Project Data Summary Sheet[155]

Project Number	**SEA 1448 Phase 2B**
Project Name	**ANZAC ANTI-SHIP MISSILE DEFENCE**
First Year Reported in the MPR	2009-10
Capability Type	Upgrade
Acquisition Type	Developmental
Capability Manager	Chief of Navy
Government 1st Pass Approval	Nov 03
Government 2nd Pass Approval	Sep 05
Budget at 2nd Pass Approval	$248.8m
Total Approved Budget (Current)	$678.7m
2018-19 Budget	**$3.1m**
Project Stage	**Final Contract Acceptance**
Complexity	ACAT I

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 2B of the ASMD Project, has introduced an indigenous, leading edge technology, phased array radar (CEAFAR) and missile illuminator (CEAMOUNT) collectively referred to as the Phased Array Radar (PAR) System. The PAR System delivers enhanced target detection and tracking that allows Evolved Sea Sparrow Missiles to engage multiple targets simultaneously. A new dual ship-set I-Band Navigation radar has also been provided under this Phase.

1.2 Current Status

This Project had been a Project of Concern since June 2008, but was removed in November 2011 as part of the Real Cost Increase (RCI) decision made by Government in November 2011.

Cost Performance

In-year

As at 30 June 2019 the project has underspent by $0.2m against the budget for the Financial Year 18/19.

Project Financial Assurance Statement

As at 30 June 2019 project SEA 1448 Phase 2B 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, 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

Based on the revised acquisition strategy approved by Government in July 2009, the systems being delivered in Phase 2B are largely on schedule. With the RCI for Phase 2B approved for the follow on ships 2-8 in November 2011, there is now a 65 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 program of work, a revised schedule was developed for ships four onwards. **The project claim for Final Materiel Release (FMR) to the Capability Manager was approved in November 2018. FOC was achieved on 18 June 2019**

155 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.

Materiel Capability Delivery Performance

Initial Materiel Release (IMR) 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 systems in 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. **Final Material Release (FMR) was achieved in November 18. Final Operational Capability (FOC) was achieved on 18 June 2019**

Note

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

1.3 Project Context

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 2B is the final Phase of the ANZAC ASMD Program, where the addition to the Class of the phased array radar technology is being undertaken by the Australian Company CEA Technologies and the overall integration into the ANZAC Class is being performed by the ANZAC Alliance (Commonwealth plus BAE Systems (previously Tenix) and Saab Australia (formerly Saab Systems).

SEA 1448 Phase 2B was approved by Government in September 2005. SEA 1448 Phases 2A (the initial phase of the ASMD Project which is procuring the combat management system hardware and the infra-red search and track capability) and 2B are being managed as a confederated ASMD Project due to their common systems engineering disciplines, schedules and risks. Due to its leading edge and developmental technology, Phase 2B, was considered to be a high risk phase. Originally planned for installation into all eight ANZAC Class ships under a single contract, a further review in 2007 of the technical risks associated with the introduction of the leading edge radar led Government in August 2009 to revise the acquisition strategy to a single ship installation. This strategy allows the project to prove this capability at sea before seeking Government approval to commence installation into subsequent ships. 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. **Final Material Release (FMR) was achieved in November 2018. Final Operational Capability (FOC) was achieved on 18 June 2019.**

Uniqueness

The phased array radar component of the ASMD Project is highly developmental and has not previously been fielded in this form before, although the system components are fourth generation derivatives of fielded CEA systems. The RAN is the first to operate a ship with the Australian designed and manufactured CEA Technologies low power active Phased Array Radar System.

Major Risks and Issues

The remaining issues for SEA 1448 Phase 2B are:

MAA closure is delayed as activities have not been planned and costed – This issue relates to the closure of the FMS case which when first addressed was delayed by a United States Navy (USN) purchase of spares related to the case which had taken 6 years to order. The consequence was a delay in Foreign Military Sales (FMS) Case closure and at this stage it is unknown if further purchases are expected. This is currently out of the control of the SEA1448 project and as such remains an issue to be monitored and controlled where possible. At 30 Jun 2019 the status remains at 'implemented' in the US with a further request for a status update sent to NIPO.

Other Current Related Projects/Phases

SEA 1448 Phase 2A – This initial phase of the ASMD Project upgraded all eight of the ANZAC Class Ship's existing ANZAC Class 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. **SEA1448 Phase 2A achieved Final Operational Capability (FOC) on 18 June 2019 in the same signal as Phase 2B.**

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.

Section 2 – Financial Performance

2.1 Project Budget (out-turned) and Expenditure History

Date	Description		$m	Notes
	Project Budget			
Sep 05	Original Approved (Second Pass Approval)		248.8	
Mar 06	Real Variation – Transfers	155.4		1
May 06	Real Variation – Transfers	(6.7)		2
Nov 11	Real Variation – Scope	214.7		3
			363.4	

Jul 10	Price Indexation		76.1	4
Jun 18	Exchange Variation		**(9.6)**	
Jun 19	**Total Budget**		678.7	
	Project Expenditure			
Prior to Jul 18	Contract Expenditure – CEA Technologies (PAR Production)	**(191.3)**		5
	Contract Expenditure – BAE Systems Australia (Follow On Ships)	**(181.0)**		
	Contract Expenditure – Saab Australia Pty Ltd (First of Class)	(78.8)		
	Contract Expenditure – BAE Systems Australia (First of Class)	(63.9)		
	Contract Expenditure – CEA Technologies (P3 Contract)	(57.6)		6
	Contract Expenditure – ICWI Membership	(19.7)		
	Other Contract Payments / Internal Expenses	**(50.2)**		7
			(642.5)	
FY to Jun 19	Contract Expenditure – BAE Systems Australia (Follow On Ships)	**(2.5)**		
	Contract Expenditure – CEA Technologies (PAR Production)	**(0.2)**		5
	Other Contract Payments / Internal Expenses	**(0.2)**		7
			(2.9)	
Jun 19	**Total Expenditure**		**(645.4)**	
Jun 19	**Remaining Budget**		**33.3**	

Notes	
1	$155.4m transferred from SEA 1448 Phase 2A after Government agreed that initial Very Short Range Air Defence (VSRAD) was to be replaced with the PAR System from CEA.
2	Transfer to DSTO (Maritime Operations Division) for phased array radar risk mitigation activities in line with original Government approval in September 2005.
3	RCI of $214.7m approved for the follow on ships 2-8 in November 2011.
4	Up until July 2010, indexation was applied to project budgets on a periodic basis. The cumulative impact of this approach was $71.0m. In addition to this amount, the impact on the project budget as a result of out-turning was a further $5.1m having been applied to the remaining life of the project.
5	This is the production contract for the delivery of the first PAR System into HMAS *Perth* (lead ship). Following the approval of an RCI in November 2011, options were exercised to increase the scope to the remaining seven ships and spare system. In order to manage acquisition obsolescence of phased array radar components and retention of the strategic workforce related to the phased array radar, this contract also included forward component buys.
6	(P3 = Preliminary Phased Array Radar Program); This contract was officially closed in April 2010 and was aimed at development and initial production of the first PAR System.
7	Other expenditure comprises: operating expenditure, short term contractors, consultants and 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
4.6	**4.9**	**3.1**	PBS – PAES: **The variation of $0.3m to the PBS estimate was due to the slippage of CEA Technologies Phased Array Radar contract milestones $0.3 into FY18/19.** PAES - Final Plan: **The variation of $1.8m to the PAES estimate was due to the movement of the budget allocation for the FMS case to 20/21.**

Variance $m	0.3	(1.8)	Total Variance ($m): (1.5)
Variance %	6.5	(36.7)	Total Variance (%): (32.6)

2.2B In-year Budget/Expenditure Variance

Estimate Final Plan $m	Actual $m	Variance $m	Variance Factor	Explanation
			Australian Industry	The final Ceamount Face Modification incorporation on HMAS ANZAC has slipped to financial year 19/20. The remaining variance is due to project expenses being less than forecast.
			Foreign Industry	
			Early Processes	
		(0.2)	Defence Processes	
			Foreign Government Negotiations/Payments	
			Cost Saving	
			Effort in Support of Operations	
			Additional Government Approvals	
3.1	2.9	(0.2)	**Total Variance**	
		(6.5)	**% Variance**	

2.3 Details of Project Major Contracts

Contractor	Signature Date	Price at		Type (Price Basis)	Form of Contract	Notes
		Signature $m	30 Jun 2019 $m			
BAE Systems Australia (First of Class)	Jul 05	2.1	63.9	Variable	Alliance	1, 2
Saab Australia Pty Ltd (First of Class)	Jul 05	3.1	78.8	Variable	Alliance	1
CEA Technologies (P3 Contract)	Dec 05	8.9	57.6	Variable	ASDEFCON	1
CEA Technologies (PAR Production)	Dec 08	16.0	191.6	Variable	ASDEFCON	1
BAE Systems Australia (Follow on Ships)	Jan 12	164.9	183.5	Variable	Alliance	1

Notes

1	Contract value as **at 30 June 2019** is based on actual expenditure to **30 June 2019** and remaining commitment at current exchange rates.
2	Initially contracted to Tenix Defence prior to their sale to BAE Systems Australia in 2008.

Contractor	Quantities as at		Scope	Notes
	Signature	30 Jun 19		
BAE Systems Australia (First of Class)	0	2	Research and Development and Ship 1 system	
Saab Australia Pty Ltd (First of Class)	0	2	Research and Development and Ship 1 system.	
CEA Technologies (P3 Contract)	1	2	Phased array radar developmental systems	1
CEA Technologies (PAR Production)	1	9	PAR Systems for Ship 1 - 8 and spare system	2
BAE Systems Australia (Follow on Ships)	7	7	Ships 2-8 Installation	

Major equipment received and quantities to 30 Jun 19

Installation has been completed for all ships.

Notes

1	(P3 = Preliminary Phased Array Radar Program); This contract was officially closed in April 2010 and was aimed at development and initial production of the first PAR System.
2	This is the production contract for the delivery of the first PAR System into HMAS *Perth* (lead ship). Following the approval of an RCI in November 2011, options were exercised to increase the scope to the remaining seven ships and spare system. In order to manage acquisition obsolescence of phased array radar components and retention of the strategic workforce related to the phased array radar, this contract also included forward component buys.

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/Phased Array Radar – Stage 1 (Requirements Review)	Mar 06	N/A	May 06	2	1
	Mk3E Combat Management System – Stage 2 (Requirements Review)	N/A	N/A	Aug 09	N/A	1

	Mk3E Combat Management System/Phased Array Radar – Stage 1 (Functional Review)	Jun 06	N/A	Aug 06	2	1
Preliminary Design	Mk3E Combat Management System/Phased Array Radar Preliminary Design Review	Dec 06	N/A	Aug 07	8	1
	ASMD Shore Facilities (HMAS *Stirling*)	N/A	N/A	Aug 08	N/A	
Critical Design	Mk3E Combat Management System (Phased Array Radar integration) - Stage 1 Critical Design Review – Part 2	Dec 07	N/A	Aug 08	8	1
	Mk3E Combat Management System - Stage 2 Critical Design Review	Nov 10	Sep 11	Sep 11	10	2
	ASMD Shore Facilities (HMAS *Stirling*)	N/A	N/A	Dec 08	N/A	
	Phased Array Radar	Oct 07	N/A	Oct 07	0	

Notes	
1	Variance in design reviews is directly related to the change of acquisition strategy (movement from an eight ship program to a single ship program) or delay in initial contract award for phased array radar system.
2	Variance in Stage 2 Critical Design Review (CDR) date was as a result of delays in finalising Defence's requirements in the Software update. This was completed in April 2011 with CDR appropriately rescheduled. There was no impact to final Stage 2 software release date.

3.2 Contractor Test and Evaluation Progress

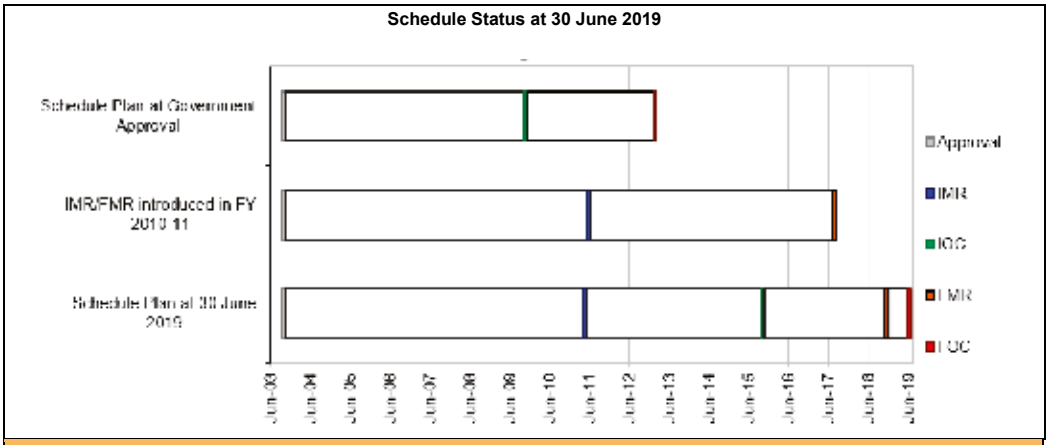
Test and Evaluation	Major System/Platform Variant	Original Planned	Current Planned	Achieved /Forecast	Variance (Months)	Notes
Test Readiness Review	HMAS *Perth* with upgraded ASMD System (Mk3E Combat Management System/Phased Array Radar System/Navigation Radar System - Harbour Phase)	Dec 08	Aug 10	Aug 10	20	1
Acceptance (Initial Operational Capability)	HMAS *Perth* with upgraded ASMD System (Mk3E Combat Management System/Navigation Radar System)	Dec 09	Nov 13	Sep 15	69	2

Notes	
1	**Variance in both the test readiness review and acceptance of the first upgraded ASMD ship is directly related to the change of acquisition strategy and movement from an eight ship program to a single ship program.**
2	Initially the variance in the acceptance of the first upgraded ASMD ship was directly related to the change of acquisition strategy and movement from an eight ship program to a single ship program. As part of the RCI process it was agreed by Navy, the then Capability Development Group and the then Defence Materiel Organisation to move IOC until after PAR had been proven against Supersonic Targets. IOC documentation was submitted to Navy in July 2014 and Capability Manager endorsement of IOC was achieved in September 2015.

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)	Dec 09	Sep 15	69	1
Final Materiel Release (FMR)	Jul 17	**Nov 18**	**16**	2
Final Operational Capability (FOC)	Mar 13	**Jun 19**	**75**	3

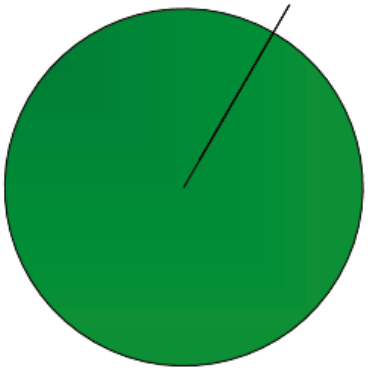
Notes	
1	Variance was directly linked to updated Materiel Acquisition Agreement which moved IOC until after Phased Array Radar System had been proven against Supersonic Targets.
2	**Variance is directly linked to the change of acquisition strategy - moving from a one plus seven ship program to an eight ship program and to remediation of Navigation Radar support deficiencies. Delay from previous expected FMR date of Aug 18 to Nov 18 was due to a combination of staffing issues and the need to fully understand the recommendation of the Nav Radar Report received at the end of August**
3	Variance is directly linked to the change of acquisition strategy - moving from a one plus seven ship program to an eight ship program and to remediation of Navigation Radar support deficiencies. **Delay from the achievement of FMR was driven by administrative delays. This project was the first to undertake a new process of regulation and assurance with Navy, required to achieve FOC.**



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

Pie Chart: Percentage Breakdown of Materiel Capability Delivery Performance	
	**Green:** The Project has met capability requirements as expressed in the suite of Capability Definition Documentation and in accordance with the requirements of the relevant Technical Regulatory Authorities. **Amber:** N/A **Red:** N/A

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
Initial Operational Capability (IOC)	**The delivery of self-defence capability against modern Anti-Ship Missiles for the first ship, HMAS Perth, including all ILS requirements (spares, training and supportability).**	**Achieved**
Final Materiel Release (FMR)	**FMR represents acceptance of all ASMD upgraded ships and associated supplies and was achieved in Nov 2018.**	**Achieved**
Final Operational Capability (FOC)	**The delivery of the complete ANZAC self-defence capability against modern Anti-Ship Missiles including all ILS and supportability requirements to sustain the weapon and support system through life. FOC was achieved on 18 June 2019**	**Achieved**

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 2018-19)	
Description	Remedial Action
N/A	N/A

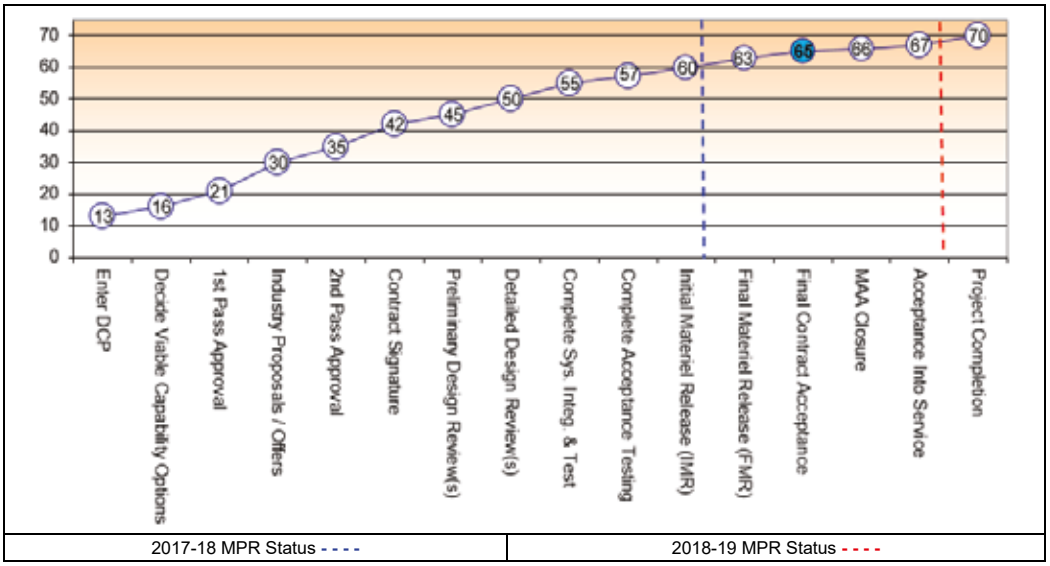
5.2 Major Project Issues

Description	Remedial Action
Inability to resource the ASMD Project correctly (includes availability, conflicts, personnel, training and quality (Commonwealth, CEA, ANZAC IMS, Industry, Test and Trials).	**The resource allocation was adequate to achieve FOC in June 2019. This issue has therefore been retired**
MAA closure is delayed as activities have not been planned and costed	**Issue remains active as timeline for MAA closure is reliant on aspects out of the control of SEA1448 ie FMS case closure.**
Obsolescence of Kelvin Hughes Navigation Radar necessitates replacement before specified date	**Navigation Radar report was delivered Aug 18. Navy have agreed that this completes the project's obligations for radar remediation. Further resolution of this issue has been transferred to the yet to be approved SEA 5014 project and the Sustainment Organisation**
Project is unable to use unallocated budget or contingency to remediate project deficiencies.	**Navy has accepted** the consequences for project **remediation of these funds not being** available when requested. **FMR was claimed and accepted on this basis. This has been retired.**
Budgeted Cost Model (BCM) and Assets under construction are not correctly maintained and rolled out	Radar Test Sets **were received in July 2018 and were** receipted into the stores system for issue to ships. Final CoA assets (3 items) held by BAe **were** returned to Naval Stores in August 2018. **This has been retired.**
Demineralised Cooling Water System causes failure or limits operation of CEAFAR and/or SPS-49	**The FMR declaration in November 2018 that this issue would be remediated by the SEA 1448 Phase 4B project which will redesign the mast where this issue occurs. This issue has been transferred to that project**
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							
		Schedule	Cost	Requirement	Technical Understanding	Technical Difficulty	Commercial	Operations and Support	Total
Project Stage	Benchmark	10	9	**10**	**9**	**9**	**9**	9	**65**
Final Contract Acceptance	Project Status	**10**	**9**	10	**10**	**10**	**9**	**10**	**68**
	Explanation	• **Technical Difficulty: Successful OT&E completed in August 2013 and 5 years of in-service experience confirms the design meets operational requirements.** • **Technical Understanding: 5 years of operation have shown a full understanding from Navy of the capability required** • **Operations and Support: This project has demonstrated over the last 5 years of in-service operation that it is fully capable of being sustained in – service and has met all operational requirements in use.**							



2017-18 MPR Status - - - -	2018-19 MPR Status - - - -

Section 7 – Lessons Learned

7.1 Key Lessons Learned

Project Lesson	Categories of Systemic Lessons
Ensure that technically complex developmental projects that have high levels of risk as part of the new system or integration of the new system into existing systems, demands that a prototype (lead platform) be agreed up-front and used for proving the capability before agreeing to additional platforms.	First of Type Equipment
Adequate communication between, and engagement of, critical stakeholders to ensure that a common understanding of Project status is maintained.	Governance
Project budgets must be managed to avoid adverse impacts of program level changes to budget management practices.	Governance
Seaworthiness policy changed the role of Regulators in the reviewing of the TI-338. Need to engage early with Policy and Procedure Owner to establish what 'assurance' is required and authorised	**Governance**

Section 8 – Project Line Management

8.1 Project Line Management as at 30 Jun 2019

Position	Name
Division Head	**RADM Wendy Malcolm**
Branch Head	CDRE Rob Elliott, RAN
Project Director/Manager	CMDR Mark Whitehouse, RAN