Project Data Summary Sheet[233]

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
Service	Royal Australian Navy
Government 1st Pass Approval	Nov 03
Government 2nd Pass Approval	Sep 05
Total Approved Budget (Current)	**$678.6m**
2014-15 Budget	**$75.2m**
Project Stage	Initial 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 will provide 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, will introduce 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 will coincidentally be provided under this Phase to replace the navigation function performed by the Target Indication Radar, at the same time replacing the obsolescent Krupp Atlas 9600.

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

Current in year performance indicates spending is in line with budget; **with a slight underspend of $2.5m, primarily due to the complex materiel management across multiple projects, including but not limited to SEA 1448 Phase 2A, this project and other sustainment products.**

Project Financial Assurance Statement

As at 30 June 2015, project SEA 1448 Phase 2B has reviewed the approved scope and budget for those

233 Notice to reader

Future dates and Sections: 1.3 (Major Risks and Issues), 4.1 (Measures of Materiel Capability Delivery Performance), 5.1 (Major Project Risks) and 5.2 (Major Project Issues) are out of scope for 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.

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 **55** month variance to the original approvals for this phase of the project. During **2014-15**, **due to pressures from the large sustainment program of work, a revised schedule has been developed for ships four onwards. Recent achievements include the Materiel Release (MR) of the second ship, HMAS *Arunta* in December 2014, and the MR of the third ship HMAS *ANZAC* in March 2015. The fourth ship HMAS *Warramunga* is working to a revised schedule and is expected to be completed in December 2015. HMAS *Ballarat* the fifth ship and HMAS Parramatta the sixth ship are both well into the upgrade, again working to a revised schedule. The project remains on track to deliver Final Operating Capability (FOC) by October 2017.** All documentation to support Initial Operational Capability (IOC) has been delivered to Navy.

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. **IOC** is anticipated 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 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.

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 major risks and issues for SEA 1448 Phase 2B are:

- **A chance that the phased array radar will not meet the required functional performance specifications and its integration complexity into the upgraded ANZAC Combat Management System may be underestimated;**
- **A chance that with the significant change in the technology levels being delivered under the ASMD upgrade, stakeholder expectations may not be achieved;**
- **That indices used in the prime contract, particularly labour rates, may exceed current predictions;**
- **An inability to resource the ASMD Project correctly (includes availability, conflicts, personnel, training and quality (CoA, CEA, ANZAC IMS, Industry, Test and Trials); and**
- **Unplanned work being activated during an ASMD upgrade period such as emergent work arising from planned ASMD installation activities, other maintenance activities and unplanned work scheduled during the ASMD installation work period.**

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).

Section 2 – Financial Performance

2.1 Project Budget (out-turned) and Expenditure History

Date	Description	$m		Notes
	Project Budget			
Sep 05	Original Approved		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 15	Exchange Variation		**(9.7)**	
Jun 15	**Total Budget**		**678.6**	
	Project Expenditure			
Prior to Jul 14	Contract Expenditure – CEA Technologies (PAR Production)	**(156.7)**		5
	Contract Expenditure – SAAB Systems Pty Ltd	**(77.6)**		
	Contract Expenditure – BAE Systems Australia (Follow On (FON))	**(66.7)**		
	Contract Expenditure – BAE Systems Australia (First of Class)	**(60.8)**		
	Contract Expenditure – CEA Technologies (P3 Contract)	(57.6)		6
	Contract Expenditure – ICWI Membership	**(19.7)**		
	Other Contract Payments / Internal Expenses	**(36.9)**		**7**
			(476.0)	
FY to Jun 15	Contract Expenditure – BAE Systems Australia (Follow On (FON))	**(51.1)**		
	Contract Expenditure – CEA Technologies (PAR Production)	**(14.5)**		5
	Contract Expenditure – SAAB Systems Pty Ltd	**(0.6)**		
	Contract Expenditure – BAE Systems Australia (First of Class)	**(0.3)**		
	Other Contract Payments / Internal Expenses	**(6.2)**		**7**
			(72.7)	
Jun 15	**Total Expenditure**		**(548.7)**	
Jun 15	**Remaining Budget**		**129.9**	

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 $71m. 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
77.2	**71.9**	**75.2**	**PBS – PAES – The variation is due to minor reduction of ASMD work due to the extent of concurrent maintenance for ANZAC ships. PAES – Final Plan – Variation is due to optimisation of funding driven by financial constraints in outer years.**
Variance $m	**(5.3)**	**3.3**	Total Variance ($m): **(2.0)**
Variance %	**(6.9)**	**4.6**	Total Variance (%): **(2.6)**

2.2B In-year Budget/Expenditure Variance

Estimate Final Plan $m	Actual $m	Variance $m	Variance Factor	Explanation
			FMS	**The underspend is primarily due to the complex materiel and schedule management across multiple projects, including but not limited to SEA 1448 Phase 2A, this project and other sustainment products.**
			Overseas Industry	
		(2.5)	Local Industry	
			Brought Forward	
			Cost Savings	
			FOREX Variation	
			Commonwealth Delays	
			Additional Government Approvals	
75.2	**72.7**	**(2.5)**	**Total Variance**	
		3.4	**% Variance**	

2.3 Details of Project Major Contracts

Contractor	Signature Date	Price at		Type (Price Basis)	Form of Contract	Notes
		Signature $m	30 Jun 15 $m			
BAE Systems Australia (First of Class)	Jul 05	2.1	**61.1**	Variable	Alliance	1
SAAB Systems Pty Ltd	Jul 05	3.1	**78.2**	Variable	Alliance	1
CEA Technologies P3 Contract	Dec 05	8.9	57.6	Variable	ASDEFCON	1
CEA Technologies PAR Production Contact	Dec 08	16.0	**184.5**	Variable	ASDEFCON	1
BAE Systems Australia (FON)	Jan 12	164.9	**169.6**	Variable	Alliance	1

Notes	
1	Contract value as at 30 June 2015 is based on actual expenditure to 30 June 2015 and remaining commitment at current exchange rates, and includes adjustments for indexation (where applicable).

Contractor	Quantities as at		Scope	Notes
	Signature	30 Jun 15		
BAE Systems Australia	0	2	Research and Development and Ship 1 system	
SAAB Systems Pty Ltd	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 Contact	1	9	PAR Systems for Ship 1 - 8 and spare system	2
BAE Systems Australia	7	7	Ships 2-8 Installation	

Major equipment received and quantities to 30 Jun 15
Equipment has been delivered into store and is being appropriately maintained until required by Phase 2B for its installation. Installation has been completed for First Of Class ship, HMAS *Perth*, HMAS *Arunta* and **HMAS *ANZAC***. Equipment continues to be installed on HMAS *Warramunga*, HMAS ***Ballarat* and HMAS *Parramatta*.**

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 is 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

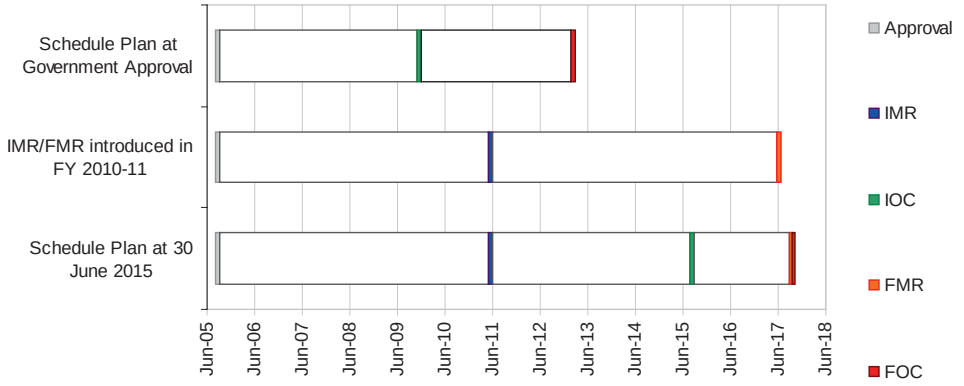
Notes	
1	Variance in both the test readiness review and acceptance of the first upgraded ASMD ship is directly related to the change of acquisition strategy and movement from an eight ship program to a single ship program.
2	Initially the variance in the acceptance of the first upgraded ASMD ship was 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, Capability Development Group and DMO to move **IOC** until after PAR had been proven against Supersonic Targets. IOC documentation **was** submitted to Navy in **July 2014** and is currently under review by regulators.

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	**Oct 17**	**3**	**2, 4**
Final Operational Capability (FOC)	Mar 13	Oct 17	55	**3, 4**

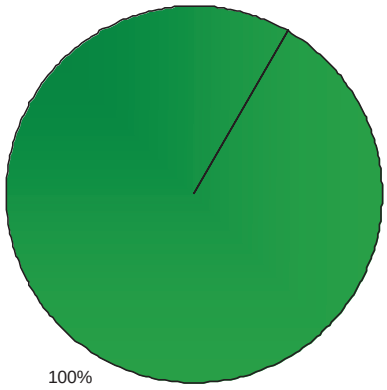
Notes	
1	Variance is directly linked to updated Materiel Acquisition Agreement which moved IOC until after Phased Array Radar System had been proven against Supersonic Targets. All IOC documentation has been submitted to Navy for processing.
2	Variance is due to approval of ships 2-8 by Government.
3	Variance is directly linked to the change of acquisition strategy - movement from a one plus seven ship program to an eight ship program.
4	**To reduce schedule pressure from the large sustainment work package, a revised schedule has been developed in consultation with Navy for ships four through to eight.**

Schedule Status at 30 June 2015



Section 4 – Materiel Capability Delivery Performance

4.1 Measures of Materiel Capability Delivery Performance

Pie Chart: Percentage Breakdown of Materiel Capability Delivery Performance	
	**Green:** Based on lead ship (HMAS *Perth*) achieving IOR in August 2011 and the successful completion of OT&E in August 2013, the Project is meeting 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 does not necessarily represent capability achieved. The capability assessments and forecasts by the project are not subject to the ANAO's assurance 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)	**Acceptance of the ASMD upgraded ship 8, HMAS *Stuart*, scheduled for October 2017.**	**Not 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 phased array radar will not meet the required functional performance specifications and its integration complexity into the upgraded ANZAC Combat Management System may be underestimated.	Project has developed a Confidence Level Demonstration Program that has been actively demonstrating the functional performance of the phased array radar since November 2007 utilising a land based test site that has been established at the CEA premises (Fyshwick, ACT). These tests continue to provide evidence that the Phased Array Radar System is meeting the expected functional performance specifications and is able to integrate with the upgraded ANZAC Combat Management System. Successful completion of acceptance testing for HMAS *Perth* has seen the Stage 1 capability of the phased array radar technology achieve IOR; however this risk will not be retired until all capability is realised, following the Stage 2 software upgrade in late 2013. Stage 2 capability OT&E in late 2013 confirmed the functional performance of the radar has been achieved. This risk will be retired when IOC is achieved.
There is a chance that with the significant change in the technology levels being delivered under the ASMD upgrade, stakeholder expectations may not be achieved.	Continuous engagement and education of stakeholders regarding the capability that will be delivered. In addition, a series of practical exercises for RAN operations crews in a specially built land based test site that simulates an upgraded ANZAC Ship operations room and all of the new systems being installed. Stage 2 capability OT&E in late 2013 confirmed that the capability meets all stakeholders expectations. This risk will be retired when IOC is achieved.
There is a risk that indices used in the prime contract, particularly labour rates, may exceed current predictions.	This risk is currently considered manageable, but is being monitored closely by the project. Commonwealth to work with industry to manage impacts of increased costs flow-on from increases in labour and overhead costs for all contracts associated with ASMD.
There is a chance of an inability to resource the ASMD Project correctly (includes availability, conflicts, personnel, training and quality (CoA, CEA, ANZAC IMS, Industry, Test and Trials).	Planning of resource profiles against known constraints and schedules using close liaison with Navy through ANZAC Systems Program Office (SPO), and with our key industry participants.
There is a chance of unplanned work being activated during an ASMD upgrade period such as emergent work arising from planned ASMD installation activities, other maintenance activities and unplanned work scheduled during the ASMD installation work period.	The project and ANZAC SPO engineering group are actively managing the introduction of additional work packages into the ASMD upgrade period, with priority on maintaining the approved ASMD schedule.
Emergent Risks (risk not previously identified but has emerged during 2014-15)	
Description	Remedial Action
N/A	N/A

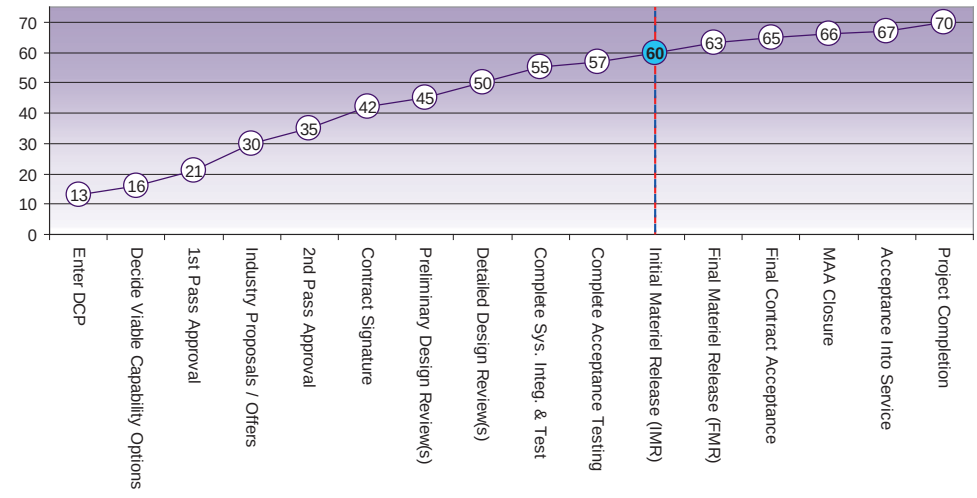
5.2 Major Project Issues

Description	Remedial Action
N/A	N/A

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	8	8	8	9	8	9	60
Initial Materiel Release	Project Status	8	8	9	9	9	8	9	60
	Explanation	• **Schedule:** Schedule is mature and there remains a further six ships to upgrade. • **Requirement:** Based on the recent completion of OT&E, the requirements of Phase 2B are clearly understood. • **Technical Understanding:** Successful OT&E completed in August 2013.							



2013-14 MPR Status - - - -	2014-15 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

Section 8 – Project Line Management

8.1 Project Line Management in 2014-15

Position	Name
General Manager	Mr Colin Thorne
Division Head	RADM Mark Purcell, RAN
Branch Head	CDRE Michael Houghton, RAN **(to Dec 14)** **CDRE Steve Tiffen, RAN (Dec 14–current)**
Project Director/Manager	Mr Mark Simmonds