National Audit Office

Report
by the Comptroller
and Auditor General

Ministry of Defence

Major Projects Report 2015 and the Equipment Plan 2015 to 2025

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

1 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.

2 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. This includes additional requirements specified by safety regulators/inspectors.
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, eg 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, eg liquidated damages, commercial exploitation levy.
Change in Associated Project	Variations due to changes in an associated project eg 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

A400M

Project Name		
A400M		
Team Responsible		
A400M		
Senior Responsible Owner	**Date Appointed**	**Planned end date**
Air Commodore David Lee	20 July 2015	July 2018
Project/Increment Name	**Current Status of Projects / Increments**	
A400M	Post-Main Investment Decision	
Training Service	Post-Main Investment Decision	
In Service Support	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 occurred in November 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 re-approval 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 Airshow 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.

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 September 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 section B2 and B3 did not change.

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 was not reported.

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) was 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.4. In-Year Progress

On 4 April 2014, Turkey took delivery of its first aircraft and became the second partner nation to operate the A400M.

On 1 May 2014, the UK A400M in Service Support Main Gate business case was approved, and this element of the programme will now be reported as a separate increment.

On 7 May 2014 the A400M Schoolhouse was officially opened. The Schoolhouse training facility currently contains one Full Flight Simulator, one Loadmaster Workstation Trainer, one Cockpit Maintenance Operations Simulator and a suite of Computer Based Training Equipment.

The first of the Part Task Trainers ordered, for Movements personnel, was delivered on 28 August 2014.

On 30 August 2014, the first flight of MSN015 (designated to become ZM400, the first RAF A400M aircraft) took place in Seville, an important waymarker in the process leading to delivery of this aircraft.

On 29 September 2014, following the successful conclusion of negotiations, a contract to provide a support service for the RAF A400M fleet was signed with Airbus Military Sociedad Limitada. The service, based at RAF Brize Norton, provides all lines of aircraft maintenance and draws upon proven civil aviation practices. It was officially certified by the UK Military Aviation Authority on 16 October 2014, meaning that it was ready to receive and support A400M aircraft.

On 17 November 2014 ZM400, the first UK aircraft, arrived at RAF Brize Norton, and was flown on training sorties on 18 November. This occasion, when the UK became the third partner nation to operate the A400M, was officially marked with a ceremony at RAF Brize Norton on 27 November 2014. Separately, on 26 November 2014, MSN016 (designated as ZM401) left the Airbus Final Assembly Line production facility in Seville and transferred to the Airbus facility at Getafe, Madrid, to undergo modification work to enable the aircraft to operate a defensive aids sub system.

On 8 December 2014, building upon the recently signed in service support contract, and in furtherance of the objectives of the 2010 Anglo-French Lancaster House Treaty, the UK and France signed a contract for the provision of joint elements for their national in service support contracts.

On 18 December 2014, Germany became the fourth partner nation to operate the A400M when it took delivery of its first aircraft.

On 9 February 2015, at a ceremony held at the Airbus facility at Filton, ZM400 was officially named “City of Bristol”.

On 27 February 2015 ZM402, the second RAF A400M aircraft, arrived at RAF Brize Norton. On the same day the Airbus Group announced its 2014 annual results accompanied by a statement relating to issues around the A400M programme and announced a “revised baseline and delivery schedule”. Details of the proposal for a revised plan were delivered in early March 2015, and are being assessed by senior officials from partner nations. Ahead of this announcement, and in acknowledgement of the delays that had already occurred to aircraft deliveries, the UK had revised its forecast of achievement of in service date from March to September 2015.

On 10 March 2015, Malaysia took delivery of MSN022, and became the first A400M export customer.

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 de-risked 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 is now reported as a separate increment. The A400M Training Service encompasses the following: a. Training for initial cadre of all User Groups undertaken at the International Training Centre using the A400M training courses offered by AMSL; b. UK-specific courses for all User Groups 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 Load Master WorkStation Trainer, 1 x Cockpit Maintenance Operations Simulator and a suite of Computer Based Training equipment. d. Three Part Task Trainers provided at Brize Norton for use by 3rd User Group (3UG) personnel; e. Aircrew instruction provided by Authority personnel with limited support from contractor instructors; maintenance instruction provided by contractor personnel; 3UG instruction provided by Authority personnel; f. Training equipment and the Schoolhouse infrastructure are contractor-maintained and supported. **In-Service Support** The UK In Service Support service achieved Main Gate approval in May 2014 and will now be reported as a separate increment. The agreed support strategy endorses a phased approach, with the support service being developed in line with the aircraft fleet build up, and this current approval, for initial in service support, covers the period until September 2016. Based at RAF Brize Norton (the UK A400M Main Operating Base), this contractor-led, output-based service covering all lines of aircraft maintenance. A Single Engineering Organisation and a Maintenance, Repair and Overhaul Organisation (utilizing a combination of contractor staff and RAF engineers) will provide continuing airworthiness management, all line and base maintenance activities for the aircraft plus maintenance of certain components. The service combines elements of civil aviation procedures with the operational flexibility required to operate a military aircraft, and is regulated by European Aviation Safety Agency and the UK Military Aviation Authority. In furtherance of the objectives of the 2010 Lancaster House Treaty, certain elements are also provided jointly with France. These parts provide savings and economies of scale through pooled spares and shared common services and costs. In addition, this approval also covers construction of a bespoke A400M hangar, which will be a key enabler for the integrated in service support service that follows on from this initial phase. The hangar is being delivered by the Defence Infrastructure Organisation on behalf of the A400M project team.

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
Support Strategy	Airbus Military Sociedad Limitada	Continuing airworthiness management; line and base maintenance activities	Firm Price	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
In Service Support	1	1	0
Total (£m)	**4**	**3**	**-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	2710	+472	-42
Total (£m)	**2238**	**2710**	**+472**	**-42**

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
March 2015	-35	Exchange Rate	An in year gain due to an increase in the value of £ vs € as a result of the difference between the set planning exchange rate and the actual outturn.
March 2015	-3	Budgetary Factors	A reduction to in year provision due to a deferral of a decision on requirements linked to future capability milestones. Financial liability for any subsequent requirement is owned by HQ Air.
February 2015	-4	Procurement Processes	A reduction as a result of the actual contract cost of equipment being less than forecast.
Historic	-4	Inflation	A reduction to the future provision for variation of price due to the delivery of two aircraft earlier than previously scheduled.
Historic	-51	Exchange Rate	A reduction due to changes in the MoD central planning assumption on the £ : € exchange rate.
Historic	-10	Technical Factors	An increase due to an increased requirement for UK specific trials and evaluation work in support of aircraft entry into service
Historic	+575	Procurement Processes	UK contribution to the multinational Export Levy Facility provided to EADS by A400M partner nations.

			Reduction in number of aircraft to be equipped with Defensive Aids Sub-System from 25 to 9. Increased costs due to contract slippage.
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 reprofile 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.
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 reprofile 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).
Net Variation (£m)	**+472**		

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	489	-37	-37
In Service Support	450	401	-50	-50

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

B.4.1.1 Training Service

Date	Variation (£m)	Category	Reason for Variation
March 2015	-19	Procurement Processes	A reduction due to the actual contracted cost of equipment and services being less than forecast.
March 2015	-13	Technical Factors	A reduction due to the non-materialisation of risk.

March 2015	-5	Exchange Rate	An in year gain due to the increase in the value of the £ vs € due to the difference between the forecast exchange rate and actual outturn.
Net Variation (£m)	**-37**		

B.4.1.2 In Service Support

Date	Variation (£m)	Category	Reason for Variation
March 2015	-6	Technical Factors	A reduction due to the non-materialisation of risk.
March 2015	-11	Exchange Rate	An in year gain due to the increase in the value of the £ vs € due to the difference between the forecast exchange rate and actual outturn.
March 2015	-1	Technical Factors	A reduction in the final contract cost as a result of a gainshare clause.
December 2014	-2	Technical Factors	A reduction in the forecast cost of in service support as a result of late aircraft deliveries.
October 2014	+5	Technical Factors	The provision of interim maintenance infrastructure prior to the construction of the new A400M hangar.
September 2014	-35	Procurement Processes	A reduction in the final value of the contract as a result of negotiations.
Net Variation (£m)	**-50**		

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

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2014 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2015 (£m)
Assessment Phase	1	0	1
Demonstration & Manufacture Phase	1230	519	1750
Support Phase (Training)	147	29	176
Support Phase (In Service Support)	52	158	210
Total Expenditure	**1430**	**706**	**2136**

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	September 2015	+79	+6

C.3.3 Timescale variation

C.3.3.1 A400M

Date	Variation (+/- months)	Category	Reason for Variation
January 2015	+6	Technical Factors	Updated programme estimate based on an assessment of the Airbus Defence & Space revised delivery schedule.
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)	**+79**		

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	Reported in MPR 2015: The further six month delay to the UK declaration of In Service Date is not expected to have any direct impact on the delivery of UK military capability. Delivery dates for future capability increments forecast by Airbus Defence and Space are not affected by current production delays, and align with UK capability milestones.
A400M	Reported in MPR 2009: 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
In Service Support	September 2014	September 2014	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
In Service Support	September 2016	September 2016	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	Comments
66	The reduction from last year's score is principally due to the declaration of a six month slip to In Service Date as a result of Airbus Defence and Space not meeting the contracted aircraft delivery schedule.

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	
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	
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 (2)	0
Last year's forecast (with risks)		8 (4)	0

D.2.1 Defence Lines of Development Variation

Date	DLOD	Category	Reason for Variation
February 2015	Training	Technical Factors	A third party assessor has been used to map RAF engineering qualifications to Airbus civil licensing requirements.
February 2015	Personnel	Technical Factors	Sufficient aircrew with the required competencies for instructional duties are expected.
Historic	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.

Historic	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 worldwide Air Transport operations.	Yes	
4	1,6	A400M is to be capable of autonomous operations from semi-prepared surfaces with a runway length of 3 500 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 worldwide.	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 Tactical scenarios, a requirement for a third flight deck crewmember will be acceptable.	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 and Training Contract

D.4.1 Training

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

D.4.2.2 Key Performance Measures Variation – N/A

D.4.2 In-Service Support

D.4.2.1 Performance against Key Performance Measures (KPM)

KPM	DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1	1, 3, 6, 8	Fleet Tasking and Availability Management. The service will integrate with the allocation of fixed-wing Air Mobility support processes to ensure that Defence tasks against A400M are assigned and dispatched.	Yes	
2	1, 3, 8	Technical services. These will provide Military Aviation Authority Regulatory Publication (MRP) Part M, Sub-part G support to the MOD Continuing Airworthiness Manager. This will include technical queries, maintenance programme optimisation and direction to the maintenance operation. It will also include support to Flight Operations tools and Ground Support Systems.	Yes	

3	1, 3	Maintenance services. These will be delivered through two MRP Part 145 approved organisations; line maintenance through the Single Engineering Organisation and base maintenance through a Maintenance Repair and Overhaul organisation.	Yes	
4	1, 3	Materiel support. This service will manage A400M Atlas spares, providing them to the point of need, including the Joint Supply Chain when required. The materiel support service will utilise the spares pool with France as required.	Yes	
Currently forecast (with risks)			4 (0)	0
Last year's forecast (with risks)			4 (0)	0

D.4.2.2 Key Performance Measures Variation – N/A

D.4.2.3 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 Tim Hodgson	March 2015	

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. 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 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 Dec 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 Mar 2013. HMS AMBUSH achieved Operational

Handover on 26 Jun 2013. Following a maintenance period at Her Majesty's Naval Base Clyde, the submarine continued with a second, Capability Proving Sea Trial phase which were completed at the end of July 2013. The vessel completed a Base Maintenance Period prior to operational tasking in 2014.

Boat 3 ARTFUL
A delay in supply of key Nuclear Steam Raising Plant components and a shortfall in volume of construction and outfit work against the plan prevented scheduled Core Load from being achieved against the baseline milestones. Core Load was completed in September 2013. ARTFUL was formally named on 20 Sep 13. 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
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 during 2013/14 with Diesel Generator Trials being completed Jun 14.

Boat 5 ANSON
Boat 5 ANSON had her 'keel laid' on 13th 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. The largest Unit 6/7 (Accommodation and Command Unit) and the Forward End Construction were delivered to the Devonshire Dock Hall in September 2013 and December 2013 respectively. Fabrication of the Aft End Construction was completed in March 2014.

Boat 6 AGAMEMNON
Further tranches of material have been procured for Boat 6. Following receipt of Whole Programme approval in Jun 12 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. 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
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 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
Submarine Production's (SMP) 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.

FOUNDATION CONTRACT
The MOD's 2010 Strategic Defence and Security Review (SDSR) plan to save at least £879M 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 minimum target of £386M over an 8 year period.

A.4. In-Year Progress

Approvals
Following whole Astute Programme approval in 2012, an annual Information Note is submitted each year to provide an update on status of the Programme. The 2014 Information Note was submitted to IAC in December 2014 within which the cost to completion was estimated to exceed approval (50%) by £80m. The same financial pressure is not evident within this report due to variations between the scope of the extant approval and MPR in particular the recognition of the sunk costs on Boats 1-3. It is however worth noting that the programme is pursuing and number of business improvement opportunities that aims to improve schedule performance and generate further cost efficiency.

Boat 1 - HMS ASTUTE
As previously reported in MPR 14; on 25 April 2013, HMS ASTUTE achieved Operational Handover whereby the scheduling authority transferred from Defence Equipment & Support (DE&S) Submarine Production to the Royal Navy and is now a deployable submarine.

Boat 2 - HMS AMBUSH
As previously reported in MPR 14; on 26 June 2013 HMS AMBUSH achieved Operational Handover whereby the scheduling authority transferred from Defence Equipment & Support (DE&S) Submarine Production to the Royal Navy and is now a deployable submarine.

Boat 3 - ARTFUL
ARTFUL was launched in May 2014 in a significantly better material state than Astute Boats 1 & 2; this has resulted in a reduction in the length of the 'in-water' test & commissioning phase (from c.21 months to c.13 months). The submarine is currently berthed alongside Wet Dock Quay at BAE Systems' Shipyard in Barrow-in-Furness having successfully completed its initial dive in early October 2014. The next key event is the start up & testing of the nuclear reactor, which is due to commence in early May 2015. The submarine is scheduled to Exit Barrow in early July 2015 before embarking on a focussed sea trials package prior to Operational Handover in Autumn 2015.

Boat 4 - AUDACIOUS
Construction and testing of AUDACIOUS continues in the Devonshire Dock Hall at Barrow-in-Furness. Diesel Generator Trials were successfully completed in June 2014. There has been schedule slippage on the Reactor Line (critical path) during the reporting period primarily as a result of a programme clash between the reactor commissioning milestones of Primary Circuit Initial Fill in AUDACIOUS and Power Range Testing in ARTFUL. Key initiatives within BAES' Business Improvement Programme (PULSAR) have been successfully rolled out in AUDACIOUS and agreement has been reached for the workforce to move to a more agile shift-working pattern. Forthcoming milestones include Primary Circuit Initial Fill (April 2015), Reactor Core Load (March 2016) and Launch (September 2016).

Boat 5 - ANSON
ANSON has continued its 'open outfit' phase with all major pressure hull Units having now been delivered to the Devonshire Dock Hall. Key milestones achieved during the period include completion of fabrication of the Aft End Construction, closure of the Unit 1 / Unit 2 butt weld and completion of the first phase of Primary Circuit Loop build. Areas of focus for the next 12 months include completion of the Unit 4 / Unit 5 butt weld (April 2015), which is a major milestone of activity on the Reactor Line (critical path). A number of other butt closures are scheduled as the build transitions from the 'open outfit' to 'closed outfit' phase; Unit 3 / Unit 4 (August 2015), Unit 7 / Unit 8 (January 2016) and Unit 2 / Unit 3 (April 2016).

Boat 6 - AGAMEMNON
Agamemnon's Command Deck Module has been delivered from Cammell Lairds and is being outfitted. Units are now beginning to be shipped from the New Assembly Shop to the Devonshire Dock Hall in readiness for butt completion.

Boat 7 - Unnamed
Fabrication of main sub units is progressing within the New Assembly Shop with the production of the Top Half Gear Case and assembly of the Main Machinery Raft delivered to baseline.

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. Preparation of media and facilities continues for the service delivery of training for Boat 4 crews from July 2015. On 18 December 2014, the IAC approved the ACTS Review Note for supplier engagement for extension of training service for Boat 5 and recommended that negotiation include options for contract extension to cover Boats 6 and 7. The supplier has been requested to propose a solution.

SUPPORT
The Astute support solution continues to mature as further experience is gained from sea time. Current focus is on preparations for ARTFUL exit and acceptance activities in the lead up to Contractor Acceptance Stage 1 (CAS1) and Operational Handover (OH) later in 2015. In addition, work continues to the optimisation of Astute support to deliver increases reliability and availability.

FOUNDATION CONTRACT
The MOD's 2010 Strategic Defence and Security Review (SDSR) plan to save at least £879M 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 of which a target of £195M will fall to the Astute programme. Across the period 17 July 2013 to 31 March 2015 the ASTUTE programme has secured efficiencies that yield financial savings of £92.8M.

A.5. Capability Risks

Delivery of the ASTUTE Class is critical to the Royal Navy's submarine's readiness profile. Delays to the ASTUTE Class 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	Single Source

			Scope of Work	
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 Maritime Services Delivery Framework arrangements. The revised approach was included as part of the whole programme approval in June 2011. 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. 18 December 2014, the IAC approved the ACTS Review Note for supplier engagement for extension of training service for Boat 5 and recommended that negotiation include options for contract extension to cover Boats 6 and 7. Approval for later Boats will be considered during FY15/16 as part of the option set for the delivery of a coherent training solution led by Submarine Training Capability Programme. 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	3536	+1303	+103
Astute Boat 4	1279	1492	+213	-0
Astute Boat 5	1464	1420	-44	+55
Astute Boat 6	1579	1533	-46	+18
Astute Boat 7	1642	1640	-2	-29
Total (£m)	**8197**	**9620**	**+1423**	**+146**

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

B.3.1.1 Astute Boats 1 -3 (In-Year)

Date	Variation (£m)	Category	Reason for Variation
01/03/2015	+23	Technical Factors	ABC Years. Combat Systems costs have increased by £21m to fund the Under Ice Capability, which was previously only funded Boat 1 but is now across the 3 Boats. Remaining increase driven by movement in the Sea Trials programme to align with revised Boat 3 exit £1m, and Platform costs £1m.
01/03/2015	-5	Procurement Processes	ABC Years. Payload Bay 3 Costs have been transferred to Boat 4 following Commercial negotiations - £5m
01/03/2015	+20	Technical Factors	ABC Years. Prime BAE costs have increased by £20m to align with revised Boat 3 exit. This has resulted in increased Labour Hours and Material costs.
01/03/2015	+23	Accounting	ABC Years. The Baseline figure was

		Adjustments and Re-definitions	suppressed at ABC13 following the unwinding of a profit accrual in FY12/13 resulting in a budgetary challenge of £23.It has not been possible to deliver the challenge due to the revised exit date of Boat 3 and consequential increase in cost.
01/03/2015	-13	Technical Factors	ABC Year. Due to the revised exit of Boat 3 Ship Builder relief has been moved into the ABC Years and the relief has increased due to extra costs.
01/03/2015	+33	Accounting Adjustments and Re-definitions	FY 14/15 Variance. The Baseline figure was suppressed at ABC13 following the unwinding of a profit accrual in FY12/13 resulting in a budgetary challenge of £33. It has not been possible to deliver the challenge due to the revised exit date of Boat 3 and consequential increase in cost
01/03/2015	+17	Technical Factors	FY 14/15 Variance. The revised exit of Boat 3 has resulted in a reprofile of the ShipBuilder Relief resulting in an increase of £16.9m.
01/03/2015	+12	Accounting Adjustments and Re-definitions	FY 14/15 Variance. Following a profit reconciliation based on the latest Forecast of Cost at Completion a release of fee was made resulting in an increase of £11.6m from the plan.
01/03/2015	-3	Technical Factors	FY 14/15 Variance. BAE Labour and Material Costs have increased by £35.6m which has been mostly offset by £-33.1m of Labour and Material Risk. In Year Profit has decreased by £3.4m as milestones have not been met. No Warranty claims have been made resulting in a decrease of -£2.3m against the plan.
01/03/2015	-3	Procurement Processes	FY 14/15 Variance. Non-BAE Costs down by £3.4m driven by funding for Payload Bay 3 being transferred to the Boat 4 funding lines.
Net Variation (£m)	**+103**		

B.3.1.2 Astute Boats 1 -3 (Historic)

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 14	+20	+25	Accounting Adjustments and Re-definitions
		-5	Technical Factors
MPR 13	+28	-58	Accounting Adjustments and Re-definitions
		+86	Technical Factors
MPR 12	-94	-60	Technical Factors
		-30	Budgetary Factors
		-4	Receipts

MPR11	+179	+172	Budgetary Factors
		+7	Technical Factors
MPR 10	-383	-412	Accounting Adjustments and Re-definitions
		+9	Budgetary Factors
		+22	Technical Factors
		-2	Receipts
MPR 09	+130	+87	Budgetary Factors
		+40	Technical Factors
		+3	Receipts
MPR 08	+47	+47	Accounting Adjustments and Re-definitions
MPR 07	-23	-23	Accounting Adjustments and Re-definitions
MPR 06	+387	+387	Technical Factors
MPR 04	+1047	+257	Changed Capability Requirement
		+751	Technical Factors
		+39	Procurement Processes
MPR 03	+40	+40	Inflation
MPR 02	-177	-177	Accounting Adjustments and Re-definitions
Net Variation (£m)	**+1200**		

B.3.1.3 Astute Boat 4 (In-Year)

Date	Variation (£m)	Category	Reason for Variation
01/03/2015	+11	Technical Factors	ABC Years. Increase across the Non Prime lines. ACTS +£1.7 (driven by increased training needs) GF +£3.2 (Increase in Sea Trials activities), Dredging of Walney Channel +£1.6 (Impact of VAT due to revised contracting strategy and movement in profile) Combat Systems +£5.6 (Under Ice Detection previously not included or planned for Boat 4) RDEL -£3.1m (Reduced estimate of external resources required), Electric Boat Costs +£2.4 (reflecting the ongoing support from Electric Boat for Boat 4) and -£0.5 (Other Lines)
01/03/2015	+8	Procurement Processes	ABC Years. Payload Bay 3 previously planned within Boats 1-3 has been transferred to Boat 4 following commercial negotiations resulting in increased costs to Boat 4.
01/03/2015	+3	Accounting Adjustments and Re-definitions	ABC Years New Costs have been

			included for additional overheads to align with the latest overhead quantum £3.6m. Investment in BAE's Business Improvement Plan £1m Change in BAE's pension from defined benefits to defined contributions for new staff Savings -£1.4
01/03/2015	+3	Technical Factors	ABC Variances. BAE Prime costs have increased by £2.8m. Labour +£42m & Material +£12m offset by the Risk provision -£37m and no warranty claims -£15m.
01/03/2015	+5	Technical Factors	In Year Variance. Due to increase Nuclear Regulations the costs for maintaining the Barrow Nuclear Site Safety Licence have increased +£3.5m. Previous planning assumptions were that NP IPT would fund the final Core H0 payment. This assumption was found to be incorrect resulting in £1.4m increase to the forecast
01/03/2015	-3	Technical Factors	In Year Variance Funding for additional resource not required within the Boat 4 Programme
01/03/2015	+6	Procurement Processes	FY 14/15 Variance. Increase costs due to Payload Bay 3 being previously planned under Boats 1-3 but following commercial negotiations was contracted against Boat 4 £5.8m.
01/03/2015	-9	Technical Factors	FY 14/15 Variance. Boat Manager Risk was consumed by the increase caused by Payload Bay -£7.1m Minor decreases in ACTS -£0.8m, Combat Systems -£0.3m and Electric Boat £-0.3m.
01/03/2015	-15	Accounting Adjustments and Re-definitions	FY 14/15 Variance. Following profit reconciliation based on the latest Forecast of Cost at Completion a recovery of fee was made resulting in a decrease of £15m from the plan.
01/03/2015	-10	Accounting Adjustments and Re-definitions	FY 14/15 Variance. Correction of a P2P accrual from FY 13/14 resulted in a decrease of £10m
Net Variation (£m)	**-0**		

B.3.1.4 Astute Boat 4 (Historic)

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 14	-13	-1	Budgetary Factors
		-12	Technical Factors
MPR 13	+56	+2	Accounting Adjustments and Re-definitions
		+66	Technical Factors
		-12	Budgetary Factors
MPR 12	+44	+44	Technical Factors
MPR11	+71	+56	Budgetary Factors
		+15	Technical Factors
MPR 10	-16	+10	Budgetary Factors
		-26	Technical Factors
MPR 09	+70	+102	Budgetary Factors
		+19	Technical Factors
		-51	Receipts
Net Variation (£m)	**+213**		

B.3.1.5 Astute Boat 5 (In-Year)

Date	Variation (£m)	Category	Reason for Variation
01/03/2015	+3	Accounting Adjustments and Re-definitions	ABC Years New Costs have been included for additional overheads to align with the latest overhead quantum £9m offset by benefits from the investment in BAE's Business Improvement Plan - £3.1m and by a change in BAE's pension from defined benefits to defined contributions for new staff Savings -£3.4
01/03/2015	+47	Technical Factors	ABC Years. BAE Prime costs have increased by Labour +£100m ,Material +£32m and Profit £2m offset in part by the release of risk provision -£87m
01/03/2015	+9	Technical Factors	ABC Years. Increase across the Non Prime lines ACTS +£1.3 (driven by increased training needs) GF +£1.4 (Boat 5 Sea Trials costs brought into line with actuals) Dredging of Wallney Channel +£5.9 (Impact of VAT due to revised contracting strategy and movement in profile) Nuclear +£6.2 (Due to increase Nuclear Regulations the costs for maintaining the Barrow Nuclear Site Safety Licence) Combat Systems +£2.5 (Under Ice Detection previously not included or planned for Boat 5) offset by the release of Boat Manger Risk -£7.8m
01/03/2015	-1	Technical	FY 14/15 In Year Variance.

		Factors	Due to increase Nuclear Regulations the costs for maintaining the Barrow Nuclear Site Safety Licence have increased +£2m Previous planning assumptions were that NP IPT would fund the final Core H0 payment. This assumption was found to be wrong resulting in £0.7m increase to the forecast Increases have been offset by the release of Boat Manager Risk.
01/03/2015	-2	Technical Factors	FY 14/15 Variance. ACTS costs -£1.2m (Boat 5 Training not yet contracted) Combat Systems -£1.7m (Delayed contract placement) offset by minor BAE Increase £0.9m
Net Variation (£m)	**+55**		

B.3.1.6 Astute Boat 5 (Historic)

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 14	-30	-3	Budgetary Factors
		-27	Technical Factors
MPR 13	-59	+7	Accounting Adjustments and Re-definitions
		-52	Technical Factors
		-14	Budgetary Factors
MPR 12	+26	+76	Technical Factors
		-50	Receipts
MPR 10	-37	-37	Budgetary Factors
Net Variation (£m)	**-99**		

B.3.1.7 Astute Boat 6 (In-Year)

Date	Variation (£m)	Category	Reason for Variation
01/03/2015	+4	Accounting Adjustments and Re-definitions	ABC Years New Costs have been included for additional overheads to align with the latest overhead quantum £14.2m offset by benefits from the investment in BAE's Business Improvement Plan -£5.6m and by a change in BAE's pension from defined benefits to defined contributions for new staff Savings -£5.1
01/03/2015	+0	Technical Factors	ABC Variances. BAE Prime costs have increased by Labour +£96m, Material +£8m offset by the release of risk provision £94, Profit -£4 and a SEPP Saving -£6m
01/03/2015	-7	Technical Factors	ABC Years. Increase across the Non Prime lines Nuclear +£5.7 (Due to increase Nuclear Regulations the costs for maintaining the Barrow Nuclear Site

			Safety Licence) offset by Combat Systems -£4.8m (Transfer of funding for NEST now covered by Networks Approval), Boat Manager Risk -£6.7 and movement across remaining lines -£1.3m
01/03/2015	+9	Technical Factors	FY 14/15 Variance. Reduction in BAE labour cost -£4m offset by Material Increase £15m and Profit reduction -£2m.
01/03/2015	+6	Technical Factors	FY 14/15 Variance. Inclusion of NP IPT Foundation contract costs not included within Baseline £6m
01/03/2015	+6	Technical Factors	FY 14/15 Variance. RC&I transfer shortfall £7m, offset by minor decreases in ACTS -£0.8m, Nuclear -£0.3m and Combat Systems -£0.02m
Net Variation (£m)	**+18**		

B.3.1.8 Astute Boat 6 (Historic)

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 14	+5	+8	Budgetary Factors
		-3	Technical Factors
MPR 13	-54	+3	Accounting Adjustments and Re-definitions
		-40	Technical Factors
		-17	Receipts
MPR 12	-13	-2	Technical Factors
		-11	Budgetary Factors
MPR 11	-	-1	Budgetary Factors
		+1	Accounting Adjustments and Re-definitions
MPR 10	-2	-2	Budgetary Factors
Net Variation (£m)	**-64**		

B.3.1.9 Astute Boat 7 (In-Year)

Date	Variation (£m)	Category	Reason for Variation
01/03/2015	+5	Accounting Adjustments and Re-definitions	ABC Years New Costs have been included for additional overheads to align with the latest overhead quantum £19.6m offset by benefits from the investment in BAE's Business Improvement Plan -£8.3m and by a change in BAE's pension from defined benefits to defined contributions for new staff Savings -£6

01/03/2015	-78	Technical Factors	ABC Variances. BAE Prime costs have increased for Labour +£36m but have been offset by Material -£51m (see In Year Variance) , Risk provision -£64, Profit -£15, VAT +£23 and a SEPP Saving -£6m
01/03/2015	+10	Technical Factors	ABC Years Increase across the Non Prime Lines Nuclear +£9.9 (Due to increase Nuclear Regulations the costs for maintaining the Barrow Nuclear Site Safety Licence),
01/03/2015	+4	Technical Factors	ABC Years Dredging of Walney Channel +£3.9 (Impact of VAT due to revised contracting strategy and movement in profile)
01/03/2015	+13	Technical Factors	ABC Years Boat Manage Risk +£14.3 (Funding included for activities and materials to protect Boat 7 from Last of Class issues) offset by movement across remaining lines -£0.8m
01/03/2015	+6	Technical Factors	FY 14/15 Variance. Inclusion of NP IPT Foundation contract costs not included within Baseline £6m
01/03/2015	+11	Technical Factors	FY 14/15 Variance. Increase in Prime BAE numbers £14m due to the release of material funding earlier than planned to protect the programme offset by decreases in the apportionment of Nuclear Site Safety costs to Boat 7 – £3.2m.
Net Variation (£m)	**-29**		

B.3.1.10 Astute Boat 7 (Historic)

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 14	+61	-2	Budgetary Factors
		+63	Technical Factors
MPR 13	-9	+13	Accounting Adjustments and Re-definitions
		-22	Technical Factors
MPR 12	-25	-25	Budgetary Factors
Net Variation (£m)	**+27**		

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)
Initial Astute Support Solution	190	144	-46	0
Astute Class Support	590	425	-165	-96
Astute Class Training Service Boats 1-3	151	627	+476	-59
Astute Class Training Service Boat 4	260	90	-170	-3
Total (£m)	**1191**	**1286**	**+95**	**-158**

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

B.4.1.1 Initial Astute Support Solution (In–Year) – N/A

B.4.1.2 Initial Astute Support Solution (Historic)

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.4.1.3 Astute Class Support (In-Year)

Date	Variation (£m)	Category	Reason for Variation
01/03/2015	-33	Accounting Adjustments and Re-definitions	Change of modelling assumptions to reflect more accurate position against approval. Now excludes all transfers to in service authorities and including all other costs up until Boat 7 OH +3 Months
01/03/2015	-23	Technical Factors	ABC 15 variances - Reduction in risk provision required following a review by project manager.
01/03/2015	-16	Accounting Adjustments and Re-definitions	The exclusion of STOROB costs within the plan (previously subsumed within the spares forecast) as outside of the scope of the approval.
01/03/2015	-14	Technical Factors	In Year realism of BAE performance to purchase Capital Spares and constraints of commercial resource.
01/03/2015	-8	Budgetary Factors	14/15 In-Year Savings measures - costs removed for Internal comms. Spares, Dii installation and combat

			systems and taken at risk following assessment of contractor performance.
01/03/2015	-3	Technical Factors	ABC 15 variances - minor movements caused by changes in requirement.
Net Variation (£m)	**-96**		

B.4.1.4 Astute Class Support (Historic)

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 14	-27	-7	Budgetary Factors
		-6	Procurement Processes
		-14	Accounting Adjustments and Re-definitions
MPR 13	-42	-42	Technical Factors
Net Variation (£m)	**-69**		

B.4.1.5 Astute Class Training Service Boats 1-3 (In-Year)

Date	Variation (£m)	Category	Reason for Variation
01/03/2015	-37	Technical Factors	Decrease driven by a revised profile and forecast for the PFI contract - £31m caused by a reassement of the PFI training end date by the project manager which has shortened the funding profile by 4 years and the subsequent impact on the VAT -£6m.
01/03/2015	-22	Technical Factors	Decreases in the expected costs for the provision of Data from BAE to FAST -£6m, a lower estimate of Change -£2m and a reduction in Risk provision -£13m
Net Variation (£m)	**-59**		

B.4.1.6 Astute Class Training Service Boats 1-3 (Historic)

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 14	+36	+1	Budgetary Factors
		+21	Technical Factors
		+2	Accounting Adjustments and Re-definitions
		+12	Inflation
MPR 13	-9	-9	Technical Factors
MPR 12	+12	+2	Budgetary Factors
		+10	Technical Factors
MPR 11	+60	+56	Budgetary Factors
		+4	Technical Factors
MPR 10	-3	-2	Budgetary Factors
		-1	Technical Factors
Pre-MPR	+440	+83	Budgetary Factors
		+357	Technical Factors
Net Variation (£m)	**+535**		

B.4.1.7 Astute Class Training Service Boat 4 (In-Year)

Date	Variation (£m)	Category	Reason for Variation
01/03/2015	-3	Technical Factors	Decrease driven by revised forecast from Project Manager for Operation Phase -£4.1m, Change +£2m and Insurance advisors -£1.2m
Net Variation (£m)	**-3**		

B.4.1.8 Astute Class Training Service Boat 4 (Historic)

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 14	-98	-96	Procurement Processes
		-2	Technical Factors
MPR 13	-10	-32	Technical Factors
		+19	Accounting Adjustments and Re-definitions
		+3	Changed Capability Requirement
MPR 12	-117	-117	Changed Capability Requirement
MPR 11	+51	+48	Budgetary Factors
		+3	Technical Factors
MPR 10	+7	+7	Technical Factors
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 2014 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2015 (£m)
Assessment Phase	29		29
Demonstration & Manufacture Phase	5588	640	6228
Support Phase / Service / PFI Cost	331	42	373
Total Expenditure	**5948**	**682**	6630

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

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 (In-Year) – N/A

C.3.3.2 Astute Boats 1-3 (Historic)

MPR	Annual Variation (+/- months)	Variation by Category (+/- months)	
MPR 11	-3	-3	Technical Factors
MPR 10	+4	+4	Technical Factors
MPR 09	+10	+10	Technical Factors
Pre-MPR	+47	+47	Technical Factors
Net Variation (£m)	**+58**		

C.3.3.3 Astute Boat 4 (In-Year) – N/A

C.3.3.4 Astute Boat 4 (Historic)

MPR	Annual Variation (+/- months)	Variation by Category (+/- months)	
MPR 11	+29	+29	Budgetary Factors
Net Variation (£m)	**+29**		

C.3.3.5 Astute Boat 5 – N/A

C.3.3.6 Astute Boat 6 – N/A

C.3.3.7 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

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

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.5.2.1 Go-Live Date Variation

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 (In-Year) – N/A

C.5.2.5 Astute Class Training Service Boats 1 – 3 (Historic)

MPR	Annual Variation (+/- months)	Variation by Category (+/- months)	
Pre-MPR	+50	+50	Technical Factors
Net Variation (£m)	**+50**		

C.5.2.6 Astute Class Training Service Boat 4 (In-Year) – N/A

C.5.2.7 Astute Class Training Service Boat 4 (Historic)

MPR	Annual Variation (+/- months)	Variation by Category (+/- months)	
MPR 11	+35	+22	Technical Factors
		+13	Budgetary Factors
Pre-MPR	-18	-18	Changed Capability Requirement
Net Variation (£m)	**+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

C.5.3.4 Astute Class Training Service Boats 1-3 (In-Year) – N/A

C.5.3.4 Astute Class Training Service Boats 1-3 (Historic)

MPR	Annual Variation (+/- months)	Variation by Category (+/- months)	
Pre-MPR	+132	+72	Technical Factors
		+60	Procurement Processes
Net Variation (£m)	**+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	Comments
NA	Sentinel Scores for Boats 1 – 3
56	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)		8	0

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	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)			9 (0)	0

D.3.1.2 Key Performance Measures Variation

Date	DLOD	Category	Reason for Variation
Historic	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	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	DLOD	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 years 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

KPM	Date	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	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.3.3.2 Key Performance Measures Variation

Date	DLOD	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

KPM	Date	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	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	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	09/05/2013	
Project/Increment Name	**Current Status of Projects / Increments**	
ASRAAM USE	Post-Main Investment Decision	
Brimstone USE	Post-Main Investment Decision	
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 designed to meet 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 procurement 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 & Security 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

Pre MPR14

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. 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.

MPR14

The Brimstone 2 programme 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, 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)

Pre MPR14

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.

MPR14

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 Anti-Surface Guided Weapon (Heavy)

Pre MPR14

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.

MPR14

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)

MPR14

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.

Future Local Area Air Defence System (Land) Assessment Phase

MPR14

The FLAADS (Land) Initial Gate Business Case was submitted to the Investment Approvals Committee 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.

Brimstone Support USE

MPR14

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.4. In-Year Progress

Sea Ceptor

The two planned Guided Firings of the Common Anti-Air Modular Missile were completed successfully in May / June 2014. The Intent To Fit on the First of Class vessel was confirmed by the Chair of the Sea Ceptor Project Board and the Type 23 Platform Duty Holder in June 14. The Design Freeze Review started in May 14 and was concluded in November 14.

FLAADS(Land) Assessment Phase

The assessment phase programme fed into the Ground Based Air Defence – Falkland Island Phase 1 Main Gate Business Case, which was brought forward to December 2014. The remainder of the assessment phase will continue to July 2015 and inform the Land Ceptor GBAD Phase 1 Demonstration Phase which has now commenced.

Land Ceptor (GBAD Phase 1)

The Main Gate Business Case for FLAADS (Land) was brought forward to Dec 14. The Land Ceptor GBAD Phase 1 contract was placed on 05 January 15; the project has been officially named LAND CEPTOR and is referred to as such throughout the PSS.

Land Ceptor forms part of Phase 1 of the wider Ground Based Air Defence Programme, led by the Joint Sensor and Engagement Networks (JSENS) Delivery Team within the Intelligence Surveillance Target Acquisition & Reconnaissance Operating Centre. JSENS are responsible for delivery of Battlefield

Mission Command, Control, Communication, Computers and Intelligence, *** Giraffe Agile Multi-Beam (G-AMB) sensors and all associated non-equipment Defence Lines of Development..

The Short Range Air Defence Project Team, within the Weapons Operating Centre, is responsible for the development and delivery of the Launcher, direct integration with the Giraffe Agile Multi Beam (G-AMB) radar, the procurement of the Common Anti-air Modular Missile stockpile and the Land Ceptor-specific training, Infrastructure and Logistics requirements.

Whilst the SHORAD Project Team retains responsibility for Land Ceptor and its integration with the G-AMB radar, it is not responsible for the availability of G-AMB, nor leading on the non-equipment DLODs; accountability remains within JSENS. Chief of Material (Joint Enablers) directed that, rather than having two Project Teams working to different goals, the single ownership of the capability within Defence Equipment and Support was preferred. As JSENS sits within Chief of Material (Joint Enablers)'s area, it was decided that JSENS would hold overall accountability for Phase 1 and Phase 2.

The money for the Land Ceptor element of Phase 1 sits within Weapons, Evaluation & Capability Assurance and therefore the Through Life Enabling Contract was seen as the most logical route for placing the work on contract with MBDA.

Future Anti-Surface Guided Weapon (Light)

A contract with Thales for FASGW(L) was placed on 12 June 2014, followed by a contract with Agusta Westland for the integration of FASGW onto the Wildcat helicopter that was placed on 13 June 2014. The Preliminary Design Review for FASGW(L) was completed by Mar 2015.

Future Anti-Surface Guided Weapon (Heavy)

The Preliminary Design Review for FASGW(H) was held in June 2014 The first Product Gate 1 Ballasted Dummy Missile became available on 28 February 2015

Brimstone 2

Qualification of both energetic sub-systems (warhead and rocket motor) completed successfully in July 2014, two months ahead of schedule. Certificates of Design were issued for Brimstone 2 Missiles and Weapon Systems and signed by the Maritime & Air Weapon Systems Project Team Leader in November 2014, two months ahead of schedule. Final 'Operational Evaluation Trial' commenced in February 2015 as planned. While the majority of trials objectives were met, several warheads did not detonate, requiring further work to ensure that the issue does not recur. Missile production was halted until identification and agreement of a resolution.

SPEAR Cap 3

In December 2013 the Surface Attack Project Team presented a Review Note to the Investment Approvals Committee seeking approval for an increase in the cost and time of the project's Assessment Phase. In March 2014 Director General Finance directed that further work be undertaken before approval could be given. This work was completed and in April 2014 the required clarifications were provided to Defence Portfolio and Approvals Secretariat.

In June 2014 DG Finance approved part of the cost increase and requested a Project update at the turn of the year. In February 2015, after a comprehensive project review, the Investment Approvals Committee approved the full cost and time increases to the Assessment Phase and noted that the SPEAR Cap 3 Key User Requirements had been re-endorsed by Air Command. The Team Complex Weapons solution, MBDA's SPEAR Cap 3 weapon, is the only weapon in the market that fulfils all the Key User Requirements (the US Small Diameter Bomb 2 (SDB2) weapon falls short on a number of the Key User Requirements) and there is clear Operational Analysis that supports the UK procurement of SPEAR Cap 3. The Investment Approvals Committee also approved the Spear Cap 3 Main Gate being deferred until 2018 with the development of the SPEAR Cap 3 weapon being continued through to 2018 with MBDA via an Assessment Phase extension, a business case for which is planned for submission to the Investment Approvals Committee in January 2016.

Brimstone Unified Support Environment

USE achieved Full Service Capability in Quarter 3 of 2014. Since then the Unified Support Environment contract was challenged by a significant increase in demand for Dual Mode Brimstone as a result of Operation SHADER (the British participation in the ongoing military intervention against Islamic State in Iraq). A significant increase in availability of the existing stockpile was enabled by joint working between MBDA UK Ltd and Defence Equipment and Support as well as an uplift in stock. This has continued with Operation SHADER now expected to be an enduring commitment.

Advanced Short Range Air to Air Missile (ASRAAM) USE

A Business Case seeking approval for an In Service Support (ISS) solution using an Asset Availability Service was presented on 11 June 14. On 22 August 2014 Weapons, Evaluation & Capability Assurance approved the case and on 29 August the case was approved by Defence Portfolio and Approvals Secretariat. The Contract was let the following month and progress against the USE contract has been satisfactory. In the initial stages of the contract there were some minor issues with meeting the customer requirements for some assets at specific locations. However the shortcomings were within the permitted levels for that point in the contract. Note: The Contract Go Live date in Section C shows April 14. This is when MBDA began to provide the service. Between April and September the Company provided the service at their own risk in advance of the Contract being formally approved.

A.5. Capability Risks

Interim Main Gate 1

Brimstone 2 - replaces the legacy Brimstone missile's energetics and airframe with a new Insensitive Munitions 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 is planned to be the primary air-to-ground armament for the Joint Combat Aircraft/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.

Land Ceptor (GBAD Phase 1)

Land Ceptor will provide a replacement to the Rapier Ground Based Air Defence system towards the end of the decade and provide increased capability over the current system to match the increased in threat over the next 20 years.

With the addition of the Ground Based Air Defence Phase 2 capability, Land Ceptor will form part of a fully networked Ground Based Air Defence system.

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

FASGW will provide the Royal Navy with a missile enabling the Surface Combatant Maritime Rotorcraft, 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. ***

ASRAAM Unified Support Environment

ASRAAM 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 31 March 19. The in-service support solution meets the customer's requirement and there is sufficient stockpile to maintain the capability out to the current contract end date. The capability risk is considered to be low, but there is a dependency on ongoing life-extension programmes delivering their expected outcomes.

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
G-AMB Radar	Land Ceptor (GBAD Phase 1) – Mar 19	Pre-Approval

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
Land Ceptor GBAD Phase 1	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 and the Advanced Short Range Air to Air Missile (ASRAAM) are the first projects that have been contracted using the Unified Support Environment approach, with Storm Shadow to follow in Financial Year 15/16. 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	198	191	-7
Future Local Area Air Defence System (Land)	40	40	0
Total (£m)	**477**	**467**	**-10**

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	-
Land Ceptor GBAD Phase 1	377	384	392
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	256	+10	-1
Brimstone 2				
Sea Ceptor Demonstration & Manufacture	850	849	-1	0
Land Ceptor GBAD Phase 1	384	361	-23	-23
Future Anti-Surface Guided Weapon (Heavy)	392	374	-18	-17
Future Anti-Surface Guided Weapon (Light)	311	311	0	+5
Total (£m)	**2183**	**2151**	**-32**	**-36**

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

B.3.1.1 Fire Shadow & Brimstone 2 (In-Year)

Date	Variation (£m)	Category	Reason for Variation
Mar-15	-1	Budgetary Factors	A Control Total transfer in FY14/15 to air warfare centre for operational evaluation.
Net Variation (£m)	**-1**		

B.3.1.1.1 Fire Shadow & Brimstone 2 (Historic)

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 14	+10	+10	Technical Factors
MPR 13	+4	+4	Technical Factors
Pre-MPR 13	-3	-3	Change in Capability Requirement
Net Variation (£m)	**+11**		

B.3.1.2 Sea Ceptor Demonstration & Manufacture (In-Year) – N/A

B.3.1.2.1 Sea Ceptor Demonstration & Manufacture (Historic)

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 12	-1	-1	Technical Factors
Net Variation (£m)	**-1**		

B.3.1.3 Future Anti-Surface Guided Weapon (Heavy) [In-Year]

Date	Variation (£m)	Category	Reason for Variation
Mar-15	-3	Exchange Rate	The Contract payment plan was originally costed using £1:€1.15. Actuals in Financial Year 14/15 have averaged £1:€1.30
Mar-15	-11	Accounting Adjustments	Funds transferred out of FASGW(H) as work will be contracted through FASGW(L).
Mar-15	-3	Budgetary Factors	Funding requirement in financial year 14/15 was lower than planned.
Net Variation (£m)	**-17**		

B.3.1.3.1 Future Anti-Surface Guided Weapon (Heavy) [Historic]

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 14	-1	-1	Exchange Rate
Net Variation (£m)	**-1**		

B.3.1.4 Future Anti-Surface Guided Weapon (Light) [In-Year]

Date	Variation (£m)	Category	Reason for Variation
Mar-15	+11	Accounting Adjustments	Increase in non Prime costs with Agusta Westland for FASGW(H) work being contracted through the FASGW(L) Project.
Sep-14	-5	Procurement Processes	Reduction in Prime costs due to Contract being placed using lower labour rates.
Net Variation (£m)	**+6**		

B.3.1.4.1 Future Anti-Surface Guided Weapon (Light) [Historic]

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 14	-5	-5	Procurement Processes
Net Variation (£m)	**-5**		

B.3.1.5 Land Ceptor GBAD Phase 1 [In-Year]

Date	Variation (£m)	Category	Reason for Variation
Mar-15	-23	Procurement Processes	This reduction reflects the benefit that MOD received from agreeing that MBDA Italy would undertake an element of the programme, which reduced the design work that MBDA UK had to complete. A Contract amendment to reflect this was put in place in Mar-15.
Net Variation (£m)	**-23**		

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
ASRAAM Unified Support Contract	40	40	0	0
Total (£m)	82	82	0	0

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2014 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2015 (£m)
Assessment Phase	378	49	427
Demonstration & Manufacture Phase	556	248	804
Support Phase / PFI Cost	5	17	22
Total Expenditure	**939**	**314**	**1253**

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
Land Ceptor (GBAD-Phase 1)	September 2018	March 2019	January 2020
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	Initial Operating Capability provides *** missiles with at least *** Air Carriage Hours and full Release to Service for deployment on Tornado GR4. This capability is forecast to be available from May 2016, subject to further assessment of the firing failures during the March 2015 trials.
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.
Land Ceptor (GBAD-Phase 1)	Phase 1 (GBAD-Early Operating Capability) is defined as: the delivery of Land Ceptor suitably scaled and prioritised, including *** launchers (and associated support vehicles); *** Common Anti-Air Modular Missile (CAMM) missiles and initial spares support; direct integration of the Giraffe Agile Multi-Beam (G-AMB) sensor; the provision of *** G-AMB sensors; Defence Lines of Development sufficient to support Phase 1 deployments.
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	May 2016	+43	+6
Sea Ceptor Demonstration and Manufacture	November 2016	November 2016	-	-
Land Ceptor (GBAD-Phase 1)	March 2019	March 2019	-	-
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

C.3.3.2 Brimstone 2 (In-Year)

[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.

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Date	Variation (+/- months)	Category	Reason for Variation
Mar 15	+6	Technical Factors	'Operational Evaluation Trial' commenced in February 2015, but six of eight missiles failed to detonate. The trial was suspended and an investigation into the cause of failures commenced. Work to resolve the technical issues will add six months to the programme.
Net Variation (+/- months)	**+6**		

C.3.3.3 Brimstone 2 (Historic)

MPR	Annual Variation (+/- months)	Variation by Category (+/- months)	
MPR 13	+9	+9	Technical Factors
MPR 12	+23	+23	Technical Factors
Pre-MPR	+5	+5	Technical Factors
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	MPR	£m (+ Cost / - Saving)	Reason for expenditure or saving
Brimstone 2	MPR 13	14	**Technical Factors**
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 plus Urgent Operational Requirement standard missiles.

C.4 Full Operating Capability

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 vi. Successful completion of Guided Firings – June 2014 vii. Intent To Fit on First of Class vessel confirmed – June 2014 viii. Successful completion of the Design Freeze Review – November 2014
GBAD-FI Phase 2	Further integration of Phase 1 systems with the necessary Battlefield Mission Command, Control, Communication, Computers and Intelligence (BMC4I) system; the delivery of systems support to meet the system availability requirement and ensure the required level of repair and maintenance is met; the delivery of all other Defence Lines of Development (DLODs), including suitably trained and experienced personnel to operate, repair and maintain the system as required; integration with Project GUARDIAN to produce a fully integrated system of systems.	Land Ceptor Contract Award January 15. Pre Qualification Questionnaire for BMC4I released to Industry.

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 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.	FASGW(H) Demonstration and Manufacture on contract 26 March 2014. Preliminary Design Review held in June 2014 First Product Gate 1 Ballasted Dummy Missile available 28 February 2015.
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 on contract 12 June 2014. Preliminary Design Review for FASGW(L) completed by March 2015. FASGW Demonstration and Manufacture Contract for Wildcat integration on contract 13 June 2014.

C.5 Support / Training / PFI Contract

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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.
ASRAAM Unified Support Contract	ASRAAM was the second of the initial tranche of equipments to be supported under the USE Construct. As part of the Asset Availability Service this project is testing the premise that this approach to in-service support is the optimum to the Front Line Command and will provide savings to the portfolio.

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	-	-
ASRAAM Unified Support Contract	April 2014	April 2014	-	-

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	-	-
ASRAAM Unified Support Contract	March 2019	March 2019	-	-

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

Project	Current Score	Comments
Fire Shadow	N/A	
Brimstone 2	65	
Sea Ceptor	79	
Future Anti-Surface Guided Weapon (Heavy)	82	
Future Anti-Surface Guided Weapon (Light)	89	

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 (0)	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.

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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)	0
	Last year's forecast (with risks)		8 (1)	0

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)	0
	Last year's forecast (with risks)		8(1)	0

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

D.2.5.1 Land Ceptor (GBAD-Phase 1)

Line of Development		Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
1	Equipment	Delivery and acceptance of * [currently undefined] Systems.	Yes	

2	Training	Delivery of Individual Training Solution on live equipment (Collective training part of Phase 2).	Yes	
3	Logistics	Industrial In-service support solution in place	Yes	
4	Infrastructure	Infrastructure changes to Thorney Island in line with Land Ceptor basing requirement.	Yes (with Risks)	
5	Personnel	Supply of sufficient qualified personnel (as part of Phase 2)	Yes	
6	Doctrine	Principles for capability employment (as part of Phase 2)	Yes	
7	Organisation	Organisation in place to exploit capability. (as part of Phase 2)	Yes	
8	Information	information interfaces defined, proven and accredited (as part of Phase 2)	Yes	
	Currently forecast (with risks)		8(1)	0
	Last year's forecast (with risks)		N/A	N/A

D2.5.2 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	

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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	DLOD	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	Forecast to be	

		capability that operates from {Wildcat}.	met	
Currently forecast (with risks)			5	0
Last year's forecast (with risks)			5	0

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)			5	0

D.3.5.2 Key Performance Measures Variation – N/A

D.3.5.3 Operational Impact of variation – N/A

D.3.6 Land Ceptor (GBAD-Phase 1)

D3.6.1 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 successfully <defeat> Fixed Wing Aircraft	Forecast to be met	
KUR 2	Equipment Doctrine	The User shall be able to <defeat> multiple raids	Forecast to be met	
KUR 3	Equipment Doctrine	The User shall be able to conduct assigned Short Range Air Defence Tasks	Forecast to be met	
KUR 4	Equipment Training Doctrine	The User shall be able to <utilise> the <System> in specified <Environmental Conditions>.	Forecast to be met	
KUR 5	Equipment Information Interoperability	The User shall <operate> within the permitted <Radio Frequency Spectrum>	Forecast to be met	

COMPLEX WEAPONS

KUR 6	Equipment Training	The <User> shall be [trained] to <Utilise>".	Forecast to be met	
KUR 7	Equipment Logistics	The User shall be able to sustain the system through life.	Forecast to be met	
KUR 8	Equipment Training Logistics	The User shall be able to complete the <Battle Field Mission> without a <Essential Functional Failure>.	Forecast to be met	
KUR 9	Equipment Logistics	The User shall be able to utilise the standard supply system	Forecast to be met	
Currently forecast (with risks)			9 (0)	0
Last year's forecast (with risks)			N/A	N/A

D.3.6.2 Key Performance Measures Variation – N/A

D3.6.3 Operational Impact of Variation – N/A

D.4 Support Contract – USE

D.4.1 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)			1(1)	0

D.4.1.2 Key Performance Measures Variation – N/A

D.4.1.3 Operational Impact of variation – N/A

D.4.2 ASRAAM Weapon System Support - USE

D.4.2.1 Performance against Key Performance Measures (KPM)

KPM	DLOD	Description	Met / Forecast to be met (with risks)	Not met / Forecast not to be met
	Logistic Support	ASRAAM WSS – USE Initial Service Capability – November 2014	Met	
	Logistic Support	ASRAAM WSS – USE Full Service Capability – February 2015	Met (with minor risk)	
Currently forecast (with risks)			1(1)	0
Last year's forecast (with risks)			N/A	N/A

D.4.2.2 Key Performance Measures Variation – N/A

D.4.2.3 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)	24/04/14	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

Requirement Changes

Following a *** in the prototype core at the Naval Reactor Test Establishment (NRTE), the Secretary of State (SofS) of Defence announced on 6th March 2014 (Hansard ref 1077-1088) the intent to refuel HMS Vanguard and to maintain options to refuel HMS Victorious. The decision has significantly impacted upon CPC along with 8 other projects. As a result of the SofS' announcement the '***new requirement'*** *for CPC* is to manufacture one additional Core H and maintain the option open to enable refuel of HMS Victorious should the decision be made to do so. This has consequently increased the approved scope at Main Gate in 2012. The impact on cost and time was included in the Core H Refuel and Resilience (CHRAR) Review Note, which was approved by the MoD Investment Appraisal Committee (IAC) in March 2015. The new approval, including the increase in requirements has been reflected in this PSS.

Background

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 since the 1960s. RR are the only company with the capability to design and manufacture nuclear fuel for this specialist application.

To conduct nuclear operations on the Raynesway Site, Rolls-Royce Marine Power Operations Limited is 'Licensed' formally by the 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.

Delivery

Pre 6th March 2014

• Delivery Confidence: Green
• Broadly on track to deliver to time and cost, following initial delay to the start of construction, following extended contract negotiations (contract placement in 2012).
• Graham Construction makes positive progress to the start of phase 1 construction (new Clean Shop, Reception Centre & Energy Centre).
• CH2MHILL (Regeneration Project Management) provide valuable experience to deliver regeneration to time and cost.
• Gained 1 month back against MPR 2014.
• 'Gain and Maintain control' workstream highlighting quality issues but plans are in place and on track to deliver core requirements to meet both the Submarine programme and CPC (Main Gate scope) Programme.

Post 6th March 2014

• Delivery Confidence: Amber – to reflect the additional challenges the project faces following the increased scope of the project.
• 5 year deferment to the demolition of the current (old) clean shop and subsequent start of phase 2 of regeneration in order to provide the increased capacity to manufacture the additional core and to maintain the option open to refuel HMS Victorious, without impact on the production of Core J for Successor
• Cost impact of **£196M** (CDEL & RDEL, inc risk, profit & VAT) to cover parallel running of two Clean Shops (inc running costs), additional inspection capacity, resources and core materials, revised Nuclear Site Safety case to ONR.
• MoD working with R-R and CH2MHILL to reduce impact and realise opportunities on the Regeneration

acivities.
• Current planning assumption is that there is no impact to Astute or Successor programmes in terms of reactor core delivery.

The forecast for the completion of all the new facilities is now June 2026, due to the deferment of the second phase of construction by five years in order to manufacture the additional H Cores. This date is five years later than the date of May 2021 approved at Main Gate.

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.

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 piling commenced.

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

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 Manufacturing Facility 1st Build was completed.

October 2013: Steel frame erected for the Energy Centre.

November 2013: As a result of a requirement for the improved inspection of J Core, arising from Naval Reactor Test Establishment investigations, a Baseline Change Request was approved for Rolls-Royce to investigate the impact of improved techniques. The impact of this decision is not reflected in MPR14.

December 2013: Steel frame erected for the Reception Centre.

March 2014: Steel frame work erected for Manufacturing Facility 1st Build.

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 Naval Reactor Test Establishment. As a result, CPC plans to present a Review Note to the IAB in November 2014. The impact of this decision is not reflected in MPR14, but will lead to additional H Cores and associated costs.

A.4. In-Year Progress

April 2014: Decision to enhance the core production inspection regime for Core J following manufacturing review in light of the *** on H Core.

September 2014: Commenced Manufacturing Facility 1st Build building services fit out.

October 2014: Completion of Reception Centre building structure and exterior walls.

November 2014: Revised Core H production rates established to deliver a reduced 12 month float on delivery for H10, H11 and H12 and 9 months float on H13 (replacement core for Astute Boat 7 – see below) and H14 (if required for HMS Victorious).

December 2014: Completion of Manufacturing Facility 1st Build structural frame.

January 2015: Core H Refuel and Resilience (CHRAR) Review Note submitted to the MoD Investment Appraisal Committee (IAC).

January 2015: Inspection capacity increased to de-risk product quality issues in the light of the ***.

March 2015: On the 9th, the IAC approved the Core H Refuel and Resilience Review Note. The Review Note included annexes from all nine projects impacted by the Secretary of State for Defence's announcement to Parliament on 6th March 2014. The CPC annex sought approval of a deferred Full Operating Capability date (5 years) and £196M to meet the requirement to manufacture at least one core and make provision for a second.

March 2015: Core H9 containerised ready for delivery to Barrow-in-Furness in *** to meet the core load programme in ***

April 2015: Core H production rates established and maintaining the 12 months float for H11 and H12 and 9 months for H13 and H14.
As a result of the diversion of core H10 from the Astute programme to refuel HMS Vanguard, and the consequential extension of H core production, to include an additional H core, there is increased pressure

on the manufacturing programme, resulting in reduced CPC programme float of 12 months for H11 and H12 and 9 months for H13 and H14.

The development and production of core J1 for Successor Boat 1 remains on track to meet the required delivery date to Barrow-in-Furness to support the requried In Service Date of 2028.

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.

The *** at the Naval Reactor Test Establishment has led to a substantial increase in the level of inspection required for current manufacturing in order to be confident that potential ***, associated with core manufacturing, are not present in future cores. This increased capacity has been delivered and is in operation.

A.6. Associated Projects

Project/Increment Name	Forecast In Service Date / Initial Operating Capability	Approval Status
Successor (inc Next Generation Nuclear Propulsion Plant)	ISD of 2028	Pre-Main Gate
Astute Class Boat 4	Core H9 delivered to Ship Yard in 2015 ISD of 2018 - Handover to Royal Navy	Post-Main Gate
Astute Class Boat 5	ISD of 2020 - Handover to Royal Navy	Post-Main Gate
Astute Class Boat 6	ISD of 2022 - Handover to Royal Navy	Post-Main Gate
Astute Class Boat 7	ISD of 2024 - Handover to Royal Navy	Post-Main Gate
HMS Vanguard	Core H10, Deep Maintenance Period (Refuel) 2016	N/A
HMS Victorious	Core H14 – TBD	If req'd

A.7. Procurement Strategy

Project/Increment Name	Contractor	Contract Scope	Contract Type	Procurement Route
Regeneration	Rolls-Royce	Demonstration and Manufacture	Ascertained Cost	Single Source
Sustainment	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.				
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)
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

NOTE: The 1190M above includes the £14M which was advanced into Assessment Phase. Although the £14M advance is reflected below in B.3. (NAO decided this is how it should be reported in MPR14).

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	1372	1360	-12	+16
Total (£m)	**1372**	**1360**	**-12**	**+16**

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

B.3.1.1 Core Production Capability (In-Year)

Date	Variation (£m)	Category	Reason for Variation
Mar-15	-5	Budgetary Factors	Greater maturity of the forecast cost of CHRAR, compared with the approval.
Mar-15	6.5	Technical Factors	Meeting enhanced production quality standards
Feb-15	-4	Budgetary Factors	Reduced Risk Management provision
May-14	24.5	Inflation	Increased Sustainment escalation provision from that agreed at Main Gate
May-14	-6	Accounting Adjustments and Re-definitions	Sunk Cost correction for FY 12/13
Net Variation (£m)	**+16**		

B.3.1.1.1 Core Production Capability (Historic)

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 14	+38	+26	Changed Capability Requirement
		+12	Technical Factors
MPR 13	-30	-26	Procurement Processes
		-4	Technical Factors
Pre-MPR	-36	-36	Procurement Processes
Net Variation (£m)	**-28**		

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

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

B.4.1 Cost variation against approved Support / PFI Cost - N/A

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2014 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2015 (£m)
Assessment Phase	107	-	107
Demonstration & Manufacture Phase	183	151	334
Support Phase / PFI Cost	-	-	-
Total Expenditure	**290**	**151**	**441**

In May 2012, the Investment Approvals Committee approved £1190 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*	June 2026	+61	+52

***** The date of May 2021 reported above was approved at Main Gate in 2011. An updated FOC date of June 2026 was included within the IAC approved Core H Refuel & Resiliance Review Note.

C.3.3 Timescale variation

C.3.3.1 Core Production Capability (In-Year)

Date	Variation (+/- months)	Category	Reason for Variation
Mar-15	+51	**Changed Capability Requirement**	As a consequence of the SofS announcement on 6th March 2014, deferment from the approved Full Operating Capability date of May 2021, in the Main Gate Business Case.
Aug-14	-1	Technical Factors	Correction made to errors that were identified in the summary schedule that was used to produce the timescale risk analysis.
Jun-14	+2	**Changed Capability Requirement**	To improve confidence following SofS announcement on 6th March 2014 additional manufacturing inspection techniques added to the baseline programme
Net Variation (+/- months)	**+52**		

C.3.3.2 Core Production Capability (Historic)

CORE PRODUCTION CAPABILITY

MPR	Annual Variation (+/- months)	Variation by Category (+/- months)	
MPR 14	+6	+6	Technical Factors
MPR 13	+3	+3	Procurement Processes
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	There is no operational impact as a result of the deferred FOC. There is no impact to the J1 delivery date as a result of the deferment, and delivery of reactor cores remains on schedule to meet the operational programme. Opportunities are being progressed to improve the forecast P50 date for Full Operating Capability.

C.4 Full Operating Capability – see above

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

D. Section D: Performance

D.1 Sentinel Score

Current score	Comments
82	Amber/Green. Date published 31 March 2015

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

*The above DLOD's are assessed against the Office of Nuclear Regulations (ONR's) Licence Conditions (LC's). If a formal improvement notice is raised this will be identified as a risk to one of the above DLOD's. Once the improvement notice is lifted the risk will be removed. To date **NO** improvement notices have been issued against the Licencee.*

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

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

D.3.1 Core Production Capability – N/A

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, and which must be of sufficient quality to satisfy the NSRP Technical Authority, the Naval Reactor Plant Authorisee (NRPA), and MoD nuclear regulator: DNSR.	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

LIGHTNING II

Project Name		
Lightning II		
Team Responsible		
Lightning Project Team		
Senior Responsible Owner	**Date Appointed**	**Planned end date**
Air Commodore Lincoln Taylor (Air Capability)		
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, latterly renamed Lightning II in the UK, 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.

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).

LIGHTNING II

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 (BK-1) at Lockheed Martin's Fort Worth facility in Texas USA, which commenced flying operations at Eglin Air Force Base later that year. The UK took delivery of its second F-35B aircraft (BK-2) in August 2012.

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 14 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.

A.4. In-Year Progress

In November 2014 the UK ordered four F-35B aircraft.

The Lightning II Main Operating Base at RAF MARHAM reached initial gate approval (Project Anvil) for general F-35 basing facilities and infrastructure.

In January 2015 17(R) Squadron was established as the UK's F-35 Test and Evaluation squadron at Edwards Air Force Base in California USA. BK1 and BK2 were transferred to 17(R) Squadron.

In March 2015 BK3 was transferred to US Marine Corps Air Station at Beaufort in North Carolina USA to continue to support UK core pilot and maintainer training.

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) – February 2018	Post Main Gate
Project Anvil	First Aircraft Arrival – 3 August 2018	Post Initial 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 Global Support Solution will be delivered in 2 discrete phases; the interim solution during Low Rate of Initial Production (LRIP) out to 2018 and then full solution concurrent with Full Rate Production from 2019. The interim solution will be US focussed, with Lockheed Martin and Pratt & Whitney operating as the interim Product Support Integrator to deliver support. Transition to the full solution will be incremental, with support capabilities outside of the USA standing up from 2017 onwards. Plans for delivery to the global solution continue to mature, with the overall Support Strategy for the Joint Strike Fighter programme remaining as a performance based logistics approach with multinational availability type contracts.

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	1744	-130	-15
Production, Sustainment & Follow on Development	3748	3203	-545	-74
Total (£m)	**5622**	**4947**	**-675**	**-89**

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

B.3.1.1 System Development & Demonstration (In-Year)

Date	Variation (£m)	Category	Reason for Variation
Jun-14	-32	International Collaboration	MPR15: Re-negotiation of Ship Integration contract with Lockheed Martin leading to a reduction in the total funds required to deliver the associated activities and milestones.
Jun-14	+12	Accounting Adjustments and Re-definitions	MPR15: Re-allocation of Project Support costs from the Production Sustainment & Follow on Development (PSFD) project code to System Development & Demonstration (SDD) to align with SDD definitions and original approval.
Oct-14	+18	Accounting Adjustments and Re-definitions	MPR15: Re-allocation of Infrastructure design costs from the Production Sustainment & Follow on Development (PSFD) project code to System Development & Demonstration (SDD) to align with SDD definitions and original approval.
Jun-14	-14	Technical	MPR15: Annual Budgeting Cycle 15

Oct-14		Factors	(ABC15) risk review including; ARM Risk Review (-£23.5M), refined mitigation plans for Life Support System, Cabin Noise and Pilot Vehicle Interface (+£3M). Forecast cost increase to support Weapons activities and independent specialist technical support (+£3M), Voyager Trials (+£1.5M), and other minor activities (+£1M).
Mar-15	+1	Exchange Rate	MPR15: FY14/15 in year exchange rate variance
Net Variation (£m)	**-15**		

B.3.1.2 System Development & Demonstration (Historic)

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 14	+176	+175	Accounting Adjustments and Re-definitions
		+2	Technical Factors
		-1	Exchange Rate
MPR 13	+17	-1	Accounting Adjustments and Re-definitions
		+20	Technical Factors
		+1	Exchange Rate
		-3	Changed Capability Requirement
MPR 12	-19	-20	Technical Factors
		+1	Exchange Rate
MPR11	+42	+8	Accounting Adjustments and Re-definitions
		+72	Technical Factors
		-7	Exchange Rate
		-31	Changed Capability Requirement
MPR 10	+16	+37	Exchange Rate
		-21	Budgetary Factors
MPR 09	-25	-25	Budgetary Factors
MPR 08	-22	-6	Budgetary Factors
		-16	Accounting Adjustments and Re-definitions
MPR 07	+55	+55	Technical Factors
MPR 06	-78	-71	Changed Capability Requirement
		-7	Budgetary Factors
MPR 05	-535	-29	Technical Factors
		-472	Changed Capability Requirement
		-34	Budgetary Factors
MPR 04	+266	+87	Technical Factors
		+279	Budgetary Factors
		-100	Exchange Rate
MPR 03	-13	-13	Accounting Adjustments and Re-definitions
MPR 02	+5	+5	Accounting Adjustments and Re-definitions
Net Variation (£m)	**-115**		

B.3.1.3 Production, Sustainment & Follow on Development (In-Year)

Date	Variation (£m)	Category	Reason for Variation
Jun-14	-42	International Collaboration	MPR15: Impact of the latest 2014 JSF Programme Office (JPO) Annual Cost Estimates and JSF F-35 Selected Acquisition Report (SAR) 2013 and implementation of the final contract prices for Low Rate of Initial Production 8 (LRIP8), below the cost estimate, with aircraft unit production costs 5% below estimate.
Jun-14	-12	Accounting Adjustments and Re-definitions	MPR15: Re-allocation of Project Support costs from the Production Sustainment & Follow on Development (PSFD) project code to System Development & Demonstration (SDD) to align with SDD definitions and original approval.
Oct-14	-18	Accounting Adjustments and Re-definitions	MPR15: Re-allocation of Infrastructure design costs from the Production Sustainment & Follow on Development (PSFD) project code to System Development & Demonstration (SDD) to align with SDD definitions and original approval.
Jun-14	-26	Procurement Processes	MPR15: Implementation of the latest 2014 JSF Programme Office (JPO) Annual Cost Estimates and JSF F-35 Selected Acquisition Report (SAR) 2013 for both Production Autonomic Logistic (+£4M) and Operational Support costs (-£18M). Including other cost estimates changes for Project Support (-£3M), Training Equipment (-£4M), and Reprogramming equipment and support (-£5M).
Jun-14	+38	Changed Capability Requirements	MPR15: Implementation of latest cost estimates for the building of the F-35 facilities at RAF Marham.
Jun-14 Oct-14	-24	Technical Factors	MPR15: Review of ARM Programme Risks undertaken during ABC15.
Mar-15	+11	Exchange Rate	MPR15: FY14/15 in year exchange rate variance
Net Variation (£m)	**-74**		

B.3.1.4 Production, Sustainment & Follow on Development (Historic)

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 14	-377	+14	Technical Factors
		-135	Accounting Adjustments and Re-definitions
		-256	Exchange Rate
MPR 13	-36	-10	Technical Factors
		-29	Exchange Rate
		+3	Changed Capability Requirement
MPR 12	+23	-1	Exchange Rate
		-3	Changed Capability Requirement
		+12	Budgetary Factors
		+15	Technical Factors
MPR11	-79	-11	Budgetary Factors
		-28	Exchange Rate
		-40	Changed Capability Requirement
MPR 10	+1	-30	Procurement Processes
		+31	Exchange Rate
MPR 09	-3	-3	Budgetary Processes
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 2014 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2015 (£m)
Assessment Phase	144	0	144
Demonstration & Manufacture Phase	2106	334	2440
Support Phase / Service / PFI Cost	0	0	0
Total Expenditure	**2250**	**334**	2584

C. Section C: Time

C.1 Length of the Assessment Phase[1]

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

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

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

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	Comments
89 Green	The System Development & Demonstration (SDD) phase remains on track with a forecast completion date of 1st April 2019
84 Green	Production, Sustainment & Follow-on Development (PSFD) remains on track to deliver Lightning II Initial Operating Capability in December 2018

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 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 (5)	0

D.2.1 Defence Lines of Development Variation

Date	DLOD	Category	Reason for Variation
Jul - 14	Equipment	Technical Factors	MPR15: Equipment risks are being managed by the PT.
Jul - 14	Infrastructure	Technical Factors	MPR15: Infrastructure risks are being managed by Infrastructure DLoD.
Jul - 14	Logistics	Budgetary Factors	MPR15: Logistics risks are being managed by Logistics DLoD.
Jul - 14	Information	Technical Factors	MPR15: Information risks are being managed by Information DLoD.
Historic	Equipment	Technical Factors	MPR14: Equipment risks are being managed by the PT.
Historic	Training	Technical Factors	MPR14: Training risks are being managed by Training DLoD.

Historic	Infrastructure	Technical Factors	MPR14: Infrastructure risks are being managed by Infrastructure DLoD.
Historic	Logistics	Budgetary Factors	MPR14: Logistics risks are being managed by Logistics DLoD.
Historic	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

LIGHTNING II

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 (with risks)	
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	
Currently forecast (with risks)			7 (2)	0
Last year's forecast (with risks)			7 (2)	0

D.3.1.2 Key Performance Measures Variation

Date	DLOD	Category	Reason for Variation
Jul - 14	2	Technical Factors	The Air System is currently forecast to meet the interoperability KUR. Agile Thunder, a highly successful series of interoperability trials using an F-35 simulation and UK platforms' Mission Systems laboratories, is being used to identify interoperability issues for assessment and action in advance of IOC. A number of interoperability issues have been identified that may impact LII's ability to operate with some of the UK's existing platforms if mitigating action is not taken. The timetable to close out these issues is demanding and Joint Forces Command (JFC) Director Capability has recently assumed responsibility for doing so.
Jul - 14	4	Technical Factors	The Air System's combat radius is currently forecast to meet the KUR. This KUR is closely linked to overall aircraft weight and performance of the fuel system. Weight increases are carefully managed by the JSF programme. This issue is being closely monitored by the Lightning Project Team.
Jul – 14	7	Technical Factors	No longer at risk – mitigated through agreement to the Lightning II Sustainment Strategy and on going maturity of the logistics solution.
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 SLOVF 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	On-going 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 & Security 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 on-going 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 on-going 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

MARSHALL

Project Name		
Marshall		
Team Responsible		
Marshall		
Senior Responsible Owner	**Date Appointed**	**Planned end date**
Air Commodore Lincoln Taylor ACOS Air Cap Del CA & ISTAR	08/12/2014	Dec 18
Project/Increment Name	**Current Status of Projects / Increments**	
Assessment Phase 1	Post-Main Investment Decision Completed	
Assessment Phase 2	Post-Main Investment Decision Completed	
Demonstration Phase	Post Main Gate Decision	
Transition / In Service	Mobilising	

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 provides this capability via a contract of 22 years duration (with appropriate contractual break points) with Aquila ATMS Ltd for the design, acquisition, installation, sustained delivery and assurance of a military Terminal ATM Service. The capability is 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 adoption of 8.33KHz channel spacing on VHF communications; Marshall is addressing these issues while delivering significant financial benefits compared to the cost of the current capability.

A.2. The Assessment Phase

The assessment phase of the Marshall project was 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 enabled formal industry engagement. The project followed 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 Project History

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 were evaluated, and a second round of competitive dialogue commenced.

A.4 In-Year Progress

Following review by the Chief of Defence Material on 31 March 2014, timescales for contract award were accelerated to de-conflict with purdah ahead of the General Election. The Main Gate Business Case was signed on 11 August 2014, Evaluation of final tender bids commenced on 28 August 2014 and concluded on 28 September 2014. The contract was signed between MOD and Aquila Air Traffic Management Services on 28 October 2014. Contract signature was followed by a 6 month mobilization phase in preparation for Aquila taking on responsibility for the availability of in-scope legacy equipment on 01 April 2015. The mobilisation phase included the preparation for Transfer of Undertakings Protection of Employment (TUPE) Transfer of MOD and contractor staff; development of working practices for operation and maintenance personnel; development of governance structures and procedures for equipment installation to enable Aquila to take on service delivery responsibility from 1st April 2015.

A.5 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 the Front Line Command's (FLC's) to train and fly and hence the ability to project air power wherever and whenever it is required.

The successful roll-out of new equipment under Marshall will offset the equipment obsolescence risk. The previous piece-meal arrangements for provision of ATM equipment and support meant that MOD held the risk of equipment un-availability; this risk is now transferred to Aquila. However, the previous arrangements did provide MOD with the ability to change equipment laydown, for example increasing equipment numbers or moving equipment between sites – under Marshall, changes to requirement are implemented via contract amendment in order to adjust the services and availability provided to specific sites. This is a consequence of contracting for assured levels of availability rather than piece-meal equipment arrangements, but may be perceived by Users and their chains of command as a lack of agility. The Senior Responsible owner (SRO) is managing the cultural change required in the ATM operational community.

A.6 Associated Projects – N/A

A.7 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
Marshall	Aquila ATMS Ltd	ATM Services & Asset Update	22 year Service Delivery	Competitive Dialogue

A.8 Support Strategy

Description
The contract with Aquila-ATMS Ltd is for a full support package measured on availability of the services.

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	7	7	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	1890	1890	1890
Total (£m)	**1890**	**1890**	**1890**

B.3. Cost of the Demonstration and Manufacture and In-Service Phase

Project/Increment Name	Budgeted for Cost (£m)	Forecast cost (£m	Variation (£m)	In-Year Variation (£m)
Marshall-Equipment Transition Phase	410	410	0	
Marshall-In Service (During Transition Phase)	344	344	0	
Marshall-Full Operating Capability Phase	1136	1136	0	
Total (£m)	**1890**	**1890**	**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 2014 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2015 (£m)
Assessment Phase 1	3	0	3
Assessment Phase 2	5	2	7
Demonstration & Manufacture Phase	0	40	40
Total Expenditure	**8**	**42**	**49**

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	Jan 08	Oct 09	22
Assessment Phase 2	Feb 10	Aug 14	55

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

Project/Increment Name	Earliest Approved	Budgeted For	Latest Approved
IOC	Nov 16	Feb 17	Jun 17

C.3 In-Service Date/Initial Operating Capability

Project/Increment Name	Earliest Approved	Budgeted For	Latest Approved
IOC	Nov 16	Feb 17	Jun 17

C.3.1 Definition

Project/Increment Name	In-Service Date/Initial Operating Capability
IOC	The **IOC** will be achieved when a Notice of Service Availability has been issued by the RAF Release to Service Authority (RTSA) in respect of the delivery of Mode-S compliant co-operative surveillance services to the highest priority sites as agreed with CAA (Boscombe Down, Brize Norton, Cranwell, Dead Water Fell, Greymare Hill, Honington, Linton-on-Ouse, Scampton, and Shawbury).

C.3.2 Progress against approved Dates

Project/Increment Name	Approved Date	Actual / Forecast Date	Variation (+/-months)	In-Year Variation (+/- months)
Marshall IOC	Feb 17	Feb 17	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

Project/Increment Name	Full Operating Capability	Progress to date
Marshall	The **FOC** will be achieved when a Notice of Service Availability has been issued by the RTSA in respect of the delivery of all required MARSHALL Technical Services at every Service Delivery Site.	After contract award in October 2014 the project moved into a mobilisation phase, allowing the supplier to engage with trade unions and TUPE affected staff. During this phase the supplier also engaged in a programme of site surveys.

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

D. Section D: Performance

D.1 Sentinel Score as at 31/03/2015

Current score	Comments
95	Project is post Main Investment

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. Training	To deliver Defence Systems Approach to Traning (DSAT) compliant training to all operators and maintainers (including those at the Central Air Traffic Control School) to allow the capability to be successfully operated at all sites.	Yes	
2. Equipment	Initial Operating Capability (IOC) is delivery of one example of each Technical Services for each different method of delivery of each of the Technical Services.	Yes	
3. Personnel	Sufficient competent personnel available (operators and maintainers) to deliver the required operational hours of the capability at all sites.	Yes	
4. Infrastructure	The Defence Infrastructire Organisation (DIO) will provide safe and legally compliant ATM Infrastructure for handover to the Project Marshall Service Provider (SP) and once the Marshall solution has been implemented, provide through life maintenance support to Marshall infrastructure.	Yes (with risk)	
5. Doctrine and Concepts	On entering service, MARSHALL will conform to extant doctrine, concepts and policy, building on experiences gained in recent operations.	Yes	
6. Organisation	To have an Organisation with sufficient competent personnel to manage, operate and maintain the capability.	Yes	
7. Information	To provide an assured communications capability, in line with MOD policy, and the associated services to all ground and air platforms and Communications Information Systems (CIS), including information sharing where required, as defined within the Output Based Specification (OBS), to all UK Sites, overseas Permanent Joint Operating Bases and Deployed locations.	Yes	

8. Logistics	Logistics Readiness for IOC is the achievement of the Logistics Support Date (LSD) which is the identification and timely provision of all support resources necessary for one example of each Technical Service and for each different method of delivery for those Technical Services."	Yes (with risk)	
Currently forecast (with risks)		8 (2)	
Last year's forecast (with risks)		N/A	

D.3 Performance against Key Performance Measures (KPM)

D.3.1 Marshall

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	The User shall be able to provide military Terminal Air Traffic Management (ATM) to MARSHALL Fixed Sites.	Yes (with risk)	
KUR 2	All	The User shall be able to provide military Terminal ATM to MARSHALL Deployed Sites.	Yes (with risk)	
KUR 3	2, 7, 8	The Air Defence Organisation (ADO) User shall be able to communicate with air vehicle operatives within specified Areas Of Responsibility (AORs).	Yes	
KUR 4	1,3,6	The User requires sufficient numbers of Competent, Current and Compliant Operators.	Yes	
KUR 5	All	The User shall be provided with a sustainable military Terminal ATM capability.	Yes	
KUR 6	All	The User shall be provided with a military Terminal ATM capability availability necessary to deliver Terminal ATM services.	Yes	
KUR 7	All	The User requires that the MARSHALL solution shall provide the flexibility to provide a military Terminal ATM capability appropriate to future changes in the Defence need.	Yes	
Currently forecast (with risks)			7 (2)	
Last year's forecast (with risks)			N/A	

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, the new tankers will incrementally replace most of the existing Royal Fleet Auxiliary single-hull tanker 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, Lightning II 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.

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.4. In-Year Progress

Critical Design Review was completed in Jun 2014, and construction of the first ship of the class RFA TIDESPRING commenced in that month. Keel laying of the first and steel cut of the second, RFA TIDERACE, was achieved in December 2014. RFA TIDESPRING was launched during a float out from Daewoo Shipbuilding and Marine Engineering's No 2 Dock in April 2015. Whilst work to complete the Integrated Logistic Support outputs continues, outstanding items from the initial deliverables provided in December 2014 are being addressed through a revised programme and are not expected to impact on platform delivery.

Following competition, A&P Group in Falmouth was awarded the UK Customisation, Capability Assessment Trials and Support contract in January 2015, in order to complete customisation of sensitive elements and undertake final military trials in the UK. A&P are also on contract to provide initial in-service support to June 2018.

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 their steel grade which is potentially susceptible to brittle fracture. 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 Main Build	Daewoo Shipbuilding and Marine Engineering	Demonstration and Manufacture	Firm Price	Competitive - International
Military Afloat Reach and Sustainability Tanker UK Customisation and Capability Assessment Trials	A&P Group	Demonstration and Manufacture	Firm price	Competitive – Restricted to UK

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 subsequent in service support will be subject to competition.				
Project/Increment Name	**Contractor**	**Contract Scope**	**Contract Type**	**Procurement Route**
Military Afloat Reach and Sustainability Tanker Support	A&P Group	Initial In-Service Support	Firm Rates	Competitive – Restricted to UK

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	552	-44	-10
Total (£m)	**596**	**552**	**-44**	**-10**

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

B.3.1.1 Military Afloat Reach and Sustainability Tanker (In-Year)

Date	Variation (£m)	Category	Reason for Variation
Mar-15	-1	Technical Factors	Reduction in Government Furnished Equipment and First Outfit costs
Feb-15	+1	Technical Factors	Advancement of Ship 2 Keel Lay
Jan-15	-10	Technical Factors	Contract award of UK Customisation and Trials element
Net Variation (£m)	**-10**		

B.3.1.1.1 Military Afloat Reach and Sustainability Tanker (Historic)

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 14	-34	-34	Technical Factors
MPR 13	-1	-1	Technical Factors
Net Variation (£m)	**-35**		

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

B.4 Progress against approved Support / PFI Cost

Project/Increment Title	Approved Cost (£m)	Forecast cost (£m)	Variation (+/- £m)	In-Year Variation (+/- £m)
Mars Tanker Interim In-Service Support	19	19		
Total (£m)	**19**	**19**	**0**	**0**

B.4.1. Cost variation against approved Support / PFI Cost (In Year) – N/A

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2014 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2015 (£m)
Assessment Phase	17	0	17
Demonstration & Manufacture Phase	122	82	
Support Phase / PFI Cost	0		
Total Expenditure	**138**	**82**	**220**

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.3.3.1 Military Afloat Reach and Sustainability Tanker – 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
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	Comments
82	Score represents a Green/Amber status

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
31/03/2015	Equipment	Technical Factors	Design and Manufacture of MARS Tankers. There is a risk of additional unforeseen issues arising during build and acceptance, exacerbated by an overseas build and additional complexities in completing production.
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.

Ongoing / Current	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 the in-service date of the early vessels, due to the delay in completion of Integrated Logistics Support tasks (Training Needs Analysis).
Ongoing / Current	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 provide anticipated through life savings. This is due to weakness in the Integrated Logistics Support package currently being addressed.
Ongoing / Current	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 19000m^3 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, Wildcat & 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 CARRIERS

Project Name
Queen Elizabeth Class Aircraft Carriers

Team Responsible
Ship Acquisition

Senior Responsible Owner	Date Appointed	Planned end date
Cdre Alex Burton	24/09/2012	31/03/2014
RAdm Russ Harding	01/04/2013	28/05/2015
RAdm Keith Blount	29/05/2015	29/05/2018

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 Tailored Air Group 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, within the context of the PM's announcement at the NATO Summit in September 2014 that HMS PRINCE OF WALES will also be brought into service ensuring one carrier available, 100% of the time. 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

1998: 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. 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.

2002: 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.

2004: In July 2004, the Assessment Phase was extended into Stage 4 to further mature the design and carry out risk reduction work, to ensure that the best technical & procurement solution was achieved. 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

2005: 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).

2006: 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.

2007: 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.

2008: The Demonstration Phase activity completed in mid-2008 with total expenditure to 31st 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 £3900M including the capitalised Assessment Phase costs and Demonstration Phase costs.

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.

2009: 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.

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.

2010: 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 £5242M. Long-lead equipment's

for HMS PRINCE OF WALES were ordered, 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 that 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.

At the close of the Financial Year in March 2010 the bow of the HMS QUEEN ELIZABETH departed from Appledore for Rosyth.

2011: 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.

2012: Lower Block 03 for HMS QUEEN ELIZABETH 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 months, Sponsons 03-06 were attached, with the final Sponson (05) join completing in February 2012.

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

2012: 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) - was cancelled. The decision to revert resulted in write off of costs accrued up to 10 May 2012. The estimated write-off costs are not expected to exceed £55M.

The Aircraft Carrier Alliance formally began rebaselining the QEC 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 ACA, with the aim of rebalancing the risk/reward mechanism. These discussions continued throughout the first half of 2013, culminating in a formal proposal from the ACA on 19 July 2013. On receipt of this proposal, the MOD Cost Assurance and Analysis Service (CAAS) was 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 ACA 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 ACA's July 2013 proposal position. Subsequently, a Heads of Terms agreement was signed between MOD and the ACA on 6 November 2013, which set out the commercial principals covering the agreement and work was undertaken to obtain programme re-approval from the MOD Approving Authorities. Following re-approval, a revised contract was signed .

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

2014: The external structure of HMS QUEEN ELIZABETH has been completed, 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. On the second carrier, HMS PRINCE OF WALES, work is 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 2014, the first ship. HMS QUEEN ELIZABETH, was officially named by Her Majesty the Queen, and on the 17 July 2014 was floated out of the dock. The ship is currently berthed in the non-tidal basin and is undergoing fitting out as part of the test, integration and commissioning phase of her programme.

A.4. In-Year Progress

Assembly of HMS PRINCE OF WALES began on 9 September 2014 with the double docking of two of the ship's largest hull sections – Lower Block 02 (6,000 tonnes) and Lower Block 03 (8,000 tonnes). The movement of the blocks into the dock at Rosyth marked the beginning of the ship's assembly phase and came only days after Prime Minister David Cameron announced at the NATO Summit in Newport that HMS PRINCE OF WALES will enter service with the Royal Navy.

An important milestone was achieved on 24 October 2014 when HMS QUEEN ELIZABETH was supplied with shore-based High Voltage (HV) electricity for the first time. This allows all the systems on-board to be brought to life and tested ahead of autonomous power from the ship's generators coming on-stream in 2015. Installation of the first MT30 Gas Turbine Alternator (GTA) package into HMS PRINCE OF WALES was successfully completed on 28 February 2015. In March HMS QUEEN ELIZABETH received her first delivery of fuel (500 tonnes), the flushing of the lubrication oil system for the diesels was completed and the first run of the diesel generators is expected to take place at the end of May.

On 28 April 2015 (shortly after 14/15 financial year end) the steel was cut for the final block of HMS PRINCE OF WALES (and, therefore, the Queen Elizabeth Class carriers programme as a whole). All 25 blocks that make up HMS PRINCE OF WALES are now in production. Over 30,000 tonnes are already assembled in the dry dock at Rosyth.

A.5. Capability Risks

The Class is, together with the Lightning II F35B and Merlin Mk2 CROWSNEST 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.

In September 2014 The Prime Minister announced at the NATO summit that both Carriers will be brought into service. We await the outcome of Strategic Defence and Security Review 2015 before knowing the precise operating position to be followed and then confirmation of the associated funding.

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.

QUEEN ELIZABETH CLASS AIRCRAFT CARRIERS

A.6. Associated Projects

Project/Increment Name	Forecast In Service Date / Initial Operating Capability	Approval Status
Queen Elizabeth Class Infrastructure Project	2016	Post-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 vessel acceptance of the first platform. The QEC Support project aims to provide affordable, value for money, in-service engineering and spares logistic support from vessel acceptance. It is split into 4 key phases; assessment, development, mobilisation and delivery. The Support project was given approval in 2014 with the In-Service Support Solution(s) being developed ready for Main Gate approval in 2016 and subsequent mobilisation ready to meet QEC Logistics Support Date of December 2016. The support solution(s) will be coherent with the Surface Ship Support Programme *'Common Support Model* 'in accordance with the Ships Operating Centre Support Strategy and Navy Commands Support vision. Approval for the procurement of Initial Provisioning Spares was achieved in March 2015.

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 (In-Year) – N/A

B.3.1.1.1 Queen Elizabeth Class Aircraft Carrier (Historic)

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 13	+754	+155	Budgetary Factors
		+101	Inflation
		+721	Technical Factors
		-223	Procurement Processes
MPR 12	+217	+217	Technical Factors
MPR11	-13	-13	Budgetary Factors
MPR 10	+679	+117	Technical Factors
		+562	Budgetary Factors
MPR 9	+924	+250	Inflation
		+674	Budgetary Factors
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

Project/Increment Name	Approved Cost (£m)	Forecast cost (£m)	Variation (£m)	In-year Variation (£m)
Support Development Phase	13	13	0	0
Initial Provisioning Spares	129	129	0	0
Total (£m)	**142**	**142**	**0**	**0**

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

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2014 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2015 (£m)
Assessment Phase	315	3	318
Demonstration & Manufacture Phase	3779	738	4517
Support Phase / PFI Cost	0	1	1
Total Expenditure	**4094**	**742**	**4836**

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 Carriers	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 Carriers	**In Service Date:** In Service Date for the QEC 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 (Carrier Strike):** Initial Operating Capability (Carrier Strike): (as based on Initial Operating Capability as defined in 1 Sea Lord's mandate to the Senior Responsible Officer): one of the vessels of the Queen Elizabeth Class has been accepted into service and: 1. Has undergone a work-up period, passed an Operational Readiness Inspection and has been certified as safe to operate (Fixed and Rotary Wing) aircraft. 2. Is capable of conducting Carrier Strike with Lightning II for contingent operations, with requisite clearances, weapons, personnel and equipment support. 3. Delivers the ability to embark, integrate and deploy an ASW capability. 4. The Queen Elizabeth Programme delivers appropriate supporting infra, logistics and IS enablers to support a simple or complex operation

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	February 2018	+31	+2

C.3.3 Timescale variation

QUEEN ELIZABETH CLASS AIRCRAFT CARRIERS

C.3.3.1 Queen Elizabeth Class Aircraft Carriers (In-Year)

Date	Variation (+/- months)	Category	Reason for Variation
July 2014	+2	Technical Factors	The 50% Queen Elizabeth ISD has been re-aligned to that forecasted at the May 2014 approval, reflecting the re-baselined position agreed with the Aircraft Carrier Alliance as part of the October2013 agreement, and reporting the 50% ISD of February 2018 for the first time. Although this highlights a +2 month variation compared with the previous 'pre-deal' 50% forecast, the Aircraft Carrier Alliance continue with efforts to bring the ISD forward to reflect or better the IAC's Target (or 'Latest Acceptable') ISD of December 2017.
Enter text			
Net Variation (+/- months)	**+2**		

C.3.3.2 Core Production Capability (Historic)

MPR	Annual Variation (+/- months)	Variation by Category (+/- months)	
MPR 13	+5	+5	Technical Factors
MPR 12	+9	+9	Technical Factors
MPR 11	+5	+5	Budgetary Factors
MPR 09	+10	+10	Budgetary Factors
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 Joint Force Air Group elements and the Queen Elizabeth Class Incremental Acquisition Plan. Full Operating Capability will therefore be defined once the Joint Combat Aircraft and Maritime Airborne Surveillance & Control delivery programmes and the Initial Approved Plan are agreed. Full Operating Capability will allow Queen Elizabeth Class to have an embarked Joint Force Air Group and a level of capability equivalent to that declared at Main Gate.

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

D. Section D: Performance

D.1 Sentinel Score

Current score	Comments
75	

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 (with risks)	
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 a Logistics and Engineering Support Solution that enables the operation 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 using 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 (7)	0
Last year's forecast (with risks)		8 (6)	0

D.2.1 Defence Lines of Development Variation

QUEEN ELIZABETH CLASS AIRCRAFT CARRIERS

Date	DLOD	Category	Reason for Variation
July-2014	Equipment	Technical Factors	Aircraft Carrier Alliance Estimates at Completion suggest small variations to cost and time.
Historic	Training	Technical Factors	Flag Officer Sea Training 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 with US will be used to assist with the generation of suitably qualified and experienced personnel to build-up the 'train the trainers' cadre
Historic	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).
Historic	Equipment	Technical Factors	Since the re-baseline of the Queen Elizabeth Class programme (November 2013) a more proactive approach has been taken by the Aircraft Carrier Alliance. A new governance structure and a more diligent and regular review of the Risks and the Performance/Cost & Time envelope by MoD in order to develop opportunities with Aircraft Carrier Alliance to reduce impacts (Costs) has been implemented. There is also on-going work with Aircraft Carrier Alliance Project Control Team to ensure Aircraft Carrier Alliance Risk Owners proactively manage their risk mitigations within target timescales.
Historic	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).
Historic	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. Navy Command Head Quarters have identified potential fills for current gapped billets which are being progressed.

Historic	Personnel	Technical Factors	HMS QUEEN ELIZABETH manning post-In Service Date; there is a considerable challenge to deliver and maintain the appropriate strength in some cadres; Navy Command Head Quarters has determined manning priorities. Prioritisation and multiple short term personnel interventions will provide additional mitigation.
Historic	Infrastructure	Technical Factors	Queen Elizabeth Class Base Port build programme dependent on achieving final bidder recommendations in late summer and approval December 2014-February 2015. Additional resource is required to remain sufficiently resilient if faced with short-term technical/commercial challenges.
Historic	Infrastructure	Technical Factors	Work remains on-going to provide sufficient resource to accommodate HMS QUEEN ELIZABETH Trials and Commissioning crew and Ship's Company ashore in the Rosyth area before they move on board.
Historic	Information	Technical Factors	HMS QUEEN ELIZABETH has sufficient bandwidth up to Initial Operating Capability (IOC) to support Carrier Strike.
Historic	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 on-going to define the In-service Support Solution Main Gate Business case (MGBC) for a submission in August 2015.
Historic	Equipment	Technical Factors	The Strategic Defence & Security Review confirmed that both carriers should be built. In May 2012, the Department reverted back to the STOVL variant meaning both hulls will operate the Short Take Off and Vertical Landing Variant of the Joint Strike Fighter. However, there are risks associated to the uncertainty around the final Queen Elizabeth Class solution which could result in cost and schedule impact beyond those reported in this year's MPR.
Historic	Infrastructure	Technical Factors	The 2011 Monte Carlo'd simulated estimate for completion of the infrastructure upgrade to Portsmouth identified a risk that base port for Queen Elizabeth could not be ready in time for first entry Portsmouth. This risk has now been mitigated; however the cost

			and schedule risk of providing two fully serviced berths in the future has yet to be resolved.
Historic	Equipment	Changed Capability Requirements	The Strategic Defence & Security Review confirmed that both carriers should be built, with the current intention to convert one hull to operate the Carrier Variant of the Joint Strike Fighter. The risks connected to the development and integration of Electro Magnetic Launch Systems and Advanced Arrestor Gear technology.
Historic	Training	Changed Capability Requirements	The risks associated with having sufficient trained, suitably qualified and experience personnel to operate the Electro Magnetic Launch Systems.
Historic	Personnel	Changed Capability Requirements	The risks associated with ensuring suitably qualified and experienced aviation personnel to operate the converted Queen Elizabeth Class aircraft carrier.
Historic	Infrastructure	Technical Factors	Early cost estimates exceed provision, necessitating further investigation of the options to ensure an affordable position
Historic	Information	Technical Factors	The risks associated with the integration of Joint Combat Aircraft and the Queen Elizabeth Class has been addressed by the Equipment Defence Lines Of Development Steering and Integration Group. Analysis of the interface issues between aircraft and the ship has been conducted and significant progress has been made in addressing the issues identified. As a result, the integration risk is now assessed as low.
Historic	Information	Technical Factors	Information Defence Lines of Development remains at risk due to uncertainty over the resolution of Joint Combat Aircraft integration into UK Global Information Infrastructure.

D.3 Performance against Key Performance Measures (KPM)

D.3.1 Queen Elizabeth Class Aircraft Carriers

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 (with risks)	
KUR 2	All	Integration – Queen Elizabeth Class	Yes	

		shall be able to integrate with all elements of joint/combined forces necessary to conduct Strike operations and support 'agile mission groups'		
KUR 3	All	Availability – Queen Elizabeth Class shall provide one platform at High Readiness for its principal role of Carrier Strike at medium scale and at Very High readiness for Carrier Strike (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 Afloat Support	Yes	
KUR 6	All	Aircraft Ops – Queen Elizabeth Class shall be able to deploy the full medium scale offensive air effort	Yes (with risks)	
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 (3)	0
Last year's forecast (with risks)			9 (1)	0

D.3.1.2 Key Performance Measures Variation

Date	DLOD	Category	Reason for Variation
Sept-2014	KUR 3	Changed Capability Requirements	The 'Availability at Sea' KUR is predicated on having two carriers available. After the Prime Minister's announcement at NATO summit that HMS Prince of Wales will enter into service, ensuring that the UK will always have one carrier available 100% of the time. The detail behind this position will likely emerge post Strategic Defence and Security Review 2015

July-2014	KUR 1 & KUR 6	Technical Factors	KUR1 and KUR 6: the Special Access Programme Facility (SAPF) required to comply with Joint Air Force Army Navy (JAFAN) 69 Standards was to be completed as part of the build programme. Due to cost and time compression, this will now be complete after Vessel Acceptance from the Aircraft Carrier Alliance.
Jul-2014	KUR 3	Technical Factors	KUR 3: The full solution of Thermal Metal Spray (TMS) is not available for HMS QUEEN ELIZABETH,instead test patches will be trialled ahead of a solution being agreed for HMS PRINCE OF WALES. The interim solution using Camrex material is likely to add maintenance pressure to the current plan of 12 weeks per year for all planned maintenance activities.

D.3.1.3 Operational Impact of variation

KPM	Date	Forecast	Operational impact of variation
KUR1 and KUR 6	July-2014	At Risk	Provided the Special Access Programme Facility can be provided, in compliance with Joint Air Force Army Navy 69 quickly following Vessel Acceptance Date there is no operational impact.
KUR 3	July-2014	At Risk	Operating the full range of aircraft to sortie generation rates and understanding whether there is an impact on availability due to extended flight deck maintenance, are dependant on a successful HMS PRINCE OF WALES trial.
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 – SDSR 15) reduces the availability of this element of Carrier Enabled Power Projection.

D.4 Support Contract – N/A

Project Name		
Scout Specialist Vehicle (SV)		
Team Responsible		
SCOUT SV		
Senior Responsible Owner	**Date Appointed**	**Planned end date**
Maj Gen Nick Pope	31 October 2013	31 October 2016

Project/Increment Name	Current Status of Projects / Increments
Recce Block 1 Demonstration	Post-Main Investment Decision
Recce Block 2 Demonstration	Post-Main Investment Decision
Recce Block 1 & 2 Manufacture	Post-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 (Information Surveillance Target Acquisition and Recognition)-like capability from a globally deployable ground platform to meet the demands of contingent operations.
Main Gate 2 was achieved in August 2014 which secured a fleet of 589 vehicles in line with the confirmed Army 2020 planning assumptions.
Scout specialist vehicle was renamed AJAX on 15 September 2015.

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 Jan 13. 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 was not set until Main Gate 2 ***, in *** when the first major production investment decision was taken for Recce Block 1 and Special-To-Role variants (updating the previous Recce Block 1 and Recce Block 2 elements of the progrmme). The Recce Block 1 Planning Assumption for Service Entry was also deferred by nine months *** 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.

APPROVALS: It should be noted that Scout SV 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 and initial support, 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. At Main Gate 2 in September 14, a third Main Gate for approval of the longer term support solution was noted.

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.

During 2013-14 the programme continued to make progress within the Demonstration Phase, including completion of Mobile Test Rig trials (extensive series of trials, including cold weather, Operational and Tactical mobility trials, and an Ease of Maintenance Assessment); Mine Blast Trial; garaging facility build for the prototypes was completed; Common Base Platform CDR completed; and vehicle numbers required to equip Army 2020 were confirmed to 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.4. In-Year Progress

MAIN GATE 2 - MANUFACTURE PHASE: This was achieved in September 2014 securing a fleet of 589 vehicles broken down into 9 different variants (including the Special To Role variants). This approval also included the initial two years in-service support. Approval for the longer term in-service support contract is planned for Q3 2016 at Main Gate 3, following an open competition.

Demonstration phase progress continues with the achievement of the following milestones:

May 2014:	K11A SCOUT Base Platform Critical Design Review
June 2014:	K13 Protected Mobility Reconnaissance Support Critical Design Review
October 2014:	K17 Equipment Support Roles Critical Design Review
December 2014:	K16 SCOUT Critical Design Review
January 2015:	K15 Protected Mobility Reconnaissance Support Training Readiness Review

A.5. Capability Risks

Scout Specialist Vehicle 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 Vehicle) 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 (Special To Role) Demonstration	Acquisition Programme with full and open competition	Post-Main Gate
Recce Block 1 & Special To Role Manufacture	Acquisition Programme with full and open competition	Post-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	Firm Price	Competitive – International

A.8. Support Strategy

Description				
The support strategy was endorsed at Main Gate 2 which committed to the 2 years initial In-Service Support as part of the manufacture phase contract amendment; 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	Firm 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	83	26
Total (£m)	**109**	**83**	**26**

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 & Special To Role Demonstration & Manufacture[1]	5351	5480	5616

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 & Special To Role Demonstration & Manufacture	5480	5480	0	0
Total (£m)	**5480**	**5480**	**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 / PFI Cost

Project/Increment Title	Approved Cost (£m)	Forecast cost (£m)	Variation (+/- £m)	In-Year Variation (+/- £m)
Recce Block 1 Demonstration	354	354	0	0
Total (£m)	**0**	**0**	**0**	**0**

B.4.1 Cost variation against approved Support / PFI Cost (In Year) – N/A

[1] MG2 approval combined RB1 and STR demonstration and manufacture into a single approval; this replaces the MPR14 RB1 demo, RB2 demo and RB1&2 manufacture lines. RB3 is progressing as dismounted capability within variants of the RB1 vehicles and as such no further manufacture contract is expected.

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2014 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2015 (£m)
Assessment Phase	75	00	75
Demonstration & Manufacture Phase	448	282	730
Support Phase / PFI Cost	0	00	00
Total Expenditure	**524**	**282**	**806**

C. Section C: Time

C.1 Length of the Assessment Phase

Project/Increment Name	Date of Initial Investment Decision Approval	Forecast / Actual Date of Main Investment Decision Approval	Length of Assessment Phase (months)
Specialist Vehicles	June 2008	Continuous Assessment Phase	-
Recce Block 1 & Special To Role (Demo & Manufacture)	June 2008	August 2014	74
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 & Special To Role (Demonstration & Manufacture)	March 2020	July 2020	December 2020
Recce Block 3 Demonstration and Manufacture	-	-	-

C.3 In-Service Date/Initial Operating Capability

C.3.1 Definition

Project/Increment Name	In-Service Date/Initial Operating Capability
Recce Block 1 & Special To Role (Manufacture)	IOC1: an Armoured Cavalry Squadron with crews trained to Collective Training (CT) Level 2. Command & Control, and Ambulance variants will be provided by other platforms. IOC2: an Armoured Cavalry Squadron (excluding attached arms) with crews trained to Collective Training (CT) Level 2.

C.3.2 Progress against approved Dates

Project/Increment Name	Approved Date	Actual / Forecast Date	Variation (+/-months)	In-Year Variation (+/- months)
In Service Date	July 2020	January 2020	-6 months	-6 months

C.3.3 Timescale variation

C.3.3.1 Recce Block 1 & 2 (Demonstration) STR

Date	Variation (+/- months)	Category	Reason for Variation
March 2015	-6 months	Technical Factors	Schedule change to the forecast date for Initial Operating Capability.
Net Variation (+/- months)	**-6 months**		

C.4 Full Operating Capability

Project/Increment Name	Full Operating Capability	Progress to date
Recce Block 1 & Special To Role	Draft definition for FOC is when the 3 Brigades receiving the capability have completed conversion training, and Force Driving Defence Operational Liability (FDDOL) is complete.	FOC forecast improved to June 2025 (50%) from forecast at Main Gate 2 of December 2025 (50%)

D. Section D: Performance

D.1 Sentinel Score

Current score	Comments
78	

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 systme requirements and design spceification 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.3.2 Project/Increment – N/A

D.3.2.1 Performance against Key Performance Measures (KPM) – N/A

D.3.2.2 Key Performance Measures Variation – N/A

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

Type 26 Global Combat Ship (T26 GCS) is currently assumed to be a single class of 13 ships.

The T26 GCS will be a multi-mission warship designed for joint and multinational operations across the full spectrum of warfare, including complex combat operations, counter piracy, humanitarian and disaster relief work. It will be capable of operating independently for significant periods, or as part of a task group. On current plans, all Type 26 Global Combat Ships will have the same base level of capability but equipment fits tailored to task will enable them to meet their specific operational requirements.

*** 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

2006: 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 (C1) 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.

2009: 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).

2010: 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 2015 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. 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.

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. ***.

2011: 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.
b. The remaining programme key milestones remain unchanged, with Planned Assumption for 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.

2011: 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 continued 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.

***.

2012: The detailed design phase and industry engagement process was planned to underpin the programme's Main Gate 2 at the end of the Assessment Phase, which was intended to conclude at the end of 2014, allowing the production phase to begin immediately thereafter. ***

Maritime Indirect Fires System was 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. ***

2013: 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 ***. The Review Note also sought approval to fund some initial stage work to scope a proposed Modern Dock Hall which aimed 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 down-selections: 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.

2014: 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 was approved on 4 June 2014.

In September 2014, a further 3 month extension was requested for the Assessment Phase to allow the project to achieve approval of a Review Note and associated contract to be placed for a new Demonstration Phase. This was approved by Ministers in December 14. The Assessment Phase concluded on 31 March 2015.

TYPE 26 GLOBAL COMBAT SHIP

A.3. In-Year Progress

August 2014: The MOD implemented a revised incremental approach to approvals and commitment on the Type 26 Global Combat Ship programme, with separate approvals covering the Demonstration Phase, shipbuilding facilities investment and the Manufacture Phase. This approach draws on key lessons from the Queen Elizabeth Class Aircraft Carrier programme. It will ensure that the ship design is sufficiently mature, the supply chain is fully mobilised early in the programme, and a full joint analysis of programme risk is completed before awarding contract(s) to build the ships.

Rigorous analysis is now re-setting the schedule, cost base and risk position to arrive at a robust realistic proposal for Main Gate 2.

January 2015: A Review Note was submitted in January 2015 to approve the Type 26 Global Combat Ship project proceeding to the Demonstration Phase, covering the period 1 April 2015 to 31 March 2016.

February 2015: The IAC approved the advancement to the Demonstration Phase on 20 February 15 and the Prime Minister made a public announcement of the £859M contract. The 12 month Demonstration Phase covers the continued progression of the Type 26 Global Combat Ship project including investment in essential Long Lead Items, Shore Testing facilities and the analysis of the potential shipbuilding facility investment options for Type 26 Global Combat Ship. The contract also commits to key initial equipment for the first 3 Type 26 Global Combat Ship vessels (extending beyond 12 months) providing certainty to UK suppliers; The Demonstration Phase sustains momentum on the programme as well as enabling time to demonstrate a robust proposal and readiness for manufacture, and as a result of careful negotiations, the MOD has secured savings and the best possible deal to ensure that this is a good investment for the taxpayer.

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 Type 26 Global Combat Ship Support Strategy has undergone a number of changes over the reporting period following a review of the Maritime Enterprise by Chief of Materiel (Fleet). This review identified that the optimal strategy for support to the Surface Fleet was to develop a Common Support Model (CSM), including the current In Service Fleet, the Queen Elizabeth Class carriers, Type 45 Destroyers Phase 2 and Type 26 Global Combat Ship. This approach was taken to the Investment Approvals Committee in October 2014 and subsequently approved, and is being led by the Surface Ship Support Programme team, with input from the Type 26 project. The T26 Global Combat Ship Demonstration Phase includes funding for the development of Integrated Logistics Support products, Design for Support (DfS), support solution development for In Service, maturation of the support elements of the Joint Cost Model and management of the support programme. Current assumptions are that this work will allow the Main Gate 2 Approval to contain all support related activities within the Manufacture Phase so delivering Royal Navy a capability that is aligned to the Navy Command Key Support Principles ready for in service. The Manufacture phase will provide initial support for each ship until Vessel Acceptance Date (VAD), including support to the Trials and Commissioning programme and to shore based test facilities. The scope and cost for that in service support will be matured during the manufacture phase and approval will be sought at a Support Main Gate, most likely in 2019.

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	339	181
Total (£m)	**158**	**339**	**181**

The cost growth to the Assessment Phase is due to the transfer of Demonstration and Manufacture Phase funding as a result of detailed design activities being brought forward which results in no overall programme cost increase.

The Type 26 Global Combat Ship has only recently entered into the Demonstration Phase from 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.

To Note: The figures shown within Sections B2 & B3 – 'Cost Boundaries for Demonstration and Manufacture Phase / PFI' differ from MPR2014, as the programme has transitioned through to Demonstration Phase, and has ceased using the figures forecast from the Initial Gate Business Case, and are using actual 'budgeted for' costs. The figures against the 'Manufacture Phase (Long Lead Items) 'Budgeted For' and 'Forecast Costs' are of one element only of the Demonstration Phase contract agreeing to purchase Long Lead Items for the first 3 ships.

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	0	***	0

B.3. Cost of the Demonstration and Manufacture Phase

Project/Increment Title	Budgeted For Cost (£m)	Forecast Cost (£m)	Variation (+/- £m)	In-Year Variation (+/- £m)
Demonstration Phase	***	***	0	0
Manufacture Phase (Inc. Long Lead Items	***	***	0	0
Total (£m)	***	***	**0**	**0**

B.3.1 Demonstration Phase – N/A

B.3.2 – N/A

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

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2014 (£m)	In-year expenditure	Total expenditure to 31 March 2015 (£M)
Assessment Phase	173	167	340
Demonstration Phase	0	0	0
Manufacture Phase (Inc. Long Lead Items)	0	3	3
Support Phase / Service / PFI Cost	0	0	0
Total Expenditure	**173**	**171**	**343**

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	March 2015	60

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	Comments
7	

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

TYPHOON

Project Name
Typhoon

Team Responsible
Typhoon Project Team

Senior Responsible Owner	Date Appointed	Planned end date
Air Commodore Lincoln Taylor (Air Capability)	January 2015	December 2018

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	Assessment Phase
Meteor Integration	Post-Main Investment Decision
Storm Shadow Integration	Post-Main Investment Decision
Brimstone 2 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 (PN) by the NATO Eurofighter and Tornado Management Agency (NETMA). 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 PN.

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 commenced in December 2013.

The Typhoon Availability Service (TAS) contract with BAE Systems, signed in March 2009 formally commenced in September 2009. The Engine Availability Service contract with Rolls-Royce (PSOP 3) 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 and concluded with 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 the 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 PN. 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 PN 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 harmonised 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, demonstrated 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 has increased 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 under the TAS contract 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.

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 signed at the Paris Airshow in June 2013, during a ceremony attended by Ministers of the PN 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, along with the other PN, are 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 underlined their collective commitment to improve the working relationships and create more efficient and agile working practices to build on and improve a programme of European Transformation.

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

The Department extended the TAS support contract for a further year in December 2013. Throughout 2013 and into 2014 the Department continued to get to grips with cost control for Typhoon support, 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 (OSD) of 2030. The combination of this activity and Ministerially endorsed European Transformation programme underlines the Governments commitment to continued cost control and the long-term affordability and exportability of Typhoon.

A.4. In-Year Progress

The Governments continued commitment to the growth of Typhoon capability was marked by the signing of two key weapon integration agreements during the period. A £120M agreement was signed at the Farnborough International Air Show in July 2014 to integrate the Storm Shadow missiles onto Typhoon. Storm Shadow will provide long-range-air-to-surface capability and will be fitted to Typhoon Tranche 2 and 3 aircraft. This was followed by the £165M contract for the Typhoon Phase 3 Enhancements (P3E) programme, which was awarded in February 2015. The P3E programme will deliver a number of upgrades to the UK's Typhoon Tranche 2 and 3 mission and maintenance systems and includes the integration of the Brimstone 2 weapon system that will introduce a short range, low collateral damage weapon capability designed specifically to combat fast moving surface targets. It is anticipated that both Storm Shadow and Brimstone 2 will be ready for service with the RAF in 2018.

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The Typhoon Future Capabilities (FCP1) Programme introduces precision air-to-surface bombing capability onto Tranche 2 and Tranche 3 aircraft. The second of two sequential phases (P1Eb) was delivered into service with the RAF in July 2014 and declared operational in April 2015. The precision bombing capability is provided principally through the integration of the Paveway IV bomb and Laser Designator Pod.

In September 2014, Typhoon aircraft of 1 (Fighter) Squadron relocated from RAF Leuchars to RAF Lossiemouth. Along with 6 Squadron, they provide Quick Reaction Alert (QRA) cover for the north of the UK, together with QRA South, based at RAF Coningsby. From 2015, Leuchars will become home to the Army.

An £800M contract for the development of a new electronic radar system for Typhoon was awarded in November 2014. The contract, which followed the UK's signing of a £72M technology de-risking and demonstration 'Extended Assessment Phase' with BAES in July 2014; marks the next stage in the full development of an Active Electronically Scanned Array (AESA) radar capability for Typhoon. The introduction of an AESA radar will support new mission capabilities for Typhoon, through simultaneous multirole air-to-air and air-to-ground tracking of targets with increased fidelity and range, whilst utilising the Radio Frequency spectrum for Electronic Warfare.

The Typhoon fleet continues to grow as planned, with 127 aircraft delivered to the RAF by the end of March 2015. In December 2014 Typhoon Tranche 3 Release to Service (RTS) was declared. The 40 Tranche 3a aircraft will be delivered to the RAF by 2018, and along with the 67 Tranche 2 aircraft, will be the core of the Typhoon fleet through to it's out of service date.

In December 2014 the Department extended the TAS contract for a further 15 months, to better align its future renewal with the international spares and repairs contracts which support it. The contract delivers aircraft depth maintenance to the RAF Typhoon Force, a spares and repairs management service, RAF aircrew and ground crew training and an engineering/technical resolution service, ensuring the availability of the RAF's Typhoon fleet to meet the Military commitments.

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, 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.

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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	Design, development, demonstration, qualification and production	Overall Max Price to be converted to UK Firm Price	Collaborative. Non-competitive but with international competitive sub-contract elements.

	EADS(CASA) and EADS(Deutschland)	clearance of the first batch of enhancements.		
Meteor Integration	Eurofighter GmbH Airframe consortium	Meteor Missile Integration on to Typhoon	Maximum Price	Non Competitive
Storm Shadow Integration	Eurofighter GmbH Airframe consortium	Storm Shadow Missile Integration on to Typhoon	Maximum Price	Single Source Non-Competitive
Brimstone 2 Integration	Eurofighter GmbH Airframe consortium	Brimstone 2 Integration on to Typhoon	Maximum Price	Single Source 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 through TAS on BAE Systems; the propulsion availability service PSOP on Rolls Royce; for Avionics (Spares Provisioning and Component Repair) via the NETMA; and for international Technical Support Services, also via the NETMA.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 European Transformation programme jointly introduced by PN 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. The TAS contract was extended for an initial one year from December 2013, with a further 15 month extension following in December 2014.

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

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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	***	***	***
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
Brimstone 2 integration	177	186	197
Total (£m)		**16064**	**16316**

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	17341	+2168	-202
Typhoon Future Capability Programme	403	401	-2	-2
Meteor Integration	130	108	-22	-15
Storm Shadow Integration	172	153	-19	-19
Brimstone 2 integration	186	186	0	0
Total (£m)	**16064**	**18189**	**2125**	**-238**

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

B.3.1.1 Typhoon (In-Year)

Date	Variation (£m)	Category	Reason for Variation
Dec-14	-234	Accounting Adjustments and Re-definitions	Reversal of historic accrual values following a detailed contract reconciliation exercise between MoD and KPMG.
Mar-15	+17	Accounting Adjustments and Re-definitions	Identification of additional Waivers & Retentions against Tranche 1 and Main Development Contracts. (FY14/15)
Mar-15	+6	Technical Factors	Additional demand for emergent safety related tasks (FUSION Contract) FY14/15.
Mar-15	+7	Accounting Adjustments and Re-definitions	Tranche 3 revised Support and GFX costs forecast based on latest estimates.

Mar-15	+2	Receipts	Review of SALAM CEL receipts resulting in maturing view of anticipated level of receipt.
Net Variation (£m)	**-202**		

B.3.1.2 Typhoon (Historic)

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 14	-109	-109	Budgetary Factors
MPR 13	-19	-7	Technical Factors
		+1	Change is Associate Project
		-13	Change in Capability Requirement
MPR 12	-69	+27	Budgetary Factors
		-96	Technical Factors
MPR11	+22	-55	Technical Factors
		-9	Accounting Adjustments and Re-definitions
		+86	Exchange Rate
MPR 10	+2457	+2457	Technical Factors
MPR 9	-38	-38	Inflation
Historic[1]	+126	+1045	Technical Factors
		+346	Accounting Adjustments and Re-definitions
		-3	Exchange Rate
		-1065	Change in Capability Requirement
		+41	Inflation
		-102	Procurement Processes
		-136	Budgetary Factors
Net Variation (£m)	**+2370**		

B.3.1.3 Typhoon Future Capability Programme (In-Year)

Date	Variation (£m)	Category	Reason for Variation
Mar-15	-2	Accounting Adjustments and Re-definitions	Review of legacy contract values
Net Variation (£m)	**-2**		

B.3.1.4 Typhoon Future Capability Programme (Historic)

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 14	-28	-28	Technical Factors
MPR 13	-11	-11	Technical Factors
MPR 12	+22	+22	Technical Factors
MPR11	-4	-8	Technical Factors
		-1	Accounting Adjustments and Re-definitions
		+5	Exchange Rate
MPR 10	+8	+8	Exchange Rate
MPR 9	+7	+7	Exchange Rate
MPR 8	+6	+6	Technical Factors
Net Variation (£m)	**0**		

B.3.1.5 Meteor Integration (In-Year)

Date	Variation (£m)	Category	Reason for Variation
Mar-15	-18	International Collaboration	International collaboration in programme resulting in reduction of costs to the UK
Mar-15	+3	Technical Factors	Additional embodiment and concurrency costs
Net Variation (£m)	**-15**		

B.3.1.6 Meteor Integration (Historic)

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 14	-6	-6	Budgetary Factors
Net Variation (£m)	**-6**		

B.3.1.7 Storm Shadow Integration (In-Year)

Date	Variation (£m)	Category	Reason for Variation
Mar-15	-19	Technical Factors	Reduction driven by decision for Joint Entry into Service with Brimstone system (P3e contract) - Driving savings through joint ILS and synthetic training.
Net Variation (£m)	**-19**		

B.3.1.8 Brimstone 2 Integration – 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

Project/Increment Name	Approved Cost (£m)	Forecast cost (£m)	Variation (£m)	In-year Variation (£m)
Typhoon	13100	12532	-568	-369

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

B.4.1.1 Typhoon (In-Year)

Date	Variation (£m)	Category	Reason for Variation
Jun-14	-345	Budgetary Factors	Results from instigated full bottom up review of Support cost model (Deep Dive Part 2) - MoD and KPMG.
Mar-15	+18	International Collaboration	Amendment to workshare allocations (reconciliation by NETMA) under International Agreement - Funding Key changes to NETMA contracts.
Mar-15	-42	Accounting Adjustments and Re-definitions	Reversal of historic accrual values following reconciliation of PC4 contract (MoD/KPMG), alongside an in year adjustment to reflect revised accounting policy for 'Forecast Delivery dates' on PSOP contract versus order dates.
Net Variation (£m)	**-369**		

B.4.1.2 Typhoon (Historic)

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 14	-199	-199	Budgetary Factors
Net Variation (£m)	**-199**		

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

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2014 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2015 (£m)
Assessment Phase	120	136	256
Demonstration & Manufacture Phase	16663	286	16949
Support Phase / Service / PFI Cost	4738	554	5292
Total Expenditure	**21521**	**976**	**22497**

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[1]	***	***	***
Meteor Integration[2]	-	April 2013	-
Storm Shadow Integration[2]		October 2013	-
Brimstone 2 integration[2]	-	February 2015	-

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[1]	-	***	-
Meteor Integration[2]	November 2017	June 2018	June 2018
Storm Shadow Integration[2]	June 2018	August 2018	July 2019
Brimstone 2 integration[2]	April 2017	December 2018	September 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
Brimstone 2 Integration[2]	First Front Line Typhoon squadron fully enabled pan DLOD to employ Brimstone 2.

[1] ***

[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
Brimstone 2 integration	December 2018	December 2018	Nil	N/A

C.3.3 Timescale variation

C.3.3.1 Typhoon (In-Year) – N/A

C.3.3.2 Typhoon (Historic)

MPR	Annual Variation (+/- months)	Variation by Category (+/- months)	
MPR 02	+12	+12	Technical Factors
MPR 99	+42	+20	Technical Factors
		+22	Procurement Processes
Net Variation (+/- months)	**+54**		

C.3.3.3 Typhoon Future Capability Programme (In-Year) – N/A

C.3.3.4 Typhoon Future Capability Programme (Historic)

MPR	Annual Variation (+/- months)	Variation by Category (+/- months)	
MPR 12	+18	+18	Technical Factors
Net Variation (+/- months)	**+18**		

C.3.3.5 Meteor Integration (In-Year) – N/A

C.3.3.6 Storm Shadow Integration (In-Year) – N/A

C.3.3.7 Brimstone 2 Integration (In-Year) – 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 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
Brimstone 2 Integration[2]	The full Typhoon Tranche 2 and Tranche 3 fleet enabled for Brimstone 2.	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.5.2.1 Go-Live Date Variation – N/A

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

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	Comments
81	Storm Shadow Integration
78	Meteor Integration
N/A in MPR15	Brimstone 2 Integration

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 (with risk)	
2. Training	The timely provision of suitably qualified and experienced personnel to deliver Defence outputs, now and in the future.	Yes (with risk)	
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 (2)	0
Last year's forecast (with risks)		8 (0)	0

TYPHOON

D.2.1 Defence Lines of Development Variation

Date	DLOD	Category	Reason for Variation
MPR15	Equipment	Budgetary Factors	Delivery of the Tornado / Typhoon transition in terms of seamless capability management. This is to be brigaded under one delivery milestone for 2018.
MPR15	Training	Budgetary Factors	Adequate synthetic training provision remains a risk for achievement of Air Force Board Standing Objectives.
Historic	Training	Technical Factors	An adequate synthetic training system is expected to be in pace and on time.
Historic	Personnel		Sufficient personnel are expected to be in place for next major capability milestone.
Historic	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	KPM 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	KPM 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 (with risk)	
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 (with risk)	
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 (2)	0
Last year's forecast (with risks)			7 (0)	0

D.3.2.2 Key Performance Measures Variation

Date	DLOD	Category	Reason for Variation
MPR15	KPM 1	Technical and Budgetary Factors	Evolving threat scenarios, in concert with on-going trials and evaluation continue to highlight the requirement for a spiral development model.
MPR15	KPM 4	Technical and Budgetary Factors	The formal acceptance of FCP 1 (P1E and additional capabilities) had a small number of provisos which are being addressed.

D.3.2.3 Operational Impact of variation

KPM	Date	Forecast	Operational impact of variation
1 and 4	MPR15	Annual updates.	Nil variance to report.

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)			10 (0)	0

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)			10 (0)	0

D.3.5 Brimstone 2 Integration

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
1	All	The user requires the Brimstone 2 weapon system (including launcher) to be integrated onto T2/3 Typhoon.	Yes	
2	All	The user requires that the integration of Brimstone 2 shall not degrade or have any adverse impact on Survivability.	Yes	
3	All	Integration shall enable full utility of the Weapon System to pilot via Human Machine Interface (HMI).	Yes	
4	All	The system shall not degrade or prevent the use of any platform sensor, Air-to-Air or A-S effector.	Yes	
5	All	The user requires the integration of Brimstone 2 to exploit the existing Ground Support Equipment (GSE).	Yes	
6	All	The user requires Brimstone 2 integration to be compatible with existing Typhoon mission planning, mission preparation and mission data loading systems.	Yes	
7	All	The user requires the integration to support all existing Brimstone 2 functionality.	Yes	
8	All	The user requires Typhoon to be capable of carriage, release and jettison of the Brimstone 2 weapon (Note: 1 x Brimstone 2 weapon comprises 1 launcher holding 3 missiles) within the defined envelope.	Yes	
9	All	The user requires the ability to carry out air to air refuelling whilst carrying the Brimstone 2 weapon.	Yes	
10	All	The user requires a Brimstone 2 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.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 (0)	0

D.4.1.2 Key Performance Measures Variation

Date	DLOD	Category	Reason for Variation
Historic	Logistics	Technical Factors	Forward Available Fleet of T2 ac now expected to be sufficient and at correct capability standard.
Historic	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.

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 Stephen Lushington	07 August 2015	
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 previously 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.

FUTURE STRATEGIC TANKER AIRCRAFT

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

During 2013/14 the Future Strategic Tanker Aircraft project 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. The Future Strategic Tanker Aircraft stepped up its operational delivery when it took over the Falkland Islands South Atlantic Airbridge in October 2013 from expensive charter aircraft. 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. During the 2013 calendar year, the Voyager aircraft flew 7,404 hours in RAF service.

A.4. In-Year Progress

FSTA has continued to deliver exemplary Air- to-Air Refuelling (AAR) and Air Transport (AT) capabilities. With a number of Operational Emergency Clearances for overseas aircraft Voyager has provided Air-to-Air Refuelling to UK and coalition aircraft involved in operations against the Islamic State since August 2014. At the end of the reporting period Voyager had provided in excess of 8 million litres in operations and had broken a number of UK AAR records.

The 7th modified aircraft was delivered during May 2014 and the 8th modified aircraft was being prepared for RAF usage following accelerated implementation of the Enhanced Platform Protection modification. As all critical military capabilities required to meet the current operational demand had been delivered the aircraft was deemed ready to enter service in May 2014. All modified Future Strategic Tanker Aircraft in the fleet are capable of refuelling operations simultaneously with any two of Air-to-Air Refuelling probe-equipped Fast Jets and, as specified, five aircraft are equipped to transfer fuel to large aircraft. The previously reported 'green' unmodified aircraft is now in conversion and will be delivered in Oct.2015.

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	11409	-370	+7

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

B.4.1.1 Future Strategic Tanker Aircraft (In-Year)

Date	Variation (£m)	Category	Reason for Variation
March 2015	+3	Changed Capability Requirements	Cost of additional Operational flying hours.
March 2015	-3	Changed Capability Requirements	Fuel Tank Inerting System (FTIS) CDEL requirement no longer necessary in year FY14/15.
March 2015	+5	Inflation	Increased programme costs due to use of forecasted instead of estimated RPI in Year 10 of project.
March 2015	+3	Changed Capability Requirements	Increased programme costs due to the change of assumptions moving from Year 11 to Year 10 of Project.
March 2015	+5	Changed Capability Requirements	Increased programme costs due to the change of assumptions moving from Year 11 to Year 10 of Project.
March 2015	+2	Inflation	Change of inflation modelling assumptions in early years.
March 2015	-1	Changed Capability Requirements	Forecast for technical support reduced due to a reduction in requirements.
March 2015	-7	Changed Capability Requirements	Reductions in 2GP Manpower costs as the mix of Officers and Airmen changed from the original forecast and reduced T&S spend In Year compared to forecast.
Net Variation (£m)	**+7**		

B.4.1.2 Future Strategic Tanker Aircraft (Historic)

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 14	+9	+2	Budgetary Factors
		+4	Inflation
		+26	Technical Factors
		+18	Procurement Processes
		-41	Changed Capability Requirements
MPR 13	-9	+6	Budgetary Factors
		+45	Inflation
		+1	Technical Factors
		-19	Procurement Processes
		-42	Changed Capability Requirements
MPR 12	-79	-121	Budgetary Factors
		+31	Inflation
		-3	Technical Factors
		+24	Changed Capability Requirements
		-10	Accounting Adjustments and Re-definitions
MPR11	+111	-16	Budgetary Factors
		+124	Changed Capability Requirements
		+3	Accounting Adjustments and Re-definitions
MPR 10	-46	-46	Accounting Adjustments and Re-definitions
MPR 9	-363	-20	Technical Factors
		-323	Accounting Adjustments and Re-definitions
		-20	HM Treasury Reserve
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	***
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 2014 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2015 (£m)
Assessment Phase	38	0	38
Demonstration & Manufacture Phase	0	0	0
Support Phase / Service / PFI Cost	790	507	1297
Total Expenditure	**828**	**507**	**1335**

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

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	Comments
N/A	ISD Achieved

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 (0)	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

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 2016
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 Fightability 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.

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. The Programme will also extend the Out of Service Date (OSD) to 2040.

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.

WARRIOR CAPABILITY SUSTAINMENT PROGRAMME

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.

March 2008 - 40mm Cased Telescopic Cannon and Ammunition mandated.
July 2009 - Warrior Capability Sustainment Programme Initial Gate Business Case Approved.
February 2010 - Investment Approval Board Meeting for Warrior Main Gate Business Case (Not Approved due to affordability issues).
March 2010 - Ministerial Letter to both bidders to confirm the Revise and Confirm of bids exercise.
April 2010 - Review Note for Cannon to Investment Approvals Board Meeting for financial approval.
August 2010 - Revise and Confirm bids received from bidders.
October 2011 - Formal Approval from Her Majesty's Treasury.
October 2011 - Formal Approval from Investment Approvals Committee.
October 2011 - Ministerial Announcement by Prime Minister.
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.
March 2013 – Unit Zero Turret Integration & Test.
November 2013 – Unit Zero Integration Readiness Review.
December 2013 – Unit Zero Block 1 – Integration of Test Point A2, Stage 2.
December 2013 – FV510 & FV511 Preliminary Design Review (Anchor).
March 2014 – Re-baseline Contract signed.
March 2014 – Live Fire 3 Stage 1 – Unmanned Fire Torque Measurement.

Following slower than expected progress by the Warrior Capability Sustainment Programme Prime Contractor a re-baselining of the Demonstration Phase schedule was required and the contract was reset in March 2014. The Programme remained within its Financial approvals and protected our approved In Service Date of March 2020 at 85% by amending the sequencing of Manufacturing Phase activities.

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 and the SCOUT Specialist Vehicle 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

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

- April 2014 – FV 510 /511 Delta Design Review in accordance with LMUK process.
- May 2014 – Unit 0 Block 2 Commencement of Hull integration activities at LMUK, Ampthill.
- July 2014 – Unit 0 Unmanned Firing (Anchor).
- October 2014 – LF3 Stage 2 Static Fire.
- February 2015 – Unit 0 Turret Integration and Test completion.
- February 2015 – Unit 0 Manned Firing (Anchor).

Armoured Battlefield Support Vehicle:

Initial Gate was planned for Quarter 3 2014, however, Army Headquarters reviewed 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 Implementation Order to increase the numbers and variants of

Armoured Battlefield Support Vehicle as well as deferring the project by two years. Once implemented Armoured Battlefield Support Vehicle will become its own CAT A project.

MAIN WEAPON SELECTION – 40mm Cased Telescope Cannon:

The qualification of the Case Telescoped 40mm Cannon, Armour Piecing Fin Stabilised Discarding Sabot-Tracer and Target Practice-Tracer ammunition was completed in May 2014 when the Safety and Environmental Case Report was approved by the Ordinance Safety Review Panel. Some minor limitations were applied in the initial use period for the cannon, but a series of 'gap closure' activities has now addressed almost all these limitations, which await only the final paperwork for completion. The remaining limitations relate to barrel wear and are expected to be resolved in early 2016. On this basis a £200M contract for 515 Case Telescoped 40mm Cannons was signed with CTAI on 27 Mar 2015 (245 for Warrior Capability Sustainment Programme and Scout Specialist Vehicle and 25 for training and further qualification activities). Work on qualifying the General Purpose Round – Point Detonating – Tracer and General Purpose Round – Air Burst - Tracer has continued during 2014. We expect final qualification of the former in 2016 and the latter by 2019. Initial work has commenced on the High Explosive Training Reduced Range – Trace and Kinetic Energy Reduced Range – Trace rounds, which will offer a cheaper training round that can be fired within a smaller safety template, in order to optimise use of the training estate. These latter ammunition natures should be qualified by 2022.

SUPPORT – Diesel Engines and Transmissions:

The previously reported contract with Caterpillar Defence Products for the repair of Diesel Engines and Transmissions expired in March 2014. A new contract was placed with Caterpillar in September 2014 to continue the support arrangement for these items, following approval of the business case from the approving authorities.

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 its 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 but will be reviewed before committing to manufacture. There will be an initial purchase of Capital Spares through the Manufacture contract to support the upgraded Warrior.

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	44	-15
Total (£m)	**83**	**73**	**-10**

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	1312	-7	-2
Total (£m)	**1319**	**1312**	**-7**	**-2**

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

B.3.1.1 Warrior Capability Sustainment Programme (In-Year)

Date	Variation (£m)	Category	Reason for Variation
Nov-14	-6	Inflation	Retail Price Index and other inflation indices forecast update based on Defence Economics (-£6M)
Nov-14	+3	Technical Factors	Implementation of design refinements and Digital Architecture (+£42M), Revised training costs following new procurement strategy (-£20M), Updated Cannon pricing (-£25M), Other minor variances (+£6M)
Net Variation (£m)	**-2**		

B.3.1.2 Warrior Capability Sustainment Programme (Historic)

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 14	-56	-41	Inflation
		-15	Technical Factors
MPR 13	+42	+56	Inflation
		+5	Technical Factors
		-9	Exchange Rate
Net Variation (£m)	**-14**		

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 Defence Economics 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 RPIX. 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 to address RPIX growth if it occurs.

B.4 Progress against approved Support / 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	0
Diesel Engines and Transmissions (new contract)	37	38	+1	+1

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

B.4.1.1 Battle Group Thermal Imaging (In-Year) – N/A

B.4.1.1.1 Battle Group Thermal Imaging (historic)

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 13	-	+1	Changed Capability Requirement
		-1	HM Treasury Reserve
Pre-MPR[1]	+6	+6	Changed Capability Requirement
Net Variation (£m)	**+6**		

B.4.1.2 Diesel Engines and Transmissions (In-Year) – N/A

B.4.1.2.1 Diesel Engines and Transmissions (Historic)

MPR	Annual Variation (£m)	Variation by Category (£m)	
MPR 14	-1	-1	Technical Factors
MPR 13	+2	+2	Technical Factors
MPR 12	-7	-7	Procurement Processes
Pre-MPR[2]	-4	-4	Changed Capability Requirement
Net Variation (£m)	**-10**		

[1] This variation pre-dates the programmes inclusion within the MPR.

[2] This variation pre-dates the programmes inclusion within the MPR.

B.4.1.3 Diesel Engines and Transmissions (new)

Date	Variation (£m)	Category	Reason for Variation
Mar-15	+1	Technical Factors	Repairs completed in-year cost more than forecast in Business Case
Net Variation (£m)	**+1**		

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2014 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2015 (£m)
Assessment Phase	65	0	65
Demonstration & Manufacture Phase	134	95	229
Support Phase / PFI Cost	57	10	67
Total Expenditure	**256**	**105**	**361**

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. This date will also be designated as Initial Operating Capability 1a. Initial Operating Capability 1b (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	**0**

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 (In-Year) – N/A

C.3.3.2 Warrior Capability Sustainment Programme (Historic)

MPR	Annual Variation (+/- months)	Variation by Category (+/- months)	
MPR 14	+8 against 50% date 0 against approved 85% date	+8 against 50% date 0 against approved 85% date	Technical Factors
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
Diesel Engines and Transmissions (new)	September 2014	September 2014	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
Diesel Engines and Transmissions (new)	March 2019	March 2019	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	Comments
78 Amber	

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

ATTACK HELICOPTER CAPABILITY SUSTAINMENT PROGRAMME

Project Name		
Attack Helicopter Capability Sustainment Programme		
Team Responsible		
Apache Project Team		
Senior Responsible Owner	**Date Appointed**	**Planned end date**
Air Cdre Richard Mason OBE MA RAF (Capability Director Joint Helicopter Command)	TBC	TBC
Project/Increment Name	**Current Status of Projects / Increments**	
Apache Capability Sustainment Programme	Assessment Phase	

A. Section A: The Project

A.1. The Requirement

UK Defence sought through competition to provide an Attack Helicopter capability to replace the Lynx/Tube-Launched Optically Tracked Wire-guided missile capability during the 1990s. The competition resulted in the selection of the GKN Westland (now AgustaWestland) Apache WAH-64, known to the British Army as the Apache AH Mk1, 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 (AH CSP) addresses existing and forecast critical obsolescence issues that will progressively degrade operational capability of the current Apache AH Mk1 towards the end of this decade. This obsolescence results from the withdrawal from service of the equivalent US Apache model which, if left untreated, would result in the complete loss of the Attack Helicopter capability over the period 2020 to 2025. The aim of the AH CSP is to enable the required Attack Helicopter capability in support of extant Defence policy to be sustained until at least 2040.

A.2. The Assessment Phase

The AH CSP Initial Gate was approved in November 2014 at a cost for the Assessment Phase of £14M Not to Exceed and resulted in the following:

- The down-selection of the Apache AH-64E as the sole platform option to be taken forward into the Assessment Phase.
- The launch of the acquisition process inviting the United States Government to prepare a Foreign Military Sales case for the supply of 50 aircraft. The Foreign Military Sales case may reuse components from the current Apache helicopters where economically viable to do so and also looks to acquire the associated supporting equipment and services. AgustaWestland has been given the opportunity to make a proposal to meet the same requirements provided it has the rights and ability to do so.
- The initiation of analysis to determine the longer term support and training solutions that will sustain the Apache through life, together with the associated procurement strategies and plans.

The eventual down selection of the preferred bidder will be determined on an assessment of the relative cost, risk and delivery confidence of the proposals received.

The Main Gate Business Case is planned to be submitted to the Investment Approvals Committee (IAC) by March 2016 and a decision is anticipated by June 2016. The Main Gate approval will enable:

- The formal agreement with either the US Government or AgustaWestland for the supply of the helicopters and associated supporting equipment and services.
- The launch of the procurement processes for the required longer term training and support services.
- Governance to be put in place, and entry onto the DMPP.

A.3. In-Year Progress

The Initial Gate Business Case was approved by Ministers on 25 November 2014 and confirmed by the Investment Approvals Committee on 19 December 2014. Leading up to the approval, a common statement of requirements and the associated procurement documentation was prepared that was released to the US Government and AgustaWestland on 25 November 2014. The Project Team has since been engaged in responding to points of clarifications ahead of the expected receipt of proposals by 15 September 2015.

The period leading up to the Initial Gate approval was treated as an extended Concept Phase to enable some early analysis relating to aircraft engineering and certification to be taken forward that was agnostic of the eventual procurement route. This has continued during the Assessment Phase with further work that will result in the determination of the aircraft Type Certification Basis under UK airworthiness regulations. This work will also develop the safety requirements and obtain the information needed to support or to identify potentially significant safety risks which will inform the future Development & Manufacture Phase programme of work. The extended Concept Phase also enabled some early work on training and support analysis to be taken forward. This has resulted in Training Needs Analysis activity being contracted which is expected to complete by July 2015. The support solution analysis will inform the Main Gate Business Case for longer term support.

A.4. Capability Risks

The AH CSP 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. If left untreated, these 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

B. Section B: Cost

B.1. Cost of the Assessment Phase

Project/Increment Name	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)
Apache CSP	14	13	-1
Total (£m)	**14**	**13**	**-1**

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

Project/Increment Name	Lowest Forecast (£m)	Budgeted For (£m)	Highest Forecast (£m)
Apache CSP	***	***	***
Total (£m)	***	***	***

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 2014 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2015 (£m)
Assessment Phase	0	1	1
Demonstration & Manufacture Phase	0	0	0
Support Phase / Service / PFI Cost	0	0	0
Total Expenditure	**0**	**1**	**1**

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)
Apache CSP	25/11/14	***	***

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

Project/Increment Name	Earliest Approved	Budgeted For	Latest Approved
Apache CSP IOC (Planning assumption)		***	
Apache CSP FOC (Planning assumption)		***	

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	Comments
72	This was the first Sentinel score for AH CSP following Initial Gate Approval

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**
Commodore Matt Briers	17 November 2014	No currently planned end date
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 & 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 & Security Review, the CROWSNEST capability is required to be delivered as a role-fit mission system integrated into the Merlin Mk2 helicopter. The CROWSNEST project will procure 10 role-fit mission systems, and convert all 30 x 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 £43M. 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 Organization, 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 2014

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

The Initial Phase of the CROWSNEST Assessment Phase was the subject of a Helicopters Operating Centre senior management review in Defence Equipment and Support, 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 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.

A.4. In-year Progress

During the year both Mission System Suppliers further matured their design solutions and conducted de-risking activities by undertaking the following activities:

- Flight Trials: Lockheed Martin trialled 2 x prototype radar pods, one on each side of the aircraft, to demonstrate radar performance and the ability to deliver full 360° surveillance; meanwhile, Thales trialled a prototype radar deployment mechanism to demonstrate the ability to lower and raise the radar.

- Capability Performance: both Mission System Suppliers constructed a mission system Synthetic Environment to allow a competitive 'fly-off' of the 2 systems using 2 operators manning a prototype mission console to conduct real-time operation of the system against representative military scenarios.

- Design Maturation: both Mission System Suppliers conducted further design reviews in June/July and November 2014, leading to design freezes in December 2014 in advance of proposal submission.

Proposals were received from both Mission System Suppliers at end-January 2015, which have been evaluated by the combined Prime Contractor and MOD assessment team, and an announcement of the preferred bidder is anticipated in Spring 2015.

During the year the forecast cost of the Assessment Phase has increased from £34M to the approval value of £43M to allow de-risking activity ahead of the Main Gate decision and to continue with the preferred supplier in order to maintain the schedule to the projected ISD of October 2018

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 ISTAR (Intelligence, Surveillance, Targeting, Acquisition and Reconnaissance) capability gaps by providing an assured surveillance capability to detect inbound threats. Without this capability the Task Group would have reduced situational awareness of air and surface threats at range, and thus 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
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 Organization (Lockheed Martin)	Pre-Main Gate

A.8. Support Strategy

Description
Merlin Mk2 support currently is 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	43	0
Total (£m)	**43**	**43**	**0**

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 / PFI Cost – N/A

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2014 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2015 (£m)
Assessment Phase	14	15	29
Demonstration & Manufacture Phase	0	0	0
Support Phase / Service / PFI Cost	0	0	0
Total Expenditure	**14**	**15**	**29**

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	Comments
	Technology de-risking flight trials during Assessment Phase 3 have matured the Technology Readiness Levels for both solutions to at least Level 6, with the aim to achieve Level 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

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	Oct 2016
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 Land Environment Tactical Communications and Information Systems (LE TacCIS) Successor Sub-Programme) is the principal capability element of the LE TacCIS Capability Change programme. It will provide tactical Communication Information Systems for Littoral, Land and Air-Land force elements operating in the Land Environment. Inherent in the requirement to deliver to these domains is the challenge of integrating MORPHEUS, in itself a system of systems, into a wide array of equally complex platforms from the individual rifleman through manoeuvre platforms including aircraft and ships. It must interface with other LE TacCIS capabilities such as Falcon and Information Systems and Services wider architectures and with international allies.

MORPHEUS will replace the current portfolio of tactical communication capability, dominated by Bowman, which entered service in 2004 and currently has an out of service date of 2026. While 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.

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 will be an important contributory element.

MORPHEUS is not solely a technology project. Key to realising MORPHEUS and the wider LE TacCIS Change Programme benefits, within which it is nested, will be the supporting Business Model and the Transition Plan for implementation of both the technical architectures and the relationship with suppliers. Increasing competition is a critical factor in the design of the supporting Business Model.

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 continued support and evolution beyond the current Bowman ComBAT and Information Platform (BCIP) Out of Service Date.

A.2. The Assessment Phase

The Initial Gate approval, issued in May 2013, authorised Part 1 of the Assessment Phase to assess and select Acquisition Options to be taken through to Assessment Phase 2. Assessment Phase 1 is required to submit a Review Note to recommend two Acquisition Options consisting of Physical Architecture Options, Transition Plans and supporting Business Models, 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 Acquisition Options to be taken forward, together with an option to reduce Whole Life Costs by 10%. A Delivery Partner will mature these Acquisition Options to the appropriate level 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).

To support the options analysis a three year contract has been placed with Atkins Ltd to bring in expertise in evaluating operational efficiency and the cost of complex system design options as the MORPHEUS Customer Friend. In addition to this, the NEO consortium has been appointed as the MORPHEUS Systems House to produce prospective design options for each Acquisition Option and cost them through life. This will be undertaken through a 15-month programme of work in consultation with industry bodies that have expressed interest in the MORPHEUS programme.

A.3. In-Year Progress

On 5 Jan 15, the MORPHEUS Systems House contract was awarded to PA Consulting as the lead for the NEO consortium with QinetiQ, Roke and CGI as partners. The purpose of Systems House is to gather evidence and develop Acquisition Options to support the Authority's initial investment decision at Review Note. The Systems House underwent a short but aggressive mobilisation period and is now engaging across industry to develop Acquisition 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 Systems House to commence design work on the future systems. Five MOD personnel are embedded with Systems House.

A.4. Capability Risks

The current Tactical CIS capability is provided by a combination of Bowman and other systems. The high number of Urgent Operational Requirements on Operations in Afghanistan (Op HERRICK) identified that in service capability no longer meets the full breadth and depth of user needs and expectations. The Legacy Systems Update Project will address obsolescence and some user needs within the current capability baseline. However, the MORPHEUS project is needed to deliver an enduring solution against identified gaps and enable:

- command agility,
- information superiority,
- information exploitation for mobile and static users from formation headquarters to individual service personnel and platforms,
- exploit advances in information technology,
- the linking of sensors, information and intelligence providers, commanders and effectors in order that UK Forces engaged in Combined, Joint, Intergovernmental, Interagency, Multinational operations in the land environment to 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.

Efficient Tactical Communication Information Systems is key in ensuring mission success, whilst minimising casualties. Delays to the MORPHEUS programme will compound the current gap between the user need and current system capability as evidenced through Urgent Operational Requirements delivered on Op HERRICK. There will also be a exponential increase in the operational risks inherent in current systems when compared to the capabilities of potential adversaries and risks against delivering wider LE TacCIS Programme benefits.

A.4. Associated Projects

Project/Increment Name	Forecast In Service Date / Initial Operating Capability	Approval Status
Legacy Systems Update	IOC 2018	Initial Gate
Crypto Enabling Services	NK	Pre Initial Gate
Operational Information Services	IOC 2018	Pre Initial Gate

A.5. Procurement Strategy

Project/Increment Name	Contractor	Contract Scope	Contract Type	Procurement Route
MORPHEUS	**Atkins**	**Assessment Phase 1 – Operational Analysis**	**Firm Price**	**Competitive – UK**
MORPHEUS	**PA Consulting**	**Assessment Phase 1 – Systems House**	**Firm Price**	**Competitive – UK**

A.6. 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. The future support strategy for MORPHEUS is to migrate to a single logtistic services and support 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 2, which will replace the Legacy Support Project in April 2019. This is expected to be approved 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	41	-10
MORPHEUS Assessment Phase 2		190	
Total (£m)	**51**	**231**	**-10**

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

Project/Increment Name	Lowest Forecast (£m)	Budgeted For (£m)	Highest Forecast (£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.5 Expenditure to date

Description	Previous expenditure to 31 March 2014 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2015 (£m)
Assessment Phase	6	12	18
Total Expenditure	**6**	**12**	**18**

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 Forecast	Budgeted For	Latest Forecast
PASE – Future Support Provision	April 2019	April 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

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.5.2.1 Go-Live Date Variation – N/A

C.5.2.2 Go-Live Date Variation – N/A

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

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 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	Nov 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 14th May 2012. An investment decision is 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.
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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. An example was the selection of Pressurised Water Reactor 3 as the submarine's propulsion system. Pressurised 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 Pressurised Water Reactor 3 is more expensive to buy and operate over a 25 year period, but cheaper if the boats are run for longer. During the Concept Phase, the 2010 SDSR Strategic Defence and Security Review deferred the planned delivery of the first submarine from 2024 to 2028, and deferred 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. The Initial Gate Business Case also 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.

Following SDSR 10, the Initial Gate Business Case was submitted to run a 69 month Assessment Phase at a cost of £3.015Bn. Treasury approved the Case on 29th March 2011, the IAC issued an approval letter on 14th April 2011 and an announcement was made in Parliament on 18 May 2011 following publication of a Report to Parliament, "The United Kingdom's Future Nuclear Deterrent: The Submarine Initial Gate Parliamentary Report".

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 13th 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. An Integrated Master Schedule has been developed pulling into one the schedules from BAES, Rolls Royce, and Babcock Marine.

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.

In December 2012, 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 Next Generation Nuclear Propulsion Plant (NGNPP) to pay for additional contractor assistance in the US.

A.3. In-Year Progress

The platform entered design stage in July 2014; this sees the spatial arrangements developed. A wholeboat Preliminary Design Review was held in November 2014 and the Pressurised Water Reactor 3 (PWR3) Critical Design Review in December 2014. Achievement of the latter two Reviews was within a week of the date set 3 years previously.

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 change in threat environment during Vanguard's in-service life have inevitably given rise to the need for a more capable replacement submarine to achieve the same levels of deterrence, particularly with regard to detectability. With the capability envelope having been set with the choice of submarine characteristics at Initial Gate, and given current levels of design maturity, opportunities to save cost against Successor through further capability trading is limited without affecting schedule and therefore cost and time. Economies in manufacture through efficiency at the build yard, management of the supply chain, and simplification of the detailed design will be considered, and economies in the wider submarine enterprise will also be exploited wherever possible to reduce cost.

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.

Project/Increment Name	Contractor	Contract Scope	Contract Type	Procurement Route
-	Babcock	Support	-	Single Source

B Section B: Cost

B.1 Cost of the Assessment Phase (Pre assessment Phase)

Project/ Increment Title	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	287	4
Total (£m)	**905**	**870**	**-35**

Cost of the Assessment Phase

Project/ Increment Title	Approved Cost (£m)	Actual / Forecast Cost (£m)	Variation (£m)
Future Submarines Assessment Phase	2038	1997	-41
Next Generation Nuclear Propulsion Plant Assessment Phase	1090	1265	175
Nuclear Propulsion Critical Technology Assessment Phase	148	148	0
Total (£m)	**3276**	**3411**	**135**

Total Cost (£m)	**4181**	**4281**	**100**

Changes have been made to the split of the approval between the Projects with Future Submarines transferring approval to Nuclear Propulsion (NP). Increases are due to NP costs for Primary and Secondary Plant as design progresses.

B.2 Actual cost boundaries for Demonstration and Manufacture Phase / PFI – N/A

B.3 Cost of the Demonstration & Manufacture Phase - N/A

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

B.5 Expenditure to date

Description	Previous expenditure to 31 March 2014 (£m)	In-year expenditure (£m)	Total expenditure to 31 March 2015 (£m)
Concept Phase / Pre Initial Gate	825	31	856
Assessment Phase	1243	580	1780
Total Expenditure	**2068**	**611**	**2635**

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	Comments
79 Amber	Successor Technology Readiness Levels are classified

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

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