

Project Data Summary Sheet¹⁴⁶

Project Number	SEA 1448 Phase 2A
Project Name	ANZAC ANTI-SHIP MISSILE DEFENCE
First Year Reported in the MPR	2009-10
Capability Type	Upgrade
Acquisition Type	Australianised MOTS
Capability Manager	Chief of Navy
Government 1st Pass Approval	N/A
Government 2nd Pass Approval	Nov 03
Budget at 2 nd Pass Approval	\$449.0m
Total Approved Budget (Current)	\$386.8m
2017- 18 Budget	\$4.7m
Project Stage	Final Materiel Release
Complexity	ACAT II



Section 1 – Project Summary

1.1 Project Description

The Anti-Ship Missile Defence (ASMD) upgrade SEA 1448 Phase 2 project **has provided** the ANZAC Class Frigates with an enhanced level of self defence against modern anti-ship missiles. There are two sub-phases of SEA 1448 Phase 2. Phase 2A of the ASMD Project, **upgraded** all eight of the ANZAC Class Ship's existing Combat Management Systems (CMS) and fire control systems, and **installed** an Infra-Red Search and Track (IRST) System which **provides** improved detection of low level aircraft and anti-ship missiles when the ship is close to land.

1.2 Current Status

Cost Performance

In-year

As at 30 June 2018 the project has achieved its budget for this Financial Year (FY).

Project Financial Assurance Statement

As at 30 June 2018, project SEA 1448 Phase 2A has reviewed the approved scope and budget for those elements required to be delivered by the project. Having reviewed the current financial and contractual obligations of the project, current known risks and estimated future expenditure (**including the remediation of the IRST support deficiency**), 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 systems being provided under Phase 2A are being delivered to current schedule **with the IRST Reference Set due in December 2018**. Overall, due to the interdependence of Phase 2A with Phase 2B, the Government approving a change of acquisition strategy for Phase 2B in August 2009 and the Real Cost Increase for Phase 2B for the follow on ships 2-8 in November 2011, there is now a **80 month** variance to the original approved date for Final Operational Capability (FOC) for this Phase of the Project. During 2014-15, due to pressures from the large sustainment package of work, a revised schedule was developed for ships four onwards. **Project will be claiming Final Materiel Release (FMR) from the Capability Manager in July 18. The TI-338 has been submitted for regulatory review and the project expects Navy to be able to declare Final Operating Capability by August 2018. The outstanding issue regarding IRST support has been addressed by the provision of an in-country facility which is on contract, under Maritime Cross-Platform Support Programme Office (MCPSPPO), and due for delivery in December 2018.**

Materiel Capability Delivery Performance

The Initial Materiel Release was claimed for Stage 1 Capability on HMAS *Perth* on 24 June 2011. The Chief of Navy formally provided Initial Operational Release (IOR) for ASMD upgrade capability delivered to HMAS *Perth* and its associated support

¹⁴⁶ 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-General in **Part 3** of this report.

systems on 16 August 2011. The Project has now completed Operational Test & Evaluation (OT&E) for the final Stage 2 Capability. Initial Operational Capability (IOC) was achieved in September 2015.

Note

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

1.3 Project Context

Explanation

Background

The need for an ASMD capability in the Royal Australian Navy's (RAN) surface fleet was first foreshadowed in the 2000 Defence White Paper.

SEA 1448 Phase 2A is the initial phase of the ANZAC ASMD Program, performed by the ANZAC Alliance (Commonwealth plus BAE Systems (previously Tenix) and Saab Australia (**previously Saab Systems**)), to provide ship systems capable of integrating missile defence systems.

Phase 2A was approved by Government in November 2003 for \$449.0m (December 2003 prices). This included an element for the Very Short Range Air Defence (VSRAD) System (two per ship) of \$155.4m, which was quarantined pending the outcome of investigations into an active Phased Array Radar system (PAR) (referred to as CEAFAR) and its Sea trials conducted in 2004, which was subsequently approved in the SEA 1448 Phase 2B Second Pass Approval.

SEA 1448 Phases 2A and 2B are being managed as a confederated ASMD Project due to their common systems engineering disciplines, schedules and risks. Phase 2A represents a low risk due to its in-service equipment.

As a result of technical issues in the integration of the phased array radar into the Class with Phase 2B of the ASMD Project in 2007, a change to the Phase 2B Project acquisition strategy caused delays in the installation of the equipment being purchased under Phase 2A. These delays do not impact on the delivery of the Phase 2A equipment, which is being delivered into store and appropriately maintained until the Phase 2B acquisition strategy calls on the equipment for installation.

To support the upgraded Mk3E Combat Management System and Infra-Red Search and Track (IRST), a combined ASMD Integration and Training Centre was built by the then Defence Support Group (DSG) in 2006. This building was added to the existing ANZAC System Support Centre located at HMAS *Stirling* in Western Australia. This facility was made available for lead ship training between September 2010 and April 2011 and was formally handed to Navy in August 2011.

The support for the Mk3E Combat Management System is already in contract as there is an existing sustainment support contract with Saab Australia (Australia) for the existing Saab Mk3 Combat Management System that is already installed in the ANZAC Class.

The IRST will be supported through the current ANZAC Alliance arrangements.

The lead ship, HMAS *Perth*, successfully underwent acceptance testing between October 2010 and June 2011 with the Chief of Navy accepting IOR in August 2011. IOC was achieved in September 2015.

Uniqueness

The Phase 2A Combat Management System upgrade is the next generation of the Mk3E system initially installed on the final ANZAC Class Frigate (HMAS *Perth*). The Mk3E was the first Windows XP based Commercial-Off-The-Shelf combat management system in the RAN and was initially installed in HMAS *Perth* as part of a de-risking trial.

This Phase of the ASMD Project is currently fully contracted through the ANZAC Ship Alliance.

Major Risks and Issues

An issue for SEA 1448 Phase 2A relates to delays in establishing a contract to remediate IRST system support deficiencies which have resulted in delay to project Material Acquisition Agreement closure and preceding major milestones. The solution to the support issue was to procure two additional sensor heads and a test bed. The two sensor heads have been procured and the test bed contract has been established with a delivery expected to occur in December 2018.

MAA closure has been delayed but with project now about to claim FMR, the process for moving forward should be routine for a project of this complexity.

Finally, the Budgeted Cost Model (BCM) and Assets Under Construction (AUC) are not correctly maintained and rolled out in time for FMR/FOC is understood and will be finalised when the IRST Test bed is delivered in Dec 18.

Other Current Sub-Projects

SEA 1448 Phase 2B - This Phase completes the ASMD Upgrade by delivering a Phased Array Radar (PAR) System consisting of a target indication and tracking radar titled CEAFAR and a missile illuminator system, titled CEAMOUNT which will provide mid-course guidance and terminal illumination to the Evolved Sea Sparrow Missile (ESSM). This phase also replaces the existing ANZAC Class navigation radar.

SEA 1448 Phase 4A -This Phase complements the ASMD Upgrade by delivering a contemporary Electronic Support Measures (ESM) system. This Phase is being managed through Electronic Systems Division (ESD).

SEA 1448 Phase 4B -This Phase replaces the obsolescent SPS-49 long range air search radar and existing Identification Friend or Foe (IFF) system with a combined CEA phased array radar and IFF system which is integrated with the radar and Combat Management System upgrades installed by SEA1448 Phase 2B. This Phase is being managed by Boats, Upgrades and Infrastructure Development Branch within Ships Division.

Note

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

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Section 2 – Financial Performance

2.1 Project Budget (out-turned) and Expenditure History

Date	Description	\$m	Notes
Project Budget			
Jan 04	Original Approved (Second Pass Approval)	449.0	
Aug 04	Real Variation – Budgetary Adjustments	(0.1)	
Mar 06	Real Variation – Transfers	(155.4)	1
Feb 07	Real Variation – Transfers	(4.4)	2
		(159.9)	
Jul 10	Price Indexation	101.3	3
Jun 18	Exchange Variation	(3.6)	
Jun 18	Total Budget	386.8	
Project Expenditure			
Prior to Jul 17	Contract Expenditure – Saab Australia Pty Ltd (CMS)	(109.3)	4
	Contract Expenditure – BAE Systems Australia (IRST)	(93.5)	
	Contract Expenditure – BAE Systems Australia (Follow On)	(81.6)	4
	Contract Expenditure – BAE Systems Australia (First of Class)	(37.6)	4
	Contract Expenditure – Saab Australia Pty Ltd (First of Class)	(24.0)	4
	Other Contract Payments / Internal Expenses	(23.4)	4, 5
		(369.4)	
FY to Jun18	Contract Expenditure – BAE Systems Australia (Follow On)	(3.6)	
	Other Contract Payments / Internal Expenses	(1.1)	5
Jun18	Total Expenditure	(374.1)	
Jun18	Remaining Budget	12.7	
Notes			
1	\$155.4m transferred to Project SEA 1448 Phase 2B for phased array radar procurement with procurement of VSRAD capability as directed by Government.		
2	Transferred to the then DSG for facilities funding of the ASMD Systems Integration and Training Centre.		
3	Up until July 2010, indexation was applied to project budgets on a periodic basis. The cumulative impact of this approach was \$88.8m. In addition to this amount, the impact on the project budget as a result of out-turning was a further \$12.5m having been applied to the remaining life of the project.		
4	The amounts for each contract differ from prior years due to a revalidation of life to date expenditure.		
5	Other expenditure comprises: operating expenditure, contractors, consultants, contingency, other capital expenditure not attributable to the aforementioned top five contracts and minor contract expenditure.		

2.2A In-year Budget Estimate Variance

Estimate PBS \$m	Estimate PAES \$m	Estimate Final Plan \$m	Explanation of Material Movements
4.5	4.7	4.7	PBS - PAES: The variation of \$0.2m is due to the provision of additional budget for the IRST Contractor. PAES - Final Plan: No change
Variance \$m	0.2	0.0	Total Variance (\$m): 0.2
Variance %	4.4	0.0	Total Variance (%): 4.4

2.2B In-year Budget/Expenditure Variance

Estimate Final Plan \$m	Actual \$m	Variance \$m	Variance Factor	Explanation
			Australian Industry	Nil
			Foreign Industry	
			Early Processes	
			Defence Processes	
			Foreign Government Negotiations/Payments	
			Cost Saving	
			Effort in Support of Operations	
			Additional Government Approvals	
4.7	4.7	0	Total Variance	
		0	% Variance	

2.3 Details of Project Major Contracts

Contractor	Signature Date	Price at		Type (Price Basis)	Form of Contract	Notes
		Signature \$m	30 Jun 18 \$m			
Saab Australia Pty Ltd (CMS)	Apr 05	123.1	109.3	Variable	Alliance	1
BAE Systems Australia (IRST)	Apr 05	104.9	93.5	Variable	Alliance	2
BAE Systems Australia (First of Class)	May 06	26.0	37.6	Variable	Alliance	1, 2, 3
Saab Australia Pty Ltd (First of Class)	May 06	6.8	23.9	Variable	Alliance	1, 3
BAE Systems Australia (Follow on Ships)	Jan 12	74.9	86.7	Variable	Alliance	1, 2
Notes						
1	Contract value as at 30 June 2018 is based on actual expenditure to 30 June 2018 and remaining commitment at current exchange rates.					
2	These contracts are listed with BAE Systems Australia, formerly Tenix Defence.					
Contractor	Quantities as at		Scope	Notes		
	Signature	30 Jun 18				
Saab Australia Pty Ltd (CMS)	8	8	Combat Management Systems and Fire Control System upgrades	1		
BAE Systems Australia (IRST)	8	8	Infra-red Search and Track Systems	1		
BAE Systems Australia (First of Class)	1	1	First of Class Installation			
Saab Australia Pty Ltd (First of Class)	1	1	First of Class Installation			
BAE Systems Australia (Follow on Ships)	7	7	FON Ships 2-8 Installation			
Major equipment received and quantities to 30 Jun 18						
Installation has been completed for all ships						
Notes						
1	\$155.4m transferred to Project SEA 1448 Phase 2B for phased array radar procurement with procurement of VSRAD capability as directed by Government					

Section 3 – Schedule Performance

3.1 Design Review Progress

Review	Major System / Platform Variant	Original Planned	Current Planned	Achieved /Forecast	Variance (Months)	Notes
System Requirements	Mk3E Combat Management System/Fire Control Director/Infra-Red Search and Track – Stage 1 (Requirements Review)	Feb 04	N/A	Aug 05	18	1
	Mk3E Combat Management System/Fire Control Director – Stage 1 (Functional Review)	Apr 05	N/A	Aug 06	16	1
	Mk3E Combat Management System/Fire Control Director – Stage 1 (System Performance Review)	N/A	N/A	Nov 06	N/A	
	ASMD Shore Facilities (HMAS Stirling)	N/A	N/A	May 06	N/A	
Preliminary Design	Mk3E Combat Management System/Fire Control Director/Infra-Red Search and Track System – Stage 1	Nov 05	N/A	Aug 07	21	1
	ASMD Shore Facilities (HMAS Stirling)	N/A	N/A	Nov 06	N/A	
Critical Design	Stage 1 Critical Design Review – Part 1 (All except Phased Array Radar in the AFT mast)	Sep 06	N/A	May 08	20	1

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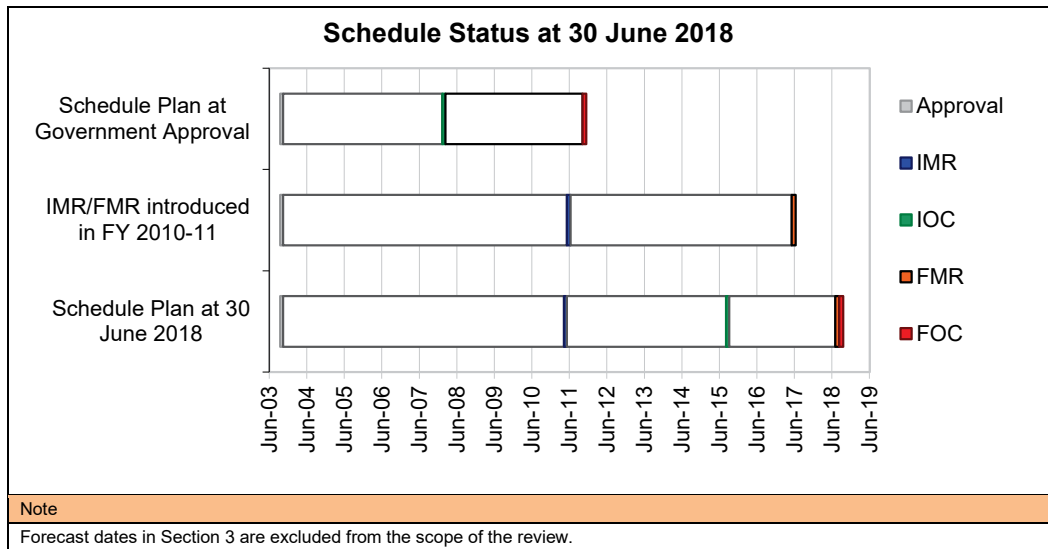
	Stage 1 Critical Design Review – Part 2 (Remaining components of AFT mast)	N/A	N/A	Aug 08	N/A	
	ASMD Shore Facilities (HMAS <i>Stirling</i>)	N/A	N/A	Jun 07	N/A	
Notes						
1	Variances indicated are directly linked to: the Government decision to investigate phased array radar technologies in lieu of the requirement for the VSRAD system; and, a realisation of technical risks in Phase 2B which required re-engineering effort to redesign the integration of the phased array radar into the ANZAC platform.					

3.2 Contractor Test and Evaluation Progress

Test and Evaluation	Major System / Platform Variant	Original Planned	Current Planned	Achieved /Forecast	Variance (Months)	Notes
Test Readiness Review	HMAS <i>Perth</i> with upgraded ASMD System (Mk3E Combat Management System/Fire Control Director/Infra-Red Search and Track - Sea Phase)	Nov 07	N/A	Mar 11	40	1, 2
Acceptance	HMAS <i>Perth</i> with upgraded ASMD System (Mk3E Combat Management System/Fire Control Director/Infra-Red Search and Track - Sea Phase)	Apr 08	Jun 11	Jun 11	38	1
Notes						
1	Variance indicated was directly linked to the Government decision to investigate phased array radar technologies in lieu of the requirement for the VSRAD system; and, a realisation of technical risks in Phase 2B which required re-engineering effort to redesign the integration of the phased array radar into the ANZAC platform.					
2	Additional variance of one month due to production completion delay of one month in lead ship HMAS <i>Perth</i> .					

3.3 Progress Toward Materiel Release and Operational Capability Milestones

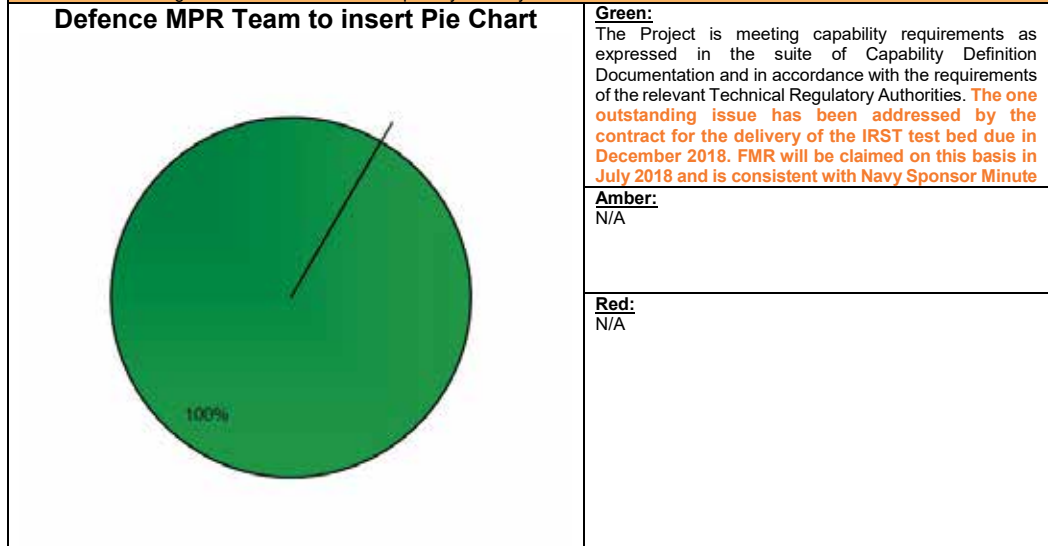
Item	Original Planned	Achieved /Forecast	Variance (Months)	Notes
Initial Materiel Release (IMR)	N/A	Jun 11	N/A	
Initial Operational Capability (IOC)	Mar 08	Sep 15	90	1
Final Materiel Release (FMR)	Jul 17	July 18	12	2
Final Operational Capability (FOC)	Dec 11	Aug 18	80	3
Notes				
1	Variance was directly linked to: the Government decision to investigate phased array radar technologies in lieu of the requirement for the VSRAD system; and, a realisation of technical risks in Phase 2B which required re-engineering effort to redesign the integration of the phased array radar into the ANZAC platform. The previous variance was linked to the updated Materiel Acquisition Agreement (MAA) which moved IOC until after PAR System has been proven against Super Sonic Targets.			
2	The project is expecting to submit a claim for the achievement of FMR from the Capability Manager in July 2018. The delay is due to the approval of ships 2-8 by Government and the implementation of the IRST support equipment contract Declaration of this milestone is dependent on Capability Manager agreement to the resolution of the IRST logistics issue noted in Section 5.2			
3	Variance is a result of the ASMD Project Management Stakeholder Group agreeing to link the completion date of this Phase of the Project with that of Phase 2B and the approval of ships 2-8 by Government and the implementation of the IRST support equipment contract Declaration of this milestone is dependent on Capability Manager agreement to the resolution of the IRST logistics issue noted in Section 5.2.			



Section 4 – Materiel Capability Delivery Performance

4.1 Measures of Materiel Capability Delivery Performance

Pie Chart: Percentage Breakdown of Materiel Capability Delivery Performance



Note
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)	Provisional acceptance of the ASMD upgraded HMAS Perth.	Achieved
Final Materiel Release (FMR)	The final ship achieved Materiel Release in October 2017. FMR represents acceptance of all ASMD upgraded ships and associated supplies and will be claimed by CASG in July 2018.	Not Yet Achieved

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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
N/A	N/A
Emergent Risks (risk not previously identified but has emerged during 2017-18)	
Description	Remedial Action
N/A	N/A

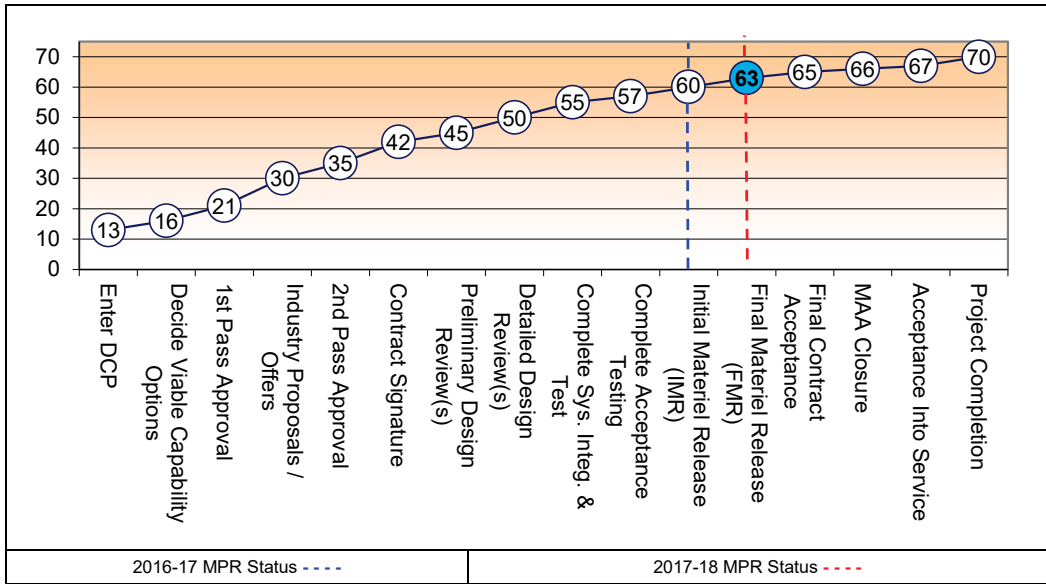
5.2 Major Project Issues

Description	Remedial Action
Incorrect estimates of IRST support requirements require purchase of additional spares	IRST capability does not achieve expected MTBF performance as agreed under the contract. Remediation of this issue is the procurement of additional sensor heads and a test bed to allow deeper maintenance without having to return items to France. The two sensor heads have been procured and the contract is in place for the test bed, delivery expected in December 2018.
MAA closure is delayed as activities have not been planned and costed	Resolution of planning and costing of final MAA deliverables is expected to be agreed by the Capability Manager when FMR is declared (expected for July 2018).
Budgeted Cost Model (BCM) and Assets Under Construction (AUC) are not correctly maintained and rolled out.	AUC rollout of major assets is almost completed. Rollout of final deliverables is expected to occur in Dec 2018 with delivery of the IRST Test Rig.
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

Maturity Score		Attributes							Total
		Schedule	Cost	Requirement	Technical Understanding	Technical Difficulty	Commercial	Operations and Support	
Project Stage	Benchmark	10	9	9	9	9	8	9	63
Final Materiel Release	Project Status	8	9	10	9	10	8	9	63
	Explanation	<ol style="list-style-type: none"> Schedule: Schedule is mature with all ships completed but is delayed and at further risk due to linkage with SEA1448 Ph2B for claiming remaining milestones. Requirement: Based on the completion of OT&E and in-service experience, the requirements of Phase 2A are clearly understood. Technical Difficulty: Successful OT&E completed in August 2013 and subsequent in-service experience confirms design meets operational requirements. 							



Section 7 – Lessons Learned

7.1 Key Lessons Learned

Project Lesson	Categories of Systemic Lessons
Adequate implementation of Project Systems Engineering processes. In light of this, the ASMD Project has rigidly followed a disciplined systems engineering process that has ensured the complete traceability from requirements through to final acceptance testing.	Requirements Management
Ensuring that stakeholder engagement at all levels (engineering and strategic) is culturally embedded within the Project Team.	Contract Management

Section 8 – Project Line Management

8.1 Project Line Management in 2017-18

Position	Name
Division Head	RADM Adam Grunsell, RAN
Branch Head	CDRE Steve Tiffen (to June 18) CDRE Rob Elliott, RAN (June 18-current)
Project Director/Manager	Mr Ian MacKinnon (to April 2018) CMDR Mark Whitehouse, RAN (April 2018-current)