

Project Data Summary Sheet²³⁸

Project Number	SEA 1429 Phase 2
Project Name	REPLACEMENT HEAVYWEIGHT TORPEDO
First Year Reported in the MPR	2009-10
Capability Type	Replacement
Acquisition Type	MOTS
Service	Royal Australian Navy
Government 1st Pass Approval	N/A
Government 2nd Pass Approval	Jul 01
Total Approved Budget (Current)	\$427.9m
2014–15 Budget	\$5.2m
Project Stage	Initial Materiel Release
Complexity	ACAT III



Section 1 – Project Summary

1.1 Project Description

This project **has acquired** a Heavyweight Torpedo (HWT) for the six Collins Class submarines to replace the United States (US) Navy's (USN) Mk48 Mod 4 HWT previously in service with the Royal Australian Navy (RAN). The torpedo **has been** supplied by the US Government under a Memorandum of Understanding (MOU), with work performed by Raytheon US and the US Naval Undersea Warfare Center. The project is also acquiring associated logistic support, weapon system interface equipment, and operational support and test equipment. ASC Pty Ltd is undertaking integration to the Collins Class submarine platform.

1.2 Current Status

Cost Performance

In-year

The project has a \$0.5m underspend due mainly to funds returned after reconciliation of a previous In Service Support contract and delay in completion of a feasibility report.

Project Financial Assurance Statement

As at 30 June 2015, project SEA 1429 Phase 2 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.

238 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.

Schedule Performance

The HWT project consists of two separate components to deliver the full HWT capability to the RAN. The first component is the modification of each submarine to accommodate and launch the HWT; the second component is the spiral development of the HWT software.

Boat installations are consistent with the approved Materiel Acquisition Agreement (MAA) schedule; however, each installation is dependent on the Full Cycle Docking (FCD) program, consequently completion dates vary according to boat availability. The HWT schedule has also been impacted by emergent work, during each submarine docking. As a result of these non project related delays, completion of the submarine modification program has slipped from 2010 to 2018.

The final weapons were delivered to Australia in January 2012. **Final Materiel Release (FMR) is forecast for achievement in October 2018.**

Materiel Capability Delivery Performance

The replacement HWT with Spiral 1 software and the integration modifications to Collins Class Submarines were approved for Operational Release (OR) by the Chief of Navy (CN) on 10 March 2010.

The replacement HWT with Advanced Processor Build (APB) 4 software was approved for Initial Operational Release (IOR) by CN on 8 March 2011. APB Spiral 4 OR was approved by CN in March 2014.

Platform modifications have been completed in HMA Ships *Waller*, *Farncomb*, *Dechaineux*, *Sheean* and *Rankin*. Platform modifications in HMAS *Collins* will be completed in conjunction with the FCD program. As first of class specific testing was carried out for HMAS *Waller*, all subsequent testing for platform modifications will be undertaken in conjunction with standard post docking testing.

Note

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

1.3 Project Context

Background

Project SEA 1429 Phase 1 was approved in December 1997 to investigate the acquisition of an enhanced torpedo capability; including, weapon performance, integration, risk, costs, through-life support, intellectual property and Australian Industry Involvement. In September 1998 the US Government invited the Defence Capability Committee (DCC) to consider pursuing a collaborative development program for the Mk48 Advanced Capability (ADCAP) HWT as the replacement HWT for the RAN. The DCC, although noting the potential benefits, decided against the collaborative program in favour of a competitive tender process.

The solicitation process, which included a Project Definition Study commenced in 1999, but was subsequently abandoned when the Government decided in July 2001 to terminate the competitive tendering process in favour of entering into a cooperative agreement with the US Government.

A Statement of Principles outlining the strategic alliance between the RAN and USN on submarine related issues was signed in Washington DC in September 2001. At the same time, negotiations began with the US Government on a MOU to develop an Armaments Cooperative Project (ACP) for the joint development of the Mk48 ADCAP HWT.

Under the MOU, the Commonwealth and the US Government joined in a partnership for the cooperative development, production, and through-life support of the Mk48 ADCAP torpedo. A Joint Project Office was then established in Washington, DC. Spiral development of the Mk48 ADCAP resulted in the current baseline Mk48 Mod 7 Common Broadband Advanced Sonar System (CBASS) torpedo, incorporating a broadband sonar capability for enhanced target acquisition.

In March 2003, following a Submarine Integration Study, Government approved the scope of the project and delivery of the supplies; including submarine integration with ASC Pty Ltd, a Torpedo Analysis Facility (TAF) at the Defence Science and Technology Organisation (DSTO), and upgrades to the Torpedo Maintenance Facility (TMF). The TAF has been formally transitioned to DSTO. Upgrades to the TMF and the management responsibility for torpedo maintenance, has been transitioned to Navy Guided Weapons System Program Office. A Portable Tracking Range was completed in December 2006 and responsibility formally transitioned to Maritime Ranges System Program Office. The MOU has been extended for a period of ten years to 2019 following successful negotiation with the US Government.

<p>Uniqueness</p> <p>Commonwealth participation in a Joint Program with the US Government to develop, produce and support the Mk48 ADCAP torpedo, through an ACP, including evolving capability enhancements, introduced additional complexity to the project. The additional complexity included requiring effective coordination of requirements management, integration, testing, torpedo deliveries and their installation in each boat according to their respective FCD schedule. The performance of the ACP is overseen by an Executive Steering Committee with senior executives from both partners.</p>
<p>Major Risks and Issues</p> <p>The small project team is disproportionately affected by turnover of key personnel, leading to an impact on cost and schedule. Mitigation activities are in place, but they do not significantly reduce the risk.</p> <p>The Coles Review recommended changes to the submarine docking program that resulted in HMAS <i>Collins</i>' implementation completion date slipping from 2016 to 2018, with a corresponding impact on the FMR and Final Operational Capability (FOC) dates.</p> <p>Any future docking program reviews, higher operational priorities or material defects may adversely affect the Project implementation program, resulting in schedule delays and cost increases. The likelihood of this has decreased due to increased docking schedule stability, so the risk is now considered medium.</p> <p>The weight of the Mk10 Mod 3 Torpedo Mounted Dispenser has created a manual handling hazard when dispensers are not attached to torpedoes. Feasibility of fibre optic cabling is being investigated to try to reduce the dispenser weight.</p> <p>As a result of the test coverage limitation declared at OR, more information needs to be collected to fully populate the weapon software model. Firings are planned for 2015 and 2016 to provide the extra data required.</p>
<p>Other Current Sub-Projects</p> <p>N/A</p>

Section 2 – Financial Performance

2.1 Project Budget (out-turned) and Expenditure History

Date	Description	\$m	Notes
	Project Budget		
Jul 01	Original Approved	238.1	1
May 03	Real Variation – Scope	213.3	
Aug 04	Real Variation – Budgetary Adjustment	(0.2)	2
Sep 04	Real Variation – Transfers	1.0	3
		214.1	
Jul 10	Price Indexation	99.4	4
Jun 15	Exchange Variation	(123.7)	
Jun 15	Total Budget	427.9	
	Project Expenditure		
Prior to Jul 14	Contract Expenditure – US Government Initial MOU	(194.9)	
	Contract Expenditure – US Government Follow-on MOU	(36.2)	
	Other Contract Payments/Internal Expenses	(70.4)	5
		(301.5)	
FY to Jun 15	Contract Expenditure – US Government Follow-on MOU	(3.7)	
	Other Contract Payments/Internal Expenses	(1.0)	6
		(4.7)	
Jun 15	Total Expenditure	(306.2)	
	Remaining Budget	121.7	
Notes			
1	Heavyweight Torpedoes purchase under the ACP with the US.		
2	Administrative Savings Harvest.		
3	Transfer from SEA 1429 Phase 1.		
4	Up until July 2010, indexation was applied to project budgets on a periodic basis. The cumulative impact of this approach was \$91.5m. In addition to this amount, the impact on the project budget as a result of out-turning was a further \$7.9m having been applied to the remaining life of the project.		
5	Other expenditure of \$70.4m includes an amount of \$27.8m to ASC Pty Ltd for platform design and installation (under the Through Life Support Agreement and In Service Support Contract), \$10.0m to L3 Nautronics Pty Ltd, \$5.0m RCS/MOU USN, \$4.6m paid to DSTO and \$3.2m to FMS Case (AT-P-GZU). The remaining expenditure of \$19.8m covered sundry operating expenditure.		
6	The amount of \$1.0m is predominantly ASC Pty Ltd contract expenditure of \$0.7m ; with the remaining \$0.3m being for sundry contractor services and operating expenditure.		

2.2A In-year Budget Estimate Variance

Estimate PBS \$m	Estimate PAES \$m	Estimate Final Plan \$m	Explanation of Material Movements
8.0	5.0	5.2	Delays in commencing a US trial and delays contracting fibre activities have resulted in variation.
Variance \$m	(3.0)	0.2	Total Variance (\$m): (2.8)
Variance %	(37.5)	4.0	Total Variance (%): (35.0)

2.2B In-year Budget/Expenditure Variance

Estimate Final Plan \$m	Actual \$m	Variance \$m	Variance Factor	Explanation
			FMS	The project underspend is due mainly to the funds returned after reconciliation of a completed In Service Support contract, and delay in completion of a feasibility report.
			Overseas Industry	
		(0.5)	Local Industry	
			Brought Forward	
			Cost Savings	
			FOREX Variation	
			Commonwealth Delays	
			Additional Government Approvals	
5.2	4.7	(0.5)	Total Variance	
		(9.6)	% 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			
US Government Initial MOU	Mar 03	336.7	194.9	Fixed	MOU	1, 2
US Government Follow-on MOU	Nov 09	43.8	46.5	Fixed	MOU	2
Notes						
1	US Government Initial MOU was closed in March 2013 with variance attributable to positive exchange variation.					
2	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				
US Government Initial MOU	Classified	Classified	Heavyweight Torpedoes			
US Government Follow-on MOU	Classified	Classified	Heavyweight Torpedoes			
Major equipment received and quantities to 30 Jun 15						
All weapon deliveries complete. Spiral 1 Software baseline achieved. Platform modifications in five submarines completed. APB Spiral 4 software baseline achieved OR endorsement.						

Section 3 – Schedule Performance

3.1 Design Review Progress

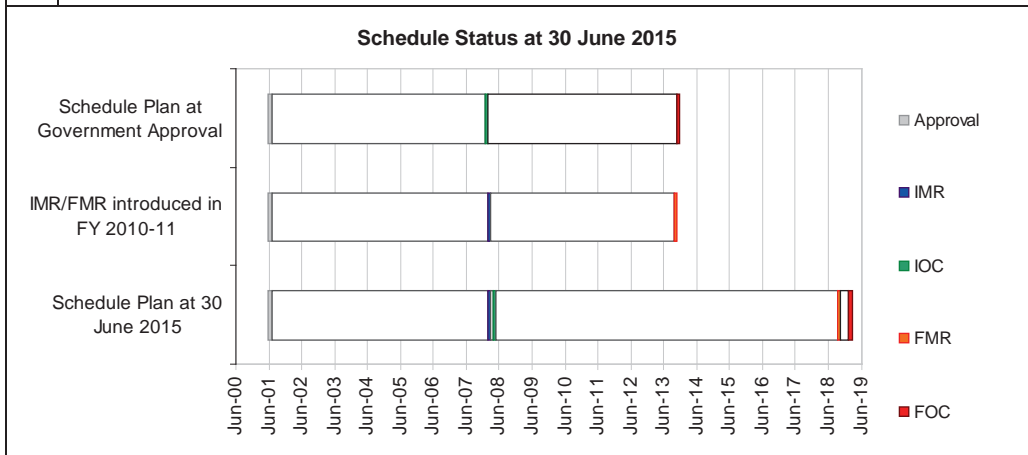
Review	Major System/Platform Variant	Original Planned	Current Planned	Achieved /Forecast	Variance (Months)	Notes
Final Design Review	Weapon Handling & Discharge Training Rig Modifications	Jun 05	N/A	Oct 05	4	1
	Submarine Weapon Handling & Discharge System Modifications	Jan 06	N/A	Nov 06	10	1
Acceptance	Weapon Handling & Discharge Training Rig Modifications	Nov 05	N/A	Nov 07	24	1
	Submarine Weapon Handling & Discharge System Modifications	Mar 06	N/A	Jun 07	15	1
Design Review	Mk48 ADCAP Torpedo Specification Compliance	Dec 07	N/A	Feb 08	2	1
	Explosive Ordnance Approval Process (Spiral 1)	Mar 08	N/A	Mar 08	0	1
	Explosive Ordnance Approval Process (APB 4 – Exercise)	Nov 12	N/A	Feb 11	(21)	1
	Explosive Ordnance Approval Process (APB 4 – Warshot)	Jul 13	N/A	Jul 13	0	
Incorporation Approval	Weapon-Collins Combat System (AN/BYG-1 (V8)) Compatibility Certificate incorporating Spiral 1	May 08	N/A	May 08	0	2
	Weapon-Collins Combat System (AN/BYG-1 (V8)) Compatibility Certificate incorporating APB 4 Exercise	Dec 12	N/A	Mar 11	(21)	
	Weapon-Collins Combat System (AN/BYG-1 (V8)) Compatibility Certificate incorporating APB 4 Warshot	Jul 13	N/A	Jul 13	0	
Notes						
1	The above data represents rolled-up information as the project consists of many subsystems each of which has independent design review activities. As the critical path for these activities was defined by the FCD program, individual events within each of the above activities were allowed to move provided the delivery of the capability was not adversely impacted. Although some individual activities were ahead or behind schedule the project has maintained the critical path as defined by the FCD program. Additionally, the reported achieved dates are based on the signature of meeting minutes or reports by external organisations. As such, minor variance in the achievement dates can be attributed to the review and the subsequent approval process as recorded in meeting minutes and reports.					
2	The Weapon-Collins Combat System (AN/BYG-1 (V8)) Compatibility Certificate, the RAN independent assessment of the suitability of the weapon for use on Collins Class submarines, was not separately scheduled but was dependent on the issue of the US Torpedo Specification Compliance (issued 22 February 2008) and was a pre-requisite for granting IOR (7 May 2008). The Compatibility Certificate was issued on 1 May 2008.					

3.2 Contractor Test and Evaluation Progress

Test and Evaluation	Major System/Platform Variant	Original Planned	Current Planned	Achieved /Forecast	Variance (Months)	Notes
Harbour Acceptance Tests	Weapon Handling and Discharge Systems Post Mk48 Mod 7 HWT Modification Test for HMAS <i>Waller</i>	Jan 07	N/A	Apr 07	3	1
Sea Acceptance Trials	Weapon Discharge System Mk48 Mod 7 HWT Modification for HMAS <i>Waller</i>	Oct 07	N/A	Dec 07	2	1
Notes						
1	Variance was attributable to the Navy Regulatory Review process and submarine program.					

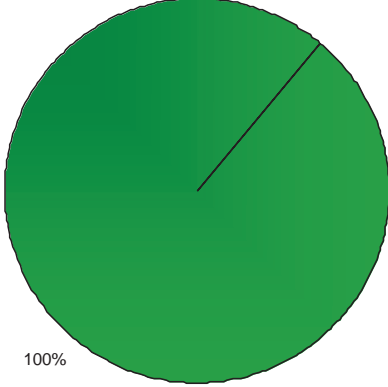
3.3 Progress Toward Materiel Release and Operational Capability Milestones

Item	Original Planned	Achieved /Forecast	Variance (Months)	Notes
Initial Materiel Release (IMR)	N/A	Mar 08	N/A	
Initial Operational Capability (IOC)				
Platform Modifications and Spiral 1	Feb 08	May 08	3	1
APB 4	Nov 12	Mar 11	(20)	2
Final Materiel Release (FMR)	Nov 13	Oct 18	59	3
Final Operational Capability (FOC)				
Platform Modifications and Spiral 1	Jan 10	Mar 10	2	4
Project FOC	Nov 13	Feb 19	62	5
Notes				
1	Variance was attributable to the Navy Regulatory Review process.			
2	Dependent upon US Government acquisition process.			
3	FMR date was set before the FCD program had reached maturity in terms of the length of dockings and impact of emergent work and other capability upgrades. As a result, the HWT installation schedule has been delayed.			
4	Variance was attributable to the Navy Regulatory Review process.			
5	Achievement of FOC is dependent on Navy. The capability delivered by the project is consistent with the MAA and FOC will be achieved when the Capability Manager confirms all other Fundamental Inputs to Capability are complete.			



Section 4 – Materiel Capability Delivery Performance

4.1 Measures of Materiel Capability Delivery Performance

Pie Chart: Percentage Breakdown of Materiel Capability Delivery Performance	
 <p>100%</p>	<p>Green: Torpedo performance has been endorsed by Navy with the OR of APB Spiral 4, with a caveat that very shallow water performance requires further testing in 2015 and 2016. Training and simulation facilities requirements are currently being met.</p> <p>Amber: N/A</p> <p>Red: N/A</p>
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)	Modification of one Collins Class Submarine and Mk48 Mod 7 CBASS HWT Initial Materiel Certification (awarded under the acceptance system in place prior to the introduction of IMR and FMR).	Achieved
Final Materiel Release (FMR)	Delivery of the approved number of Mk48 Mod 7 CBASS torpedoes, with supporting infrastructure, and acceptance of modifications to all submarines.	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 productivity of the project team will be affected by a turnover of key personnel, leading to an impact on cost and schedule.	This risk is being mitigated by: <ul style="list-style-type: none"> • Use of contractors where appropriate; • Use of Reserve personnel where skills are suitable; and • Optimising use of matrix support staff.
There is a risk that delays to the submarine docking program as a result of higher operational priorities or material defects will adversely affect the Project platform integration program creating further schedule delays and cost increases.	This risk has been downgraded to a medium risk as improvements to the management of the submarine docking program implemented following the Coles Review allow greater certainty for the remaining implementation activity.

Emergent Risks (risk not previously identified but has emerged during 2014–15)	
Description	Remedial Action
N/A	N/A

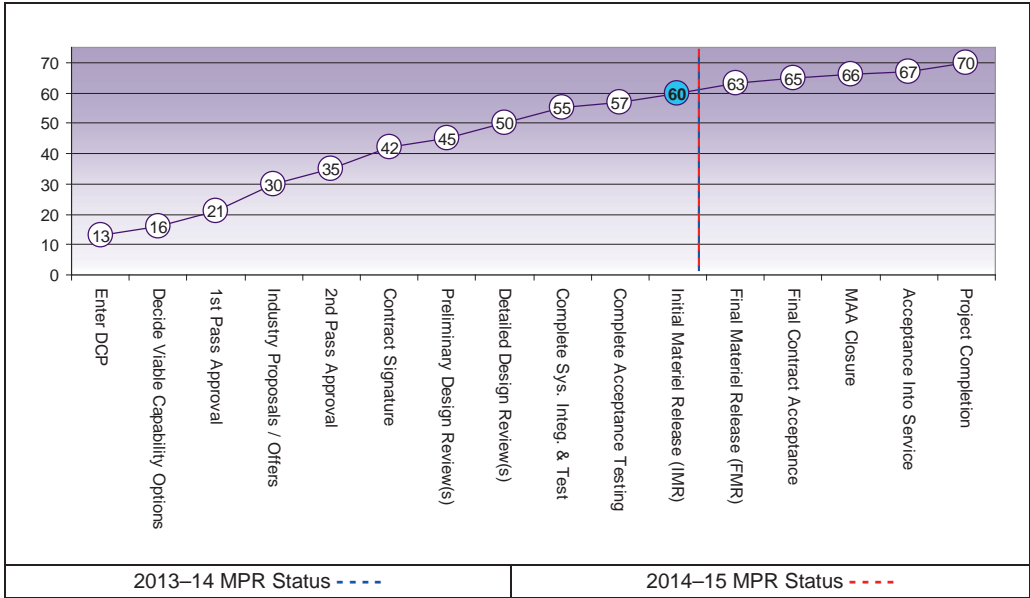
5.2 Major Project Issues

Description	Remedial Action
Uncertainty in the submarine docking cycle and the availability of submarines has impacted the HWT installation schedule.	A government submission is being prepared to baseline already agreed implementation dates resulting from previous docking program changes such as those following the Coles Review.
Weight of the Mk10 Mod 3 Torpedo Mounted Dispenser has created a manual handling hazard when dispensers are not attached to torpedoes.	Investigate the feasibility of replacing the guidance wire with fibre optic cable to reduce weight.
As a result of the test coverage limitation declared at OR of APB Spiral 4, more information needs to be collected to fully populate the weapon software model.	Conduct further testing in 2015 and 2016 to determine full performance.

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	9	9	9	9	8	9	61
	Explanation	<ul style="list-style-type: none"> • Schedule: FMR date was set before the FCD program had reached maturity in terms of the length of dockings and impact of emergent work and other capability upgrades. As a result, the HWT installation schedule has been delayed. • Cost: The completion of APB 4 software operational testing completes a major deliverable. The remaining Project budget and contingency is considered adequate to cover any remaining project cost risk. • Requirement: System integration and testing processes have verified the platform modification requirements and those modifications apply to later Spiral baselines. The APB 4 baseline has also been accepted for IOR. • Technical Understanding: APB 4 software has completed operational testing. 							



Section 7 – Lessons Learned

7.1 Key Lessons Learned

Project Lesson	Categories of Systemic Lessons
Ensure that adequate staffing is available to execute the project particularly in the start up phase.	Resourcing
Ensure that all project dependencies are established before schedule is established.	Schedule Management
Identify all requirements for technical data and technology as early as possible in the project to allow the transfer requests to be administered. US Government International Traffic in Arms Regulation can require up to a year to progress.	Requirements Management
Engaging in a joint development project where Australia is the junior partner and largely dependent on the US Government program, can introduce project management, cost, technology and schedule risk that needs to be addressed.	First of Type Equipment

Section 8 – Project Line Management

8.1 Project Line Management in 2014-15

Position	Name
General Manager	Mr David Gould
Division Head	Vacant
Branch Head	Mr David Cochrane
Project Director	CMDR Ian Jimmieson (Acting)
Project Manager	CMDR David Strangward (Jul 14–Feb 15) CMDR Ian Jimmieson (Mar 15–current)