

Project Data Summary Sheet¹⁶⁶

Project Number	SEA1448 Phase 4B
Project Name	ANZAC AIR SEARCH RADAR REPLACEMENT
First Year Reported in the MPR	2018-19
Capability Type	Replacement
Capability Manager	Chief of Navy
Government 1st Pass Approval	Mar 15
Government 2nd Pass Approval	Jun 17
Budget at 2nd Pass Approval	\$427.8m
Total Approved Budget (Current)	\$429.1m
2020-21 Budget	\$39.9m
Complexity	ACAT II



Section 1 – Project Summary

1.1 Project Description

SEA1448 Phase 4B is replacing the SPS-49(V) 8 Air Search Radar on the 8 Anzac class frigates with a modern digital Long Range Air Search Radar. The project will also replace the existing Identification Friend or Foe (IFF) system with a new system. By replacing the existing air search radar and IFF system, the project will deliver an integrated and supportable modern Long Range Air Search Capability (LRASC) into the Anzac Class Frigates.

1.2 Current Status

Cost Performance

In-year

As at 30 June 2021, the project had underspent by **\$3.4m due to delays resulting from security upgrades of the Phased Array Radar Simulator and reduced travel**. The project achieved the milestones aligned with ANZAC Midlife Capability Assurance Program.

Project Financial Assurance Statement

As at 30 June 2021, project SEA1448 Phase 4B has reviewed the approved scope and budget for those elements required to be delivered by Defence. Having reviewed the current financial and contractual obligations of Defence for this 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 project has progressed through the Design phases and is now within the Delivery phase. The first mast was installed on HMAS *Arunta* in December 2018 and Sea Acceptance Trials were completed in February 2020, with all reports delivered in Q2 2020.

In March 2020 Government was advised of a schedule review with Industry that determined an additional 26 weeks was critical to the AMCAP realisation across the class. The schedule for ship availability to replace the Long Range Air Search Radar and integrated IFF system was amended as a consequence but did not affect the SEA1448 Phase 4B Final Operating Capability (FOC) date.

The second ship, HMAS *Anzac*, commenced Sea Qualification Trials in June 2020 and **concluded** in October 2020. The delays to entering Sea Qualification Trials correspond to delays in the AMCAP program.

Initial Operating Capability (IOC) **was** delayed from the original planned date due to the complexities in achieving United States Identification Friend or Foe (IFF) certification requirements. Additionally COVID-19 international travel restrictions prevented United States IFF certification authorities from participating in certification activities **as originally planned. Rescheduled certification activities concluded in October 2020. Notification of IFF certification was achieved in April 2021.**

Material Capability Delivery Performance

The project expects to deliver eight modern digital air search radars with integrated Identification Friend or Foe (IFF) system in the Anzac Class Frigates. The first mission system ship set capability with associated support systems is scheduled for acceptance in Quarter 1 2021, but is dependent on IFF certification.

Initial Materiel Release (IMR) was split into two Initial Materiel Releases. The first release enabled the project to support acceptance of the radar to enable the RAN to utilise the capability on HMAS *Arunta*, realign the CEA Technologies payment schedule and commence the warranty period. The second release was aligned with IFF certification being sufficiently completed. IMR 1 was declared December 2020 with exceptions. IMR2 was declared April 21 with exceptions.

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Forecast dates and Sections: 1.2 (Material Capability Delivery Performance), 1.3 (Major Risks and Issues), 4.1 (Measures of Material 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 Review Report by the Auditor-General in Part 3* of this report.

Initial Operational Capability is scheduled for July 2021.

Note

Forecast dates and capability assessments are excluded from the scope of the Auditor-General's Independent Assurance Report.

1.3 Project Context

Background

SEA1448 Phase 4B was entered into the 2009 Defence Capability Plan (DCP) to replace the existing and ageing Anzac Class AN/SPS-49(V)8 Long Range Air Search Radar System with a modern, digital air search radar that complements the capabilities and functionality of the Phased Array Radar System delivered under the SEA1448 Phases 2A and 2B – Anti Ship Missile Defence (ASMD) Program. In addition, the current Identification Friend or Foe (IFF) does not support the next generation of encrypted military IFF (Mode 5) which is required to operate effectively with our Allies as deemed by Vice Chief of the Defence Force (VCDF). In March 2015, at Gate 1 (previously first pass) multiple options were presented to Government, spanning Militarily-Off-The-Shelf (MOTS) and Developmental options. The MOTS solution; an upgraded variant of the AN/SPS-49(V)8 was not progressed further as it did not resolve the obsolescence issues faced by the radar.

Government did approve Defence's proposal to select CEA Technologies Pty Limited (CEA) as the sole Australian provider of Phased Array Radars (PAR) to supply a replacement long range air search radar using the developmental technology successfully installed under the SEA1448 Phase 2A and 2B ASMD Program. This solution provided a three dimensional PAR with six fixed faces and an integrated IFF capability. The Mission System Integrator role would be undertaken by Industry Participants of the Anzac Warship Asset Management Agreement ((WAMA) (previously Anzac Ship Integration Materiel Support Program Alliance (ASIPA)).

The Project adopted the Smart Buyer Framework proceeding to Gate 2 Government Approval committees throughout the 2016-17 period. In November 2016, Government approved early access to Acquisition Phase funding, to enable the project to progress a number of time-critical activities prior to Second Pass Approval. This allowed the project to maintain schedule and continue to effectively mitigate 2016-17 key schedule risks (subsequently retired) that were identified during application of the Smart Buyer framework. Those activities included:

- Advanced material purchases for CEA; and
- BAE to commence Mast production.

In June 2017, at Gate 2, Government approved Defence's proposal to act as the Prime integrator for the Long Range Air Search Capability (LRASC), and that the project has overall responsibility for procuring and managing the key components that make up the final Mission System:

- A new Long Range Air Search Radar (LRASR) with integrated IFF, to be delivered by CEA;
- The integration of the LRASR and IFF system into the Anzac Platform and Combat Management System (CMS), to be delivered by the industry participants under the Anzac Warship Asset Management Agreement (WAMA); and
- Acquisition of supporting equipment (and services) under Foreign Military Sales (FMS).

Production timings and integration of the mission system(s) into the Anzac Class is driven by the AMCAP schedule, managed by the ANZAC System Program Office.

Uniqueness

The CEA Phased Array Radar (PAR) technology on which SEA1448 Phase 4B is based is considered to be a Strategic Industry Capability (SIC). The acquisition of which will ensure the RAN has regionally superior technology into the future. The IFF system will be integrated into the PAR faces. This is a world leading technological step to have the IFF interrogator integrated into the PAR faces without a secondary system requirement.

Major Risks and Issues

The Major risks the project faces are:

- **The project delivery schedule will be affected by a delay in the acceptance of capability by Navy.**
- **The AIMS Box and Platform level certified software will be impacted by the rectification of deficiencies identified by AIMS.**
- **CEA data being passed from Commonwealth to Commonwealth interrelated projects may lead this information being disclosed to a non-authorized recipient.**

The Major issues the project faces are:

- Contractual deliverables impact the forecast spend spread of the project.

Other Current related Projects/Phases

The deliverables provided by SEA1448 Phase 4B have been incorporated into the overall ANZAC Midlife Capability Assurance Program (AMCAP) schedule. The ANZAC AMCAP involves a suite of upgrades to the ANZAC platform being delivered by multiple projects, of which SEA1448 Phase 4B is one. Delays or issues with other AMCAP projects can delay the schedule of SEA1448 Phase 4B.

The AMCAP projects consist of:

SEA1448 Phase 4A – this Phase delivered a contemporary Electronic Support Measures (ESM) system as part of the ASMD upgrade program and is being re-installed under the SEA1448 Phase 4B program. SEA1442 Phase 4 – this Phase will upgrade the communication capability in the eight Anzac Class Frigates and address communications system obsolescence in the Anzac Class.

Anzac Platform System Remediation (PSR) program – the PSR will see the upgrade of on board systems that includes ventilation, the propulsion control system to improve power and efficiency, waste management and water production systems.

Note

Major risks and issues are excluded from the scope of the Auditor-General's Independent Assurance Report.

Section 2 – Financial Performance

2.1 Project Budget (out-turned) and Expenditure History

Date	Description	\$m	Notes
	Project Budget		
Oct 13	Original Approved	3.0	1
Jun 14	Real Variation – Scope	5.9	2
Mar 15	Government First Pass Approval	45.2	3

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Jan 17	Real Variation –Scope	20.4	4
Aug 17	Government Second Pass Approval	353.3	
	Total at Second Pass Approval	427.8	
Jun 21	Exchange Variation	1.3	
Jun 21	Total Budget	429.1	
	Project Expenditure		
Prior to Jul 20	Contract Expenditure - CEA	(139.5)	5
	Contract Expenditure - WAMA	(109.1)	
	Other Contract Payments/Internal Expenses	(27.1)	
		(275.7)	
FY to Jun 21	Contract Expenditure - CEA	(18.7)	5
	Contract Expenditure - WAMA	(16.6)	
	Other Contract Payments/Internal Expenses	(1.2)	
		(36.5)	
Jun 21	Total Expenditure	(312.1)	
Jun 21	Remaining Budget	116.9	

Notes

1	The project's original approved budget was the amount received for project initiation prior to Government Second Pass Approval.
2	To advance the L-Phased Array Radar Risk Reduction Program
3	Government First Pass approval to advance the progress of the risk reduction program to Gate 2.
4	Early release of funding to commence activities in advance of Gate 2 Approval.
5	Other expenses comprises FMS payments, operating expenditure and other capital expenditure not attributable to the listed contracts.

2.2A In-year Budget Estimate Variance

Estimate PBS \$m	Estimate PAES \$m	Estimate Final Plan \$m	Defence's Explanation of Material Movements
43.0	39.9	39.9	PBS - PAES: The variation is primarily due to amending the delivery dates of certain milestones to reduce risk within CEA's payment schedule resulting in Contract Change Proposal 004. PAES – Final Plan: There is no variation.
Variance \$m	(3.1)	(0.0)	Total Variance (\$m): (3.1)
Variance %	(7.2)	(0.0)	Total Variance (%): (7.2)

2.2B In-year Budget/Expenditure Variance

Estimate Final Plan \$m	Actual \$m	Variance \$m	Variance Factor	Explanation
		(3.4)	Australian Industry	The variation is primarily due to delays in the installation and validation of the Phased Array Radar Simulator.
			Foreign Industry	
			Early Processes	
			Defence Processes	
		(0.1)	Foreign Government Negotiations/Payments	
			Cost Saving	
			Effort in Support of Operations	
			Additional Government Approvals	
39.9	36.5	(3.4)	Total Variance	
		(8.5)	% Variance	

2.3 Details of Project Major Contracts

Contractor	Signature Date	Price at		Type (Price Basis)	Form of Contract	Notes
		Signature \$m	30 Jun 21 \$m			
CEA	Sep 17	166.6	163.2	Fixed with indices escalation	Standard Defence Contract	1,2
WAMA	Aug 17	136.1	142.8	Variable with Pain/Gain Share	Alliance	2,3

Notes

1	SEA1448 Phase 4B contract execution date is official order under the Head Contract DMO/ESD/00297/2013 Standing Offer for Phased Array Radar Development Services, executed 30 October 2013. CCP01 reduced the contract price by removing the performance security as the technology had been demonstrated.
2	Contract value as at 30 June 2021 is based on actual expenditure to 30 June 2021 and remaining commitment at current exchange rates, and includes adjustments for indexation (where applicable).
3	WAMA consists of Commonwealth of Australia, BAE Systems Maritime Australia (BAE), Saab Australia Pty Ltd (Saab) and Naval Ship Management Pty Ltd (NSM). The primary Industry Partners for SEA1448 Phase 4B tasking is BAE and Saab.

Contractor	Contracted Quantities as at		Scope	Notes
	Signature	30 Jun 21		
CEA	1	1	Qualification and Verification System	
	8	8	Mission System Ship Sets	
	2	2	Depot Spare Systems	
	4	8	Training Simulators	1
WAMA	8	8	Mast, Ship Systems and integration	
	8	8	Combat Management System (CMS) upgrades and integration	
Major equipment accepted and quantities to 30 Jun 21				
Aft masts have been installed on HMAS <i>Arunta</i> , HMAS <i>Anzac</i> , HMAS <i>Warramunga</i> and HMAS Perth . As of 30 June 2021, integration, set to work and harbour acceptance trials of CEA's Mission System Ship Sets One (1), Two (2) and Three (3) are complete. Sea acceptance tests have been completed for Mission System Ship Sets One (1) and Two (2).				
Notes				
1	CEA contract change proposal was accepted to modify the number of training simulators from (4) to (8) to support the training requirements solution put forward by the WAMA.			

Section 3 – Schedule Performance

3.1 Design Review Progress

Review	Major System / Platform Variant	Original Planned	Current Contracted	Achieved / Forecast	Variance (Months)	Notes
System Requirements	CEA Radar System Performance Specification	N/A	N/A	Aug 17	N/A	
Preliminary Design	Mast	N/A	N/A	Apr 17	N/A	1
	Platform	N/A	N/A	Sep 17	N/A	1
	Whole of Ship	N/A	N/A	Nov 17	N/A	1
Critical Design	Mast	N/A	N/A	Sep 17	N/A	1
	Platform	N/A	N/A	Jun 18	N/A	1
	Whole of Ship	N/A	N/A	Jun 18	N/A	1
Notes						
1	Original Planned dates for completion of Preliminary and Critical Design activities not disclosed within the Integrated Master Schedule as these dates were determined prior to Second Pass Approval.					

3.2 Contractor Test and Evaluation Progress

Test and Evaluation	Major System / Platform Variant	Original Planned	Current Contracted	Achieved / Forecast	Variance (Months)	Notes
System Integration	Ship 1 – CAT1 (Factory Acceptance Testing)	Nov 18	N/A	Apr 19	5	1
	Ship 1 – CAT2 (Environmental Qualifications) and CAT3 (Integration)	Jan 19	May 20	Jul 20	18	2,3
	Ship 1 – CAT4 (Harbour Acceptance Trials)	Feb 19	N/A	Oct 19	8	4
	Ship 2 – CAT4 (Harbour Acceptance Trials)	Aug 19	N/A	May 20	9	4,5
	Ship 3 – CAT4 (Harbour Acceptance Trials)	Jul 20	Mar 21	Jun 21	11	6
	Ship 4 – CAT4 (Harbour Acceptance Trials)	Dec 20	Dec 21	Dec 21	12	6
	Ship 5 – CAT4 (Harbour Acceptance Trials)	Nov 21	Jul 22	Jul 22	8	6
	Ship 6 – CAT4 (Harbour Acceptance Trials)	May 22	Feb 23	Feb 23	9	6
	Ship 7 – CAT4 (Harbour Acceptance Trials)	Feb 23	Aug 23	Aug 23	7	6
Acceptance	Ship 8 – CAT4 (Harbour Acceptance Trials)	Aug 23	Mar 24	Mar 24	9	6
	Ship 1 – CAT5 (Sea Acceptance Trials)	Sep 19	N/A	Mar 20	6	4
	Ship 2 – CAT5 (Sea Acceptance Trials)	May 20	N/A	Oct 20	5	6
	Ship 3 – CAT5 (Sea Acceptance Trials)	Feb 21	May 21	Jul 21	6	6
	Ship 4 – CAT5 (Sea Acceptance Trials)	Sep 21	Mar 22	Mar 22	7	6
	Ship 5 – CAT5 (Sea Acceptance Trials)	Jun 22	Sep 22	Sep 22	1	6
	Ship 6 – CAT5 (Sea Acceptance Trials)	Dec 22	May 23	May 23	4	6
	Ship 7 – CAT5 (Sea Acceptance Trials)	Oct 23	Sep 23	Sep 23	-1	6

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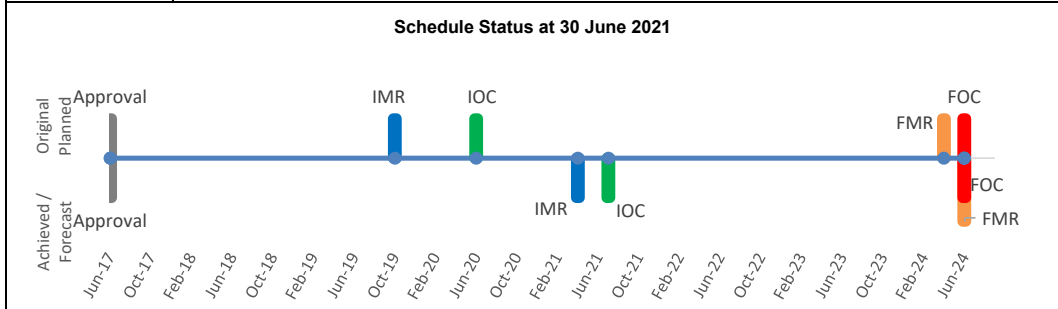
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	Ship 8 – CAT5 (Sea Acceptance Trials)	Apr 24	Apr 24	Apr 24	0	6
Notes						
1	A manufacturing delay with CEA resulted in the Factory Acceptance Testing from November to December 2018. Test Reports were accepted in April 2019.					
2	CEA Contract Change Proposal approved the delay in which CEA are to obtain Environmental Qualification for the LRASR.					
3	CAT 3 integration activities were completed in May 2019. Acceptance of CAT 3 reports occurred in September 2019. The CAT 2 test results were received in July 2020. This delay was caused by the limited number of appropriately certified third party test facilities and longer than anticipated test durations.					
4	Delays in the AMCAP Schedule for Ship 1 and Ship 2 has resulted in delays to CAT 4 and CAT 5.					
5	Ship 2 CAT4 testing was undertaken in Apr 2020, with acceptance of the test reports in May 2020.					
6	Forecast dates for ship availability based on the approved AMCAP Ship Maintenance Availability Master Plan (SMAMP).					

3.3 Progress toward Materiel Release and Operational Capability Milestones

Item	Original Planned	Achieved/Forecast	Variance (Months)	Notes
Initial Materiel Release 1 (IMR1)	Oct 19	Dec 20	14	1, 2, 3, 4, 5
Initial Materiel Release 2 (IMR2)	Mar 21	Apr 21	1	2, 3, 4, 6
Initial Operational Capability (IOC)	Jun 20	Jul 21	13	1, 4
Final Materiel Release (FMR)	Apr 24	Jun 24	3	4, 7
Final Operational Capability (FOC)	Jun 24	Jun 24	0	4

Notes	
1	Initial Materiel Release (IMR) and Initial Operating Capability (IOC) dates are dependent on Identification Friend or Foe (IFF) certification, which was impacted by COVID-19 travel restrictions.
2	IMR1 with radar acceptance occurred December 2020 and IMR2 IFF certification was completed by April 2021.
3	Delays in the AMCAP Schedule for Ship 1 and Ship 2 has resulted in delays to CAT 4 and CAT 5.
4	These milestone definitions are aligned with Section 4.2
5	IMR1 was achieved with three exceptions. One of these exceptions had not been resolved at 30 June 2021. This is disclosed as an issue in Section 5.2 of this PDSS.
6	IMR2 was achieved with four exceptions. Two of these exceptions had not been resolved at 30 June 2021. This is disclosed as an issue in Section 5.2 of this PDSS.
7	Delay is due to alignment with Ship availability and the testing milestones in Section 3.2.

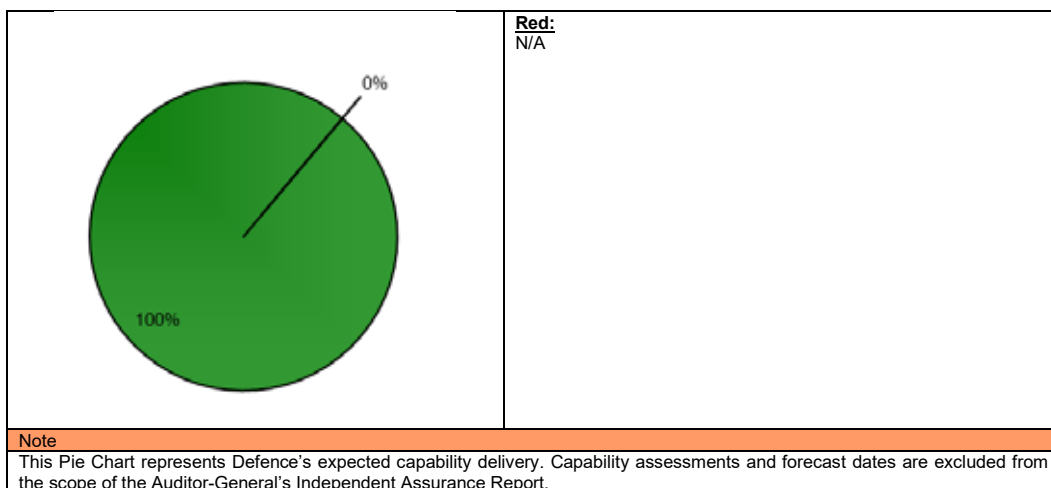


Note
Forecast dates in Section 3 are excluded from the scope of the Auditor-General's Independent Assurance Report.

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 is currently meeting capability requirements as expressed in the Joint Project Directive and Materiel Acquisition Agreement.
	Amber: N/A



4.2 Constitution of Materiel Release and Operational Capability Milestones

Item	Explanation	Achievement
Initial Materiel Release (IMR1)	Integration of one (1) Air Search Radar and partial IFF System into the first ship, including installation of a new aft-mast and reinstallation of all extant systems. Delivery of on-board spares and training packages. Establishment of Initial Support Contracts for both Radar and Integration.	Achieved with exceptions
Initial Materiel Release (IMR2)	Integration of one (1) Air Search Radar and full IFF System into the second Anzac Class Frigate, including installation of a new aft-mast and reinstallation of all extant systems. Delivery of on-board spares.	Achieved with exceptions
Initial Operational Capability (IOC)	Installation of equipment onto ships completed to date , development of operator and maintainer training package and initial package completed, tactical doctrine updated, completion of acceptance trials on the first ship completed, and the logistics support arrangements in place. Achievement of IOC is scheduled for July 2021 but is dependent of Identification Friend or Foe (IFF) certification.	Not Yet Achieved
Final Materiel Release (FMR)	Integration of one (1) Air Search Radar and IFF System into the final ship. Delivery of all outstanding logistic documentation. Delivery of a Support system. Final delivery of on-board spares and depot spares. Achievement of FMR is scheduled for June 2024 .	Not Yet Achieved
Final Operational Capability (FOC)	Installation of equipment onto all ships is complete, training facilities have been set to work, operator and maintainer trainer is in a steady state, tactical doctrine is mature, full logistics support arrangements are in place, establishment and other Fundamental Inputs to Capability arrangements are complete. Achievement of FOC is scheduled for June 2024.	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
There is a chance that the project delivery schedule will be affected by a delay in the acceptance of capability by Navy leading to an impact on both schedule and reputation	To advise all key stakeholders of delays and request assistance as required.

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There is a chance that the recipients of CEA data being passed from Commonwealth to Commonwealth interrelated projects may lead this information being disclosed to a non-authorized recipient, who may inadvertently expose the data therefore impacting sovereign capability leading to an impact on cost, schedule and reputation.	Limit access to data through the application of the Defence records management policy.
Emergent Risks (risk not previously identified but has emerged during 2020-21)	
Description	Remedial Action
There is a chance that the AIMS Box and Platform level certified software will be impacted by the rectification of deficiencies identified by AIMS leading to an impact on engineering approvals, cost and schedule of Follow-On ships using the updated certified software	The United States Air Traffic Control Radar Beacon System Identification Friend or Foe Mark XIIA electronic identification System (AIMS) Program Office (PO) is the IFF certification authority. Revert software to the baseline approved by AIMS until software rectification has been made, tested and evidence provided to AIMS for approval.

5.2 Major Project Issues

Description	Remedial Action
Contractual deliverables are impacting the forecast spend spread of the project.	Arrayed faces have been required to undertake minor hardware design changes that have impacted schedule. Project Office has agreed to the re-prioritisation of some deliverables to focus on ship integration activities.
Certification for the Identification Friend or Foe (IFF) interrogator was not achieved in time to meet the original IOC date due to the complexities in meeting requirements for United States IFF certification and Australia not being able to certify the equipment internally.	In February 2020 Government was advised that the IOC date had been changed to March 2021. The Integrated Investment Program (IIP) bi-annual update advised of IOC being delayed until June 2021 due to COVID-19 impacting availability of the United States AIMS PO to travel to Australia to participate in IFF certification activities.
IMR1 was achieved with three exceptions. One of these exceptions, relating to the final Integrated Logistics Support matrix, had not been resolved at 30 June 2021.	Consistent liaison with key stakeholders will resolve the exception and testing regimes monitored for any further issues.
IMR2 was achieved with four exceptions. Two of these exceptions, relating to electromagnetic testing and the final Integrated Logistics Support matrix, had not been resolved at 30 June 2021.	Consistent liaison with key stakeholders will resolve the exceptions and testing regimes monitored for any further issues.
Note	
Major risks and issues in Section 5 are excluded from the scope of the Auditor-General's Independent Assurance Report.	

Section 6 – Lessons Learned

6.1 Key Lessons Learned

Project Lesson	Categories of Systemic Lessons
The Phased Array Radar and IFF technology used in SEA1448-4B is the same as intended to be used in other vessels. The experience gained and achievements made in SEA1448-4B will reduce the risks to the delivery schedule for future projects.	First of Type Equipment
Understanding of certification authority test requirements to ensure sufficient resources, facilities and personnel can be scheduled to minimise the chance of delays.	Schedule Management
Understanding of Operational Security requirements prior to the development of the acceptance program to minimise the chance of delays.	Requirements Management
Improved project assurance and governance oversight requirements, due to the uniqueness of the CEA technology, has necessitated a non-traditional approach to requirements specification and acceptance.	Governance
Establishing Two-Star review boards to ensure the project's priority is maintained, particularly noting there are other Commonwealth and overseas customers vying for priority on CEA resources.	Governance

Section 7 – Project Line Management

7.1 Project Line Management as at 30 June 2021

Position	Name
Division Head	Ms Sheryl Lutz
Branch Head	CDRE Darron Kavanagh, RAN

