Project Data Summary Sheet¹³⁸

Project Number	JP 2048 Phase 4A/4B
Project Name	AMPHIBIOUS SHIPS (LHD)
First Year Reported in	2008-09
the MPR	
Capability Type	New
Acquisition Type	Australianised MOTS
Capability Manager	Chief of Navy
Government 1 st Pass	Aug 05
Approval	
Government 2 nd Pass	Jun 07
Approval	
Total Approved Budget	\$3,091.9m
(Current)	
2016–17 Budget	\$18.2m
Project Stage	Initial Materiel Release
Complexity	ACAT I



Section 1 – Project Summary

1.1 Project Description

The JP 2048 Phase 4A/4B project is providing the Australian Defence Force (ADF) with an increased amphibious deployment and sustainment capability through the acquisition of two Landing Helicopter Docks (LHDs) and associated supplies and support. Together, these 27,000 tonne LHDs will be able to land a force of over 2,000 personnel by helicopter and watercraft, along with all their weapons, ammunition, vehicles and stores.

1.2 Current Status

Cost Performance

In-year

End of year underspend is \$5.6m. This is primarily due to the delay in Prime Contractor payment milestones and the Survey and Quote work for the inventory and critical spares.

Project Financial Assurance Statement

As at 30 June 2017, project JP 2048 Phase 4A/4B has reviewed the approved scope and budget for those elements required to be delivered. Having reviewed the current financial and contractual obligations of the project, current known risks and estimated future expenditure, Defence considers, as at the reporting date, there is sufficient budget remaining for the project to complete against the agreed scope.

Contingency Statement

The project has not applied contingency in the financial year.

Schedule Performance

The Prime Contractor Final Acceptance milestone has slipped to June 2018 (33 months behind schedule). This will impact Final Materiel Release (FMR), slipping it from November 2016 to September 2018 (37 months behind schedule).

Major project milestones achieved in 2016-17 include:

- Recommended Provisioning List Contract Change Proposals;
- LHD 02 Harbour Acceptance Trials 100 per cent complete; and

LHD 02 Sea Acceptance Trials 100 per cent complete.

Technical issues have impacted the availability of the LHDs to progress operational test and evaluation activities. The issues diverted resources and delayed the rectification of outstanding on-board acquisition activities. A plan to achieve FOC is being redeveloped with the completion of operational test and evaluation activities to be rescheduled across the ADF in balance with existing operational and training commitments. The project anticipates achievement of Final Operational Capability (FOC) in December 2019 (37 months behind schedule).

138 Notice to reader

Forecast dates and Sections: 1.2 (Materiel Capability Delivery Performance), 1.3 (Major Risks and Issues), 4.1 (Measures of Materiel Capability Delivery Performance), and 5 (Major Risks and Issues) are excluded from the scope of the ANAO's review of this Project Data Summary Sheet. Information on the scope of the review is provided in the Independent Assurance Report by the Auditor-Ceneral in **Part** 3 of this report.

LHD Ships

Materiel Capability Delivery Performance

The amphibious capability sought through the provision of two LHDs is as follows:

- Carriage, in addition to the crew, of approximately 1,200 personnel in the force ashore with a further 800 personnel providing helicopter operations, logistics, command and intelligence as well as other supporting units;
- Space and deck strength sufficient to carry around 100 armoured vehicles, including tanks, and 200 other vehicles (approximately 2,400 lane metres);
- Hangar space for at least 12 helicopters and an equal number of landing spots to allow a company group to be simultaneously landed;
- 45 days endurance for crew and embarked force including sustainment, medical, rotary wing and operational maintenance and repair support to these forces whilst ashore for 10 days;
- · Command and control of the land, sea and air elements of a Joint Task Force; and
- The ability to conduct simultaneous helicopter and watercraft operations in conditions up to Sea State 4.

Production set to work and test activities, although delayed due to a combination of low electrical trade productivity, timeliness of documentation and complexity involved in the integration of the platform and combat system solutions, supported the achievement of project capability outcomes with later than planned acceptance dates for both LHD 01 and LHD 02.

Note

Forecast dates and capability assessments are excluded from the scope of the review.

1.3 Project Context

Background

The Defence Capability Plan 2004–14 identified a requirement to replace the Heavy Landing Ship HMAS *Tobruk* (JP 2048 Phase 4A) and one Amphibious Landing Ship, either HMAS *Manoora* or *Kanimbla* (JP 2048 Phase 4B). In the Defence Capability Plan 2006–16, Phases 4A and 4B of JP 2048 were amalgamated.

A Request For Information was undertaken to gather vessel capability and industry capacity information from international and Australian ship designers and shipbuilders. A Risk Reduction and Design Study and a preliminary Request for Quotation were also undertaken to provide commercial, technical, financial and schedule information for First Pass.

First Pass approval was obtained in August 2005 with the identification of two existing LHD designs that could meet the capability requirements (Armaris' Mistral and Navantia's LHD 'Juan Carlos') and the identification of potential Australian shipbuilders.

After First Pass, a Design Development Activity was conducted at the designers' respective premises to clarify the necessary Australian environmental and technical requirements, resulting in Australianised designs.

During this process, two shipbuilder/designer teams were formed with Tenix Defence working with Navantia and Thales Australia with Armaris.

A Request for Tender was released in April 2006 to the shipbuilders for the construction of the Australianised designs. Both builders submitted compliant tenders which were evaluated, and Second Pass Approval for the Tenix-Navantia solution was obtained in June 2007.

A contract was signed in October 2007 between the Commonwealth and Tenix Defence (now BAE Systems Australia Defence), for the acquisition of the two Spanish designed *Canberra* Class LHD ships and support systems; the contract came into effect in November 2007.

Navy accepted HMAS Canberra (LHD 01) on 25 November 2014 and HMAS Adelaide (LHD 02) on 2 December 2015.

Uniqueness

While the LHDs are based on an existing Spanish LHD design, the Australianisation changes, the incorporation of an existing SAAB Combat System, and the development and integration of the internal and external communication systems will result in a unique vessel.

Despite the experience gained in amphibious operations with the current amphibious ships in the Royal Australian Navy (RAN), the LHDs will bring a new and unique capability to the ADF by virtue of their size, aviation, well dock, and communications capabilities.

A unique build strategy has been employed. The LHD hulls were built, including the majority of the fit-out, by Navantia at the Ferrol and Fene Shipyards in Spain. They were transported to Australia as individual lifts on a 'float on/float off' heavy lift ship, the Blue Marlin. Construction of the superstructure and its consolidation with the hull was conducted by BAE Systems Australia Defence (BAE Systems) at their Williamstown (Victoria) Shipyard in Australia. The superstructure contains the high level Combat and Communications Systems equipment that will be maintained and upgraded in Australia. BAE Systems also undertook the final out-fit, set-to-work, and trials.

Major Risks and Issues

As the project moves towards closure there has been a reduction in the strategic risk profile but an increase in issues such as inservice performance, ship availability, and close out of outstanding verification/assurance and warranty/latent defects. This has influenced Prime Contractor Final Acceptance leading to an impact on achievement of Final Materiel Release (FMR). System performance of the propulsion pods had a significant impact upon the availability of both ships in the first two Quarters of 2017 requiring the docking of HMAS Adelaide and a trial program for HMAS Canberra prior to exercise TALISMAN SABRE 2017. The project is transferring to the Maritime Systems Division (MSD) branch managing sustainment effective 1 July 2017. A Transition and Remediation Program (TARP) has been established to complete the outstanding acquisition scope in conjunction with the remediation of a number of systems of concern. Many existing risks were retired

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upon delivery of LHD 02 with the associated integrated logistics support products. Such risks included the identification and treatment of technical issues, major ship system or equipment failure, indices escalation, supplies, severe weather conditions during sea trials, non-acceptance of the LHD Safety Case, scope creep, Legislative/Regulatory changes and any non-supply of Government Furnished Equipment or Services. The remaining risks, issues and certification and acceptance tasks (two per cent of the total tasks) continues to be resolved by the project office in conjunction with the prime contractor, Navy and other relevant Defence areas. The risk regarding the availability of suitably qualified project office personnel was realised. The transfer of the project combined with the remediation activity has introduced a new risk regarding the transition and retention of existing corporate project knowledge.

Other Current Sub-Projects

JP 2048 Phase 3: Watercraft system acquisition used in conjunction with the JP 2048 Phase 4A/4B Amphibious Ships (LHD) Mission System. This watercraft is the ship to shore connector for the LHDs.

Note

Major risks and issues are excluded from the scope of the review.

Section 2 - Financial Performance

2.1 Project Budget (out-turned) and Expenditure History

Date	Description		\$m	Notes			
	Project Budget						
Nov 03	Original Approved		3.1	1			
Sep 04	Real Variation – Scope		4.8	2			
Aug 05	Real Variation – Scope	:	29.6	3			
Jun 07	Government Second Pass	Approval 2,92	20.8				
Oct 08	Real Variation – Transfer		9.3	4			
			2,964.5				
Jul 10	Price Indexation		428.4	5			
Jun 17	Exchange Variation		(304.1)				
Jun 17	Total Budget		3.091.9				
	Project Expenditure						
Prior to Jul 16	Contract Expenditure – BAB	Systems (2,66	6.7)				
	Other Contract Payments /		1.9)	6			
	,		(2,778.6)				
			(-,- ,- ,- ,- ,				
FY to Jun 17	Contract Expenditure – BAB	Systems (1	0.6)				
		(.	,				
	Other Contract Payments /	Internal Expenses	2.0)	7			
			(12.6)				
Jun 17	Total Expenditure		(2,791.2)				
our n			(2,731.2)				
Jun 17	Remaining Budget		300.7				
Juli 17	Remaining Budget		500.7				
Nistas							
Notes	This project's original hudget emount is	that prior to achieving Second Deep Cover	ment ennrevel				
1	I his project's original budget amount is	that prior to achieving Second Pass Govern	iment approval.				
2	To fund a risk reduction activity for the requirements.	Project to obtain design data and develop d	esigns to meet Aust	ralian essential			
3	First Pass Approval.						
4	Transfer of funding for technical studies from the then Defence Science and Technology Organisation (now Defence						
	Science and Technology Group).						
5	Up until July 2010, indexation was applied to project budgets on a periodic basis. The cumulative impact of this approach was \$350.0m. In addition to this amount, the impact on the project budget as a result of out-turning was a						
	further \$78.4m having been applied to t	he remaining life of the project.					
6		g Expenditure, Offer Definition, Consultants not attributable to the Prime contract and r					

LHD Ships

7	Other expenditure comprises: project management costs (\$1.1m), Integrated Logistics Support (\$0.4m) and
	other contract payments not attributable to the Prime Contract (\$0.5m)

2.2A In-year Budge	2.2A In-year Budget Estimate Variance							
Estimate	Estimate	Estimate	Explanation of Material Movements					
PBS \$m	PAES \$m	Final Plan \$m						
19.5	32.9	18.2	PBS-PAES: The variation is primarily due to the delay in delivery of key milestones (Recommended Provisioning Lists Spares) from 2015-16 to 2016-17. PAES-Final Plan: The variation is primarily due to delays in the survey and quote contract for additional spares as well as Prime Contractor payment milestones (including final acceptance milestone) reprogrammed to FY 17-18.					
Variance \$m	13.4	(14.7)	Total Variance (\$m): (1.3)					
Variance %	68.9	(44.8)	Total Variance (%): (6.8)					

2.2B In-year Budg	jet/Expenditure '	Variance		
Estimate	Actual	Variance	Variance Factor	Explanation
Final Plan \$m	\$m	\$m		
		(5.6)	Australian Industry	End of year underspend of \$5.6m is
			Foreign Industry	due to the delay in the Prime
			Early Processes	Contractor payment milestones and
			Defence Processes	the Survey and Quote work for the
			Foreign Government	inventory and critical spares.
			Negotiations/Payments	
			Cost Saving	
			Effort in Support of Operations	
			Additional Government Approvals	
18.2	12.6	(5.6)	Total Variance	
		(30.8)	% Variance	

2.3 Details of Project Major Contracts

Contractor		Signature Date	Price at		Тур	e (Price Basis)	Form of Contract / Arrangement	Notes
			Signature	\$m 30 Jur	7 \$m			
BAE S	systems	Oct 07	2,268.1	2,6	.1	Variable	ASDEFCON	1, 2
Notes								
1	 Contract Price at Revision 123. Amendments to Contract since signature include execution of contracted options for Training and Spares. 							
2					expenditure to 30 (where applicab		emaining commitment	at current
Contra	actor		Quantities as	at		Scope		Notes
		Signat	ure	30 Jun 17				
BAE S	E Systems 2 2 LHD ships and integrated support systems.							
Major equipment received and quantities to 30 Jun 17								
	LHD 01 and LHD 02 Delivery and Acceptance achieved.							

Section 3 – Schedule Performance

3.1 Design Review	Progress
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Review	Major System / Platform Variant	Original Planned	Current Planned	Achieved /Forecast	Variance (Months)	Notes
System Mission System (Includes Platform / Requirements Combat Systems)		Feb 08	Feb 08	Feb 08	0	
	Support System	Apr 08	Apr 08	Apr 08	0	
Preliminary	Communication	Oct 08	Oct 08	Dec 08	2	1
Design	Navigation	Oct 08	Oct 08	Dec 08	2	1
	Platform System	Nov 08	Nov 08	Nov 08	0	
	Combat System	Dec 08	Apr 09	Apr 09	4	1
	Whole of Ship	Jan 09	May 09	May 09	4	1
	Support system	Mar 09	May 09	May 09	2	1
Detailed Design	Communication	May 09	Sep 09	Sep 09	4	1

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	Navigation	Jun 09	Jun 09	Jun 09	0	
	Platform system	Jun 09	Jun 09	Jun 09	0	
	Combat system	Jul 09	Oct 09	Oct 09	3	1
	Whole of ship	Jul 09	Dec 09	Dec 09	5	1
	Support system	Aug 09	Dec 09	Dec 09	4	1
Notes						

Notes

1 Due to the complexity of the design and integration of the combat, communications and platform systems, more time was allocated to the design review activities.

The Heavy Lift Ship Company, Dockwise, delivered the LHD 01 hull to BAE Systems in Australia on 28 October 2012 (66 days later than planned). LHD 02 departed Spain on the Heavy Lift Ship, Blue Marlin, in December 2013 and arrived in Australia in February 2014 on schedule.

3.2 Contractor Test and Evaluation Progress

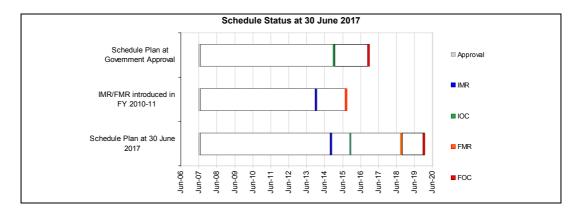
0.2	Contractor 103	5.2 Contractor rest and Evaluation Progress					
Test and Major S		Major System / Platform Variant	Original Planned	Current Planned	Achieved /Forecast	Variance (Months)	Notes
System Integration		LHD Ships 1 and 2	Mar 15	Mar 15	Oct 15	7	1
Acc	eptance	LHD Ship 1 Project Acceptance	Jan 14	Feb 14	Oct 14	9	2
		LHD Ship 2 Project Acceptance	Aug 15	Aug 15	Oct 15	2	3
		LHD Final Acceptance	Sep 15	Nov 16	Jun 18	33	4
Not	es						
1		ation relates to the whole capability, comme delays impacted System Integration and set			ion at LHD 02. I	LHD 01 produ	iction and
2	2 Project Acceptance for LHD 01 occurred later than planned. The delay was a direct result of a combination of low productivity in the set to work of electrical systems, timeliness of documentation and complexity involved in the integration of the platform and combat system solutions.						
3	A combination of lower than anticipated production and testing performance, timeliness of documentation and complexity involved in the integration of the platform and combat system solutions, delayed the planned Sea Acceptance Trials for LHD 02, with an associated follow-on impact of delayed delivery and acceptance of LHD 02.						
4	The change from Original Planned Date to Current Planned Date for Final Acceptance is due to the relationship this has with LHD 02 Project Acceptance and scheduled defect/deficiency close-out activities and milestones.						

3.3 Progress toward Materiel Release and Operational Capability Milestones

J.J F	3.3 Progress toward Materiel Release and Operational Capability Milestones							
Item		Original Planned	Achieved /Forecast	Variance (Months)	Notes			
Initia	I Materiel Release (IMR) (LHD 01)	Jan 14	Oct 14	9	1			
Initia	I Operational Capability (IOC) (LHD 01)	Dec 14	Nov 15	11	2, 3			
Mate	riel Release 2 (MR2) (LHD 02)	Aug 15	Oct 15	2	4			
Fina	Materiel Release (FMR)	Aug 15	Sep 18	37	4			
Fina	Operational Capability (FOC) (LHD 02)	Nov 16	Dec 19	37	5			
Note	S	•						
1	LHD 01 production delays impacted System Integration and	set to work activitie	es resulting in the c	lelay to achievemer	t of IMR.			
2	The change is a direct result of a combination of low productivity in the set to work of electrical systems, timeliness of documentation and complexity involved in the integration of the platform and combat system solutions. IOC is a Capability Manager responsible milestone which is constituted by an operational capability level delivered through a range of Defence assets. LHD 01 and the associated Integrated Logistic Support products contribute to the achievement of IOC.							
3	This variance is as a result of late delivery of LHD 01 and year by the Defence Forces. This delay is not related directl				during the			
4	The variance is related directly to a combination of lower than anticipated production and testing performance, timeliness of documentation and complexity involved in the integration of the platform and combat system solutions, and delayed LHD 02 delivery to the project. The Prime Contractor Final Acceptance milestone has slipped to June 2018. This will impact Final Materiel Release (FMR), slipping it from November 2016 to September 2018. The FMR date is under review to incorporate remediation activity and expected to be clarified with the approval of a revised Materiel Acquisition Agreement in 2017.							
5	operational scenarios. This milestone will confirm the two Group and support an Amphibious Ready Group in a comp be available in Quarter three and four 2017, after whic ships. The Operation Test and Evaluation activities plan	LHDs combined at lex amphibious war th time Operation aned in 2018 are b						

LHD Ships

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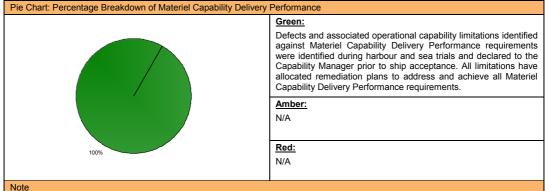


Note

Forecast dates in Section 3 are excluded from the scope of the review.

Section 4 - Materiel Capability Delivery Performance

4.1 Measures of Materiel Capability Delivery Performance



This Pie Chart represents Defence's expected capability delivery. Capability assessments and forecast dates are excluded from the scope of the review.

4.2 Constitution of Initial Materiel Release and Final Materiel Release					
Item	Explanation	Achievement			
Initial Materiel Release (IMR)	LHD 01 delivered ready for Operational Test and Evaluation.	Achieved			
	 Capability Acquisition and Sustainment Group (CASG) Elements of Fundamental Input to Capability Support System, including Technical Documentation, Spares Support and Training Support (CASG portion). 				
Final Materiel Release (FMR)	Completed delivery of LHD 02 and all remaining Acquisition Project Support Deliverables.	Not yet achieved			
	 FMR is expected to be achieved in September 2018. 				

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Section 5 – Major Risks and Issues

5.1 Major Project Risks					
Identified Risks (risk identified by standard project risk management processes)					
Description	Remedial Action				
The LHD Project organisation will be impacted through the lack of the correct number of appropriately qualified personnel available to undertake required LHD Project Office commitments.	 Engaging External Service Providers (Contractors). Utilise personnel from CASG maritime matrix organisation and available personnel from the SPO. This risk was realised and is now disclosed as an issue in Section 5.2. 				
Emergent Risks (risk not previously identified but has emerged during 2016-17)					
Description	Remedial Action				
There is a chance that the delivery and support of two LHDs will be affected by spares and equipment that are not appropriate for RAN usage profiles leading to an impact upon sustainability and cost.	 Project engaging External Service Providers to review & make recommendations on the Logistics Supportability Analysis Record. Verification activity (analysis) to be done across all technical data deliverables and Configuration Baseline Specification to ensure consistency. 				
	Project to continue to review all engineering changes to ensure spares have been correctly identified.				
There is a chance that in-service use of the Ships during the NOTE period will identify system performance shortfalls in key systems leading to an impact on schedule and cost.	• Transition and Remediation Program (TARP) established to address system performance issues (remediation) and progress rectification of outstanding acquisition deficiencies and defects.				
	 Project is transferring to the branch that sustains the capability and integrated with TARP effective 1 July 2017, to ensure effort required for all activities is coordinated. 				
There is a chance that defect rectification and testing won't be completed by Final Acceptance due to insufficient accept to LPUP leading to an impact on	Prime Contractor to schedule defect and test activity to occur during each availability.				
insufficient access to LHD's leading to an impact on schedule and cost.	 Project Office to provide subject matter expertise to witness tests based upon schedule. 				
	Prime Contractor (acquisition) and In-Service Support Contractor to coordinate the development of a combined schedule for an availability period.				
There is a chance that FMR won't be achieved as forecast due to the amount of outstanding issues leading to an impact on schedule and cost.	This risk was realised and is now disclosed as an issue in Section 5.2.				
There is a chance that the Final Acceptance CCP won't be accepted due to the amount of outstanding work to be transferred to the Transition In-Service Support Contract (TISSC) leading to an impact on schedule.	This risk was realised and is now disclosed as an issue in Section 5.2.				
There is a chance that the corporate knowledge of the CoA project team will be affected by the transfer from Specialist Ships Acquisition Branch to Major Surface Ships Branch leading to an impact upon schedule and cost.	 Transfer plan developed incorporating activities for outgoing project team to prepare guidance for incoming team to review. Several resources retained and included in the transfer to support the establishment of the new PMO. Colocation with LHDSPO will assist new PMO to obtain current knowledge of ships and schedule. 				

5.2 Major Project Issues	
Description	Remedial Action
Initial acceptance of the LHDs occurred prior to the achievement of all applicable contractual and FPS requirements this has affected the ability to complete the outstanding requirements leading to an impact on schedule and cost.	 Early sign off of contract requirements. Monitor burn down rate of remaining contract requirements. Provision of expert review at earlier acceptance testing. Progressive acceptance review of stage category test results.
The review of contract deliverables, witnessing of tests and defect rectification has been affected by the limited number of sufficiently skilled CoA project personnel leading to an impact on schedule and cost.	 Engaging External Service Providers (Contractors). Utilise personnel from CASG maritime matrix organisation and available personnel from the SPO.

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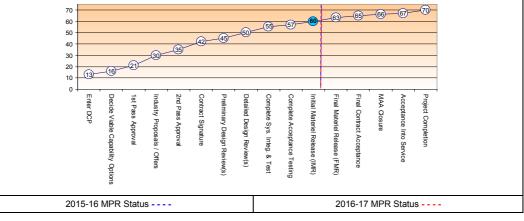
Description	Remedial Action		
The forecast FMR date has been affected by the rejection of the FWT CCP leading to an impact on schedule.	 The project is working with the Contractor to accept and close out Warranty, Latent Defect claims and items in the Defect and Deficiency List - relating to unverified Mission System Specification requirements. 		
	 Key personnel identified to ensure internal/external stakeholders are made available to develop, review and provide internal signatures for outstanding waivers/deviations. 		
	• Key personnel identified with authority to agree to actions that will enable the resolution of outstanding requirements.		
Final Acceptance (FA) of the acquisition contract has been affected by the rejection of the Final Work Transfer (FWT)	Resolution of the outstanding deficiencies and defects will be undertaken by the Prime contractor.		
CCP intended to transfer the remaining scope of work to the in-service support contract leading to an impact on schedule.	• The establishment of the TARP will ensure improved collaboration between outstanding acquisition tasks, remediation tasks and on-going sustainment tasks being undertaken to the LHDs.		

Note
Major risks and issues in Section 5 are excluded from the scope of the review.

Section 6 - Project Maturity

6.1 Project Maturity Score and Benchmark

6.1 Project Maturity	Attributes								
Maturit	ty Score	Schedule	Cost	Requirement	Technical Understanding	Technical Difficulty	Commercial	Operations and Support	Total
Project Stage	Benchmark	10	8	8	8	9	8	9	60
Initial Materiel	Project Status	8	9	9	9	9	8	9	61
Release	Explanation	 Schedule: BAE Systems delivered LHD 01 and LHD 02 late. Cost: The Project is on track to achieve outcomes within the allocated budget. Requirement: Integration and testing processes have verified achievement of endorsed requirements. Technical Understanding: Knowledge necessary to operate and support the capability has been transferred to Sustainment. 							



Project Data Summary Sheets

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Section 7 – Lessons Learned

7.1 Key Lessons Learned

Project Lesson	Categories of Systemic Lessons
Independent Assurance Reviews and Project Stakeholder Group meetings enable adjustment of project strategies and stakeholder input to balance schedule decisions against impacts to cost, schedule, performance, quality and stakeholder expectations. For example, cost, performance and supportability may be impacted by early acceptance of the supplies to meet schedule demands.	Contract Management
Prior to committing to the acquisition contract, use best endeavours to obtain high fidelity sustainment data and assess it against suitability (fitness for purpose). Senior engineering and logistic reviews are required prior to the delivery of the sustainment products to minimise sustainment risks.	Contract Management
When introducing new major capabilities into service, both operational tasks and maintenance tasks should be modelled and analysed in detail, before the training obligations under the acquisition contract are agreed.	First of Type Equipment

Section 8 – Project Line Management

8.1 Project Line Management in 2016-17

Position	Name	
Division Head	Mr Alan Nicholl (Dec 15 <mark>–Feb 17) Mr Patrick Fitzpatrick (Acting Feb 17–current)</mark>	
Branch Head	Mr Peter Croser	
Project Director	Mr Peter Croser	
Project Manager	Mr Paul Hegarty	

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