and Security Review (SDSR) White Paper deferred the In-Service Date (ISD) for the Successor SSBN to 2028 with a 36 month drumbeat.

A.2. The Assessment Phase

In September 2007, the Investment Appraisals Board approved the CPC Initial Gate Business Case, to down select to the phased regeneration of the Rolls-Royce Raynesway Site, as the most cost effective way of delivering the capability.

Prior to Main Gate Contract being awarded, two Review Notes were approved to continue the Assessment Phase and enable the Department to explore other more advantageous commercial arrangements.

In 2010 it became apparent that several stakeholders, including HM Treasury, required a more detailed review of the options to refurbish the current facilities to establish whether it offered improved value for money. This led to Director Submarines directing a study into the viability of refurbishing the current facilities to meet the CPC requirements and formally presenting this as an option for Main Gate.
The Assessment Phase contract was let on 13th February 2008. This contract covered Assessment Phase work up to February 2010.

The Interim Contract was placed on 4th February 2010 to cover the work required to complete Assessment Phase activities up to placement of the Main Phase Contract on 23rd April 2012.

In January 2012 the IAC approved the Review Note requesting release of funding against the Main Gate Business Case. The advanced funding was required to maintain capability and continuation of the programme i.e. Sustainment.

During the Assessment Phase of the CPC project, Rolls-Royce Power Engineering have continued to produce nuclear cores for the Astute Class Ship Submersible Nuclear (SSN).

A.3. Project History

April 2012: HMT approved the CPC Main Gate Business Case.

April 2012: Placement of the main phase CPC Contract. The scope includes the full regeneration of CPC and Sustainment of capability to March 2023 and production and delivery of 2 cores.

May 2012: IAC approval of Main Gate Business Case.

CORE PRODUCTION CAPABILITY

The CPC contract includes the delivery of 2 cores (H12 [Astute Boat 7] and J1 [Successor Boat 1]). Approval for J1 is included within the CPC Main Gate Business Case and H12 is included within the Astute Submarine Programme Approval of Aug 2011.

***

May 2012 to January 2013: Construction Contract tender evaluation.

November 2012: Following the Licensed Site Periodic Safety Review (PSR), The Health and Safety Executive's Office for Nuclear Regulation concluded that normal operation of the Licensed Site can continue whilst a programme of work to implement a number of improvements is progressed.

December 2012: Rolls-Royce place Contract with sub-contractor CH2MHILL to provide the project support.

January 2013: Rolls-Royce place contract for construction with Graham Construction. Work commenced on site. The demolition of Nuclear Manufacturing Services was completed in January 2013 in preparation for the start of Phase 1.

March 2013: Demolition of the Operations Management Centre was completed.

March 2013: Contract amendment to bring H11 under CPC from the core batch buy contract.

May 2013: Manufacturing Facility 1st Build (MF1B) piling commenced.

Cores have been delivered in-year to support the submarine programme.

A.4. In-Year Progress

May 2013: Reactor core *** development for Successor (SSBN) explicitly included in CPC J Core development.

July 2013: Piling of the Energy Centre and Reception Centre was completed.

August 2013: Piling of MF1B was completed.

October 2013: Steel frame erected for the Energy Centre.

***

December 2013: Steel frame erected for the Reception Centre.

March 2014: Steel frame work erected for MF1B.

6th March 2014: The Secretary of State for Defence made a statement to Parliament announcing his decision to refuel HMS Vanguard in 2015, following the detection of low level radiation in the cooling water of the prototype core at the NRTE. ***

A.5. Capability Risks

Delivery of the CPC project is essential in order to maintain the capability to manufacture nuclear reactor cores for the submarine programme and support development work on the Successor core design and manufacturing processes.

The CPC project will maintain the Nuclear site Licence and essential manufacturing and engineering skills; these would require significant time and cost to recover and therefore represent an intolerable risk to the Successor Deterrent core production schedule and subsequent in-service date.

A.6. Associated Projects

Project/Increment Name	Forecast In Service Date / Initial Operating Capability	Approval Status
Successor (Incl Next Generation Nuclear Propulsion Plant)	ISD of 2028	Pre-Main Gate
Astute Boat 4	ISD of 2018 - Handover to Royal Navy	Post-Main Gate
Astute Boat 5	ISD of 2020 - Handover to Royal Navy	Post-Main Gate
Astute Boat 6	ISD of 2022 - Handover to Royal Navy	Post-Main Gate
Astute Boat 7	ISD of 2024 - Handover to Royal Navy	Post-Main Gate

A.7. Procurement Strategy

Project/Increment Name	Contractor	Contract Scope	Contract Type	Procurement Route
Core Production Capability	Rolls-Royce	Demonstration and Manufacture	Target Cost Incentive Fee	Single Source

A.8. Support Strategy

Description
The CPC contract procures a capability to manufacture nuclear reactor cores for Astute and Successor. The support strategy is embedded in the CPC Procurement Strategy.

B. Section B: Cost

B.1. Cost of the Assessment Phase

Project/Increment Name	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)
Core Production Capability	107	107	0
Total (£m)	**107**	**107**	**0**

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

Project/Increment Name	Lowest Approved (£m)	Budgeted For (£m)	Highest Approved (£m)
Core Production Capability	1128	1190	1272

B.3. Cost of the Demonstration and Manufacture Phase

Project/Increment Name	Budgeted for Cost (£m)	Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
Core Production Capability	1176	1148	-28	+38
Total (£m)	**1176**	**1148**	**-28**	**+38**

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

B.3.1.1 Core Production Capability

Date	Variation (£m)	Category	Reason for Variation
March 2014	-1	Technical Factors	***
March 2014	+18	Technical Factors	***
March 2014	-5	Technical Factors	***
April 2013	+26	Changed Capability Requirements	***
Historic	-4	Technical Factors	This reflects reduction in the risk management provision. Although it appears that ~£10M might not be needed, ~£6M is required to make provision for unforeseen issues.
Historic	-26	Procurement Processes	This reflects profit reduction following negotiation in accordance with the CPC Regeneration Contract Saving Audit Pack.
Historic	-36	Procurement Processes	Variation due to the delay of the Main Gate approval.
Net Variation (£m)	**- 28**		

B.3.2 Operational Impact of Cost Variations of Demonstration & Manufacture Phase – N/A

B.4 Progress against approved Support / Training / PFI Cost

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2013 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2014 (£m)
Assessment Phase	107	0	107
Demonstration & Manufacture Phase	73	110	183
Support Phase / Service / PFI Cost	0	0	0
Total Expenditure	**180**	**110**	**290**

In May 2012, the Investment Approvals Committee approved £1,190 million as the cost of the D&M phase. This includes £14 million which was subsequently advanced into the Assessment Phase in order to continue the programme whilst contract negotiations were finalised and has been accounted for as a cost to the Assessment Phase.

C. Section C: Time

C.1 Length of the Assessment Phase

Project/Increment Name	Date of Initial Investment Decision Approval	Actual Date of Main Investment Decision Approval	Length of Assessment Phase (months)
Core Production Capability	September 2007	May 2012	56

C.2 Planned / Actual Boundaries for In Service Date or Initial Operating Capability

Project/Increment Name	Earliest Approved	Budgeted For	Latest Approved
Core Production Capability	-	May 2021	-

C.3 Full Operating Capability

C.3.1 Definition

Project/Increment Name	In-Service Date/Initial Operating Capability
Core Production Capability	Ability to manufacture a core through the new facility

C.3.2 Progress against approved Dates

Project/Increment Name	Approved Date	Actual / Forecast Date	Variation (+/-months)	In-Year Variation (+/- months)
Core Production Capability	May 2021	February 2022[2]	+9	+6

C.3.3 Timescale variation

C.3.3.1 Core Production Capability

Date	Variation (+/- months)	Category	Reason for Variation
February 2014	+1	Technical Factors	***
November 2013	+5	Technical Factors	***
Historic	+3	Procurement Processes	Delay in placing Main Gate contract.
Net Variation (+/- months)	**+9**		

C.3.4 Other costs resulting from Timescale variation – N/A

C.3.5 Operational Impact of Full Operating Capability variation

Project/Increment Name	Operational Impact
Core Production Capability	Nil. ***

C.4 Full Operating Capability – see above

C.5 Support / Training / PFI Contract – N/A

[2] Full Operating Capability forecast presented at the Quarterly Risk Review on 19th February 2014.

D. Section D: Performance

D.1 Sentinel Score

Current score	Last years score	Comments
88	94	The reduced current score (March 2014) results from *** schedule variation.

D.2 Performance against Defence Lines of Development (DLOD)

Line of Development	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1. Equipment	Production of Cores for Astute Class and the first Successor submarine. Licence conditions:19, 20, 21	Yes	
2. Training	Trained personnel to enable equipment DLOD. Licence conditions: 10, 12	Yes	
3. Logistics	Maintenance of a Nuclear Site Licence. Licence condition:15	Yes	
4. Infrastructure	Facilities to manufacture Cores. Licence conditions: 16, 20	Yes	
5. Personnel	Maintenance of a Nuclear Site Licence. Licence condition: 12, 26	Yes	
6. Doctrine	N/A	-	
7. Organisation	Maintenance of a Nuclear Site Licence. Licence condition: 36	Yes	
8. Information	Maintenance of a Nuclear Site Licence. Licence conditions: 6, 25	Yes	
Currently forecast (with risks)		7 (0)	0
Last year's forecast (with risks)		7 (0)	0

D.2.1 Defence Lines of Development Variation – N/A

D.3 Performance against Key Performance Measures (KPM)

D.3.1 Core Production Capability

CORE PRODUCTION CAPABILITY

D.3.1.1 Performance against Key Performance Measures (KPM)

KPM	DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
The USER shall be supplied with a core production capability that can produce cores that comply with Astute and Successor specifications.	All DLODs except Doctrine	Supply of Astute and Successor SSBN Reactor Cores - must provide reactor cores to the specification defined by the Astute and Successor programmes ***.	Yes	
The USER shall be supplied with cores according to the submarine programme	Equipment	The intention to renew the deterrent platform was stated in Defence White Paper "The future of the United Kingdom's Nuclear Deterrent". The white paper was endorsed by parliamentary vote early 2007. The provision of cores aligned with the submarine build programme reduces the storage requirement and ensures that approvals are aligned with platform requirements	Yes	
Currently forecast (with risks)			2 (0)	0
Last year's forecast (with risks)			2 (0)	0

D.3.1.2 Key Performance Measures Variation – N/A

D.3.1.3 Operational Impact of variation – N/A

D.4 Support Contract – N/A

FUTURE STRATEGIC TANKER AIRCRAFT

Project Name		
Future Strategic Tanker Aircraft		
Team Responsible		
Strategic Transport and Air to Air Refuelling Team		
Senior Responsible Owner	**Date Appointed**	**Planned end date**
Air Commodore Jon Ager	25 April 2013	
Project/Increment Name	**Current Status of Projects / Increments**	
Future Strategic Tanker Aircraft	Post-Main Investment Decision	

A. Section A: The Project

A.1. The Requirement

The Future Strategic Tanker Aircraft Service will provide 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

The Future Strategic Tanker Aircraft was nominated as a potential Private Finance Initiative project in 1997. An Assessment Phase, designed to confirm whether a Private Finance Initiative 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. Project History

The Main Gate Business Case was submitted to the Investment Approvals Board in January 2007 and was approved in May 2007. In March 2008 a 27 year Private Finance Initiative contract was signed. The final Approval envelope for Future Strategic Tanker Aircraft was set by the Investment Approvals Board in June 2008.

The Investment Approvals Board approved Contract Not To Exceed cost remains at £10.5 Bn. In addition there will be Front Line Command manpower and support costs leading to a total cost of £12.3 Bn.

The successful maiden flight of the first green Future Strategic Tanker Aircraft A330-200 aircraft took place on the 4th June 2009; the aircraft was subsequently delivered for conversion to the Airbus Military purpose-built hangar facility Getafé in Spain on the 10th July 2009. It was joined by the second Future Strategic Tanker Aircraft aircraft on the 7th September 2009; both aircraft have now been converted for their Future Strategic Tanker Aircraft role, which includes fitting of military avionics as well as the specialist refuelling equipment. Following this work both aircraft moved into the Certification and Qualification programme.

The Future Strategic Tanker Aircraft is not simply about the procurement of aircraft, but covers all aspects of an integrated worldwide aircraft service, ranging from the provision of the infrastructure, including a hangar complex (which allows for the maintenance of two aircraft simultaneously and houses the two Future Strategic Tanker Aircraft Squadrons, the maintenance crew; operations centre and associated office accommodation), a full flight crew and engineer training service, despatch and ground support. The new facility, known as the AirTanker Hub, was completed ahead of schedule and was officially opened on 31 March 2011, for the provision of the Future Strategic Tanker Aircraft service at Royal Air Force Brize Norton.

The construction of the training facility building was completed ahead of schedule.

TEMPEST and Defensive Aids Sub System testing began at Boscombe Down on 18 April 2011 and Ground testing for Air to Air Refuelling with receivers began in May 2011.

European Aviation Safety Agency issued the Supplemental Type Certificate 1 and 2 to Airbus Military on 20 April 2011 and 29 July 2011 respectively. MOD and Air Tanker signed a contract on 11 July 2011 to allow C130 Hercules aircraft to use the hangar for line maintenance.

Secretary of State for Defence, Dr Liam Fox named the Future Strategic Transport Aircraft 'Voyager' at the Royal International Air Tattoo at Royal Air Force Fairford on 15 July 2011.

Cobham achieved the UK Civil Aviation Authority approval for the extension to their European Aviation Safety Agency Part-145 accreditation, to include Base and Line Maintenance for the Airbus A330-243 series aircraft on 23 August 2011, signifying the beginning of the conversion programme at Cobham. On the 10 October 2011 the Civil Aviation Authority issued the Part 145 & M Certificate to Air Tanker Services. This completed the set of Air Tanker Services deliverables for Introduction to Service. Because of problems in the trials programme and delay in delivery of documentation from Air Tanker, the Introduction To Service date slipped to February 2012.

The first Voyager aircraft arrived at Royal Air Force Brize Norton on 21 December 2011. On arrival, Air Tanker registered the aircraft and obtained the Civil Aviation Authority Certificate of Airworthiness. The originally planned flight trials to clear wing pod Air to Air Refuelling for Tornado and Typhoon finished in December 2011. These trials identified problems associated with fuel leakage at various parts of the Air to Air Refuelling clearance flight envelope. Rectification plans for these issues were agreed with Air Tanker and the Independent Technical Adviser on 31 January 2012.

The Simulator Test Readiness Review completed successfully on 10 January 2012. The Type Certification Exposition version 5 for Air Transport & Aeromed 3 was issued on 2 February 2012. Capability Acceptance at Introduction To Service acknowledged that only the Air Transport and Aeromed 3 elements of the capability had been achieved on 2 February 2012, but not achievement of an acceptable Air to Air Refuelling capability. The Director Air Support signed the Voyager Release To Service Recommendation for Air Transport and Aeromed 3 only, on 21 March 2012.

Future Strategic Tanker Aircraft project has previously been reported in the Major Projects Report on a forecasted Whole Life Cost basis, including all costs (up to 2035) for PFI contract and other costs incurred by MOD in use of the PFI service. Public Accounts Committee on 4 February 2013 agreed that fuel costs would be removed from future reports. MOD and NAO agreed for Major Projects Report 2013 that Future Strategic Tanker Aircraft project should be reported on a basis similar to that of other projects. This resulted in a reduction in the approval value from £12,307 million, reported in 2012, to £11,779 million reported in MPR13. The fuel elements were also removed from the forecast cost and cost variations.

FSTA continued to build capability. The 1st Voyager aircraft was in trials programme with Airbus Military. The 2nd aircraft (MOD's 1st delivered) was granted a Release To Service for Air Transport on 4 April 2012, was placed on Military Aircraft Register on 5 Apr 2012 and commenced operational flying.

Following experience on the 3rd and 4th aircraft conversions, industry decided in Jun 2012 to move remaining 10 conversions to Airbus Military facility in Getafe near Madrid. The 3rd aircraft was delivered end of December 2012, transferred to the Military Register and commenced Air Transport tasking.

A standard (un-converted) Airbus A330 has been used since 5 January 2013 by AirTanker Services. This "green" aircraft has alleviated pressure on AAR crew training during 2013 through being used for Air Transport operations instead of other Voyager aircraft. It will be fed back into the conversion programme in January 2015.

MOD placed on contract the enhanced FSTA Aircraft Platform Protection system (EDAS). Embodiment is underway, as planned in the programme and is also reflected in wider defence capability planning. Voyager infrastructure at RAF Brize Norton completed, also the training service stood up with the full flight simulator operational and used to train crews.

The 4th Voyager aircraft was delivered on time at the end of April 2013. The remaining deliveries remained on schedule and the May 2014 ISD remained unchanged.

A.4. In-Year Progress

Aircraft deliveries have continued during 2013/14 with a total of seven aircraft (including the above reported "green" aircraft) now delivered as at end March 2014.

During 2013/14 the Future Strategic Tanker Aircraft project has continued to build operational capability. The Release To Service clearance to deliver Air to Air Refuelling of Tornado was granted on 16 May 2013. The Typhoon Release To Service and Mk3 Voyager Release To Service for 2 point tanking were both granted on 15 August 2013. The Release To Service for refuelling C130 aircraft from the Fuselage Refuelling Unit was granted in March 2014 and the Release To Services' of Extended Twin Range Operations for Air Transport and Air To Air Refuelling were granted in February and March

14 respectively. With the granting of the Release To Service's, Future Strategic Tanker Aircraft is now delivering the capability requirements of Air Transport, Air to Air Refuelling, and Medevac capabilities.

During the year Future Strategic Tanker Aircraft has stepped up its operational delivery, it took over the Falkland Islands South Atlantic Airbridge in October 2013 from expensive charter aircraft and following accelerated delivery (three months earlier than planned) of the enhanced Aircraft Platform Protection system capability previously reported, it took over the Afghanistan airbridge from Tristar aircraft in December 2013. Over the 2013 calendar year, Voyager aircraft flew 7,404 hours in RAF service.

Looking forward from this reporting year, the 7th modified aircraft was delivered during May 2014 to complement the unmodified "green" aircraft. With an 8th modified aircraft working-up following accelerated Enhanced Platform Protection modification the ISD was met at end May 2014 as all critical military capability required to meet the current operational demand has been delivered. All modified Future Strategic Tanker Aircraft are capable of refuelling operations simultaneously with any two of Air-to-Air Refuelling-probe-equipped Fast Jets, and five of the nine aircraft are able to transfer fuel to large aircraft. The previously reported "green" aircraft is delivering the required Falkland Islands Airbridge capability which does not require it to be converted. Nine modified aircraft will be available from September 2014.

A.5. Capability Risks

Following the retirement of the VC10 and Tristar aircraft, the Future Strategic Tanker Aircraft programme provides to the Royal Air Force a reliable, safe and efficient Military Air Transport and Air to Air Refuelling service.

The primary role for the Future Strategic Tanker Aircraft is Air-to-Air Refuelling, and the objective of these operations is to enhance combat effectiveness by extending the range, payload or endurance, of front line fast jet aircraft and large aircraft types where and when it is needed. Continued availability of FSTA aircraft and operational clearances is essential to maintain the UK's strategic deployment and tactical strike capabilities.

A.6. Associated Projects - N/A

A.7. Procurement Strategy

Project/Increment Name	Contractor	Contract Scope	Contract Type	Procurement Route
Future Strategic Tanker Aircraft	AirTanker Ltd	PFI Service Delivery	PFI	Competitive - International

A.8. Support Strategy

Description
Future Strategic Tanker Aircraft is a Private Finance Initiative programme that will provide an Air-to-Air Refuelling and passenger Air Transport service for 24 years. The contract will provide a comprehensive and integrated service solution, based on new Airbus A330-200 aircraft modified to provide Air-to-Air Refuelling capability. The service will include the provision of purpose designed training and maintenance facilities at Royal Air Force Brize Norton, together with through life training, maintenance and support.

Project/Increment Name	Contractor	Contract Scope	Contract Type	Procurement Route
Future Strategic Tanker Aircraft	AirTanker Ltd	PFI Service Delivery	PFI	Competitive - International

B. Section B: Cost

B.1. Cost of the Assessment Phase

Project/Increment Name	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)
Future Strategic Tanker Aircraft	13	38	+25
Total (£m)	**13**	**38**	**+25**

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

Project/Increment Name	Lowest Approved (£m)	Budgeted For (£m)	Highest Approved (£m)
Future Strategic Tanker Aircraft	-	11779	-

B.3. Cost of the Demonstration and Manufacture Phase – N/A

B.4 Progress against approved Support / Training / PFI Cost

Project/Increment Name	Approved Cost (£m)	Forecast cost (£m)	Variation (£m)	In-year Variation (£m)
Future Strategic Tanker Aircraft	11779	11402	-377	+9

B.4.1 Cost Variation against approved Support / Training / PFI Cost

B.4.1.1 Future Strategic Tanker Aircraft

Date	Variation (£m)	Category	Reason for Variation
March 2014	+7	Budgetary Factors	Delay in refinancing of PFI Capital reduces assumed savings.
March 2014	+4	Inflation	Increased programme costs due to use of forecasted instead of estimated RPI in Year 10 of project.
March 2014	+9	Technical Factors	Project resources increased to meet MAA requirements and maintain Airworthiness and Safety compliance. "Technical Factors" chosen from available current criteria but does not reflect cause of the change, MoD and NAO will consider a new criteria for MPR15
March 2014	+17	Technical Factors	Installation and maintenance of Fuel Tank Inerting System.
March 2014	+18	Procurement Processes	Finalisation of costs of option for potential change to fleet numbers.
March 2014	-5	Budgetary Factors	Change to assumptions on EDAS VAT and Foreign Exchange rates.
March 2014	-2	Budgetary Factors	In year reduction experienced due to usage, risk and changes.
March 2014	1	Budgetary Factors	COSVAT increased due to use of external manpower
March 2014	1	Budgetary Factors	Increased handling and landing fees partly offset by demographic impacts on RAF manpower capitation rates.

March 2014	-80	Changed Capability Requirements	Steady state hours changed to 16,918 per annum reflecting confirmation of previous forecast of impact of the draw down of Harrier, reduction in Tornado and new concurrency sets.
March 2014	39	Changed Capability Requirements	Element of remaining estimated costs reversed out of project team forecast in order to show above actual impact of confirmed changed capability requirements.
Historic	-42	Changed Capability Requirements	Air Command and 2 Gp are assessing Air to Air Refuelling demand with the effect of the draw down of Harrier, the reductions in Tornado and the new concurrency sets. ***
Historic	+45	Inflation	Increased program costs due to RPI.
Historic	+3	Technical Factors	Increased costs for the purchase of drogues and fuel tank inerting.
Historic	-7	Technical Factors	Risk provision reallocated to trials activity needed to bring Voyager into service.
Historic	+6	Budgetary Factors	Delays in refinancing of PFI Capital reduces assumed savings.
Historic	-19	Procurement Processes	Finalisation of EDAS commercial negotiations results in a £19m saving on EDAS.
Historic	+5	Technical Factors	Increased trials activity needed to bring Voyager into service.
Historic	-98	Budgetary Factors	Increase in assumption of the amount that can be realised by refinancing.
Historic	+31	Inflation	Increase in Retail Price Index assumption.
Historic	+24	Changed Capability Requirements	Inability to realise savings associated with proposed French utilisation of Voyager capability.
Historic	-10	Accounting Adjustments and Re-definitions	Revised VAT treatment of PFI training element.
Historic	-20	Budgetary Factors	Reassessment by Front Line Command of manpower and operating costs.
Historic	-3	Budgetary Factors	Reduction in general office support costs due to budgetary constraints.
Historic	+2	Technical Factors	Implementation of civil aviation safety standards.
Historic	-5	Technical Factors	Introduction to Service and aircraft receiver trials delayed resulting in reduced service charge.
Historic	+124	Changed Capability Requirements	Costs associated with PR11 Options which address platform protection and greater utilisation of the a/c.
Historic	-16	Budgetary Factors	Reduced costing due to reprofiling of project manpower required to support the programme and reduced in-year trials support costs.

Historic	+3	Accounting Adjustments and Re-definitions	Change in VAT rate from 17.5% to 20% resulting in an increase in costs.
Historic	-38	Accounting Adjustments and Re-definitions	Correction of IRDEL Double Counting
Historic	-8	Accounting Adjustments and Re-definitions	Reduction in costs associated with instrumentation of aircraft in support of Future Strategic Tanker Aircraft clearance trials.
Historic	-63	Accounting Adjustments and Re-definitions	Forecast based on expected levels of usage and fuel costs modelled in accordance with Front Line Command estimates.
Historic	-300	Accounting Adjustments and Re-definitions	Method for costing Military equipment obsolescence and change in law costs amended from using actual figures to a risk based assessment.
Historic	-50	Accounting Adjustments and Re-definitions	Correction of Defensive Aids Suite balance sheet treatment to include RDEL reduction across the contact 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 Communications and Information Systems.
Historic	+90	Accounting Adjustments and Re-definitions	Revised assessment of potential risk opportunities such as refinancing.
Net Variation (£m)	**-377**		

B.4.2 Operational Impact of Support / Training / PFI Cost Variations

Project/Increment Name	Category	Explanation
Future Strategic Tanker Aircraft	Changed Capability Requirements	No operational impact to date, but Air Command and 2 Gp are assessing Air to Air Refuelling demand with the effect of the draw down of Harrier, the reductions in Tornado and the new concurrency sets. ***
Future Strategic Tanker Aircraft	Changed Capability Requirements	The enhanced platform protection measure will expand operational capability.

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2013 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2014 (£m)
Assessment Phase	38	0	38
Demonstration & Manufacture Phase	0	0	0
Support Phase / Service / PFI Cost	311	479	790
Total Expenditure	**349**	**479**	**828**

C. Section C: Time

C.1 Length of the Assessment Phase

Project/Increment Name	Date of Initial Investment Decision Approval	Actual Date of Main Investment Decision Approval	Length of Assessment Phase (months)
Future Strategic Tanker Aircraft	December 2000	May 2007	77

C.2 Planned / Actual Boundaries for In Service Date or Initial Operating Capability

Project/Increment Name	Earliest Approved	Budgeted For	Latest Approved
Future Strategic Tanker Aircraft	January 2014	May 2014	November 2014

C.3 In-Service Date/Initial Operating Capability

C.3.1 Definition

Project/Increment Name	In-Service Date/Initial Operating Capability
Future Strategic Tanker Aircraft	Initial Operating Capability Introduction to Service + 18 months is the definition of Initial Operating Capability 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. In-Service Date At the point of Air-to-Air Refuelling In-Service Date there will be the capability to provide at least nine 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.

C.3.2 Progress against approved Dates

Project/Increment Name	Approved Date	Actual / Forecast Date	Variation (+/-months)	In-Year Variation (+/- months)
Future Strategic Tanker Aircraft	May 2014	May 2014	0	0

C.3.3 Timescale variation – N/A

C.4 Full Operating Capability

C.4.1 Definition

Project/Increment Name	Full Operating Capability	Progress to date
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 Key Performance Measures are met.	Introduction to Service has been achieved.

C.5 Support / Training / PFI Contract

FUTURE STRATEGIC TANKER AIRCRAFT

C.5.1 Scope of Support / Training / PFI Contract

Project/Increment Name	Description
Future Strategic Tanker Aircraft	Private Finance Initiative Contract covers full service

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

Project/Increment Name	Approved Date	Actual Date	Variation (+/- months)	In-year Variation (+/- months)
Future Strategic Tanker Aircraft	March 2008	March 2008	0	0

C.5.2.1 Go-Live Date Variation – N/A

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

Project/Increment Name	Approved Date	Actual Date	Variation (+/- months)	In-Year Variation (+/- months)
Future Strategic Tanker Aircraft	March 2035	March 2035	0	0

C.5.3.1 End of Contract Date Variation – N/A

C.5.4 Other costs resulting from Support Cost variation – N/A

C.5.5 Operational Impact of Support / Training / PFI Support Contract variation – N/A

D. Section D: Performance

D.1 Sentinel Score

Current score	Last years score	Comments
92 Green	88 Green	

D.2 Performance against Defence Lines of Development (DLOD)

Line of Development	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1. 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 seven will also be three-point capable, with five centre-line systems being available for use. Aircraft will be fitted for a Defensive Aids Suite.	Yes	
2. 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	
3. Logistics	Logistics support for the fleet will be controlled by AirTanker as part of the service-delivery contract.	Yes	
4. 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 including a flight simulator will be housed in another complex nearby.	Yes	
5. Personnel	Flight deck crews comprising military and military Sponsored Reserves will be trained, together with Mission Systems Operators. There will be cabin crew, ground crew and operations support personnel.	Yes	
6. Doctrine	The solution meets the requirement identified within the Concept of Use.	Yes	
7. Organisation	The aircraft service will build up gradually from Introduction to Service to Air-to-Air Refuelling In-Service Date.	Yes	
8. Information	AirTanker Services will provide a bespoke Information Technology system to interface with current MOD Information Technology systems.	Yes	
Currently forecast (with risks)		8 (0)	0
Last year's forecast (with risks)		8 (2)	0

D.2.1 Defence Lines of Development Variation

Date	DLOD	Category	Reason for Variation
Historic	Equipment	Technical Factors	Timely delivery and clearance of Voyager's Enhanced Defensive Aids System; and gaining a Release-To-Service for the aircraft as a three-point tanker (utilizing its fuselage refuelling unit). New risk 2012/13. Risk mitigated 2013/14.
Historic	Training	Technical Factors	Training capacity will be adversely impacted if three-point tanker clearance (above) is not forthcoming or mitigated. This is because, from now on, all aircraft will be delivered as three-point tankers and the aircrew training plan relies upon being able to fly them. New risk 2012/13. Risk mitigated 2013/14.
Historic	Training	Technical Factors	Uncertainty of the acceptance by 22 Group of the Commercial Off The Shelf and training validation. Risk mitigated 2012/13.
Historic	Equipment	Technical Factors	Development of avionics packages has fallen behind schedule. Increased resources have been identified as a mitigation strategy to ensure DLOD will be achieved. As at March 2011 the Military Avionics Integration issues remain. Key activities continue for the Certification of the aircraft. Risk mitigated 2012/13.
Historic	Personnel	Technical Factors	Engineer training manpower to be made available. Line of Development no longer at risk.
Historic	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.
Historic	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 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.

D.3 Performance against Key Performance Measures (KPM)

D.3.1 Future Strategic Tanker Aircraft

D.3.1.1 Performance against Key Performance Measures (KPM)

KPM	DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast 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 acquire and maintain the necessary skills to utilise the system across the spectrum of operation.	Yes	
Currently forecast (with risks)			9 (0)	0
Last year's forecast (with risks)			9 (0)	0

D.3.1.2 Key Performance Measures Variation – N/A

D.3.1.3 Operational Impact of variation – N/A

D.4 Support Contract – N/A

LIGHTNING II

Project Name		
Lightning II		
Team Responsible		
Lightning Project Team		
Senior Responsible Owner	**Date Appointed**	**Planned end date**
Air Commodore Mark Hopkins (Air Capability)	27 April 2012	
Project/Increment Name	**Current Status of Projects / Increments**	
System Development & Demonstration	Post-Main Investment Decision	
Production, Sustainment & Follow on Development	Post-Main Investment Decision	

A. Section A: The Project

A.1. The Requirement

The Joint Combat Aircraft is the requirement for a multi-role aircraft to be operated jointly by the Royal Air Force and the Royal Navy from both fixed and deployable land bases and the new Queen Elizabeth Class aircraft carriers.

The Joint Strike Fighter (F-35 Lightning II) was selected as the aircraft to meet the Joint Combat Aircraft requirement, and provides the UK with a fifth generation air system. Lightning II provides the UK with an expeditionary multi-role combat aircraft with the ability to enter and operate within contested airspace. Lightning II is a stealth aircraft which includes an array of advanced sensors, highly integrated mission systems and is equipped with air to air and air to ground weaponry. It is capable of undertaking a wide range of operations from land bases and the Queen Elizabeth Class Carriers (QECC).

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. The phase completed in October 2001 with the announcement of Lockheed Martin as the successful bidder.

A.3. Project History

The project has followed an incremental acquisition strategy from its conception. A Main Gate approval (Main Gate 1) was obtained in January 2001 for participation in the System Development and Demonstration (SDD) phase of the Joint Strike Fighter programme, leading to signature that same month by UK and United States governments of the SDD Memorandum of Understanding. The UK is the only Level 1 Partner Nation within the SDD programme, along with the United States Services, and is able to decide and agree the Requirements within the JSF Contract Specification, which delivers the Block 3 capability required by the UK at initial operating capability.

The selection of Lockheed Martin as the Joint Strike Fighter and 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. In April 2011, the F135 engine was selected as the sole engine variant within the Joint Strike Fighter programme.

In September 2002 the UK selected the Short Take Off and Vertical Landing (STOVL) Joint Strike Fighter variant to meet the Joint Combat Aircraft requirement. A review of the Joint Strike Fighter Programme, and the viability of the STOVL design was completed in January 2005 post a period of anticipated contract non-compliance. It concluded that a successful programme of weight reduction initiatives and other performance enhancements had restored confidence in the STOVL design, which should remain the UK's preferred solution to meet the JCA requirement. 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 coincided with Main Gate 2 approval. This MoU committed the UK to a collaborative partnership with 8 other international partners.

In March 2009, approval (Main Gate 3) was given for the participation in joint Initial Operational Test & Evaluation with the United States Services. This Main Gate procured 3 Operational Test aircraft.

In October 2010 the UK Government's Strategic Defence & Security Review announced that the Joint Combat Aircraft programme would switch variant from the STOVL variant (F-35B) to the Carrier Variant (F-35C).

In May 2012 the UK Government reverted back to the Joint Strike Fighter F-35B variant due to the increased cost, technical risk and programme delay associated with converting the Queen Elizabeth Class carriers to receive the Joint Strike Fighter Carrier Variant.

On 19 July 2012, the UK took delivery of its first Joint Strike Fighter aircraft at Lockheed Martin's Fort Worth facility in Texas USA, which commenced flying operations at Eglin Air Force Base later that year.

A.4. In-Year Progress

The UK took delivery of its third F-35B aircraft (BK-3), which transferred to Eglin Air Force Base, Florida, on 25 June 2013. BK-3 joined the US Marine Corps' Marine Fighter Attack Training Squadron 501 (VMFAT 501) to support core pilot and maintainer training. An order was placed for a fourth UK F-35B aircraft in September 2013.

The Lightning II Main Gate 4 Business Case (MG4 BC) was endorsed by the Investment Approvals Committee (IAC) in October 2013 and obtained HM Treasury approval in January 2014. The Lightning II MG4 BC sought approval to procure the aircraft for the first UK Squadron with all associated support equipment and capital spares. The Business Case also approved the procurement of Freedom of Action (FoA) facilities, and all associated support contracts, which will enable the transition of the aircraft from the US to the UK, delivery of Initial Operating Capability from RAF Marham in December 2018, and permit initial First of Class Flying Trials to take place aboard the new Queen Elizabeth Class Carrier in the same year. The MG4 BC approval provides for the support contracts to cover the period 2015 to 2020.

Main Gate 4 set the operational In Service Date (ISD) for the UK Lightning II aircraft as 31 December 2018.

During the MPR14 reporting period, the first three British operational pilots completed their training to enable them to fly the F-35 and are now flying regularly from Eglin AFB, FL.

A.5. Capability Risks

The Strategic Defence and Security Review 2010 confirmed the need for Joint Strike Fighter which forms the backbone of Carrier Enabled Power Projection. If the UK did not acquire Joint Strike Fighter it would be unable to meet its Combat Air and Carrier Enabled Power Projection requirements and be unable to support ground forces in multi threat environments at a time and place of the Government's choosing. Joint Strike Fighter brings no significant risks to other projects, but relies heavily on the Queen Elizabeth Class Carrier programme to deliver suitable carriers to introduce a Carrier Strike capability around 2020.

A.6. Associated Projects

Project/Increment Name	Forecast In Service Date / Initial Operating Capability	Approval Status
Queen Elizabeth Class (Future Aircraft Carrier)	Initial Operating Capability: Ship 1 (Queen Elizabeth) – July 2015	Post Main Gate

A.7. Procurement Strategy

Project/Increment Name	Contractor	Contract Scope	Contract Type	Procurement Route
System Development & Demonstration (SDD)	Lockheed Martin (Air System Prime) & Pratt and Whitney (Propulsion System Prime)	System Development and Demonstration	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 who then contract Lockheed Martin and Pratt & Whitney on UK MOD behalf)

Production, Sustainment & Follow on Development (PSFD)	Lockheed Martin (Air System Prime) & Pratt and Whitney (Propulsion System Prime)	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 who then contract Lockheed Martin and Pratt & Whitney on UK MOD behalf)

A.8. Support Strategy

Description
The long term support strategy for the Joint Strike Fighter programme is currently under development and will not be fully determined until the System Design and Demonstration phase is formally completed. Current proposals assume that Lockheed Martin and Pratt & Whitney will provide a contracted for availability solution around a performance based logistics approach.

B. Section B: Cost

B.1. Cost of the Assessment Phase

Project/Increment Name	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)
Lightning II	150	144	-6
Total (£m)	**150**	**144**	**-6**

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

Project/Increment Name	Lowest Approved (£m)	Budgeted For (£m)	Highest Approved (£m)
System Development & Demonstration	-	1874	2060
Production, Sustainment & Follow on Development	-	3748	4199

B.3. Cost of the Demonstration and Manufacture Phase

Project/Increment Name	Budgeted for Cost (£m)	Forecast cost (£m	Variation (£m)	In-Year Variation (£m)
System Development & Demonstration	1874	1759	-115	+176
Production, Sustainment & Follow on Development	3748	3277	-471	-377
Total (£m)	**5622**	**5036**	**-586**	**-201**

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

B.3.1.1 System Development & Demonstration

Date	Variation (£m)	Category	Reason for Variation
May 13	+57	Accounting Adjustments and Re-definitions	A number of System Development & Demonstration (SDD) activities have been costed against the Production Sustainment & Follow on Development (PSFD) project code as it had previously been assumed that SDD would have concluded by 2016. In accordance with the US driven slip of SDD to 2019 all costs related to these activities should now fall to where they were originally approved, e.g. the MG1 SDD approval. Includes +£17M CVF Integration; +£11M Initial Operational Test &Evaluation (IOT&E) MOU; +£12M Integrated Test Force; (-£10M) Project Support, +£9M Weapons; +£4M Reprogramming; +£4M Representative Sustainment Integration Testing (RSIT); +£3M Cutlass; +£3M Communications Navigation Identification (CNI) Trials; +£4M combination of other activities.

September 2013	+63	Accounting Adjustments and Re-definitions	MPR14: At Annual Budgeting Cycle 14 (ABC14) QRPC1 movement of some PSFD risks to SDD c.£7M, plus major risk review at ABC14 Q2 +£49M, including Shipbourne Rolling Vertical Landing (SRVL +£7M) due to uncertainty parameters set on the costings. Base cost for this activity has not increased since MPR13.
September 2013	-10	Accounting Adjustments and Re-definitions	MPR14: Reduction of 'Conformitie European (CE) Markings' cost. Original assumption was that this was a unique UK requirement, however later information showed this cost could be shared with other EU participants.
April 2014	+2.4	Technical Factors	MPR14: 14/15 Pilot Mask activity and Risk to Life Model are new requirements added since MPR13 (+£0.7M) due to realisation of risk. JAFAN Ship integration risk realised (+£1.5M). Bring forward of more LOVF & FOA design activity than planned prior to MG4 (+£0.2M).
May 2013	+65	Accounting Adjustments and Re-definitions	MPR14: Approval for ship integration, equipment and trials was covered under MG1 however, post SDSR10 the associated costings were attributed to the PSFD project code as it was assumed that SDD would have concluded by 2016. In accordance with the US driven slip to SDD of 2019, all costs related to these activities should now fall to where they were originally approved, e.g. the MG1 SDD approval - and now showing within the MPR reporting window.
March 2014	-0.6	Exchange Rate	MPR14 In year 2013/14 Exchange Rate variance (-£2.3m). Exchange rate variance 2014/15 to 2021/22 (+£1.7m).
Historic	+1	Exchange Rate	MPR13: 12/13 in year variance.
Historic	-1	Accounting Adjustments and Re-definitions	MPR13: Correction of an accrual related to a UK study into pilot flight equipment.
Historic	+20	Technical Factors	MPR13: Development of interim solution to deal with potential gap in re-programming capability (+£5M). Review of risk and issues relating to UK integration work, including aircraft & weapons certification (+£15M) and review integration risks (+£5M). Revised financial profiles received from the Joint Programme Office - MOU Safety Case (-£1.6M) and Operational Test & Evaluation MOU Contribution (£-1M). Technical Support contract cost not realised due to change in contracting scope (£-2.8M).

Historic	-3	Changed Capability Requirements	MPR13: Tasks no longer relevant to a Carrier Variant programme so removed, Carrier Variant Add Ons (-£39M). Stop work order imposed on Carrier Variant Future (Queen Elizabeth Class) Integration development contract during period of revision resulting in underspend (-£4M). Short Take Off and Vertical Landing specific costs added back in - Ship Borne Rolling Vertical Landing Solution (£+40M).
Historic	+1	Exchange Rate	MPR12: Exchange rate fluctuations through financial year 2011/12
Historic	-20	Technical Factors	MPR12: Reclassification of UK specific work as development focussed rather than production (+£9m). Slower than anticipated progress on ship/air integration work (-£5m). Reduced levels of UK specific risk mitigations being required (-£18m). Qualification of UK weapons for carriage on F-35 (+£14m). Delays to work supporting UK's transition to the Carrier Variant post Strategic Defence & Security Review (-£9m). Reduced levels of engineering support required for UK specific development tasks (-£11m).
Historic	+13	Technical Factors	Reassessment of risk mitigation activities in relation to Reprogramming (+£5m) and Ship/Air Integration (+£8m).
Historic	+8	Accounting Adjustments and Re-definitions	Removal of IRDEL (Foreign Exchange) as per revised Departmental policy.
Historic	-7	Exchange Rate	MPR2011 In year 2010/11 Exchange Rate variance (-£3m). Exchange rate variance 2011/12 to 2013/14 (-£4m).
Historic	+59	Technical Factors	Creation and ongoing funding of an Engineering Authority +£9m. +£50m due to the Joint Strike Fighter's Technical Baseline Review impact on: a) the System Development and Demonstration now completing in 2015/16 (+£58m), b) In-year delays and revised short-term plans (-£8m).
Historic	-31	Changed Capability Requirements	Deletion of the Ship-Borne Rolling Vertical Landing Key User Requirement due to the Strategic Defence & Security Review decision to change aircraft variant.
Historic	-16	Accounting Adjustments and Re-definitions	Removal of Cost of Capital due to Clear Line of Sight policy implemented by HM Treasury.
Historic	+37	Exchange Rate	MPR2010 In year 2009/10 Exchange Rate variance (+£12m). Exchange rate variance 2010/11 to 2013/14 (+£25m).

Historic	-21	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).
Historic	-100	Exchange Rate	MPR2009 In year 2008/09 Exchange rate variance (+£4m). Exchange rate variance 2009/10 to 2013/14 (+£2m).MPR08: System Development and Demonstration contribution against MPR07 Versus MPR08 Exchange rate: 2007/08 (-£12m), 2008/09 to 13/14 (-£6m). MPR07: Exchange rate against profile until 2013 (-£11m). Change in dollar/pound exchange rate (MPR06 +£9m; MPR05 -£181m; MPR04 -£85m; MPR03 -£9m; MPR02 +£189m).
Historic	-25	Budgetary Factors	MPR09: In year out turn against forecast – 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). Re-profiling of future years - comprising of Ship Borne Rolling and Vertical Landing – 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).
Historic	-5	Budgetary Factors	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.

Historic	-1	Budgetary Factors	MPR08: 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).
Historic	+279	Budgetary Factors	MPR07: 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 & testing (+£5m), Identification of Operational Test & Evaluation costs (+£26m). Outturn for 2006/07 versus Forecast (-£6m). 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).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).

Historic	-34	Budgetary Factors	MPR06: 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).MPR05: Reassessment of Dstl & QinetiQ tasking (-£10m). Correction of contingency estimates due to weight risks in MPR04 (-£15m).
Historic	-13	Accounting Adjustments and Re-definitions	MPR07: 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). New Defence Procurement Agency requirement to include Price Forecasting Group costs within the equipment plan (+£1m). Accounting reclassification of feasibility studies (-£2m).
Historic	+5	Accounting Adjustments and Re-definitions	MPR06: 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. Reconciliation of accrual (+£1m). MPR05: Re profiling of UK specific tasks (+£3m).
Historic	-71	Changed Capability Requirements	MPR06: 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).
Historic	-472	Changed Capability Requirements	MPR05: 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).

Historic	+55	Technical Factors	MPR07: Re-alignment of programme now included in Development - Ship-Borne Rolling and Vertical Landing (+£55m).
Historic	-29	Technical Factors	MPR05: Reduction of Risk line as a result of programme delays (-£29m).
Historic	-7	Budgetary Factors	Fewer UK studies than originally planned (MPR02 -£1m; MPR03 (-£6m).
Historic	+87	Technical Factors	MPR 04: Re-examination of risk within the overall programme. (+£87m).
Net Variation (£m)	**-115**		

B.3.1.2 Production, Sustainment & Follow on Development

Date	Variation (£m)	Category	Reason for Variation
December 13	-3	Risk Differential (Post Main-Gate only)	MPR14: ABC14 QRPC3 financial risk and cost model uncertainty review resulting in -£1m and -£2m cost changes respectively.
October 13	+6	Technical Factors	MPR14: Engine Modifications - expected increase in engine Modification costs based on latest JPO estimate of cost.
September 13	+8	Technical Factors	MPR14: Tooling estimate originally based on figures from the JPO. This costing has now been updated to reflect the actual committed value negotiated by the JPO. Latest revision of Financial Management Procedures Document (PSFD) tables (Revision 6) provided during the FY, costing updated to align with latest profile. Costing at MPR14 includes an additional year's CSR (FY15) in relation to the corresponding additional approval value. To note: Approval for CSR FY14 was estimated for MPR13. Subsequently an adjustment has been made in the approval value at MPR14 as the final figures have been endorsed by HMT.
October 13	-14	Accounting Adjustments and Re-definitions	MPR14: IY13/14 outturn is lower than previous forecast due to reduction in actual Vs planned flying hours. FY14/15 variance is due to FY14/15 portion of LRIP 7 Sustainment being duplicated between MG3 and MG4 approvals.

January 14	-118	Accounting Adjustments and Re-definitions/ Procurement Processes	MPR14. Production MG2-3: (-£35m) decrease in forecast costs due to actual contract costs being less than planned. LRIP7 contract values are less than that approved via MG3 RN2. There are also production and sustainment cost reductions for LRIP3, LRIP4 and LRIP8 Long Lead costs being less than estimated within MPR13. MPR14. Production MG4: (-£83m) total decrease in forecast costs due to; a reduction in the uncertainty assumptions embedded within ABC14 (£22m); removal of LRIP8 Long Lead costs (£37m) due to FY14/15 portion of LRIP8 being duplicated between MG3 RN2 and MG4 approvals; and reduction in costs in the first decade due to amended URF scenario risks applied to the ABC14 QRPC3 costings (£24m) to account for the reduction in partner jets.
January 14	-256	Exchange Rate	MPR14: £204m is included in the Main Gate 4 Business Case for FOREX Risk, however no forecast provided against this as future £/$ FOREX rates are not known, thus -£204m variance. Variations between MG2-4 FOREX rates and Annual Budget Cycle (ABC) corporate planning rate are favourable to the UK and therefore result in an additional variance of -£37m across the approval period. Additional in year (FY13/14) FOREX variation of -£15m between planning and actual rates.
Historic	-29	Exchange Rate	MPR13: FOREX Risk approval now included for Main Gate 3. Variation to planning rate does not result in consumption of Risk pot (£-32m). 12/13 IY FOREX variation (£+3m).
Historic	-10	Technical Factors	MPR13: Increase in cost of Sustainment. MPR 13 based on contracting evidence vice United States Government (USG) estimate at MPR12 (£+24m). Concurrency development cost estimates based on improved USG data, reduced from $14m to $8m per aircraft (£-12m). Low Rate Initial Production 3 contract production cost increase due to correction of USG accounting approach (£+9m). The first two jets were grounded for a number of weeks due to technical issues resulting in reduced flying rates (£-9m). Revised estimates received from USG, with improved forecast for

			Tooling and Follow on Development common costs (£-5m, £-19m). Value of Low Rate Initial production 7 Long Lead production contract higher than estimated at MPR12 (£+2m). Production Overhead & Admin common programme costs increased to reflect latest version of the USG MOU financial management plan (£+3m). Partner Reprogramming Lab common costs detailed in the MOU financial management plan superseded by development of the interim solution - cost now profiled under SDD approval (£-3m).
Historic	+3	Changed Capability Requirements	MPR13: Flight Test Instrumentation (FTI) equipment ordered under LRIP5 contract to support operational test aircraft purchase under LRIP 7. Delay in buying equipment due to reversion to Carrier Variant and then, back to Short Take Off and Vertical Landing.
Historic	-1	Exchange Rate	MPR12 Exchange rate fluctuations through financial year 2011/12.
Historic	+26	Technical Factors	MPR12 The F35 programme runs concurrent development and production programmes to deliver advanced capability earlier than under legacy programmes. This variance represents the cost against the 3 UK aircraft purchased to date of design changes uncovered during production which require re-design work and implementation of modifications.
Historic	+12	Budgetary Factors	MPR12: Estimates for over target costs on the first two UK production contracts (+£8m). Diminished Manufacturing Supplies (+£2m). Decreased contract preparation costs (-£2m). Correction of levels of shared non-recurring programme costs (+£2m). Increased costs for aircraft and engine spares (+£2m).
Historic	-3	Changed Capability Requirements	MPR12 Due to the decision to change variant under the Strategic Defence & Security Review the requirement for Flight Test Instrumentation was removed from the third aircraft.
Historic	-11	Technical Factors	MPR12 The delayed delivery of the first UK aircraft has delayed commencement of UK flying operations from that per the original approval and therefore reduced the cost of flying in the relevant time period.
Historic	-40	Changed Capability Requirements	No operational conversion unit is now required in the early years and as such support costs in the early years of flying aircraft have been reduced.

Historic	-28	Exchange Rate	MPR2011: Exchange Rate variation (-£28m).
Historic	-11	Budgetary Factors	Improved estimate of production expenditure (-£12m). Delays in Long Lead expenditure (+£1m).
Historic	+31	Exchange Rate	MPR2010: Exchange Rate variation (+£31m).
Historic	-3	Budgetary Factors	Correction of Composite Share Ratio (UK contribution to shared partner costs) from MPR09 (-£3m).
Historic	-30	Procurement Processes	Improved understanding of production cost data related specifically to Operational Test & Evaluation aircraft (-£30m).
Net Variation (£m)	**-471**		

B.3.2 Operational Impact of Cost Variations of Demonstration & Manufacture Phase – N/A

B.4 Progress against approved Support / Training / PFI Cost – N/A

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2013 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2014 (£m)
Assessment Phase	144	0	144
Demonstration & Manufacture Phase	1971	135	2106
Support Phase / Service / PFI Cost	0	0	0
Total Expenditure	**2115**	**135**	**2250**

C. Section C: Time

C.1 Length of the Assessment Phase

Project/Increment Name	Date of Initial Investment Decision Approval	Actual Date of Main Investment Decision Approval	Length of Assessment Phase (months)
Lightning II	-	January 2001	-

C.2 Planned / Actual Boundaries for In Service Date or Initial Operating Capability[1]

Project/Increment Name	Earliest Approved	Budgeted For	Latest Approved
Lightning II	-	December 2018	-

C.3 In-Service Date/Initial Operating Capability

C.3.1 Definition

Project/Increment Name	In-Service Date/Initial Operating Capability
Lightning II	Initial Operating Capability – Declaration of the ability of the UK Lightning Force to be able to undertake contingent operations.

C.3.2 Progress against approved Dates

Project/Increment Name	Approved Date	Actual / Forecast Date	Variation (+/-months)	In-Year Variation (+/- months)
Lightning II	December 2018	December 2018	0	0

C.3.3 Timescale variation – N/A

C.3.4 Other costs resulting from Timescale variation – N/A

C.3.5 Operational Impact of In-Service Date/Initial Operating Capability variation – N/A

C.4 Full Operating Capability

C.4.1 Definition

Project/Increment Name	Full Operating Capability	Progress to date
Lightning II	Yet to be defined	The transition from IOC in December 2018 to FOC (April 2023) will be set out in Main Gate 5 post 2017.

C.5 Support / Training / PFI Contract – N/A

C.5.1 Scope of Support / Training / PFI Contract – N/A

C.5.2 Progress against approved Support / Training / PFI Contract Go-Live Date – N/A

C.5.3 Progress against approved End of Support / Training / PFI Contract Date – N/A

C.5.4 Other costs resulting from Support Cost variation – N/A

C.5.5 Operational Impact of Support / Training / PFI Support Contract variation – N/A

[1] Rather than passing an initial gate, Lightning II has used a tailored Main Gate Strategy based on an incremental approach to approvals.

D. Section D: Performance

D.1 Sentinel Score

	Current score	Last years score	Comments
Production Sustainment & Follow-on Development	95 Green	92 Green	PSFD is on track to deliver F-35 Initial Operating Capability December 2018.
System Design and Development	97 Green	92 Green	No significant change to SDD which has a forecast completion date of 1st April 2019.

D.2 Performance against Defence Lines of Development (DLOD)

Line of Development	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1. Equipment	Initial 10 Force Elements @ Readiness.	Forecast to be met (with risks)	
2. Training	Sufficient trained and available personnel.	Forecast to be met (with risks)	
3. Logistics	Successful integration of Autonomic Logistics and Global Sustainment (ALGS) into UK and Joint Supply Chain.	Forecast to be met (with risks)	
4. Infrastructure	Completion of Freedom of Action (FoA) and non-FoA build at Main Operating Base.	Forecast to be met (with risks)	
5. Personnel	Sufficient suitable personnel available for training and support.	Forecast to be met	
6. Doctrine	Doctrine in place.	Forecast to be met	
7. Organisation	Suitable structures in place to support 17 (R) sqn (US based Operational Test and Evaluation squadron) Operational Conversion Unit and all 617 Sqn operations at MOB.	Forecast to be met	
8. Information	Integration of Lightning II into UK IT Infrastructure and Air C2 networks.	Forecast to be met (with risks)	
Currently forecast (with risks)		8 (5)	0
Last year's forecast (with risks)		8 (4)	0

D.2.1 Defence Lines of Development Variation

Date	DLOD	Category	Reason for Variation
Jun-14	Equipment	Technical factors	MPR14: Equipment risks are being managed by the PT.
Jun-14	Training	Technical Factors	MPR14: Training risks are being managed by Training DLoD.
Jun-14	Infrastructure	Technical Factors	MPR14: Infrastructure risks are being managed by Infrastructure DLoD.
Jun-14	Logistics	Budgetary Factors	MPR14: Logistics risks are being managed by Logistics DLoD.
Jun-14	Information	Technical Factors	MPR14: Information risks are being managed by Information DLoD.

Historic	Training	Changed Capability Requirements	MPR13: Following the reversion decision there is reliance on US Marine Corps training system for initial throughput and training of early instructor pilots and squadron pilots. Lack of knowledge of 5th Generation Tactics, Training and Procedures, Low Observable aircraft employment and integration with 4th Generation aircraft and other defence assets may limit initial capability. 5th Generation is a new capability for the UK with little/no current suitably qualified personnel. The ability to assessing and maintain the Low Observable characteristics of the aircraft is essential to optimise capability. Lead time to generate suitably qualified personnel is estimated to be in the order of five years.
Historic	Infrastructure	Changed capability Requirements	MPR13: The location of the Lightning Main Operating Base has now been announced allowing the Lightning Basing project to progress to Initial Gate (Dec 13) and the assessment phase. Risk relates to aggressive timeline to meet first aircraft arrival from 1 Apr 2018. Insufficient Maritime Intra-Theatre Lift to support Joint Combat Aircraft aboard Queen Elizabeth Class Carriers.
Historic	Logistics	Budgetary Factors	Lack of a through-life sustainment solution for Joint Strike Fighter. 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.

D.3 Performance against Key Performance Measures (KPM)

D.3.1 Lightning II Key User Requirements as laid down in the LII User Requirement Document v7.0

D.3.1.1 Performance against Key Performance Measures (KPM)

KPM (KUR)	DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1	Equipment / Training	Operate In Hostile Environments	Forecast to be met	
2	Equipment / Information	Interoperability	Forecast to be met	
3	Equipment	Take Off and landing performance	Forecast to be met	

4	Equipment / Doctrine	Combat Radius	Forecast to be met (with risks)	
5	Equipment	Mission Reliability	Forecast to be met	
6	Doctrine	Sortie Generation Rate	Forecast to be met	
7	Logistics	Logistic Footprint	Forecast to be met (with risks)	
Currently forecast (with risks)			7 (2)	0
Last year's forecast (with risks)			7 (3)	0

D.3.1.2 Key Performance Measures Variation

Date	DLOD	Category	Reason for Variation
Historic	1	Technical Factors	The programme has made significant progress in understanding the technical challenge associated with signature management. Furthermore, Main Gate 4 introduces options for LOVF to be taken forward for approval in 2014.
Historic	5	Technical Factors	Changed assessment based on current programme progress towards meeting both availability and mission reliability targets.
Historic	6	Technical Factors	Ongoing absence of a long term Autonomic Logistic Support Solution is a key JSF programme risk.
Historic	2	Changed Capability Requirements	Work carried out over the last 12 months in the BAeS owned Validation Facility / Validation & Acceptance Laboratory have progressed the UK's understanding of Information Exchange Requirements, with links that could also further our knowledge and development of Defence Operational Training Capability (Air).
Historic	4	Changed Capability Requirements	Previous Key Performance Measure (KPM) referred to Carrier Variant Recovery Mission performance and was reported in MPR12 as "at risk". Following the May 12 announcement to revert to the Short Take Off and Vertical Landing variant this KPM was switched back to Short Take Off and Vertical Landing recovery and replaced with the US Programme KPM measuring the Vertical Lift performance of the aircraft. (This reverses the historical record of removal of Short Take Off and Vertical Landing KPM post Strategic Defence & Security review10). The previous 'work-stop' on SRVL has been lifted and the development of the manoeuvre is now a core PT activity.

Historic	3	Changed Capability Requirements	Previous KPM referred to Carrier Variant Combat Radius (590nm). Following the May 12 announcement to revert to the Short Take Off and Vertical Landing variant this KPM has been removed and replaced with the US Programme KPM for Short Take Off and Vertical Landing Combat Radius (450nm).Combat Radius now assessed against USMC F-35B HHH flight profile and is assessed as forecast to be met since the aircraft currently performing to the programme Combat Radius Key Performance Parameter.
Historic	2	Technical Factors	The programme manager assessed that the UK's aspirations for interoperability using the Carrier Variant of the Joint Strike Fighter were more complex than initially thought. This could lead to cost growth on the programme.
Historic	4	Changed Capability Requirements	The carrier landing speed of the Carrier Variant remains at the limit of the Joint Strike Fighter US Key Performance Parameter of 145kts and is a watch item.
Historic	1	Changed Capability Requirements	Concerns over ability for the UK to generate sufficient suitably qualified and equipped personnel in 5th Generation capability.
Historic	3	Changed Capability Requirements	Previous report of "at risk" referred to concerns on the performance of the Short Take Off and Vertical Landing variant. Following the Strategic Defence & Security Review announcement to change procurement strategy and using US indices this is now assessed as "Forecast to be met".
Historic	4	Changed Capability Requirements	Previous KPM referred to Short Take Off and Vertical Landing Mission performance and was reported in MPR10 as "at risk". Following the Strategic Defence & Security Review announcement to change the procurement strategy to procure the Carrier Variant this KPM has been removed and replaced the US Programme KPM for Carrier Variant recovery measuring the landing speed onto the carrier.
Historic	3	Changed Capability Requirements	Previous report of "at risk" referred to concerns on the performance of the Short Take Off and Vertical Landing variant. Following the Strategic Defence & Securtiy Review announcement to change procurement strategy and using US indices this is now assessed as "met forecast".

Historic	3	Technical Factors	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.
Historic	6	Technical Factors	This KUR represents a measure of the amount of support equipment required to allow Joint Combat Aircraft to be deployed on operations. As the Joint Strike Fighter system design has matured, the amount and design of equipment required for deployment in support of Joint Combat Aircraft has reduced to below the contractually specified requirement.
Historic	4	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	6	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.
Historic	4	Changed Capability Requirements	Previous Key Performance Measure referred to Short Take Off and Vertical Landing Mission performance and was reported in MPR10 as "at risk". Following the Strategic Defence & Security Review announcement to change the procurement strategy to procure the Carrier Variant this Key Performance Measure has been removed and replaced the US Programme Key Performance Measure for Carrier Variant recovery measuring the landing speed onto the carrier.

Historic	3	Technical Factors	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.
Historic	6	Technical Factors	This KUR represents a measure of the amount of support equipment required to allow Joint Combat Aircraft to be deployed on operations. As the Joint Strike Fighter system design has matured, the amount and design of equipment required for deployment in support of Joint Combat Aircraft has reduced to below the contractually specified requirement.
Historic	4	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	6	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.3.1.3 Operational Impact of variation

KPM	Date	Forecast	Operational impact of variation
Historic	5	At Risk	The inability to achieve mission reliability is a watch item, since it will have an impact on achievement of desired Sortie Generation Rate and Mission Success.
Historic	2	To be Met	The reversion to Short Take Off and Vertical Landing makes the UK interoperable with USMC / Italian F-35B with potential for joint operations from Queen Elizabeth Class Carriers, subject to further work to address specific weapon clearances and operational limitations and is now regarded as 'To be met'.
Historic	3	To be Met	The Short Take Off and Vertical Landing variant currently meets the Joint Strike Fighter programme KPP for Combat Radius so this measure is now regarded as 'To be met'.
Historic	4	At Risk	The full solution to deliver a Ship-borne Rolling Vertical recovery manoeuvre still remains immature. Simulator / Trial work scheduled ahead of First of Class Flying trials on Queen Elizabeth Class Carriers in 2018.
Historic	2	At Risk	Reduced interoperability may limit opportunities for allied aircraft to operate from the decks of Queen Elizabeth Class Carriers.
Historic	1	At Risk	Action taken by Community of Interest 1 community and Air Command to engage with US Air Force to understand support requirements to maintain Low Observable characteristics will address this KPM. US National Disclosure Policy and UK access to required data remain issues to overcome.
Historic	4	At Risk	Joint Strike Fighter programme development action will address this Key Performance Measure.
Historic	3	To be Met	As a result of the decision of purchase the Carrier Variant this measure is now regarded as to be met.
Historic	4	To be Met	As a result of the decision of purchase the Carrier Variant this measure is now regarded as to be met.
Historic	6	To be Met	As a result of the 2010 Strategic Defence & Security Review decision to purchase the Carrier Variant, this measure is now assessed as 'To be met'.

Historic	3	At Risk	Inability to strike some targets at the extreme range capability of aircraft and weapon system.
Historic	4	At Risk	Severely limits the operational effectiveness of the platform and result in high waste of weapons.

D.4 Support Contract – N/A

MILITARY AFLOAT REACH AND SUSTAINABILITY

Project Name
Military Afloat Reach Sustainability

Team Responsible
Commercially Supported Shipping

Senior Responsible Owner	Date Appointed	Planned end date
Brigadier John Brittain	March 2011	November 2012
Commodore William Walworth	November 2012	September 2013
Commodore Robert Dorey	September 2013	September 2018

Project/Increment Name	Current Status of Projects / Increments
Military Afloat Reach and Sustainability Tanker	Post-Main Investment Decision
Military Afloat Reach and Sustainability Fleet Solid Support Ships	Pre-Main Investment Decision

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.

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.

The Military Afloat Reach and Sustainability capability will be in service into the 2050s and 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 Type 26 Global Combat Ship. Tankers will provide bulk consumables and forward aviation support to the maritime task group. Solid Support Ships, previously referred to as Fleet Solid Support and Amphibious Combat Stores ship, will provide non bulk consumables and forward aviation support to the maritime task group.

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 with initial focus on the double-hulled Tankers which are required in order to comply with International Maritime legislation.

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. Following a review of the Procurement Strategy in 2007, the Alliance Strategy was terminated. A new strategy, based on a 'Competitive and Adaptive' approach, was approved and reflected the need to procure the Tanker element of the programme separately in order to comply with International Maritime legislation. In addition approval was granted for the designation and delegation of the Heavy Replenishment at Sea project as a separate Category D project. Solid Support ships will now form a separate strategy. An open international competition was launched for the design and build of up to six Fleet Tankers but was cancelled following the Department's examination of its equipment programme in 2008. A review of the requirements and procurement strategy was undertaken which concluded that a more open procurement strategy to consider a range of possible solutions and which take account of the market conditions was more likely to secure best value for money for the MOD. A new international competition for up to six Military Afloat Reach and Sustainability Tankers was launched in October 2009 which was conducted using the Competitive Dialogue process. Subsequently the requirement was reduced from six ships to four as a result of the Strategic Defence and Security Review 2010.

Following assessment of initial Pre Qualification Questionnaires six companies were invited to proceed to the next stage of the competition. The competition was conducted over three stages: Stage 1 - Invitation to Submit Outline Solutions took place over March to September 2010; Stage 2 - Invitation to Submit Detailed Solutions commenced in October 2010 and continued through to Invitation to Submit Final Bids in October 2011 which was issued to three companies; Daewoo Shipbuilding and Marine Engineering (Republic of Korea), Fincantieri (Italy), Hyundai Heavy Industries (Republic of Korea). Three companies withdrew earlier in the competition; Flensburger Schiffbau-Gesellschaft (Germany); Knutsen OAS Ltd in June 2011 and A&P Group Ltd in August 2011.

MILITARY AFLOAT REACH AND SUSTAINABILITY

The current approved budget for the Military Afloat Reach and Sustainability Assessment Phase is £44m and the current forecast for the Assessment Phase £17m. Following the Department's annual Planning Round 2012 the Fleet Solid Support element of the programme was considered a Non Core Equipment Programme and will require Departmental review before further work is undertaken and therefore no further forecast Assessment Phase expenditure is included. The Tanker element of the programme passed through Main Gate in 2011.

A.3. Project History

The Main Gate Business Case for the Military Afloat Reach and Sustainability Tankers was approved by the Investment Approvals Committee in October 2011. The Performance Cost and Time envelope put forward at that time was based on available indicative information the approval of which enabled the Department to proceed to the final bid stage of the competition. Further Departmental and HM Treasury approval to proceed to contract award was received in January 2012 and Daewoo Shipbuilding and Marine Engineering was named as the preferred bidder in February 2012. The contract was placed in March 2012.

In accordance with the Department's approvals process the final Performance Cost and Time was approved in December 2012 providing the project's baseline. In June 2012 Her Majesty the Queen approved the names of the Tankers confirmed to be RFA TIDESPRING, RFA TIDERACE, RFA TIDESURGE, RFA TIDEFORCE. The Preliminary Design Review was completed in July 2012.

A.4. In-Year Progress

Completion of design transition from basic design phase to detailed design phase in June 2013. Award and commencement of build Oversight and Surveillance contract to SeaQuest Marine Project Management Ltd in August 2013. Before entering service the ships will require customisation in the UK and will undergo further trials; an advert was placed in the Defence Contracts Bulletin for the UK Customisation, Capability Assessment Trials and Support contract in December 2013.

A.5. 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 four single hulled tankers under exemption from legislation. The number of ships with single hulled tanks was reduced from six to four in 2011 as a result of the Strategic Defence and Security Review. 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 Military Afloat Reach and Sustainability Programme is delivered.

A.6. Associated Projects – N/A

A.7. Procurement Strategy

Project/Increment Name	Contractor	Contract Scope	Contract Type	Procurement Route
Military Afloat Reach and Sustainability Tanker	Daewoo Shipbuilding and Marine Engineering	Demonstration and Manufacture	Firm Price	Competitive - International

A.8. Support Strategy

Description
The contract with Daewoo Shipbuilding and Marine Engineering includes two years initial provisioning including spares and training for each of the ships. The in service support will be subject to competition.

B. Section B: Cost

B.1. Cost of the Assessment Phase

Project/Increment Name	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)
Military Afloat Reach and Sustainability	44	17	-27
Total (£m)	**44**	**17**	**-27**

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

Project/Increment Name	Lowest Approved (£m)	Budgeted For (£m)	Highest Approved (£m)
Military Afloat Reach and Sustainability Tanker	-	596	-

B.3. Cost of the Demonstration and Manufacture Phase

Project/Increment Name	Budgeted for Cost (£m)	Forecast cost (£m	Variation (£m)	In-Year Variation (£m)
Military Afloat Reach and Sustainability Tanker	596	562	-34	-34
Total (£m)	**596**	**562**	**-34**	**-34**

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

B.3.1.1 Military Afloat Reach and Sustainability Tanker

Date	Variation (£m)	Category	Reason for Variation
January 2014	+1	Technical Factors	Additional tasks to satisfy mandatory safety requirements and critical operational requirements
July 2013	-35	Technical Factors	Reduction in elements of risk
Historic	-1	Technical Factors	Gradual reduction in elements of risk
Net Variation (£m)	**-35**		

B.3.2 Operational Impact of Cost Variations of Demonstration & Manufacture Phase – N/A

B.4 Progress against approved Support / Training / PFI Cost – N/A

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2013 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2014 (£m)
Assessment Phase	17	0	17
Demonstration & Manufacture Phase	63	59	122
Support Phase / Service / PFI Cost	0	0	0
Total Expenditure	**80**	**59**	**138**

The forecast cost of the Assessment Phase reflects the expenditure up to the Main Investment Decision for Military Afloat Reach & Sustainability Tankers and does not include any further expenditure on the Fleet Solid Support ships which are not currently in the core equipment programme.

C. Section C: Time

C.1 Length of the Assessment Phase

Project/Increment Name	Date of Initial Investment Decision Approval	Actual Date of Main Investment Decision Approval	Length of Assessment Phase (months)
Military Afloat Reach and Sustainability	July 2005	January 2012	78

C.2 Planned / Actual Boundaries for In Service Date or Initial Operating Capability

Project/Increment Name	Earliest Approved	Budgeted For	Latest Approved
Military Afloat Reach and Sustainability Tanker	-	October 2016	-

C.3 In-Service Date/Initial Operating Capability

C.3.1 Definition

Project/Increment Name	In-Service Date/Initial Operating Capability
Military Afloat Reach and Sustainability Tanker	The date when the Sponsor accepts the MARS Tanker as being operationally capable to its fullest extent; OR the date when the Sponsor agrees with the User that the MARS Tanker has achieved operational capability in an agreed minimum effective deployable form.

C.3.2 Progress against approved Dates

Project/Increment Name	Approved Date	Actual / Forecast Date	Variation (+/-months)	In-Year Variation (+/- months)
Military Afloat Reach and Sustainability Tanker	October 2016	October 2016	0	0

C.3.3 Timescale variation

C.3.4 Other costs resulting from Timescale variation – N/A

C.3.5 Operational Impact of In-Service Date/Initial Operating Capability variation – N/A

C.4 Full Operating Capability

C.4.1 Definition

Project/Increment Name	Full Operating Capability	Progress to date
Military Afloat Reach and Sustainability Tanker	Declared when all ships of class are accepted into service	On track

C.5 Support / Training / PFI Contract – N/A

D. Section D: Performance

D.1 Sentinel Score

Current score	Last years score	Comments
82	97	Score decrease due to time lapsed in production of formal three point estimates for cost and time as a result of team vacancy. Additionally, one milestone at risk related to integrated logistics support deliverables.

D.2 Performance against Defence Lines of Development (DLOD)

Line of Development	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1. Equipment	Design and Manufacture phases of MARS Tanker to the point of declaring acceptance into service	Yes (with risks)	
2. Training	Establishment of a timely training plan to support MARS Tanker within the directed resources.	Yes (with risks)	
3. Logistics	Through-life support plan and Integrated Logistics Support plan.	Yes (with risks)	
4. Infrastructure	Readiness of UK and overseas port and shoreside infrastructure	Yes	
5. Personnel	Timely establishment of Front Line Command manpower.	Yes (with risks)	
6. Doctrine	Doctrinal direction underpins safe and effective introduction into service	Yes	
7. Organisation	Policy underpins safe and effective introduction into service	Yes	
8. Information	Fully accredited Command Control Communication Computer Information. Systems	Yes	
Currently forecast (with risks)		8 (4)	0
Last year's forecast (with risks)		8 (4)	0

D.2.1 Defence Lines of Development Variation

Date	DLOD	Category	Reason for Variation
Historic	Equipment	Technical Factors	Design and Manufacture of MARS Tankers. There is risk in the transition from outline design to detailed design work owing to tight timescale and overseas build option. If realised this risk could cause a cost or time overrun.

Historic	Training	Technical Factors	Establishment of a timely training plan to support MARS Tanker within the dedicated resources. There is a risk that a sufficiently robust training plan is not developed in time to support acceptance from contract, of the early vessels, due to the delay in completion of Integrated Logistics Support tasks (Training Needs Analysis). The risk could lead to a delay in acceptance of the vessels and potential cost increase.
Historic	Logistics	Procurement Processes	Through life support plan and Integrated Logistics Support solution. There is a risk that the through life support plan will not be developed, to sufficient maturity, to provide anticipated through life savings thus increasing the cost of the vessels. This is due to contractual interpretation over responsibilities and requirements for Integrated Logistics Support.
Historic	Personnel	Technical Factors	Timely establishment of Front Line Command manpower. There is a risk that insufficient suitably qualified manpower will be available to accept delivery and support manning of the vessels. This is due to a general shortfall in Royal Fleet Auxiliary recruitment numbers and unforecast levels of outflow together with uncertainty in the training burden.

D.3 Performance against Key Performance Measures (KPM)

D.3.1 Military Afloat Reach and Sustainability Tanker

D.3.1.1 Performance against Key Performance Measures (KPM)

KPM	DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1	Logistics	Cargo Capacity. The platform shall store 19000^{m3} of useable Class II fuel.	Yes	
2	Logistics	Cargo Embarkation. The Platform shall embark cargo Bulk Logistics Materiel in accordance with Oil Companies International Marine Forum Publication Recommendations for Oil Tanker Manifolds and Associated Equipment 4th Edition 1991	Yes	
3	Equipment	Replenishment at Sea Capability. The platform shall deliver Bulk Logistics Materiel whilst underway and making way at 12 knots through the water.	Yes	
4	Logistics	Replenishment Tempo. The platform shall deliver bulk logistics material to 3 exchange points concurrently.	Yes	

5	Doctrine	Platform Speed. The platform shall propel itself at an Upper Sustained Speed of 15 knots	Yes	
6	Doctrine	Platform Endurance. The platform shall have an endurance of 7000 nautical miles at a sustained speed of 15 knots	Yes	
7	Doctrine	Platform Equipment Performance. The platform shall deliver Core MARS Tanker Platform functions in sea temperatures up to 38°C.	Yes	
8	Doctrine	Survivability. The platform shall enable Above Water Warfare self defence.	Yes	
9	Information	Computer Information Systems Interoperability. The platform shall exchange information in accordance with MoD CIS policy as recorded in the JSP 600 series of Directions.	Yes	
10	Doctrine	Physical Interoperability. The MARS system shall provide Logistics sustainment to UK/US and NATO Military operations.	Yes	
11	Logistics	Aviation. The platform shall conduct the launch and recovery of rotorcraft (Aircraft Types Merlin Mk1 or Mk2, Surface Combatant Maritime Rotorcraft & Chinook).	Yes	
Currently forecast (with risks)			11	0
Last year's forecast (with risks)			11 (0)	0

D.3.1.2 Key Performance Measures Variation – N/A

D.3.1.3 Operational Impact of variation – N/A

D.4 Support Contract – N/A

QUEEN ELIZABETH CLASS AIRCRAFT CARRIES

Project Name		
Queen Elizabeth Class Aircraft Carriers		
Team Responsible		
Ship Acquisition		
Senior Responsible Owner	**Date Appointed**	**Planned end date**
RAdm Russ Harding	1 April 2013	
Project/Increment Name	**Current Status of Projects / Increments**	
Queen Elizabeth Class Aircraft Carrier	Post-Main Investment Decision	
Conversion (cancelled May 12)	Pre-Main Investment Decision	

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[1] is an air group comprising 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.

The Strategic Defence & Security Review confirmed the requirement for a Carrier Strike capability as part of MOD's Future Force 2020. In order to deliver overall savings to Defence, it concluded that the Carrier Strike component would be based around the Carrier Variant of the Joint Strike Fighter which would fly from an operational Queen Elizabeth Class carrier converted to a Carrier Variant configuration (fitted with catapults and arrestor gear). The Strategic Defence & Security Review confirmed that both carriers should be built, with one to be operational and the second kept in extended readiness or sold. Following concerns over the escalating cost of the catapults and arrestor gear, in May 2012 the decision was made to revert back to a Short Take Off and Landing solution for both ships in Class. The decision to run one operational carrier and keep one in extended readiness was retained, a decision that is to be reviewed in Strategic Defence & Security Review 2015. The current schedule will see the first in class (HMS QUEEN ELIZABETH) Vessel Acceptance in 2017, First of Class Lightning II Flying Trails in 2018, which if successful will lead to Carrier Strike Initial Operating Capability declaration in 2020.

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.

[1] The air groups will be formed of the Carrier Air Group (CAG), which will be the 'standing' Carrier Strike assets (Lightning II, Merlin Mk2 and Crows Nest). Should air assets need to be configured to undertake specific tasking, a Tailored Air Group (TAG) will be formed, comprising assets required to deliver the required tasking.

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. 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 and was finalised in November 2010, on receipt of Final Cost Certificates, at a revised total cost of £288m.

A.3. Project History

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 March 2011 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 25th July 2007 at a not to exceed cost of £3,900m 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 February 2009 the Alliance Management Board agreed to a revised build strategy reallocating LB03 to BVT Clyde therefore terminating the contract with BAE Systems. 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 3rd 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 the next four years and delayed In-Service Dates of the two carriers by 1 and 2 years respectively. 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 subsequently conducted in six UK shipyards: Babcock Rosyth and Appledore, BAE System Surface Ships, Govan, Portsmouth, Cammell Laird Birkenhead and A&P Tyne.

In 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.

At the close of the Financial Year in March 2010 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.

During 2010 Diesel Generators were installed in Lower Block 02 (Portsmouth) and in March 2011 in Lower Block 04 (Govan) on HMS Queen Elizabeth. In early 2011, the Goliath Crane, used to assemble the carriers, arrived at Rosyth.

The Investment Approvals Board approved the Queen Elizabeth Class Final Target Cost for the pre-Strategic Defence & Security Review programme on 31 January 2011 to £5,242m. Long-lead equipments for HMS Prince of Wales have been ordered over the last four years, with many of the major components already in-build or delivered (e.g. Diesel Generators).

In October 2010, the Strategic Defence & Security Review concluded that one carrier would be fitted with Catapults and Arrestor gear to operate the F35C Carrier Variant of the Joint Strike Fighter. The other carrier would not be converted and placed into Extended Readiness. An 18 month investigation into how best to achieve this formally began in Spring 2011 with assistance from the US. As this work proceeded, it became clear the cost of conversion, and the time needed, was far greater than initially thought. As a result, it was announced in May 2012 that the carriers would revert to their original Short Take Off and Landing configuration and operate the F-35B Joint Strike Fighter. The National Audit Office has separately examined the 2010 and 2012 decisions.

The Goliath Crane was delivered to Rosyth in March 2011. It was assembled and tested over the next two months and was commissioned (ready for use) in June 2011 with steelwork beginning on HMS PRINCE OF WALES's Lower Block 03 at Govan, with a formal steel cut ceremony held on 26 May 2011.

Lower Block 03 for HMS Queen Elizabeth Class arrived at Rosyth No.1 Dock in early September 2011 from Govan, with work to join Centre Block 03 (Tyne) to Lower Block 03 later in the month marking the start of the assembly phase on the project. Over the next few months, Sponsons 03-06 were attached, with the final Sponson (05) join completing in February 2012.

The build of the first carrier has made significant progress, with over 50,000 tonnes now in the dock at Rosyth. Both gas turbines have been installed, the forward and aft islands have been lowered into place on the flight deck and the ramp has been installed. Work on the second carrier is increasing, with work underway on four Lower Blocks, two Centre Blocks and some of the Sponsons.

In May 2012, the Secretary of State announced the Department's decision to revert to the pre Strategic Defence and Security Review position of operating the Queen Elizabeth Class as a Short Take-Off and Vertical Landing platform. This meant that the Carrier Development Phase work - the activity to investigation options to convert one Carrier to operate the carrier variant of the Joint Strike Fighter (F-35C) formally initiated in May 2011 - was cancelled. The decision to revert will result in a write off of costs accrued up to 10 May 2012. The estimated write-off costs are not expected to exceed £55m. The full impact of reverting to Short Take Off and Vertical Landing is currently being considered and will form part of the final write-off business case.

The Aircraft Carrier Alliance formally began rebaselining the Queen Elizabeth Class programme in July 2012 and provided their initial findings to the MOD-Chaired Alliance Management Board (AMB) in November 2012. Faced with a significant level of cost growth, MOD began detailed discussions with the Aircraft Carrier Alliance, with the aim of rebalancing the risk/reward mechanism. These continued throughout the first half of 2013, culminating in a formal proposal from the Aircraft Carrier Alliance on 19 July 2013. On receipt of this proposal, the MOD Cost Assurance and Analysis Service (CAAS) were commissioned to undertake further investigations, which once again highlighted a series of challenges, or areas where cost could be reduced. MOD 2* and 3* led sessions were convened to ensure appropriate rigour had been applied in reviewing the Aircraft Carrier Alliance proposal and to agree resolution. Through this mechanism some £252m of costs were driven out prior to final negotiations. During the negotiations in late October 2013, a further reduction to the target cost of £96m was agreed, resulting in a total cost reduction of £348m compared to the Aircraft Carrier Alliance's July 2013 proposal position. Subsequently, a Heads of Terms agreement was signed between MOD and the Aircraft Carrier Alliance on 6 November 2013, which set out the commercial principals covering the agreement and work is now underway to obtain programme re-approval from the MOD Approving Authorities. A revised contract will be signed once this has been achieved.

At the industrial level, the revised Queen Elizabeth Class programme underpins the wider deal reached with BAES on the future of UK shipbuilding announced by the Secretary of State on 6 November 2013.

A.4. In-Year Progress

The external structure of HMS Queen Elizabeth is now complete, consisting of over 55,000 tonnes of metal work and systems. In January 2014, the supports surrounding the ramp were removed, the forward and aft aircraft lifts were fitted (February and May 2014 respectively) and the Pole Mast was installed on the Aft island. The Flight Control centre (Flyco), which forms part of the Aft Island was also completed in May 2014. This consisted of an additional metalwork and glass structure. On the second carrier, HMS Prince of Wales, work is now underway on all of the main blocks and assembly is expected to begin in August/September 2014.

A revised contract, reflecting a rebaselined programme, was signed on 29 May 2014. This contract places greater incentivisation on Industry to deliver to cost and time, through a revised 50/50 shareline arrangement. On 4 July, the first ship. HMS QUEEN ELIZABETH, was officially named by Her Majesty the Queen, and on 17 July was floated out of the dock. The ship is now berthed in the non-tidal basin and is undergoing fitting out as part of the test, integration and commissioning phase of her programme. Blocks for the second ship, HMS PRINCE OF WALES, have been arriving at Rosyth during August and September, and assembly work on the second ship is due to begin in September.

A.5. Capability Risks

The Class is, together with the Lightning II F35B and Merlin Mk2 CROWSNEST and deemed the Carrier Strike Change Programme, an essential element of the Carrier Enabled Power Projection Programme: it exploits the attributes of maritime, air and land forces to deliver or threaten action across three environments. Specifically for Queen Elizabeth Class, the Strategic Defence & Security Review 2010 states 'the Queen Elizabeth Class carrier, operating as part of a Response Force Task Group will be a key basing option for the projection of air and amphibious power in support of national influence and future complex or simple non-enduring intervention operations'.

Lightning II Maritime capability depends on the Queen Elizabeth Class to achieve Carrier Strike. Strategic Defence & Security Review 2010 further stated that "The current, limited carrier-strike capability will be retired" because" short-range Harriers ... would provide only a very limited coercive capability. We judge it unlikely that this would be sufficiently useful in the latter half of the decade to be a cost-effective use of defence resources". This will create a capability gap until a Queen Elizabeth Class aircraft carrier has completed integration with the first operational squadron of Lightning II aircraft.

Strategic Defence & Security Review 2010 accepted a capability gap in the operation of fixed wing aircraft from 2011 to 2020. This has resulted in a risk to the re-generation of this element of Carrier Enabled Power Projection, which is being addressed by work across multiple Defence Lines of Development, including the analysis of the experience gained from the US and French Navies.

The reduced availability of the Queen Elizabeth Class platform as a result of the Strategic Defence & Security Review 2010 decision to operate a single carrier may (depending on future decisions) reduce the availability of this element of Carrier Enabled Power Projection.

Queen Elizabeth Class is not fully funded to deliver the Helicopter Carrying role in support of Littoral Manoeuvre and the design and safety clearance in its amphibious helicopter support capability is currently limited.

A.6. Associated Projects

Project/Increment Name	Forecast In Service Date / Initial Operating Capability	Approval Status
Queen Elizabeth Class Infrastructure Project	2016	Pre-Main Gate
Defence Information Infrastructure	2014	Post Main Gate
Medium Range Radar	2012	Post Main Gate
Queen Elizabeth Class In Service Support Solution	2016	Pre-Main Gate

A.7. Procurement Strategy

Project/Increment Name	Contractor	Contract Scope	Contract Type	Procurement Route
Queen Elizabeth Class Aircraft Carrier	BAE Systems Insyte / Thales / Kellogg Brown & Root / VT Shipbuilding / Babcock Support Services / BAE System Marine	Demonstration to Manufacture	Target Cost Incentive Fee (subsequently, from July 2007 the Engineering Transition Stage as cost reimbursement)	Non-Competitive - UK
	BAE Surface Ships/ Mission Systems/ Babcock Marine/ Thales/ BAE Barrow	Manufacture to In Service	Target Cost Incentive Fee	Non-Competitive - UK

A.8. Support Strategy

Description
Integrated Logistic Support deliverables are required to enable safe and effective operation and support for the Queen Elizabeth Class. These deliverables are being procured in the main through the manufacturing contract and will be delivered prior to contract acceptance of the first platform. The Carrier In-Service Support Solution project aims to provide affordable, value for money, in-service engineering and spares logistic support from contract acceptance. It is split into 4 key phases; assessment, development, mobilisation and delivery. The Support Assessment Phase is now complete and approval to commence the Support Development Phase will be sought in February 2014 that will produce a detailed design solution for Stage 1 support. In 2015 Main Gate approval will be sought to mobilise and deliver Stage 1 support to HMS Queen Elizabeth from Queen Elizabeth Class Logistics Support Date of December 2016. Stage 1 support solution is coherent with both the Ships Operating Centre support strategy and the Navy Command Support vision.

Project/Increment Name	Contractor	Contract Scope	Contract Type	Procurement Route
Support Assessment Phase	Aircraft Carrier Alliance - Industrial Participants	Assessment Phase in increments	Cost reimbursement moving to Target Cost	Non-Competitive - UK
Support Development Phase	To be determined	To be determined	To be determined	To be determined

B. Section B: Cost

B.1. Cost of the Assessment Phase

Project/Increment Name	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)
Queen Elizabeth Class Aircraft Carrier	120	288	+168
Conversion (cancelled May 12)	56	55	-1
Total (£m)	**176**	**343**	**+167**

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

Project/Increment Name	Lowest Approved (£m)	Budgeted For (£m)	Highest Approved (£m)
Queen Elizabeth Class Aircraft Carrier	3191	3541	3791

B.3. Cost of the Demonstration and Manufacture Phase

Project/Increment Name	Budgeted for Cost (£m)	Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
Queen Elizabeth Class Aircraft Carrier	3541	6102	+2561	0
Total (£m)	**3541**	**6102**	**+2561**	**0**

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

B.3.1.1 Queen Elizabeth Class Aircraft Carrier

Date	Variation (£m)	Category	Reason for Variation
Historic	-96	Procurement Processes	Cost reductions agreed during final Commercial Negotiations between MOD and the Aircraft Carrier Alliance.
Historic	-71	Procurement Processes	More efficiently compressed sea trials programme including early transfer of vessel from Rosyth to Portsmouth.
Historic	-181	Procurement Processes	Cost reductions as a result of the in depth review carried out by MOD (Cost Assurance and Analysis Service) and the Aircraft Carrier Alliance. Issues identified include duplication and estimating subjectivity.
Historic	-19	Procurement Processes	Reduced Target Cost Incentive Fee payable to the Aircraft Carrier Alliance as part of the agreement.
Historic	+144	Procurement Processes	Current Target Cost set at a higher certainty level than at Final Target Cost with share arrangements altered to reflect a shift in the balance of risk and reward to make it more favourable for the Department.

Historic	+35	Budgetary Factors	Better understanding of activity originally considered to be within the scope of support has resulted in its transfer to procurement, together with the associated budget.
Historic	+28	Technical Factors	Increased cost to reflect revised apportionment of overhead recovery against updated yard hour throughput assumptions.
Historic	-7	Technical Factors	Reduction in cost estimates for Government Furnished Assets as a result of maturing programme information.
Historic	-259	Technical Factors	Risk budget consumed by the programme cost growth.
Historic	+216	Technical Factors	Many opportunities for cost savings recognised at the Final Target Cost stage have not been realised resulting in further cost increase.
Historic	-23	Technical Factors	Internal Aircraft Carrier Alliance reviews identified cost savings through reduction in the management team post Ship 2 flood up; optimising the use of Engineering resources and Project Management reorganisation achievable from the newly implemented and improved Project Controls system.
Historic	+19	Technical Factors	Review of Vessel Acceptance identified insufficient budget for Defect Rectification in terms of cost and time.
Historic	+10	Technical Factors	Expenditure on external consultancy support during the rebaseline of the programme schedule and costs including independent Validation and Verification of schedule, costs and risks.
Historic	+123	Technical Factors	Revised Bill of Materials estimate including labour and material cost as a result of: maturing engineering data, incorrect design quantities and parts specifications at the Final Target Cost stage and increased scrappage rates.
Historic	+150	Technical Factors	Improved design maturity has resulted in 17,000+ Change Requests since the Final Target Cost baseline resulting in work being undertaken out of sequence, work needing to be repeated or additional work. Impact of change results in increased carryover from build to integration yard with resulting impact upon time and cost.

Historic	+65	Technical Factors	Significant increase in budget requirements for paint and access driven by underestimation of scope and scale at Final Target Cost PMB, extended schedule, and inadequate provision for change. The contract was placed and managed centrally by the Alliance Management Team (to achieve economies of scale cost savings) resulting in a lack of budget understanding and accountability at the local working level.
Historic	+33	Technical Factors	Following a review of the Programme Management processes in 2013, the Alliance Management Team agreed to further investment to strengthen programme management to deliver the rebaseline programme (schedule and costs) going forward, building on lessons learned to date. This includes the development of the Mission Control Environment (Management Information), additional Project Management, Controls and Engineering resource.
Historic	+19	Technical Factors	Cost increase primarily associated with revised estimates for outfit and assembly and transferred scope from Naval Ships and Cammell Laird to Rosyth.
Historic	+37	Technical Factors	Elements of cost growth related to: late delivery from Heating, Ventilation & Air Conditioning subcontractor, extra safety management resource and increase in T&S budget to reflect higher level of resource required.
Historic	+5	Technical Factors	Results from changed rates assumptions (overhead, throughput and direct labour) from those assumed at Final Target Cost.
Historic	+32	Technical Factors	Net cost growth across all Industrial Participants resulting from cost increases/decreases to individual work packages, activities and overspends.
Historic	+12	Technical Factors	The Ships Deliverable List was immature at the time of Final Target Cost, there was a list of items but the scope of each item was not agreed between Industry and MoD. In addition there have been some gaps identified where there has been unclear demarcation between Industrial Participants.

Historic	+261	Technical Factors	The consequential cost impact associated with extension to the schedule durations e.g. maintenance over a longer period, warehousing / storage costs and marching army costs. Elements of schedule at Final Target Cost PMB assumed parallel working which has since proved impractical. A revised sequential schedule has resulted in further delay.
Historic	+101	Inflation	The cost increase has resulted in an increase in inflation.
Historic	+120	Budgetary Factors	Relates to the reversion decision in May 2012 to a STOVL carrier including Ramp, Flight Deck Coating, Radar and other equipment required to operate STOVL aircraft. Of the £190M total STOVL costs identified some elements (£70M) fall under the approval and budget of other MOD project teams.
Historic	+217	Technical Factors	Following the agreement of Final Target Cost in 2010, the Aircraft Carrier Alliance are reporting a higher Estimate At Completion cost. This difference is driven by a combination of factors, key of which are: Aircraft Carrier Alliance not able to fully deliver cost reduction opportunities agreed at Final Target Cost (a total of £312m was agreed) the current Aircraft Carrier Alliance view is that some of this will not be delivered (+£88m) (with the remainder to be determined); the latest view of overall risk exposure has increased since Final Target Cost (+£134m); and a reduction against escalation (-£5m). With commercial discussions ongoing, MOD's assessment of the position is being with-held on the basis that it may prejudice those discussions but it has been agreed that the costs of the programme for MPR2012 should reflect the Aircraft Carrier Alliance's Estimate At Completion.
Historic	-13	Budgetary Factors	Completion of Final Target Cost negotiations with the Aircraft Carrier Alliance.
Historic	+190	Budgetary Factors	Refinement of cost estimate connected to the Equipment Examination.
Historic	+35	Budgetary Factors	An £8m reduction on inflation following refinement of estimates against additional costs of £43m for Government Furnished Equipment.

Historic	+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.
Historic	+117	Technical Factors	Various factors including growth of Bill of Materials and the impact of build strategy changes.
Historic	+674	Budgetary Factors	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	+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.
Net Variation (£m)	**+2561**		

B.3.2 Operational Impact of Cost Variations of Demonstration & Manufacture Phase – N/A

B.4 Progress against approved Support / Training / PFI Cost – N/A

B.4.1 Cost Variation against approved Support / Training / PFI Cost – N/A

B.4.2 Operational Impact of Support / Training / PFI Cost Variations – N/A

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2013 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2014 (£m)
Assessment Phase	320	-5	315
Demonstration & Manufacture Phase	3001	779	3780
Support Phase / Service / PFI Cost	0	0	0
Total Expenditure	**3321**	**773**	**4094**

C. Section C: Time

C.1 Length of the Assessment Phase

Project/Increment Name	Date of Initial Investment Decision Approval	Actual Date of Main Investment Decision Approval	Length of Assessment Phase (months)
Queen Elizabeth Class Aircraft Carrier	December 1998	December 2005	84
Conversion (cancelled May 12)	April 2011	Not Applicable	Not Applicable

C.2 Planned / Actual Boundaries for In Service Date or Initial Operating Capability

Project/Increment Name	Earliest Approved	Budgeted For	Latest Approved
Queen Elizabeth Class Aircraft Carrier	April 2015	July 2015	October 2015

C.3 In-Service Date/Initial Operating Capability

C.3.1 Definition

Project/Increment Name	In-Service Date/Initial Operating Capability
Queen Elizabeth Class Aircraft Carrier	**In Service Date:** In Service Date for the Queen Elizabeth Class is defined as the date that the vessel is ready to proceed to Operational Sea Training. A prerequisite for this is a formal declaration that the vessel has successfully completed Safety and Readiness Check. **Initial Operating Capability:** Initial Operating Capability (IOC) will be declared when the vessel has successfully completed Operational Sea Training and the Operational Readiness Inspection. Operational Sea Training consists of two 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 warfighting capabilities and more complex emergencies.

C.3.2 Progress against approved Dates

Project/Increment Name	Approved Date	Actual / Forecast Date	Variation (+/-months)	In-Year Variation (+/- months)
Queen Elizabeth Class Aircraft Carriers	July 2015	December 2017	+29	0

C.3.3 Timescale variation

C.3.3.1 Queen Elizabeth Class Aircraft Carriers

Date	Variation (+/- months)	Category	Reason for Variation
Historic	+5	Technical Factors	Further maturity of time estimates from the Aircraft Carrier Alliance has identified programme extension of 14 months which includes, and brings refinement to the +9 month reported in MPR12.

			Major Drivers: - Delays relating to change, which includes an element of carry-over work and the impact of changing the carrier configuration from STOVL to CV back to STOVL. This was necessary as a result of blocks being transferred incomplete from the shipbuild yards to the integration yard, and therefore work needing to be completed in Rosyth. It was previously assumed that it would be possible to carry out this work in parallel, but this has now had to be incorporated into the time needed for assembly (+6 Months). - Reduced access as a result of delay (see above) and carry over work has caused disruption to Mission Systems original timeframe, resulting in an extension (+5 months). - An analysis based upon norms from similar programmes identified an underestimation of elements of the Commissioning, Sea Trials and Defect Rectification Periods (+5 months). - A stronger shift pattern in Assembly through increased night shifts has meant a reduction in outfit periods (-4.5 months). - Resulted from changes to the sequencing of Mission Systems events (-2.5 months). - The bottom-up rebaseline exercise allowed full understanding of the complex iterations between the mission systems and platform programmes for the first time; concerns around the availability of ships services to meet the mission systems demand has led to further delay (+5 months).
Historic	+9	Technical Factors	The Project Team, in conjunction with the Aircraft Carrier Alliance, had an improved understanding of the build schedule with the latest Time Risk Analysis identifying a revised 50% estimate for Contract Acceptance Date. This points to a potential for a 9 month slip which the Project Team considers prudent to report.

Historic	+5	Budgetary Factors	The Aircraft Carrier Alliance continues to work to Build Strategy 5, which was first announced in March 2009 following the Equipment Examination. As part of the Final Target Cost analysis, the Aircraft Carrier Alliance have revisited their Monte-Carlo analysis not only in terms of cost but also schedule. Risk and uncertainty assumptions around integration, commissioning and trials have been updated and fully aligned to those used for costing of Final Target Cost. Analysis that both the Project Team and Cost Assurance & Analysis Services support suggests that Contract Acceptance Dates for the two Queen Elizabeth Class vessels should now be June 2016 for Queen Elizabeth and September 2018 for Prince of Wales. Allowing for transition from Contract Acceptance Date to In Service Date gives a revised In Service Dates as October 2016 and December 2018.
Historic	+12	Budgetary Factors	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 Factors	Industry and Capital Ship current estimates are that the current schedule contains sufficient flexibility to allow for mitigating actions to be taken.
Net Variation (+/- months)	**+29**		

C.3.4 Other costs resulting from Timescale variation

Project/Increment Name	Date	£m (+ Cost / - Saving)	Category	Reason for expenditure or saving
Marine Equipment Systems	Historic	+6	Budgetary Factors	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 Factors	
Naval Electronic Warfare	Historic	+2	Budgetary Factors	
T45 Overhead	Historic	+63	Budgetary Factors	
CVS Run-on Costs	Historic	+49	Budgetary Factors	
Total		**+123**		

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

Project/Increment Name	Operational Impact
Queen Elizabeth Class Aircraft Carrier	The Equipment Examination introduced a slip in the In Service Date which would have required the extension in the service of HMS Illustrious in order to maintain carrier-strike capability, the Strategic Defence and Security Review stated that "The current, limited carrier-strike capability will be retired" because "short-range Harriers... would provide only a very limited coercive capability. We judge it unlikely that this would be sufficiently useful in the latter half of the decade to be a cost effective use of defence resources". This will create a capability gap until a Queen Elizabeth Class aircraft carrier has completed integration with the first operational squadron of Joint Combat Aircraft.

C.4 Full Operating Capability

C.4.1 Definition

Project/Increment Name	Full Operating Capability	Progress to date
Queen Elizabeth Class Aircraft Carriers	Yet to be defined	The Full Operational Capability will be largely determined by the combination of Carrier Air Group / Tailored Air Group elements as required 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.5 Support / Training / PFI Contract

C.5.1 Scope of Support / Training / PFI Contract

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

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

C.5.4 Other costs resulting from Support Cost variation

C.5.5 Operational Impact of Support / Training / PFI Support Contract variation

D. Section D: Performance

D.1 Sentinel Score

Current score	Last years score	Comments
61	47	

D.2 Performance against Defence Lines of Development (DLOD)

Line of Development	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1. Equipment	Delivery of 2 Queen Elizabeth Class Carriers to the required Performance, Cost and Time Specification / Schedule.	Yes	
2. 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 (with risks)	
3. Logistics	Provision of Support Solution that enables the operational movement and maintenance of Queen Elizabeth Class Carriers.	Yes (with risks)	
4. Infrastructure	Provision of support infrastructure and facilities in the MOD estate to support Queen Elizabeth Class Carriers and their associated equipments and personnel.	Yes (with risks)	
5. 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 (with risks)	
6. Doctrine	Provision of framework of practices and procedures to derive the greatest benefit from the capability within the Queen Elizabeth Class Carriers in a range of operations and scenarios.	Yes	
7. Organisation	Establish a robust and deliverable command structure for Queen Elizabeth Class Carriers with correctly qualified personnel in place and in time to support the programme delivery, running and support solutions.	Yes (with risks)	
8. 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 (with risks)	
Currently forecast (with risks)		*8 (6)*	*0*
Last year's forecast (with risks)		*8 (4)*	*0*

D.2.1 Defence Lines of Development Variation

Date	DLOD	Category	Reason for Variation
March 2014	Training	Technical Factors	Flag Officer Sea Training (FOST) training personnel numbers being configured and resourced to train Queen Elizabeth Class Carriers to enable safe operation of the ship from pre Ship Staff Move on Board through to an operational posture. Statement Of Intent (SOI) with US will be used to assist with the generation of suitably qualified and experienced personnel (SQEP) to build-up the 'train the trainers' cadre
March 2014	Training	Technical Factors	Synthetic Training is seen as an essential part of the de-risking process for the safe delivery of training for Queen Elizabeth Class personnel. Some risk remains for the journey through to an operational posture but this is being actively worked through X-DLoD and throughout the Carrier Delivery Team (CDT).
March 2014	Equipment	Technical Factors	Since the re-baseline of the Queen Elizabeth Class programme (Nov 13) a more proactive approach has been taken by the Aircraft Carrier Alliance (ACA). A new governance structure and a more diligent and regular review of the Risks and the Performance/Cost & Time (PCT) envelope by MoD in order to develop opportunities with Aircraft Carrier Alliance to reduce impacts (Costs) has been implemented. There is also ongoing work with Aircraft Carrier Alliance Project Control Team to ensure Aircraft Carrier Alliance Risk Owners proactively manage their risk mitigations within target timescales.
March 2014	Equipment	Technical Factors	Work is in progress with Aircraft Carrier Alliance client team and the Aircraft Carrier Alliance to ensure Queen Elizabeth Class systems being developed meet the required relevant Defence Standards (e.g. AVCAT system due to lack of water filter/separation and Flight Deck Crash Fire Rescue performance and timings need further work).
March 2014	Personnel	Technical Factors	Trials and Commissioning (T&C) personnel are being identified to ensure sufficient personnel will be available to meet the T&C requirement. NCHQ have identified potential fills for current gapped billets which are being progressed.

March 2014	Personnel	Technical Factors	QNLZ manning post-In Service Date; there is a considerable challenge to deliver and maintain the appropriate strength in some cadres; NCHQ has determined manning priorities. Prioritisation and multiple short term personnel interventions will provide additional mitigation.
March 2014	Infrastructure	Technical Factors	Queen Elizabeth Class Base Port build programme dependent on achieving final bidder recommendations in late summer and approval Dec 14-Feb 15. Additional resource is required to remain sufficiently resilient if faced with short-term technical/commercial challenges.
March 2014	Infrastructure	Technical Factors	Work remains ongoing to provide sufficient resource to accommodate QNLZ T&C crew and Ship's Company ashore in the Rosyth area before they move on board.
March 2014	Information	Technical Factors	QNLZ has sufficient bandwidth up to Initial Operating Capability (IOC) to support Carrier Strike.
March 2014	Logistics	Technical Factors	Queen Elizabeth Class In –service support solution (ISS) is complex and challenging to cost. Accurate resource calculations are essential to avoid any adverse impact upon the scale of the base port support in terms of manpower, infrastructure and the forward / reverse supply chain. Work is ongoing to define the ISS Main Gate Business case (MGBC) for a submission in Aug 15.

D.3 Performance against Key Performance Measures (KPM)

D.3.1 Queen Elizabeth Class Aircraft Carriers

QUEEN ELIZABETH CLASS AIRCRAFT CARRIES

D.3.1.1 Performance against Key Performance Measures (KPM)

KPM	DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast 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	All	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	All	Availability – Queen Elizabeth class shall provide, using one platform, at High Readiness for its principal role of Carrier Strike at medium scale, and also at Very High readiness for CS small scale focused intervention, at all times.	Yes (with risks)	
KUR 4	All	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	All	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 with AFSUP.	Yes	
KUR 6	All	Aircraft Ops – Queen Elizabeth class shall be able to deploy the full medium scale offensive air effort	Yes	
KUR 7	All	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 (October 2004)	Yes	
KUR 8	All	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	
KUR9	All	Versatility – Queen Elizabeth class shall be able to deploy agile Mission groups	Yes	
Currently forecast (with risks)			9 (1)	0
Last year's forecast (with risks)			8 (0)	1

D.3.1.2 Key Performance Measures Variation

Date	DLOD	Category	Reason for Variation
Historic	KUR 3	Changed Capability Requirements	The Strategic Defence & Security Review confirmed that both carriers should be built, with one to be operational and the decision on the second carrier to be decided in Strategic Defence & Security Review 15. The Department has still not committed to two ship operation. Therefore one ship will be at Very High Readiness and the other at Extended Readiness.

D.3.1.3 Operational Impact of variation

KPM	Date	Forecast	Operational impact of variation
KUR 3	Historic	At Risk	The reduced availability of the Queen Elizabeth Class platform as a result of the Strategic Defence & Security Review decision to operate a single carrier may (depending on future decisions – Strategic Defence & Security Review 15) reduce the availability of this element of Carrier Enabled Power Projection.

D.4 Support Contract – N/A

SPECIALIST VEHICLES

Project Name		
Scout Specialist Vehicles		
Team Responsible		
SCOUT SV		
Senior Responsible Owner	**Date Appointed**	**Planned end date**
Maj Gen Nick Pope	31 October 2013	31 October 2015
Project/Increment Name	**Current Status of Projects / Increments**	
Recce Block 1 Demonstration	Post-Main Investment Decision	
Recce Block 2 Demonstration	Pre-Main Investment Decision	
Recce Block 1 & 2 Manufacture	Pre-Main Investment Decision	
Recce Block 3 Demonstration and Manufacture	Pre-Main Investment Decision	

A. Section A: The Project

A.1. The Requirement

Scout SV will provide the mounted reconnaissance capability integral to Army 2020 by equipping the Army with a fully digitised tracked armoured vehicle, designed as a manned, all-weather persistent, intelligence gathering capability with built in growth. Integral to Army 2020 plans, it delivers a Base ISTAR-like capability from a globally deployable ground platform to meet the demands of contingent operations.

The emerging Army 2020 planning assumption is to deliver a reconnaissance fleet of at least *** vehicles, but numbers and fleet will not be set until Main Gate 2

A.2. The Assessment Phase

GENERAL: Future Rapid Effect System Specialist Vehicles entered its assessment phase (Assessment Phase 2) in June 2008. The approval covered the anticipated Specialist Vehicles fleet scope, with high priority afforded to Scout (Recce Block 1), given the pressing need to replace Combat Vehicle Reconnaissance (Tracked). Specialist Vehicles was assumed to consist of three Recce Blocks plus Medium Armour and Manoeuvre Support components, all mounted on a common base platform. In broad terms the Assessment Phase Studies confirmed that the Common Base Platform concept was viable for all platforms and also set the time, cost performance and risk envelope for Recce Block 1.

TRADE-OFFS: Assessment Studies were used to derive the preferred Programme Option and its associated characteristics of performance (requirements), cost, time and risk, ahead of launching a competition to select the Prime contractor. These studies included an analysis of potential solutions ranging from off-the-shelf platforms, modified off-the-shelf, and new design, as well as studies on critical sub-system choices e.g. primary sighting system. Industry was engaged throughout to ensure data used reflected market reality, whilst still keeping competitive choices open. The Military Customer and User were engaged throughout the process.

ACQUISITION STRATEGY: Assessment Phase 2 also determined the most appropriate Acquisition Strategy for the Specialist Vehicles. The product of this strand was subject to a separate Investment Approvals Board Approval. This Approval endorsed the use of open international competition to select a 'prime contractor' to conduct the demonstration phase for Recce Block 1, and subject to further approval included progression to manufacture and initial in-service support, together with a Common Base Platform for all Specialist Vehicles. Major enabling sub-systems e.g. Guided Weapons (missiles) for later Recce Blocks were not included in the scope of Recce Block 1 and Common Base Platform in order to leave competitive choice for later Recce Blocks e.g. missile coherence with Team Complex Weapons.
An update to the Acquisition Strategy was endorsed in January 2013. In line with the Common Base Platform concept the Protected Mobility Recce Support vehicle can be used with minor sub-system changes for the Ambulance, Command and Engineer Recce roles. Similarly, for the three remaining roles, further studies have been contracted to assess these requirements.

The Recce Block 1 element of Assessment Phase 2 was conducted in four Stages, with the key findings from each stage captured in a stage report. The final stage - the formal competition and Investment Approvals Board approval for Demonstration was conducted under an aggressive timeline with transition through Main Gate 1 achieved seven months ahead of forecast. In 2010, the project was subject to re-approval by the new coalition government which delayed contract award by three months, due to the pre-election period.

Assessment Phase 2 included risk reduction studies and demonstrators on the Specialist Vehicles platforms and on high performance thermal imaging sighting systems which were subsequently down-selected as part of the main competition.

The Recce Block 1 element of the Assessment Phase 2 concluded with a major international competition, which selected General Dynamics UK Ltd as the Prime Contractor.

A.3. Project History

MAIN GATE 1 - DEMONSTRATION RECCE BLOCK 1 ONLY: The outcome of the Specialist Vehicles Assessment Phase for Recce Block 1 and Common Base Platform was presented as evidence for the Specialist Vehicles Main Gate 1 approval for entry into Demonstration. As part of this Main Gate 1 approval, the Office of Government Commerce conducted a Gateway Review in September 2009, followed by a full Major Projects Review Group examination in December 2009, which confirmed that Specialist Vehicles was in a position to proceed to its planned Demonstration phase with General Dynamics UK Ltd as the Prime contractor. Approval was re-endorsed by the new Coalition Government in June 2010. The contract with General Dynamics UK Ltd commits to the Demonstration Phase for Recce Block 1 only, whilst taking contractual option for manufacture for Recce Block 1 and Common Base Platform options for later Blocks and initial in-service support. This contract includes seven Anchor Milestones.

Main Gate 1 did not set Initial Operating Capability, Full Operating Capability or total fleet requirements, but merely noted the planning assumptions associated with these for service entry at the time. There was also recognition that the then forthcoming Strategic Defence and Security Review could change total fleet requirements and assumptions, and these should not therefore be set at Main Gate 1.

Planning Round 11 and Strategic Defence and Security Review Savings Options removed the Medium Armour element and reset the total vehicle fleet numbers up to ***, with the delivery profile recast to aspire to the emerging Army restructuring under Strategic Defence and Security Review (Five Multi Role Brigades). Final size and shape of the Specialist Vehicles fleet will not be set until Main Gate 2, in *** when the first major production investment decision will be taken. The Recce Block 1 Planning Assumption for Service Entry was also deferred by nine months from *** to *** due to a Strategic Defence and Security Review savings option. The enduring need for the Specialist Vehicles project was noted in an Information Note to the Investment Approvals Committee in June 2011.

FURTHER APPROVALS: It should be noted that Specialist Vehicles does not have a single Main Gate Approval. The size of the programme, together with previous lessons learned in other programmes, determined that a two stage Main Gate approach should be used; Main Gate 1 for entry into Demonstration for Recce Block 1 and Common Base Platform only, with a second Main Gate (2) for entry into production, the latter being the major investment decision. Later approvals (in effect sub-Main Gates) will approve Demonstration and Manufacture of the remaining Protected Mobility Recce Support roles and any future needs.

DEMONSTRATION PHASE PROGRESS: Continuing to build on progress made in 2011/12, the programme completed its initial milestones reaching the entry review into the Preliminary Design Review. MAIN WEAPONS SELECTION - SCOUT: Approval for the selection of the 40mm Case Telescope Weapon System was given in 2008 to enable commonality with the Warrior Capability Sustainment Programme, thus taking the benefit of common ammunition and training. Qualification for the 40mm Case Telescoped Weapon System is led by the Scout - Specialist Vehicles team.

In 2012-13, the programme continued to make progress with a number of design maturity events including Mine Blast De-risking, Mobile Test Rig trials and an Ambulance role mock-up, culminating in the achievement of Preliminary Design Review exit in December 2012 and the first Anchor Milestone.

In parallel, assessment studies, including representative mock-ups, confirmed that Ambulance, Command and Engineer Recce roles could be delivered by sub-system installation on the Protected Mobility Recce Support vehicle. Assessment studies continued on options for the remaining roles of Formation Recce (Overwatch), Joint Fires Command and Ground Base Surveillance roles, against the existing User Requirements, to determine whether incremental upgrades are required to develop their capability further Planning Round 12 made a number of assumptions on fleet numbers *** the follow on Recce Block 2 and 3 assessment, and the Planning Assumption for Service Entry ***, pending Army 2020, Rebasing and Main Gate 2.

An Information Note was circulated in January 2013 to provide a general update with an expectation that a further approval update would be submitted later in 2013.

A.4. In-Year Progress

During the year the programme continued to make progress within the Demonstration Phase, this included:

- April 13 – Mobile Test Rig - extensive series of trials, including cold weather, Operational and Tactical mobility trials, and an Ease of Maintenance Assessment (Jun 13).
- June to August 13 – Successful completion of the Mine Blast Trial
- August 13 – Completion of garaging facilities for the Specialist Vehicles prototypes
- December 2013 – the Common Base Platform CDR was completed.
- January 14 – Confirmation of vehicle numbers required to equip Army 2020, which will inform Main Gate 2.

An Information Note was acknowledged by the Investment Approvals Committee in July 2013. A further Information Note in April 2014 provided an update on the discussions with General Dynamics UK on MOD Planning Round intent, Army 2020 vehicle numbers and contractor progress.

A.5. Capability Risks

Scout Specialist Vehicles will replace Combat Vehicle Reconnaissance (Tracked) which has already been extended beyond its planned out of service date through a series of modifications and Urgent Operational Requirements. Combat Vehicles Reconnaissance (Tracked) is restricted by its very small design meaning that it has reached its operational capacity against the Army's needs. Combat Vehicles Reconnaissance (Tracked) must be replaced (by Scout Specialist Vehicles) to avoid a long term capability gap opening up in essential manned ground reconnaissance.

A.6. Associated Projects – N/A

A.7. Procurement Strategy

Pre-Main Investment Decision Projects / Increments only				
Project / Increment Title	**Procurement Route**			**Approval Status**
Recce Block 2 Demonstration	Acquisition Programme with full and open competition			Pre-Main Gate
Recce Block 1 & 2 Manufacture	Acquisition Programme with full and open competition			Pre-Main Gate
Recce Block 3 Demonstration and Manufacture	Acquisition Programme with full and open competition			Pre-Main Gate
Post-Main Investment Decision Projects / Increments only				
Project/Increment Name	**Contractor**	**Contract Scope**	**Contract Type**	**Procurement Route**
Recce Block 1 Demonstration	General Dynamics UK Ltd	Demonstration to Manufacture	The contract is a mixture of Firm, Maximum (to be converted to Firm) and Fixed Prices. The Firm Prices apply until 31 March 2015 and thereafter Fixed Prices will apply, with the exception of the Demonstration Phase activity which is Firm Price regardless.	Competitive - International

A.8. Support Strategy

Description				
Not yet committed. The current contract for Reconnaissance Block 1 and Common Base Platform includes a Contract Option for an initial In-Service Support Phase; this is for a two year period from the date that the Initial Operating Capability is delivered. It is currently planned to negotiate an incentivised support solution during the Demonstration Phase to come into effect following the Initial In-Service Support Phase.				
Project/Increment Name	**Contractor**	**Contract Scope**	**Contract Type**	**Procurement Route**
First Two Years Support	General Dynamics UK	Support	Fixed Price	Competitive - International

B. Section B: Cost

B.1. Cost of the Assessment Phase

Project/Increment Name	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)
Specialist Vehicles	109	87	-22
Total (£m)	**109**	**87**	**-22**

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

Project/Increment Name	Lowest Approved (£m)	Budgeted For (£m)	Highest Approved (£m)
Recce Block 1 Demonstration	1377	1394	1433
Recce Block 2 Demonstration	-	-	-
Recce Block 1 & 2 Manufacture	-	-	-
Recce Block 3 Demonstration and Manufacture	-	-	-

B.3. Cost of the Demonstration and Manufacture Phase

Project/Increment Name	Budgeted for Cost (£m)	Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
Recce Block 1 Demonstration	1394	1394	0	0
Recce Block 2 Demonstration	-	-	-	-
Recce Block 1 & 2 Manufacture	-	-	-	-
Recce Block 3 Demonstration and Manufacture	-	-	-	-
Total (£m)	**1394**	**1394**	0	0

B.3.1 Cost Variation against approved Cost of the Demonstration & Manufacture Phase – N/A

B.3.2 Operational Impact of Cost Variations of Demonstration & Manufacture Phase – N/A

B.4 Progress against approved Support / Training / PFI Cost – N/A

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2013 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2014 (£m)
Assessment Phase	73	3	75
Demonstration & Manufacture Phase	379	69	448
Support Phase / Service / PFI Cost	0	0	0
Total Expenditure	**452**	**72**	**524**

C. Section C: Time

C.1 Length of the Assessment Phase

Project/Increment Name	Date of Initial Investment Decision Approval	Actual Date of Main Investment Decision Approval	Length of Assessment Phase (months)
Specialist Vehicles	June 2008	Continuous Assessment Phase	-
Recce Block 1 Demonstration	June 2008	March 2010	21
Recce Block 2 Demonstration	June 2008	***	***
Recce Block 1 & 2 Manufacture	June 2008	***	***
Recce Block 3 demonstration and Manufacture	June 2008	***	***

C.2 Planned / Actual Boundaries for In Service Date or Initial Operating Capability

Project/Increment Name	Earliest Approved	Budgeted For	Latest Approved
Recce Block 1 Demonstration	-	-	-
Recce Block 2 Demonstration	-	-	-
Recce Block 1 & 2 Manufacture	-	-	-
Recce Block 3 Demonstration and Manufacture	-	-	-

C.3 In-Service Date/Initial Operating Capability – N/A

C.3.2 Progress against approved Dates – N/A

C.3.3 Timescale variation – N/A

C.4 Full Operating Capability – N/A

D. Section D: Performance

D.1 Sentinel Score

Current score	Last years score	Comments
Not reported	Not reported	The project is currently in its Demonstration Phase and is investigating how to best manage the Planning Round 12 outcome within the overall project boundaries.

D.2 Performance against Defence Lines of Development (DLOD)

Line of Development	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1. Equipment	System verification (Contract Acceptance against SRD)	Forecast to be met	
2. Training	Personnel trained for trials	Forecast to be met	
3. Logistics	In Service Support solution verified (contract acceptance in accordance with ITEAP)	Forecast to be met	
4. Infrastructure	Infrastructure solution demonstrated in accordance with ITEAP.	Forecast to be met	
5. Personnel	Personnel solution demonstrated in accordance with the ITEAP.	Forecast to be met	
6. Doctrine	Draft Concept of Use (CONUSE) developed by Concepts & Doctrine (C&D) from Equipment's Initial Baseline Solution (Initial B/L Sol) and C&D's Concept of Employment (CONEMP), covering all funded platform variants, with gaps between funded CONUSE and CONEMP fed back to Capability's Capability Gap (CG).	Forecast to be met	
7. Organisation	Organisation solution demonstrated in accordance with the ITEAP.	Forecast to be met	
8. Information	Information solution, including hardware, software and data messages required to satisfy the information exchange requirements, has been successfully verified against the system requirements and design specification through analysis and developmental testing in synthetic and real- world development environments in accordance with the Integrated Test, Evaluation & Acceptance Plan (ITEAP)	Forecast to be met	
Currently forecast (with risks)		8 (0)	0
Last year's forecast (with risks)		8 (0)	0

D.2.1 Defence Lines of Development Variation – N/A

D.3 Performance against Key Performance Measures (KPM)

D.3.1 Recce Block 1 Demonstration

D.3.1.1 Performance against Key Performance Measures (KPM)

KPM	DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
KUR 1 Situational Awareness	Equipment	The User shall be able to gather and use information about the operational environment.	Forecast to be met	
KUR 2 Interoperability	Equipment	The User shall be able to operate national, and with multinational, C4I Battlespace Systems	Forecast to be met	
KUR 3 Deployability	Equipment	The User shall be able to deploy rapidly worldwide by land, sea and air.	Forecast to be met	
KUR 4 Operational Mobility	Equipment	The User shall be able to self-deploy a total of 530 km (300 km by road, 200 km on tracks and 30 km cross country) on a single load of fuel with the appropriate number of personnel and equipment according to role, ready to complete a Battlefield Mission after re-fuelling.	Forecast to be met	
KUR 5 Tactical Mobility	Equipment	The User shall be able to achieve levels of terrain accessibility and agility appropriate to role.	Forecast to be met	
KUR 6 Lethality	Equipment	The User shall be able to achieve the defined levels of lethality appropriate to role.	Forecast to be met	
KUR 7 Survivability	Equipment	The User shall be provided with the defined levels of survivability appropriate to role.	Forecast to be met	
KUR 8 Sustainability	Equipment	The User shall be able to sustain Future Rapid Effect System operational effectiveness for national and coalition operations.	Forecast to be met	
KUR 9 Availability	Equipment	The User shall be able to deliver high levels of operational availability, for durations of 14 day high intensity warfighting operation, with minimum maintenance.	Forecast to be met	
KUR 10 Environment	Equipment	The User shall be able to store, transport and operate the capability world-wide in all relevant operational environments and terrains.	Forecast to be met	

KUR 11 Growth Potential	Equipment	The User shall be able to develop the capability of Future Rapid Effect System through life, through the ready integration of emerging technologies.	Forecast to be met	
Currently forecast (with risks)			11 (0)	0
Last year's forecast (with risks)			11 (0)	0

D.3.1.2 Key Performance Measures Variation – N/A

D.3.1.3 Operational Impact of variation – N/A

D.4 Support Contract – N/A

TYPHOON

Project Name
Typhoon

Team Responsible
Typhoon Project Team

Senior Responsible Owner	Date Appointed	Planned end date
Air Commodore Mark Hopkins (Air Capability)	25 April 2012	

Project/Increment Name	Current Status of Projects / Increments
Typhoon	Post-Main Investment Decision
Typhoon Future Capability Programme	Post-Main Investment Decision
Active Electronic Scanned Array	Pre-Main Investment Decision
Meteor Integration	Post-Main Investment Decision
Storm Shadow Integration	Post-Main Investment Decision

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 and evolving strategic environment.

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 onwards 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 Department will continue to develop the Typhoon capability incrementally in line with the Strategic Defence and Security Review 2010.

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 - Phase 1

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 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.

The UK has embarked on an Extended Assessment Phase to assess technologies that would meet its requirement for an Electronically Scanned Radar to replace the existing mechanically scanned radar. The embodiment of this technology on to Typhoon aircraft will provide a considerable operational and export enhancement for the aircraft and add to the growing formidable array of weapons operationally available.

A.3. Project History

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 required now (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.

Number 6 Squadron, the first Typhoon fighter squadron in Scotland, officially formed at RAF Leuchars on 6 September 2010. The Typhoon Force assumed Quick Reaction Alert (North) air defence responsibility from RAF Leuchars in March 2011.

The outcome of the review into basing was announced by the Secretary of State for Defence in July 2011 which will result in the closure of Leuchars as an Air Force base and move the Typhoon Squadron to RAF Lossiemouth, redeploying aircraft from 2013 onwards.

A proposal was made in May 2010 by the Eurofighter GmbH consortium to slow down rate of production of Typhoon Tranche 3A aircraft for all four partner nations. The Typhoon partner nations agreed to this proposal in July 2011. The agreement on production slowdown aims to protect the industrial capacity of the Eurofighter partner companies to service export orders for Typhoon while meeting the requirements of the partner nations. In March 2011, Typhoon aircraft were deployed overseas for the first time on contingent operations in support of the coalition plan to enforce United Nations Resolution 1973 (Libya).

Following Typhoon's first overseas contingent operational deployment in March 2011 on Operation ELLAMY, it was used initially in an air defence role and then as a ground attack aircraft against targets varying from tactical to strategic. The aircraft consistently demonstrated exceptional levels of reliability, performance, accuracy and overall cost-effectiveness over and above the MOD's very high expectations. Typhoon aircraft deployed on Operation ELLAMY returned to the UK in September 2011.
In June 2011 the ministers of the four core partner nations signed an agreement which signalled their intent to develop an operational requirement for an Electronically Scanned radar for the Eurofighter programme which would aim to introduce a harmonized new radar onto the aircraft, also enhancing the exportability of the aircraft to new overseas customers.

Typhoon capability upgrades continue to be progressed and capitalise on the aircrafts growth potential during the early stages of its operational life as a multi-role air defence platform in the 21st century. Planned upgrades include; the integration of the Meteor Beyond Visual Range Air-to-Air Missile following its successful launch from a Typhoon aircraft in 2012; continuing work to mature the technology required to replace the existing mechanically scanned radar with a new electronically scanned radar.

An announcement was made December 2012 for the contract between BAES and the Sultanate of Oman for the delivery of 12 Typhoon aircraft to the Royal Omani Air Force. This will increase the number of Typhoon users to seven.

Under the programme known as Retrofit 2, 43 Typhoon aircraft have been upgraded to the Tranche 1 Block 5 standard, which includes installation of the Forward Looking Infra-Red system, sensor fusion and the enhancement of air-to-air capability.

Typhoon undertook it first 'major' maintenance interval after completing 1,600 flying hours. The 'major' maintenance programme typically takes around nine months per aircraft to complete and is carried out as part of the Typhoon Availability Service at RAF Coningsby.

Typhoon played a key role during the 2012 Olympics by providing air defence capability when they were deployed to RAF Northolt to protect London as part of Operation Olympic Guardian. The aircraft also took part in fly pasts over London during the Diamond jubilee celebrations.

The first phase of the Future Capability Programme has shown good progress now that the project schedule has been re-baselined, through joint working between the Department and Industry. This accommodated the 18 month delay which was highlighted in Major Projects Report 2012.
The Typhoon front line fleet continues to build with well over half of the contracted deliveries of 160 aircraft in three Tranches now in service with the RAF.

A.4. In-Year Progress

The Governments continued commitment to the growth in Typhoon capability was marked when the £130m contract between NETMA and Eurofighter GmbH to integrate the Meteor missile system onto Typhoon was at the Paris Airshow in June 2013 at a ceremony attended by Ministers of the Partner Nations of the Typhoon/Eurofighter programme.

The Typhoon Future Capabilities (FCP1) Programme introduces precision air-to-surface bombing capability on Tranche 2 and Tranche 3 standard of aircraft. The programme is delivered in two sequential phases, the first of which (P1Ea) was accepted into service with the RAF (1 Squadron) in December 2013. The precision bombing capability is provided principally via the integration of Paveway IV bomb and Laser Designator Pod in service acceptance followed an earlier successful test firing of this weapon in July 2013.

The planning for integration of further capability upgrades under the wider FCP programme includes Storm Shadow, Meteor and additional Air to Ground Weapons. The United Kingdom and its Partner Nations are also jointly committed to integrate an Active Electronic Scanned Array (AESA) radar on to Typhoon and we are working closely with Industry to finalise arrangements for bringing this capability into service, subject to the usual approvals processes. The addition of this capability will further enhance both the operational capability and the exportability of this formidable aircraft which is already in service with the Air Forces of 6 Nations.

In November 2013 the Ministers of the Eurofighter/Typhoon Nations instigated a programme that underlines their collective commitment to improve the working relationships and create more efficient and agile working practices and build on and improves a programme of European Transformation.

The Typhoon fleet continues to grow as planned with 117 aircraft now delivered to the RAF as at the end of March 2013. The last of the Tranche 2 aircraft and the first of 40 new Tranche 3a aircraft were delivered at the end of December 2013.

The Department extended the Typhoon Availability Service support contract for a further year in December 2013. Throughout 2013 and into 2014 the Department has continued to get to grips with cost control in the Support area by contracting accounting consultants to conduct a 'Deep Dive' into the £13Bn Support budget to ensure it remains under control and affordable over the life of the aircraft through to it's planned Out of Service Date in 2030. The combination of this activity and Ministerially endorsed European Programme Transformation underlines the Government's commitment to continued cost control and the long term affordability and exportability of Typhoon.

A.5. 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 occurring, loss of Typhoon would reduce the UK's ground-attack and air superiority capabilities.

A.6. Associated Projects

A.7. Procurement Strategy

Project/Increment Name	Contractor	Contract Scope	Contract Type	Procurement Route
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 comprising: Alenia, BAE Systems, Cassidian (formerly EADS(CASA) and 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 provisions the price elements for Airframe and equipments have been converted to a Limit of Liability cost reimbursement without profit.	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	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 Price for production of 1st and 2nd 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 10% 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, Cassidian (formerly EADS(CASA) and EADS(Deutschland)	Design, development, demonstration, qualification and production clearance of the first batch of enhancements.	Overall Max Price to be converted to UK Firm Price	Collaborative. Non-competitive but with international competitive sub-contract elements.
Meteor Integration	Eurofighter GmbH Airframe consortium	Meteor Missile Integration on to Typhoon	Maximum Price	Non Competitive

A.8. Support Strategy

Description
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. Work is now well underway to implement changes to the contractual framework for support by replacing eleven legacy contracts with four new more efficient contracts as a part of a wider Transformation programme jointly introduced by Partner Nations and Eurofighter Gmbh. Two of the four Contracts were let in 2012 and work is now underway to let the remaining two. The UK has also developed a series of managed workstreams, focussing on the support costs of the Engine, Avionics Engineering sustainment and improved maintenance processes. Progress against these workstreams has continued during the year with efficiencies now starting to be realised in maintenance of the aircraft. All of these workstreams are specifically designed to manage Support expenditure so that it stays within the current Approval limit over the life of the aircraft to its planned out of service date. The Typhoon Availability Service contract was extended for one year from December 2013 with BAES.

Project/Increment Name	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, with international workshare of sub-contracting also determined by those Memoranda

B. Section B: Cost

B.1. Cost of the Assessment Phase

Project/Increment Name	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)
Typhoon	87	78	-9
Typhoon Future Capability Programme	39	39	0
Active Electronic Scanned Array – Extended Assessment Phase	***	***	***
Total (£m)	***	***	***

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

Project/Increment Name	Lowest Approved (£m)	Budgeted For (£m)	Highest Approved (£m)
Typhoon	-	15173	15348
Typhoon Future Capability Programme	349	403	435
Meteor Integration	122	130	137
Storm Shadow Integration	164	172	199
Total (£m)	-	**15878**	**16119**

B.3. Cost of the Demonstration and Manufacture Phase

Project/Increment Name	Budgeted for Cost (£m)	Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
Typhoon	15173	17543	+2370	-109
Typhoon Future Capability Programme	403	403	-	-28
Meteor Integration	130	124	-6	-6
Storm Shadow Integration	172	172	-	-
Total (£m)	**15878**	**18242**	**+2364**	**-143**

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

B.3.1.1 Typhoon

Date	Variation (£m)	Category	Reason for Variation
Sep-13	+4	Budgetary Factors	Increased profile following reassessment of GFX requirements
Jun-13	-113	Budgetary Factors	Reduction in Tranche 3 profile from ABC 13 to ABC14 due to reassessment of production costs.
Historic	+11	Technical Factors	Cost increases across the Main Development Contract. NAO were unable to validate this due to insufficient evidence being provided.
Historic	-18	Technical Factors	Risk retirement. Due to the maturity of the programme risk was released in Planning Round 13, FY 12/13 (£12M), FY 13/14 (£6M).
Historic	+1	Change in Associated Project	FY 13/14 £1M - Due to the delay in Voyager refuel clearance safety certification (QRPC1/ABC13).

Historic	-13	Changed Capability Requirements	Tranche 3 adjustment FY 19/20 due to de-scoping of Electronic Planning Tool in Planning Round 12.
Historic	-4	Budgetary Factors	Reduction in In Year costs of Tranche 3 Production
Historic	+31	Budgetary Factors	Increased profile as a result of Tranche 3 Production Stretch Planning Round 12 Option taken.
Historic	-96	Technical Factors	Reduction in Tranche 3 profile from Planning Round 11 to Planning Round 12 due to reassessment of project costs and risks and reduction in software costs.
Historic	-9	Accounting Adjustments and Re-definitions	Removal of Indirect RDEL (Foreign Exchange) in accordance with a change in Departmental policy.
Historic	+86	Exchange Rate	Changes to Planning Round 2011 assumptions for exchange rates.
Historic	-55	Technical Factors	Reassessment of Development costs (-£29m) and Production costs (-£14m). Reduction in Development costs as a result of In Year savings (-£12m).
Historic	+87	Accounting Adjustments and Re-definitions	Removal of Cost of Capital due to Clear Line of Sight policy implemented by HM Treasury (+87m).
Historic	+71	Exchange Rate	Changes to planning round assumptions for foreign exchange rates
Historic	-74	Technical Factors	Reassessment of Development cost (-£70m). Reassessment of Production cost (-4m)
Historic	+2531	Technical Factors	Inclusion of Tranche 3 Aircraft contract (+£2531m)
Historic	+58	Exchange Rate	Changes to planning round assumptions for exchange rates and weakening of the Pound against the Euro and US Dollar during 2008/09
Historic	-47	Technical Factors	Reassessment of Development cost (-£83m). Reassessment of Production cost (+£36m).
Historic	-38	Budgetary Factors	Saving measures taken in Planning Round 2009 (-£38m)
Historic	-128	Budgetary Factors	Reduced provision for modifications (-£123m). Reduced quantity of Role Equipment (-£5m).
Historic	+118	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)

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 2008 (-£18m).
Historic	-482	Procurement Processes	Transfer to Future Capability Programme.
Historic	+65	Technical Factors	Correction of omission of transferred cost in MPR05 calculation.
Historic	+19	Procurement Processes	Industry restructuring.
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 (+£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	-1355	Changed Capability Requirements	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	+945	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). Further price variation due to slippage in the programme (+£136m). 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).

Historic	+290	Changed Capability Requirements	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 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	-8	Budgetary Factors	Transfers to other budgets (-£8m).
Historic	-12	Inflation	Changes in inflation assumptions since approval: development (+£208m) and production (-£220m).
Historic	-114	Exchange Rate	Changes in exchange rate assumptions since approval (-£114m).
Historic	-52	Procurement Processes	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 Processes	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	+259	Accounting Adjustments and 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).
Net Variation (£m)	**+2370**		

B.3.1.2 Typhoon Future Capability Programme

Date	Variation (£m)	Category	Reason for Variation
Mar 14	-28	Technical Factors	Contract rebate and reassessment of risk allocated to future years
Historic	-11	Technical Factors	Risk retirement. Due to the maturity of the programme risk was released in Planning Round 13, FY 13/14 (£2M) & FY 14/15 (£2M). In Year FY 12/13 (£7M) NAO were unable to validate this due to insufficient evidence being provided.
Historic	+22	Technical Factors	Higher than expected development costs due to complexity of requirement specification.
Historic	-1	Accounting Adjustments and Re-definitions	Removal of Indirect RDEL (Foreign Exchange) in accordance with a change in Departmental policy.
Historic	+5	Exchange Rate	Changes to planning round assumptions for exchange rates.
Historic	-8	Technical Factors	Reduction in costs due to reassessment of risk.
Historic	+8	Exchange Rate	Changes to planning round assumptions for foreign exchange rates.
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
Historic	-2	Technical Factors	Reduction in CDEL achieved at contract negotiation (-£2m).
Historic	+8	Technical Factors	In 2007/8 an attempt to re-baseline the Future Capability Programme Approval (for predominantly technical reasons) was rejected. This change was not reflected in subsequent Major Projects Report submissions and resulted in a higher Approval baseline being carried forward.
Net Variation (£m)	**0**		

B.3.1.3 Meteor Integration

Date	Variation (£m)	Category	Reason for Variation
Mar-14	-6	Budgetary Factors	Reassessment of programme costs, including reprofiling of procurement of Meteor missile simulators and retirement of risk contingency FY14/15
Net Variation (£m)	**-6**		

B.3.1.4 Storm Shadow Integration N/A

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

Project/Increment Name	Category	Explanation
Typhoon	Technical Factors	Does not directly impact operations
Typhoon Future Capability Programme	Technical Factors	No impact on operations
Meteor Integration	Budgetary Factors	No impact on operations

B.4 Progress against approved Support / Training / PFI Cost

Project/Increment Name	Approved Cost (£m)	Forecast cost (£m)	Variation (£m)	In-year Variation (£m)
Typhoon	13100	12901	0	-199

B.4.1 Cost Variation against approved Support / Training / PFI Cost

B.4.1.1 Typhoon

Date	Variation (£m)	Category	Reason for Variation
Mar 14	-199	Budgetary Factors	Reassessment of whole life costs based on revised cost modelling
Net Variation (£m)	**-199**		

B.4.2 Operational Impact of Support / Training / PFI Cost Variations

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2013 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2014 (£m)
Assessment Phase	120	0	120
Demonstration & Manufacture Phase	15953	710	16663
Support Phase / Service / PFI Cost	4338	400	4738
Total Expenditure	**20411**	**1110**	**21521**

C. Section C: Time

C.1 Length of the Assessment Phase

Project/Increment Name	Date of Initial Investment Decision Approval	Actual Date of Main Investment Decision Approval	Length of Assessment Phase (months)
Typhoon	(Legacy Project) pre SMART	November 1987	-
Typhoon Future Capability Programme	Combined Initial and Main Gate approval	January 2007	-
Active Electronic Scanned Array EAP[1]	July 2011	***	-
Meteor Integration[2]	-	April 13	-
Storm Shadow Integration[2]	-	October 13	-

C.2 Planned / Actual Boundaries for In Service Date or Initial Operating Capability

Project/Increment Name	Earliest Approved	Budgeted For	Latest Approved
Typhoon	-	December 1998	-
Typhoon Future Capability Programme	January 2012	June 2012	December 2012
Active Electronic Scanned Array	-	***	-
Meteor Integration[2]	November 2017	June 2018	June 2018
Storm Shadow Integration[2]	June 2018	August 2018	July 2019

C.3 In-Service Date/Initial Operating Capability

C.3.1 Definition

Project/Increment Name	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.
Meteor Integration	12 aircraft or one squadron fully Meteor Capable
Storm Shadow Integration	First Front Line Unit Operational

[1] Extended Assessment Phase (EAP) for Active Electronic Scanned Array
[2] No Assessment Phase – Project Approved at Main Gate

C.3.2 Progress against approved Dates

Project/Increment Name	Approved Date	Actual / Forecast Date	Variation (+/-months)	In-Year Variation (+/- months)
Typhoon	December 1998	June 2003	+54	0
Typhoon Future Capability Programme	June 2012	December 2013	+18	0
Meteor Integration[2]	June 2018	June 2018	Nil	N/A
Storm Shadow[2] Integration	August 2018	August 2018	Nil	N/A

C.3.3 Timescale variation

C.3.3.1 Typhoon

Date	Variation (+/- months)	Category	Reason for Variation
Historic	+32	Technical Factors	Resulting from the application of complex technologies required to enable the equipment to meet the original Staff Requirement (+32 months).
Historic	+22	Procurement Processes - International Collaboration	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).
Net Variation (+/- months)	**+54**		

C.3.3.2 Typhoon Future Capability Programme

Date	Variation (+/- months)	Category	Reason for Variation
Historic	+15	Technical Factors	Rebaseline of programme by Industry for Integrated Logistic Support and embodiment factors
Historic	+3	Technical Factors	Re-baselining of Future Capability Programme which affects forecast of ISD.
Net Variation (+/- months)	**+18**		

C.3.3.3 Meteor Integration

Date	Variation (+/- months)	Category	Reason for Variation
	Nil	N/A	N/A
Net Variation (+/- months)	**Nil**		

C.3.3.4 Storm Shadow Integration

Date	Variation (+/- months)	Category	Reason for Variation
	Nil	N/A	N/A
Net Variation (+/- months)	**Nil**		

C.3.4 Other costs resulting from Timescale variation

Project/Increment Name	Date	£m (+ Cost / - Saving)	Category	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
Total		**+214**		

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

Project/Increment Name	Operational Impact
Typhoon	Key improvements in capability not realised until revised ISD are: i) Agility and all altitude performance; ii) Autonomous detection, identification and multiple engagement of air to air targets; iii) Human computer interface to reduce operator workload; iv) Multi role capability; v) Survivability through superior airframe and equipment performance; vi) Low mean time between failures. 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.
Typhoon Future Capability Programme	Delays to Future Capability Programme 1 does not adversely impact on the Typhoon Force build.

C.4 Full Operating Capability

C.4.1 Definition

Project/Increment Name	Full Operating Capability	Progress to date
Typhoon	A declaration by Head of Capability (Theatre Airspace) that the full strength Military Capability has been achieved.	On track
Typhoon Future Capability Programme	A declaration by Head of Capability (Theatre Airspace) that Swing-role military capability has been achieved.	On track
Meteor Integration	Full Tranche 2 & 3 fleet provisioned for a four missile Meteor fit.	On Track
Storm Shadow Integration	The full Typhoon Tranche 2 and Tranche 3 fleet enabled for Storm Shadow.	On track

C.5 Support / Training / PFI Contract

C.5.1 Scope of Support / Training / PFI Contract

Project/Increment Name	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 Service	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 Support / Training / PFI Contract Go-Live Date – N/A

C.5.3 Progress against approved End of Support / Training / PFI Contract Date– N/A

C.5.4 Other costs resulting from Support Cost variation– N/A

C.5.5 Operational Impact of Support / Training / PFI Support Contract variation– N/A

D. Section D: Performance

D.1 Sentinel Score

Current score	Last years score	Comments
93 Green	93%	Typhoon - continuing to build increased capability
91 Green	97%	Future Capability Programme (FCP1) - the minor reduction in score is because prior to achieving the FCP1 In Service Date the scores were adjusted to reflect programme challenges such as successful achievement of certification by close collaborative working with the Military Aviation Authority.

D.2 Performance against Defence Lines of Development (DLOD)

Line of Development	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1. Equipment	Delivery of Typhoon platform, Typhoon Future Capability Programme and associated weapons.	Yes	
2. Training	The timely provision of suitably qualified and experienced personnel to deliver Defence outputs, now and in the future.	Yes	
3. Logistics	The provision of maintenance and support to the Typhoon fleet, including the operation of support activities such as supply chain.	Yes	
4. 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	
5. Personnel	The timely provision of sufficient, capable and motivated personnel to deliver the Typhoon capability, now and in the future.	Yes	
6. Doctrine	Doctrine is an expression of the principles by which military forces guide the use of Typhoon.	Yes	
7. 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	
8. 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	
Currently forecast (with risks)		8 (0)	0
Last year's forecast (with risks)		8 (4)	0

D.2.1 Defence Lines of Development Variation

Date	DLOD	Category	Reason for Variation
MPR14	Training	Technical Factors	An adequate synthetic training system is expected to be in place and on time.
MPR14	Personnel		Sufficient personnel are expected to be in place for next major capability milestone
MPR14	Logistics	Technical Factors	Logistic support solution expected to be in place for next major capability milestone
Historic	Information	Technical Factors	Generation and validation of mission data for elements of the weapon system is heavily reliant on technical support. With mission data production reliant on interim industry equipment, and personnel additional future investment will be required.
Historic	Logistics	Technical Factors	National Support arrangements are working well, but there are problems with the timely supply of spares and repair of equipment under the collaborative support contracts which are contributing to the RAF failing to achieve its flying hours.
Historic	Training	Technical Factors	There is risk that synthetic training will not be provided concurrently with the Future Capability Programme 1 aircraft standard, across the Typhoon Force.
Historic	Equipment	Technical Factors	It is now assessed that this DLOD will deliver capability to meet the redefined Future Capability Programme 1 In Service Date of December 2013.
Historic	Equipment	Technical Factors	The approved ISD of June 2012 for Future Capability Programme 1 will not be achieved and is likely to be delayed by over 12 months. A combination of technical complexity, Partner Nation disagreement on a synthetic training solution and delays in agreement of an international support arrangement have caused the delay. The situation is summarised in an Information Note released on 2nd April 2012. The ISD for Typhoon surface-attack capability was rebaselined as part of the Strategic Defence and Security Review to 2015. Consequently, the delay to the delivery of Future Capability Programme 1 DLODs does not affect Typhoon's ability to deliver Defence Final Output.

Historic	Logistics	Technical Factors	The delivery of the Future Capability Programme 1 Logistics DLOD is dependent on the completion of the Future Capability Programme product which is delayed by over 12 months (Information Note released on 2nd April 2012 refers). The ISD for Typhoon surface-attack capability was rebaselined as part of the Strategic Defence and Security Review to 2015. Consequently, the delay to the delivery of Future Capability Programme 1 DLODs does not affect Typhoon's ability to deliver Defence Final Output.
Historic	Training	Technical Factors	The delivery of the Future Capability Programme 1 Training DLOD is dependent on the completion of the Future Capability Programme product which is delayed by over 12 months (Information Note released on 2nd April 2012 refers). The ISD for Typhoon surface-attack capability was rebaselined as part of the Strategic Defence and Security Review to 2015. Consequently, the delay to the delivery of Future Capability Programme 1 DLODs does not affect Typhoon's ability to deliver Defence Final Output.
Historic	Infrastructure	Technical Factors	Overall performance is good with minor issues mainly relating to the second operating base at Leuchars. Minimum infrastructure was provided because the timescale for delivery was short (approximately two years) and some mitigations are still in place. Furthermore, funding for the building for synthetic simulators has still not been approved.
Historic	Logistics	Technical Factors	National Support arrangements are working well, but there are problems with the timely supply of spares and repair of equipment under the collaborative support contracts which are contributing to the RAF failing to achieve its flying hours.
Historic	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.

Historic	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.
Historic	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.
Historic	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.
Historic	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.

D.3 Performance against Key Performance Measures (KPM)

D.3.1 Typhoon

D.3.1.1 Performance against Key Performance Measures (KPM)

KPM	DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1	Equipment	Take off Distance	Yes	
2	Equipment	Landing Distance		Yes
3	Equipment, Training, Logistics, Personnel	Attributable Failures per 1000 Flying Hours	Yes	
4	Equipment, Logistics	Life (Flying Hours)	Yes	
5	Equipment	Sustained Minimum Turn Radii at Sea Level, Max Reheat	Yes	
6	Equipment	Maximum speed at sea level	Yes	
7	Equipment	Maximum speed at 36,000 ft	Yes (with risks)	
8	Equipment	Acceleration Time at Sea level from 200 knots to Mach 0.9	Yes	
9	Equipment	Instantaneous Turn Rate Sea Level, Max Reheat	Yes	
10	Equipment	Sustained Turn Rate at Mach 0.9 at 5000ft, Max Dry	Yes	
Currently forecast (with risks)			9 (1)	1
Last year's forecast (with risks)			9 (1)	1

D.3.1.2 Key Performance Measures Variation

Date	DLOD	Category	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. It is assessed that it would not be cost effective to conduct trials to expand the existing clearance.
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 – N/A

D.3.2 Typhoon Future Capability Programme

D.3.2.1 Performance against Key Performance Measures (KPM)

KPM	DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1	All	To engage a defined set of targets.	Yes	
2	All	To complete Air Policing duties.	Yes	
3	All	To maintain Typhoon rates of effort.	Yes	
4	All	To satisfy Communications and Information Systems interoperability requirements.	Yes	
5	All	To complete a mission in zero visibility.	Yes	
6	All	To complete the mission from zero to bright sunlight.	Yes	
7	All	To maintain the Typhoon supportability.	Yes	
Currently forecast (with risks)			7 (0)	0
Last year's forecast (with risks)			7 (0)	0

D.3.2.2 Key Performance Measures Variation- N/A

D.3.2.3 Operational Impact of variation – N/A

D.3.3 Meteor Integration

D.3.3.1 Performance against Key Performance Measures (KPM)

KPM	DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1	All	The systems shall be able to change BVRAAM parameters during mission pre-launch.	Yes	
2	All	The systems shall acquire adversary airborne targets.	Yes	
3	All	The System shall be able to launch BVRAAM against designated airborne targets.	Yes	
4	All	The system shall select a weapon for launch.	Yes	
5	All	The system shall send target data updates to air-to-air weapons post launch.	Yes	
6	All	The systems MMI shall provide the pilot with accurate and timely information.	Yes	
7	All	The system shall interface with BVRAAM weapon consistent with its ICD.	Yes	
8	All	The system shall provide accurate pilot training to the Meteor deltas.	Yes	
9	All	The platform shall support two missiles in flight to the required uncertainty index with graceful degradation for further missiles	Yes	
10	All	The platform shall have the ability to carry a mixed configuration of 4 Meteor UF and 2 AMRAAM UW.	Yes	
Currently forecast (with risks)			10 (0)	0
Last year's forecast (with risks)			N/A	N/A

D.3.3.2 Key Performance Measures Variation – N/A

D.3.3.3 Operational Impact of variation – N/A

D.3.4 Storm Shadow Integration

D.3.4.1 Performance against Key Performance Measures (KPM)

KPM	DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1	All	The user requires the existing Storm Shadow weapon to be integrated onto the Tr2/3 Typhoon.	Yes	
2	All	The user requires Storm Shadow to be integrated without increasing the overall level of risk to the Weapon System.	Yes	
3	All	The user requires the integration of Storm Shadow to exploit the existing Ground Support Equipment (GSE)	Yes	
4	All	The user requires Storm Shadow integration to be compatible with existing Typhoon mission planning, mission preparation and mission data loading systems.	Yes	
5	All	The user requires the integration to support all existing Storm Shadow functionality.	Yes	
6	All	The user requires Typhoon to be capable of carriage, release and jettison of up to 2 Storm Shadow weapons within the defined envelope.	Yes	
7	All	The user requires the capability to carry out Air-to-Air refuelling whilst carrying Storm Shadow	Yes	
8	All	The user requires the capability to verify and change Storm Shadow selected target prior to the point of release.	Yes	
9	All	The user requires the capability to erase protectively marked information from the Storm Shadow weapon.	Yes	
10	All	The user requires a Storm Shadow training system for Mission Planners, Ground Crew and Pilots.	Yes	
Currently forecast (with risks)			10 (0)	0
Last year's forecast (with risks)			N/A	N/A

D.3.4.2 Key Performance Measures Variation – N/A

D.3.4.3 Operational Impact of variation – N/A

D.4 Support Contract

D.4.1 Typhoon

D.4.1.1 Performance against Key Performance Measures (KPM)

KPM	DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast 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	
Currently forecast (with risks)			3 (0)	0
Last year's forecast (with risks)			3 (2)	0

D.4.1.2 Key Performance Measures Variation

Date	DLOD	Category	Reason for Variation
MPR14	Logistics	Technical Factors	Forward Available Fleet of T2 ac now expected to be sufficient and at correct capability standard.
MPR14	Training	Technical Factors	Adequate synthetic training devices will now be in place on time.
Historic	2	Technical Factors	There is a risk that the Tranche 2 aircraft will not be available to declare as operational force elements as a result of technical and support issues. Several avionic upgrades and a full deployable support solution must be in place for Tranche 2 aircraft to be declared as operational
Historic	3	Technical Factors	There is a risk that the synthetic training devices (simulators) will not be upgraded concurrently with the aircraft. This would mean that pilots would be unable to train adequately for employing the new aircraft standard.

D.4.1.3 Operational Impact of variation – N/A

WARRIOR CAPABILITY SUSTAINMENT PROGRAMME

Project Name		
Warrior Capability Sustainment Programme		
Team Responsible		
Warrior Project Team		
Senior Responsible Owner	**Date Appointed**	**Planned end date**
Major General Nick Pope	31 October 2013	31 October 2015
Project/Increment Name	**Current Status of Projects / Increments**	
Warrior Capability Sustainment Programme	Post-Main Investment Decision	
Common Cannon	Post-Main Investment Decision	

A. Section A: The Project

A.1. The Requirement

The requirement for the Warrior Capability Sustainment Programme is to sustain the capability of the Armoured Infantry within the balanced force against current and emerging threats, across the spectrum of conflict until the Warrior Out of Service Date. The Warrior Armoured Fighting Vehicle was brought into service in 1988 with an Out of Service Date of 2025.

The Warrior Capability Sustainment Programme consists of four main elements:

1. Warrior Figtability Lethality Improvement Programme
(A new turret incorporating a fully stabilised automatic 40mm cannon)
The 40 mm Cased Telescopic Cannon and Ammunition System has been mandated as the weapon system for Warrior and procured by a joint Anglo-French project. The project is currently part way through qualification of the ammunition and cannon, concurrently the weapon system is being integrated into Warrior by Lockheed Martin UK, who will qualify the new turret.

2. Enhanced Electronic Architecture
(Power generation and distribution enhancement and the introduction of a modern electronic architecture)

3. Modular Protection System
(Applique Armour fixing points, enabling a 'tailored' armour solution to counter specific threats)

4. Armoured Battlefield Support Vehicle
(A new variant, replacing obsolescent platforms, that has equal protection and mobility to the core fighting platforms). Armoured Battlefield Support Vehicle is currently in the Concept Phase and is subject to future approval.

The current affordable fleet is 565 vehicles including 445 currently planned to be upgraded to Warrior Capability Sustainment Programme which includes the intent to upgrade 65 to Armoured Battlefield Support Vehicle.

A.2. The Assessment Phase

The Assessment Phase was conducted from the approval of Initial Gate (27 July 2009) to the contract effective date of 31 October 2011. A competition was run, with two bidders (BAE Systems and Lockheed Martin) invited to compete.

After Initial Gate, the programme was given a compressed timeline of six months to gain Main Gate Approval, and a Business Case was submitted to the Investment Approval Board in February 2010. Affordability issues due to an over extended Defence Budget meant Main Gate Approval was not given, with the bidders requested to Revise and Confirm their bids against a range of options. In March 2010 the Investment Approvals Board approved an uplift of up to £12.4m to fund the extended Assessment Phase. The programme team resubmitted a Main Gate Business Case to the Defence Equipment and Support Investment Board on 11 July 2011, which was approved and submitted for the Investment and Approval Committee meeting on 19 July 2011. Approval was given by Her Majesty's Treasury on 4 October 2011 and then the Investment and Approvals Committee on 10 October 2011.

The Prime Minister visited the Lockheed Martin facility in Ampthill, Bedfordshire on 25 October 2011 and made a public announcement regarding the placement of the contract with Lockheed Martin. The Contract for the Demonstration Phase was signed on 31 October 2011.

Within the Warrior approval, the 40mm Cannon was the mandated weapon system (March 2008) which would enable commonality with the Specialist Vehicles Programme, thus benefiting from common ammunition and training. A Review Note for the 40mm Cannon went to the Investment Approvals Board in March 2010 and was approved in April 2010.

Armoured Battlefield Support Vehicle is currently in the Concept Phase, with an Equipment Programme funding line of £107M included in Annual Budgeting Cycle14 to support procurement of 65 vehicles covering two different variants, an Armoured Personnel Carrier variant and an Ambulance variant.

A.3. Project History

Warrior Capability Sustainment Programme was approved against the not to exceed (NTE) In Service Date (ISD) of March 2020 at 85% confidence. This is the latest acceptable ISD and is used as the DE&S reporting baseline.

26 March 2008 - 40mm Cased Telescopic Cannon and Ammunition mandated.
27 July 2009 - Warrior Capability Sustainment Programme Initial Gate Business Case Approved
25 February 2010 - Investment Approval Board Meeting for Warrior Main Gate Business Case (Not Approved due to affordability issues)
22 March 2010 - Ministerial Letter to both bidders to confirm the Revise and Confirm of bids exercise.
4 April 2010 - Review Note for Cannon to Investment Approvals Board Meeting for financial approval
25 August 2010 - Revise and Confirm bids received from bidders
4 October 2011 - Formal Approval from Her Majesty's Treasury
10 October 2011 - Formal Approval from Investment Approvals Committee
25 October 2011 - Ministerial Announcement by Prime Minister
31 October 2011 - Contract Effective Date with Lockheed Martin UK
April 2012 - Integrated Baseline Review
May 2012 - System Design Review (Anchor)
September 2012 - Ballistic Solution Algorithm Software Drop 3
November 2012 - System Architecture Design Review 510/511 (Anchor)
January 2013 - SciSys Electronic Architecture Software Build 2

MAIN WEAPON SELECTION – Case Telescoped 40mm Cannon:
Approval for the selection of the 40mm Case Telescoped Weapon System was given in 2008 to enable commonality with the Warrior Capability Sustainment Programme, thus taking the benefit of common ammunition and training. Qualification for the 40mm Case Telescoped Weapon System is led by the Scout - Specialist Vehicles team.

Armoured Battlefield Support Vehicle is currently in the Concept Phase to support procurement of 65 vehicles covering two different variants, an Armoured Personnel Carrier variant and an Ambulance variant.

A.4. In-Year Progress

Following slower than expected progress by the Warrior Capability Sustainment Programme Prime Contractor a re-baselining of the Demonstration Phase schedule was required. The contract was reset following a period of negotiation. Warrior Capability Sustainment Programme remained within financial approvals and protected our approved In Service Date of March 2020 at 85% by amending the sequencing of Manufacture Phase activities, including the purchase of long lead items.

The following milestones have been achieved by Lockheed Martin in-year:

March 2013 – Unit Zero Turret Integration & Test {Turret Factory Acceptance Test Plan / Specification complete and approved. Integration & Test Point A1 Test Report completed and any resultant corrective actions agreed}

November 2013 – Unit Zero Integration Readiness Review {Integration Readiness Review held}

December 2013 – Unit Zero Block 1 – Integration of Test Point A2, Stage 2 {Integration & Test Point A2 completed in accordance with Test Plan}

December 2013 – FV510 & FV511 Preliminary Design Review (Anchor) {Conduct FV510 & FV511 Preliminary Design Review in accordance with and meet the criteria in the Systems Engineering Management Plan}

March 2014 – Re-baseline Contract signed.

March 2014 – Live Fire 3 Stage 1 – Unmanned Fire Torque Measurement {Trial to include unmanned firing of the Primary Weapon System integrated onto the Warrior Hull in the configuration and at the build standard}.

Armoured Battlefield Support Vehicle:
Initial Gate was planned for Quarter 3 2014, however, Army Headquarters is currently reviewing the scope of the Armoured Battlefield Support Vehicle programme with a view to harmonising the requirement across the broader Army programme. Both the quantity of vehicles and the number of variants required for Armoured Battlefield Support Vehicle are expected to increase as a consequence of this review and Defence Equipment & Support are awaiting an option detailing the Army's requirement

MAIN WEAPON SELECTION – Case Telescoped 40mm Cannon:
The qualification of Case Telescoped 40mm Cannon and Armour Piercing Fin Stabilised Discarding Sabot-Tracer and Target Practice-Tracer rounds continued in 2013 and included tests on the cannon and ammunition which included safety and functional trials in ambient and extreme hot and cold conditions. In addition, the ammunition was sequentially vibrated, shocked, heated, frozen and dropped to a specification which simulated a very tough in-service life, before being inspected and fired. The final qualification trials were completed in December 2013, forming the evidence in the Safety and Environmental Case Report which is currently with the Ordinance Safety Review Panel for their recommendation that Case Telescoped 40mm Cannon and Ammunition is safe to use. Some minor limitations have been applied in the initial use period, which will be lifted once further evidence or improvements have been provided as part of the 'gap closure' activities

A.5. Capability Risks

Warrior Capability Sustainment Programme will upgrade the current Warrior fleet, some of which have been upgraded through a series of modifications and Urgent Operational Requirements. The current fleet is now restricted in it's capability on operations. The Out of Service Date for the non Warrior Capability Sustainment Programme Warrior fleet is 2025, so Warrior must be upgraded to avoid a long-term capability gap opening up.

A.6. Associated Projects – N/A

A.7. Procurement Strategy

Project/Increment Name	Contractor	Contract Scope	Contract Type	Procurement Route
Warrior Capability Sustainment Programme	Lockheed Martin UK	Demonstration to Manufacture	Prime Contractor	Competitive - International
Common Cannon	CTA International	Design and Development	Prime Contractor	Single Source

A.8. Support Strategy

Description
Repair of equipment and supply of spares for the current Warrior fleet is provided through contracts with industry placed by Civil Servants employed by Defence Equipment and Support and Defence Support Group. A number of significant support contracts exist, with major examples being with Thales Optronics Ltd for the Battle Group Thermal Imager sights and a contract for the Diesel Engines and Transmission with Caterpillar Ltd. The support strategy for the upgraded Warrior will be similar to the current fleet. There will be an initial purchase of Capital Spares through the Manufacture contract to support the upgraded Warrior for a period of two years.

Project/Increment Name	Contractor	Contract Scope	Contract Type	Procurement Route
Warrior Capability Sustainment Programme	Lockheed Martin UK	Manufacture to In Service	Prime Contractor	Competitive - International

B. Section B: Cost

B.1. Cost of the Assessment Phase

Project/Increment Name	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)
Warrior Capability Sustainment Programme	24	29	+5
Common Cannon	59	49	-10
Total (£m)	**83**	**78**	**-5**

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

Project/Increment Name	Lowest Approved (£m)	Budgeted For (£m)	Highest Approved (£m)
Warrior Capability Sustainment Programme	1234	1319	1424

B.3. Cost of the Demonstration and Manufacture Phase

Project/Increment Name	Budgeted for Cost (£m)	Forecast cost (£m)	Variation (£m)	In-Year Variation (£m)
Warrior Capability Sustainment Programme	1319	1315	-4	-56
Total (£m)	**1319**	**1315**	**-4**	**-56**

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

B.3.1.1 Warrior Capability Sustainment Programme

Date	Variation (£m)	Category	Reason for Variation
November 2013	-41	Inflation	Retail Price Index base rate change and inflation forecast update from Defence Economics (-£30m), Weapons inflation forecast update from Defence Economics (-£11m)
November 2013	-15	Technical Factors	Development of manufacturing risks (+£12m), Government Furnished Equipment for trials price and quantity update (-£12m), updated commonality assumptions following design maturity (-£8.2m), reduced technical support requirement for Manufacturing Phase (-£7.8m), optimised Safety Case solution (+£3.6M) and refined training estimate (-£3M)
Historic	+56	Inflation	Retail Price Index and other inflation indices forecast update from DASA DESA.

Historic	+5	Technical Factors	Refined training estimate (-£26.5m), additional technical support requirement for Demonstration Phase Activities (+£11.4m), remodelled equipment support for trials (+11.2m), Cannon Government Furnished Equipment requirement update (+£5.5m), Long Lead Item assumptions update (+£3.2).
Historic	-9	Exchange Rate	Foreign exchange forecast update from DASA DESA.
Net Variation (£m)	**-4**		

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

Project/Increment Name	Category	Explanation
Warrior Capability Sustainment Programme	Inflation	An increase in Retail Price Index (RPIX) forecast from DASA DESA could drive significant cost growth in the Manufacturing years. Manufacture with the Prime is subject to a Fixed Price Contract with a Variation of Price Clause based on Retail Price Index. The Main Gate approval for Warrior Capability Sustainment Programme capped the cost of the project at £1319M. A decision is not required until the end of the Demonstration Phase when we commit to manufacture which will be supported by an Information/Review Note

B.4 Progress against approved Support / Training / PFI Cost

Project/Increment Name	Approved Cost (£m)	Forecast cost (£m)	Variation (£m)	In-year Variation (£m)
Battle Group Thermal Imaging	61	67	+6	-0
Diesel Engines and Transmissions	25	15	-10	-1

B.4.1 Cost Variation against approved Support / Training / PFI Cost

B.4.1.1 Battle Group Thermal Imaging

Date	Variation (£m)	Category	Reason for Variation
Historic	+1	Changed Capability Requirements	Increased usage due to providing equipment to support operations
Historic	-1	HM Treasury Reserve	Money claimed back from Treasury Reserve Fund
Historic	+6	Changed Capability Requirements	35 Additional Warrior Battle Group Thermal Imager (BGTI) supported as per formal planning round option.
Net Variation (£m)	**+6**		

B.4.1.2 Diesel Engines and Transmissions

Date	Variation (£m)	Category	Reason for Variation
March 2014	-1	Technical Factors	Fewer repairs loaded in year than forecast
Historic	+2	Technical Factors	More expensive type of repairs required in FY12/13, compared to forecast
Historic	-7	Procurement Processes	Decision to reduce existing stock
Historic	-4	Changed Capability Requirements	Reduction in Warrior Joint Business Agreement predicted kilometres.
Net Variation (£m)	**-10**		

B.4.2 Operational Impact of Support / Training / PFI Cost Variations – N/A

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2013 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2014 (£m)
Assessment Phase	60	5	65
Demonstration & Manufacture Phase	72	62	134
Support Phase / Service / PFI Cost	49	8	57
Total Expenditure	**181**	**75**	**256**

C. Section C: Time

C.1 Length of the Assessment Phase

Project/Increment Name	Date of Initial Investment Decision Approval	Actual Date of Main Investment Decision Approval	Length of Assessment Phase (months)
Warrior Capability Sustainment Programme	July 2009	October 2011	27
Common Cannon	July 2009	April 2010	9

C.2 Planned / Actual Boundaries for In Service Date or Initial Operating Capability

Project/Increment Name	Earliest Approved	Budgeted For	Latest Approved
Warrior Capability Sustainment Programme	March 2018	November 2018	October 2020

C.3 In-Service Date/Initial Operating Capability

C.3.1 Definition

Project/Increment Name	In-Service Date/Initial Operating Capability
Warrior Capability Sustainment Programme	In Service Date an Armoured Infantry company (Infantry Section and Command variants) trained to Collective Training Level 2. Consisting of the delivery of 28 vehicles along with training and logistic solutions. Initial Operating Capability (In Service Date + 9 months) is defined as the Combat Support and Combat Service Support variants supporting In Service Date

C.3.2a Progress against Budgeted for Date at approval

Project/Increment Name	Budgeted for Date	Actual / Forecast Date	Variation (+/-months)	In-Year Variation (+/-months)
Warrior Capability Sustainment Programme (50%)	November 2018	July 2019	+8	+8

C.3.2b Progress against Approval Date

Project/Increment Name	Approval Date	Actual / Forecast Date	Variation (+/-months)	In-Year Variation (+/-months)
Warrior Capability Sustainment Programme (85% NTE Approval)	March 2020	March 2020	0	0
The business case approval for the Warrior Capability Sustainment Programme In Service Date was granted on the basis of the 'not to exceed' date of March 2020 (set at an 85 per cent level of confidence), rather than the usual practice of approval on the basis of 50 per cent confidence. We have measured progress here against the In Service Date at the 50 per cent confidence level in order to report changes to the delivery forecast and to be consistent with the other projects in this Report. The project team continues to forecast that the Programme will meet its 'not to exceed' In Service Date.				

C.3.3 Timescale variation

C.3.3.1 Warrior Capability Sustainment Programme

Date	Variation (+/- months)	Category	Reason for Variation
27 November 2013	+8 against 50% date 0 against approved 85% date	Technical Factors	The Demonstration Phase schedule was rebaselined to allow the Prime Contractor more time to progress the design. Time has been made up in the latter part of the programme schedule so that the approved NTE 85% In Service Date of March 2020 is not affected.
Net Variation (+/- months)	**+8 against 50% 0 against 85%**		

C.3.4 Other costs resulting from Timescale variation – N/A

C.3.5 Operational Impact of In-Service Date/Initial Operating Capability variation – N/A

C.4 Full Operating Capability

C.4.1 Definition

Project/Increment Name	Full Operating Capability	Progress to date
Warrior Capability Sustainment Programme	445 Warriors upgraded (including 65 Armoured Battlefield Support Vehicles)	

C.5 Support / Training / PFI Contract

C.5.1 Scope of Support / Training / PFI Contract

Project/Increment Name	Description
Battle Group Thermal Imaging	Battle Group Thermal Imager is a thermal imaging sighting system incorporating a laser range-finder and tactical navigation system and is used on Warrior. The Battle Group Thermal Imager contract is with Thales Optronics Ltd, selected through competition and covers the procurement of installed systems and provision of a support service for a period of 15 years from 4 March 2004 until March 2019. Battle Group Thermal Imager is a Contractor Logistic Support project with a 1st to 4th line maintenance and repair policy and includes warehousing, supply, repair, reporting and Post Design Services activities. Spares include both repairables and consumables delivered direct from the supplier's warehouse to the user in Germany / Canada and into Purple Gate for Users in the UK / Operations. Lockheed Martin UK will upgrade the Battle Group Thermal Imager sights on Warrior as part of their Warrior Capability Sustainment Programme solution.
Diesel Engines and Transmissions	CV8 Diesel main engines and X300 transmissions are repaired through a single source contract placed with the original equipment manufacturer, Caterpillar, Shrewsbury Ltd. This contract is an enabling arrangement that enables each year's repair load to be varied to meet the User's planned activity demand. Engines and transmissions are repaired using Original Equipment Manufacturer parts through a menu pricing process.

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

Project/Increment Name	Approved Date	Actual Date	Variation (+/- months)	In-year Variation (+/- months)
Battle Group Thermal Imaging	March 2004	March 2004	0	0
Diesel Engines and Transmissions	April 2009	April 2009	0	0

C.5.2.1 Go-Live Date Variation – N/A

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

Project/Increment Name	Approved Date	Actual Date	Variation (+/- months)	In-Year Variation (+/- months)
Battle Group Thermal Imaging	March 2019	March 2019	0	0
Diesel Engines and Transmissions	March 2014	March 2014	0	0

C.5.3.1 End of Contract Date Variation – N/A

C.5.4 Other costs resulting from Support Cost variation – N/A

C.5.5 Operational Impact of Support / Training / PFI Support Contract variation – N/A

D. Section D: Performance

D.1 Sentinel Score

Current score	Last years score	Comments
95 Green	89 Green	

D.2 Performance against Defence Lines of Development (DLOD)

Line of Development	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1. Equipment	Equipment solution validated against current capability audit outputs.	Yes	
2. Training	Training solution validated against current capability audit outputs.	Yes	
3. Logistics	Logistics solution validated against current capability audit outputs.	Yes	
4. Infrastructure	Infrastructure solution validated against current (<2 years) capability audit outputs.	Yes	
5. Personnel	Personnel solution validated against current (<2 years) capability audit outputs.	Yes	
6. Doctrine	Impact of current (<2 years) capability audit upon Doctrine & Concepts assessed.	Yes	
7. Organisation	Organisation solution validated against current (<2 years) capability audit outputs.	Yes	
8. Information	Information solution validated against current (<2 years) capability audit outputs.	Yes	
Currently forecast (with risks)		8 (0)	0
Last year's forecast (with risks)		8 (0)	0

D.2.1 Defence Lines of Development Variation – N/A

D.3 Performance against Key Performance Measures (KPM)

D.3.1 Warrior Capability Sustainment Programme

D.3.1.1 Performance against Key Performance Measures (KPM)

KPM	DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
KUR 1	Equipment	The User shall be able to suppress an enemy section in the open, when own vehicle is moving as well as static, by day and by night.	Yes	
KUR 2	Equipment	The User shall be able to destroy (WCSP decode 63) IFVs when own vehicle is moving as well as static, by day and by night.	Yes	
KUR 3	Equipment	The User shall be able to carry personnel and equipment appropriate to the role.	Yes	
KUR 4	Equipment	The User requires that both Commander and Gunner shall be able to maintain all round local Situational Awareness (SA) in all environments, including urban, when closed down and head out, by day or night when own vehicle is moving as well as static.	Yes	
KUR 5	Equipment	The User shall be provided with appropriate levels of operational and tactical mobility commensurate to role.	Yes	
KUR 6	Equipment	The User shall be provided with the ability to quickly add and remove protection appropriate to the operational threat.	Yes	
KUR 7	Equipment	The User shall be able to store, operate and transport the capability in all relevant climates and terrains.	Yes	
KUR 8	Equipment	The User shall be provided with a capability that is available for the required sustained level for training and operations.	Yes	
KUR 9	Equipment	The User shall be provided with a capability that can interface and is interoperable with current and known future systems.	Yes	
Currently forecast (with risks)			9 (0)	0
Last year's forecast (with risks)			9 (0)	0

D.3.1.2 Key Performance Measures Variation – N/A

D.3.1.3 Operational Impact of variation – N/A

D.4 Support Contract – N/A

Assessment phase projects

CIPHER

Project Name		
Cipher		
Team Responsible		
Networks		
Senior Responsible Owner	**Date Appointed**	**Planned end date**
Chief Information Officer – Mike Stone	29 April 2014	
Project/Increment Name	**Current Status of Projects / Increments**	
Cipher	Pre-Main Investment Decision	

A. Section A: The Project

A.1. The Requirement

Cipher will provide protection for all of MOD's sensitive information and communications both at home and overseas. The project encapsulates work to renew the MOD cryptographic inventory and key management systems. Cipher will replace a number of current systems, in particular the General Key Management System.

There are three business drivers for Cipher. The first is to overcome the obsolescence of existing equipment and key management systems. The second is to enable network agility and interoperability with our Allies. The final driver is to improve security and efficiency in the delivery of cryptographic services.

Cipher will be delivered in three increments. Increment 1 provides an Enduring Operational Capability, Increment 2 replaces all legacy services and Increment 3 providing the additional services required to satisfy new requirements.

The MOD uses three levels of technology maturity metrics. These are:
1. Technology Readiness Levels to describe the levels of maturity that are embodied in systems.
2. System Readiness Levels for the integrated systems.
3. Information Readiness Levels which provide a meaningful measurement of the maturity of the information design.

Cipher is a large, complex information-centric programme, involving Government Communication Headquarters (GCHQ) and therefore Information Readiness Levels have been selected to report against for this project.

A.2. The Assessment Phase

Cipher is a combination of two earlier MOD projects, the Future Crypto Programme (Delivering the hardware) and Interoperable Electronic Key Distribution (the complementary system to deliver keying material, and other supporting configuration and management data). The Initial Gate approval, issued in August 2007, for a combined assessment phase for the two programmes authorised an assessment phase funding *** at 50% confidence with agreement that the funding could be increased to *** at 75% confidence subject to written confirmation from Head of Capability that the additional funding was available. No delivery phase timescale or funding estimate was provided in the Initial Gate submission beyond the available ten year funding profile. However, an Information Note issued in December 2008 stated 2012 as the date for the Initial Operating Capability.

Following Initial Gate approval, two consortia were down-selected and awarded "Assessment Phase" contracts in November 2008 to evaluate potential options, develop solutions, undertake demonstration programmes and deliver costed delivery phase proposals. The competition was undertaken in accordance with the Initial Gate strategy and the Procurement Strategy and both consortia agreed to at least match MOD funding for their assessment phase programmes of work.

Recognising the importance of Cipher and its potential use across Government, the Government Communication Headquarters has engaged proactively, providing guidance on standards to ensure that the resulting solutions and services can be readily adopted by Other Government Departments and Partners Across Government and be interoperable with our Allies.

In June 2010, the Defence Equipment and Support Performance Delivery Improvement Team issued a report on Cipher. Head of Capability responded by producing a Project Mandate defining the project vision, scope, outcomes, delivery timelines and Governance arrangements. An Information Note was submitted to the Investment Appraisal Board in January 2011 to notify of the changes necessary, with a review of progress being held in February 2011 at a 2-Star Foundation Milestone Review. A Review Note was submitted to the Investment Approval Board in April 2011 seeking approval for the revised project timescales, the adoption of an incremental acquisition strategy and a revision to the approved budgetary level for the assessment phase *** representing an uplift of *** to the Initial Gate approval at 50% confidence. The programme includes four key mitigation actions of a) maturing the incremental approach, b) enhancing the delivery team with additional MOD and Government Communications Headquarters staff, c) developing a detailed and resourced plan and d) improving stakeholder and benefits management. Of these, a, c and d have progressed well. This left mitigation action falling short with regard to additional MOD staff.

The Review Note outcome resulted in contract amendments for both companies, increased spend for the extant project team (including Specialist Technical Support and Government Communication Headquarters staff) by virtue of the longer time frame and a proportion for Risk Reduction activities.

The outcome of the February 2011 Foundation Milestone Review was to proceed, but with the direction that all outstanding actions from the Performance Delivery Improvement Treatment Phase would be addressed. The additional funding required for the delivery of the extended Assessment Phase was identified and revised staffing levels agreed. Funding was used to extend the contracts of Logica and Thales.

Cipher proceeded with the successful completion of the tender evaluation process in February 2012. The public announcement of the preferred bidder was delayed (pending resolution of a number of significant commercially sensitive issues). As at March 2012, the intent remained to submit the Main Gate Business Case for Increment 1 to Investment Approvals Committee in September 2012. However in late 2011, Defence Equipment and Support 3 Star lead for Cipher Chief of Material Joint Enablers queried the maturity of the National Level 2 Design and Deliverability. As a result, a detailed review of the Procurement Strategy was required to precede the Main Gate decision. Representation from the preferred bidder joined the Project Team in Corsham. Both MOD and Government Communication Headquarters personnel worked closely and good progress continued to be made.

The next phase of the project was completion of the National Level 2 design (a more detailed design which was needed to complete the Service Requirement Document) which was managed and delivered using Government Communication Headquarter ‘best practice’ System Engineering methodology and process. A number of Planning Round 2012 options were raised to re-align finances which would if taken, impact the project and collectively extend the transition period, delay the realisation of benefits and extend the life of the project (but overall affordability would have improved as a result). Both Planning Round Options were taken. As reflected in the completed (March 2012) Office of Government Commerce Level 3 Review (Investment Decision), the availability of sufficient Suitably Qualified Experienced Personnel in project manpower (Crown Servants) was a serious issue (AMBER/RED), and there was well known weaknesses in external governance and senior stakeholder support that that needed to be addressed. A coherent and appropriately resourced joint Crypto Modernisation Programme to coordinate and span MOD, Government Communication Headquarters and Other Government Departments (as applicable) activities in this area was set up. The Office of Government Commerce Gateway Level 3 Review again highlighted the high levels of technical risk inherent in the approach (i.e. to proceed to Main Gate in advance of completion of the Level 2 design).

A.3. In-Year Progress

The extended Assessment Phase contract *** was brought to an end in June 2013 ***. Cipher as a project was brought to a carefully managed conclusion. Following this, an over-arching programme (the Crypto Capability Programme) was proposed to manage this complex capability as a whole. *** It was envisaged that the Crypto Capability Programme would include a number of projects. Some of these are already well established, but there will also be an incremental series of new projects (each subject to approval at an appropriate level) to modify or deliver discrete elements of the capability. A long-term progressive transition is now envisaged.

A Draft Review Note was raised *** in late Summer 2013. The final version of the Review Note was presented in March 2014. *** The Investment Appraisal Committee gave authority to formally close down Cipher as a project and also gave retrospective approval for In-Year spend under the auspices of the Crypto Capability Programme. The Investment Appraisal Committee directed that a revised Review Note should be presented for June 2014; reflecting a more incremental approach, focused on the most immediate capability priorities.

A.4. Capability Risks

Since July 2013, work has focused on addressing the capability gaps that exist in the short to medium term, ahead of any modernised end-to-end system. A Cipher Review Note was taken by the Investment Approval Committee in March 14 which approved the formal closure of Cipher. The Investment Approval Committee also directed the Delivery Team to submit a Review Note addressing short term obsolescence and approved sufficient funding headroom to achieve this milestone. A revised programme Cryptographic Enabling Services was created to reset the programme. The Review Note was taken by the Investment Approval Committee on 24 June 2014 and approved. The approved work programme is an initial Concept Phase for Cryptographic Enabling Services to address the immediate cryptographic capability gaps.

A.5. Associated Projects

Project/Increment Name	Forecast In Service Date / Initial Operating Capability	Approval Status
Key Production Authority Futures Project	December 2015	

A.6. Procurement Strategy N/A

A.7. Support Strategy N/A

B. Section B: Cost

B.1. Cost of the Assessment Phase

Project/Increment Name	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)
Cipher	19	46	27
Total (£m)	**19**	**46**	**27**

B.2. Cost Boundaries for Demonstration and Manufacture Phase / PFI - N/A

B.3. Cost of the Demonstration and Manufacture Phase – N/A

B.4 Progress against approved Support / Training / PFI Cost – N/A

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2013 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2014 (£m)
Assessment Phase	39	7	46
Demonstration & Manufacture Phase	0	0	0
Support Phase / Service / PFI Cost	0	0	0
Total Expenditure	**39**	**7**	**46**

C. Section C: Time

C.1 Length of the Assessment Phase

Project/Increment Name	Date of Initial Investment Decision Approval	Date of Approval to cancel programme	Length of Assessment Phase (months)
Cipher	August 2007	March 2014	80

C.2 Planned / Actual Boundaries for In Service Date or Initial Operating Capability - N/A

C.3 In-Service Date/Initial Operating Capability – N/A

C.4 Full Operating Capability – N/A

C.5 Support / Training / PFI Contract – N/A

D. Section D: Performance

D.1 Technology Readiness Level – N/A

D.2 Performance against Defence Lines of Development (DLOD) – N/A

D.3 Performance against Key Performance Measures (KPM) – N/A

D.4 Support Contract – N/A

CROWSNEST

Project Name		
Crowsnest		
Team Responsible		
Merlin Project Team		
Senior Responsible Owner	**Date Appointed**	**Planned end date**
Rear Admiral Russ Harding	22 November 2013	May 2015
Project/Increment Name	**Current Status of Projects / Increments**	
Crowsnest	Pre-Main Investment Decision	

A. Section A: The Project

A.1. The Requirement

The requirement for an Airborne Surveillance and Control capability emerged from the need to provide an organic long range airborne surveillance, control and early warning capability to Carrier Enabled Power Projection, Littoral Manoeuvre, and Maritime Task Groups at all scales of operation. The CROWSNEST project is to succeed the capability currently provided by the Sea King Mk7 Airborne Surveillance and Control aircraft which has a planned Out of Service Date of September 2018, extended from 31 March 2016. The primary purpose of this capability is to provide Organic Force Protection for Maritime Task Groups and their forward deployed Task Elements, including wide area surveillance overland and in the Littoral environment. Following the 2010 Strategic Defence and Security Review, the CROWSNEST capability is required to be delivered as a role-fit mission system integrated into the Merlin Mk2. The CROWSNEST project will procure 10 role-fit mission systems, and convert all 30 Merlin Mk2 aircraft to make them "fit-to-receive" the CROWSNEST role-fit equipment.

A.2. The Assessment Phase

The CROWSNEST Assessment Phase is planned to run from March 2013 through to a Main Gate investment decision in April 2016, at an expected cost of £34M. The purpose of the Assessment Phase is to select a Mission System Supplier from two competing solutions, one provided by Lockheed Martin UK, and one provided by Thales UK. The Assessment Phase competition is being managed by Lockheed Martin UK in their role as the Merlin Mk2 Design Organisation, and appropriate firewall procedures and MOD oversight have been established to ensure that Lockheed Martin run an open and fair competition in which they are also competing. Down selection to the winning Mission System Supplier is expected in Spring 2015.

A.3. Project History up to 31 March 2013

The 2010 Strategic Defence and Security Review directed that the UK's future maritime Airborne Surveillance and Control capability was to be provided via role-fit equipment for installation on the Merlin Mk2 under the Maritime Force Protection Optimisation Planning Round 2011 option. During activity to seek approval to commence the Assessment Phase for this project, Planning Round 2012 decisions introduced a four year delay to the planned delivery date for the capability, with a planned In Service Date of April 2020. Review Note approval to commence the project was obtained in March 2013, and a £3M Limit of Liability Initial Phase of the Assessment Phase commenced in March 2013.

A.4. In-year Progress

Following commencement of Initial Phase of the CROWSNEST Assessment Phase in March 2013, outline solution concepts were received from the competing Mission System Suppliers, and these were the subject of a Helicopters Operating Centre senior management review in Defence Equipment and Support. This review confirmed that the project should proceed into the Full Phase of the Assessment Phase. In parallel, work conducted by Navy Command and Defence Equipment and Support identified an opportunity to accelerate the project by 18 months, for a revised In Service Date of October 2018. This accelerated programme was adopted in Autumn 2013, and the £24M Full Phase contract award with Lockheed Martin was placed in September 2013. In February 2014 each competing Mission System Supplier held successful initial design reviews, and two further reviews are planned in July and November as the designs mature, leading to delivery of Mission System Supplier proposals at the end of January 2015, and a downselect decision by April 2015.

A.5. Capability Risks

The requirement is driven by the need to provide Force Protection of the Carrier Enabled Power Projection, Littoral Manoeuvre and Maritime Task Groups, including forward deployed force elements. The procurement of the CROWSNEST capability mitigates other Intelligence, Surveillance, Targeting, Acquisition and Reconnaissance capability gaps by providing an assured surveillance capability to detect inbound threats. Without this capability the Task Group will have reduced situational awareness of air and surface threats at range, and will have reduced warning time to counter any inbound threats.

A.6. Associated Projects

Project/Increment Name	Forecast In Service Date / Initial Operating Capability	Approval Status
Merlin Mk2 Capability Sustainment Programme	June 2014 In Service Date – achieved 29th May 2014	Post-Main Gate
Queen Elizabeth Class Carriers	Q1 2018 In Service Date for the Queen Elizabeth vessel Q4 2020 Initial Operating Capability for Queen Elizabeth in the Carrier Strike role	Post-Main Gate

A.7. Procurement Strategy

Project/Increment Name	Procurement Route	Approval Status
Crowsnest	Sole source to the Merlin Mk2 Design Organisation (Lockheed Martin)	Pre-Main Gate

A.8. Support Strategy

Description
Merlin Mk2 support is currently provided through the Integrated Merlin Operational Support contract with AgustaWestland as Prime Contractor in concert with other key industry partners such as Lockheed Martin, Selex, and Thales. It is intended that CROWSNEST support will be added to this support arrangement for Pricing Period 4, which is scheduled to commence in April 2020. Prior to this, Lockheed Martin will be responsible for providing the initial in-service support under the Demonstration and Manufacture phase Prime Contract.

B. Section B: Cost

B.1. Cost of the Assessment Phase

Project/Increment Name	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)
Crowsnest	43	34	-9
Total (£m)	**43**	**34**	**-9**

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

Project/Increment Name	Lowest Approved (£m)	Budgeted For (£m)	Highest Approved (£m)
Crowsnest	***	***	***

B.3. Cost of the Demonstration and Manufacture Phase – N/A

B.4 Progress against approved Support / Training / PFI Cost – N/A

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2013 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2014 (£m)
Assessment Phase	1	13	14
Demonstration & Manufacture Phase	0	0	0
Support Phase / Service / PFI Cost	0	0	0
Total Expenditure	**1**	**13**	**14**

C. Section C: Time

C.1 Length of the Assessment Phase

Project/Increment Name	Date of Initial Investment Decision Approval	Actual Date of Main Investment Decision Approval	Length of Assessment Phase (months)
Crowsnest	March 2013	***	***

C.2 Planned / Actual Boundaries for In Service Date or Initial Operating Capability

Project/Increment Name	Earliest Approved	Budgeted For	Latest Approved
Crowsnest	***	***	***

C.3 In-Service Date/Initial Operating Capability – N/A

C.4 Full Operating Capability – N/A

C.5 Support / Training / PFI Contract – N/A

D. Section D: Performance

D.1 Technology Readiness Level

Current score	Last years score	Scale	Comments
NA	NA	NA	Due to the current status of the competitive Assessment Phase, it is not possible to evaluate Technology Readiness Level for the project at this time, as it is different for the different solutions, and is the subject of ongoing trials activity to raise the level. An evaluation will be possible when the preferred Mission System is selected in April 2015, with the aim to achieve Level 6/7 by Main Gate in April 2016.

D.2 Performance against Defence Lines of Development (DLOD) – N/A

D.3 Performance against Key Performance Measures (KPM) – N/A

D.4 Support Contract – N/A

MARSHALL

Project Name		
Marshall		
Team Responsible		
Marshall		
Senior Responsible Owner	**Date Appointed**	**Planned end date**
Air Commodore Mark Hopkins ACOS Air Cap Del CA & ISTAR	July 2012	
Project/Increment Name	**Current Status of Projects / Increments**	
Assessment Phase 1	Pre-Main Investment Decision	
Assessment Phase 2	Pre-Main Investment Decision	

A. Section A: The Project

A.1. The Requirement

The MoD requires a sustainable military Terminal Air Traffic Management (ATM) capability that will enable air vehicles to operate safely and effectively with tactical freedom, in all weather conditions and in any environment, within UK Areas of Responsibility, including permanent overseas airfields, and in support of UK and coalition forces worldwide. The Marshall project (previously known as Joint Military Air Traffic Services (JMATS)) will provide this capability via a contract of up to 22 years duration (with appropriate contractual break points) with a Service Provider (SP) for the design, acquisition, installation, sustained delivery and assurance of a military Terminal ATM Service. The capability will be operated by military personnel (except in those locations that have previously civilianised ATM operations).

The authority to operate and regulate UK military aircraft is vested in the Secretary of State for Defence who has directed that the MOD maintains equivalence with civil Air Traffic Management (ATM) legislation in so far as is reasonably practicable, whilst ensuring national security and continued operational capability. The 2010 Strategic Defence and Security Review confirmed the requirement for the provision of ATM services within Future Force 2020.

The equipment that currently supports Terminal ATM is becoming increasingly obsolete with key elements becoming unsustainable beyond 2015. Furthermore, new capabilities are required to maintain civil interoperability: the mandated implementation of Secondary Surveillance Radar (SSR) Mode S and the expected adoption of 8.33KHz channel spacing on VHF communications; Marshall will address these issues while delivering significant financial benefits compared to the cost of the current capability.

A.2. The Assessment Phase History

The assessment phase of the Marshall project is being conducted in two parts. The first part (Assessment Phase 1) was approved on the 17th 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. In December 2010 Joint Military Air Traffic Services changed its name to Project Marshall.

Part 2 of the Assessment Phase enables formal industry engagement. The project is following the Competitive Dialogue procedure to determine the most economically advantageous solution for the MARSHALL requirement. A notification in the Official Journal of the European Union (OJEU) initiating the formal procurement process was issued in March 2011. Three consortia, Aquila (Thales and National Air Traffic Services), BAE Systems, and Fusion (Lockheed Martin, Selex and Cobham) were selected to participate in Competitive Dialogue. In January 2012 a dedicated Team Leader for the Marshall project was appointed in accordance with the recommendations of an Office of Government Commerce Gateway 0 review.

A.3. In-Year Progress

The three competing consortia submitted their outline solution proposals in January 2013. Following evaluation of the proposals, an initial round of competitive dialogue was conducted with each bidder. BAE Systems took the strategic decision to withdraw from the competition in September 2013. The remaining two bidders, Aquila and Fusion submitted detailed solution proposals in January 2014; these proposals have been evaluated, and a second round of competitive dialogue is currently underway. Submission of the Main Gate Business Case is planned for November 2014, which will enable the Marshall contract to be placed no later than February 2015 (50% confidence dates).

Following review by the Chief of Defence Material on 31 March 2014, the project team are working to an accelerated contract award to seek to de-conflict with expected purdah ahead of the General Election.

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 increasingly suffering from obsolescence. Furthermore 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 MOD operated airfields and associated sites in the UK and overseas. 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.

A.5. Associated Projects – N/A

A.6. Procurement Strategy

Project/Increment Name	Contractor	Contract Scope	Contract Type	Procurement Route
Assessment Phase 1	Public Private Partnership such as Strategic Partnering. Delivery partner and solution to be sought through competitive dialogue.	Pre-Main Gate	Assessment Phase 1	Public Private Partnership such as Strategic Partnering. Delivery partner and solution to be sought through competitive dialogue.
Assessment Phase 2	Competitive	Pre-Main Gate	Assessment Phase 2	Competitive

A.7. Support Strategy

Description				
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 retained MOD owned Air Traffic Control assets to support deployed operations.				
Project/Increment Name	**Contractor**	**Contract Scope**	**Contract Type**	**Procurement Route**

B. Section B: Cost

B.1. Cost of the Assessment Phase

Project/Increment Name	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)
Assessment Phase 1	3	3	0
Assessment Phase 2	6	6	0
Total (£m)	**9**	**9**	**0**

B.2. Cost Boundaries for Through Life Contract

Project/Increment Name	Lowest Forecast (£m)	Budgeted For Forecast (£m)	Highest Forecast (£m)
Project Marshall through life	***	***	***

B.3. Cost of the Demonstration and Manufacture Phase – N/A

B.4 Progress against approved Support / Training / PFI Cost – N/A

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2013 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2014 (£m)
Assessment Phase 1	3	0	3
Assessment Phase 2	4	1	5
Support Phase / Service / PFI Cost			
Total Expenditure	**7**	**1**	**8**

C. Section C: Time

C.1 Length of the Assessment Phase

Project/Increment Name	Date of Initial Investment Decision Approval	Actual Date of Main Investment Decision Approval	Length of Assessment Phase (months)
Assessment Phase 1	January 2008	October 2009	21
Assessment Phase 2	February 2010	February 2015	60

C.2 Planned / Actual Boundaries for In Service Date or Initial Operating Capability

Project/Increment Name	Earliest Approved	Budgeted For	Latest Approved
ISD	November 2016	February 2017	June 2017

C.3 In-Service Date/Initial Operating Capability – N/A

C.4 Full Operating Capability – N/A

C.5 Support / Training / PFI Contract – N/A

D. Section D: Performance

D.1 Technology Readiness Level

Current score	Last years score	Scale	Comments
8	N/A	1-10	This is an average of the TRL assurance assessments for MGBC. There are no Evaluation Criteria linked to TRL's and these are not being used to evaluate or compare bids. There are two bidders remaining in the competition. One has a score of 7.8 and the other has a score of 7.7 thereby implying a TRL of 8 for the Project.

D.2 Performance against Defence Lines of Development (DLOD) – N/A

D.3 Performance against Key Performance Measures (KPM) – N/A

D.4 Support Contract – N/A

MORPHEUS

Project Name		
MORPHEUS		
Team Responsible		
Battlefield Tactical CIS Delivery Team		
Senior Responsible Owner	**Date Appointed**	**Planned end date**
Major General Nick Pope	16 October 2013	
Project/Increment Name	**Current Status of Projects / Increments**	
MORPHEUS Assessment Phase 1	Initial Gate	

A. Section A: The Project

A.1. The Requirement

The MORPHEUS Project (previously known as the LE TacCIS Successor Sub-Programme) is the future capability element of the Land Environment Tactical Communications and Information Systems (LE TacCIS) Capability Change programme. It is planned to provide tactical Communication Information Systems for Littoral, Land and Air-Land force elements operating in the Land Environment. It must interface with other major projects such as Falcon and Operational IS as part of the wider Defence architecture as well as enable interoperation with allies' systems in a multinational context; a key focus being interoperation with NATO.

MORPHEUS will replace the current portfolio of tactical communication capability, dominated by Bowman, which entered service in 2004 and currently have an out of service date of 2026. Whilst MORPHEUS is undergoing assessment there is a requirement to sustain the current capability with a continuous need to address obsolescence and, where appropriate and affordable, exploit rapidly developing technology. The current capability will be sustained through first the Legacy Support Project, a five year support contract which has recently been let and secondly, routine updates through the Legacy Systems Update.

An integral element of the MORPHEUS Project is the provision of communications and situational awareness to the dismounted close combat user where, in this instance, the Dismounted Situational Awareness project (within the LE TacCIS Capability Change Programme) will be an important contributory element.

The business drivers for MORPHEUS are to deal with critical obsolescence in legacy systems; make better use of advances in technology; and respond to current requirements including those drawn from experience on recent operations, by providing the next major evolution of systems for Land Environment Tactical Information Superiority, reaching beyond the current planned out of service date.

The options being assessed range from sustaining the current systems, to evolution of these systems through to their wholesale replacement. Within the LETacCIS Programme, the Legacy Support Project and Legacy Systems Update Projects will sustain the current systems whilst MORPHEUS will provide the capability beyond its Out of Service Date, including Future Support Provision.

A.2. The Assessment Phase

The Initial Gate approval, issued in May 2013, authorised Part 1 of the assessment phase to assess acquisition options (sustain, evolve or replace) and select options to be taken through to Assessment Phase 2, to then be designed and assessed in detail by a Delivery Partner. Assessment Phase 1 is required to submit a Review Note to recommend two options and appoint a Delivery Partner in July 2016 (50% confidence). It will also request approval for Assessment Phase 2 which will work to submit a Main Gate Approval and select a system design to build and implement.

The selection of two options will be undertaken through a complex appraisal of Operational Effectiveness and Investment. This will provide the two optimum high level designs to be taken forward, together with an option to reduce Whole Life Costs by 10%. A Delivery Partner will mature these designs to the appropriate readiness levels for a decision at Main Gate. The context within which any new system will need to operate will be complex. Integration within MOD wide information enterprise, integration onto a diverse platform fleet (including, inter alia, complex armoured vehicles, helicopters and dismounted soldiers) and the future MOD environment, Future Force 2020, coupled with rapidly developing technology could lead to MORPHEUS delivering in more than one increment. Main Gate 1 is expected to be submitted in May 2018, and could be followed by Review Notes for approval for subsequent increments (acquisition option dependent).

A.3. In-Year Progress

To support the options analysis a three year appointment has been made with Atkins Ltd to bring in expertise in evaluating operational efficiency and cost of complex system design options. In addition to this, industry will be asked to produce prospective design options for each acquisition option and cost them through life. A competition has been launched for a Company (acting as a Systems House) to engage with broader industry to develop design options based upon current market experience and future technology plans. System characteristics of the current capabilities are being documented, and together with MOD options for sustaining the current systems, will form the baseline for the System House to commence design work on the future systems.

A.4. Capability Risks

The current Tactical CIS capability is provided by a combination of Bowman and other systems. It does not fully meet user needs – evidenced by the high number of UORs on Op HERRICK. The Legacy Systems Update Project will update the current capability and will address some of the capability gap. The MORPHEUS project is needed to:
-enable command agility
-enable information superiority
-enable information exploitation for mobile and static users from formation headquarters to individual service personnel and platforms
-link sensors, information and intelligence providers, commanders and effectors
in order that UK Forces engaged in Combined, Joint, Intergovernmental, Interagency, Multinational operations across the mosaic of conflict in the land environment remain inside the decision/action cycle of its adversaries.

To mitigate the issues caused by the rapid developments in both civilian and military Communication Information Systems, MORPHEUS will need to be flexible, adaptable, easy to reconfigure and upgrade – characteristics that are not present in current systems.

System level obsolescence of the current capability will cause degradation in information services in this decade and a widening of the capability gap.

Benefits associated with exploiting advances in information technology will not be realised.

Efficient tactical Communication Information Systems is key in ensuring mission success, whilst minimising casualties. Delays to the MORPHEUS project will increase the operational risks inherent in current systems.

A.5. Associated Projects

Project/Increment Name	Forecast In Service Date / Initial Operating Capability	Approval Status
Legacy Systems Update	IOC 2018	Initial Gate
Falcon Phase 2	IOC 2016	Pre Initial gate

A.6. Procurement Strategy

Project/Increment Name	Contractor	Contract Scope	Contract Type	Procurement Route
MORPHEUS	**Atkins**	**Assessment Phase 1 – Operational Analysis**	**Firm Price**	**Competitive – UK**

A.7. Support Strategy

Description
In-service capabilities are supported through the Legacy Support Project by a number of Providers, for which current contracts expire in March 2019/2020. The approach for MORPHEUS is to migrate to a single Provider adopting best practice and seek to exploit the benefits of a more open and modular solution. This 'Future Support Solution' will be developed through the Assessment Phase Part 2, which will replace the Legacy Support Project in Apr 2019/2020. This will be submitted for approval at the Morpheus Main Gate.

B. Section B: Cost

B.1. Cost of the Assessment Phase

Project/Increment Name	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)
MORPHEUS Assessment Phase 1	51	49	-2
MORPHEUS Assessment Phase 2		239	
Total (£m)	**51**	**288**	**-2**

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

Project/Increment Name	Lowest Approved (£m)	Budgeted For (£m)	Highest Approved (£m)
MORPHEUS	2538	2903	3495

B.3. Cost of the Demonstration and Manufacture Phase – N/A

B.4 Progress against approved Support / Training / PFI Cost-N/A

B.4.1 Operational Impact of Support / Training / PFI Cost Variations-N/A

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2013 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2014 (£m)
Assessment Phase	0	6	6
Total Expenditure	**0**	**6**	**6**

C. Section C: Time

C.1 Length of the Assessment Phase

Project/Increment Name	Date of Initial Investment Decision Approval	Forecast Date of Main Investment Decision Approval	Length of Assessment Phase (months)
Assessment Phase 1	May 2013	Review Note July 2016	39 months
Assessment Phase 2	December 2016	***	***

C.2 Planned / Actual Boundaries for In Service Date or Initial Operating Capability

Project/Increment Name	Earliest Approved	Budgeted For	Latest Approved
PASE – Future Support Provision	April 2019	August 2019	May 2020

C.3 In-Service Date/Initial Operating Capability – N/A

C.4 Full Operating Capability – N/A

C.5 Support / Training / PFI Contract – N/A

D. Section D: Performance

D.1 Technology Readiness Level – N/A

Assessing a Technology Readiness Level (TRL) to MORPHEUS will not be possible until the High Level Design options are explored in detail in Assessment Phase 2.

D.2 Performance against Defence Lines of Development (DLOD) – N/A

D.3 Performance against Key Performance Measures (KPM) – N/A

D.4 Support Contract – N/A

SUCCESSOR

Project Name		
Successor		
Team Responsible		
Future Submarines		
Senior Responsible Owner	**Date Appointed**	**Planned end date**
Vice Admiral Simon Lister	November 2013	
Project/Increment Name	**Current Status of Projects / Increments**	
Future Submarines Concept Phase	Concept Phase	
Next Generation Nuclear Propulsion Plant Concept	Concept Phase	
Nuclear Propulsion Critical Technology	Concept Phase	
Common Missile Compartment Non-Recurring Costs	Concept Phase	
Future Submarines Assessment Phase	Pre-Main Investment Decision	
Next Generation Nuclear Propulsion Plant Assessment Phase	Pre-Main Investment Decision	
Nuclear Propulsion Critical Technology Assessment Phase	Pre-Main Investment Decision	

A. Section A: The Project

A.1. The Requirement

Future of the United Kingdom's Nuclear Deterrent Cm 6994, to maintain a Continuous At Sea Nuclear Deterrent by means of a new class of submarine. This will replace the current Vanguard class as it comes out of service.

The submarines are part of the MOD's committed core equipment programme as announced by the Secretary of State on 14 May 2012. Any decision to build will not be taken until after the next General Election expected in 2015 with any Main Gate Approval expected in 2016.

The Successor boats are expected to have a 25 year life with the option of at least a five year extension and suitable low detectability. The current planned service entry date for the first boat is 2028.

A Common Missile Compartment for the submarine is being developed with the United States. This will house the Trident Strategic Weapon System.

Next Generation Nuclear Propulsion Plant: At Initial Gate in April 2011, the decision was taken to power the submarine with a nuclear propulsion system known as Pressurised Water Reactor 3 (PWR3) which incorporates the latest safety technologies and ensures the boats have the performance to deliver the United Kingdom's minimum credible nuclear deterrent out to the 2060s.

The Nuclear Propulsion Critical Technology programme brings focused investment to regenerate the UK nuclear propulsion design and support capability, and ensures we have the design base essential to maintain a strategic sovereign UK nuclear capability.

The Wider Programme: The Strategic Defence and Security Review concluded that it would be possible to defer decisions on the replacement of both the warhead and infrastructure elements of the programme. Over the next few years concept studies will begin to refine potential programmes and costs. No decision as to whether a new warhead design is needed will be taken until the next Parliament. Neither the warhead nor infrastructure is covered in this report.

The Rolls-Royce Core Production Capability facility at Raynesway has passed Main Gate and will provide the fuel cores for Successor. This is covered by a separate Project Summary Sheet.

The expected overall cost of any replacement of the Nuclear Deterrent remains as set out in Para 5-11 of the 2006 White Paper as between £15-20bn for a four boat solution.

A.2. Assessment Phase History

The MOD's Future Submarines Project Team was established in 2007 from a small group within the then Nuclear Directorate.

Three companies, BAE Submarine Solutions (Platform), Babcock (support), and Rolls-Royce (power plant) known as the Tier One industrial partners were awarded contracts for the collaborative Concept Phase. This work informed the Options considered at Initial Gate. A Technical Demonstrator programme was also undertaken.

An Integrated Project Management Team has also been established.

Initial Gate was approved on 14th April 2011 and announced in Parliament on 18 May 2011 when a Report to Parliament, "The United Kingdom's Future Nuclear Deterrent: The Submarine Initial Gate Parliamentary Report" was made.

This followed a Concept phase from 2006/07 to April 2011 during which £905m was approved.

This period saw the preparation and staffing of the Initial Gate Business Case through the MOD and Treasury with Treasury approval received on 29th March 2011.

2010 also saw the SDSR Strategic Defence and Security Review, "Securing Britain in an Age of Uncertainty: Publication of the Strategic Defence and Security Review" chapter three, published on 19 October 2010, and the Trident Value for Money Review (Fact Sheet ten). These made changes to the White Paper Assumptions. These included: a deferral of the planned delivery of the first submarine from 2024 to 2028, and a deferral of the Main Gate decision point from 2014 to 2016. There was also agreement with the United States on the major parameters of the jointly-developed common missile compartment design that will be capable of carrying the current Trident D5 missiles and any replacement missile once the D5 reaches the end of its expected life in the 2040s.

Initial Gate considered the Submarine design using pull through of Astute technology to reduce cost and design and delivery risk, and provide commonality in training and maintenance. There were also opportunities to take advantage of developments since the Astute design.

One such was the selection of Pressure Water Reactor 3 as the submarine's propulsion system. Pressure Water Reactor 3 provides superior performance and meets the Nuclear Safety Regulator's requirement to continually improve our performance and meet the "As Low As Reasonably Practicable" requirement. However Pressure Water Reactor 3 is more expensive to buy and operate over a 25 year period, but cheaper if the boats are run for longer.

The Coalition's policy on the Successor Deterrent is clear, and it is that it is committed to the United Kingdom's nuclear Deterrent based on a ballistic missile submarine. The Trident Alternatives Study will form part of the information considered to assist the decisions needed at Main Gate.

Immediately following approval, design activities commenced under an extension of the Concept contract while the full Design Phase and Engineering services framework contracts were finalised and signed with BAE Submarine Solutions and Babcock on 13 December 2011. These cover the period up to Main Gate and consist of an overarching framework structure with rolling waves of task packages. A contract amendment to align with these contracts was also placed with Rolls-Royce. A Collaborative Agreement between all three companies and the MOD was also signed. This governs the relationships between industrial parties' performance and profit retention.

The MOD and Integrated Programme Management teams have been established and teams built up in Barrow and Derby. An Integrated Master Schedule has been agreed with industry across the Programme.

Annual notes on progress are submitted to the MOD's Investment Approvals Committee and HMT in July.

The Ship Specification, which decomposes the user requirement into specific requirements for each submarine system and attribute, has been fully developed and placed under configuration control with the exception of Outfitting Requirements. The first phase of the platform detailed design programme, Design Intent Definition which confirms the system architectures, completed to plan in December 2012 with a major design review (System Definition Review, SDR) across all of the major systems areas.
During December 2012, the Annual Report to Parliament was submitted and in March 2013, the MoD Investment Approvals Committee approved the build strategy for the Common Missile Compartment.

A.3. In-Year Progress

The detailed design of the Pressurised Water Reactor 3 (PWR3) plant is now well advanced with all significant design decisions have been taken.

Similarly, design of the platform continues to progress well. A successful interim whole boat Preliminary Design Review was held in December 2013 with the full PDR scheduled for November 2014.
The IAC and HMT approved bringing forward post-Main Gate platform funding amounting to £261m - £55m for additional long lead material purchases and £201m to commit to facilities upgrades at the BAES Barrow boat yard. The bring-forward is not additional funding; the total cost of the programme remains the same, it is purely a bring-forward of programmed funding post MG into the IG period, therefore no programme cost growth overall. This is early expenditure to de-risk the programme. Separately, £3m of platform approval was provided to NGNPP to pay for additional contractor assistance in the US.

A.4. Capability Risks

Without the design and build of a new class of ballistic missile submarines, the United Kingdom would be unable to maintain its independent nuclear deterrent once the current Vanguard class goes out of service. This decision was agreed by Parliament in 2007 following the 2006 White Paper: "The Future of the United Kingdom's Nuclear Deterrent" Cm 6994. The current Government also supports the maintenance of the United Kingdom's independent Nuclear Deterrent capability.

The Nuclear Deterrent is a current Operation.

A.5. Associated Projects

Project/Increment Name	Forecast In Service Date / Initial Operating Capability	Approval Status
Core Production Capability	Full Operating Capability August 2021	Post Main Gate
Infrastructure	Various sub-projects to ensure all Infrastructure is in place and able to support Successor	Concept

A.6. Procurement Strategy

Project/Increment Name	Procurement Route	Approval Status
Future Submarines Concept Phase	Ascertained costs to be three tier 1 contractors	Concept Phase
Next Generation Nuclear Propulsion Plant Concept	Single Source	Concept Phase
Nuclear Propulsion Critical Technology	Non-Competitive – International	Concept Phase
Common Missile Compartment Non-Recurring Costs	Non-Competitive – International	Concept Phase
Future Submarines Assessment Phase	Ascertained costs to be three tier 1 contractors	Pre-Main Gate
Next Generation Nuclear Propulsion Plant Assessment Phase	Single Source	Pre-Main Gate
Nuclear Propulsion Critical Technology Assessment Phase	Non-Competitive – International	Pre-Main Gate

A.7. Support Strategy

Description
The Support Chain Strategy is in preparation, and engagement has started. The aim is for affordable Through Life Support with established Whole Life Costs and challenging availability targets, within the constraint of the design which is not optimised for Through Life Costs. The target is to have a Whole Life Cost that does not exceed that of the current Vanguard class and ensure maintenance of the Continuous At Sea Deterrent. Drivers for change include: Long term supply chain incentivisation and reductions in design complexity and component range and scale. Babcock is the Tier 1 company for support, and the strategy will be delivered as a collaborative activity within the Submarine Enterprise Performance Programme.

Contractor	Contract Scope	Procurement Route
Babcock	Support	Single Source

B. Section B: Cost

B.1. Cost of the Concept Phase

Project/Increment Name	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)
Future Submarines Concept Phase	209	198	-11
Next Generation Nuclear Propulsion Plant Concept	305	305	0
Nuclear Propulsion Critical Technology	108	80	-28
Common Missile Compartment Non-Recurring Costs	283	271	-12
Total (£m)	**905**	**847**	**-58**

Cost of the Assessment Phase

Project/Increment Name	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)
Future Submarines Assessment Phase	2090	2000	-90
Next Generation Nuclear Propulsion Plant Assessment Phase	1020	1171	151
Nuclear Propulsion Critical Technology Assessment Phase	166	148	-18
Total (£m)	**3276**	**3318**	**42**

Total Cost (£m)	**4181**	**4165**	**-16**

B.2. Cost Boundaries for Demonstration and Manufacture Phase / PFI – N/A

B.3. Cost of the Demonstration and Manufacture Phase – N/A

B.4 Progress against approved Support / Training / PFI Cost – N/A

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2013 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2014 (£m)
Concept Phase/ Pre Initial Gate	802	22	825
Assessment Phase	730	513	1243
Total Expenditure	**1532**	**535**	**2068**

The Assessment Phase Approved Costs reflect a £47m approvals between Next Generation Nuclear Power Plant and Future Submarines. Though forecast as £60m within the Common Missile Compartment Review Note (dated January 2013) subsequent review has reduced this to £47m. This was formalised in the annual Review Note to the Investment Approvals Committee 2013.

A bring-forward of funding was approved by HM Treasury during the year for the investment in Barrow Facilities and Long Lead Items amounting to £261m hence our approval position has increased by this value.

Costs shown in the Initial Gate approval do not include recoverable VAT, the assumption being that Ship Builder Relief would apply as it did on Astute. Such relief will be provided retrospectively over the Assessment Phase from the point of starting the build. The Future Submarines project team has, however, to account for VAT and books all commitments and sunk costs against the approval inclusive of VAT. To ensure that commitments and approval are compared on a VAT-comparable basis, recoverable VAT has been deducted from the figures presented in MPR 14.

Since the approval granting development of a new Nuclear Steam Raising Plant (NSRP -designated Pressurised Water Reactor 3) at Initial Gate was received, the detailed NSRP design has progressed through a number of formal gates, each of increasing maturity. The design is now progressing well towards the Critical Design Review (CDR); this review is scheduled for December 2014 and this is when the design will be frozen enabling the Department to progress its formal technical and safety review and approval of this new reactor design. Critical Design Review signifies the completion of the detailed plant design, and therefore provides high confidence that the NSRP will achieve 100 per cent design maturity by Main Gate.

The Pressurised Water Reactor 3 (PWR3) design represents a step change in technology from Pressurised Water Reactor 2 (PWR2), leveraging off a high level of technology transfer from the US. The Principle themes in this step change involve increasing the engineering robustness of the basic design which enables a simpler plant with fewer components, reduced reliance on shore infrastructure and far more benign operating characteristics. These changes have, however, involved considerable challenges for the UK in terms of the numbers of nuclear suitably qualified experienced personnel required to enact them. For example, the level of effort required to develop and therefore de-risk 40 new manufacturing techniques specific to the PWR3 plant has only become clear during the detailed design phase since Initial Gate. In numerical terms, this under-estimation has resulted in an average additional 136 full time equivalents per year in the Assessment Phase therefore the overall non-recurring expenditure programme costs exceed the original Initial Gate expectations. This has occurred because, in essence, the Next Generation Nuclear Propulsion Plant project has set about a concurrent programme regenerating UK design “know how” in parallel with the early development of the PWR3 concept. In simple terms the level of modern safety standards analysis, expectations and demonstration in the UK regulatory framework for the development of a new pressurised water reactor has been greater than that estimated prior to Initial Gate even taking the benefits of the read-across from US plant designs. Many technical issues have had to be solved, but in relative terms it was the sheer volume of work to underpin a new Nuclear Power Plant design that was under-estimated. On reflection, this could have been anticipated as the UK has never before executed such a significant plant design; even PWR2 in the 1980s was a modest evolution of the PWR1 design.

Concept Phase (pre-Assessment Phase): costs have been included due to the scale. Usually, Concept Phase costs are relatively small, but given the size of this project they have been included for full disclosure. Concept Phase costs to 31 March 2013: there is a £1m variation from MPR 13 to MPR 14, formerly £803m now reported as £802m, this is due to a correction made following the statutory audit of the 2012-13 Departmental Resource Accounts to reduce accruals by £61k causing a rounding difference.

C. Section C: Time

C.1 Length of the Assessment Phase

Project/Increment Name	Date of Initial Investment Decision Approval	Forecast Date of Main Investment Decision Approval	Length of Assessment Phase (months)
Successor	April 2011	March 2016	65

C.2 Planned / Actual Boundaries for In Service Date or Initial Operating Capability

Project/Increment Name	Earliest Forecast	Budgeted For	Latest Forecast
Successor	-	PASE Dec-2028	-

C.3 In-Service Date/Initial Operating Capability – N/A

C.4 Full Operating Capability – N/A

C.5 Support / Training / PFI Contract – N/A

D. Section D: Performance

D.1 Sentinel Score

Current score	Last years score	Comments
-	-	Successor Technology Readiness Levels are classified

Technology Development Programmes (TDP) are managed in accordance with MoD policy for new technology following the Technology Readiness Levels Framework held on the Acquisition Operating Framework. This is used as one measure of the various TDP's which currently consist of 7 MoD managed TDP's and 4 BAE managed TDP's. The TDP's are also assessed against the Successor Maturity Management Plan which is used for the whole boat design. Finally the TDP's receive varying levels of scrutiny depending upon whether they are part of the baseline design, a mitigation or an opportunity.

D.2 Performance against Defence Lines of Development (DLOD) – N/A

D.3 Performance against Key Performance Measures (KPM) – N/A

D.4 Support Contract – N/A

TYPE 26 GLOBAL COMBAT SHIP

Project Name		
Type 26 Global Combat Ship		
Team Responsible		
Type 26 Global Combat Ship		
Senior Responsible Owner	**Date Appointed**	**Planned end date**
Commodore Alex Burton	September 2012	
Project/Increment Name	**Current Status of Projects / Increments**	
Type 26 Global Combat Ship	Pre-Main Investment Decision	

A. Section A: The Project

A.1. The Requirement

There is a need to replace the 13 ship Type 23 capability before the safe operating standard for legacy ships is withdrawn and the platforms become obsolete. Following the Strategic Defence and Security Review it was confirmed that this enduring requirement will be delivered by the Type 26 Global Combat Ship.

The Type 26 Global Combat Ship is planned to be a globally deployable and sustainable warship that will form the spine of the Royal Navy's future fleet. It will be a task group enabled Anti Submarine Warfare warship and will combine the capabilities necessary to protect maritime task groups, the strategic deterrent and land forces, with the flexibility to conduct a wide range of other tasks. Type 26 Global Combat Ship retains the combat power that had been originally envisaged within the Future Surface Combatant C1 and C2 variants, whilst enhancing endurance and intelligence gathering capabilities in a common, acoustically quiet hull.

*** The current planning assumption is to replace Type 23 under the Type 26 Global Combat Ship programme, based on one class of 13 ships delivered in two variants; anti submarine warfare and general purpose vessels.

A.2. The Assessment Phase

The Sustained Surface Combatant Capability pathfinder project in 2006 recommended a three-class solution; C1, a task-group enabled anti-submarine warfare frigate; C2, a general purpose frigate; C3, providing Mine Countermeasure, Hydrographic and Patrol capabilities. The Sustained Surface Combatant Capability project highlighted a need for up to ten C1s and eight C2s. Type 26 C1 was to be built first at a rate of one per year, followed by C2. This approach also met the needs of industrial sustainability whilst fulfilling the Royal Navy requirement.

It was on this basis that the Concept Phase progressed to the Initial Gate approval for Future Surface Combatant (C1) on 18 March 2010. It was anticipated that Main Gate approval would be sought by the middle of the decade and estimated that for a ten ship class the procurement cost would be *** (inclusive of VAT and inflation), with a whole life cost of *** (inclusive of VAT and inflation), assuming a ship life of 25 years. It was also recognised that there would be a Strategic Defence and Security Review following the General Election. Subsequently as part of the approval, it was planned that there would be a mid-phase review point to assess the impact of any changes in policy driven by that review.

The approval from the Investment Approvals Board capped the "not to exceed" value of the Assessment Phase at the 50% level. All non-UK new design and build options were discounted at the Initial Gate, as recorded in the Investment Appraisal, noting the over-arching agreement with BAE Systems Maritime – Naval Ships in the Terms of Business Agreement (TOBA) (dated 21 July 2009).

In October 2010 the Strategic Defence and Security Review reduced the total surface fleet to 19 frigates and destroyers which will include six Type 45 destroyers and the current Type 23 frigates which will be replaced by the newly renamed Type 26 Global Combat Ship (previously Future Surface Combatants) after 2020. The Strategic Defence and Security Review also merged the C1 and C2 variants into a single class of 13 ships based on a common acoustically quiet hull, eight of which would be Anti-Submarine Warfare and five General Purpose platforms.

Subject to approvals and value for money assessments, Type 26 Global Combat Ships are expected to be procured on a single source basis from BAE Systems Maritime - Naval Ships. ***

The alignment of renamed Type 26 Global Combat Ship against the goals of the Strategic Defence and Security Review was confirmed in an Information Note submitted to the Investment Approvals Board in January 2011. This Information Note stated that:

a. Approval will be split into two parts. Approval (Main Gate 1) will seek endorsement of the requirements to be delivered by Type 26 Global Combat Ship with Main Gate 2, the main investment decision, following at the end of the Assessment Phase. This will allow detailed costing and design work to proceed against a defined requirement so that the project can present an affordable design proposal for approval at Main Gate 2 and subsequent contract signing;

b. The remaining programme key milestones remain unchanged, with planned service entry as soon as possible after 2020;

c. Type 26 Global Combat Ship design is considered to have export potential with considerable effort being expended to encourage overseas partner interest.

The design and study work for the Analysis of Options stage concluded in the Capability Decision Point, held in November 2011. This identified a baseline design from which more detailed design work continues during the remainder of the Assessment Phase. The Capability Decision Point informed the Main Gate 1 submission which has been endorsed by the MOD Investment Approvals Committee. Main Gate 1 provided approval for the Project Team to continue the Assessment Phase with the detailed design work on the Type 26 Global Combat Ship capability architecture, down selected on the basis of the Capability Decision Point output; and for the Support Solution to enter its Assessment Phase.

***

The detailed design phase and industry engagement process will underpin the programme's Main Gate 2 at the end of the Assessment Phase, which is planned to conclude at the end of 2014, allowing the production phase to begin immediately thereafter . ***

Maritime Indirect Fires System has been brought under the programme umbrella, and its Main Gate approval will be integrated into the Type 26 Main Gate 2 submission. Maritime Indirect Fires System is an open competition led by the MOD for a medium calibre gun system and which passed its own Initial Gate in September 2012. The Invitation to Negotiate was issued in March 2013 to companies who successfully completed the Pre-Qualification Questionnaire.***

In order to maximise Type 26 Global Combat Ship export potential to realise wider benefits to the MOD, industry and the UK the design is being developed in close partnership with industry to improve these opportunities.

A.3. In-Year Progress

The MOD has engaged in a series of negotiations with BAE Systems to determine the best approach to maintain the key industrial skills needed to sustain UK Shipbuilding - the Maritime Composite Option. ***

A Review Note was submitted in July 2013 when the Project sought permission to extend the Assessment Phase from December 2013 through to July 2014 and reported that the December 2012 affordability challenge had been reduced from *** The Review Note also sought approval to fund some initial stage work to scope the proposed Modern Dock Hall which aims to deliver an optimised, efficient build at lower overall cost and to underpin transformation within BAES.

The Assessment Phase extension was necessary as a result of *** and the yet to be concluded Maritime Composite Option negotiations. Extension enabled the design to be further matured ahead of the main investment decision.

At the Defence Security and Equipment International exhibition in September 2013, BAE Systems released new images of the current Type 26 Global Combat Ship design and announced the first 4 equipment downselections: Gas Turbines (Rolls Royce) Gearbox (David Brown Gear Systems Ltd), Diesel Generators (MTU) and Integrated Digital Communications systems (Rohde Schwarz).

Approval to extend the Assessment Phase was granted in early October 2013 but the Investment Approvals Committee did not initially approve the funding for the Modern Dock Hall element due to the outstanding resolution of the Maritime Composite Option negotiations.

On 6 November 2013, the Secretary of State announced in Parliament that the Maritime Composite Option negotiations had concluded and confirmed in his statement that three Offshore Patrol Vessels would be built for the Royal Navy. The construction of these vessels would ensure the key industrial skills were maintained between the conclusion of the Queen Elizabeth Class Aircraft Carriers and the start of construction of the first Type 26 Global Combat Ship. As a result of the conclusion of the Maritime Composite Option negotiations, the approval for the initial scoping of a Modern Dock Hall option was subsequently granted in late November 2013.

In May 2014 a further Review Note was submitted to the Investment Approvals Committee to extend the Assessment Phase to December 2014 which stems from the need for the Department to achieve the most mature case practicable given the significance of the investment. This has now been approved.

A.4. Capability Risks

The Strategic Defence and Security Review confirmed the need for Future Force 2020 to provide maritime defence of the UK and its South Atlantic Overseas Territories. Capabilities should include a surface fleet of 19 frigates and destroyers providing military flexibility across a variety of operations, including six Type 45 destroyers and the current Type 23 frigates. However there is a need to replace the Type 23 surface combatant capability before the safe operating standard for legacy ships is withdrawn and the platforms become obsolete.

*** There is no scope to extend the current Type 23 platforms further without extensive, currently unaffordable modifications. If further extension was required, the hull strength, stability and legislative safety compliance would need to be addressed by work that removes capability, does not reduce the risk to the generation of forces at readiness and costs more than a new build, incurring significant additional cost for a limited time extension of the class (between 1 and 3 years). Individual platform availability at this end of the reliability curve is likely to be low and with restricted endurance (because of fuel liquid load restrictions) their warfighting utility will be limited. The Strategic Defence and Security Review confirmed that as soon as possible after 2020 the Type 23 frigates will be replaced by the Type 26 Global Combat Ship which will be designed to be easily adapted to change roles and capabilities depending on the strategic circumstances.

A.5. Associated Projects

Project/Increment Name	Forecast In Service Date / Initial Operating Capability	Approval Status
***	***	***
***	***	***

A.6. Procurement Strategy

Pre-Main Investment Decision Project / Increments only		
Project / Increment Name	**Procurement Route**	**Approval Status**
Type 26 Global Combat Ship	Single Source	Pre-Main Gate

A.7. Support Strategy

Description
***

The project Assessment Phase approval covers funding for Concept and Assessment Phase Support activities. The Assessment Phase contract was placed non-competitively under the BAE Systems Maritime - Naval Ships Terms of Business Agreement. Support Initial Gate which was approved as part of the Main Gate 1 submission to the Investment Approvals Committee outlined the initial commercial arrangement to be placed following Main Gate 2 Approval. The current assumption is that the initial commercial arrangement to be placed following Main Gate 2 Approval, will be:
a. a pricing framework agreed with the dockyard partners within the Surface Ship Support Alliance / Maritime Support Delivery Framework for support at the platform level covering Class Output Management, fleet time maintenance and upkeep activity. At this stage some aspects of the commercial agreements will be based on pricing formulae relating variations in performance targets, operational and other parameters. During the build of the First of Class, these arrangements will be firmed up so that planned maintenance and in service activities are priced as far as possible for a complete support cycle.
b. tailored equipment support contracts appropriate to the different equipment characteristics. The strategic support options of Surface Ship Support Alliance or the Public Sector Comparator will establish the means by which support will be delivered in an integrated way at whole ship level. This level of support is underpinned by support of the constituent equipments and systems, which will be delivered

through differing arrangements depending on a range of factors such as whether the equipment is unique to Type 26 Global Combat Ship, whether it is Commercial off the Shelf or its original procurement route. These equipment support arrangements in turn influence the platform level solution. It is the intent to seek contractible offers for long term support arrangements concurrently with contracting for initial procurement to the extent practicable.

The aim of the Type 26 Global Combat Ship project at Initial Gate was to provide the Approval Authority with a cost for all support elements at Main Gate 2 as far as possible, based on contractible offers from industry. Work during the Assessment Phase has proven that this will not be achievable in all areas. The project team will therefore seek approval at Main Gate 2 for an integrated Demonstration, Manufacture and Support contract with commitment sought for development, procurement and delivery of in-service support and new to service training. This will comprise a mixture of contractual commitment to BAE, Type 26 Global Combat Ship amendments to existing enterprise support arrangements and development work for later placing of contracts as the design and Fleet wide support arrangements mature.

Subsequently, decisions around the support strategy have been revisited in early 2014 following a comprehensive review of Surface Ship support. The outcomes of that review are intended to form the basis of Phase 3 of the Surface Ship Support Programme and will shape in particular the approach to the support of all complex warships with convergence around a common model. The Type 26 Support Solution will now develop within this new overall framework. Initial support for each ship until its Acceptance into the Fleet will, as is normal, be provided as part of the Build contract.

Project/Increment Name	Contractor	Contract Scope	Contract Type	Procurement Route
In-Service Support Contract for Type 26 Global Combat Ship	BAE Systems	Initial Support	Prime Contractor	Single Source

B. Section B: Cost

B.1. Cost of the Assessment Phase

Project/Increment Name	Approved Cost (£m)	Forecast Cost (£m)	Variation (£m)
Type 26 Global Combat Ship	158	***	***
Total (£m)	**158**	***	***

The Type 26 Global Combat Ship is currently in the Assessment Phase with investigations into the cost of delivering the capability being assessed. As such it would not be appropriate at this time to disclose the immature costs of Type 26.

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

Project/Increment Name	Lowest Forecast (£m)	Budgeted For (£m)	Highest Forecast (£m)
Type 26 Global Combat Ship	***	***	***

B.3. Cost of the Demonstration and Manufacture Phase – N/A

B.4 Progress against approved Support / Training / PFI Cost – N/A

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2013 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2014 (£m)
Assessment Phase	91	82	173
Demonstration & Manufacture Phase	-	-	-
Support Phase / Service / PFI Cost	-	-	-
Total Expenditure	**91**	**82**	**173**

C. Section C: Time

C.1 Length of the Assessment Phase

Project/Increment Name	Date of Initial Investment Decision Approval	Forecast Date of Main Investment Decision Approval	Length of Assessment Phase (months)
Type 26 Global Combat Ship	March 2010	***	***

C.2 Planned / Actual Boundaries for In Service Date or Initial Operating Capability

Project/Increment Name	Earliest Forecast	Budgeted For	Latest Forecast
Type 26 Global Combat Ship	***	***	***

C.3 In-Service Date/Initial Operating Capability – N/A

C.4 Full Operating Capability – N/A

C.5 Support / Training / PFI Contract – N/A

D. Section D: Performance

D.1 Technology Readiness Level

Current score	Last years score	Scale	Comments
4	4	**1-10**	

D.2 Performance against Defence Lines of Development (DLOD) – N/A

D.3 Performance against Key Performance Measures (KPM) – N/A

D.4 Support Contract – N/A

Concept phase projects

Project Name		
Attack Helicopter Capability Sustainment Programme		
Team Responsible		
Apache Project Team		
Senior Responsible Owner	**Date Appointed**	**Planned end date**
Cdre Jonathan Pentreath (Capability Director Joint Helicopter Command)	2 January 2013	18 July 2014
Project/Increment Name	**Current Status of Projects / Increments**	
Apache Capability Sustainment Programme	Concept Phase	

A. Section A: The Project

A.1. The Requirement

UK Defence competed to provide an Attack Helicopter capability to replace the Lynx/Tube-Launched Optically Tracked Wire-guided missile (TOW) combination during the 1990s. The competition resulted in the selection of the AgustaWestland (then GKN Westland) Apache WAH-64, known to the British Army as the Apache AH Mk1, and which entered service in 2004.

The UK's Apache AH Mk1 is a modified US AH-64D Block 1 and is becoming increasingly obsolescent. The Attack Helicopter Capability Sustainment Programme (AHCSP) addresses existing and forecast critical obsolescence issues that will progressively degrade operational capability of the current Apache AH Mk1 towards the end of the decade, following the withdrawal from service of the equivalent US Apache model, and which, if left untreated, would result in the complete loss of the Attack Helicopter capability in the period 2020 to 2025. The aim of the Capability Sustainment Programme is to deliver the sustainment of the required Attack Helicopter capability in support of extant Defence policy across the full spectrum of warfare until 2040.

A.2. The Concept Phase

The AHCSP Concept Phase strategy is to define and analyse the platform, support and training options to address the Attack Helicopter requirement and to recommend options to be assessed in greater detail in the Assessment Phase to deliver the optimal value for money solution for the ongoing provision of the capability. The Concept Phase will result in:

- Candidate Key User Requirements and the User Requirements Document.
- The recommendation of Platform Options to be analysed in the Assessment Phase. The Platform Options analysed during the Concept Phase fall into three categories:
    * Obsolescence management of the Apache AH Mk 1
    * Upgrade to Apache AH64E
    * New Attack Helicopter platform
- The most appropriate procurement strategy to deliver the Capability Sustainment Programme
- The recommendation of Support Options and also the Training Delivery and Synthetic Training Equipment Options to be analysed in the Assessment Phase, based on the Platform Option(s) recommended at Initial Gate.
- The work package and the funding requirements to conduct the resulting Assessment Phase plan.

The Concept Phase has seen the production, delivery and endorsement of the Key User Requirements.

A.3. In-Year Progress

The AHCSP options analysis, based on engineering analyses and cost modelling, has been completed. The time-phased budget of work for the platform, training and Integrated Logistic Support requirements has been developed to support the Initial Gate Business Case. The Initial Gate Business Case making the recommendation for the way forward was submitted to the Investment Approvals Committee in October 2013 and further analysis was subsequently provided to help inform the consideration of the business case. No decision has yet been taken on the preferred option or procurement strategy.

A.4. Capability Risks

The Attack Helicopter Capability Sustainment Programme addresses existing and forecast critical obsolescence issues that will progressively degrade operational capability of the current Apache AH Mk1 towards the end of the decade, following the withdrawal from service of the equivalent US Apache model, and which, if left untreated, would result in the complete loss of the Attack Helicopter capability in the period 2020 to 2025.

A.5. Associated Projects - NA

A.6. Procurement Strategy - NA

A.7. Support Strategy - NA

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