

Project Data Summary Sheet¹³⁶

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 2 nd Pass Approval	\$248.8m
Total Approved Budget (Current)	\$678.7m
2017-18 Budget	\$5.5m
Project Stage	Final Materiel Release
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 2018 the project achieved the budget for the Financial Year 17/18.

Project Financial Assurance Statement

As at 30 June 2018 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 **consistent with Navy direction.**

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 expects to submit the claim for Final Materiel Release (FMR) to the capability manager for consideration in July 2018 and the project expects Navy to be able to declare FOC by August 2018. The outstanding issue related to Navigation Radar obsolescence has been agreed by Navy to be addressed by the production of a remediation report which was due originally in March 2018 with funding for the actual remediation by SEA5014. This report has been subject to delay from the contractor due to various issues including Intellectual Property. It is now due in early August 2018. The issue regarding Demineralised Cooling Water System (DCWS) has been deferred as a re-design is already being undertaken by SEA1448**

136 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.

Ph4B on this system.

Material 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.

Note

The capability assessments and forecasts by the project are not subject to the ANAO's assurance 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.

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:

- Obsolescence of Kelvin Hughes navigation radar necessitates replacement before the specified date **and requires application of contingency funding; and.**
- **Demineralised Cooling Water System causes increased support requirements of CEA FAR and/or SPS-49 radars.**

Both of these issues have been agreed by Navy, as being addressed via a report on Navigation Radar remediation due August 2018 and by SEA1448 4B redesign of the DCWS. Contingency funding and unallocated funds access to remediate these issues has not been approved.

Other Current Sub-Projects

SEA 1448 Phase 2A – This initial phase of the ASMD Project is to upgrade all eight of the ANZAC Class Ship's existing ANZAC Class Combat Management Systems (CMS) and fire control systems, and install an Infra-Red Search and Track (IRST) System which will provide improved detection of low level aircraft and anti-ship missiles when the ship is close to land.

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

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Jul 10	Price Indexation		363.4	
Jun 18	Exchange Variation		(9.6)	4
Jun 18	Total Budget		678.7	
Project Expenditure				
Prior to Jul 17	Contract Expenditure – CEA Technologies (PAR Production)	(189.3)		5
	Contract Expenditure – BAE Systems Australia (Follow On Ships)	(179.0)		
	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	(48.7)		7
			637.0	
FY to Jun18	Contract Expenditure – BAE Systems Australia (Follow On Ships)	(2.0)		
	Contract Expenditure – CEA Technologies (PAR Production)	(2.0)		5
	Other Contract Payments / Internal Expenses	(1.5)		7
			(5.5)	
Jun 18	Total Expenditure		(642.5)	
Jun 18	Remaining Budget		(36.2)	

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 <i>Perth</i> (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
5.7	6.3	5.5	<p>PBS – PAES: The variation of \$0.6m to the PBS estimate was due to the provision of budget for the Navigation Radar tasking.</p> <p>PAES - Final Plan: The funding requirement for the provision of the Navigation Radar tasking in 17/18 was significantly reduced, due to the preliminary study taking longer than anticipated.</p>

Variance \$m	0.6	(0.8)	Total Variance (\$m):	(0.2)
Variance %	10.5	(12.7)	Total Variance (%):	(3.5)

2.2B In-year Budget/Expenditure Variance

Estimate Final Plan \$m	Actual \$m	Variance \$m	Variance Factor	Explanation
			Australian Industry	The remaining variance is the aggregation of minor variances in project office and low level support activities.
			Foreign Industry	
			Early Processes	
		(0.1)	Defence Processes	
			Foreign Government Negotiations/Payments	
			Cost Saving	
			Effort in Support of Operations	
			Additional Government Approvals	
5.5	(5.5)	(0.1)	Total Variance	
		(0.2)	% Variance	

2.3 Details of Project Major Contracts

Contractor	Signature Date	Price at		Type (Price Basis)	Form of Contract	Notes
		Signature \$m	30 Jun 2018 \$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	185.7	Variable	Alliance	1

Notes

- Contract value as at 30 June 2018 is based on actual expenditure to 30 June 2018 and remaining commitment at current exchange rates.
- Initially contracted to Tenix Defence prior to their sale to BAE Systems Australia in 2008.

Contractor	Quantities as at		Scope	Notes
	Signature	30 Jun 18		
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 18

Installation has been completed for all ships.

Notes

- (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.
- 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

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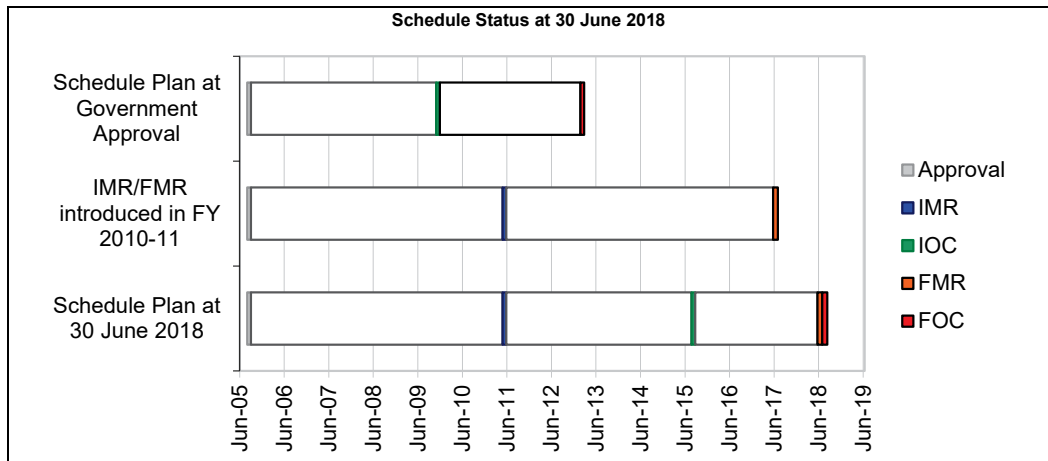
	Mk3E Combat Management System/Phased Array Radar – Stage 1 (Functional Review)	Jun 06	N/A	Aug 06	2	1
Preliminary Design	Mk3E Combat Management System/Phased Array Radar Preliminary Design Review	Dec 06	N/A	Aug 07	8	1
	ASMD Shore Facilities (HMAS <i>Stirling</i>)	N/A	N/A	Aug 08	N/A	
Critical Design	Mk3E 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 <i>Stirling</i>)	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 <i>Perth</i> 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 <i>Perth</i> 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

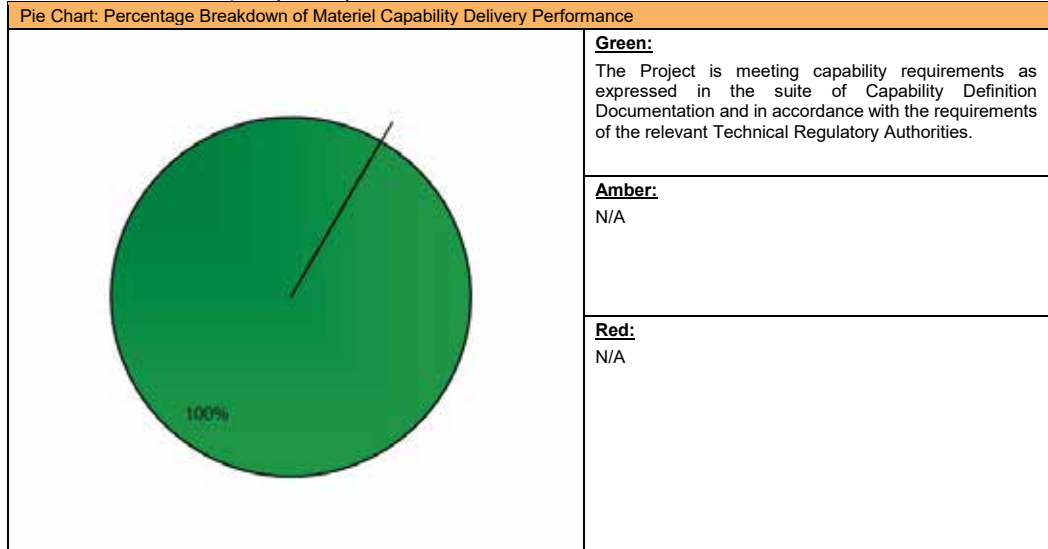
Item	Original Planned	Achieved/Forecast	Variance (Months)	Notes
Initial Materiel Release (IMR)	N/A	Jun 11	N/A	
Initial Operational Capability (IOC)	Dec 09	Sep 15	69	1
Final Materiel Release (FMR)	Jul 17	Jul 18	12	2
Final Operational Capability (FOC)	Mar 13	Aug 18	65	3
Notes				
1	Variance was directly linked to updated Materiel Acquisition Agreement which moved IOC until after Phased Array Radar System had been proven against Supersonic Targets.			
2	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 to plans to remediate navigation radar support deficiencies. Declaration of this milestone is dependent on Capability Manager agreement to the resolution of the navigation radar and DCWS issues noted in Section 5.2. Given the extensive discussions already held with Navy regarding the resolution of these issues, It is not expected that the DCWS and Nav Radar outstanding issues will cause any problems to the final acceptance.			
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.			



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



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 is expected to be achieved in July 2018.	Not Yet 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 2017-18)	
Description	Remedial Action
N/A	N/A

5.2 Major Project Issues

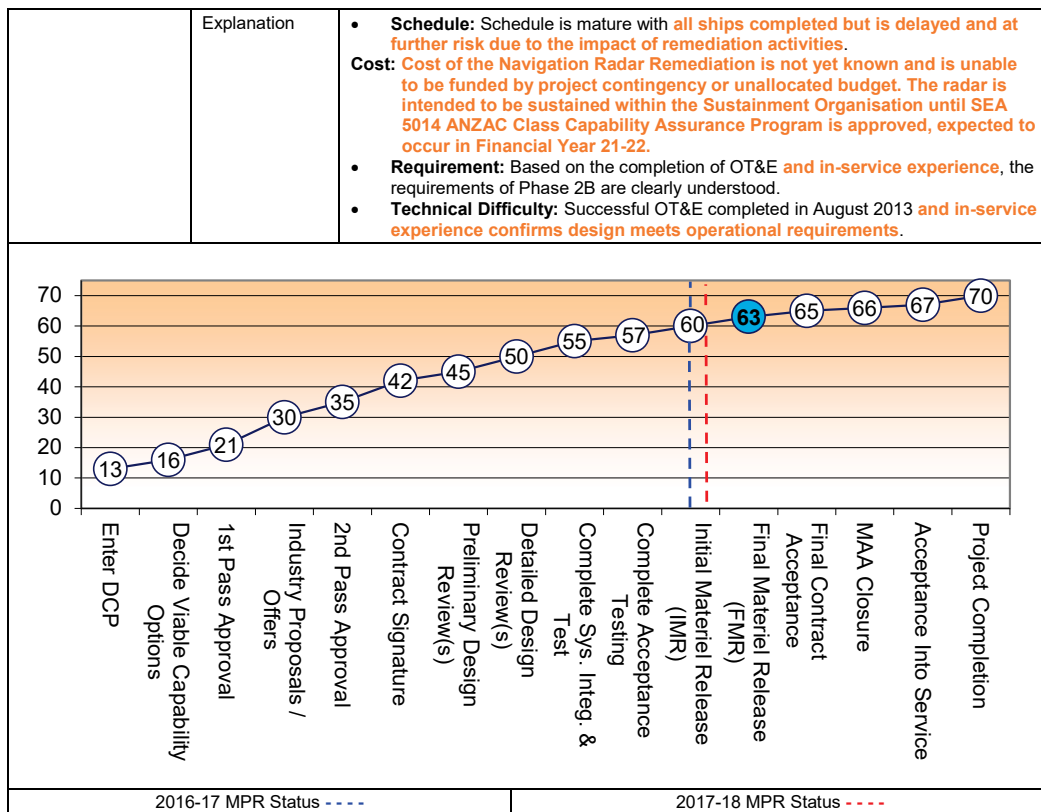
Description	Remedial Action
Inability to resource the ASMD Project correctly (includes availability, conflicts, personnel, training and quality (Commonwealth, CEA, ANZAC IMS, Industry, Test and Trials).	Given the stage of the project (FMR claimed) the current resource allocation is considered adequate to achieve FOC and project closure as long as no new requirement emerge. Consequently Issue has been placed on retired list.
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).
Obsolescence of Kelvin Hughes Navigation Radar necessitates replacement before specified date	Nav Radar report is now due 20 August 18 followed by review end of August. Any decision on way ahead awaits this report but project has been informed, that access to contingency or unallocated budget is not approved and radar will need to be sustained by CN02 Sustainment Funding until SEA5014 is funded.
Project is unable to use unallocated budget or contingency to remediate project deficiencies.	Stakeholders have been made aware of the expected need to access these funds and the consequences for project progression if they are not available when requested. FMR will be claimed on this basis
Budgeted Cost Model (BCM) and Assets under construction are not correctly maintained and rolled out	Radar Test Sets are expected in July 2018 and will be receipted into the stores system for issue to ships. Final CoA assets (3 items) held by BAe are expected to be returned to Naval Stores in August 2018. This will complete the outstanding AUC issue.
Demineralised Cooling Water System causes failure or limits operation of CEFAR and/or SPS-49	Further DCWS remediation remains on hold following HMS Budget Estimate review. DGSCA accepted this position). Monitor for changes from COMSURF. Intention is for SEA14484B to remediate issues with DCWS in their required re-design process for the new radar.

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	7	10	9	10	8	9	61



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

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 Jun 18) CDRE Rob Elliott, RAN (Jun 18 to current)
Project Director/Manager	Mr Ian MacKinnon (to Apr 2018) CMDR Mark Whitehouse, RAN (Apr 2018 to current)

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