

The Auditor-General
Report No.9 2008–09
Assurance Report

**Defence Materiel Organisation
Major Projects Report 2007–08**

Australian National Audit Office

© Commonwealth
of Australia 2008

ISSN 1036-7632

ISBN 0 642 81039 7

COPYRIGHT INFORMATION

This work is copyright. Apart from any use as permitted under the *Copyright Act 1968*, no part may be reproduced by any process without prior written permission from the Commonwealth.

Requests and inquiries concerning reproduction and rights should be addressed to the Commonwealth Copyright Administration, Attorney-General's Department, Robert Garran Offices,
National Circuit
Barton ACT 2600

<http://www.ag.gov.au/cca>



Canberra ACT
27 November 2008

Dear Mr President
Dear Mr Speaker

The Australian National Audit Office has undertaken an assurance review in the Defence Materiel Organisation in accordance with the authority contained in the *Auditor-General Act 1997*. I present the report of this review to the Parliament. The report is titled *Defence Materiel Organisation Major Projects Report 2007-08*.

Following its tabling in Parliament, the report will be placed on the Australian National Audit Office's Homepage—<http://www.anao.gov.au>.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Ian McPhee', is positioned above the printed name.

Ian McPhee
Auditor-General

The Honourable the President of the Senate
The Honourable the Speaker of the House of Representatives
Parliament House
Canberra ACT

AUDITING FOR AUSTRALIA

The Auditor-General is head of the Australian National Audit Office. The ANAO assists the Auditor-General to carry out his duties under the *Auditor-General Act 1997* to undertake performance audits, assurance reviews and financial statement audits of Commonwealth public sector bodies and to provide independent reports and advice for the Parliament, the Government and the community. The aim is to improve Commonwealth public sector administration and accountability.

For further information contact:
The Publications Manager
Australian National Audit Office
GPO Box 707
Canberra ACT 2601

Telephone: (02) 6203 7505
Fax: (02) 6203 7519
Email: webmaster@anao.gov.au

ANAO audit and assurance reports, and information about the ANAO are available at our internet address:

<http://www.anao.gov.au>

Assurance Review Team

Peter White
Michael White
Dr Ray McNally
Michael Shiel
Russell Coleman
Harit Wadhawan

Contents

Abbreviations.....	7
Part 1. ANAO Overview.....	9
Auditor-General's Foreword	11
1. ANAO Review	13
Appendix 1: Review Methodology.....	19
Part 2. DMO Overview	23
Preface	25
CEO DMO Foreword.....	27
1. The Defence Materiel Organisation's Business.....	29
Introduction	29
Formation of the DMO.....	29
The Pre and Post Kinnaird Review Environments.....	30
Overview of the DMO's Business	31
Governance and Accountability	33
Management of Acquisition.....	36
Challenges and Opportunities.....	48
Recent Successes	52
2. The Major Projects Report	55
Background	55
Developing and Implementing the Methodology.....	56
Project Selection	56
Major Projects Synopsis	61
Airborne Early Warning & Control Aircraft	70
C-17 Globemaster III Heavy Airlifter	72
Armed Reconnaissance Helicopter	73
F/A 18 Hornet Upgrade Program Phase 2.....	74
Guided Missile Frigate Upgrade	75
High Frequency Communication Modernisation.....	77
Collins Combat Replacement System	78
Armidale Class Patrol Boat.....	79
Bushranger Protected Mobility Vehicle	80
Project Maturity - Variance from Benchmarks	84
Project Schedule	85
Project Capability	87
3. Development of the 2007-08 Project Data Summary Sheets	93
2007-08 Project Data Summary Sheet Guidelines	95

Part 3. Auditor-General Review, CEO DMO Statement and Project Data Summary Sheets	99
Independent Review Report by the Auditor-General	101
Statement by the CEO DMO.....	105
Project Data Summary Sheets.....	107
Airborne Early Warning and Control Aircraft – AIR 5077 Phase 3	109
Armidale–Class Patrol Boat – SEA 1444 Phase 1	121
High Frequency Modernisation Project – JP 2043 Phase 3A.....	133
Bushmaster Protected Mobility Vehicle - LAND 116 Phase 3	147
F/A–18 Hornet Upgrade – AIR 5376 Phase 2.2	161
Collins Replacement Combat System – SEA 1439 Phase 4A	175
Armed Reconnaissance Helicopter – AIR 87 Phase 2	193
C–17 Globemaster III Heavy Airlifter – AIR 8000 Phase 3	209
Guided Missile Frigate Upgrade Implementation – SEA 1390 Phase 2.1	219
Appendix	237
Appendix 1: Acquisition Category Definitions.....	239
Glossary	240
Index.....	245
Series Titles.....	247
Current Better Practice Guides	248

Abbreviations

ACAT	Acquisition Category
ACPB	Armidale Class Patrol Boat
ADF	Australian Defence Force
AEW&C	Airborne Early Warning and Control
AIC	Australian Industry Capability
ANAO	Australian National Audit Office
ARH	Armed Reconnaissance Helicopter
BushR	Bushmaster Protected Mobility Vehicle – Project Bushranger
C–17	Globemaster Heavy Airlifter
CCP	Contract Change Proposal
CDB	Capability Development Board
CDD	Capability Definition Document
CDF	Chief of the Defence Force
CDG	Capability Development Group
CDR	Critical Design Review
CEO	Chief Executive Officer
CIO	Chief Information Officer
COTS	Commercial Off The Shelf
CSIG	Corporate Support and Infrastructure Group
DCC	Defence Capability Committee
DCIC	Defence Capability and Investment Committee
DCP	Defence Capability Plan
DMO	Defence Materiel Organisation
DNOC	Defence Network Operations Centre
DSG	Defence Support Group
DSTO	Defence Science and Technology Organisation
FFG	Guided Missile Frigate
FIC	Fundamental Inputs to Capability
FMA	<i>Financial Management and Accountability Act 1997</i>
FMS	Foreign Military Sales
FOC	Final Operational Capability
FPS	Function and Performance Specification
GDP	Gross Domestic Product
GST	Goods and Services Tax

HF	High Frequency
HF Mod	High Frequency Modernisation
HMAS	Her Majesty's Australian Ship
HUG	F/A-18 Hornet Upgrade
IOC	Initial Operational Capability
ISD	In-Service Date
JALO	Joint Ammunition Logistic Organisation
JCPAA	Joint Committee of Public Accounts and Audit
MAA	Materiel Acquisition Agreements
MAC	Materiel Audit Committee
MoA	Memorandum of Arrangements
MOE	Measures of Effectiveness
MOTS	Military Off The Shelf
MPR	Major Projects Report
MSA	Materiel Sustainment Agreements
NZ	New Zealand
OCD	Operational Concept Document
ORC	Options Review Committee
OT&E	Operational Test and Evaluation
PDR	Preliminary Design Review
PDSS	Project Data Summary Sheet
PMSG	Project Management Stakeholder Group
PMV	Protected Mobility Vehicle
RAAF	Royal Australian Air Force
RAN	Royal Australian Navy
RCI	Real Cost Increase
RCS	COLLINS Replacement Combat System
SADI	Skilling Australia's Defence Industry
SES	Senior Executive Service
SPO	System Program Office
SRR	System Requirements Review
T&E	Test and Evaluation
TCD	Test Component Document
TEMP	Test and Evaluation Master Plan
UK	United Kingdom
US	United States

Part 1. ANAO Overview

Auditor-General's Foreword

This first review of the status of selected Defence equipment acquisition projects, which has the support of the Parliament and the Government, represents a substantial step towards improving transparency and public accountability in major Defence procurement.

Managing major Defence equipment acquisitions that successfully deliver front line capability for the Australian Defence Force represents a significant challenge. With Defence equipment often expensive and technically complex, there are generally significant risks in delivering the required capability on schedule and within budget.

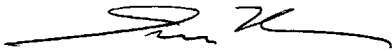
In this environment, increased transparency and accountability on progress with major Defence acquisitions has been a focus of Parliamentary interest for some time. The Joint Committee of Public Accounts and Audit has been active and influential in progressing the issue of an annual report on the status of progress with major Defence capital acquisition projects. An annual program has now been established and the Government has approved funding to enable the ANAO to review major Defence projects being managed by the Defence Materiel Organisation (DMO).

The review of the DMO's 2007–08 Major Projects Report represents an important first milestone in this ongoing program. The approach adopted builds upon international experience, particularly in the United Kingdom and United States. In consultation with key stakeholders, this Report will evolve over time to best meet the information needs of key stakeholders on the status of major Defence capital acquisition projects.

Next year's DMO Major Projects Report is expected to report on the progress of 15 major projects, with the number of projects rising to 30 projects in subsequent years. This significant number of projects will allow a broader perspective on equipment acquisition performance by DMO than is currently available. This new perspective will not only be of interest to Parliament and the Government, but will also assist DMO in pursuing its agenda to improve its performance in managing major acquisition projects.

The review itself was conducted in a cooperative manner between the DMO and ANAO, with support from Defence and industry stakeholders. A strong foundation for an effective working relationship on future annual reviews has been established.

I would like to thank the Chief Executive Officer of the DMO, Dr Stephen Gumley, and his staff at the corporate and project levels for their support and considerable work in developing the first Major Projects Report, and assisting ANAO staff in their project reviews. I also have appreciated the assistance provided by the Australian Defence Force and Defence industry during the course of our review.



Ian McPhee
Auditor-General

20 November 2008

1. ANAO Review

Background

1. The acquisition of Defence equipment is a significant area of government expenditure. In 2007–08 the Defence Materiel Organisation (DMO), which is responsible for acquiring and supporting Defence's weapon systems, platforms and other materiel, expended some \$3.936 billion on both major and minor capital equipment acquisition projects.¹ These projects are often expensive, technologically advanced and managerially challenging, and require DMO to manage contracts that:

- are inherently complex and require sophisticated management processes;
- often specify substantial progress payments prior to Defence being able to test and operationally evaluate the capability being acquired; and
- involve significant risks and issues that may only be identified during the latter phase of development tests and evaluations.

2. Defence equipment acquisition projects are also the subject of considerable parliamentary and public interest, in view of their planned contribution to national security, the challenges in bringing these major projects in on time, and their cost to the public purse. The Senate Foreign Affairs, Defence and Trade Reference Committee in its 2003 report *Materiel acquisition and management in Defence*, found that there was relatively poor visibility on the progress of major projects as far as the Parliament and the public are concerned. The Committee recommended that the Senate request the Auditor-General to produce an annual report on progress in major Defence projects.²

3. In 2006, the Joint Committee of Public Accounts and Audit (JCPAA) recommended that the ANAO produce an annual report, based on data supplied by the Department of Defence and the DMO, on the progress of the

¹ Department of Defence, *Defence Annual Report 2007–08*, Volume 2, p. 18.

² Senate Committee Report, *Materiel acquisition and management in Defence*, Foreign Affairs, Defence and Trade References Committee, March 2003, pp.xv–xvi, 78–79.

top 30 capital equipment projects.³ The Government agreed and approved funding for the ANAO in the May 2008 budget.

4. This report is the pilot of an annual DMO Major Projects Report, and was developed in conjunction with the DMO. It covers the cost, schedule and capability progress achieved by selected DMO projects, and includes the Auditor-General's formal review conclusion on information presented by DMO on nine major projects covered by this report. The approved budget for these nine projects total \$13.535 billion as at 30 June 2008.

5. The development of this report benefited from consultation with, and the strong support of, the JCPAA. From March 2006 to August 2008, the JCPAA conducted an inquiry into financial reporting and equipment acquisition by the Department of Defence and DMO. That inquiry resulted in the August 2008 JCPAA Report 411, *Progress on equipment acquisition and financial reporting in Defence* which, amongst other things, outlines the JCPAA's expectations that the annual DMO Major Projects Report would provide a significant and timely step toward improving transparency and accountability around major acquisition projects within Defence and the DMO.⁴

6. Next year's DMO Major Projects Report is expected to report on the progress of 15 projects, with the number of projects rising to 30 projects in subsequent years. The ANAO's review of these projects will be additional to our regular program of performance audits and financial statement audit work conducted in the Defence portfolio.

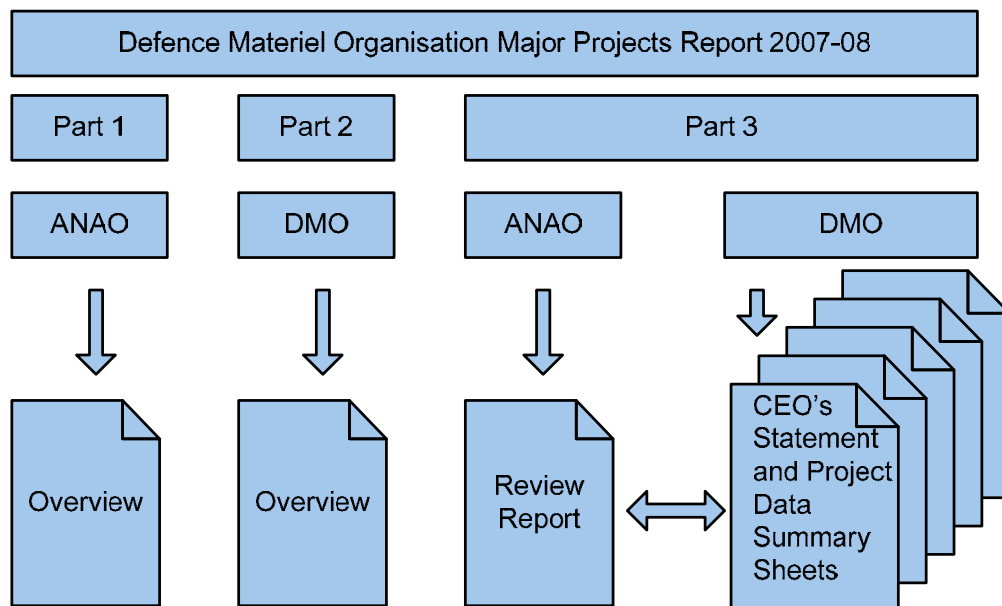
Report structure and development process

7. This report is organised into three parts as shown in Figure 1. Part 1 comprises the ANAO overview, including the Auditor-General's Foreword. Part 2 comprises the Major Projects Report prepared by DMO, including an overview reflecting DMO's perspective on their business and on the nine projects included in this report. Part 3 incorporates the Auditor-General's Review Report, the statement by the CEO DMO, and the information prepared by DMO in the form of standardised Project Data Summary Sheets (PDSSs) covering each of the nine pilot projects.

³ Joint Committee of Public Accounts and Audit, Media Alert; *Committee Recommends Funding for ANAO Annual Review of Major Defence Capital Equipment Projects*, 6 December 2006.

⁴ Joint Committee of Public Accounts and Audit, Report 411, *Progress on equipment acquisition and financial reporting in Defence*, August 2008, pp.vii–viii, xxii–xxiii, 161–175.

Figure 1
Report structure



8. The PDSSs describe each project and contains information required by the PDSS Guidelines relating to each project's budget and expenditure, schedule performance, and development of specified capability. They also include sections for collecting information on each project's major risks and issues, which may have a negative impact on project outcomes. The PDSSs also include key project management lessons learned as reported by DMO. However, consistent with the Guidelines, information of a classified nature has been excluded from the PDSSs.

9. The ANAO's focus in preparing this pilot DMO Major Projects Report in conjunction with DMO, was to:

- develop and test the processes that enable the ANAO to obtain, in a timely and effective manner, sufficient appropriate evidence to support the Auditor-General's review conclusion on information provided by DMO;
- consult with DMO on their development of the PDSS template and the PDSS Guidelines for use by DMO project personnel; and
- to assist the ANAO and DMO to identify the key milestones that needed to be achieved by both organisations, to develop and prepare

the report for tabling within five months of the close of each financial year.

Review approach

10. The ANAO's review of individual PDSSs contained in Part 3 of this report is based on the Australian Standard on Assurance Engagements (ASAE) 3000 promulgated by the Australian Auditing and Assurance Standards Board.⁵

11. Our review of the information presented in the individual PDSSs included:

- an examination of each PDSS;
- a review of relevant procedures used by DMO to prepare the PDSSs;
- a review of documents and information relevant to the PDSSs;
- interviews with persons responsible for the preparation of the PDSSs and those responsible for the management of the nine projects; and
- an examination of the statement and management representations by the Chief Executive Officer of DMO (CEO DMO), sign-offs by DMO managers, and management representations from the Australian Defence Force Capability Managers relating to Initial Operational Capability and Final Operational Capability.

12. While our work is appropriate for the purpose of providing a review report in accordance with ASAE 3000, our review is not as extensive as individual project performance audits conducted by the ANAO, in terms of the nature and scope of project issues covered, and the extent to which evidence is obtained by the ANAO. Consequently, the level of assurance provided by this review in relation to the nine projects is less than that typically provided by our performance audits. The review from its initial planning phase spanned some 17 months, and was conducted at a cost to the ANAO of \$1 030 000. Further information on the review's methodology is at Appendix 1 of this Part.

13. The sections within the PDSS relating to major risks and issues and references to future events have been scoped out of the review. By their nature, the nomination of major risks and issues and the achievement of future dates involve uncertainty because they relate to events, and depend on

⁵ Australian Auditing and Assurance Standards Board; Australian Standard on Assurance Engagements ASAE 3000, *Assurance Engagements Other than Audits or Reviews of Historical Financial Information*, July 2007.

circumstances, that may or may not occur. As such, a range of circumstances can cause these items to differ materially over time from those stated in the PDSSs. Accordingly, the review conclusion does not cover major risks and issues included in Tables 1.2, 4.1 and 4.2 of each PDSS, and forecasts regarding a project's expected achievement of delivery schedules and capability that are included in Sections 3 and 4 of each PDSS.

14. Our examination of information in the PDSSs, and our review of systems and processes that support this information, highlighted that DMO relies on a variety of different approaches to compile project information. The project office management information systems, databases, spreadsheets and progress records are, to varying degrees, not integrated. The extent of integration was particularly low in the older projects affected by organisational change, such as the Guided Missile Frigate Upgrade project which has undergone project office relocations, breaks in data caused by change-over from one system to another, and changes in project management policy on the recording of project information.

15. These information systems issues resulted in ANAO's review of documents and information relevant to the PDSSs, being reliant on project personnel assistance in locating the records needed to provide an assurance as to the completeness and accuracy of the PDSSs.

16. The PDSS entry most widely affected by the information system issue is prime contract expenditure in base date prices, presented in the PDSS Table 2.7.⁶ The ANAO was unable to rely on the Defence's corporate financial management information system to provide the prime contract expenditure amounts at the base date price. Instead, DMO project personnel were required to use various spreadsheet-based systems to provide support for that PDSS information relating to prime contract expenditure. However, the accuracy of the spreadsheet information was not able to be substantiated during this review, and so the reliability of that information in relation to progress payments included in Table 2.7 of each PDSS, cannot be assured at this time. Accordingly, the review report on the PDSSs has been qualified due to uncertainty with respect to the accuracy of this information in the PDSSs.

⁶ The base date price is the contract price at the specified date from which a tender price is valid. The base date is the date used in variable priced contracts, to calculate the price variation payments needed to fairly compensate contractors for the difference between the base date price and the price conditions at the time contract work is actually undertaken.

17. In the next 12 months, the ANAO will review 15 DMO projects planned for inclusion in the 2008-09 DMO Major Projects Report. The ANAO will also work with DMO to refine the approach adopted for providing assurance on each PDSS. This includes the issues related to the limitations that DMO's financial management information system has in reporting progress payments in base date prices.⁷

18. The ANAO will also consider the inclusion of an analysis of each project's emerging trends, as appropriate, to complement DMO's intention to provide improved analysis of project management performance regarding all projects included in the Major Projects Report.⁸ The ANAO in conjunction with the DMO will seek the JCPAA's guidance and endorsement of any proposals to make significant changes to the PDSSs.

⁷ See Part 2 paragraphs 2.28–29.

⁸ See Part 2, paragraph 2.82.

Appendix 1: Review Methodology

Review report legislative basis

1. The review of DMO's Major Projects Report has been conducted under arrangements agreed under section 20(1)(c) of the *Auditor-General Act 1997*. The arrangement outlines the review scope, and respective responsibilities of the Auditor-General, and the Chief Executive Officer of DMO in relation to the review and reporting arrangements.

Review standard

2. The review has been conducted in accordance with the Australian Standard on Assurance Engagements ASAE 3000, *Assurance Engagements Other than Audits or Reviews of Historical Financial Information*, issued by the Australian Auditing and Assurance Standards Board.⁹

3. The review was designed to enable the Auditor-General to obtain sufficient appropriate evidence to form a conclusion whether anything has come his attention to indicate that the information in the Project Data Summary Sheets (PDSSs), that is within the scope of his review, has not been prepared, in all material respects, in accordance with the Guidelines.

4. The criteria that have been used to conduct the Auditor-General's review are based on DMO's compliance with the PDSS Guidelines. They include whether DMO has procedures in place designed to ensure that project information and data was recorded in the PDSSs in a consistent, complete and accurate manner for each project.

Review methodology

5. DMO project personnel populated each of the PDSSs, which were subsequently provided to the ANAO for review. The review of project data contained in each PDSS involved a five to 10 day examination of evidence provided by DMO concerning the cost, schedule and capability performance of

⁹ Australian Standard on Assurance Engagements ASAE 3000, paragraph 5 (b) – The objective of a limited assurance engagement is a reduction in assurance engagement risk to a level that is acceptable in the circumstances of the assurance engagement, but where that risk is greater than for a reasonable assurance engagement, as the basis for a negative form of expression of the assurance practitioner's conclusion.

each project. Discussions were also held with the CEO DMO, senior executives, project directors and project personnel.

6. The ANAO did not, as part of the review process, audit the accuracy of the DMO's project management systems and internal controls used to provide the project data.

Projects selected for review

7. This pilot report covers nine Defence acquisition projects, chosen by DMO and agreed by ANAO on the basis that they represent a reasonable cross-section of the largest projects to test the review methodology and Project Data Summary Sheets. These projects are listed below:

- Airborne Early Warning and Control Aircraft – AIR 5077 Phase 3
- Armidale-Class Patrol Boats – SEA 1444 Phase 1
- High Frequency Modernisation – JP 2043 Phase 3A
- Bushmaster Protected Mobility Vehicle – LAND 116 Phase 3
- F/A-18 Hornet Upgrade – AIR 5376 Phase 2.2
- Collins Replacement Combat System – SEA 1439 Phase 4A
- Armed Reconnaissance Helicopter – AIR 87 Phase 2
- C-17 Globemaster III Heavy Airlifter – AIR 8000 Phase 3
- Guided Missile Frigate Upgrade Implementation – SEA 1390 Phase 2.1

8. Among the nine projects, the project which received the earliest Second Pass Approval (or equivalent) is the High Frequency Communications Modernisation project (August 1996). The C-17 Globemaster III Heavy Air Lift project received the most recent Second Pass Approval (March 2006).

9. The above nine projects will be included in subsequent annual DMO Major Projects Report until the acquisition phase of the project has ended with Final Operational Capability being achieved. In the planned 2008-09 report, the pilot projects will be supplemented by six other DMO projects selected on the basis that they are within DMO's largest 30 projects in approved budget terms. In later years, the report is scheduled to cover 30 of DMO's largest projects.

Management Representation

10. A management representation as to the PDSSs' compliance in material respects with the Guidelines, was provided by the CEO DMO.

Third Parties

11. DMO provided copies of draft PDSSs to relevant prime contractors for comment before the PDSSs were finalised. The DMO provided the ANAO with copies of the contractors' comments.

12. The ANAO sought confirmation as to capability delivered, from the Australian Defence Force Service Chiefs, in their capacity as the Capability Managers and end users of weapons systems and platforms delivered by DMO. Specifically, the representations sought were with respect to each project's progress toward Initial Operational Capability and Final Operational Capability, as set out in Tables 1.2, 3.3 and 3.4 of each PDSS.

13. Initial Operational Capability is the point in time at which the first subset of a major ADF system that can be operationally employed. Final Operational Capability is the point in time at which the final subset of a major ADF system that can be operationally employed. Both these stages of ADF capability delivery are reported as having been reached by the respective Capability Manager.¹⁰

14. The Capability Managers' responses, received by the ANAO, provided confirmations as to the progress toward Initial Operational Capability and Final Operational Capability milestones contained within Tables 1.2, 3.3 and 3.4 of each PDSS.

¹⁰ Department of Defence, *Defence Capability Development Manual*, 2006, p.90

Part 2. DMO Overview

Preface

The Defence Materiel Organisation (DMO) works in partnership with the Department of Defence and is responsible for acquisition of equipment, mainly through individual projects, and sustainment of Australian Defence Force (ADF) equipment. The DMO's business is delivered through the efforts of about 7500 staff and 28 000 Australians employed in Australian industry and a range of overseas suppliers.

The DMO endeavours to ensure that acquisition and sustainment is on time, on budget and to the required levels of quality, safety and capability. This has to be achieved in a very complex environment involving rapid change in technology and in the development of the available equipment capability.

The nature of defence procurement, which usually involves complex, expensive and high profile equipment, has resulted in a high level of interest from the various stakeholder groups.

In its report handed down on 27 March 2003, the Senate Foreign Affairs, Defence and Trade References Committee recommended that the Senate request that the Auditor-General produce, on an annual basis, a progress report on major defence projects based on the model ordered by the British House of Commons.

The British methodology includes reporting to the Parliament on the UK Ministry of Defence major projects and includes information on time, cost, and technical performance as well as analysis of performance and emerging trends on the major projects. The recommendation that Australia should follow a similar methodology met with support from both the Government and opposition at that time and also from the Joint Committee of Public Accounts and Audit (JCPAA).

Consequently, the DMO and the Australian National Audit Office (ANAO) have been working together to develop this report. The JCPAA agreed that the report be developed over a three year period during which projects would be progressively added to the Major Projects Report (MPR). Lessons learned during the 2007–08 pilot implementation, the subject of this MPR, will be used to further develop the report in future years.

These projects cover a cross section of capabilities being acquired for all three Services – Army, Navy, Air Force, and a Joint Project.

Regarding the information and data contained within the Project Data Summary Sheets (PDSS), it should be noted that the data about future events are based on the DMO's best available knowledge, assessments and judgments made at 30 June 2008. The DMO recognises that the ANAO is able to provide an assurance conclusion on the events that have occurred up to 30 June 2008, but is unable to do so for any events after that date. Furthermore, as this MPR is a publicly available report, readers should note that in relation to certain project information contained within the PDSS – in the main, Major Project Risks and Major Project Issues – the DMO has only published unclassified material.

Accordingly, the DMO recognises that the ANAO assurance scope of this MPR does not include assurance over any estimates of future schedule dates or events, or a conclusion on the Major Project Risks or Major Project Issues.

CEO DMO Foreword

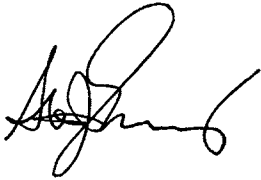
I am pleased to present the first Defence Materiel Organisation (DMO) Major Projects Report (MPR). This Report reflects the position of the nine projects that were chosen to form the 'pilot' MPR program, and demonstrates the progress against cost, schedule and capability performance in each of these projects as at 30 June 2008.

This MPR is the conclusion of what has been very much a collaborative approach between the DMO and the Australian National Audit Office (ANAO) during the last year. The ANAO has reviewed each of the projects during 2007–08 and we have progressively updated the Project Data Summary Sheets (PDSS) to reflect each project's position as at the time of the review. Thereafter, the DMO produced a summary of the nine projects within this MPR and provided updated (to 30 June 2008) PDSS to the ANAO for its assurance statement.

I have often said that the aspect of the DMO's procurement business that keeps me awake at night is not cost or capability issues, but rather project schedule and especially schedule slippages or over-runs. This issue is one that is highlighted in the MPR and clearly indicates one area where we can and need to do better.

The schedule for the development of this MPR has been extremely aggressive for a pilot endeavour and we have learned a number of lessons from the exercise that we intend to apply in improving the MPR for subsequent years. For example, the time required for the projects to prepare their project data as at the end of the financial year, and the internal clearances required within the DMO, was extremely compressed during this pilot year. These timelines need to be reviewed to ensure that in the future the final MPR is a high quality product that provides surety regarding the published information.

I would like to thank the Auditor-General, Mr Ian McPhee, and his ANAO staff for their contribution towards the completion of this first MPR. The DMO looks forward to working on the 2008–09 MPR with the ANAO where we will increase our focus to consider 15 projects – the nine in the pilot program plus six others – in the remainder of financial year 2008–09.

A handwritten signature in black ink, appearing to read 'Dr Stephen Gumley', with a stylized, flowing script.

Dr Stephen Gumley
Chief Executive Officer
20 November 2008

1. The Defence Materiel Organisation's Business

Introduction

1.1 In March 2003 the Foreign Affairs, Defence and Trade References Committee recommended that the Senate request the Auditor-General to produce an annual report on the progress of major defence projects detailing cost, time and technical performance data for each project. The Committee recommended that the report be modelled on the UK National Audit Office annual Major Projects Report ordered by the British House of Commons and produced by the UK Comptroller and Auditor-General. The Senate supported these recommendations. In August 2006, the Joint Committee on Public Accounts and Audit (JCPAA) supported the development and submission of an annual Major Capital Equipment Projects Report to Parliament.

1.2 In September 2007 the JCPAA agreed to a joint proposal from the Australian National Audit Office (ANAO) and the Defence Materiel Organisation (DMO) to develop a Major Projects Report and that it be progressively implemented starting with a pilot program of nine projects.

1.3 Considering that this is the first Major Projects Report, it is appropriate to briefly describe the business context in which major projects are managed in the DMO – the subject of this Chapter. Chapter 2 of this Part analyses and discusses more fully the development of this Major Projects Report and the nine pilot projects reported, and makes some observations on lessons learned from the pilot program. Chapter 3 outlines the ANAO assurance review period and contains the 2007-08 Project Data Summary Sheet Guidelines.

Formation of the DMO

1.4 The DMO was established in 2000 through the merger of the then Defence Acquisition Organisation, Support Command Australia and National Support Division. The purpose was to provide a cradle-to-grave acquisition and in service support organisation. The Defence Procurement Review 2003, undertaken by Mr Malcolm Kinnaird, also known as the “Kinnaird Review”, has resulted in fundamental changes to the way in which the DMO operates and its relationship with Government and Defence.

1.5 On 1 July 2005, following the Government's adoption of the majority of recommendations of the Kinnaird Review, the DMO became a Prescribed Agency under the *Financial Management and Accountability Act 1997 (FMA)*, with a Chief Executive Officer at its head and operating under formal purchaser-provider (Defence-DMO) arrangements.

The Pre and Post Kinnaird Review Environments

1.6 The Kinnaird Review introduced a strengthened two pass approval process that provides greater rigour to the analysis supporting the decision making process for acquiring major capital equipment.

1.7 The Kinnaird reforms of 2003 have instituted changes in the way Capability Development Group (CDG) and the DMO operate. The post-Kinnaird changes that have improved the capability development process include:

- higher levels of investment in risk reduction before acquisition decisions are made via the two-pass Government approval process;
- formal technical readiness and risk assessments by the Defence Science and Technology Organisation (DSTO);
- greater involvement of the DMO in pre-first pass capability development through the DMO Emerging Project Teams working with the CDG and the continuation of high levels of engagement through integrated project teams;
- responsibility for developing the acquisition aspects of second pass business cases (such as the acquisition strategy, industry and commercial matters, project and risk management, cost and schedule establishment) being vested in the DMO;
- seeking tender quality information of cost, schedule and capability performance and risk before seeking second pass approval for a project;
- DMO's General Manager Systems being a member of all capability development boards and committees;
- more rigorous acquisition requirements definition through mandated Capability Definition Documents that specify what the DMO has to acquire; and
- a documented capability development process underpinned by Materiel Acquisition Agreements between customer and provider i.e.

CDG and the DMO, that both defines and funds the DMO's activities in pre-second pass capability development.

1.8 Post-Kinnaird, the DMO has introduced a more consistent contracting framework and in consultation with industry is continuing to make improvements. Many contracts let in the pre-Kinnaird era did not adequately reflect the balance of risk between the Commonwealth and contractor, nor did they provide adequate protection for the Commonwealth. Consequently, when contracting issues arise in these projects it is difficult to change the previously agreed rights and obligations of the parties.

1.9 The September 2008 "Defence Procurement and Sustainment Review – Going to the Next Level" has recommended a large number of further improvements to the capability development process and greater accountability and independence for the DMO. At the time of preparing this Major Projects Report, Government has not considered these recommendations.

Overview of the DMO's Business

1.10 The DMO is a goods and services delivery Agency responsible for equipping and sustaining the Australian Defence Force (ADF). This service is provided through the acquisition of capital equipment assets and the sustainment of those assets throughout their in-service life. The DMO's business is driven principally by the defence policies and objectives set by the Government and the operational requirements of the ADF.

DMO's purpose

To equip and sustain the Australian Defence Force.

DMO's vision

To become the leading program management, logistics and engineering services organisation in Australia.

DMO's goal

To deliver capability and sustainment to the Australian Defence Force on time, on budget and to the required capability, safety and quality.

1.11 The DMO's business ranges from relatively simple supplies such as tents and non-combat equipment to highly complex and expensive platforms such as new generation fighter planes and naval destroyers that typically involve long lead times of up to 15 years. The DMO continues to give priority

support to Australia's troops deploying on operations. The DMO is arguably Australia's largest project management, engineering and logistics organisation.

1.12 Over the next 10–15 years, more than 80 per cent of the ADF's war-fighting assets will be replaced or upgraded. The DMO and industry have a major role to play in this transformation and will manage acquisition and sustainment in excess of \$100 billion, of which an estimated 65 per cent would be spent in Australia.

1.13 Against a 2007–08 budget of \$9117.6 million, the DMO achieved an expenditure of \$8441 million spending \$3936 million in capability acquisition, \$4445 million on sustaining ADF equipment in service, and \$60 million in the provision of policy advice and management services. Rapid acquisition in support of ADF operations accounted for \$377 million. The acquisition budget covers both major and minor projects. Major projects generally have a project cost of \$20 million or more and are sponsored by the CDG; minor projects generally have a project cost of less than \$20 million and are sponsored by Capability Managers i.e. the three Service Chiefs, the Chief Information Officer Group and the Defence Support Group.

1.14 The DMO manages 226 major projects and over 180 minor projects in capability acquisition. Despite the high proportion of minor projects, investment in minor projects represents only 2 per cent of the acquisition budget. The sustainment budget covers in-service support of 106 product categories (or "fleets") of ADF assets. In 2008–09 the DMO is also focusing on 'reducing the cost of ownership' in the management of in-service platforms and equipment, which accounts for more than half of the DMO's budget spend. The DMO will identify efficiencies that reduce the cost of ownership to the Commonwealth. The DMO has committed to a goal of \$200 million a year in savings over the next 10 years in sustainment of the ADF's current inventory of war fighting assets.

1.15 The DMO workforce of about 7500 (located in more than 50 locations around Australia and overseas) includes over 1400 permanent ADF personnel.

Risk Environment

1.16 Risk management is a core part of the DMO's business. The organisation operates in an environment of complex, high risk endeavours focused on the acquisition, modification and sustainment of high technology capabilities. In most cases this involves innovative and leading edge technology and highly complex systems integration, with inherently high

levels of risk. The DMO takes on and manages some of the highest risk projects in Australia to provide the ADF with the best possible capability.

Industry

1.17 A key objective of Defence and industry policy is the development of a sustainable and capable domestic industry that can support our military capabilities, and contribute to Australia's defence self reliance. At present 61 per cent or \$4.9 billion of the DMO's budget is spent in Australia – of this over \$2 billion per annum goes to Australian owned small and medium enterprises.

1.18 The ADF must be self reliant, yet at the same time, realistic about how much of its equipment can be purchased and/or supported locally. The challenges facing Australian industry to support a technologically advanced ADF are such that we cannot afford to run the risk of assuming that local industry will be able to deliver all of the goods and services upon which Australia's national security depends. To provide local industry with specific direction on priorities, Defence will identify those strategic capabilities that are essential to support the ADF's war fighting efforts.

1.19 In order to break down the barriers to entry for Australian defence companies, Defence has developed the Australian Industry Capability program. The program is also one of the principal mechanisms which will drive and enhance the long standing partnership between Defence and industry, and aims to sustain both the critical military capability of the ADF and the international competitiveness of Australian Defence industry. The Australian Industry Capability program will maximise Australian industry participation in Defence procurement on a best value for money basis. Defence will use its leverage, available through procurement contracts, to secure the right for Australian companies to bid into global supply chains of the international primes.

Governance and Accountability

1.20 As a Prescribed Agency, with its own *Financial Management and Accountability Act* responsibilities, the DMO operates under purchaser-provider arrangements established with Defence Groups. The DMO is a core part of the Defence Portfolio and, as such, close collaboration between Defence and the DMO is critical to achieve effective business outcomes.

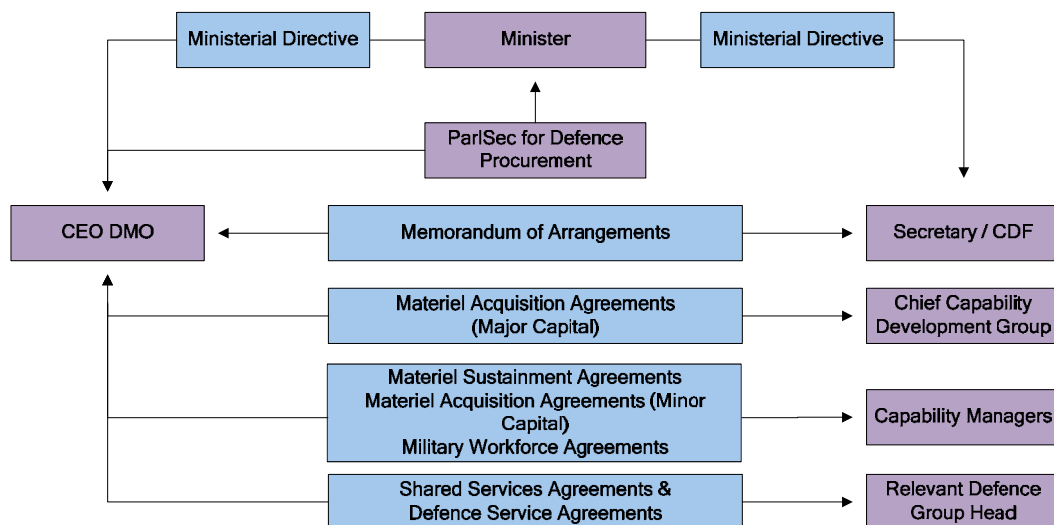
1.21 Four fundamental principles underscore the DMO's relationship with Defence. They are:

- the primacy of Defence as the customer, with responsibility for setting requirements and determining priorities;
- the DMO's aim to be business-like in the way it delivers the primary outputs funded by Defence and Government – i.e. acquisition and sustainment, and advice;
- that the DMO is a core part of the Defence Portfolio and close collaboration between Defence and the DMO is critical to achieve effective business outcomes; and
- transparency, information exchange, mutual accountabilities, and disclosure.

1.22 Various tiers of agreements support and give structure to the relationship between Defence and the DMO and reinforce the focus on delivering DMO outputs. These include Military Workforce Agreements; Materiel Acquisition Agreements (Major and Minor Capital); Materiel Sustainment Agreements; and Shared Service Agreements and Defence Service Agreements. As indicated in the following diagram, this relationship is articulated in a Memorandum of Arrangements (MoA) between the Secretary of the Department of Defence, the Chief of the Defence Force (CDF) and the CEO DMO. The MoA documents the framework and mechanisms within which products and services provided by Defence and the DMO are specified, priced and performance managed to facilitate the desired outcomes of each organisation. The MoA is the head agreement under which all subordinate agreements between Defence and the DMO are given effect.

Figure 1.1

Defence – DMO Business Model



Legislation

1.23 The DMO's legislative environment is established under the authority of the Constitution and defined under a number of Acts of Parliament. Significantly, the Acts include the *Financial Management and Accountability Act 1997* and the *Public Service Act 1999*.

1.24 As a contract and project management organisation with the vast majority of its funding disbursed through contracts with industry, efficient and effective procurement is core to the DMO business. Project and Fleet managers must operate within a complex regulatory framework. Apart from legislation there are policies covering payments, open competition, mandatory reporting, Government's accounting and more. Other international obligations under the World Trade Organisation; Free Trade Agreements with the US, Singapore and Thailand; Aust – NZ Closer Economic Relations Trade Agreement and other legislation related to doing business with a country or a business in that country, also regulate the DMO's business environment.

Accountability and management

1.25 The DMO Executive and line management are responsible for the performance of the DMO and its conformance with probity, due process, ethical behaviour and legislative requirements. They are supported by internal

review processes that target key activities, overseen by the DMO Executive Team led by CEO DMO.

1.26 The DMO's strategic initiatives are overseen by the DMO Executive comprising the CEO, General Managers and Division Heads.

1.27 Internal audit services for the DMO are provided through a mix of contracted audit services and the Defence Inspector-General. External audit services are provided by the Australian National Audit Office. The DMO's Materiel Audit Committee (MAC) provides independent advice and assurance to the CEO DMO.

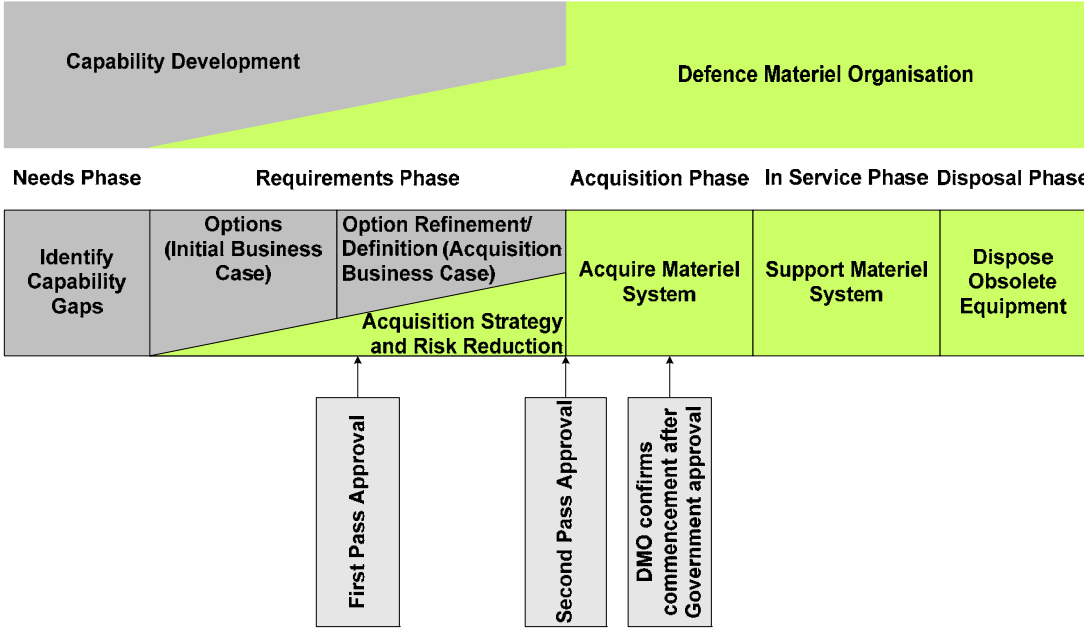
Management of Acquisition

1.28 The Defence Capability Development Manual defines capability as 'the power to achieve a desired operational effect in a nominated environment, within a specified time, and to sustain that effect for a designated period'. Capability is generated by Fundamental Inputs to Capability (FICs) comprising organisation, personnel, collective training, major systems, supplies, facilities, support, command and management.

1.29 The DMO contributes to Defence capability capital investment projects by providing a materiel system comprising mission and support systems that comprise the FIC elements of major systems, supplies and support, and designated elements of training and non-infrastructure equipment for facilities that support the operating of ADF equipment, such as flight simulator trainers and complex test equipment.

1.30 Capability systems have a life cycle that begins with the identification of a need to address a current or prospective capability gap and ends with the withdrawal of the capability from service. The Defence Capability Development Manual identifies the five phases in the capability life cycle as: needs, requirements, acquisition, in-service, and disposal.

Figure 1.2
Capability Life–Cycle Phases



Capability Lifecycle Overview

1.31 Needs phase: In the needs phase, Defence identifies capability gaps derived from the consideration of strategic guidance, current and future operational concepts, future technology and the current and emerging force structure. Government endorses the need to address the identified gaps and approves the inclusion of a project with an indicative budget provision in the Defence Capability Plan (DCP).

1.32 Requirements phase: In the requirements phase, each capability need endorsed by Government in the needs phase is transformed progressively into a costed, defined solution to that need and is approved by government under a two-pass approval process.

1.33 Acquisition phase: In the acquisition phase, an approved capability solution is acquired and introduced into service.

1.34 In-service phase: In the in-service phase, the capability system is operated and supported for the life of the system.

1.35 Disposal phase: In the disposal phase, the capability system as a whole is progressively withdrawn from service and disposal action taken.

1.36 Chief of the CDG is accountable for the needs and requirements phases and CEO DMO is accountable for the acquisition phase, the sustainment element of the in service phase (e.g. repair, maintenance, and equipment upgrades, spares and maintenance of technical documentation) and the eventual disposal of assets.

First and Second Pass approvals

1.37 Capability proposals go through two government decision points in the requirements phase: 'First Pass approval' and 'Second Pass approval':

- First Pass approval—at which the Government considers alternatives and approves one or more capability development options to proceed to more detailed analysis and costing, with a view to subsequent approval of a preferred capability option.
- Second Pass approval—at which the Government agrees to fund the acquisition of a specific capability system with a well-defined budget and schedule and to allocate future provision for through-life support costs.

1.38 Depending on the strategic importance, value, sensitivity or complexity of a project, the Government may also consider a project between First and Second Pass approval. In more straightforward projects, First and Second Pass approvals may be combined.

1.39 The capability development process within Defence is governed by four main committees:

- The Options Review Committee (ORC) is a committee which determines the options a project will investigate before the First Pass documentation is presented to the Defence Capability Committee (DCC).
- The Capability Development Board (CDB) has a focus of quality control ensuring that documentation produced is complete and of a standard that allows effective decision making by Government and the higher Defence committees.
- The Defence Capability and Investment Committee (DCIC) strengthens independent review by seeking to ensure that resourcing, including

capital investment and operating costs, is consistent with Defence's strategic priorities and resourcing strategy.

- The DCC, a sub-committee of the DCIC, considers and develops options for current and future capability. The DCC focuses on individual major capital investment projects to ensure:
 - consistency with the Defence White Paper and the Defence Capability Plan;
 - a whole-of-life and whole-of-capability perspective;
 - an acceptable return on capital expenditure;
 - there are no unmanageable strategic, technical, schedule or financial risks; and
 - rigorous, independent scrutiny of capability, cost, schedule and risk.

1.40 The DMO is represented on all of the above boards and committees.

DMO's Part in supporting Capability Development

1.41 The DMO contributes to the needs phase by providing advice to Defence on the assessment of the materiel condition of in-service equipment and systems and their ongoing supportability; the cost effectiveness and feasibility of life extension programs or upgrades; the capacity of industry to support new capabilities across the Defence Capability Plan while taking account of current commitments to extant capabilities being acquired and those that industry supports in-service. The CDG also consults the DMO on cost and schedule for projects entering the DCP.

1.42 Over the course of the requirements phase the DMO's involvement becomes increasingly greater as projects progress through the First and Second Pass approval stages. This involvement includes direct support to CDG staff in such tasks as developing capability requirements, cost and schedule estimates, developing project management plans and acquisition strategies, undertaking risk reduction studies, and seeking and evaluating proposals and offers from industry to supply equipment, systems and services.

1.43 The DMO works with CDG staff in supporting the development of First Pass options for consideration by Government under a pre-First Pass omnibus Materiel Acquisition Agreement (MAA) with CDG. Post First Pass, the level of the DMO involvement increases substantially in development of the

Acquisition Business case for Second Pass which usually entails confirming the achievability of capability requirements, developing a detailed acquisition and in-service support strategy, undertaking tendering action (where this is necessary to achieve quality estimates of cost and schedule) and recommending preferred suppliers, developing detailed acquisition costs and estimates of sustainment costs, and developing project management and test and evaluation plans. This work is specified and funded under a project specific First to Second Pass Materiel Acquisition Agreement.

1.44 CDG's capability requirements are expressed by way of a Capability Definition Documents (CDDs) suite comprising an Operational Concept Document (OCD), a Function and Performance Specification (FPS), and Test Concept Document (TCD). The OCD expresses the "warfighter's" operational requirements for a given capability; the FPS is an engineering expression of these requirements in terms of functions to be performed and the level of performance necessary; and the TCD explains the strategy for testing that these requirements have been met. A preliminary version of the CDD suite is considered by capability development committees at First Pass, and confirmed at Second Pass for the preferred option. The CDDs form the basis of more detailed contract specifications.

1.45 The MAA under which the DMO acquires the capability approved by Government comes into effect post Second Pass. Following contract negotiations conducted by the DMO with the preferred suppliers(s), this Agreement is ratified by the DMO and CDG.

Verification and validation of capability requirements

1.46 Mission and support system requirements that the DMO commits to deliver to CDG are specified by way of the OCD, FPS and TCD included in MAAs. The DMO's Test and Evaluation Master Plan (TEMP) articulates how the requirements of the TCD will be managed, including the management of contractor test and evaluation.

1.47 The DMO includes the OCD, FPS and Service technical regulators' standards in its contract specifications. Through the use of requirements traceability, the DMO ensures that contractor system and subsystem specifications are traceable to OCD and FPS requirements. Verification and validation processes, including the project's TEMP and contractor test plans, are the means by which requirements are demonstrated as being met. The DMO's project staff participate in and witness contractor acceptance test and

evaluation, and coordinate the Capability Manager's and CDG's Test and Evaluation attendance at test events, and the provision of specialist operator advice on test activities.

1.48 Any discrepancies between the materiel capability delivered under the MAA and what is necessary to achieve Initial Operational Capability (IOC) is rectified under arrangements between CDG and the Capability Manager. Where the DMO's services are required for the rectification, this is arranged under scope and funding supplementary to the MAA.

Capability realisation

1.49 Capability realisation for the DMO consists of the following elements:

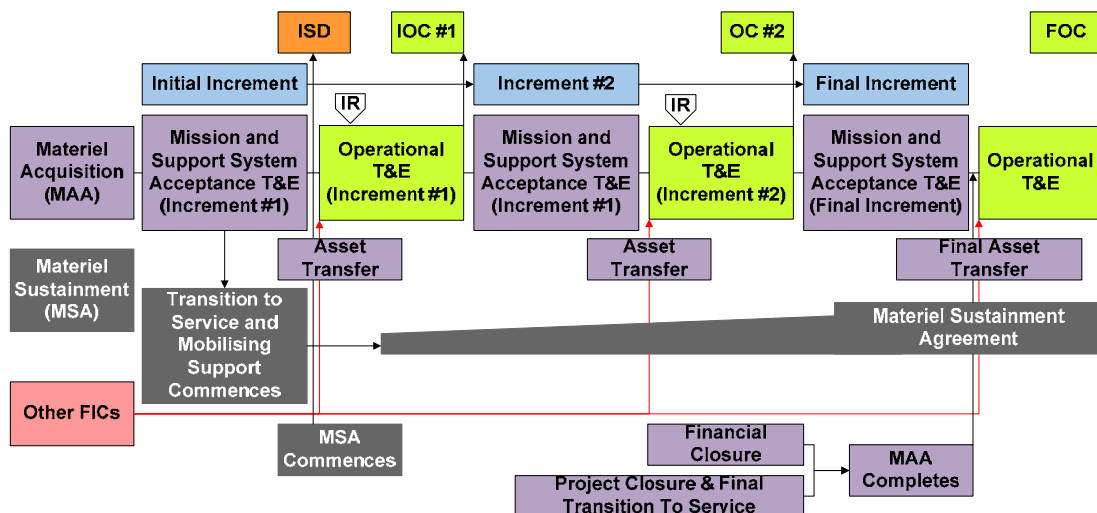
- contributing to the Capability Manager's task of integrating FICs, transitioning materiel systems into service and establishing in-service support arrangements;
- assuring CDG that the endorsed materiel requirements of CDDs have been met and satisfying the Capability Manager on requirements for Service Release;
- managing the process of transferring Assets Under Construction to Specialised Military Equipment in use and initiating the commencement of Materiel Sustainment Agreements to fund ongoing in-service support;
- managing the implementation of endorsed changes to materiel systems that emerge from Operational Test and Evaluation (T&E) or other T&E activities; and
- finalising the MAA and closing the project.

1.50 A capability is realised when the relevant Capability Manager provides Operational Release, thereby acknowledging that a capability system or subset has proven effective and suitable for its intended role and that FICs are ready for operational service. Operational Release is preceded by a period of Operational Test and Evaluation (OT&E) conducted under realistic operational conditions and is intended to demonstrate that a capability is safe, suitable and effective for its intended role. Capital investment projects usually comprise a number of capability increments commencing with an Initial Operational Capability (IOC) for the first increment and culminating in a Final Operational Capability (FOC) being realised. For example, the first of the 14 Armidale Class Patrol Boats would go through an operational test and evaluation period and

achieve IOC. An FOC would be achieved when all 14 boats and associated FICs were declared fit for operational release. As a major FIC provider, the DMO works with the Capability Manager and other FIC providers to ensure this is achieved in an integrated manner. Providers of non-DMO FICs are responsible for delivery of their elements. The DMO is not responsible for achieving an Initial or Final Operational Capability; this responsibility rests with the Capability Manager.

1.51 Figure 1.3 illustrates that, following contract acceptance by the DMO, the In-Service Date (ISD) marks the beginning of asset transfer from the DMO to Defence, the transition of materiel and support systems from the acquisition phase to the in-service phase, and activation of a Materiel Sustainment Agreement (MSA). Often, ISD is a symbolic event as the first assets are received from the Contractor, to which the DMO and ADF can add other fundamental inputs to capability (e.g. training, spares, bases etc). Initial Release (IR) is the milestone at which the initial operational and materiel condition of the capability, including associated FIC, are in a state that the Capability Manager considers is safe to proceed to Operational Test and Evaluation (OT&E). An Initial Operational Capability (IOC) state is achieved following OT&E. If the capability involves the delivery of a number of increments, this process is repeated until a Final Operational Capability (FOC) is reached. Project Managers institute project closure actions progressively as assets are transferred, arrange for transition to the in-service phase and finalise the project when all MAA requirements have been completed.

Figure 1.3



1.52 The transfer of assets from ‘assets under construction’ to specialised military equipment or ‘assets in use’ signifies that control of assets – acquired from the DMO under the MAA – moves to the relevant Capability Manager. It also marks the commencement of sustainment activity under the MSA.

1.53 A Transition Plan, developed by the Project Manager and agreed by the Capability Manager and CDG representatives, details what materiel systems will be transitioned to service for initial, subsequent and final materiel capability increments, and how and when the transfer will be affected. The Transition Plan also describes how existing materiel systems, to be replaced by new or modified systems, will be retired.

1.54 Project closure encompasses the technical and financial closure of the project. When both of these are achieved, the MAA can be closed by CDG and the DMO jointly by issuing an MAA Completion Certificate. At this point, the project will cease to report under the DMO's financial management and reporting regimes.

Risk Management

1.55 Risk management is core to the DMO's business. The Government expects that the DMO will deliver and sustain the required capability at an optimum cost and to tight schedules. The Government and Defence also expect the DMO to identify and mitigate high levels of risk. Any failure to address

risk can increase acquisition and sustainment costs, delay delivery and potentially compromise ADF capability and operational safety. Inaction would also have a direct adverse impact on the DCP, the consequences of which could be delayed starts for new projects, expensive overlaps in the retirement of old platforms and the introduction of new platforms.

1.56 For the DMO, acquisition risks, when realised, manifest themselves most visibly as schedule slippage. The primary reason for schedule slippage is industry's inability to deliver against contracted schedules brought about by underestimation of technical risks involved in a project, poor management of key subcontractors and a lack of capacity to adequately resource the contract. Schedule slippage can also occur because of protracted contract negotiations or project approval taking longer than the original schedule for the project. Legacy projects have also suffered from companies bidding and contracting against Defence delivery targets without a proper schedule risk assessment. Finally, scope increases or changes to specifications, whether initiated by Defence or Industry, almost inevitably have an adverse schedule effect.

1.57 Robust costing of projects' acquisition and through life costs is necessary for making informed choices between different capability options during the requirements development phase of a project. In an environment of acquiring and supporting highly complex and evolving military equipment, much of it at the forefront of new technology and involving long lead times, reliable project costing represents a risk. Through life support costs are particularly difficult to estimate, especially for new capabilities where the DMO has not had experience in sustaining similar equipment.

1.58 The DMO recently undertook an analysis of the cost performance of the 239 projects it closed over a period of 10 years. After correcting for inflation, foreign exchange and Government agreed changes to scope or quantities, on average these projects were delivered within 98 per cent of their approved budgets.

1.59 The DMO has made significant efforts to control project expenditure, and cost overruns are not the major problem for project management. The key risk and focus of attention is delays to schedule delivery.

Project Maturity Score

1.60 The DMO introduced Project Risks Scores in September 2004. From March 2005 onward these have been known as Project Maturity Scores.

1.61 The Project Maturity Score is based on the assessment of the following seven attributes listed in Table 1.1.

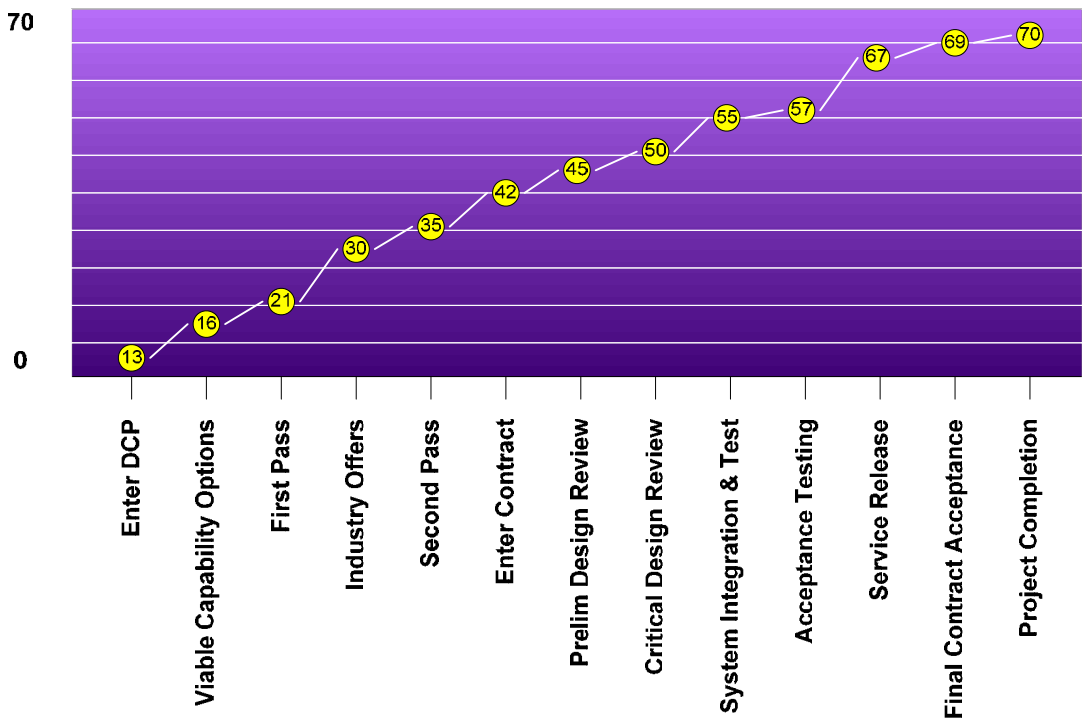
Table 1.1

Project Maturity Score Attributes

Attribute	Pre-Second Pass	Post-Second Pass
Schedule	How realistic is the schedule?	How is the In-Service Date tracking?
Cost	What is the quality of the project estimate?	How well are the costs tracking project approval?
Requirement	How well have we defined the requirement?	How well is the requirement being realised?
Technical understanding	How well do we understand the solutions?	Understanding of the technical solution and arrangements needed to operate and support the capability.
Technical difficulty	How difficult is it to put together?	How well is the design and its validation coming along?
Commercial	Can industry deliver the solution?	What is the contractor's management performance and customer relationship?
Operations and support	What is the impact on the existing operating and support environment?	How prepared is the project to deliver an operating system?

1.62 Project Maturity Scores rate seven attributes, on a scale of one to ten, at one of 13 life cycle gates spanning entry into the DCP until project completion. The maximum Project Maturity Score (70) is achieved at the last life cycle gate – project completion. Figure 1.4 depicts the life cycle gates and the benchmark scores at each of these gates. Scores that fall outside the benchmark are reviewed to ascertain which attributes are contributing to a variance from the benchmark and require management attention.

Figure 1.4
Project Maturity Scores at Life–Cycle Gates



Project Acquisition Categories

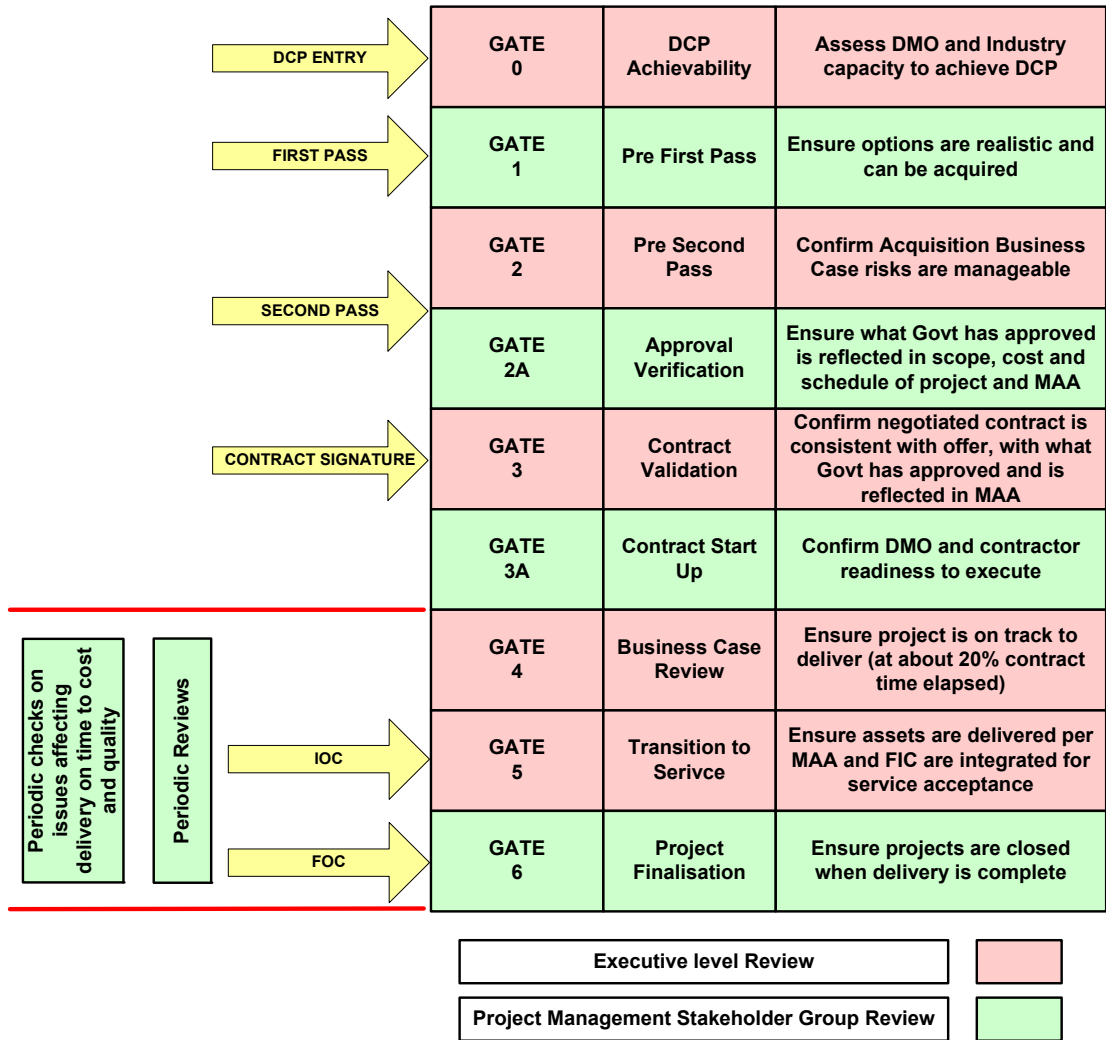
1.63 The DMO has adopted an Acquisition Categorisation (ACAT) framework that provides a graduated scale for projects from the most demanding and complex to those that are less so. There are four categories, the largest, most demanding and complex projects are categorised as ACAT I; less demanding and minor projects are categorised as ACAT II, ACAT III and ACAT IV. The ACAT level of a project is determined by assessing its complexity across the following domains: acquisition cost, project management complexity, schedule, technical difficulty, operations and support, and commercial. Appendix 1 has further details on the ACAT framework.

DMO Gate Reviews

1.64 The DMO has recently introduced a system of reviews at specific “Gates” in the capability lifecycle. These Gates Reviews and their objectives are outlined in Figure 1.5.

Figure 1.5

Project Maturity Scores at Life–Cycle Gates



1.65 These reviews are conducted at two levels – a strategic level to examine selected ACAT I and ACAT II projects and a complex level for selected ACAT III and ACAT IV projects. A strategic level board would typically comprise the DMO General Managers as well as the DMO Executive Level legal and finance representatives, and head of the relevant DMO Systems Division, and stakeholders such as the Head of Capability Systems (CDG) and the relevant Deputy Chief of Service. A complex level board would comprise the same functional representatives but at one level lower. These boards are convened

for Gates 2, 3, 4, and 5 while the standing Project Management Stakeholder Group (PMSG) for each project would examine projects at Gates 1, 2A, 3A and 6. PMSGs comprise the DMO, CDG and Capability Manager representatives and are usually convened at the Senior Executive Service (SES) level 1 staff / Military one star rank. Before Second Pass the PMSG is chaired by a CDG representative; after Second Pass the PMSG is chaired by a DMO representative.

1.66 This is a relatively new initiative that has had wide ranging support across Defence and with the Parliamentary Secretary for Defence Procurement. It is envisioned that reviewing high risk projects at specific points will identify issues that might otherwise get “lost in the noise” of tactical level project management as well as provide positive independent advice on how best to address the issues.

1.67 One of the initiatives introduced by the Government is the establishment of a dedicated unit within the DMO that provides executive oversight of issues and remediation plans on projects facing particularly difficult or intractable issues. This unit, headed by DMO's General Manager Programs, regularly reports to the Parliamentary Secretary for Defence Procurement, who in turn reports to the Minister for Defence so that Government has continuing visibility of these projects. Recent cancellation of the Tactical Unmanned Aerial Vehicle contract is an example of an outcome from this initiative. Other projects are benefiting from advice, including from independent technical specialists, on the nature and implementation of remediation plans.

Challenges and Opportunities

1.68 In the coming year the DMO will face a number of challenges as well as opportunities which will primarily be driven by the outcomes of the Defence White Paper, Defence Procurement and Sustainment Review, and the Defence Budget Audit. Other challenges that will need to be managed include the capacity of the DMO and industry to deliver new acquisition projects against the current work load of delivering approved acquisition projects and sustaining ADF assets.

1.69 The DMO is strongly focused on continuing to improve its acquisition and sustainment core business, ensuring the effective implementation of enhancements to its business processes and systems, and continuing its reform program.

Cost savings

1.70 A major challenge for the DMO is to meet its contribution to the five per cent efficiency dividend committed to across the Defence portfolio without reducing service delivery. A significant portion of the five per cent reduction will come directly from within the DMO and through productivity improvements in industry. The DMO will contribute to efficiencies through a determined effort to achieve 'cost of ownership' savings across its sustainment programs. These savings would be delivered in consultation with Capability Managers by reviewing servicing schedules for equipment, examining platform usage patterns and rates of effort, reviewing how they do business and the subsequent demands placed on the supply chain, as well as introducing performance based contracts for in-service support work undertaken by industry.

Skill Requirements

1.71 Over the next decade it is estimated that a further 18 000 skilled personnel are needed in the Australian defence industry due to increasing demand and the attrition rates associated with an aging workforce. This is a huge challenge and one that industry is currently not meeting. It is estimated that in 2007–08 industry needed nearly 1700 skilled workers but was only able to add 650. Meeting this challenge is essential if we are to maintain a sustainable defence industry and lifting the level of the skilled workforce will be central to defence industry delivering on time and on budget.

1.72 Workforce demands will not only be a challenge for industry but also for the DMO. It is clear that the DMO will also need to increase its skilled workforce in a competitive labour marketplace to undertake new projects that emerge from the White Paper process and changing ADF operational needs. The DMO is tackling the skilled workforce challenge through a professionalisation and up-skilling reform agenda. The uptake in professionalisation of engineering, project management and accounting personnel has been a success. Starting from an almost zero base in 2005, the DMO's professionalisation program has resulted in a total of 654 staff obtaining externally recognised proficiencies in project management, engineering, accounting, technical and legal professions with a further 681 currently enrolled in professionalisation programs.

1.73 The Project Managers Certification Framework is a central strategy in the DMO's vision of professionalising its project management workforce. This

framework certifies project managers against defined professional standards, provides professional development opportunities that will be sustained through structured career management and continuing professional development, and provides the means by which the DMO can build, enhance and retain a pool of professional project managers. A recognised, consistent and repeatable methodology for categorising projects is a key element to aligning certified experience and competencies of project managers to the complexity and scale of projects. The DMO endeavours to assign acquisition projects to project managers on the basis of their Certified Professional Project Manager status, consistent with the acquisition category (ACAT level) of projects. However, until the DMO builds a sizeable pool of Certified Professional Project Managers it is not always possible to appoint project managers based on the Project Managers Certification Framework.

1.74 The DMO's capital equipment projects operate in a dynamic and changing environment where the complexity of a project is not static. Therefore, the initial assignment of a project's ACAT level needs to be kept under review to ensure that it reflects the complexity associated with the ACAT level assigned and in turn the certification level of its project manager.

Intellectual Property

1.75 Intellectual property rights are a frequent cause of tension between Defence suppliers and the DMO and usually present themselves as a significant issue during detailed negotiations for acquisition or support contracts. Even though negotiated positions are captured in the eventual contract, the complex nature of intellectual property rights can lead to dispute between the Commonwealth and suppliers. Indeed, suppliers may raise intellectual property issues as a barrier to the DMO having subsequent work undertaken by a different contractor. The original supplier may argue that the Commonwealth or the third party contractor does not have sufficient intellectual property rights to undertake the work. This can arise when the DMO decides to have in-service support work done by a contractor other than the acquisition contractor or when the DMO decides to change in-service support contractors. Inadequate intellectual property rights can lock the DMO into a sole source supply arrangement.

Military Off The Shelf

1.76 Acquisition of Military Off The Shelf (MOTS) equipment offers a significant means of countering project risk and easing the pressure on the

acquisition workload in both industry and the DMO. However, more often than not, MOTS equipment needs to be Australianised and this introduces risk on a scale that is not always appreciated. Seemingly small modifications to MOTS can have a significant effect on the risk profile and can quite quickly push a project into the realms of a developmental program. While MOTS acquisitions can dramatically reduce cost, performance and schedule risk, supporting it in service can be a challenge particularly when equipment not in the ADF inventory is rapidly introduced into service e.g. with the C-17 Globemaster Heavy Airlift aircraft acquisition.

1.77 While there are opportunities to capitalise more on acquiring MOTS equipment, this will require more rigour in the requirements development process and cost benefit analysis of Australianising equipment.

Rapid Acquisitions

1.78 The growth in rapid acquisitions in support of ADF operations has increased markedly over the last two years with investment in these acquisitions growing from \$176 million to \$377 million. Equipment purchased through Rapid Acquisitions are typically Military Off The Shelf (MOTS) solutions. Support to ADF operations in response to the Chief of Defence Force is the highest of the DMO's priorities and is undertaken using the existing staffing base through reprioritisation. The demanding nature of this work, particularly the short time frames involved, means that we need to place our best project practitioners on rapid acquisitions. The emergent nature of this work means that the DMO is unable to plan in advance for these eventualities and timely rebalancing of the priority for rapid acquisitions with ongoing work is the only practical way the DMO can manage the influx of rapid acquisitions.

Recent Successes



The C-17 Globemaster Heavy Airlift project has been delivered on time and within budget. The aircraft are being used in direct support of operational deployments. The C-17 project is an excellent example of US–Australian cooperation on capital investment programs.

The Abrams tanks were delivered six months ahead of schedule and within budget.



The HMAS *Sirius* replenishment ship was delivered years ahead of the 2000 Defence White Paper projections and at about half the originally budgeted amount. This was achieved by using an innovative contracting strategy of buying a new commercial tanker and modifying it for the role of a RAN replenishment ship.

The air refueller has been a high risk project because Australia is the lead customer and, as such, bears the majority of the risk. The aircraft has completed testing and delivery into service will start in 2009.





The Australian Service Light Armoured Vehicle upgrade project has directly contributed to the successful operation of these vehicles in both Iraq and Afghanistan and the safety of deployed Australian troops.

The protective weapons station installed on the Bushmaster was successfully undertaken as a rapid acquisition project. The system has been fitted to more than 40 Bushmaster vehicles while deployed in Iraq and Afghanistan and has improved the Bushmaster's ability to operate in dangerous theatres.



2. The Major Projects Report

Background

2.1 On 13 March 2002, the Senate asked its Foreign Affairs, Defence and Trade References Committee to inquire and report on whether the (then) current materiel acquisition and management framework of the Department of Defence was effective in meeting the organisation's equipment requirements. The Committee reported on its findings in March 2003.

2.2 A key finding was that: *While the Committee acknowledges that there have been noticeable improvements in the ways in which progress on major projects is being reported to government, there is still relatively poor visibility of projects as far as the parliament and the public are concerned. The Committee seeks dramatic improvements in this area, and points to the kinds of parliamentary accountability being delivered to the House of Commons in an annual report on acquisition projects prepared by the Comptroller and Auditor-General. As a consequence, the Committee recommends that the Senate request the Auditor-General:*

- *to produce on an annual basis, a report on progress in major defence projects, detailing cost, time and technical performance data for each project;*
- *to model the report on that ordered by the British House of Commons and produced by the UK Comptroller and Auditor-General; and*
- *to include in the report such analysis of performance and emerging trends as will enable the parliament to have high visibility of all current and pending projects.*¹¹

2.3 The Senate supported the recommendation and asked the Auditor-General to consider the request. On 17 August 2006, the Joint Committee of Public Accounts and Audit (JCPAA) expressed support for the ANAO to be funded to provide a Major Capital Equipment Projects Report to Parliament.

2.4 On 22 May 2008, the Parliamentary Secretary for Defence Procurement confirmed in a media release that the DMO will produce an annual report on the performance of its most significant acquisition projects. He confirmed that nine projects will feature in the first "pilot program" report which will contain key performance metrics on cost, schedule and capability.

¹¹ Foreign Affairs, Defence and Trade References Committee – Report on the Inquiry into Materiel Acquisition and Management in Defence, March 2003.

Developing and Implementing the Methodology

2.5 Since the recommendation to produce an annual report on the major DMO acquisition projects, the DMO and ANAO have been working together to develop a template, based on that used in the United Kingdom (UK) report but modified to capture Australian project data. It should be noted that the data contained in the DMO's Project Data Summary Sheet (PDSS) covers a far greater range of subject matter and level of detail than the UK National Audit Office / Ministry of Defence Major Projects Report.

2.6 On 20 September 2007, the DMO and ANAO jointly presented to the JCPAA an iterative approach to implementing the first Major Projects Report (MPR). The JCPAA endorsed the proposed indicative template structure and the nine projects identified for inclusion in the 2007–08 report.

2.7 Senior DMO and ANAO officers subsequently engaged the DMO project management teams of the selected nine projects to gain feedback on the proposed approach to implementing the MPR and gained first hand knowledge of how different and complex projects are managed within the DMO. Members of the DMO and ANAO have researched the work that has been undertaken for a number of years by the United States, Canada and UK, which report annually on their largest Defence acquisition projects. This research has been extremely effective in allowing the DMO and ANAO to leverage from the years of international knowledge and experience.

2.8 The template proposed by the DMO and the ANAO has undergone further refinement following recommendations stemming from the JCPAA meeting in September 2007, and lessons learned in the pilot implementation.

Project Selection

2.9 The nine DMO projects selected for the initial pilot report for 2007–08 include a combination of Navy, Army, Air Force and one Joint Service Project. They also include a mix of upgrades to existing capability and new acquisitions, developmental and Military Off The Shelf (MOTS) projects, defence contracts and Foreign Military Sales (FMS).

2.10 The nine projects included in the 2007–08 Major Projects Report are:

- | | | |
|--------------------|---|----------------------|
| • Navy | Armidale Class Patrol Boat (ACPB) | – SEA 1444 Phase 1 |
| | Collins Replacement Combat System (RCS) | – SEA 1439 Phase 4A |
| | Guided Missile Frigate Upgrade Implementation (FFG) | – SEA 1390 Phase 2.1 |
| • Army | Bushmaster Protected Mobility Vehicle (BushR) | – LAND 116 Phase 3 |
| | Armed Reconnaissance Helicopter (ARH) | – AIR 87 Phase 2 |
| • Air Force | Airborne Early Warning and Control Aircraft (AEW&C) | – AIR 5077 Phase 3 |
| | F/A–18 Hornet Upgrade (HUG 2.2) | – AIR 5376 Phase 2.2 |
| | C–17 Globemaster III Heavy Airlifter (C–17) | – AIR 8000 Phase 3 |
| | | |
| • Joint | High Frequency Modernisation (HF Mod) | – JP 2043 Phase 3A |

2.11 The major characteristics for each of the projects are displayed at Table 2.1.

2.12 Between November 2007 and February 2008, selected projects were asked to populate the PDSS and prepare supporting evidence in preparation for ANAO independent review. AEW&C, ACPB, HF Mod and BushR projects also provided assistance in developing the PDSS. Following the pilot implementation for the first four projects, PDSS for the next five projects, viz HUG 2.2, RCS, ARH, C–17 and FFG were developed.

2.13 Experience overseas has shown that the MPR will continue to develop and evolve over time as a result of lessons learned in the development and analysis, and as readers become more familiar with the data and the projects.

2.14 For the 2008–09 MPR an additional six projects will be added to the nine listed above. Selection of the additional projects will be undertaken following liaison with the JCPAA, ANAO and other senior stakeholders.

Table 2.1

MPR Projects – Major Characteristics

Project and Abbreviated Name	Pre–Post Kinnaird	Type	Service Customer	Technology	Complexity ¹²	Budget (\$m) 30 June 08	Maturity Score ¹³ 30 June 08	Prime System Integrator	Contract Type ¹⁴	Quantity of Prime Assets Contracted
Armada Class Patrol Boat (ACPB)	Pre–Kinnaird	Australiansed MOTS	Navy	Naval Ship	ACAT 3	558.8	61	Defence Maritime Services (with Austal)	Variable	14
Collins Replacement Combat System (RCS)	Pre–Kinnaird	Australiansed MOTS	Navy	Naval Combat Systems	ACAT 3	451.6	56	Commonwealth	Various contracts	6
FFG Upgrade (FFG)	Pre–Kinnaird	Developmental	Navy	Naval Combat Systems	ACAT 2	1503.8	53	Thales	Variable	4
Bushranger (BushR)	Pre–Kinnaird	Australiansed MOTS	Army	Vehicles	ACAT 2	892.9	57	Thales	Variable	724

¹² The complexity of a project is reflected in its Acquisition Category (ACAT) rating which is explained in Appendix 1.

¹³ The Project Maturity Score is explained in Figure 1.4.

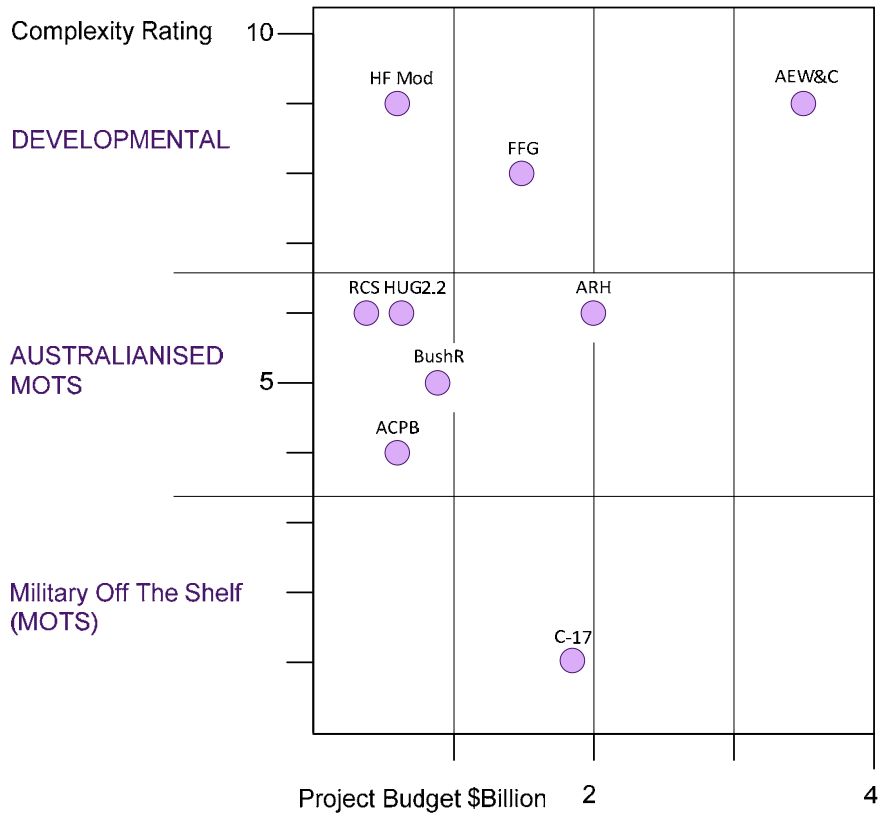
¹⁴ A variable price contract is one in which the base fixed price can be varied to take account of price indexation and foreign exchange variations.

Project and Abbreviated Name	Pre-Post Kinnaird	Type	Service Customer	Tech-nology	Complexity ¹²	Budget (\$m) 30 June 08	Maturity Score ¹³ 30 June 08	Prime System Integrator	Contract Type ¹⁴	Quantity of Prime Assets Contracted
ARH Tiger Helicopter (ARH)	Pre-Kinnaird	Australianised MOTS	Army	Helicopter	ACAT 2	2026.4	55	Australian Aerospace Ltd (with Eurocopter)	Variable	22
Airborne Early Warning and Control Aircraft (AEW&C)	Pre-Kinnaird	Developmental	Air Force	Military aircraft	ACAT 1	3751.7	47	Boeing	Variable	6
Hornet Upgrade Ph2.2 (HUG 2.2)	Pre-Kinnaird	Australianised MOTS	Air Force	Avionics	ACAT 3	1874.7	66	Commonwealth	Variable and FMS	71
C-17 Heavy Airlifter (C-17)	Post-Kinnaird	MOTS	Air Force	Military aircraft	ACAT 2	1838.4	65	Foreign Military Sale (Boeing)	FMS	4
HF Modernisation (HF Mod)	Pre-Kinnaird	Developmental	Joint	Electronic systems	ACAT 2	637.1	54	Boeing	Variable	1 Core 8 mobiles

2.15 The nine MPR projects can be further characterised by the following diagram.

Figure 2.1

Nine Projects Mapped by Type, Complexity and Budget



2.16 Figure 2.1 plots each of the nine projects in the MPR against budget and a complexity rating which ranges from a pure Military off the Shelf (MOTS) solution, through the Australianisation of a MOTS solution, and into a developmental project. In this depiction, cost is only an indicator of value of the fiscal commitment not the complexity of the project e.g. the C-17 project with a project cost of \$1.838 billion as a MOTS procurement project would be far less complex than the FFG Upgrade at \$1.503 billion as the latter is a developmental project.

Major Projects Synopsis

2.17 This section of the Report provides an analysis of the data in the individual PDSS. The purpose of this section is to aggregate data from the individual PDSS and to provide a view of key elements of these projects' performance. The diversity of project characteristics coupled with the small sample size of MPR projects make like for like comparisons or the discernment of trends difficult to deduce. Furthermore, it would be inappropriate to draw broad based conclusions about the rest of the DMO's large portfolio of projects based on this small sample of MPR projects.

2.18 The analysis also includes some international comparisons which provide some contextual benchmarks against which to compare the MPR projects. Australia is not unique in its project acquisition experience; for example, delays in schedule are a significant issue for defence acquisition in the US, Canada, UK and most European countries as well.

Project Budget and Variations

2.19 Project budgets and variations are matters of considerable interest and the MPR provides a substantial amount of information in this area. Therefore it is important that there is a clear understanding of the data presented, and for this MPR it is explained for each project. All project financial data in the PDSS are reported on the basis of their status at the end of financial year 2007–08.

Project Budget Figures

2.20 The Project Budget figures quoted in the PDSS are the investment budgets passed to the DMO via the Materiel Acquisition Agreement (MAA), as amended from time to time between Defence and the DMO, and reflect the funding provided for the scope of work tasked to the DMO through the MAA. These figures are consistent with those published in the DMO's Portfolio Budget Statements and Additional Estimates.

2.21 The Project Budget Approval History and Project Real Variation History (PDSS Tables 2.1 and 2.2 respectively) of the PDSS tracks the original approved budget for the project that was transferred to the DMO at the time that the project was approved by Government, and the variations made to it since. The budget variation history tracks changes on account of:

- **Price Indexation Variations** to take account of variations in labour and materiel indices over time, a factor that is beyond the DMO's capacity to control.
- **Foreign Exchange Variations** brought about by changes in foreign exchange rates for payments in foreign currency, again a factor over which the DMO has no control.
- **Real Variations** comprising a number of contributing elements such as changes in quantities and scope which are explained in further detail.

2.22 The sum of the above three variations results in a "Current Approved" project budget presented in Table 2.1 of the PDSS; that is the original budget brought up to a comparable value by application of indexation and exchange parameters set by the Department of Finance and Deregulation. All dollar amounts are adjusted to a common base date so that like for like comparisons can be made of the numbers.

2.23 Real Variations are then broken out in Table 2.2 of the PDSS into the following consistent categories:

- "Scope" changes are attributable to changes in requirements by Defence (as the customer of the DMO). These generally take the form of changes in quantities of equipment, a change in requirements that result in specification changes in contracts, changes in logistics support requirements or changes to services to be provided which are accompanied by a corresponding budget adjustment.
- "Transfers" occur when a portion of the budget and corresponding scope is transferred to or from another approved project in the DMO or to a Group in Defence in order to more efficiently manage delivery of an element of project scope and to vest accountability for performance accordingly.
- "Budgetary Adjustment" is made to account for corrections to foreign exchange or indexation accounting errors that might occur from time to time. Also included under this heading are Departmental administrative decisions that result in variations such as efficiency dividends to be harvested from project budgets or adjustments made to fund initiatives such as Skilling Australia's Defence Industry (SADI).
- "DMO Performance" amounts under this category can be attributed to how effectively the DMO managed its financial performance on a project. Budget adjustments under this category are not related to any of the above headings. They include cost overruns that can arise because of incorrect estimates that the DMO may have previously

agreed to in MAAs, real cost variations that do not have a corresponding scope variation, such as non indexation or foreign exchange price variations in contracts, or changes in contract price that might result from global settlement of contractual issues.

Financial Analysis of MPR Projects

2.24 This section first presents a financial analysis of each of the nine MPR projects and then presents aggregate data for comparison based on their PDSS. For each project there is a pair of graphs that show project budget and contract price variations. The first graph of each pair depicts the variance to original project budget in the categories of variances explained in paragraphs 2.21 to 2.23. In this section of the Report, variance explanations focus on the larger variances, however all variances are explained in the detailed PDSS and for convenience a consolidated list of variances for all projects is presented in Table 2.2 below.

2.25 Defence is compensated for indexation variation based on the Australian Non Farm Gross Domestic Product (GDP) Index variations, not the actual indexation variances based on contractually agreed indices; these are borne by the project budget.¹⁵ Government bears the risk of foreign exchange variations on a “no win – no loss” basis insofar as project budgets are concerned. Accordingly variations on account of price indexation and foreign exchange are presented but not explained except where unusual circumstances were encountered.

¹⁵ The price indexation figures quoted in this Major Projects Report and Project Data Summary Sheets are the actual indexation variations incurred to end of financial year 2007–08.

Table.2.2**Consolidated List of Real Project Cost Variations**

Project	Date	Scope	Transfer	Budgetary Adjustment	DMO Performance	Total	Real Variance Explanation
Armidade Class Patrol Boat (ACPB)	Jun-04			2.6		2.6	Real Adjustment due to incorrect currency mix used at time of approval.
	Aug-04			-0.4		-0.4	Administrative Savings harvest.
	Nov-04		-0.2			-0.2	Transfer to Joint Materiel Agency for supply of medical allowance list.
	Jun-05		-1.8			-1.8	Transfer to Joint Ammunition Logistics Organisation for Typhoon (gun) 25mm rounds and Defence Support Group for project office fit out in Darwin.
	Jun-05	67.1				67.1	Increased scope for the number of Patrol Boats from 12 to 14.
	Aug-05			-1.5		-1.5	Skilling Australia's Defence Industry (SADI) harvest.
	Total	67.1	-2.0	0.7	0.0	65.8	
	May-03		-0.9			-0.9	Transfer to Defence Science and Technology Organisation.
Collins Replacement Combat System (RCS)	Aug-04			-0.8		-0.8	Administrative Savings harvest.
	Total	0.0	-0.9	-0.8	0.0	-1.7	

Project	Date	Scope	Transfer	Budgetary Adjustment	DMO Performance	Total	Real Variance Explanation
FFG Upgrade (FFG)	Nov-98			-0.1		-0.1	Travel not required.
	Jul-99		-152.6			-152.6	Transfer to Project Sea 1428 Ph 2A (Evolved Sea Sparrow Missile Project) for the procurement of Evolved Sea Sparrow missiles on behalf of Project SEA 1390 Ph2.
	Aug-04			-0.7		-0.7	Administrative Savings harvest.
	Total	0.0	-152.6	-0.8	0.0	-153.4	
	Jul-07	154.8				154.8	Additional Protected Mobility Vehicles for Enhanced Land Force requirements.
Bushranger (BushR)	Aug-07	360.6				360.6	Additional Protected Mobility Vehicles for Overlander requirements.
	Total	515.4	0.0	0.0	0.0	515.4	
	Oct-02		-18.2			-18.2	Transfer to Defence Support Group Oakey Redevelopment Project (Queensland) to develop ARH specific infrastructure.
ARH Tiger Helicopter (ARH)	Dec-03		-59.1			-59.1	Transfer to Defence Support Group 1 Aviation Relocation Project (Darwin) to develop ARH specific infrastructure.
	Aug-04			-2.2		-2.2	Administrative Savings harvest.
	Sep-04		-3.0			-3.0	Transfer to Defence Science and Technology Organisation to fund studies in support of the ARH.
	Jun-05		-4.0			-4.0	Transfer to Defence Support Group to fund AIR 87 facilities constructed as part of the Darwin 1 Aviation Relocation Project.

Project	Date	Scope	Transfer	Budgetary Adjustment	DMO Performance	Total	Real Variance Explanation
Airborne Early Warning and Control Aircraft (AEW&C)	Aug-05			-4.5		-4.5	Skilling Australia's Defence Industry (SADI) harvest.
	Total	0.0	-84.3	-6.7	0.0	-91.0	
	Jul-98		-170.4			-170.4	Transfer to Project Olympus.
	Nov-98		807.9			807.9	Merging of Project Olympus, which had been established separately to acquire classified elements of the AEW&C capability.
	Jun-99			-166.0		-166.0	Variation for overfunding for Price Exchange at time of approval.
	Mar-02		-3.9			-3.9	Transfer to supplement Overseas Allowances.
	Jun-04	225.6				225.6	Increased scope, approved by Government in April 2004, for the acquisition of the 5th and 6th aircraft.
	Aug-04			-2.4		-2.4	Administrative Savings harvest.
	Aug-04		-14.0			-14.0	Transfer to Facilities.
	Jun-05		-1.0			-1.0	Transfer to Facilities.
	Aug-05			-4.8		-4.8	Skilling Australia's Defence Industry (SADI) harvest.
	Jul-08				388.1	388.1	Supplementation sought by DMO for incurred and forecast price indexation losses beyond DMO's control.
	Total	225.6	618.7	-173.2	388.1	1,059.1	

Project	Date	Scope	Transfer	Budgetary Adjustment	DMO Performance	Total	Real Variance Explanation
Hornet Upgrade Ph2.2 (HUG 2.2)	Feb-99		23.9			23.9	Transfer from other phases of AIR 5376.
	Aug-00		11.3			11.3	Transfer from AIR 5376 Ph1 for Hornet Aircrew Training System.
	Jul-01	-132.1				-132.1	White paper considerations.
	Oct-02		-0.2			-0.2	Transfer to Facilities.
	Oct-03	9.3				9.3	Scope increase for Hornet Aircrew Training System.
	Aug-04			-0.7		-0.7	Administrative Savings harvest.
	Aug-04	-1.2				-1.2	Transfer to Facilities.
	Dec-04	-67.0				-67.0	Transfer to Major Capital Equipment Program for Radio Frequency Jammer.
	Aug-05			-2.7		-2.7	Skilling Australia's Defence Industry (SADI) harvest.
	May-07	412.5				412.5	Scope increase to include Hornet Electronic Warfare Self Protection Suite upgrade being conducted under HUG Stage2.3.
	Total	221.5	35.0	-3.4	0.0	253.1	
	Total	0.0		0.0	0.0	0.0	
C-17 Heavy Airlifter(C-17)							

Project	Date	Scope	Transfer	Budgetary Adjustment	DMO Performance	Total	Real Variance Explanation
HF Modernisation (HF Mod)	Jul-98		2.3			2.3	Transfer from other phases of JP 2043.
	Feb-99		0.1			0.1	Transfer from other phases of JP 2043.
	Feb-99	11.0				11.0	Scope change to include Wideband High Frequency Direction Finding capability.
	May-02		0.9			0.9	Transfer for installation at Robertson Barracks.
	Feb-03		-6.1			-6.1	Transfer to Defence Support Group as contribution to construction of Defence Network Operations Centre (DNOC) and infrastructure support.
	May-03		-1.9			-1.9	Transfer to Facilities.
	Aug-04			-0.2		-0.2	Administrative Savings harvest.
	Aug-05			-0.6		-0.6	Skilling Australia's Defence Industry (SADI) harvest.
	Total	11.0	-4.7	-0.8	0.0	5.5	

2.26 For each of the nine projects included in the MPR, there are two data graphs together with an explanation of variances. The first graph of each pair depicts the variance to original project budget. This broad variance is then broken down further into the major components of Price Indexation, Foreign Currency Exchange and Real increase/decrease. The Real increase/decrease is then broken down into Scope, Transfers, Budgetary Adjustments and DMO performance. The second graph of each pair shows the total Contract Price broken into original and variance to 30 June 2008, expenditure to date against the Contract Price, and the current project Maturity Score.

2.27 These graphs also show the Contract Price and real variances but excludes price indexation and foreign exchange adjustments; these are accounted for at a whole of project budget level in the previous graph. This section of the Report also provides a comparison of contract expenditure and Project Maturity Score. This provides a rough comparator of contract expenditure against how mature the project is. However, it should be recognised that a direct correlation between maturity score and expenditure cannot be made because this score is not a direct measure of project progress, as in percentage to completion, but rather how mature the project is as it advances through the project lifecycle. For example, some projects have a number of components to them; the overall Project Maturity Score will reflect the least mature of these components even though the other components of the project of greater value and expenditure might be much more mature. As a result, the Project Maturity Score in such instances would lag the contract expenditure. Where this occurs an explanation is provided.

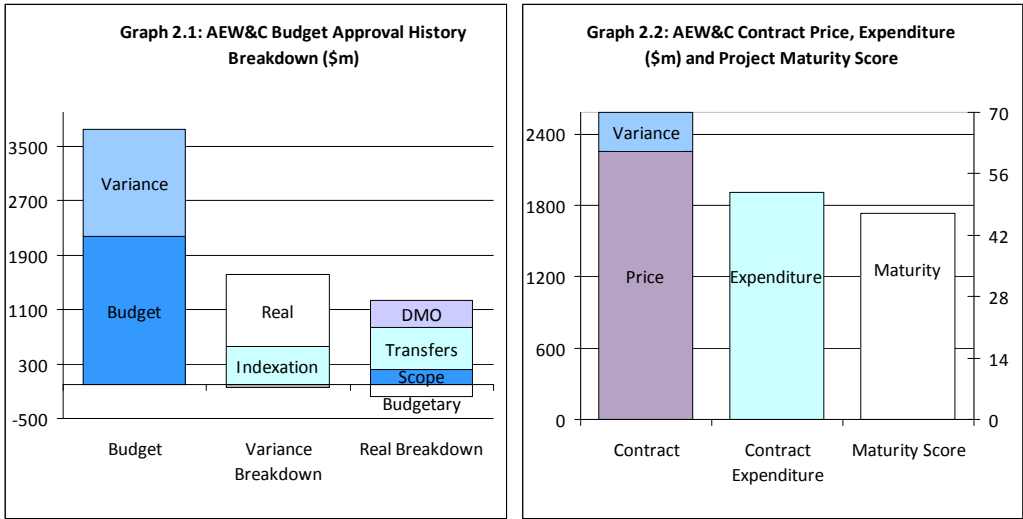
Contract Expenditure

2.28 Defence capital equipment acquisition contracts are generally written on a variable price basis reflecting their long-term nature and appropriate risk allocation. Such contracts include a base date, being the date agreed to be the basis of the fixed contract price (usually a date specified in the tender documents to ensure comparability of responses), and agreed conditions under which this price can be varied (usually conditions concerning contract price adjustment for foreign exchange variation and indices to calculate contract price adjustment for movement in the cost to the contractor of labour and materials). The financial performance section of the PDSS provides the life to date expenditure against the Prime Acquisition Contract (Table 2.7 of the PDSS) in 'Base Date Dollars'. This assists readers to understand the proportion

of the contract price related to the scope of work contracted that has been paid to date.

2.29 The DMO’s financial management system (ROMAN – Resource and Output Management Network) captures all contract expenditure whether they are base date payments or price variation payments and is the authoritative source for contract payment transactions. ROMAN has limitations on the type of reports it can generate and source data from ROMAN on project expenditure needs to be filtered in tools such as spreadsheets to enable the base date expenditures to be separately identified.

Airborne Early Warning & Control Aircraft



Budget Variations

2.30 In Graph 2.1 the most significant variance is due to the merging of a legacy project - Project Olympus. The AEW&C project (AIR 5077 Phase 3) was originally approved in December 1997 at \$2.17 billion and Project Olympus was approved separately at the same time to acquire classified elements of the AEW&C capability at a cost of \$807.9 million. When the AEW&C project (AIR 5077 Phase 3) was subsequently approved in December 2000 to proceed to contract for four aircraft and associated capabilities, it was funded for the full scope of these capabilities, which included the classified elements of the original Project Olympus, with a corresponding increase in cost. The other significant real variation reflects Government’s decision to acquire a further

two aircraft at a cost of \$306.7 million¹⁶. When this decision was made, the project risk was deemed to be manageable and project contingency funds were used to pay for the acquisition of the additional two aircraft. This assessment of project risk later proved to be incorrect and as a consequence the remaining contingency for risk treatment and to fund indexation changes proved to be inadequate. Indexation changes in particular have been significant because of the large difference between the actual price indexation changes and the Non Farm GDP Index that Government compensates Defence for.

DMO Performance

2.31 Only Price Indexation Variations covered by supplementation to the limit of the Australian Non Farm GDP Index are listed in Table 2.1 of the PDSS. In the case of AEW&C, additional supplementation had to be sought by way of a real cost increase for the price indexation variations incurred and forecast that were beyond what supplementation covers. Notwithstanding that these price indexation variations are beyond the control of the DMO, the only category under which they can be shown is “DMO Performance”.

Contract Price Variations

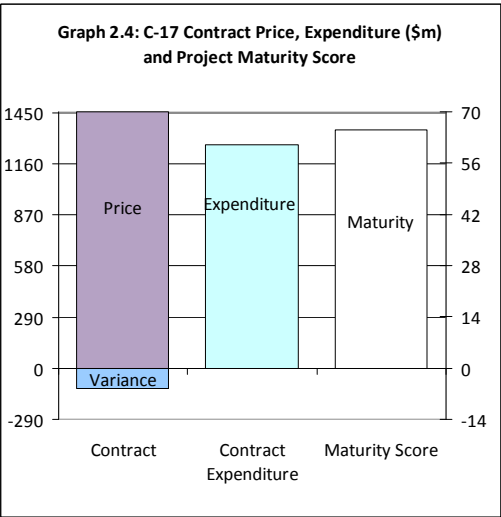
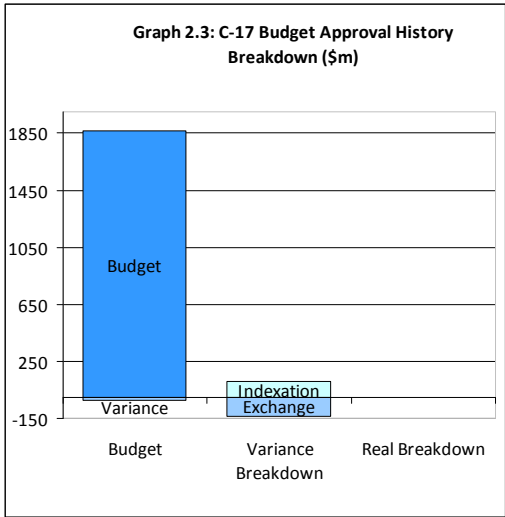
2.32 The original contract price of \$2257.7 million has increased to \$2586.8 million as a consequence of acquiring an additional two aircraft and other changes to the contract introduced as risk mitigation measures.

Maturity Score

2.33 The Maturity Score has been held at 47, Critical Design Review, because performance associated with radar and electronic support measures has yet to be resolved. As a consequence the maturity score would appear to lag contract expenditure but the latter reflects physical and financial progress on the contract.

¹⁶ While the additional aircraft cost \$306.7 million, the net scope increase attributed to the project was \$225.6 million.

C-17 Globemaster III Heavy Airlifter



Budget Variation

2.34 There have been no appreciable budget variations for this project.

DMO Performance

2.35 There were no cost variations on account of the DMO's performance.

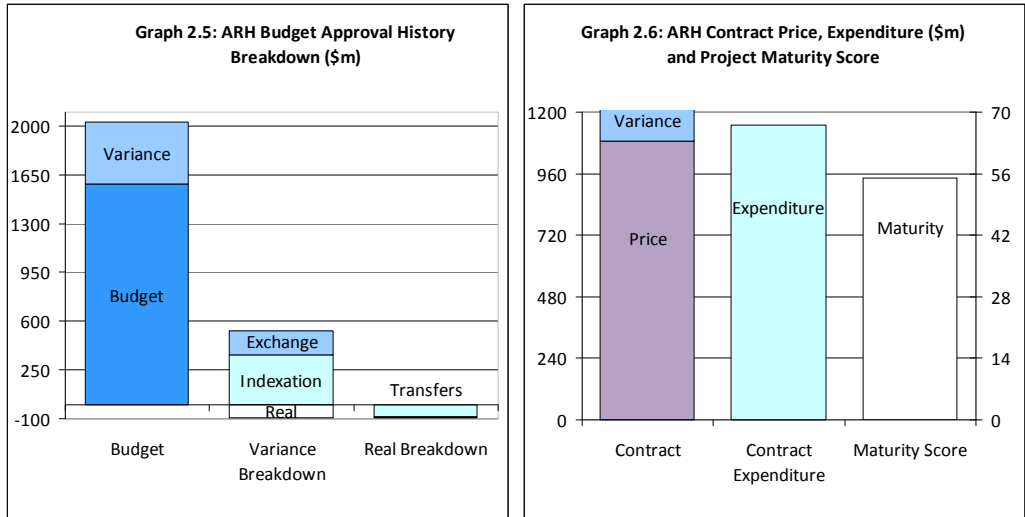
Contract Price Variations

2.36 Foreign exchange variation has reduced the value of the FMS case for this project.

Maturity Score

2.37 The maturity score of 65 reflects that although the C-17 Project has finalised the delivery of aircraft and initial support provisions, other project deliverables including spares, support equipment, role equipment and training equipment will progressively be accepted in the 2008 to 2011 timeframe. In this project, expenditure closely matches the maturity score.

Armed Reconnaissance Helicopter



Budget Variations

2.38 The real variation mainly relates to transfers of \$81.34 million to the Defence Support Group to develop ARH specific facilities infrastructure.

DMO Performance

2.39 There were no cost variations on account of the DMO’s performance.

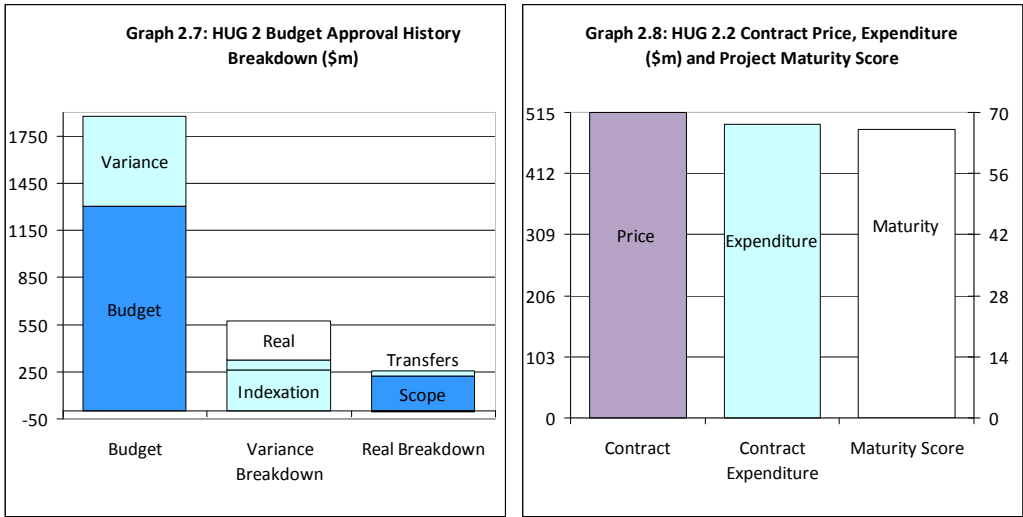
Contract Price Variations

2.40 The contract price increase of \$164.7 million was due to Defence approved scope changes to enhance the training continuum to provide a cost effective solution for aircrew training requirements and for acquiring additional Ground Mission Equipment sets needed to meet Army’s operational and fixed site requirements. No variation to the project budget was necessary for this.

Maturity Score

2.41 In this project the maturity score lags contract expenditure primarily because acceptance testing of all contract deliverables has yet to be completed.

F/A 18 Hornet Upgrade Program Phase 2¹⁷



Budget Variations

2.42 The budget variation primarily relates to a funds transfer for the Hornet Electronic Warfare Self Protection Suite upgrade being conducted under HUG Stage 2.3. There are no real cost increases or decreases for HUG Stage 2.2.

Contract Price variations

2.43 There have been no variations to the contract base date prices.

DMO Performance

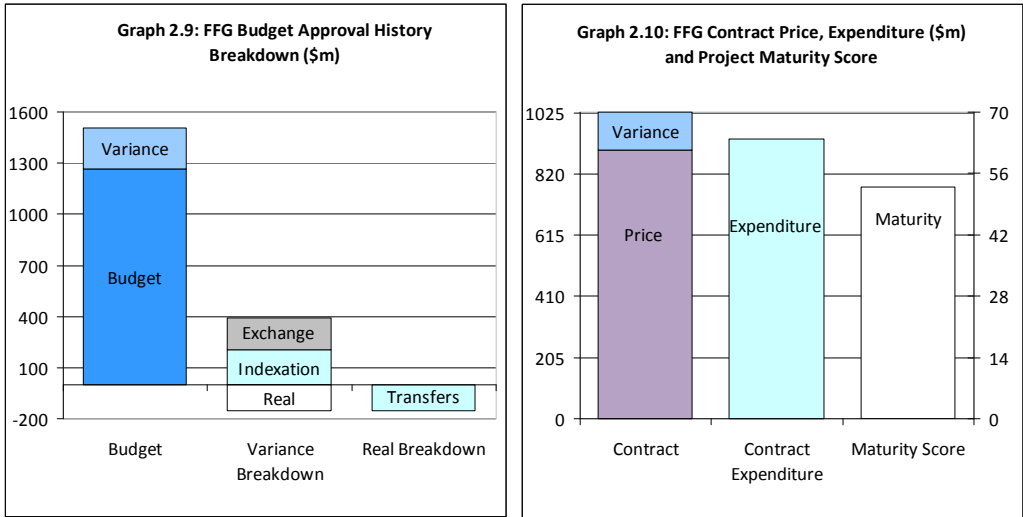
2.44 There were no cost variations on account of the DMO's performance.

Maturity Score

2.45 This project has achieved Final Operational Capability and its maturity score and contract expenditure are reasonably well aligned.

¹⁷ Budget Figures are for Air 5376 Phase2 overall and are not broken down to sub Stages. Each Stage has a discrete internal budget and is managed as part of the overall Phase2 budget. All four stages are within the current budget allocations with HUG Phase2.2 approaching Project Closure. Contract Price, Expenditure and Maturity Score are for HUG Phase2.2.

Guided Missile Frigate Upgrade



Budget Variations

2.46 Budget variations are primarily due to a transfer of \$152.6 million to Project Sea 1428 Ph 2A (Evolved Sea Sparrow Missile Project) for the procurement of Evolved Sea Sparrow missiles on behalf of Project SEA 1390 Phase 2.

DMO Performance

2.47 Despite the variations in both project budget and contract price, there were no cost variations on account of the DMO’s performance.

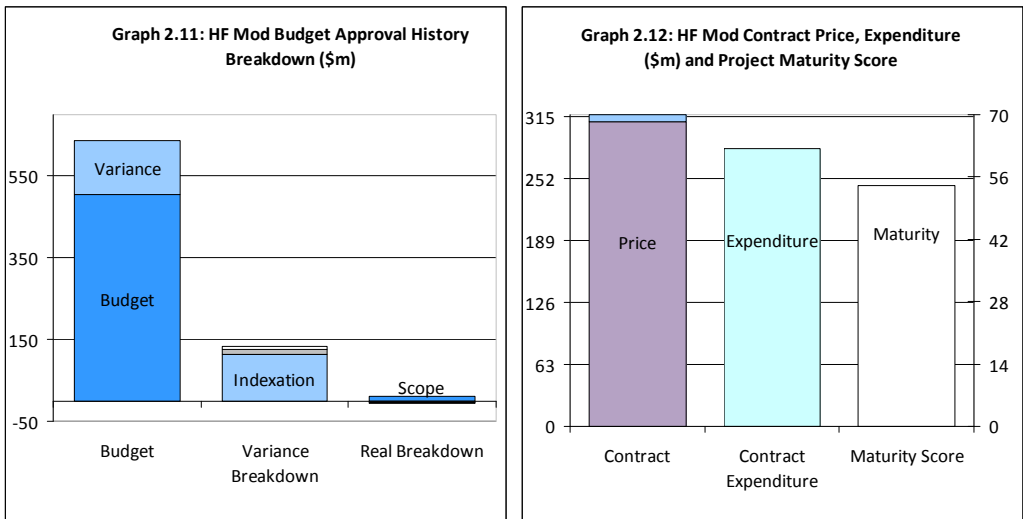
Contract Price Variations

2.48 The original contract price was varied to include the refit of HMA Ships Sydney, Melbourne, Darwin and Newcastle to be conducted concurrently with the upgrade of these ships. The refits are funded from the Navy’s sustainment budget and are not part of the approved project cost. The contract price was reduced under a May 2006 Deed of Settlement and release which globally settled claims between the Commonwealth and contractor, and also reduced the number of ships to be upgraded from six to four. The price reduction takes cognisance of the investment in engineering development costs that were not proportionally impacted by the reduction in the number of ships and the original six ship sets of equipment purchased as long lead items remained unchanged.

Maturity Score

2.49 The four ships in the upgrade program are at different states of maturity between 53 and 67. However, the Project Maturity score reflects the status of the least advanced of the four FFGs. Accordingly, the maturity score appears to lag the contract expenditure.

High Frequency Communication Modernisation



Budget Variations

2.50 HF Mod variations mainly relate to a transfer of \$6.1 million to the Defence Support Group as contribution to construction of Defence Network Operations Centre and infrastructure support, and an approved scope change of \$11 million to include a Wideband HF Direction Finding capability.

DMO Performance

2.51 There were no cost variations on account of the DMO’s performance.

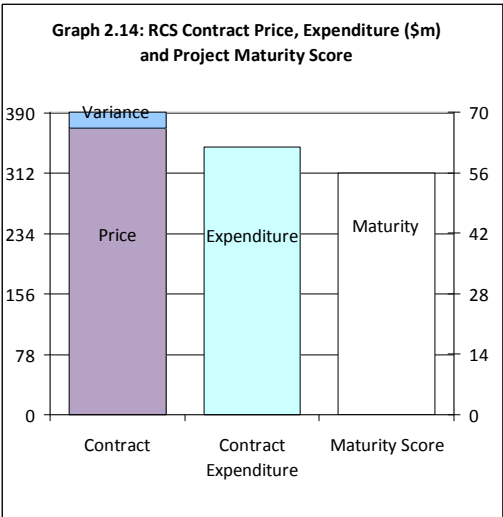
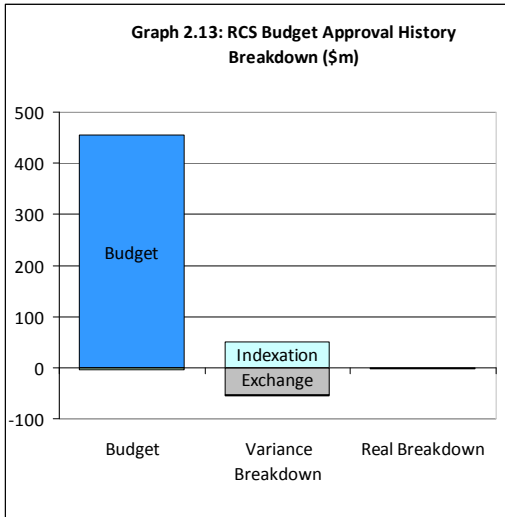
Contract Price Variations

2.52 The project has had a number of contract price variations over the life of the contract. The 2006–07 Auditor General Audit Report No. 34 on this project provides an account of these variations to 2006. The June 2008 contract price of \$316.8 million represents a total increase of \$7.2 million over the price at contract signature.

Maturity Score

2.53 The maturity score appears to lag contract expenditure primarily due to schedule delays experienced on this contract.

Collins Combat Replacement System



Budget variations

2.54 The project has experienced a budget variation of \$1.7 million.

DMO Performance

2.55 There were no cost variations on account of the DMO's performance.

Contract Price Variations

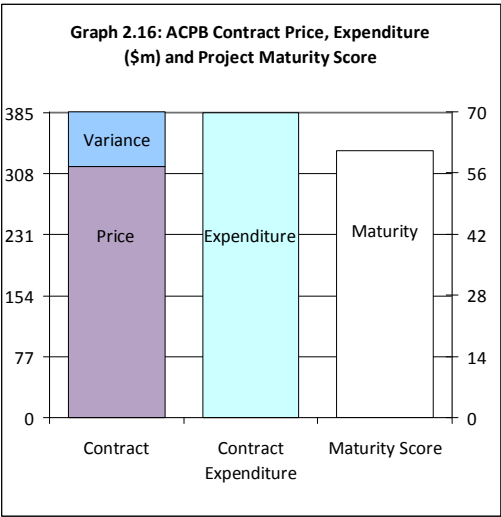
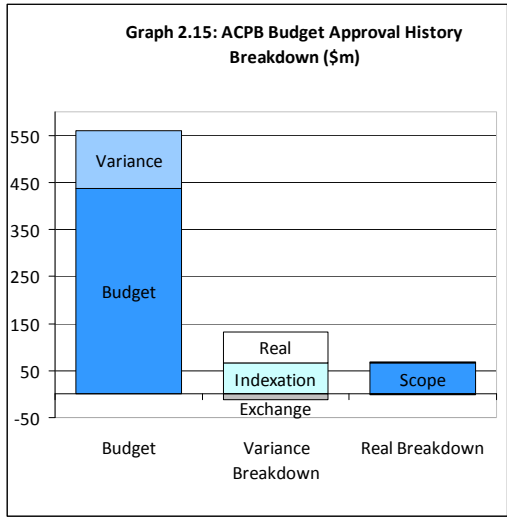
2.56 The net contract price increase to an initial contract of \$369.9 million has been \$20.6 million across 13 different types of equipment. The most significant changes occurred with the Acoustic Transitory Event Processing systems where quantities were increased from four to seven; a further three Acoustic Transitory Event Processing systems were purchased through the acquisition contract for the in-service support organisation at a contract price increase of \$13.3 million. This is not a contract cost increase attributable to the project. A further contract price increase of \$7.3 million related to purchase of a range of subsystems and components of the tactical system.

Maturity Score

2.57 The maturity score reflects the status of a current software baseline not the overall status of the project. Hence it lags slightly behind contract expenditure.

DMO Overview

Armidale Class Patrol Boat



Budget variations

2.58 The major change to the budget was due to Government’s requirement for a further two boats which increased total quantities of Armidale Class Patrol Boats (ACPB) from 12 to 14.

DMO Performance

2.59 There were no cost variations on account of the DMO’s performance.

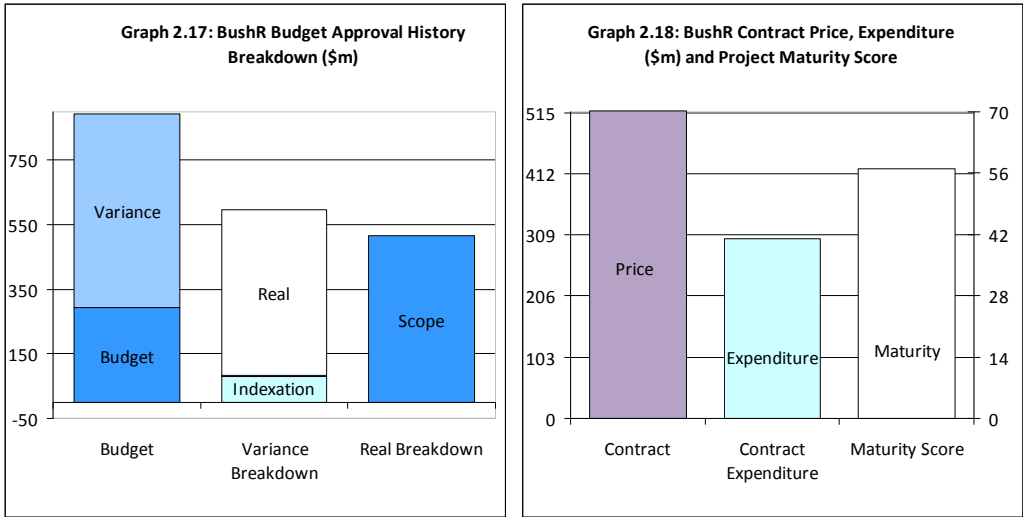
Contract Price Variations

2.60 The contract price increased by \$68.8 million for the two additional boats acquired.

Maturity Score

2.61 All 14 boats have been delivered and commissioned into the Royal Australian Navy. Due to outstanding defects with the ACPB, being rectified under the contract, the maturity score has been reduced. Hence the maturity score lags the contract expenditure.

Bushranger Protected Mobility Vehicle



Budget variations

2.62 Budget variations are attributable to the purchase of additional vehicles for the Enhanced Land Force (143 vehicles at \$154.5 million) and the Overlander Land 121 Phase3 (additional vehicles and trailers estimated to cost \$360.4 million).

DMO Performance

2.63 There were no cost variations on account of the DMO’s performance.

Contract price Variation

2.64 The variation to contract price of \$297.1 million relates to the additional vehicles. The acquisition contract has been used to acquire urgent operational enhancements under Rapid Acquisition processes. These do not form part of the project but have been included here for a complete understanding of the value of the current contract.

Maturity Score

2.65 The maturity score of 57 reflects the fact that Bushranger vehicles have achieved service release. The contract expenditure lags the maturity score as the contract price has increased due to the additional vehicles to be acquired under the Enhanced Land Force and Overlander project.

Design Review Progress

2.66 The data on Design Reviews in the PDSS provide a brief overview of the systems engineering process conducted on the projects. The degree of design development required for a project generally determines the intensity and depth of the systems engineering process applied over the course of the contract, which in turn provides a measure of project technical complexity. This is usually identified in the contractor's systems engineering plan that the Commonwealth approves. The design review data in the PDSS only address three major systems engineering reviews – System Requirements Review (SRR), Preliminary Design Review (PDR) and Critical Design Review (CDR). All of these reviews are attended by both Commonwealth and contractor project teams.

2.67 The SRR is a multi-disciplined technical review to ensure that the system under review can proceed towards design development. Generally this review ensures that there is a common understanding and interpretation of the Commonwealth's specification and higher contract requirements, assesses the contractor's understanding of the scope of the contract and ensures that the system requirements are consistent with the contractor's developing technical solution and the systems specification that define it. PDRs are conducted to ensure that the design is suitable to proceed to detailed design development and can meet the required performance requirements within cost, schedule, risk, and other system constraints. Subsequent CDRs, also called Detailed Design Reviews, ensure that the system under review can proceed to system fabrication, demonstration and test.

2.68 The number of design reviews conducted depends on the number of systems and subsystems involved and are conducted over a period of time. The schedule for their conduct is driven by the contractor's master schedule. The combination of the number of systems and sub-systems, their associated systems engineering activities, and when they were conducted over the contracted period, would produce an extensive list of events that would add little value to the data in the PDSS; hence, an aggregated presentation of design reviews is presented where planned and achieved dates are broad representations over the design review period, rather than specific event schedules.

Test and Evaluation Progress

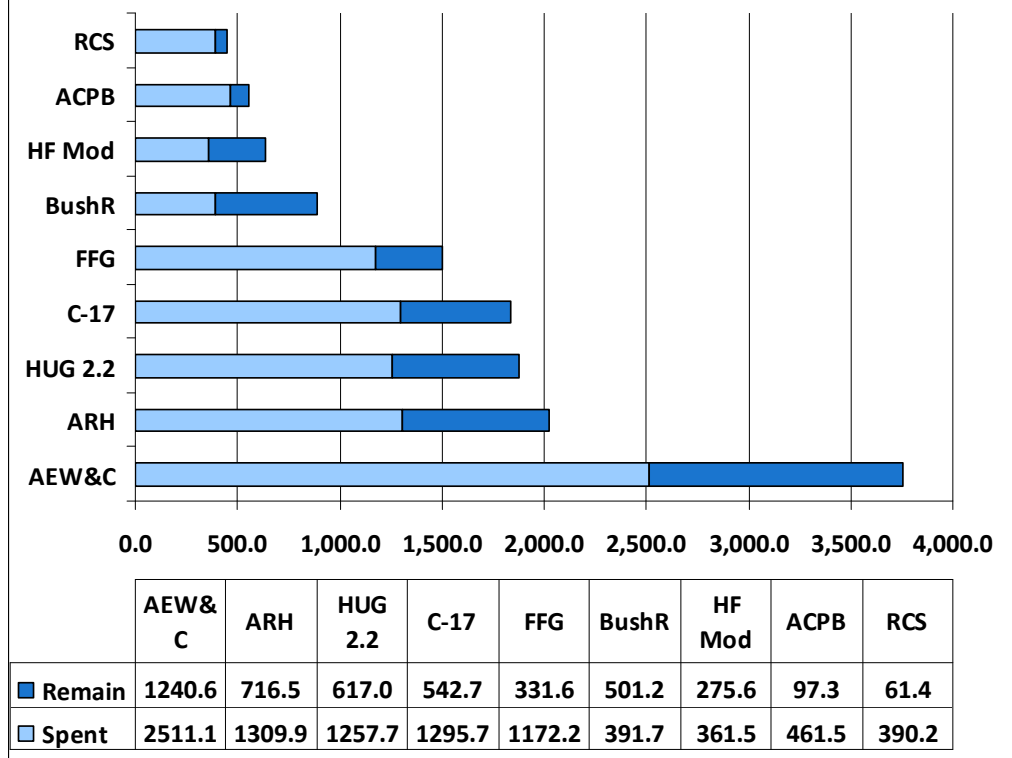
2.69 Test and evaluation of weapons systems encompasses a complex set of activities. Testing encompasses a range of tests, including factory acceptance tests of equipment and systems from an original manufacturer, component level tests, sub-system testing and progressive testing as sub-systems are integrated into higher level systems, and systems of systems integration testing, culminating in contractor acceptance testing. The test regime includes both hardware and software testing. The test and evaluation regime is outlined in the project's Test and Evaluation Master Plan which in turn is developed into contractor test and evaluation plans. Following the DMO's completion of contract acceptance testing, the Capability Manager conducts a series of operational test and evaluation testing – the DMO is not responsible for the conduct of this testing.

2.70 Similar to design reviews, the presentation of a detailed set of test and evaluation events across all of the components, sub-systems and systems of a weapon system, and when they were conducted would result in an extensive list of events. Hence the PDSS have aggregated the test and evaluation data to broadly align with the lifecycle points used in the project maturity score viz systems integration test and evaluation and acceptance testing. Accordingly, the test and evaluation progress noted in PDSS are broad representations over the period rather than specific event schedules.

Project Expenditure vs Approved Budget

2.71 Graph 2.19 compares life to date project expenditure to 30 June 2008 against the current approved budget. All nine projects have adequate remaining funds to complete their deliveries.

Graph 2.19: Comparison of Project Expenditure and Approved Budget (\$m) as at 30 June 2008



Cost Performance Benchmarks

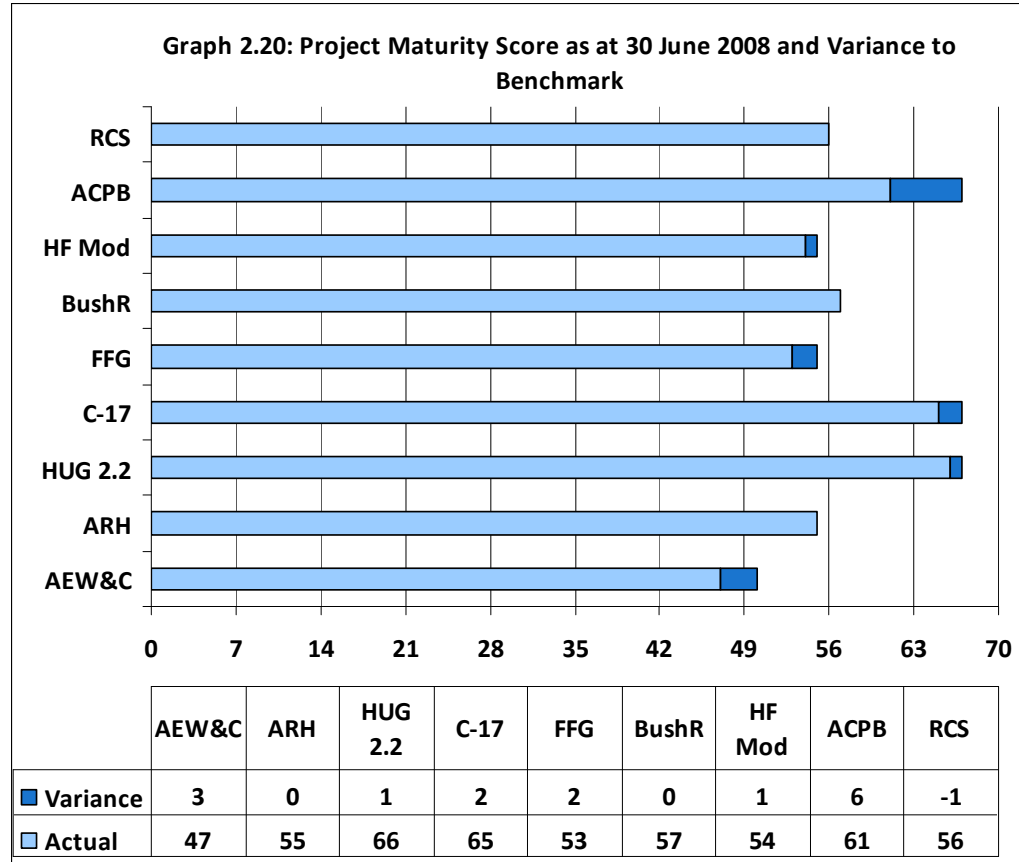
2.72 The UK National Audit Office Major Projects Report 2007 notes that the current forecast for the 19 largest projects shows an 11 per cent cost increase since the time that the main investment decision (i.e. the equivalent of Second Pass) was taken. The US Government Accounting Office's March 2008 report "Defense Acquisitions Assessments of Selected Weapon Programs" advised that 95 programs in the 2007 portfolio experienced a change in total acquisition cost of 26 per cent from first estimate. This report also presents data on cost increases to acquisition contract target prices for the same tranche of projects; the increases range from 40 to 912 per cent. The Australian Strategic Policy Institute Defence Budget Brief 2008–09¹⁸ states that "cost increases to approved projects are relatively infrequent, or at least less frequent than often supposed" and in the same section also says that "In fact, the DMO advised that from a study of 239 completed projects valued at \$26.8 billion, the total final cost was

¹⁸ Australian Strategic Policy Institute "The Cost of Defence – ASPI Defence Budget Brief 2008–09"

around 98 per cent of approved budget". In comparison with the US and UK, the DMO's cost performance on approved projects is markedly better.

2.73 As can be seen from the analysis, the variations relate to price adjustments (indexation, foreign exchange and transfers) and scope changes. All scope changes are due to Defence requirement changes. There have been no increases in scope due to DMO's Performance, with the exception of AEW&C where the shortfall came about in Price Indexation which was beyond the DMO's capacity to control. The average Real Cost Increase (RCI) over the total approved budget across the nine MPR projects is 11 per cent.

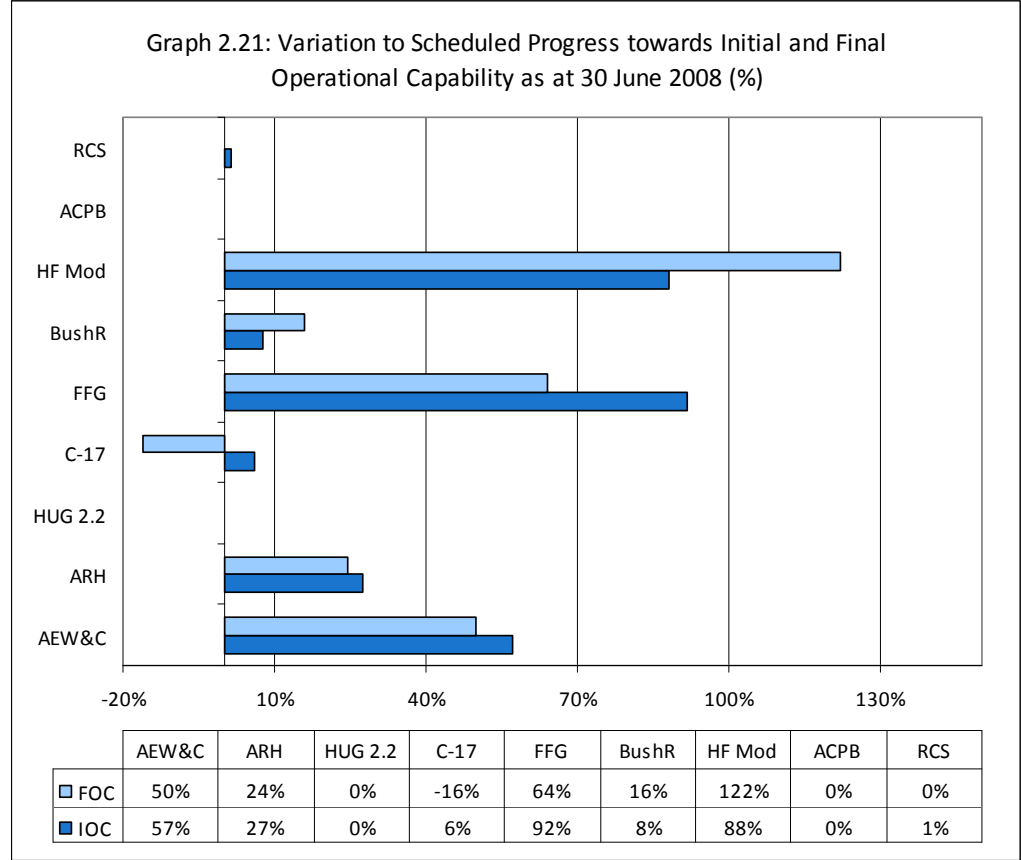
Project Maturity - Variance from Benchmarks



2.74 Maturity Scores are a means of benchmarking and communicating the relative maturity of an acquisition project and provide a simple quantitative representation of its stage of development compared to expected

benchmarks¹⁹. Graph 2.20 indicates that all nine projects, with the exception of the ACPB project, have a maturity level that is close to expected benchmarks. The variance from the benchmark for the ACPB project is due to unresolved defects. The ACPB project plans to achieve Operational Release of the first ACPB by the end of 2008 with the remainder of the fleet being progressively brought up to the agreed baseline over the next 12 to 18 months.

Project Schedule



2.75 Graph 2.21 depicts each project’s projected Initial Operational Capability (IOC) and Final Operational Capability (FOC) dates from second pass (or equivalent), as recorded in the MAA or relevant project approval reference, expressed as a percentage variation. IOC is the point in time at which the first element of a capability system that can be operationally deployed is realised e.g. the first of 14 ACPBs. Final Operational Capability

¹⁹ Refer to Figure 1.4 to make a comparison to the benchmark.

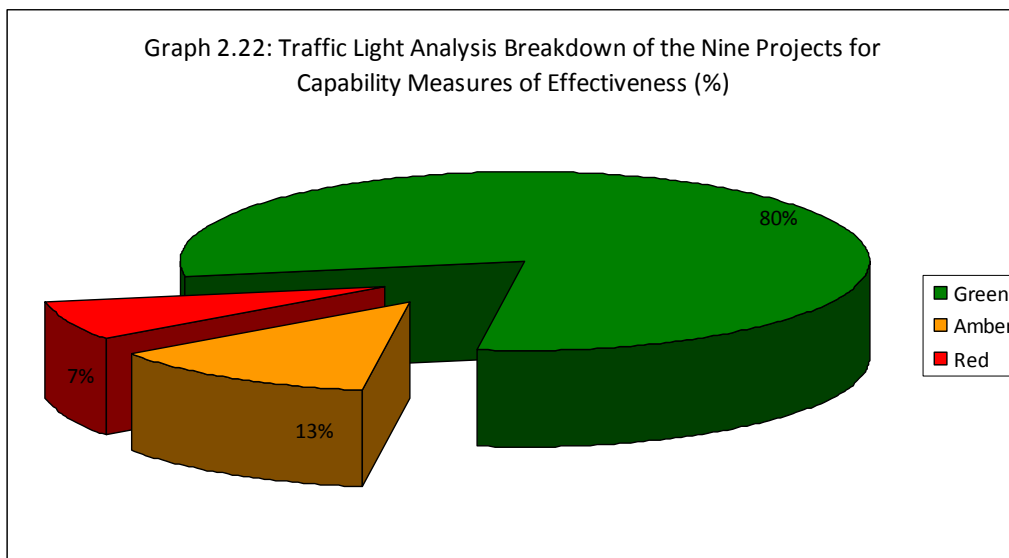
(FOC) is the point in time at which the final subset of a capability system is delivered e.g. the last of the 14 boats with all other elements of capability achieved. In Graph 2.21, bars to the left indicate early delivery and bars to the right indicate a projected slippage. It should be noted that DMO is only responsible for schedule up to the delivery of the materiel system it undertook to provide to Defence under the MAA. The Service Chiefs are ultimately responsible for achieving an operational capability – either IOC or FOC. However, at present not all projects have this incorporated in their schedules. IOC and FOC dates therefore are estimates of when the Services expect to declare that Initial and Final Operational Capability would be achieved.

Schedule Performance Benchmarks

2.76 The UK National Audit Office Major Projects Report 2007 notes that "Overall the 19 projects for which we analyse time performance are now predicted to achieve their In-Service dates 441 months later than expected when they were approved, which is a 36 per cent increase on timescales overall." The Australian Strategic Policy Institute Defence Budget Brief 2008–2009 notes that "18.5 per cent" of the DMO project budget represented projects with a delay in excess of 12 months, including 17.3 per cent with a delay in excess of 18 months".

2.77 The average slippage to Final Operational capability for the nine projects is 30 months. It should be noted that projects such as HF Mod with a delay of 127 months makes this average far greater than it might otherwise be with a larger sample of projects. This average is not representative of the other 217 major projects currently managed in the DMO.

Project Capability



2.78 Graph 2.22 breaks down the percentage of Measures of Effectiveness (MOE), identified in the nine projects' Materiel Acquisition Agreements (MAAs), and their respective traffic light indicators as at 30 June 2008. MOEs represent key capability performance attributes of a project which if not satisfied would have a significant effect on the eventual suitability for operational service. The individual MOEs for projects are not included in this MPR for security classification reasons.

2.79 The traffic lights in the graph mean:

- **Red:** MOEs that at this stage are unlikely to be met.
- **Amber:** MOEs that are under threat but still considered as manageable.
- **Green:** MOEs in which there is a high level of confidence that they will be met.

2.80 This graph indicates that 80 per cent of all nine projects' consolidated MOEs are likely to be or have been met.

Major Project Risks

2.81 For major procurement projects, the capability and capacity of Industry to deliver the contracted specifications on schedule remains the major risk. Key areas of risk are:

- ability of contractor to accurately estimate cost and delivery schedule;
- the actual level of technical development versus the stated level of development;
- skills shortages in industry and limitations on the capacity to recruit personnel;
- ability of prime contractors to effectively manage key sub-contractors;
- ability of the sub-contractors to deliver key components on time and to specifications;
- non conformance to specifications and capability requirements of systems and components provided by contractors and the resulting impact on schedule and cost;
- ability to successfully integrate complex systems;
- unplanned baseline changes, or changes to specifications, resulting in flow on impact on production and implementation schedule and cost; and
- risk to project schedule resulting from other significant and dependent activities such as platform availability.

Lessons Learned from the 2007–08 Major Projects Report and Intentions for Improvement

2.82 One of the key aims of the MPR is to present information clearly and ensure that, as a Parliamentary and public report on the DMO's project performance, it is comprehensible by readers. Having completed this years MPR it is recognised that there are several 'lessons learned' that the DMO intends to address and thereby ensure an improved quality of MPR in future years. These improvements will address the pilot project year 'lessons learned' including:

- improvements in readability and comprehension that need to be addressed in the PDSS;

- consideration of the preferred method to present updated information for future reports;
- improved analysis regarding project management performance across all MPR projects both in year and across years;
- clearer guidance to DMO project staff regarding the completion of the PDSS and in the subsequent preparation for ANAO's visits; and
- reviewing the schedule for the MPR – populating data in the PDSS, data assurance, ANAO assurance, and report compilation all exceeded planned pilot program schedule.

PDSS Improvements in Readability

2.83 The intent of the PDSS is to provide sufficient detail to enable the reader to gain an appreciation of the background and history of the project and, importantly, the current project status against cost and schedule as at the end of the financial year. The project management of most Defence acquisition projects is a complex business and the PDSS for this initial MPR suffer from limitations in clarity and readability, in part brought about by the level of detail in certain areas of the PDSS.

2.84 In future years the DMO will endeavour to synthesise this PDSS data at a higher level, focusing on key systems comprising the capability rather than delving into detail and sub-system levels of detail. This will also enable variance from planned explanations to be more focused on major causes and better align the variance explanations with events being reported.

Presentation of Updated Information for Future Reports

2.85 In subsequent years the PDSS will also include a capacity for reporting in-year variations while retaining history from previous years, otherwise, as each previous year's data gets added to the project's history, there is the potential to produce cumbersome PDSS with large amounts of historical data.

Improved Analysis across all MPR Projects

2.86 While the data elements for this year's nine projects reflect the status of each individual project, when viewed across all nine projects, the data elements would benefit from further standardisation. This will be particularly important as more projects are added from year to year and consistency of data will become more important. This matter came to light when analysis of

project data was conducted across the nine projects. It will be important to make the necessary standardisation adjustments in future PDSS in order for trend analysis and comparison to be made across the increasing number of projects that will be reported.

Clearer Guidance to DMO Project Staff

2.87 A further lesson learned in the development of the MPR has been the duplicate effort in progressively capturing data during the financial year that would not be mature until the end of the reporting period i.e. the end of the financial year.

2.88 This has caused project offices and the DMO's coordination team, along with the ANAO, to have to keep track of an evolving set of data along with the evidence to support same. This has not been efficient in terms of resource usage and multiple visits to project offices have diverted key project staff from their core task of project delivery. In future years the intention will be to devise a more efficient means of capturing this data only once. Consequently, in 2008–09, the DMO intends to conduct an internal assurance of data and prepare the relevant evidence pack prior to the ANAO's review of that data. This will likely mean that certain data elements will be earmarked for end of financial year data capture, thereby allowing more efficient use of time and resources during the year to improve the quality of data that is not tied to an end of financial year update. The DMO intends to work closely with the ANAO to reduce the frequency of visits to projects and to ensure that there are clearly articulated guidelines for project staff to assist in the production of their PDSS.

2.89 Likewise, there is also considerable scope for putting in place detailed procedures for the standardisation and characteristics of data that is collected including the nature of evidence and its sources to enable ANAO's task of data assurance to be conducted in a more predictable and consistent manner.

2.90 The DMO will work with ANAO to ensure that the 'lessons learned' through the 2007–08 MPR result in process and presentation improvements for next year's report. Where appropriate we will seek JCPAA guidance and endorsement of changes that are made to PDSS.

Major Projects Report Development Schedule

2.91 This year's MPR was completed within the constraints of an extremely aggressive schedule for tabling to Parliament. Since the end of the 2007–08 financial year, the DMO has had only about three months to gather together

performance data in the PDSS, ensure that the supporting evidence was of sufficient quality for the ANAO to complete its assurance review, and make the necessary adjustments to data to make the PDSS suitable for public release. The pilot nature of this year's endeavour further complicated the demands on schedule. A further issue is associated with the DMO's corporate information systems. At this stage, these systems are not able to readily support the data and evidence demands of many of the data fields in the PDSS. This means that the integrity of data can only be assured through a high investment in the DMO resources, with a large reliance on manual processes, which inevitably causes issues in confidence that the ANAO had in the assurance of supporting evidence behind the data in the PDSS.

2.92 In 2008–09, with a further six projects to report, the current schedule will be even more compressed and progressively become more acute in successive years as we build up to a total of some 30 projects to be reported. In comparison the UK Ministry of Defence and UK National Audit Office allow some eight months from the end of the UK financial year to the time that their MPR is published. The development and reporting schedule leading to the time of tabling the report will be reviewed before the 2008–09 MPR process starts.

3. Development of the 2007–08 Project Data Summary Sheets

3.1 The Major Projects Report (MPR) includes the individual Project Data Summary Sheets (PDSS). These have been designed to provide a snapshot of the key performance data for each individual project included in the report. The Guidelines, included later in this chapter, provide an explanation of the PDSS content.

ANAO Initial Assurance Reviews

3.2 The PDSS for each project was developed, in consultation with, and reviewed by the Australian National Audit Office (ANAO) over the periods detailed below. The first four projects selected to populate their PDSS were:

- **Airborne Early Warning and Control Aircraft (AEW&C)** hosted up to three ANAO auditors in Canberra over 19–21 November 2007, 6 December 2007 and 30 January – 1 February 2008.
- **Armidale–Class Patrol Boat (ACPB)** hosted two ANAO auditors in Darwin from 4–8 February 2008.
- **High Frequency Modernisation (HF Mod)** hosted up to three ANAO auditors in Canberra over 20 December 2007 and 11–15 February 2008.
- **Bushmaster Protected Mobility Vehicle – Project Bushranger (BushR)** hosted two ANAO auditors in Melbourne over 18 December 2007 and 25–29 February 2008.

3.3 During this initial activity, the ANAO reviewed the PDSS data populated by the first four projects for inclusion in the 2007–08 MPR. The knowledge gained out of these initial reviews was used to develop more detailed instructions and suggested evidence sources to complete the PDSS and associated evidence packs for the remaining five projects.

3.4 A MPR improvement workshop was held over 3–4 April 2008 with all nine projects in attendance. Outcomes of the workshop largely settled immediate concerns regarding pilot program management and coordination aspects between the DMO and ANAO, and the responsibilities of DMO projects.

3.5 The next five projects were:

- **F/A–18 Hornet Upgrade Phase 2.2 (HUG 2.2)** hosted two ANAO auditors at RAAF Williamtown, NSW, over 14–18 April 2008.
- **Collins Replacement Combat System (RCS)** hosted two ANAO auditors in Canberra over 7–9 May 2008, 12–16 May 2008 and 19–20 May 2008.
- **Armed Reconnaissance Helicopter (ARH)** hosted up to two ANAO auditors in Brisbane over 21–23 May 2008 and 27–30 May 2008.
- **C–17 Globemaster III Heavy Airlifter (C–17)** hosted up to two ANAO auditors in Canberra over 2–6 June 2008 and 10–11 June 2008.
- **Guided Missile Frigate Upgrade Implementation (FFG)** two ANAO auditors at Fleet Base Garden Island in Sydney over 16–20 June 2008.

ANAO Assurance Reviews

3.6 Following the end of financial year updates, the ANAO conducted assurance visits with two auditors for each of the nine projects as follows:

• High Frequency Modernisation (HF Mod)	10 September 2008
• Collins Replacement Combat System (RCS)	11 September 2008
• Airborne Early Warning and Control Aircraft (AEW&C)	12 September 2008
• F/A–18 Hornet Upgrade Phase 2.2 (HUG 2.2)	15–16 September 2008
• Guided Missile Frigate Upgrade Implementation(FFG)	17–18 September 2008
• C–17 Globemaster III Heavy Airlifter (C–17)	19 September 2008
• Armed Reconnaissance Helicopter (ARH)	22–23 September 2008
• Armidale–Class Patrol Boat (ACPB)	25–26 September 2008
• Bushmaster Protected Mobility Vehicle (BushR)	29–30 September 2008

3.7 At the completion of all nine reviews, the DMO has worked closely with the projects staff and the ANAO to consolidate the nine PDSS into a consistent, accurate and unclassified report.

2007–08 Project Data Summary Sheet Guidelines

These Guidelines have been developed by the DMO in consultation with the ANAO, for projects to be included in the 2007–08 Major Projects Report. Each project has a PDSS that covers the following data:

- Section 1: Project Summary;
- Section 2: Financial Performance;
- Section 3: Schedule Progress;
- Section 4: Risks, Issues and Linked Projects;
- Section 5: Lessons Learned; and
- Section 6: Addendum.

The Guidelines require each PDSS to contain materially accurate and complete unclassified cost, schedule and capability performance data on each individual project as at 30 June 2008, and an addendum describing material events that have occurred between 30 June 2008 and 31 October 2008.

Section 1 – Project Summary

Table 1.1 Project Management – identifies the senior personnel responsible for managing the individual project as well as the history of personnel charged with the day to day management of the project.

Table 1.2 Project Context – provides the overall context of the project, outlines the key complexities and characteristics. The project context will address:

- **Description** – brief description of the capability being acquired, including what is to be delivered. It may include comment on the major mission system items and their supporting systems.
- **Background** – any significant decisions taken by Government, previous phases and any other significant matters relevant to the evolution of the project and the data provided in the report.
- **Uniqueness** – identifies any unique project or system characteristics (developmental elements, its level of Military Off-the-Shelf or Commercial Off-the-Shelf (MOTS/COTS) content and the amount of systems integration, and other features that contribute to the project's individuality.

- **Major Risks and Issues** – provides a brief description of the major risks and issues that have faced the project, and generally how these risks and issues have been and are being managed.
- **Current status** – a general appreciation of cost, schedule and capability performance.

Table 1.3 Project Approvals – identifies when the project was planned to and achieved first pass and second pass approval (or equivalent).

Table 1.4 Prime Acquisition Contract(s) Details – provides details of key contracts – prime contractors, contract scope, price basis, contract type and signature dates. It should be noted that the project may have multiple contractors and these contractors may use a number of sub-contractors but these are not included.

Table 1.5 Other Current Project Phases or Sub-Projects – provides details of any other phases of the project or sub projects currently under way. Previous phases of the project that have been completed may be included in Project Background.

Table 1.6 Project Maturity Score and Benchmark – provides the current Maturity Score and life stage ‘gate’ against the benchmark for that gate. Where appropriate a narrative or explanation will be provided for any significant variance to the benchmark score.

Section 2 – Financial Performance

Table 2.1 Project Budget Approval History – provides details of variances between original project budget at approval and the current project budget. The approved total project costs cover the capital equipment acquisition contract(s) and all other project costs including contingency. The variance from the original project cost is attributed to three factors which include Price (Material and Labour) indexation; Foreign Currency exchange rate variations; and real cost increases or decreases.

Table 2.2 Project Real Variation History – real cost increases or decreases as per Table 2.1 are detailed in chronological order categorised by four factors, Scope, Transfers, Budgetary Adjustments and DMO Performance with an accompanying explanation.

Table 2.3 Project Budget and Expenditure as at 30 June – details life to date project expenditure against the approved budget, providing remaining project budget available.

DMO Overview

ANAO Report No.9 2008–09 Defence Materiel Organisation Major Projects Report 2007-08

Table 2.4 End of Financial Year Total Project Expenditure Performance – in year financial expenditure.

Table 2.5 End of Financial Year Total Project Expenditure Variance Attribution – Identifies the key factors driving variation. For the project it identifies the relevant causal factors and provides an explanation for any variance between estimated and actual Financial Year expenditure.

Table 2.6 Prime Acquisition Contract(s) Real Price Increases and Capital Equipment Quantities Required – lists movement from the original contract base price since contract signature with explanations for these movements.

Table 2.7 Prime Acquisition Contract(s) Price & Progress Payments – states whether the prime acquisition is commercial or Foreign Military Sales (FMS), and expenditure made against these to date. Payment amounts are expressed in base date terms.

Section 3 – Schedule Progress

Table 3.1 Design Review Progress – provides an aggregated view of major systems engineering reviews conducted.

Table 3.2 Contractor Tests & Evaluation (T&E) Progress – provides an aggregated view of key milestones in the test and evaluation program.

Table 3.3 & Table 3.4 – Progress toward Initial and Final Operational Capability (IOC/FOC) – provides information on how the project is tracking towards IOC and FOC compared to original planned dates.

Section 4 – Risks, Issues and Linked Projects

Table 4.1 Major Project Risks – provides a description of the major risks and mitigation treatments.

Table 4.2 Major Project Issues – provides a description of major issues that have occurred and a brief description of their remediation.

Table 4.3 Linked Projects – linked projects are those which the project is dependent on to deliver FOC. The table provides details and status of the dependency that the project has on the listed linked project. Details include the Project Number, Project Name, Description of the Project, and Description of Dependency.

Section 5 – Lessons Learned

Table 5.1 Lessons Learned – outlines the lessons learned over the life of the project.

Section 6 – Addendum

Table 6.1 Addendum – outlines any material events that may have occurred in the project since 30 June 2008 to the date that the Major Projects Report has been completed.

Part 3. Auditor-General Review, CEO DMO Statement and Project Data Summary Sheets



Auditor-General for Australia



Independent Review Report on the Defence Materiel Organisation's Project Data Summary Sheets by the Auditor-General

To the President of the Senate
To the Speaker of the House of Representatives

Scope

I have undertaken a review of the accompanying Project Data Summary Sheets as at 30 June 2008 against the Guidelines for nine major capital equipment acquisition projects included in this pilot report for which the Defence Materiel Organisation (DMO) is responsible. The nine projects are:

- | | |
|---|----------------------|
| • Airborne Early Warning and Control Aircraft | – AIR 5077 Phase 3 |
| • Armidale-Class Patrol Boats | – SEA 1444 Phase 1 |
| • High Frequency Modernisation | – JP 2043 Phase 3A |
| • Bushmaster Protected Mobility Vehicle | – LAND 116 Phase 3 |
| • F/A-18 Hornet Upgrade | – AIR 5376 Phase 2.2 |
| • Collins Replacement Combat System | – SEA 1439 Phase 4A |
| • Armed Reconnaissance Helicopter | – AIR 87 Phase 2 |
| • C-17 Globemaster III Heavy Airlifter | – AIR 8000 Phase 3 |
| • Guided Missile Frigate Upgrade Implementation | – SEA 1390 Phase 2.1 |

My review encompassed information relating to the cost, schedule and capability performance of each project, but did not include an assessment of the following information.

- (a) Major Project Risks and Major Project Issues included in Tables 1.2, 4.1 and 4.2 of each Project Data Summary Sheet.
- (b) Future dates that are 'forecasts' regarding a project's expected achievement of delivery schedules and capability that are included in Sections 1, 3 and 4 of each Project Data Summary Sheet.

GPO Box 707 CANBERRA ACT 2601
19 National Circuit BARTON ACT
Phone (02) 6203 7500 Fax (02) 6273 5355
Email ian.mcphee@anao.gov.au

Auditor-General Review

ANAO Report No.9 2008–09 Defence Materiel Organisation Major Projects Report 2007-08

By their nature, the nomination of major project risks and issues and the achievement of future dates involve uncertainty because they relate to events, and depend on circumstances, that may or may not occur. As such, a range of circumstances can cause these items to differ materially from those stated in the Project Data Summary Sheets. Accordingly, these sections of the Project Data Summary Sheets have been scoped out of the review.

The Responsibility of the Chief Executive of DMO

The Chief Executive of DMO is responsible for the preparation and presentation of Project Data Summary Sheets for each project in accordance with Project Data Summary Sheet Guidelines (the Guidelines).

The Auditor's Responsibility

My responsibility is to express an independent conclusion based on my review.

My review has been conducted in accordance with the Australian Standard on Assurance Engagements ASAE 3000 *Assurance Engagements Other than Audits or Reviews of Historical Financial Information* issued by the Australian Auditing and Assurance Standards Board. My review is designed to enable me to obtain sufficient appropriate evidence to form a conclusion whether anything has come to my attention to indicate that the information in the Project Data Summary Sheets, that is within the scope of my review, has not been prepared, in all material respects, in accordance with the Guidelines.

Review criteria and methodology

The criteria that have been used to conduct my review are based on the Guidelines and include whether DMO has procedures in place designed to ensure that project information and data was recorded in a consistent, complete and accurate manner for each project.

I have conducted the review of the Project Data Summary Sheets for the nine projects by making such enquiries and performing such procedures as I, in my professional judgement, considered reasonable in the circumstances including:

- an examination of each Project Data Summary Sheet;
- a review of relevant procedures used by DMO to prepare the Project Data Summary Sheets;
- a review of documents and information relevant to the Project Data Summary Sheets;
- interviews with persons responsible for the preparation of the Project Data Summary Sheets and those responsible for the management of the nine projects; and
- an examination of the statement and management representations by the DMO Chief Executive, sign-offs by DMO managers, and management representations from the Capability Managers relating to Initial Operational Capability and Final Operational Capability.

A review of this nature provides less assurance than an audit.

Basis for Qualified Conclusion

Due to systems limitations, there is uncertainty in relation to the reported information on prime contract expenditure at base date price, presented in the Project Data Summary Sheets at Table 2.7. Consequently, I have not been able to obtain all the information necessary to be satisfied about the accuracy of the prime contract expenditure as reported. This constitutes a basis for a qualified conclusion of my review.

Qualified Conclusion

Except for the effect of such adjustments as might be necessary had the uncertainty relating to the information in Table 2.7, referred to in the above paragraph not existed, based on my review described in this Report, nothing has come to my attention that causes me to believe that the information in the Project Data Summary Sheets, within the scope of my review, has not been prepared, in all material respects, in accordance with the Guidelines.



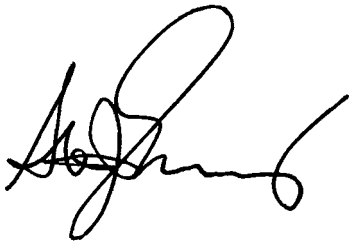
Ian McPhee
Auditor-General

Canberra ACT
20 November 2008

Statement by the CEO DMO

The attached Project Data Summary Sheets for the nine major projects included in this report have been prepared in accordance with Guidelines developed by the DMO in consultation with the Australian National Audit Office.

In my opinion, the Project Data Summary Sheets comply in all material respects with the Guidelines and reflect the projects by way of cost, schedule and capability status as at 30 June 2008.

A handwritten signature in black ink, appearing to read 'Stephen Gumley', with a large loop at the end.

Dr Stephen Gumley
Chief Executive Officer

20 November 2008

Project Data Summary Sheets

Airborne Early Warning and Control Aircraft – AIR 5077

Phase 3

Royal Australian Air Force



Description

The \$3.752 billion Air 5077 Phase 3 project will provide the Australian Defence Force with an airborne early warning and control capability, with the provision of six aircraft and associated supplies and support. As an integral part of a layered Australian Defence Force Air Defence System, the airborne early warning and control capability will enhance surveillance, air defence, fleet support and force coordination operations in defence of Australian sovereignty and national interests.

This Project is also known as Project “Wedgetail”.

This Project was first reported in the 2007–08 Major Projects Report

Section 1 – Project Summary

1.1 Project Management

30 June 2008	Name		
General Manager	Mr Warren King		
Division Head	Air Vice Marshal Chris Deeble		
Branch Head	Mr Bill Spencer		
Project Director	Air Vice Marshal Chris Deeble		
History	Name	Start	End
Project Manager	Air Vice Marshal Chris Deeble	Jul 06	–
	Mr Kim Gillis	Apr 06	Jun 06
	Air Vice Marshal (Retired) Norm Gray	Jul 04	Mar 06
	Air Vice Marshal Norm Gray	Jan 01	Jun 04
	Mr John Popham	Jan 99	Dec 00
	Group Captain Paul Ekin–Smyth	Dec 97	Dec 98

1.2 Project Context

Project	Explanation
Description	The \$3.752 billion Air 5077 Phase 3 project will provide the Australian Defence Force with an airborne early warning and control capability, with the provision of six aircraft and associated supplies and support. As an integral part of a layered Australian Defence Force Air Defence System, the airborne early warning and control capability will enhance surveillance, air defence, fleet support and force coordination operations in defence of Australian sovereignty and national interests.
Background	<p>Government gave the equivalent of first pass approval for Phase 3 of this project on 2 December 1997. Following a competitive Initial Design and tendering activity, the Government gave the equivalent of second pass approval on 19 December 2000 and a contract was signed with The Boeing Company (Boeing) the next day for supply of four aircraft and associated supplies and support. On 15 April 2004, Government gave approval to amending the contract for supply of an additional two aircraft.</p> <p>The airborne early warning and control 'Wedgetail' is based on Boeing's next generation 737 aircraft, modified to accommodate various sophisticated mission systems. The primary sensor on the aircraft is a phased-array radar – with no moving parts – that can scan through 360 degrees.</p> <p>On 8 March 2007, Boeing presented the results of the schedule replan to the Commonwealth following the company's announcement, on 1 February 2007, of a two-year slip in the program. This slippage results from problems</p>

	<p>associated with sub-system integration; supplier hardware availability; mission computing, radar and electronic support measures maturity and stability; and aircraft modification. On 28 May 2008, Boeing advised a further delay to the program resulting from ongoing problems with radar and electronic support measures development and system integration.</p> <p>Boeing now plans to deliver the first fully mission capable aircraft in January 2010, which if accepted would represent a total delay of 38 months against the contract baseline. However, Boeing is also planning to deliver two partially mission capable aircraft in July 2009 to help mitigate the impact on Defence of the latest slippage. A detailed re-baselined Integrated Master Schedule is anticipated to be provided by Boeing in July 2008. However, Defence Materiel Organisation analysis of Boeing management's re-baselined executive level summary schedule indicates that there is still residual schedule risk to the project.</p>
Uniqueness	<p>Project Wedgetail is a highly developmental project. The phased array radar, the heart of the surveillance capability, has never previously been integrated into an operational system. Northrop Grumman Corporation, the suppliers to Boeing of the phased array radar, has worked to an extremely tight schedule of putting into production and integrating this unique radar, which was still undergoing initial design at the time of contract signature. Similar schedule acceleration issues have also been encountered on other mission critical systems.</p> <p>The Australian Defence Force will be the first to operate an aircraft of this configuration and capability, and significant effort has been devoted by the Royal Australian Air Force in developing operational doctrine and tactics for its deployment.</p>
Major Risks and Issues	<p>Integration of other mission critical systems such as electronic support measures, Communication Systems and Data Links have proved to be more complex than originally anticipated. Initial planning for the project was optimistic, resulting in an aggressive schedule that had been compressed to such a high level that there was no margin for re-work or risks being realised. Continuing challenges are being realised in British Aerospace Systems Australia execution of schedule and specified performance in key areas are under review by the both the Defence Materiel Organisation Program Office and Boeing. Technical challenges with the Radar and Identification Friend or Foe subsystem will drive completion of Radar Developmental Test and Evaluation for 2008.</p> <p>Progress in mission software and radar during the remainder of the Developmental Test and Evaluation will be key to assessing the overall project progress and technical risk. Overall technical and schedule risk remains high to very high.</p>
Current Status	<p>Cost Performance</p> <p>The project remains within current approved budget. Defence Materiel Organisation has invoked the payment withhold provisions of the contract. This situation will not improve until we have a stable and agreed schedule, and agreed Earned Value baseline.</p> <p>Schedule Performance</p> <p>Developmental Test and Evaluation continues on the first three aircraft at Boeing (Seattle). Functional Check Out on Aircraft number one was not completed on schedule. Aircraft number three production made sufficient progress to enable the aircraft to depart Australia for the United States on 29</p>

	<p>January 2008 to support test and evaluation in Seattle. Preparation for commencement of Acceptance Test and Evaluation was delayed by several months and the first of three Test Blocks did not commence until December 2007. Boeing Australia Limited started modification of the sixth aircraft at Royal Australian Air Force Base Amberley (Queensland) in July 2007.</p> <p>The revised prime contract schedule is still highly dynamic and has not yet been agreed by the Commonwealth.</p> <p>Capability Performance</p> <p>Integrated system performance, particularly in respect of the radar, electronic support measures and mission computing sub systems, is currently not meeting specification. Boeing and its subcontractors are continuing to work on remediating the shortfalls and the Commonwealth has not granted any relief to Boeing on meeting contracted technical performance.</p>
--	---

1.3 Project Approvals

Approval	Original	Achieved	Variance
First Pass	N/A	Dec 97	N/A
Second Pass	N/A	Dec 00	N/A

1.4 Prime Acquisition Contract(s) Details

Prime Contractor(s)	Scope Outline	Type (Price Basis)	Template	Signature
The Boeing Company	Provision of an airborne early warning and control capability comprising four aircraft and associated supplies and support.	Variable	DEFPUR 101	Dec 00

1.5 Other Current Project Phases or Sub-Projects

Phase or Sub-Project	Description
N/A	

1.6 Project Maturity Score and Benchmark

Benchmark Stage	Current	Benchmark	Explanation
Critical Design Review	47	50	The problems being experienced by the project demonstrate that Technical Understanding and Technical Maturity are lagging against the benchmark for Critical Design Review.

Section 2 – Financial Performance

2.1 Project Budget Approval History

Original Approved (\$m Base)	Price Indexation Variation (\$m)	Exchange Variation (\$m)	Real Variation (\$m)	Current Approved (\$m Current)
2170.4	560.4	(38.2)	1059.1	3751.7

2.2 Project Real Variation History

Date	Amount (\$m)	Factor	Explanation
Jul 98	(170.4)	Transfer	Transfer to Project Olympus.
Nov 98	807.9	Transfer	Merging of Project Olympus, which had been established separately to acquire classified elements of the airborne early warning and control capability.
Jun 99	(166.0)	Budgetary Adjustment	Variation for overfunding for Price Exchange at time of approval.
Mar 02	(3.9)	Transfer	Transfer to supplement Overseas Allowances.
Jun 04	225.6	Scope	Increased scope, approved by Government in April 2004, for the acquisition of the 5th and 6th aircraft.
Aug 04	(2.4)	Budgetary Adjustment	Administrative Savings harvest.
Aug 04	(14.0)	Transfer	Transfer to Facilities.
Jun 05	(1.0)	Transfer	Transfer to Facilities.
Aug 05	(4.8)	Budgetary Adjustment	Skilling Australia's Defence Industry harvest.
Jul 08	388.1	DMO Performance	Real adjustment to funding of Price and Exchange Variations.
Total	1059.1	Real Variation	

2.3 Project Budget and Expenditure as at 30 June 2008

Approved Budget(\$m Current)	Life to Date Expenditure (\$m Cumulative)	Remaining Balance (\$m)
3751.7	2511.1	1240.6

2.4 End of Financial Year Total Project Expenditure Performance

Estimate (\$m)	Actual (\$m)	Variance (\$m)
139.1	42.9	(96.2)

2.5 End of Financial Year Total Project Expenditure Variance Attribution

Variance (\$m)	Variance Factor	Explanation
(91.0)	Foreign Industry	Year End variation was driven by delays in the System Acquisition Contract delivery schedule, with significant slippage against Milestone and Earned Value payments forecast in Financial Year 2007–08. In addition to System Acquisition Contract delays, further delay in the signing of an acceptable In Service Support Contract due to protracted negotiations with Boeing and System Acquisition Contract delays have resulted in a significant reduction in forecast spend associated with this contract in Financial Year 2007–08. Other minor variations in Government Furnished Equipment, External Service Providers and administrative expenses also contribute.
(2.2)	DMO processes	
(2.9)	Infrastructure	
(0.1)	Foreign Government Payments	
(96.2)	Total Variance	

2.6 Prime Acquisition Contract(s) Real Price Increases and Capital Equipment Quantities Required

Prime Contractor(s)	Price (\$m Base) at		Equipment	Quantities at	
	Signature	30 Jun 08		Signature	30 Jun 08
The Boeing Company	2257.7	2586.8	Boeing 737–700 IGW Aircraft	4	6
			Airborne Mission System Sets	6	6
			Operational Flight Trainer	1	1
			Operational Mission Simulator	1	1
			Mission Support System (Fixed)	2	2
			Mission Support System (Deployable)	2	2
			Airborne early warning and control Support Facility	1	1
Explanation	\$306.7 million (Base) for the acquisition of the 5th and 6th aircraft, plus a number of minor changes to the contract that have been incorporated as risk mitigation actions.				

2.7 Prime Acquisition Contract(s) Price and Progress Payments

Prime Contract(s)	Price (\$m Base) at Signature	Price (\$m Base) at 30 Jun 08	Progress Payments (\$m Base) at 30 Jun 08
Commercial	2257.7	2586.8	1908.2
Total	2257.7	2586.8	1908.2
Explanations	<p>Contract Price – As per explanation for Table 2.6</p> <p>Progress Payments – Defence Materiel Organisation has invoked the payment withhold provisions of the contract. This situation will not improve until we have a stable and agreed schedule, and agreed Earned Value baseline.</p>		

Section 3 – Schedule Progress

3.1 Design Review Progress

Event	Major System/ Platform Variant	Original Planned	Current Planned	Achieved/ Forecast	Variance (Months)
Preliminary Design Review	Airborne Mission System	Jul 02		Jun 02	(1)
	Operational Mission Simulator	Jan 03		Apr 03	3
	Mission Support System	Mar 03		Apr 03	1
	Operational Flight Trainer	Aug 03		Jul 03	(1)
	Airborne early warning and control Support Facility	Nov 03		Oct 03	(1)
Critical Design Review	Airborne Mission System	Feb 03		Dec 02	(2)
	Operational Mission Simulator	Nov 03		Nov 03	0
	Mission Support System	Dec 03		Nov 03	(1)
	Operational Flight Trainer	May 04		Apr 04	(1)
	Airborne early warning and control Support Facility	Oct 04		Sep 04	(1)
Variance Explanations	Variances to Design Reviews were due to various minor causes				

3.2 Contractor Test and Evaluation Progress

Event	Major System/ Platform Variant	Original Planned	Current Planned	Achieved/ Forecast	Variance (Months)
System Integration Test and Evaluation	Airborne Mission System	Mar 06	Nov 08	Nov 08	32
	Operational Mission Simulator	Mar 06	Oct 10	Oct 10	55
	Operational Flight Trainer	Dec 05	Dec 05	Dec 05	0
	Mission Support System	Jul 06	Oct 08	Oct 08	27
	Airborne early warning and control Support Facility	Dec 06	Dec 09	Dec 09	36
	Airborne Mission System	Nov 06	Jan 10	Jan 10	38
Acceptance Test and Evaluation	Operational Mission Simulator	May 06	Mar 11	Mar 11	58
	Operational Flight Trainer	Mar 06	Jun 08	Aug 08	29

	Mission Support System	Aug 06	May 09	May 09	33
	Airborne early warning and control Support Facility	Mar 07	Sep 10	Sep 10	42
Variance Explanations	Operational Flight Trainer Acceptance Test and Evaluation – Disagreement between Boeing and Commonwealth over specification requirements. All other items – Problems associated with sub system integration; mission computing, radar and electronic support measures maturity and stability; and supplier hardware availability.				

3.3 Progress toward Initial Operational Capability

Item	Original	Achieved/ Forecast	Variance (Months)	Variance Explanations/ Implications
Initial Operational Capability	Dec 07	Dec 11	48	Delays to system delivery due to problems associated with sub–system integration, supplier hardware availability, radar and electronic support measures maturity, and aircraft modification. This variance is based on the Defence Materiel Organisation’s assessment of a Boeing schedule which has not yet been accepted by the Defence Materiel Organisation.

3.4 Progress toward Final Operational Capability

Item	Original	Achieved/ Forecast	Variance (Months)	Variance Explanations/ Implications
Final Operational Capability	Dec 08	Dec 12	48	As per explanation for Table 3.3.

Section 4 – Risks, Issues and Linked Projects

4.1 Major Project Risks

Description	Remedial Action
<p>The major risks to the project fall within the following categories:</p> <ul style="list-style-type: none"> • Schedule; and • Attainment of contracted technical performance. <p>Schedule and technical performance risks arise from lack of technical maturity of key on-board sensor systems, incomplete software development, system integration and acceptance testing.</p>	<p>Engage and influence the prime contractor and major sub-contractors to maintain appropriate focus and commitment to deliver contracted performance to a credible and resourced schedule.</p> <p>Exercise contractual remedies.</p>

4.2 Major Project Issues

Description	Remedial Action
<p>Current major project issues fall within the following categories:</p> <ul style="list-style-type: none"> • Technical performance short falls; and • Contract management. <p>Technical performance shortfalls arise due to some sub-systems not meeting contracted performance requirements.</p> <p>Contract management issues relate to an contractor schedule that does not take account of technical risk and an inability to reach agreement with Boeing for a workable and affordable In Service Support Contract.</p>	<p>Engage and influence the prime contractor and major sub-contractors to maintain appropriate focus and commitment to deliver contracted performance to a credible and resourced schedule.</p> <p>Review contracting strategy for in-service support.</p>

4.3 Linked Projects

Project	Description of Project	Description of Dependency
AIR 5376 F/A-18 Hornet Upgrade	Upgrade of the F/A-18 Hornet communications, navigation and mission computing systems.	Air to air data communications in support of the air defence mission.
AIR 5402 Air to Air Refuelling Capability	Provision of five Multi-Role Tanker Transport aircraft and associated supplies and support.	Air-to-air refuelling support for extended range/duration airborne early warning and control missions.
AIR 5333 2CRU and 3CRU Replacement	Replace the fixed, ground-based Aerospace Surveillance and Battlespace Management command and control	Coordination between airborne early warning and control and ground-based

(Vigilare)	capability.	control units.
AIR 5405 Mobile Regional Operations Centre	Replace the deployable, ground-based Aerospace Surveillance and Battlespace Management command and control capability. Not yet approved.	Coordination between airborne early warning and control and deployed ground-based control unit.
JP 2008 MILSATCOM	Provision of a military satellite communications system.	Air-to-surface and air-to-air communications support.
JP 2030 Phases 5B and 7B Air Command Support System	Provision of enhancements to the Air Command Support System.	Command and control interface for the airborne early warning and control Mission Support System.
JP 2072 Battlespace Communications	Provision of an enhanced battlespace communications system for the land environment. Not yet approved.	Terrestrial communications support to the deployable airborne early warning and control Mission Support System.

Section 5 – Lessons Learned

5.1 Key Lessons Learned

Lesson
In the context of pre-project planning, the need to better appreciate the effort involved in being a customer of a first-of type program.
Underestimating the length of time required and effort involved in undertaking these phases when applied to a complex, highly developmental system.
Better appreciating the challenges involved in contractor management in a complex developmental project.
Recognising the need for pro-active risk management and the use of high-end risk management tools.
The need for industry to pay greater attention to adequately resourcing complex and highly developmental projects.
Early recognition of the need for proactive stakeholder engagement throughout the project.
The need to provide adequate resources with sufficient lead-time to develop and execute the evaluation and negotiating phases for the in-service support component of a first-of type capability.

Section 6 – Addendum

6.1 Addendum

Material events post 30 June 2008
While Boeing has yet to deliver the detailed re-baselined Integrated Master Schedule, the earlier schedule analysis regarding residual schedule risk remains valid, particularly in view of the delays experienced in completing key elements of the Developmental Test and Evaluation phase and undertaking Acceptance test and evaluation.
In September 2008, the United States International Association of Machinists went on strike. This strike remains unresolved and while Boeing has taken some action to alleviate the impact of the strike, the tempo of Test and Evaluation activities has slowed and will likely impact the Wedgetail schedule.
DMO has written to Boeing expressing its concern and affirming the Commonwealth's rights under the contract that the program is not sufficiently technically mature or stable enough to enter into Acceptance Test and Evaluation (AT&E) as the company had proposed.

Armidale-Class Patrol Boat – SEA 1444 Phase 1 Royal Australian Navy



Description

The \$559 million Sea 1444 Phase 1 project is to deliver 14 Armidale-Class Patrol Boats and provide 15 years in-service support. In addition the project is providing funding to Defence Support Group to deliver patrol boat facilities at Cairns and Darwin.

The new patrol boats will improve the Royal Australian Navy's capability to intercept and apprehend vessels suspected of illegal fishing, quarantine, customs or immigration offences.

This Project was first reported in the 2007–08 Major Projects Report

Section 1 – Project Summary

1.1 Project Management

30 June 2008	Name		
General Manager	Mr Kim Gillis		
Division Head	Rear Admiral Boyd Robinson		
Branch Head	Mr Colin Cooper		
Project Director	Mr Darren Toohey		
History	Name	Start	End
Project Manager	Mr Darren Toohey	2008	–
	Mr Peter Davey	2000	2007

1.2 Project Context

Project	Explanation
Description	<p>The \$559 million Sea 1444 Phase 1 project is to deliver 14 Armidale-Class Patrol Boats and provide 15 years in-service support. In addition the project is providing funding to Defence Support Group to deliver patrol boat facilities at Cairns and Darwin.</p> <p>The new patrol boats will improve the Royal Australian Navy's capability to intercept and apprehend vessels suspected of illegal fishing, quarantine, customs or immigration offences.</p>
Background	<p>In June 2001 Government required Defence to analyse private finance and direct purchase options and to recommend a preferred procurement strategy. Defence requested tenders for private finance and/or direct purchase. After Government approval of the preferred acquisition strategy, Stage 1 short-listing occurred, then a Stage 2 Request For Tender was released to the short-listed companies.</p> <p>In June 2002 after the Stage 1 bids from nine tenderers were evaluated, Government decided not to proceed with private financing as there was no clear financial advantage in pursuing that option.</p> <p>The Stage 2 Request For Tender for direct purchase closed on 19 November 2002 and on 29 August 2003 the Minister for Defence announced the preferred tenderer as Defence Maritime Services. On 17 December 2003 Defence signed a contract with Defence Maritime Services for the supply and support of 12 Armidale Class Patrol Boats. The scheduled delivery for the vessels was to be from May 2005 to June 2007.</p> <p>On 10 May 2005 additional funding was provided for an additional two vessels to be acquired under Project Sea 1444, to operate as part of the Government's Securing the North West Shelf policy.</p> <p>All 14 vessels have been delivered, achieved Initial Operational Capability</p>

Project	Explanation
	and commissioned into the Royal Australian Navy, with the 14th vessel achieving Initial Operational Release in November 2007 and commissioned in February 2008.
Uniqueness	<p>The contractor had to propose the number of vessels required to meet the operational requirements and their maintenance obligations. In the original tender, twelve vessels was the minimum that could be supplied to meet the proposed requirement. This approach also involved Navy moving to a multi-crewing (per vessel) philosophy.</p> <p>Also, following Government direction (equivalent to first pass) the acquisition strategy considered both private finance and ownership models for the acquisition of the required capability. This strategy meant that with either model Defence Materiel Organisation contracted for the acquisition and support of the fleet in one single contract rather than the traditional acquisition model followed by a separate support contract.</p>
Major Risks and Issues	<p>Aggressive schedule. 12 vessels were to be constructed and delivered within a two year period. This essentially did not provide the opportunity to address lessons learned from production or early operational use.</p> <p>Performance based in-service support contract. In essence Defence pays a set fee for every available day each vessel is programmed for use and able to be used. This is a major cultural shift in programming, crewing and control.</p> <p>Fuel system and reliability problems. Problems of water contamination and water separability of the fuel onboard under normal operating conditions led to the need for increased operating intervention by the crews. A change to the diesel engine fuel supply system has been incorporated to overcome one of the primary problems. Subsequently a fuel Integrated Project Team comprising representatives from Defence, the prime contractor Defence Maritime Services and the builder Austal, was established to investigate. Intensive trials have recently concluded on two patrol boats and the Integrated Project Team will shortly report on whether an appropriate permanent solution has been achieved or further modifications need to be implemented.</p>
Current Status	<p>Cost Performance</p> <p>All 14 Patrol Boats have been delivered within the current approved budget.</p> <p>Schedule Performance</p> <p>All vessels have been delivered albeit some with delays of up to two months from their original scheduled delivery dates.</p> <p>Capability Performance</p> <p>With all vessels delivered and commissioned into the Royal Australian Navy, the Systems Program Office is now closing extant issues and moving towards the targeted Operational Release of the fleet prior to winding up the acquisition phase of the project (anticipated to be in 2009).</p>

1.3 Project Approvals

Approval	Original	Achieved	Variance
First Pass	N/A	Jun 01	N/A
Second Pass	N/A	Oct 02	N/A

1.4 Prime Acquisition Contract(s) Details

Prime Contractor(s)	Scope Outline	Type (Price Basis)	Template	Signature
Defence Maritime Services	Acquisition of 14 patrol boats and 15 years of support with a 5 year extension option	Variable	SMART 2000/ASDEFCON strategic plus variation due to private financing considerations and in-service support requirements	Dec 03

1.5 Other Current Project Phases or Sub-Projects

Phase or Sub-Project	Description
N/A	

1.6 Project Maturity Score and Benchmark

Benchmark Stage	Current	Benchmark	Explanation
Service Release	61	67	Due to outstanding defects the benchmark score has not been reached. It is planned to achieve Operational Release of the first Armidale Class Patrol Boat by the end of 2008 with the remainder of the fleet being progressively brought up to the agreed baseline over the next 12 – 18 months.

Section 2 – Financial Performance

2.1 Project Budget Approval History

Original Approved (\$m Base)	Price Indexation Variation (\$m)	Exchange Variation (\$m)	Real Variation (\$m)	Current Approved (\$m Current)
436.8	67.2	(11.0)	65.8	558.8

2.2 Project Real Variation History

Date	Amount (\$m)	Factor	Explanation
Jun 04	2.6	Budgetary Adjustment	Real Adjustment due to incorrect currency mix used at time of approval.
Aug 04	(0.4)	Budgetary Adjustment	Administrative Savings harvest.
Nov 04	(0.2)	Transfer	Transfer to Joint Material Agency for supply of medical allowance list.
Jun 05	(1.8)	Transfer	Transfer to Joint Ammunition Logistic Organisation for Typhoon (gun) 25mm rounds and Defence Support Group for Project office fit out in Darwin.
Jun 05	67.1	Scope	Increased scope for the number of Patrol Boats from 12 to 14.
Aug 05	(1.5)	Budgetary Adjustment	Skilling Australia's Defence Industry harvest.
Total	65.8	Real Variation	

2.3 Project Budget and Expenditure as at 30 June 2008

Approved Budget (\$m Current)	Life to Date Expenditure (\$m Cumulative)	Remaining Balance (\$m)
558.8	461.5	97.3

2.4 End of Financial Year Total Project Expenditure Performance

Estimate (\$m)	Actual (\$m)	Variance (\$m)
72.3	61.8	(10.5)

2.5 End of Financial Year Total Project Expenditure Variance Attribution

Variance (\$m)	Variance Factor	Explanation
(10.5)	Australian Industry	Delays in negotiating contract change proposals for minor modifications and cost savings.
(10.5)	Total Variance	

2.6 Prime Acquisition Contract(s) Real Price Increases and Capital Equipment Quantities Required

Prime Contractor(s)	Price (\$m Base) at		Equipment	Quantities at	
	Signature	30 Jun 08		Signature	30 Jun 08
Defence Maritime Services	316.6	385.4	Armidale Class Patrol Boats	12	14
Explanation	The major variation is as a result of the additional 2 vessels. There have been other minor contract changes that have not had a significant affect on the price.				

2.7 Prime Acquisition Contract(s) Price and Progress Payments

Prime Contract(s)	Price (\$m Base) at Signature	Price (\$m Base) at 30 Jun 08	Progress Payments (\$m Base) at 30 Jun 08
Commercial	316.6	385.4	384.9
Total	316.6	385.4	384.9
Explanations			

Section 3 – Schedule Progress

3.1 Design Review Progress

Event	Major System/ Platform Variant	Original Planned	Current Planned	Achieved/ Forecast	Variance (Months)
Preliminary Design Review	Armidale Class Patrol Boat	Feb 04		Feb 04	0
Critical Design Review	Armidale Class Patrol Boat	May 04		Apr 04	(1)
Variance Explanations	There are no known variances to the initial schedule.				

3.2 Contractor Test and Evaluation Progress

Event	Major System/ Platform Variant	Original Planned	Current Planned	Achieved/ Forecast	Variance (Months)
Acceptance Test and Evaluation – DMO Acceptance	Armidale Class Patrol Boat 01	May 05		Jun 05	1
	Armidale Class Patrol Boat 02	Oct 05		Nov 05	1
	Armidale Class Patrol Boat 03	Nov 05		Dec 05	1
	Armidale Class Patrol Boat 04	Mar 06		Apr 06	1
	Armidale Class Patrol Boat 05	Mar 06		Apr 06	1
	Armidale Class Patrol Boat 06	Jun 06		Jun 06	0
	Armidale Class Patrol Boat 07	Jul 06		Jul 06	0
	Armidale Class Patrol Boat 08	Oct 06		Oct 06	0
	Armidale Class Patrol Boat 09	Nov 06		Nov 06	0
	Armidale Class Patrol Boat 10	Mar 07		Apr 07	1
	Armidale Class Patrol Boat 11	Mar 07		May 07	2
	Armidale Class Patrol Boat 12	Jun 07		Jul 07	1
	Armidale Class Patrol Boat 13	Sep 07		Sep 07	0
	Armidale Class Patrol Boat 14	Nov 07		Nov 07	0
Variance Explanations	Boats 1–5 delayed due to contractor labour shortages – permissible delays. Boat 10–12 delayed due to configuration changes and change to deliver location – permissible delays, plus defect rectifications by the contractor.				

3.3 Progress toward Initial Operational Capability

Item	Original	Achieved/ Forecast	Variance (Months)	Variance Explanations/ Implications
Armidale Class Patrol Boat 01		Jul 05		The Initial Operational Capability date for each boat was not specified by Navy until after boat acceptance had been achieved.
Armidale Class Patrol Boat 02		Jan 06		
Armidale Class Patrol Boat 03		Feb 06		
Armidale Class Patrol Boat 04		May 06		
Armidale Class Patrol Boat 05		May 06		
Armidale Class Patrol Boat 06		July 06		
Armidale Class Patrol Boat 07		Aug 06		
Armidale Class Patrol Boat 08		Nov 06		
Armidale Class Patrol Boat 09		Nov 06		
Armidale Class Patrol Boat 10		May 07		
Armidale Class Patrol Boat 11		Jul 07		
Armidale Class Patrol Boat 12		Aug 07		
Armidale Class Patrol Boat 13		Oct 07		
Armidale Class Patrol Boat 14		Nov 07		

3.4 Progress toward Final Operational Capability

Item	Original	Achieved/ Forecast	Variance (Months)	Variance Explanations/ Implications
Final Operational Capability				The forecast date for final operational capability was not included in the Materiel Acquisition Agreement as at 30 June 2008. Refer to Section 6 for update regarding the Final Operational Capability date.

Section 4 – Risks, Issues and Linked Projects

4.1 Major Project Risks

Description	Remedial Action
Royal Australian Navy standards are different to commercial standards resulting in a risk to customer acceptance.	Promote understanding of commercial standards and the contract methodology. Where there are unacceptable issues, institute a contract change.
Contractor inability to provide or support vessels throughout the life of the in-service phase of the contract (performance risk).	Actively manage performance under the contract.

4.2 Major Project Issues

Description	Remedial Action
Hydraulic system non compliance – The use of non-compliant pipe material has affected the certification basis for the sea boat davit performance and operational limitations were imposed as a precaution pending rectification.	This has been accepted by the contractor as a latent design defect. The contractor should complete the first retrofit of the correct piping during August 2008 and will then proceed to rectify the remainder of the fleet.
Fuel Separability Issues – With the implementation of fuel system design changes and additional operating procedures in place, the Armidale Class Patrol Boat operational availability is being achieved.	A fuel Integrated Project Team comprising representatives from Defence, the prime contractor Defence Maritime Services and builder Austal has been established to investigate the effectiveness of modifications undertaken during 2007. Intensive trials have recently concluded on two patrol boats and a further modification to the purifiers has been implemented as a trial in HMAS GLENELG. The Integrated Product Team will shortly report on whether an appropriate permanent solution has been achieved or further modifications need to be implemented.
Certification – The certification process is proving problematic in some areas.	Proactively engaging the regulators and acceptance bodies through a recently established tiger team to ensure there is a common understanding to achieve appropriate sign-off.

4.3 Linked Projects

Project	Description of Project	Description of Dependency
Defence Support Group – Darwin Naval Base Redevelopment	Darwin Naval Base Redevelopment.	To accommodate Armidale Class Patrol Boat facilities changes.
Defence Support Group – HMAS Cairns Redevelopment	HMAS Cairns Redevelopment.	To upgrade facilities to support personnel and Royal Australian Navy Fleet Units operating in and near far north Queensland.
Project JP 2043 High Frequency Modernisation	The Project is to provide the Australian Defence Force with a secure, cost-effective information exchange capability for the command and control of deployed forces as a primary survivable system and as a parallel system to satellite communications.	The High Frequency communications capability for the Replacement Patrol Boats will be funded by Project JP 2043 and fitted after delivery.
Project JP 2008 Military Satellite Communications	The Defence Mobile Communications Network is a mobile satellite communication system, using the Cable and Wireless Optus service.	This capability has been fitted to the Armidale Class Patrol Boats.
Project SEA 1430 Phase 2A – Navigation Display Systems (Electronic Chart Display and Information System)	Project SEA 1430 Ph2A will provide Electronic Chart Display and Information Systems for the navigation of Royal Australian Navy ships and submarines. The project is titled Navigation Display Systems. The project will also deliver Navigation Display Systems to selected command and training shore establishments.	This capability has been fitted to the Armidale Class Patrol Boats.

Section 5 – Lessons Learned

5.1 Key Lessons Learned

Lesson
<p>For a new or significantly modified design there will be a number of design changes emanating from initial sea trials. The aggressive delivery schedule for the Armidale Class Patrol Boats did not allow time for changes from initial sea trials to be built into the follow-on build boats prior to their construction. This resulted in an evolving design baseline throughout the production phase that was not stabilised until after delivery of the last boat. Consequently the redesign, build, test and acceptance aspects of boats built after the first of class became unnecessarily complicated, expensive and inefficient. Time should be allowed after the first (or second depending on the size of the class) boat build to conduct sea trials and modify and stabilise the design as appropriate prior to the main production run.</p>

Section 6 – Addendum

6.1 Addendum

Material events post 30 June 2008
The contractor completed the retrofit of the correct hydraulic piping in the first boat (HMAS GLENELG) during August 2008. Subject to rectification of minor defects and successful completion of trials in October 2008, modifications to the remainder of the class will be progressed.
The Final Operational Capability date (March 2009) was included in the Materiel Acquisition Agreement Amendment 2 on 1 August 2008. Prior to that amendment, Initial Operational Capability and Final Operational Capability were not specified.

High Frequency Modernisation Project – JP 2043 Phase 3A

Joint Services



Description

The \$637 million JP2043 Phase 3A project provides for the procurement of a Modernised High Frequency Communications System for Defence long-range communications. The Fixed Network component comprises four High Frequency stations, one station in each of the Riverina (New South Wales), Townsville (Queensland), Darwin (Northern Territory) and North West Cape (Western Australia) areas together with primary and backup Network Management Facilities in Canberra. The project will also provide upgrades to selected Australian Defence Force sea, land and air mobile platforms to make them compatible with the top-level capabilities of the modernised network.

The Fixed Network capability will be provided in two major stages. The first stage (the Core System) replaced the existing Navy and Air Force High Frequency networks and is now supporting Australian Defence Force operations. The second stage of the Fixed Network capability (the Final System) will provide increased automation and enhanced functionality and is still undergoing development.

This Project was first reported in the 2007–08 Major Projects Report

Section 1 – Project Summary

1.1 Project Management

30 June 2008	Name		
General Manager	Mr Kim Gillis		
Division Head	Ms Shireane McKinnie		
Branch Head	Mr David Marshall		
Project Director	Mr Andrew Schmidt		
History	Name	Start	End
Project Manager	Mr Andrew Schmidt	Jul 04	–
	Mr John Gordon	Aug 97	Jul 04
	Mr Alan Wilson	Nov 95	Aug 97
	Captain Ian Noble (RAN)	May 93	Nov 95

1.2 Project Context

Project	Explanation
Description	<p>The \$637 million JP2043 Phase 3A project provides for the procurement of a Modernised High Frequency Communications System for Defence long-range communications. The Fixed Network component comprises four High Frequency stations, one station in each of the Riverina (New South Wales), Townsville (Queensland), Darwin (Northern Territory) and North West Cape (Western Australia) areas together with primary and backup Network Management Facilities in Canberra. The project will also provide upgrades to selected Australian Defence Force sea, land and air mobile platforms to make them compatible with the top-level capabilities of the modernised network.</p> <p>The Fixed Network capability will be provided in two major stages. The first stage (the Core System) replaced the existing Navy and Air Force High Frequency networks and is now supporting Australian Defence Force operations. The second stage of the Fixed Network capability (the Final System) will provide increased automation and enhanced functionality and is still undergoing development.</p>
Background	<p>The Defence Communications Corporate Plan of May 1991 directed that existing Australian Defence Force High Frequency networks be rationalised and modernised. Satellite communications is now the primary system for high and medium data rate communication with mobile Australian Defence Force platforms (Mobiles) such as ships, aircraft and vehicles, however High Frequency provides a secure alternative means of long range communications for Satellite communications fitted platforms and a primary long-range communication capability for platforms not Satellite communications fitted. The High Frequency Modernisation Project was established in May 1993 and originally envisaged four implementation phases:</p> <ul style="list-style-type: none"> • Phase 1 (completed 1994) – a preparatory phase including a Network

	<p>Definition Study to determine the basic requirement and an Invitation to Register Interest process;</p> <ul style="list-style-type: none"> • Phase 2 (completed 1996) – a more detailed definition phase involving parallel Project Definition Studies undertaken by short-listed Phase 1 companies following a Request for Proposal process; • Phase 3A (commenced 1997)– an implementation phase involving selection of the Prime Contractor through a restricted Request for Tender process, provision of a modernised High Frequency communication network and its follow-on support, and High Frequency upgrades to an initial range of Mobiles; and • Phase 3B (cancelled 1999) – an implementation Phase involving High Frequency upgrades to selected remaining Mobiles. <p>The Phase 3A Prime Contract was signed in December 1997 with Boeing Australia. It is variable price, initially comprising 40 per cent milestone payments and 60 per cent earned value payments. This was subsequently amended to milestone payments only, after substantial delays to progress were experienced by the Contractor. A Network Operation Support Contract with Boeing Australia was executed at the same time as the Prime Contract, to take effect from Final Acceptance of Prime Contract deliverables.</p> <p>The Prime Contract has undergone several major amendments and currently provides for the implementation in two stages:</p> <ul style="list-style-type: none"> • a Core System (accepted October 2004), to provide an upgraded Fixed Network having a capability no less than that provided by the networks being replaced; and • a Final System including enhanced features for the upgraded Fixed Network and a Mobiles upgrade component. <p>Project approval provides for 87 platforms to be upgraded. The Prime Contract was originally scoped for First-of-Type installations and Upgrade Modification Kits for a total of 56 Platforms. However amendments made in 2004 reduced the Contract scope to a single First-of-Type Upgrade (CH47 Chinook helicopter), five High Frequency Upgrade Kits for follow-on Chinook installations, plus two Generic High Frequency Upgrade Systems. The Generic Systems will be used to demonstrate functional performance and to verify the suitability of System software and hardware components for platform use prior to implementation of Mobiles upgrades.</p> <p>The Mobiles within approved project scope are listed below.</p> <table> <tr> <th>Platform Type</th><th>Qty</th></tr> <tr> <td>CH47 Chinook</td><td>6</td></tr> <tr> <td>Black Hawk</td><td>35</td></tr> <tr> <td>Mine Hunter Coastal</td><td>6</td></tr> <tr> <td>Armidale Class Patrol Boats</td><td>14</td></tr> <tr> <td>Hydrographic Ships</td><td>2</td></tr> <tr> <td>Army Land Strategic High Frequency</td><td>14</td></tr> <tr> <td>RAAF No. 1 Combat Communications Squadron</td><td>4</td></tr> <tr> <td>Defence Force School of Signals Watsonia (Simpson Barracks)</td><td>2</td></tr> </table>	Platform Type	Qty	CH47 Chinook	6	Black Hawk	35	Mine Hunter Coastal	6	Armidale Class Patrol Boats	14	Hydrographic Ships	2	Army Land Strategic High Frequency	14	RAAF No. 1 Combat Communications Squadron	4	Defence Force School of Signals Watsonia (Simpson Barracks)	2
Platform Type	Qty																		
CH47 Chinook	6																		
Black Hawk	35																		
Mine Hunter Coastal	6																		
Armidale Class Patrol Boats	14																		
Hydrographic Ships	2																		
Army Land Strategic High Frequency	14																		
RAAF No. 1 Combat Communications Squadron	4																		
Defence Force School of Signals Watsonia (Simpson Barracks)	2																		

	<p>Defence Force School of Signals (Cerberus) 1</p> <p>Deployable Mine Countermeasures & Clearance Diving 3</p> <p>Headquarters</p> <hr/> <p>Total: 87</p> <p>The Australian National Audit Office carried out a performance audit of the project in 2007. Audit Report No. 34 2006–07 was tabled in Parliament on 1 May 2007.</p>
Uniqueness	<p>The High Frequency Modernisation Project is a complex software intensive and high risk project involving geographically diverse sites at five major locations across Australia. Implementation of the Fixed Network has involved civil infrastructure development, electrical power generation and transmission, telecommunications infrastructure extension, communications system hardware and antenna installation. It has involved the engineering disciplines of systems engineering, software development, system design and integration, system test and evaluation. It also includes an extensive program to develop, install and integrate upgraded capabilities on selected Mobiles.</p> <p>Because of the complex nature of the project, provision was made in the contract for the use of, what was at the time, relatively new methodology of Integrated Product Development Teams which included Contractor and Commonwealth personnel. These were included for project insight and to reduce risk particularly in the important areas of requirements clarification, systems engineering and acceptance, test and evaluation. While not as effective as originally expected the use of these teams did achieve moderate success.</p> <p>The System being provided is designed to be one of the most advanced of its type in the world. It incorporates capabilities leading those in similar High Frequency communications systems in the United States and the United Kingdom.</p>
Major Risks and Issues	<p>The project has suffered implementation delays but that part of the new communication system which has replaced the legacy systems previously operated by the Navy and Air Force has now been operational since 2004. The project is presently focussed on providing enhanced capabilities and on Mobiles upgrades.</p> <p>The capacity to utilise the additional functionality provided by the Final System immediately following Final Acceptance will be limited by the status of the Mobiles upgrade program.</p> <p>Platform availability will be an issue for all Mobiles upgrades. The upgrade schedules need to be coordinated with the maintenance schedules and operational requirements of the platforms. Other risk factors related to Mobiles upgrades include the complex task of integrating High Frequency upgrade equipment with existing communications systems of varying levels of maturity and sophistication, and of accommodating the new equipment within the spaces available. For several existing High Frequency radios it will be necessary to develop type-specific software drivers to provide operational compatibility with the modernised High Frequency System being supplied by the project.</p>
Current Status	<p>Cost Performance</p> <p>The project is tracking within its approved budget. Some payments to the contractor have been withheld as a result of failure to meet contracted schedule milestones.</p> <p>Schedule Performance</p> <p>The Core System was accepted in October 2004 and achieved Initial Operational</p>

	<p>Release in November 2004, replacing all Defence legacy High Frequency Systems (with the last legacy site closed in November 2005).</p> <p>The delivery schedule for the Final System, including the single upgraded Chinook, was rebaselined following the execution of a Deed of Settlement and Release in February 2004 and a Deed of Agreement in May 2005.</p> <p>Boeing Australia is currently experiencing delay in the delivery of the Final System capability and failed to meet a significant delivery milestone in October 2007. Subsequently the Commonwealth agreed to negotiate with Boeing Australia on the basis of granting schedule relief in return for receiving appropriate compensation. Negotiations commenced in February 2008 and ended on 27 June 2008 with the parties failing to reach agreement on an acceptable overall compensation package.</p> <p>Delays have also impacted on the upgrade schedule for the Mobiles not yet in contract. These delays, together with platform availability problems, mean that the Mobiles program may extend to 2016.</p> <p>Capability Performance</p> <p>The Core System is currently providing a highly reliable service in support of operational Australian Defence Force platforms, meeting or exceeding the specified availability. Compared to the replaced Navy and Air Force High Frequency Systems the Core System provides:</p> <ul style="list-style-type: none"> • greater automation; • improved frequency management; • joint communications planning tools; • improved area of coverage; • secure phone patches; • centralised management & control; and • reduced operations and maintenance staff. <p>Operators and maintenance personnel report a good degree of satisfaction with the Core System.</p> <p>For the Final System, following the failure of negotiations, the Commonwealth and Boeing Australia agreed to an independent technical review, followed by a schedule review. The reviews will inform further decisions on the way ahead. The review panel will consist of external technical experts agreed by both the Commonwealth and Boeing Australia.</p> <p>Current contractual arrangements provide for a CH47 Chinook helicopter to be upgraded prior to Final Acceptance. However, following recent advice from the Chinook helicopter Capability Manager that access to the aircraft for the upgrade will be delayed due to operational priorities, the Chinook helicopter integration design only will be completed under the Prime Contract and Chinook helicopter installation activities will be removed from the Contract.</p>
--	--

1.3 Project Approvals

Approval	Original	Achieved	Variance
First Pass	N/A	N/A	N/A
Second Pass	N/A	Aug 96	N/A

1.4 Prime Acquisition Contract(s) Details

Prime Contractor(s)	Scope Outline	Type (Price Basis)	Template	Signature
Boeing Australia	Deliver a Modernised High Frequency Communications System	Variable	DEFPUR 101 v46	Dec 97

1.5 Other Current Project Phases or Sub-Projects

Phase or Sub-Project	Description
N/A	

1.6 Project Maturity Score and Benchmark

Benchmark Stage	Current	Benchmark	Explanation
System Integration and Test	54	55	The primary reason for not achieving the benchmark score is schedule delay. The maturity score relates mainly to the Fixed Network deliverables in the Prime Contract.

Section 2 – Financial Performance

2.1 Project Budget Approval History

Original Approved (\$m Base)	Price Indexation Variation (\$m)	Exchange Variation (\$m)	Real Variation (\$m)	Current Approved (\$m Current)
505.0	114.9	11.7	5.5	637.1

2.2 Project Real Variation History

Date	Amount (\$m)	Factor	Explanation
Jul 98	2.3	Transfer	Transfer from other phases of JP 2043
Feb 99	0.1	Transfer	Transfer from other phases of JP 2043
Feb 99	11.0	Scope	Scope change to include Wideband High Frequency Direction Finding capability
May 02	0.9	Transfer	Transfer for installation at Robertson Barracks
Feb 03	(6.1)	Transfer	Transfer to Defence Support Group as contribution to construction of Defence Network Operations Centre and infrastructure support
May 03	(1.9)	Transfer	Transfer to Facilities
Aug 04	(0.2)	Budgetary Adjustment	Administrative Savings harvest
Aug 05	(0.6)	Budgetary Adjustment	Skilling Australia's Defence Industry harvest
Total	5.5	Real Variation	

2.3 Project Budget and Expenditure as at 30 June 2008

Approved Budget (\$m Current)	Life to Date Expenditure (\$m Cumulative)	Remaining Balance (\$m)
637.1	361.5	275.6

2.4 End of Financial Year Total Project Expenditure Performance

Estimate (\$m)	Actual (\$m)	Variance (\$m)
9.0	6.5	(2.5)

2.5 End of Financial Year Total Project Expenditure Variance Attribution

Variance (\$m)	Variance Factor	Explanation
(2.5)	Australian Industry	Delays in delivery
(2.5)	Total Variance	

2.6 Prime Acquisition Contract(s) Real Price Increases and Capital Equipment Quantities Required

Prime Contractor(s)	Price (\$m Base) at		Equipment	Quantities at	
	Signature	30 Jun 08		Signature	30 Jun 08
Boeing Australia	309.6	316.8	Fixed Network	1	1
			Mobiles	56	8
Explanation	There have been a number of Contract Change Proposals over the life of the contract which have increased or removed scope, resulting in a small increase to the contract price in base date dollars. These proposals have included adjustments related to the Fixed Network and a reduction in the number of Mobiles platforms to be upgraded, as well as the addition of the two Generic High Frequency Upgrade Systems which provide for the underlying design and development of hardware and software forming the basis of all upgrade systems.				

2.7 Prime Acquisition Contract(s) Price and Progress Payments

Prime Contract(s)	Price (\$m Base) at Signature	Price (\$m Base) at 30 Jun 08	Progress Payments (\$m Base) at 30 Jun 08.
Commercial	309.6	316.8	282.5
Total	309.6	316.8	282.5
Explanations	See Table 2.2 for explanation of real price increase. Note. The Project is withholding \$3.6 million in payments to the Contractor representing 15 per cent of payments for late milestones. The withheld amount will be paid at Final System Acceptance.		

Section 3 – Schedule Progress

3.1 Design Review Progress

Event	Major System/ Platform Variant	Original Planned	Current Planned	Achieved/ Forecast	Variance (Months)
System Requirements Review	Core System	Apr 98		Jun 98	2
	Final Systems (Fixed Network)	Jul 99		Jun 04	59
	Mobile Generic (In Contract)	Jul 99		Mar 05	68
Preliminary Design Review	Core System	Nov 98		Jan 00	14
	Final Systems (Fixed Network)	Jul 00		Aug 05	61
	Mobile Generic (In Contract)	Feb 00		Jul 05	65
Critical Design Review	Core System	Nov 99		Dec 00	13
	Final Systems (Fixed Network)	Dec 01		Nov 06	59
	Mobile Generic (In Contract)	Dec 02		Nov 06	47
Variance Explanations	<p>System Requirements Review delayed due to requirements instability. The June 1999 Deed of Agreement acknowledges 'requirements instability'.</p> <p>Preliminary Design Review: Requirements instability & scope changes.</p> <p>Critical Design Review Final Systems and Mobile: Contractor delays with software development and system integration design.</p>				

3.2 Contractor Test and Evaluation Progress

Event	Major System/ Platform Variant	Original Planned	Current Planned	Achieved/ Forecast	Variance (Months)
System Integration Test & Evaluation	Final Systems (Fixed Network)	Sep 03		May 08	56
	Core System	Mar 01		Jun 04	39
Acceptance Test & Evaluation	DMO Acceptance – Core System	Nov 01		Oct 04	35
	Final Systems (Fixed Network)	Feb 04	Feb 08	Feb 11	84
	DMO Acceptance – Final System	May 04	Mar 08	Mar 11	82
	Generic Mobiles	Dec 03	Dec 07	Sep 08	57
Variance Explanations		Core System: Contractor delays with software development and			

	<p>system instability.</p> <p>Final Systems and Mobile: Contractor delays with software development, resource shortages and technical reviews.</p> <p>Note. Current planned dates are based on Deed of Settlement and Release (February 2004) and Deed of Agreement (May 2005) outcomes (incorporated into the Prime Contract as Contract Amendment 15).</p>
--	---

3.3 Progress toward Initial Operational Capability

Item	Original	Achieved/ Forecast	Variance (Months)	Variance Explanations/ Implications
Initial Operational Capability – Final System	May 04	Mar 11	82	Contractor delays with software development, resource shortages, system instability. Deferral of operational capability.

3.4 Progress toward Final Operational Capability

Item	Original	Achieved/ Forecast	Variance (Months)	Variance Explanations/ Implications
Final Operational Capability – Final System	May 05	2011	67	Delays in Initial Operational Capability will normally lead to consequent delays in Final Operational Capability. Responsibility for Operational Release passes to Navy Systems Command following Final Acceptance and Initial Operation Release. Deferral of operational capability.
Final Operational Capability – Mobiles	May 05	2016	127	This date is based upon the last of the 87 Mobiles upgrades obtaining Final Operational Capability.

Section 4 – Risks, Issues and Linked Projects

4.1 Major Project Risks

Description	Remedial Action
Upgraded Mobile platform(s) may not be available for Final System testing within the Prime Contract timescale	Work closely with platform managers to minimise impact of late availability. Negotiate with Contractor to have in place alternative upgraded platforms (with temporary fits if necessary)
Timely supply of Mobiles unique configuration items is not assured and any delay in the supply of these items has a direct impact on the mobiles schedule	Negotiate a contract for the supply of the Mobiles unique configuration items once they have passed acceptance testing
Delayed Radio Study for Mobiles may impact on Mobiles upgrade program	Finalise Support Services Contract with Boeing Australia urgently. Ensure work to develop drivers commences at earliest possible time after Support Services Contract in place
Delayed implementation of Support Services Contract may impact on support for Mobiles program	Finalise Support Services Contract with Boeing Australia urgently

4.2 Major Project Issues

Description	Remedial Action
Contractor has not achieved required schedule	Notice placed on Contractor, leading to negotiations. Negotiations ended 27 June 2008 without settlement. Technical review, followed by schedule review, to be conducted to inform decisions on way ahead
Fixed Network software development has not achieved the agreed schedule	Following unsuccessful negotiations, conduct of technical review, followed by schedule review, to inform decisions on way ahead
Contractor delays will delay completion of Mobiles upgrades beyond current project completion date	Address with Capability Development Group in context of schedule review for contract deliverables and the impact on other project deliverables

4.3 Linked Projects

Project	Description of Project	Description of Dependency
	There are no dependencies upon other projects however the Mobiles program may be impacted by other projects competing for platform availabilities e.g. AIR 5416 ECHIDNA, JP 2008 MILSATCOM.	

Section 5 – Lessons Learned

5.1 Key Lessons Learned

Lessons
Risks associated with requirements instability, software development and systems engineering were known at the time of contract signature but in the light of subsequent events were clearly not adequately addressed in pre-contract negotiations. The experience underlines the importance of having well-defined and stable requirements at contract award, and of contractors having sound systems engineering and software development processes.
A proper balance needs to be kept between proper engineering processes and contractor-perceived commercial imperatives to minimise risk that unrealistic technical programs will actually result in delays to the overall schedule.
Accessibility requirements should be agreed, specified and documented early in the contracting process to minimise risk of incurring excusable delays when access to the system to be upgraded is constrained due to operational reasons.
<p>Best practice would suggest that for a capability acquisition that includes significant software development, a contract that allows for both fixed price elements as well as alternative cost structures which include; appropriate controls, incentive and penalty models that can be applied to the highly developmental elements involving significant risk, may be appropriate.</p> <p>Milestone payments could be selected for those deliverables that have well defined objectives and the alternative payment method with incremental work packages could be applied to the software aspect of the project. This approach would require strict controls and metrics to limit the risk to the Commonwealth.</p>

Section 6 – Addendum

6.1 Addendum

Material events post 30 June 2008
<p>Following the unsuccessful negotiations, the DMO initiated an independent expert technical review during August 2008, to ensure there were no underlying design issues that could be impeding progress. In its report, the review team noted that a significant proportion of the planned capability had already been successfully delivered and was in operational use. The team's primary conclusion was that the technical solution is deliverable, albeit with some low level technical risk in achieving all performance requirements. From a technical viewpoint, the team recommended that the program be pursued to completion.</p>
<p>The technical review was followed by a Commonwealth–led review of the schedule being developed by Boeing Australia covering the remainder of the contract requirements. The schedule review was completed in mid–October 2008 with some shortcomings identified, which Boeing Australia agreed to address. Negotiations to agree a revised schedule and to resolve outstanding contractual issues are planned to recommence late October 2008.</p>

Bushmaster Protected Mobility Vehicle - LAND 116 Phase 3 Australian Army



Description

The \$893 million Land 116 Phase 3 project is to deliver at least 700 vehicles in seven variants; troop, command, mortar, assault pioneer, direct fire weapon, air defence and ambulance, as well as approximately 173 trailers. These vehicles will provide protected land mobility to Army combat units and Royal Australian Air Force Airfield Defence Guards. In addition to the acquisition of the vehicles through the Approved Major Capability Investment Program, a number of enhancements are being made to the vehicles through the Rapid Acquisition process. These enhancements do not form part of the Project Land 116 Phase 3, but do impinge upon the project.

This Project is also known as Project “Bushranger”

This Project was first reported in the 2007–08 Major Projects Report.

Section 1– Project Summary

1.1 Project Management

30 June 2008	Name		
General Manager	Mr Kim Gillis		
Division Head	Mr Colin Sharp		
Branch Head	Brigadier Mike Phelps		
Project Director	Mr Joseph Cardillo		
History	Name	Start	End
Project Manager	Mrs Norrell Swanson	Jul 07	–
	Mr Jon Hill	Oct 05	Jul 07
	Lieutenant Colonel Louise Abell	Jan 03	Oct 05
	Lieutenant Colonel Mark Egglar	Jul 00	Dec 02
	Mr Kevin Heath	Oct 99	Jul 00
	Lieutenant Colonel Mike Phelps	May 98	Oct 99
	Lieutenant Colonel WD Feakes	1993	May 98

1.2 Project Context

Project	Explanation
Description	<p>The \$893 million Land 116 Phase 3 project is to deliver approximately 724 vehicles in seven variants; troop, command, mortar, assault pioneer, direct fire weapon, air defence and ambulance as well as approximately 173 trailers. These vehicles will provide protected land mobility to Army combat units and Royal Australian Air Force Airfield Defence Guards. In addition to the acquisition of the vehicles through the Approved Major Capability Investment Program, a number of enhancements are being made to the vehicles through the Rapid Acquisition process. These enhancements do not form part of the Project Land 116 Phase 3, but do impinge upon the project.</p>
Background	<p>The Bushranger Project is being conducted in three phases:</p> <p>Phase 1 involved the motorisation of the infantry battalions of 6 Brigade, with 268 interim infantry mobility vehicles, based on the in-service Land Rover PERENTIE 4x4 and 6x6 vehicles and the procurement of an additional twenty nine (29) support vehicles.</p> <p>Phase 2 consisted of Phase 2A the development of the infantry mobility vehicle specification and the release of an Invitation to Register Interest and Phase 2B the release of a Request for Tender and the trialling and evaluation of successful contender vehicles.</p>

	<p>Phase 3 is the full rate production of the protected vehicles. The Production Contract Option was executed on 1 June 1999 with Australian Defence Industries for the supply of 370 Bushmaster vehicles by December 2002. A range of problems emerged with design enhancements, cost, and schedule slippage in the contract, shortly after the Production Option was exercised, leading to renegotiation of the Contract in July 2002 for 299 vehicles. This phase has been divided into three separate production periods that reflects the increase over time in the quantity of vehicles being acquired. The Production Periods are as follows:</p> <p>Production Period One: During this period 300 vehicles in six variants were acquired; troop, command, mortar, assault pioneer, direct fire weapon and ambulance. This period reflects the final position of the original protected mobility requirement. Defence had contracted for 299 vehicles; however, it then sold 25 vehicles back to Thales for sale to the Netherlands and received 26 vehicles from Thales as consideration.</p> <p>Production Period Two: Currently in progress, this is the acquisition of an additional 144 vehicles in five variants consisting of; troop, command, mortar, direct fire weapon and ambulance. This period reflects change to the Army's structure under the Enhanced Land Force Phase 1. Defence had contracted for 143 vehicles; however, it then allowed Thales to divert 24 vehicles from the production line for sale to the United Kingdom, thereby delaying delivery to Defence. Defence received one additional vehicle from Thales as consideration.</p> <p>Production Period Three: During this period additional vehicles will be acquired to meet the Medium Protected Mobility vehicle component of Land 121 Phase 3 Project Overlander. This will include all six variants and an air defence variant. In addition purpose designed Bushmaster trailers will also be acquired.</p> <p>As a result of operational experience a number of enhancements are being made to the Bushmaster vehicle to enhance crew survivability. This includes 116 Protected Weapon Stations, 116 Automatic Fire Suppression Systems and 116 purpose-design Spall Curtains which are being progressively fitted to vehicles under a Rapid Acquisition. These additional items are being acquired through Thales using the acquisition contract but are not part of Land 116 Phase 3.</p> <p>In December 2007 the Chief of Army redesignated the Bushmaster Infantry Mobility Vehicle as the Bushmaster Protected Mobility Vehicle.</p> <p>This report relates to Land 116 Phase 3 only.</p>
Uniqueness	The Bushmaster Protected Mobility Vehicle has been developed and built in Australia by Thales to meet a niche requirement of Australian forces.
Major Risks and Issues	<p>A major risk for Phase 3 was the production of a vehicle in Australia by a company that had little prior experience in the manufacture of military vehicles. This was compounded by the number of variants (initially six) and the requirement for development and testing of each. Consequently, the contractor initially had difficulty producing the vehicle within the contracted time, quality and cost. These difficulties have been overcome in the current contract.</p> <p>The project requirement has expanded to meet Defence's evolving requirements for protected mobility. The number of vehicles to be produced has increased from 299 to approximately 724 with the addition of vehicles for the Enhanced Land Force and the Medium Protected Mobility component of Land 121 Phase 3 – Project Overlander.</p>

	The production schedule has been interrupted twice due to the diversion of production capacity for other requirements. The Commonwealth has been compensated for the schedule impact through the provision of two vehicles at no cost. This has had no impact on capability and was agreed to by Government and Army.
Current Status	<p>Cost Performance</p> <p>As at 30 June 2008, 368 vehicles had been delivered on budget.</p> <p>Schedule Performance</p> <p>288 Production Period 1 vehicles were delivered by July 2007 on schedule, with 12 Ambulance variants delivered by March 2008, eight months late. As at 30 June 2008, 68 Enhanced Land Force vehicles had been delivered in accordance with the schedule with the remaining vehicles on track for completion by early 2009. Defence was also in contract with Thales for long lead time items and material for the additional Production Period 3 vehicles.</p> <p>At 30 June 2008 the project office was in negotiations with Thales for the acquisition of additional Bushmaster vehicles to meet the Production Period 3 requirement. These vehicles are scheduled for delivery commencing in May 2009.</p> <p>Capability Performance</p> <p>All variants are meeting their current specifications. Options to improve the protection levels of the vehicle are continually being reviewed should the need arise to enhance the vehicles to meet emerging threats emanating from the changing operational environment.</p>

1.3 Project Approvals

Approval	Original	Achieved	Variance
First Pass	N/A	N/A	N/A
Second Pass	N/A	Nov 98	N/A

1.4 Prime Acquisition Contract(s) Details

Prime Contractor(s)	Scope Outline	Type (Price Basis)	Template	Signature
Australian Defence Industries (now Thales Australia)	Provision of Bushmaster vehicles	Variable	DEFPUR 101	Jun 99

1.5 Other Current Project Phases or Sub-Projects

Phase or Sub-Project	Description
N/A	

1.6 Project Maturity Score and Benchmark

Benchmark Stage	Current	Benchmark	Explanation
Acceptance Testing	57	57	

Section 2 – Financial Performance

2.1 Project Budget Approval History

Original Approved(\$m Base)	Price Indexation Variation (\$m)	Exchange Variation (\$m)	Real Variation(\$m)	Current Approved (\$m Current)
295.0	78.8	3.7	515.4	892.9

2.2 Project Real Variation History

Date	Amount (\$m)	Factor	Explanation
Jul 07	154.8	Scope	Additional Protected Mobility Vehicles for Enhanced Land Force requirements.
Aug 07	360.6	Scope	Additional Protected Mobility Vehicles for Overlander requirements.
Total	515.4	Real Variation	

2.3 Project Budget and Expenditure as at 30 June 2008

Approved Budget (\$m Current)	Life to Date Expenditure (\$m Cumulative)	Remaining Balance (\$m)
892.9	391.7	501.2

2.4 End of Financial Year Total Project Expenditure Performance

Estimate (\$m)	Actual (\$m)	Variance (\$m)
119.6	112.5	(7.1)

2.5 End of Financial Year Total Project Expenditure Variance Attribution

Variance (\$m)	Variance Factor	Explanation
(7.1)	Australian Industry and Defence Materiel Organisation processes	The project scope will be achieved within the approved budget. The under spend was due to an over optimistic Additional Estimate for this project. Defence's estimate was based upon Thales attaining a production rate higher than achieved.
(7.1)	Total Variance	

2.6 Prime Acquisition Contract(s) Real Price Increases and Capital Equipment Quantities Required

Prime Contractor(s)	Price (\$m Base) at		Equipment	Quantities at	
	Signature	30 Jun 08		Signature	30 Jun 08
Original June 1999 Contract					
Australian Defence Industries (now Thales Australia)	170 ⁽¹⁾	N/A	Bushmaster Infantry Mobility Vehicles	370	N/A
Contract post 2002 Deed of Settlement					
Thales Australia	219	219	Production Period 1 Bushmaster vehicles	299	300 ⁽²⁾
	118	118	Production Period 2 Bushmaster vehicles	143	143 ⁽³⁾
	126	126	Long lead time items and material for future Production Period 3 vehicles	⁽⁴⁾	⁽⁴⁾
	54	54	Additional Rapid Acquisition operational enhancements	⁽⁵⁾	⁽⁵⁾
	517	517	Total	442	443
Explanation	<p>Note 1 The date of original tender, and therefore the base dollar date of the original contract, was October 1995 and contained the number of vehicles contracted on 1 June 1999.</p> <p>Note 2 Production Period 1 vehicles valued at \$219 million comprise the original 299 plus the 1 additional vehicle provide by Thales as consideration for sale of vehicles to the Netherlands.</p>				

DMO Project Data Summary Sheets

ANAO Report No.9 2008–09 Defence Materiel Organisation Major Projects Report 2007-08

Note 3 Production Period 2 vehicles values at \$118 million comprise the additional 143 Enhanced Land Force vehicles plus the additional 1 vehicle provided by Thales as consideration for the sale of vehicles to the United Kingdom. As at 30 June 2008, Defence was still in negotiation with Thales to have the additional vehicle inserted into the contract.

Note 4. As at 30 June 2008, Defence was still in negotiations with Thales for the additional Production Period 3 vehicles. The Long lead time items and material valued at \$126 million was incorporated into the contract in Feb 08. Notwithstanding, the project has prepared for the continuity of production by acquiring some long lead items prior to the completion of these negotiations. Payments in the financial year include \$15.7 million for the provision of these items.

Note 5 As outlined in the Background Information, the acquisition contract is the contractual mechanism used to purchase the operational enhancements valued at \$54 million being acquired through the Rapid Acquisition process. These do not form part of Land 116 Phase 3 but have been included here for a complete understanding of the value of the current contract.

2.7 Prime Acquisition Contract(s) Price and Progress Payments

Prime Contract(s)	Price (\$m Base) at Signature	Price (\$m Base) at 30 Jun 08	Progress Payments (\$m Base) at 30 Jun 08
Commercial	517	517	303
Total	517	517	303
Explanation	See Table 2.6 for explanation		

Section 3 – Schedule Progress

3.1 Design Review Progress

Event	Major System/ Platform Variant	Original Planned	Current Planned	Achieved/ Forecast	Variance (Months)
System Requirements Review	Troop Vehicle	N/A		Aug 03	N/A
	Assault Pioneer Vehicle	N/A		Oct 06	N/A
	Command Vehicle	N/A		Jan 06	N/A
	Mortar Vehicle	N/A		Jan 09	N/A
	Direct Fire Weapon Vehicle	N/A		Jan 09	N/A
	Ambulance Vehicle	N/A		Jan 09	N/A
Preliminary Design Review	Troop Vehicle	Oct 99		Oct 99	0
	Assault Pioneer Vehicle	Nov 99		Feb 00	3
	Command Vehicle	Oct 99		Oct 99	0
	Mortar Vehicle	May 03		Mar 03	(2)
	Direct Fire Weapon Vehicle	May 03		Mar 03	(2)
	Ambulance Vehicle	Jul 03		May 03	(2)
Critical Design Review	Troop Vehicle System Verification Review	Oct 02		Sep 02	(1)
	Assault Pioneer Vehicle Initial Production Vehicle Review	Oct 04		Dec 06	26
	Command Vehicle Initial Production Vehicle Review	Oct 04		Mar 06	17
	Mortar Vehicle Initial Production Vehicle Review	Apr 06		May 07	13
	Direct Fire Weapon Vehicle Initial Production Vehicle Review	Apr 06		Apr 07	12
	Ambulance Vehicle System Verification Review	Oct 05		Feb 07	16
Variance Explanations	Initial testing of the first variant revealed a number of deficiencies against the specification that required rectification and design changes prior to acceptance and production. This had a consequential effect on the system and design review progress for the subsequent variants. As a result additional testing was required which impacted on completing critical design review and contractor test and evaluation.				

3.2 Contractor Test and Evaluation Progress

Event	Major System/ Platform Variant	Original Planned	Current Planned	Achieved/ Forecast	Variance (Months)
System Integration Test and Evaluation	Troop Vehicle	Jun 04		Dec 04	6
	Command Vehicle	Sep 04		Mar 06	18
	Assault Pioneer Vehicle	Oct 04		Dec 06	26
	Mortar Vehicle	Apr 06		May 07	13
	Direct Fire Weapon Vehicle	Apr 06		Apr 07	12
	Ambulance Vehicle	Aug 07		Feb 08	6
Acceptance Test and Evaluation updates following testing of later variants	All vehicles from Production Period 1 except Ambulance	Jun 06		Jul 07	13
	Production Period 1 – Ambulance	Jul 07		Feb 09	19
Production Acceptance Testing and Evaluation – Production Period 1	Troop Vehicle	May 06		Feb 09	33
	Command Vehicle	Jul 06		Feb 09	31
	Assault Pioneer Vehicle	Jan 07		Feb 09	25
	Mortar Vehicle	May 07		Feb 09	21
	Direct Fire Weapon Vehicle	Mar 07		Feb 09	23
	Ambulance Vehicle	Jul 07		Feb 09	19
Variance Explanations	Additional reviews and testing requirements impacted the ability of Thales to conduct Production Acceptance Testing and Evaluation in the original timeframe. The situation was also impacted by the priority to support vehicles deployed on operations.				

3.3 Progress toward Initial Operational Capability

Item	Original	Achieved/ Forecast	Variance (Months)	Variance Explanations/ Implications
Initial Operational Capability – Production Period 1	N/A	Dec 04	N/A	Initial Operational Capability was achieved in December 2004 when full rate production delivery commenced for Production Period 1 vehicles.
In Service Date	Jul 07	Mar 08	8	The original In Service Date for the

– Production Period 1				Production Period 1 vehicles was July 2007. All variants met In Service Date with the exception of the 12 Ambulance variants which were delivered in March 2008 due to their technical complexity.
-----------------------	--	--	--	--

3.4 Progress toward Final Operational Capability

Item	Original	Achieved/ Forecast	Variance (Months)	Variance Explanations/ Implications
Final Operational Capability – Production Period 1	Oct 07	Mar 09	17	The delay is due to the unavailability of communications wiring harness for the Ambulance variant which prevents Defence from fully utilising these vehicles.

Section 4 – Risks, Issues and Linked Projects

4.1 Major Project Risks

Description	Remedial Action
There is a chance that vehicle changes will be sought as a result of current operations which will draw staff effort impacting on performance, cost and schedule.	Proposed changes based on current operational experience are a valid input to ongoing vehicle development. The impact of proposed changes will be identified and referred to the appropriate delegates within Defence for approval. If approved, the impact on performance, cost and schedule will be negotiated with Defence.

4.2 Major Project Issues

Description	Remedial Action
The non-availability of communications wiring harness has prevented the issue of Production Period 1 Ambulances to Army, impacting on schedule and cost.	Defence is investigating an alternative communications wiring harness, which if assessed suitable, will enable earlier than currently forecast issue of the Ambulances.

4.3 Linked Projects

Project	Description of Project	Description of Dependency
N/A	Land 116 Phase 3 is not dependant on any other project.	N/A

Section 5 – Lessons Learned

5.1 Key Lessons Learned

Lesson
In the early planning phases of the project, the operational concept and functional performance requirements were not clearly defined, making it difficult to understand and undertake appropriate cost–capability trade–offs.
Cost Estimating – there was a lack of industry capability to provide adequate cost estimates and inability by Defence to evaluate the validity of the cost data.
Testing program – significant contingency planning should be conducted for compliance testing of a new capability.

Section 6 – Addendum

6.1 Addendum

Material events post 30 June 2008
Successful negotiations with Thales have resulted in the contract for an additional 293 Bushmaster vehicles to meet the Medium Protected Mobility vehicle component of Land 121 Phase 3 – Project Overlander. The total number of vehicles to be supplied is now 737. The requirement has been incorporated into the Acquisition Contract via a Contract Amendment signed on 15 August 2008. The cost of this element of the contract for additional vehicles is \$91.4m. This does not include the contract for long lead time items of \$126 million required to ensure the continuity of production.
A further 34 Enhanced Land Force vehicles have been delivered post 30 June 08, ahead of schedule, taking the total number of vehicles delivered to the Commonwealth to 402 as at 21 October 2008.

F/A–18 Hornet Upgrade – AIR 5376 Phase 2.2

Royal Australian Air Force



Description

Hornet Upgrade Phase 2.2 is the Avionics upgrade modification package of the \$1.875 billion Air 5376 Phase 2 project to provide upgrade modifications to the Radar system, Avionics system, Electronic Warfare suite and the acquisition of a Hornet Aircrew Training System. Hornet Upgrade Phase 2.2 provides aircrew with enhanced situational awareness by upgrading the avionics suite with installation of the following equipment:

- Link16 Secure data link. The particular Link 16 equipment to be fitted to the F/A–18 is known as the Multifunction Information Distribution System.
- An upgraded Counter Measures Dispenser Set.
- Multi–Purpose Display Group Upgrade.
- Upgraded digital moving map system known as the Tactical Air Moving Map Capability.
- Joint Mission Planning Systems.
- Joint Helmet Mounted Cueing System.

This integration of these systems into the F/A–18s is achieved through upgraded Operational Flight Program software.

This Project was first reported in the 2007–08 Major Projects Report.

Section 1– Project Summary

1.1 Project Management

30 June 2008	Name		
General Manager	Mr Kim Gillis		
Division Head	Air Vice Marshal Clive Rossiter		
Branch Head	Air Commodore Roy McPhail		
Project Director	Group Captain Ian Nesbitt		
History	Name	Start	End
Project Manager	Mr Matt Hall	Jul 05	–
	Mr Keith Moody	Jan 99	Jul 05

1.2 Project Context

Project	Explanation
Description	<p>Hornet Upgrade Phase 2.2 is the Avionics upgrade modification package of the \$1.875 billion Air 5376 Phase 2 project to provide upgrade modifications to the Radar system, Avionics system, Electronic Warfare suite, and the acquisition of a Hornet Aircrew Training System. Hornet Upgrade Phase 2.2 provides aircrew with enhanced situational awareness, by upgrading the avionics suite with installation of the following equipment:</p> <ul style="list-style-type: none"> • Link16 Secure data link. The particular Link 16 equipment to be fitted to the F/A–18 is known as the Multifunction Information Distribution System. • An upgraded ALE–47 Counter Measures Dispenser Set • Multi–Purpose Display Group Upgrade (colour displays). • Upgraded digital moving map system known as the Tactical Air Moving Map Capability. • Joint Mission Planning Systems • Joint Helmet Mounted Cueing System <p>This integration of these systems into the F/A–18s is achieved through upgraded Operational Flight Program software.</p>
Background	<p>In October 1981 the Australian Government selected the F/A–18 to fill the Royal Australian Air Force's multi–role fighter requirement. F/A–18 fleet deliveries commenced in May 1985 with the 75th aircraft delivered in May 1990. Since then the need to address equipment obsolescence and improve the F/A–18 capabilities, in line with operational requirements, resulted in the development of the F/A–18 Hornet Upgrade Program Air 5376 (known as the HUG program).</p> <p>Project Air 5376 is to enhance the F/A–18 fleet's air defence capability through upgrades to the following aircraft systems, and their associated ground support</p>

	<p>systems:</p> <ul style="list-style-type: none"> • Radar; • Electronic Warfare; • Navigation; • Identification Friend or Foe; • Communications; and • Data Link <p>Hornet Upgrade Phase 2.2 was approved in May 1998 as part of the overall Hornet Upgrade Phase 2 Project. Hornet Upgrade Phase 2.2 originally included the replacement of the Hornet Electronic Warfare suite. However; this element of the project was deferred in the Defence White Paper of 2000. The Hornet Electronic Warfare suite is now being upgraded by Hornet Upgrade Phase 2.3.</p> <p>Hornet Upgrade Phase 2.2 consists of a prime contract with Boeing for the aircraft integration and development of the colour display suite upgrade, and several Foreign Military Sales cases with the United States for the procurement of equipment. Hornet Upgrade Phase 2.2 was implemented via an incremental process. The first stage was engineering design and development. The second stage included a prototype modification and acceptance test and evaluation program. The third stage is the fleet modification program, which is being conducted at Royal Australian Air Force Base Williamtown (New South Wales) by Australian Industry.</p> <p>Two prototype aircraft were modified in January 2005 and subsequently underwent a test and evaluation program during the remainder of 2005. Fleet modification commenced in January 2006. The Hornet Upgrade Phase 2.2 modification received Supplemental Type Certification and Service Release in February 2006, Initial Operating Capability in April 2007 and Final Operating Capability achieved within schedule in December 2007.</p>
Uniqueness	<p>The Project Office has the role of prime integrator for Hornet Upgrade Phase 2.2. Early in the project, a decision was made by the project office to contract Boeing for the aircraft integration aspects, and Foreign Military Sales for the procurement of hardware. The Project Office managed and approved contracts and Foreign Military Sales cases incrementally as requirements of each element of the project were satisfactorily defined. The Project Office was responsible for coordinating each activity to ensure the achievement of the overall program.</p> <p>The development of the upgraded colour displays was a collaborative program with the Canadian Forces which achieved significant efficiencies for both countries. The collaborative program also extended to other areas of Hornet Upgrade Phase 2.2, such as non-recurring engineering and development of training devices. Although, with the exception of the new displays, the other hardware has been fielded in later versions of the United States Navy F/A-18, the integration into the Australian version involved unique design and certification effort.</p>
Major Risks and Issues	<p>The major challenge associated with Hornet Upgrade Phase 2.2 was the development of colour displays under a collaborative initiative with the Canadian Forces. This activity was the pacing item in respect to schedule and the Canadian Forces were responsible for the program until the completion of the design phase. Any delay to display development and production impacted not only the Hornet Upgrade Phase 2.2 Critical Design Review but also Boeing integration and United States Navy software development and testing of the displays.</p>

	<p>Regular commercial Integrated Product Teams provided a very effective vehicle to manage the prime integration contract with Boeing and the Original Equipment Manufacturer.</p> <p>There are no ongoing major challenges faced by the project.</p>
Current Status	<p>Cost Performance</p> <p>Currently 64 aircraft have been modified by Hornet Upgrade Phase 2.2 and accepted on budget.</p> <p>Schedule Performance</p> <p>The 64 modified aircraft have been accepted within schedule. The remaining seven aircraft are scheduled for completion by November 2008.</p> <p>Capability Performance</p> <p>Modified aircraft have been accepted with Final Operational Capability achieved in December 2007.</p>

1.3 Project Approvals

Approval	Original	Achieved	Variance
First Pass	N/A	N/A	N/A
Second Pass	N/A	May 98	N/A

1.4 Prime Acquisition Contract(s) Details

Prime Contractor(s)	Scope Outline	Type (Price Basis)	Template	Signature
The Boeing Company (Prime)	Design and Integration	Variable	DEFPUR101	Dec 01
United States Government	Various Equipment	Foreign Military Sales	Foreign Military Sales	May 99 – Mar 04
Boeing Australia Limited and British Aerospace Systems	Aircraft modification production	Time & Materials	Mixed	Interim Jul 06

1.5 Other Current Project Phases or Sub-Projects

Phase or Sub-Project	Description
Air 5376 Phase 2.3	Air 5376 Phase 2.3 seeks to acquire an upgrade of the F/A-18 Electronic Warfare Self protection suite including the jammer, radar warning receiver and counter-measure dispensing system.
Hornet Aircrew Training System	The Hornet Aircrew Training System acquisition provides simulators to ensure pilots can successfully train to meet their operational objectives. The simulators are being procured through Raytheon Australia and are based on those produced for the United States Navy and Canadian Forces.

1.6 Project Maturity Score and Benchmark

Benchmark Stage	Current	Benchmark	Explanation
Service Release	66	67	Due to nature of the Foreign Military Sales Cases and Contracts, the Commercial and Costs attributes are slightly behind the benchmark score. Maturity score and benchmark is based on Hornet Upgrade Phase 2.2.

Section 2 – Financial Performance

2.1 Project Budget Approval History

Original Approved (\$m Base)	Price Indexation Variation (\$m)	Exchange Variation (\$m)	Real Variation (\$m)	Current Approved (\$m Current)
1,300.0	259.2	62.4	253.1	1,874.7
Note: Budget Figures are for AIR5376 Phase 2 overall and are not broken down to sub Stages. Each Stage has a discrete internal budget and is managed as part of the overall Hornet Upgrade Phase 2 budgets. All four stages are within the current budget allocations with Hornet Upgrade Phase 2.2 approaching Project Closure.				

2.2 Project Real Variation History

Date	Amount (\$m)	Factor	Explanation
Feb 99	23.9	Transfer	Transfer from other phases of AIR 5376
Aug 00	11.3	Transfer	Transfer from AIR 5376 Phase 1 for Hornet Aircrew Training System
Jul 01	(132.1)	Scope	White paper considerations
Oct 02	(0.2)	Transfer	Transfer to Facilities
Oct 03	9.3	Scope	Scope increase for Hornet Aircrew Training System
Aug 04	(0.7)	Budgetary Adjustment	Administrative Savings harvest
Aug 04	(1.2)	Scope	Transfer to Facilities
Dec 04	(67.0)	Scope	Transfer to Unapproved Major Capital Equipment Program for Radio Frequency Jammer
Aug 05	(2.7)	Budgetary Adjustment	Skilling Australia's Defence Industry harvest
May 07	412.5	Scope	Scope increase to include Hornet Electronic Warfare Self Protection Suite upgrade being conducted under Hornet Upgrade Phase 2.3.
Total	253.1	Real Variation	

2.3 Project Budget and Expenditure as at 30 June 2008

Approved Budget (\$m Current)	Life to Date Expenditure (\$m Cumulative)	Remaining Balance (\$m)
1874.7	1257.7	617.0

2.4 End of Financial Year Total Project Expenditure Performance

Estimate (\$m)	Actual (\$m)	Variance (\$m)
147.2	149.5	2.3

2.5 End of Financial Year Total Project Expenditure Variance Attribution

Variance (\$m)	Variance Factor	Explanation
2.3	Australian Industry (Production Program) and Foreign Military Sales Disbursements	Financial year variation is for all Phase 2. Variation primarily relates to supplementary Foreign Military Sales payments for Phase 2.3 Radar Warning Receivers, which was then partially offset by reduced payments for Phase 2.2 production activity. The Hornet Upgrade Phase 2.2 variance was a consequence of re-phasing production activities under a revised contracting strategy with Australian industry.
2.3	Total Variance	

2.6 Prime Acquisition Contract(s) Real Price Increases and Capital Equipment Quantities Required

Prime Contractor(s)	Price (\$m Base) at		Equipment	Quantities at	
	Signature	30 Jun 08		Signature	30 Jun 08
The Boeing Company (Prime)	49.7 (Dec 00)	49.7 (Dec 00)	Design and development of aircraft modification		
Prime Contract Amendment	11.2 (Dec 02)	11.2 (Dec 02)	Procurement of 2 prototype aircraft modification kits	2	2
Prime Contract Amendment	37.5 (Jan 04)	37.5 (Jan 04)	Colour displays upgrade development activities		
Prime Contract Amendment	35.1 (Feb 04)	35.1 (Feb 04)	Validation and verification modification activities. Procurement of fleet production modification kits	2 modified 69 kits	2 modified 69 kits
Prime Contract Amendment	95.0 (Dec 04)	95.0 (Dec 04)	Procurement of upgraded colour displays & spares. Procurement of upgraded Integrated Maintenance Training	69 displays 4 IMTS kits	69 displays 4 IMTS kits

			System (IMTS) unit		
Prime Contract Amendment	7.5 (Feb 05)	7.5 (Feb 05)	Head-up display camera modifications & Field Engineer Support	94	94
Prime Contract Amendment	10.6 (Dec 06)	10.6 (Dec 06)	Colour displays upgrade additional spares		
Boeing Australia Limited and British Aerospace Systems	46.2	46.2	Aircraft Modification Production	71	71
Foreign Military Sales	5.3 (Feb 04)	5.3 (Feb 04)	Joint Mission Planning System Core Software		
Foreign Military Sales	11.2 (Dec 06)	11.2 (Dec 06)	Joint Mission Planning System Hardware	24	24
Foreign Military Sales	43.7 (Dec 00)	43.7 (Dec 00)	Multifunctional Information Distribution System	Numbers Classified	Numbers Classified
Foreign Military Sales	34.2 (Dec 01)	34.2 (Dec 01)	Joint Helmet Mounted Cueing System	73	73
Foreign Military Sales	3.5 (Dec 01)	3.5 (Dec 01)	Countermeasures Dispensing System	73	73
Foreign Military Sales	4.2 (Dec 01)	4.2 (Dec 01)	Advanced Memory Unit/ Tactical Aircraft Moving Map Capability	73	73
Foreign Military Sales	58.1 (Dec 99)	58.1 (Dec 99)	Omniscient Software Support		
Foreign Military Sales	62.5 (Jan 04)	62.5 (Jan 04)	Hornet Upgrade Project Additional Equipment		
Total	515.5	515.5			
Explanation	<p>The Hornet Upgrade Phase 2.2 Prime Acquisition Contract with The Boeing Company, St Louis, was a variable price Contract implemented via an incremental process by Contract Change Proposals at approximately 12 month intervals. The first Contract Change Proposal was for engineering design and development of the aircraft modification. The second Contract Change Proposal included the procurement of prototype modification and acceptance test and evaluation program and so on.</p> <p>The original contract price is in base date dollars (December 2000). As the contract is implemented (variable) via incremental Contract Change Proposal process, the base date dollars has been set at the Budget exchange rate at</p>				

DMO Project Data Summary Sheets

ANAO Report No.9 2008–09 Defence Materiel Organisation Major Projects Report 2007-08

	Contract Change Proposal Approval. This process has been adapted for the base dollar amounts for all Hornet Upgrade Phase 2.2 Foreign Military Sales Cases. There are no price increases with either Contract Change Proposals or Foreign Military Sales Cases.
--	---

2.7 Prime Acquisition Contract(s) Price and Progress Payments

Prime Contract(s)	Price(\$m Base) at Signature	Price(\$m Base) at 30 Jun 08	Progress Payments (\$m Base) at 30 Jun 08
Commercial	292.8	292.8	N/A
Foreign Military Sales	222.7	222.7	N/A
Total	515.5	515.5	495.0 ⁽¹⁾
Explanations	Note 1 Progress payments are for all expenses against the Hornet Upgrade Phase 2.2 budget.		

Section 3 – Schedule Progress

3.1 Design Review Progress

Event	Major System/ Platform Variant	Original Planned	Current Planned	Achieved/ Forecast	Variance (Months)
System Requirements Review	Aircraft Modification	Feb 02	Feb 02	Feb 02	0
	Display Upgrade	Aug 02	Aug 02	Aug 02	0
Preliminary Design Review	Aircraft Modification	Sep 02	Sep 02	Sep 02	0
	Display Upgrade	Dec 02	Dec 02	Dec 02	0
Critical Design Review	Aircraft Modification	Mar 03	Mar 03	Mar 03	0
	Display Upgrade	Mar 04	Mar 04	Mar 04	0
Variance Explanations	N/A				

3.2 Contractor Test and Evaluation Progress

Event	Major System/ Platform Variant	Original Planned	Current Planned	Achieved/ Forecast	Variance (Months)
System Integration Test & Evaluation	Aircraft Modification Verification and Validation – A & B model – Project Office Acceptance	Feb 05	Jan 05	Jan 05	(1)
Acceptance Test & Evaluation	Aircraft Modification DMO Acceptance – A & B model	Nov 05	Nov 05	Nov 05	0
Operational Test & Evaluation	Aircraft A & B model Operational Test & Evaluation – Air Combat Group Acceptance	Jan 06	Jul 06	Jul 06	6
Variance Explanations	The Operational Test and Evaluation program was determined by Air Combat Group priorities and aircraft availability considerations.				

3.3 Progress toward Initial Operational Capability

Item	Original	Achieved/ Forecast	Variance (Months)	Variance Explanations/ Implications
Initial Operational Capability	Apr 07	Apr 07	0	N/A

3.4 Progress toward Final Operational Capability

Item	Original	Achieved/ Forecast	Variance (Months)	Variance Explanations/ Implications
Final Operational Capability	Dec 07	Dec 07	0	N/A

Section 4 – Risks, Issues and Linked Projects

4.1 Major Project Risks

Description	Remedial Action
There are no major risks that would impact contract deliverables or achievement of Initial Operational Capability and Final Operational Capability as these have been achieved.	

4.2 Major Project Issues

Description	Remedial Action
There are no major issues that would impact contract deliverables or achievement of Initial Operational Capability and Final Operational Capability as these have been achieved.	

4.3 Linked Projects

Project	Description of Project	Description of Dependency
JP2030	JP2030 seeks to acquire a common aircraft Mission Planning System capability for F-111, AP-3C, Lead-in Fighter and F/A-18 aircraft. Project Air 5376 will consider the interface requirements necessary for data transfer between Mission Planning System and the F/A-18.	Project Air 5376 was dependent on JP2030 for their Mission Planning System framework and standard hardware requirements when considering the interface requirements necessary for data transfer between Mission Planning System and the F/A-18.

Section 5 – Lessons Learned

5.1 Key Lessons Learned

Lesson
Integrated Product Teams for all project disciplines (engineering, logistics, commercial, test and evaluation, and display development) were established with members from all major stakeholders (Commonwealth, Prime and Sub contractors, United States and Canadian Government representatives). Integrated Product Teams met formally on a regular basis and significant issues were raised to an overarching management Integrated Product Team. As well as ensuring progress towards a common goal, the Integrated Product Teams enabled the implementation of many other Project initiatives that relied on quick and honest communication between all parties.
Through the Integrated Product Teams a common risk and schedule management methodology was implemented for the entire project. Boeing, as the prime integrator, provided a vehicle to manage both risk and schedule in a common tool. Pro-active management of risks was encouraged and many mitigation strategies, particularly in respect to display development, were implemented to avoid schedule delays.
Due to the incremental contracting nature of the project, joint and proactive contract management was essential. Regular commercial Integrated Product Teams provided a very effective vehicle to manage the prime integration contract with Boeing and Foreign Military Sales cases with the United States Government.

Section 6 – Addendum

6.1 Addendum

Material events post 30 June 2008
As at 20 October 2008, 69 modified aircraft have been accepted within schedule. The remaining two aircraft are scheduled for completion by 30 November 2008.

Collins Replacement Combat System – SEA 1439

Phase 4A

Royal Australian Navy



Description

The \$452 million Sea 1439 Phase 4A Replacement Combat System project was established to provide each of the Royal Australian Navy COLLINS Class submarines with the United States Navy Tactical Command and Control System, minor improvements to the combat system augmentation sonar, and shore facilities for integration, testing and training. The shore based support and laboratory reference sites are necessarily located in the United States at the Naval Undersea Warfare Center. The project required the development of system commonality between the Royal Australian Navy and the United States Navy.

This Project was first reported in the 2007–08 Major Projects Report

Section 1– Project Summary

1.1 Project Management

30 June 2008	Name		
General Manager	Mr Kim Gillis		
Division Head	Rear Admiral Boyd Robinson		
Branch Head	Commodore Rick Longbottom		
Project Director	Mr Bob Clark		
History	Name	Start	End
Project Manager	Commander Stephen O'Hearn	Feb 07	–
	Commander Robert Elliott	Feb 05	Jan 07
	Mr Bob Clark	Sep 02	Feb 05

1.2 Project Context

Project	Explanation
Description	<p>The \$452 million Sea 1439 Phase 4A Replacement Combat System project was established to provide each of the Royal Australian Navy COLLINS Class submarines with the United States Navy Tactical Command and Control System, minor improvements to the combat system augmentation sonar, and shore facilities for integration, testing and training. The shore based support and laboratory reference sites are necessarily located in the United States at the Naval Undersea Warfare Center. The project required the development of system commonality between the Royal Australian Navy and the United States Navy.</p> <p>Risks associated with rapid technology change have been treated by adopting a project management strategy that aligns with the United States continuous update program and its two-year update cycle.</p> <p>The standard Defence Materiel Organisation acquisition approach was adapted to enable the project office to establish itself as prime contractor with a series of Integrated Project Teams working at various levels within Defence Materiel Organisation and industry. This role has required close collaborative relationships to be formed between the Defence Materiel Organisation, the United States Navy and industry partners in Australia and the United States.</p> <p>By adopting an innovative approach, the project developed a successful acquisition strategy for managing the difficult situation of merging rapidly changing and sensitive United States technology with the existing Australian platform sensors, and other submarine infrastructure. This also included complex regulatory constraints associated with International Traffic in Arms Regulations and the export control of United States military equipment.</p>

Project	Explanation
Background	<p>On 9 July 2001 the Minister for Defence terminated the original tender process for the COLLINS Class Replacement Combat System and made the following announcement:</p> <p>“The Government has decided that a comprehensive arrangement with the United States Navy on submarine issues is in Australia's best strategic interests and has therefore decided that the selection of the combat system for the COLLINS Class submarines cannot proceed at this time.”</p> <p>On 10 September 2002 the Government approved the Project based on a reduced capability solution and directed the procurement of the following off-the-shelf sub-systems:</p> <ul style="list-style-type: none"> • the United States Tactical Command and Control sub-system, consisting of the Combat Control System and the Virginia Class Weapons Integration Panel, to be acquired by an Foreign Military Sales case; • minor improvements to the sonar processing solution currently installed in HMAS SHEEAN and HMAS DECHAINEUX as part of the Combat System Augmentation initiative; and • other system support infrastructure and project support. <p>The United States Navy Tactical Command and Control System is being supplied under an Armaments Cooperative Project which provides for system upgrades developed on a bi-annual basis. The project will provide one system baseline for the first two submarines and a later baseline for the remaining four submarines. The initial baseline will be upgraded at some later date as a sustainment activity.</p> <p>Australian systems are being provided under a combination of contracts. The main Australian contractors include Australian Submarine Corporation, Raytheon Australia, Thales Australia and Sonartech Atlas Pty Ltd. Installation is being undertaken in conjunction with Sea 1429 Phase 2 Heavyweight Torpedo and at locations in South Australia and Western Australia. Installation in all submarines is coordinated with the submarine docking program and is currently scheduled to complete in 2012.</p> <p>The combat system capability enhancement required a significant change to submarine infrastructure that could only be achieved during a major docking. Furthermore, to ensure the required submarine availability was not impacted adversely and to work within the existing workforce at Australian Submarine Corporation, it was necessary to couple the installation program to the existing submarine docking program. Although there are significant benefits in coupling the Replacement Combat System installation schedule to the submarine docking program, that coupling has dictated the delivery schedule of the Replacement Combat System capability.</p>
Uniqueness	<p>The Commonwealth has undertaken the functions of a prime systems integrator. This role placed additional pressure on the Commonwealth project team to manage and coordinate a number of separate contracts and ultimately the integration, installation and testing of the delivered products.</p> <p>Participation in a Joint Development Program with the United States Navy to design, develop, and test the Advanced Processing Build and</p>

Project	Explanation
	Technical Insert processes for Tactical Command and Control System, Tactical Subsystem upgrades and implementing that evolving system baseline into Replacement Combat System, presented a difficult and unique system of coordination, integration, test and evaluation and installation processes.
Major Risks and Issues	A possible change to the submarine docking program is a risk to the completion of installation. This risk is being managed by the engagement with the Royal Australian Navy to ensure compatibility of the submarine docking and installation schedules. Another risk is the ongoing participation in the joint development program and being able to include Royal Australian Navy requirements in the Tactical Command and Control System. This is being managed by having key uniformed personnel at the development site.
Current Status	<p>Cost Performance</p> <p>The project is working within project approval and no real cost increases have been required.</p> <p>Schedule Performance</p> <p>Installations are proceeding as planned for HMAS FARNCOMB and HMAS DECHANEUX with Initial Operational Release scheduled for FARNCOMB in January 2009 and DECHANIEUX in January 2010. However, the project schedule is dependent on the Submarine docking program and those dates may vary. To date the Replacement Combat System schedule has been impacted by emergent work in the docking schedule and the final installation is now scheduled to be complete in 2012.</p> <p>Capability Performance</p> <p>The Replacement Combat System, as installed in HMAS WALLER, was approved for Initial Operational Release by Chief of Navy on 7 May 2008.</p> <p>Initial Operational Release marks the point at which Navy is satisfied that the capability is fit for purpose and when management passes from Defence Materiel Organisation to the Navy. Following Initial Operational Release the capability entered a period of Navy Operational Test and Evaluation to determine the performance boundaries and if the capability is suitable for Operational Release.</p> <p>The capability delivered in WALLER is consistent with that identified in the Project Materiel Acquisition Agreement. However, some sonar trials are yet to be completed.</p>

1.3 Project Approvals

Approval	Original	Achieved	Variance
First Pass	N/A	N/A	N/A
Second Pass	Apr 02	Sep 02	5

1.4 Prime Acquisition Contract(s) Details

Prime Contractor(s)	Scope Outline	Type (Price Basis)	Template	Signature
Sonartech Atlas	Augmented Sonar Processing for the Replacement Combat System.	Variable	ASDEFCON Strategic	Jun 03
Raytheon Australia	Modification kits, products and sub-systems as part of the Replacement Combat System.	Variable	ASDEFCON Strategic	Aug 03
Thales Underwater Systems	Products to modify the existing Sonar System to remove full dependency on Tactical Data Handling System and inclusion of the existing Sonar System interface capability with supporting shore facilities simulation and training infrastructure, and adaptation of the existing Sonar System for inclusion of Submarine Acoustic Transitory Event Processing Systems and Sonar Open Architecture Interface.	Variable	ASDEFCON Strategic	Oct 03
Acoustic Technologies (now owned by Sonartech Atlas)	Supply of a Sonar Data Recording System and Ancillaries for the Replacement Combat System.	Variable	ASDEFCON Strategic	Mar 04
Logicalis (now Cerulean)	Supply of a Network Infrastructure for the Sonar System, as part of the Replacement Combat System.	Firm Price (price variation to ad hoc labour rates)	ASDEFCON Complex	May 04
Operational Solutions Management	Supply of Sonar Simulation Controller software.	Firm Price	ASDEFCON Complex	Nov 04
Acoustic Technologies (now owned by Sonartech Atlas)	Supply of seven Self Noise Monitoring Systems and 25 Sonar X Display Consoles.	Firm Price	ASDEFCON Complex	Aug 04

Raytheon Australia	For Systems Level Integration and Support Services associated with the Replacement Combat System.	Firm Price (approx 1/3) Time & Materials (2/3)	ASDEFCON Complex	Aug 05
Raytheon Australia	Build to Specification of four Navigation Subsystem Structures.	Firm Price	ASDEFCON Complex	Jul 07
Acacia	Supply of the Submarine Mission Data System Analysis Tool.	Fixed	ASDEFCON Complex	Feb 08
United States Navy	Acquisition of the United States Tactical Control Command Subsystem.	Fixed	Foreign Military Sales	Jun 03
United States Navy	COLLINS Towed Array Processor.	Fixed	Foreign Military Sales	Feb 05
United States Navy	HARPOON Tactical Support.	Fixed	Foreign Military Sales	Nov 01
United States Navy	Acquisition of the United States Tactical Control Command Subsystem.	Fixed	Armaments Cooperative Project	Jun 06

1.5 Other Current Project Phases or Sub-Projects

Phase or Sub-Project	Description
Sea 1439 Phase 1–6	<p>Following completion of Sea 1114 (Submarine Build Program) it was planned to address the remaining discrete upgrades and material deficiencies identified under that program through Sea 1439. There are six phases of project Sea 1439 constituting studies, replacement, and enhancement and improvement programs. The six phases, excluding project Phase 4A Replacement Combat System are:</p> <ul style="list-style-type: none"> • Phase 1&2 Platform and Combat System Studies (Both Closed); • Phase 3 Reliability and Sustainment Improvement and Phase 4B Weapon and Sensor Enhancement Program (Both current); and • Phase 5 Continuous Improvement Program and Phase 6 Sonar Replacement System (Pre 2nd Pass and Pre 1st Pass respectively).

DMO Project Data Summary Sheets

ANAO Report No.9 2008–09 Defence Materiel Organisation Major Projects Report 2007-08

1.6 Project Maturity Score and Benchmark

Benchmark Stage	Current	Benchmark	Explanation
System Integration and Test	56	55	The current score marginally exceeds the Benchmark Gate score of 55. This is because the project is progressing the integration and test of a second system baseline and, although not formally at the next Gate for that second baseline, a significant component of the initial proven baseline is incorporated into the second baseline and the performance remains extant. The benchmark score followed the normal expectation for the first system baseline but reverted to a lower Benchmark Gate as the project focused on the development of the second baseline. The project score will remain marginally ahead of the Benchmark Gate until the project commences harbour side testing of the second baseline in May 2009.

Section 2 – Financial Performance

2.1 Project Budget Approval History

Original Approved (\$m Base)	Price Indexation Variation (\$m)	Exchange Variation (\$m)	Real Variation (\$m)	Current Approved (\$m Current)
455.3	51.1	(53.1)	(1.7)	451.6

2.2 Project Real Variation History

Date	Amount(\$m)	Factor	Explanation
May 03	(0.9)	Transfer	Transfer to Defence Science and Technology Organisation
Aug 04	(0.8)	Budgetary Adjustment	Administrative Savings harvest
Total	(1.7)	Real Variation	

2.3 Project Budget and Expenditure as at 30 June 2008

Approved Budget (\$m Current)	Life to Date Expenditure (\$m Cumulative)	Remaining Balance (\$m)
451.6	390.2	61.4

2.4 End of Financial Year Total Project Expenditure Performance

Estimate (\$m)	Actual (\$m)	Variance (\$m)
40.1	38.3	(1.8)

2.5 End of Financial Year Total Project Expenditure Variance Attribution

Variance (\$m)	Variance Factor	Explanation
(1.5)	Australian Industry	Entered into contracts later than expected and awaiting invoicing.
(0.3)	Service Providers	Revised estimation of Service Provider costs.
(1.8)	Total Variance	

2.6 Prime Acquisition Contract(s) Real Price Increases and Capital Equipment Quantities Required

Prime Contractor(s)	Price (\$m Base) at		Equipment	Quantities at	
	Signature	30 Jun 08		Signature	30 Jun 08
Sonartech Atlas	22.5	35.8 ⁽¹⁾	Submarine Acoustic Transitory Event Processing Systems	4	7
Raytheon Australia	53.9	99.2 ⁽²⁾	Tactical System sub-systems or components	7	7
Thales Underwater Systems	22.9	26.1	Scylla Sonar and associated sub-systems	7	7
Acoustic Technologies (now Sonartech Atlas)	3.3	5.4	Sonar Data Recording System and associated Sub-Systems	3	7
Logicalis (now Cerulean)	1.9	3.1	Provision of networking switches etc to connect the Replacement Combat System products	3	7
Operational Solutions Management	0.6	0.7	Sonar Simulation Controller	3	3
Acoustic Technologies (now Sonartech Atlas)	1.9	1.9	Sonar system and associated Sub-Systems	7	7
Raytheon Australia	14.1	13.1	Integration of all Replacement Combat System products delivered under the other contracts.	1	1
Raytheon Australia	2.1	2.1	Navigation Subsystem Structure	4	4
Acacia	0.3	0.3	Supply of the Submarine Mission Data System Analysis Tool. Prototype Data Management Facility to provide improved situational awareness	1	1
United	143.9	72.0 ⁽³⁾	Acquisition of the United	7	7

States Navy			States Tactical Control Command Subsystem ⁽⁴⁾		
United States Navy	8.3	8.3	COLLINS Towed Array Processor	7	7
United States Navy	1.5	2.9	HARPOON Tactical Support		
United States Navy	92.7	119.6 ⁽⁵⁾	Acquisition of the United States Tactical Control Command Subsystem ⁽⁴⁾	7	7
Total	369.9	390.5			
Explanation	<p>Note 1 The Replacement Combat System Project was only originally funded for 4 Submarine Acoustic Transitory Event Processing System units. The In Service Support organisation took advantage of an option in the Replacement Combat System Projects Acquisition contract with Sonartech to replace the aging Submarine Acoustic Transitory Event Processing System units fitted to the existing submarine combat system. Whilst this increased the contract value it did not require a Real Cost Increase.</p> <p>Note 2 Equipment acquisition contracts were established with a defined statement of work and other work packages were included, by way of Contract Change Proposals, as the technical and cost risk associated with those other work packages decreased to an acceptable level. An example of this strategy is where one supplier tendered a price in excess of \$85 million for the perceived total statement of work. That price was reduced to approximately \$54 million by excising those work packages where the risk was considered as unacceptable. As risk reduced other work packages were added to that contract. As a result, a large number of Contract Change Proposals are associated with that contract. This does not represent a deficient contract but rather an efficient contracting strategy that effectively manages the unusual nature of the project. A similar process has been used on most equipment contracts.</p> <p>All Contract Change Proposals for the Replacement Combat System project were calculated in current day dollars (ie date of each Contract Change Proposal), not base date dollars. The above figures were calculated using the price as at the date of each Contract Change Proposal.</p> <p>Note 3 Foreign Military Sales value at the time the Foreign Military Sales Case was closed and funds written back to the Armaments Cooperative Project.</p> <p>Note 4 Includes on-going involvement in the Tactical Control Command hardware and software development process for the duration of the Memorandum of Understanding.</p> <p>Note 5 Value shown includes funds transferred to the Armaments Cooperative Project when the Tactical Control Command Subsystem Foreign Military Sales Case was closed.</p>				

2.7 Prime Acquisition Contract(s) Price and Progress Payments

Prime Contract(s)	Price (\$m Base)at Signature	Price (\$m Base)at 30 Jun 08	Progress Payments(\$m Base) at 30 Jun 08
Commercial	123.5	187.7	180.4
Foreign Military Sales	246.4	202.8	165.9
Total	369.9	390.5	346.3
Explanations	See table 2.6 for price increase explanation		

Section 3 – Schedule Progress

3.1 Design Review Progress

Event	Major System/ Platform Variant	Original Planned	Current Planned	Achieved/ Forecast	Variance (Months)
System Readiness Review	Combat System	Nov 04		Nov 04	0
System Design Review	Combat System	May 05		May 05	0
Preliminary Design Review	20 Separate sub-systems or major components	Oct 03 – Oct 06		Nov 03 – Oct 06	1
Critical Design Review	20 Separate sub-systems or major components ⁽⁶⁾	Nov 03 – Apr 07		Nov 03 – Apr 07	0
Variance Explanations	<p>The above data represents rolled up information as the project consists of many subsystems each of which have independent Preliminary Design Review, Critical Design Review or associated activities. Additionally, these system engineering activities were applied across two system baselines. As a result, there were many individual events within each of the above activities where the schedule was allowed to move provided the critical path for the delivery of capability was not impacted adversely. The critical path was based on the submarine docking program. Although some individual activities were ahead or behind schedule the project has maintained the critical path as defined by the submarine docking program.</p> <p>In some instances slippage has occurred as a result of project management intervention to delay finalisation of sub-system and major component design until the evolving United States Tactical Command and Control system baseline was mature. The project schedule has been re-baselined following significant events. To progress the Preliminary Design Review and Critical Design Review activity ahead of the United States system development would have incurred significant impairment cost. Preliminary Design Review and Critical Design Review slippage has not impacted capability delivery because of the dependency on the submarine docking program to install the Replacement Combat System equipment.</p> <p>Note 6 Some sub systems or major components have several Critical Design Reviews or United States equivalent.</p>				

3.2 Contractor Test and Evaluation Progress

Event	Major System/ Platform Variant	Original Planned	Current Planned	Achieved/ Forecast	Variance (Months)
System Integration Test and Evaluation	Combat System – System Integration Test Phase 1–6	Jun 06 Apr 08		Jun 06 – Apr 08	0
	Combat System – Harbour Acceptance Trials Stage 1–3	Nov 06 – May 08		Nov 06 – May 08	0
	Combat System – Sea Acceptance Trials Stage 1–2	Dec 07 – Jun 08		Dec 07 – Jun 08	0
	Combat System – System Integration Testing & Reporting For Augmented Program Build	Aug 08		Aug 08	0
Variance Explanations	Sea Acceptance Trials testing was conducted in two stages to account for weather, submarine defects and support vessel defects. In general, the project test and evaluation program must be carried out in conjunction with other post docking activities and the planned testing schedule has been impacted to some extent. However, all testing necessary to support Initial Operational Release approval by Chief of Navy has been conducted successfully.				

3.3 Progress toward Initial Operational Capability

Item	Original	Achieved/ Forecast	Variance (Months)	Variance Explanations/Implications
Initial Operational Release	Mar 08	Apr 08	1	Initial Operational Release is achieved against the first of class and represents the point at which the capability passes to Navy to carry out Operational Test and Evaluation. The small variance is attributed to finalising the technical regulatory review necessary to support Chief of Navy approving Initial Operational Release. Implication nil – HMAS WALLER will still deploy on-schedule.

3.4 Progress toward Final Operational Capability

Item	Original	Achieved/ Forecast	Variance (Months)	Variance Explanations/Implications
Final Operational Capability	2010	2013	36	<p>Final Operational Capability is achieved when the project has delivered the required capability to all submarines, and all other Fundamental Inputs to Capability (logistics support, training, facilities etc) have been fulfilled.</p> <p>Final Operational Capability date was set at project approval before the submarine full cycle docking programme had reached maturity in terms of the length of dockings and impact of other capability upgrades.</p> <p>As a result, the Replacement Combat System installation schedule has been delayed. The project has been able to recover some schedule by targeting both Full and Mid Cycle dockings. However, there is no opportunity to recover the original schedule. Currently one submarine has completed installation and test and is at sea undergoing Naval Operational Test and Evaluation; two other submarines are progressing well to the schedule identified above.</p>

Section 4 – Risks, Issues and Linked Projects

4.1 Major Project Risks

Description	Remedial Action
Submarine Availability. There is a chance that installation of both Replacement Combat System and Heavy Weight Torpedo equipment will be affected by slippages in submarine availability leading to an impact on schedule.	<p>This risk is being treated by:</p> <ul style="list-style-type: none"> Monitoring submarine availability through the Submarine Availability Group; Coordinating the Replacement Combat System and Heavy Weight Torpedo installation programs relative to submarine docking cycles and operational requirements; and Incorporating schedule slippages, attributable to submarine availability, by amending the Materiel Acquisition Agreement.
Unplanned United States Navy Baseline Changes. There is a chance that the Tactical Command and Control may be adversely affected by unplanned United States Navy baseline changes leading to impacts on project cost and schedule.	<p>This risk is being treated by:</p> <ul style="list-style-type: none"> Establishing a Steering Committee to monitor changes to the approved configuration baseline; and Seeking United States Navy agreement to develop a core system that will minimise changes to the Combat System architecture.

4.2 Major Project Issues

Description	Remedial Action
There are no major issues.	

4.3 Linked Projects

Project	Description of Project	Description of Dependency
Replacement Heavyweight Torpedo System Sea 1429 Phase 2	To acquire a replacement Heavyweight Torpedo for the COLLINS-class submarine to replace the United States Navy Heavy Weight Torpedo currently in service with the Royal Australian Navy.	Required to provide Heavy Weight Torpedoes compatible with Replacement Combat System.
Navigation Display Systems Sea 1430 Phase 2A	To provide Electronic Chart Display and Information Systems for the navigation of Royal Australian Navy ships and submarines. The project also delivers Navigation Display System systems to selected command and training shore establishments.	Navigation Display System installed in conjunction with Replacement Combat System.

Collins Class Improvement Program Sea 1439 Phase 5B2	To provide COLLINS Class Submarines with a replacement communications centre and a High Data Rate communications capability, and to provide the COLLINS Class Submarines with an upgrade to the Sub-Microwave Electronic Support Measures.	Possible inclusion of Tactical Data Link.
--	--	---

Section 5 – Lessons Learned

5.1 Key Lessons Learned

Lesson
Ensure that adequate staffing is available, in particular if Defence Materiel Organisation is to be the prime system integrator.
Ensure that all project dependencies are established before schedule is established.
Identify all requirements for technical data and technology as early as possible in the project to allow the transfer requests to be administered. United States International Traffic in Arms Regulation can require up to a year to progress.
Engaging in a joint development project where Australia is the junior partner can introduce project management, cost, technology and schedule risk that needs to be addressed.

Section 6 – Addendum

6.1 Addendum

Material events post 30 June 2008
Amendment 1 to Materiel Acquisition Agreement between the Defence Materiel Organisation and the Department of Defence Capability Development Group for the implementation of SEA 1439 Phase 4A – COLLINS Class Submarine Replacement Combat System was signed and became effective on 8 August 2008. This amendment re-baselines the current boat schedule to align with the Submarine Docking Program.
HMAS FARNCOMB has completed its extended Mid Cycle Docking and is currently at sea undertaking Licensing and Safety Trials.

Armed Reconnaissance Helicopter – AIR 87 Phase 2 Australian Army



Description

The \$2.026 billion Air 87 Phase 2 Tiger Armed Reconnaissance Helicopter Project was approved to provide a reconnaissance and fire support capability for the Australian Defence Force. The Project has contracted for delivery of 22 aircraft including an instrumented aircraft, a Full Flight Mission Simulator, two Cockpit Procedural Trainers, Ground Crew Training Devices, Electronic Warfare Mission Management System, Ground Mission Equipment, with supporting stores, facilities, and ammunition.

This Project was first reported in the 2007–08 Major Projects Report.

Section 1– Project Summary

1.1 Project Management

30 June 2008	Name		
General Manager	Mr Kim Gillis		
Division Head	Major General Tony Fraser		
Branch Head	Brigadier Charles Crocombe		
Project Director	Colonel Anthony McWatters		
History	Name	Start	End
Project Manager	Colonel Anthony McWatters	Jan 07	–
	Mr Graeme Toms (acting)	Aug 06	Dec 06
	Colonel Gary Michajlow	Jan 06	Aug 06
	Colonel Malcolm Motum	Jan 00	Dec 05

1.2 Project Context

Project	Explanation
Description	The \$2.026 billion Air 87 Phase 2 Tiger Armed Reconnaissance Helicopter Project was approved to provide a reconnaissance and fire support capability for the Australian Defence Force. The Project has contracted for delivery of 22 aircraft including an instrumented aircraft, a Full Flight Mission Simulator, two Cockpit Procedural Trainers, Ground Crew Training Devices, Electronic Warfare Mission Management System, Ground Mission Equipment, with supporting stores, facilities, and ammunition.
Background	<p>The Project received Government approval in March 1999 to replace the Army's aerial reconnaissance and fire support capability, which is currently based on the 1960s technology Bell Kiowa and Iroquois helicopters. Defence's acquisition strategy specified substantial Australian Industry Involvement in the project, and in February 2002 Australian Aerospace Ltd was awarded a fixed price Acquisition contract and firm price Through Life Support contract. The first four aircraft were manufactured and assembled in France and the remaining 18 aircraft were manufactured in France and assembled in Brisbane. One Armed Reconnaissance Helicopter is fitted with flight test instruments to assist the test and evaluation of Armed Reconnaissance Helicopter capability upgrades.</p> <p>The training system relies heavily on simulation devices using the Full Flight Mission Simulator and Cockpit Procedural Trainers which were built in France, then shipped to Australia. The Full Flight Mission Simulator and one Cockpit Procedures Trainer are installed at Oakey (Queensland); the second Cockpit Procedures Trainer will be installed at Darwin (Northern Territory) in the near future.</p> <p>The project has experienced delays in achieving the Initial Operational Capability critical contractual milestone, which was due in June 2007, resulting in Defence Materiel Organisation exercising its contractual right to stop all payments on the Acquisition Contract while maintaining payments on the Through Life Support</p>

	<p>Contract.</p> <p>Several factors contributed to the delay in achieving that milestone which in turn resulted in insufficient numbers of aircraft, training devices and logistics support in service to enable the required training outcomes.</p> <p>Australian Aerospace served a notice of dispute on 9 October 2007 and the parties entered into a formal Dispute Resolution process over issues affecting both the Acquisition and Through Life Support contracts. The dispute resolution process resulted in both parties signing a Deed of Agreement on 16 April 2008 which established a revised Acquisition Contract Price and Delivery Schedule, a revised Through Life Support Contract pricing structure that transitioned it to a Performance Based Contract, and established networks for work done by third-party support subcontractors. The re-plan includes integration of a program necessary to retrofit all Armed Reconnaissance Helicopters to the final configuration where all mission systems are certified for employment by Army crews (known as the retrofit program). Partial payments to Australian Aerospace on the Armed Reconnaissance Helicopter Acquisition Contract were recommenced on 17 April 2008, with full payment due on signing of the contract change proposals.</p>
Uniqueness	<p>The Australian Tiger Armed Reconnaissance Helicopter design is based on the Eurocopter French and German Armies Tiger helicopters. The Armed Reconnaissance Helicopter design varies from the French and German designs through changes made to the following systems:</p> <ul style="list-style-type: none"> • Secure radio communication systems; • Digital Map System; • Integration of the Hellfire Missile weapon system; • 70 mm rocket modifications; • Storage Bay and Digital Video Recorder; • Roof Mounted Sight multi-target tracking system; and • Helmet Mounted Sight Displays in both cockpits. <p>The Australian Defence Force's Airworthiness certification of the Armed Reconnaissance Helicopter Tiger aircraft relies on the French airworthiness certification process undertaken by the French acquisition agency (Delegation General Pour l'Armement). The Australian Defence Force's Director General Technical Airworthiness recognises the French acquisition agency as a competent certification agency, and subsequently accepts the French acquisition agency certification of common Tiger systems used in the Australian Armed Reconnaissance Helicopter Tiger. In doing so, the French acquisition agency certification of the French aircraft became an integral part of the Australian Defence Force's Armed Reconnaissance Helicopter certification plan. Consequently, delays in the French program flowed through to the Australian Defence Force's Armed Reconnaissance Helicopter program and delivery of operational capability to the Army. This has caused slippage in the aircraft and system certification, simulator development and aircrew training. The delays in the program have resulted in the contractor failing to achieve the Initial Operational Capability critical milestone.</p>
Major Risks and Issues	<p>The major remaining risk to the project is schedule slippage in the process of entering the aircraft into service and achieving full systems certification by Initial Operational Test and Evaluation Readiness in September 2009.</p> <p>The most significant issue in the program is recovering some of the delay and sustaining training rates while the Through Life Support program is ramping up</p>

	following resolution of the dispute. The precise extent of the delay, as it affects Army's ability to generate operational capability, will be defined during the rebaselining and project planning that is presently being negotiated with Australian Aerospace.
Current Status	<p>Cost Performance</p> <p>The Project is currently progressing within the approved budget and the capability is anticipated to be delivered within the approved budget.</p> <p>Schedule Performance</p> <p>In considering the revised Initial Operational Capability target of Initial Operational Test and Evaluation Readiness, the project overall is 27 months behind original schedule, although 12 Armed Reconnaissance Helicopter Tiger aircraft have been delivered for acceptance including the flight test instrumented aircraft that is currently in the final stages of acceptance. Australian Aerospace has also delivered the Full Flight Mission Simulator, four of the six Groundcrew Training Devices, Ground Mission Equipment, Electronic Warfare Mission Management System, Maintenance Management System and supporting stores, facilities and ammunition.</p> <p>The Deed of Agreement's project re-plan schedules all 22 Armed Reconnaissance Helicopter Tiger aircraft to be delivered by first quarter of 2010.</p> <p>Capability Performance</p> <p>The Deed of Agreement between the Defence Materiel Organisation and Australian Aerospace outlays the schedule for the implementation of engineering changes needed to achieve compliance to the contracted specifications, and is to be completed by third quarter 2009.</p> <p>Currently, the Full Flight Mission Simulator is being used for training; Australia has trained 24 Armed Reconnaissance Helicopter aircrew, including six instructors; and Armed Reconnaissance Helicopter Tiger has flown in excess of 2900 hours, mainly in support of training in Australia. Emphasis has now shifted from instructor training to operational crew training for Army's 1st Aviation Regiment.</p> <p>A permanent Armed Reconnaissance Helicopter Tiger presence was established at Robertson Barracks, Darwin, in June 2008 to enable the capability to commence transition to operational service and operational test and evaluation.</p>

1.3 Project Approvals

Approval	Original	Achieved	Variance
First Pass	N/A	N/A	N/A
Second Pass	N/A	Mar 99	N/A

1.4 Prime Acquisition Contract(s) Details

Prime Contractor(s)	Scope Outline	Type(Price Basis)	Template	Signature
Australian Aerospace	Deliver the Armed Reconnaissance Helicopter System comprising of : 22 Armed Reconnaissance Helicopters Training System Support Systems	Variable	SMART 2000	Dec 01

1.5 Other Current Project Phases or Sub-Projects

Phase or Sub-Project	Description
N/A	

1.6 Project Maturity Score and Benchmark

Benchmark Stage	Current	Benchmark	Explanation
System Integration & Test	55	55	

Section 2 – Financial Performance

2.1 Project Budget Approval History

Original Approved (\$m Base)	Price Indexation Variation (\$m)	Exchange Variation (\$m)	Real Variation (\$m)	Current Approved (\$m Current)
1,584.0	361.7	171.7	(91)	2,026.4

2.2 Project Real Variation History

Date	Amount (\$m)	Factor	Explanation
Oct 02	(18.2)	Transfer	Transfer to Defence Support Group Oakey (Queensland) Redevelopment Project to develop Armed Reconnaissance Helicopter specific infrastructure
Dec 03	(59.1)	Transfer	Transfer to Defence Support Group Darwin 1 Aviation Relocation Project to develop Armed Reconnaissance Helicopter specific infrastructure
Aug 04	(2.2)	Budgetary Adjustment	Administrative Savings harvest
Sep 04	(3.0)	Transfer	Transfer to Defence Science and Technology Organisation to fund studies in support of the Armed Reconnaissance Helicopter
Jun 05	(4.0)	Transfer	Transfer to Defence Support Group to fund AIR 87 facilities constructed as part of the Darwin 1 Aviation Relocation Project
Aug 05	(4.5)	Budgetary Adjustment	Skilling Australia's Defence Industry harvest
Total	(91.0)	Real Variation	

2.3 Project Budget and Expenditure as at 30 June 2008

Approved Budget (\$m Current)	Life to Date Expenditure (\$m Cumulative)	Remaining Balance (\$m)
2,026.4	1,309.9	716.5

2.4 End of Financial Year Total Project Expenditure Performance

Estimate (\$m)	Actual (\$m)	Variance (\$m)
49.5	90.7	41.2

2.5 End of Financial Year Total Project Expenditure Variance Attribution

Variance (\$m)	Variance Factor	Explanation
41.2	Australian Industry	Original budget estimate was revised down in anticipation of slippage due to Stop Payment and contract dispute proceedings during Financial Year 2007–08. The dispute was formally resolved ahead of schedule with the execution of the Armed Reconnaissance Helicopter Deed of Agreement on 16 April 2008 resulting in an increased spend after the lifting of the Stop Payment.
41.2	Total Variance	

2.6 Prime Acquisition Contract(s) Real Price Increases and Capital Equipment Quantities Required

Prime Contractor(s)	Price (\$m Base) at		Equipment	Quantities at	
	Signature	30 Jun 08		Signature	30 Jun 08
Australian Aerospace	1,087.3	1,252.0	ARH Fleet		
			<ul style="list-style-type: none">Armed Reconnaissance Helicopters	22	22
			<ul style="list-style-type: none">ARH Software Support Capability	1	1
			Training System		
			<ul style="list-style-type: none">Full Flight Mission Simulator	1	1
			<ul style="list-style-type: none">Cockpit Procedural Trainers	2	2
			<ul style="list-style-type: none">Ground Crew Training Devices	6	6
			Support Systems		
			<ul style="list-style-type: none">Electronic Warfare Mission Management System	1	1
			<ul style="list-style-type: none">Ground Mission Equipment Fixed site Systems	5	5
			<ul style="list-style-type: none">Ground Mission Equipment Deployable Systems	7	9
			<ul style="list-style-type: none">Maintenance Management System	1	1
Explanation	Additional Ground Mission Equipment sets were identified to meet Army's operational and fixed site requirements.				

2.7 Prime Acquisition Contract(s) Price and Progress Payments

Prime Contract(s)	Price (\$m Base) at Signature	Price (\$m Base) at 30 Jun 08	Progress Payments (\$m Base) at 30 Jun 08
Commercial	1,087.4	1,252.0	1,149.6
Total	1,087.4	1,252.0	1,149.6
Explanations	As per Table 2.6 above.		

Section 3 – Schedule Progress

3.1 Design Review Progress

Event	Major System/ Platform Variant	Original Planned	Current Planned	Achieved/ Forecast	Variance (Months)
System Requirements Review	Armed Reconnaissance Helicopter System	Mar 02		Feb 03	11
	Aircrew Training Devices	Jun 02		Feb 03	8
System Design Review	Armed Reconnaissance Helicopter System	Jun 02		Feb 03	8
	Armed Reconnaissance Helicopter System – Delta System Design Review	Mar 03		Apr 03	1
	Aircrew Training Devices	Apr 03		Jul 03	3
Preliminary Design Review	Armed Reconnaissance Helicopter Tiger	Oct 02		May 03	7
	Aircrew Training Devices	Mar 03		Oct 04	19
Critical Design Review	Armed Reconnaissance Helicopter Tiger	Mar 03		Jul 04	16
	Aircrew Training Devices	Sep 03		Jun 05	21
Variance Explanations	<p>Armed Reconnaissance Helicopter System</p> <p>Reliance on the certification of the French Tiger variant was critical to the Australian design review and acceptance program. The Defence Materiel Organisation's ability to leverage from the French program was adversely impacted because the French program had not achieved design approval outcomes in the timeframe expected.</p> <p>As the Armed Reconnaissance Helicopter is a variant of the French and German Tiger helicopters, the Australian Defence Force Technical Airworthiness Authority planned to utilise the existing certification work undertaken by the French acquisition agency (Delegation General Pour l'Armement).</p> <p>Certification of the Armed Reconnaissance Helicopter is based on the French acquisition agency as a competent certification agency and the Australian Defence Force Technical Airworthiness Authority subsequently recognised the French acquisition agency as such for certification of common Tiger systems in the Armed Reconnaissance Helicopter. In doing so, the French acquisition agency certification of the French Tiger variant became an integral part of the Australian Defence Force certification plan. Delays experienced in the Franco–German program directly impacted on the design development and Australian Military Type Certificate achievement.</p> <p>The maturity of the Armed Reconnaissance Helicopter design has required ongoing engineering changes to the approved Armed Reconnaissance Helicopter product baseline presented to the Airworthiness Board at the In Service Date. As a result subsequent flight testing is required to confirm contract compliance and operational acceptance of incorporated design changes to enable removal of Australian Military Type Certificate and</p>				

	<p>Service Release limitations.</p> <p>Aircrew Training Devices</p> <p>The Full Flight Mission Simulator required customisation to both the visual system and the motion systems following contract signature in order to account for capability deficiencies associated with the proposed simulator design. A major cause of the delay in delivering training devices can be attributed to the efficacy with which the software provided from the aircraft manufacturer's test program is being managed to produce a high fidelity simulator.</p>
--	---

3.2 Contractor Test and Evaluation Progress

Event	Major System/ Platform Variant	Original Planned	Current Planned	Achieved/ Forecast Close Out	Variance (Months)
System Integration Test and Evaluation	Full Flight Mission Simulator Contractor In-plant Test and Evaluation	Jul 04		Apr 08	45
	Cockpit Procedural Trainer Oakey Contractor In-plant Test and Evaluation and On-Site Test Evaluation	Jul 04		Jun 08	47
	Cockpit Procedural Trainer Darwin Contractor In-plant Test and Evaluation and Army In-plant Test and Evaluation	Jul 04	Dec 08	Dec 08	53
Acceptance Test and Evaluation	Armed Reconnaissance Helicopter				
	Type Acceptance Review Special Flight Permit	Oct 04		Jun 05	8
	Australian Military Type Certificate achieved	Jun 05		Oct 05	4
	Aircrew Training Devices – Final Acceptance Test and Evaluation				
	Full Flight Mission Simulator (Transition Training capability)	Feb 05		Nov 07	33
	Full Flight Mission Simulator (Full Training capability)	Feb 05	May 09	Jul 09	53
	Cockpit Procedural Trainer Oakey	Feb 05		Sep 08	43
	Cockpit Procedural Trainer Darwin	Feb 05		Oct 09	56
	Acceptance				

	Armed Reconnaissance Helicopter #11	Jul 06		Apr 08	21
	Armed Reconnaissance Helicopter #22	Apr 08		Aug 10	28
Variance Explanations	<p>Armed Reconnaissance Helicopter</p> <p>Causes of variance are a flow on from those detailed in Table 3.1 above. Final certification activities for the Armed Reconnaissance Helicopter System to meet the specification are being managed through Product Baseline changes and are subject to the project rebaselining under the Integrated Master Schedule developed from the Deed of Agreement. All Acceptance Test and Evaluation against the Armed Reconnaissance Helicopter System specification will be completed to meet the new contracted milestones.</p> <p>Aircrew Training Devices</p> <p>Delays are because the concurrent development of a high fidelity aircraft simulator with an aircraft still undergoing a level of developmental is not possible. Time is required to allow the adaption of the aircraft configuration into the simulation environment followed by testing and acceptance.</p>				

3.3 Progress toward Initial Operational Capability

Item	Original	Achieved/ Forecast	Variance (Months)	Variance Explanations/ Implications
Initial Operational Capability (Initial Operational Test and Evaluation Readiness)	Jun 07	Sep 09	27	The full contracted requirements for Initial Operational Capability were not achieved in June 2007 primarily due to delays in training. The contract dispute resolution has focussed the Contractor on providing the aircraft, support systems and trained personnel that, in concert with Army's collective training and test and evaluation programs, generate an operational capability as soon as possible. Rebaseline of the Acquisition Contract and the integrated planning currently underway are seeking to recover schedule and implement milestones that best align with Army's plans for introduction into service and operational release of capability. The contract changes required to execute this are still being negotiated with the Prime Contractor. The forecast date for Initial Operational Capability achievement is based on a critical new milestone, Initial Operational Test and Evaluation Readiness, that will enable Army to commence operational evaluation in a collective training environment from October 2009.

3.4 Progress toward Final Operational Capability

Item	Original	Achieved/ Forecast	Variance (Months)	Variance Explanations/ Implications
Final Operational Capability	Jun 09	Dec 11	30	As per Table 3.3, contract changes are being negotiated with the Prime Contractor. Planning is seeking to optimise resources to provide more reliable schedules and predictable performance so the enablers for Final Operational Capability are delivered as expeditiously as possible. Additional 3 month delay to Final Operational Capability beyond the 27 month delay to Initial Operational Capability is due to finalisation of the retrofit program to incorporate modifications into the remaining Armed Reconnaissance Helicopter Fleet.

Section 4 – Risks, Issues and Linked Projects

4.1 Major Project Risks

Description	Remedial Action
A major risk to the project is schedule slippage in the process of entering the aircraft into service and achieving full systems certification by Initial Operational Test and Evaluation Readiness in September 2009.	As part of the dispute resolution and contract change process, the project office is instituting a contractual arrangement to establish a joint project management office in collaboration with the contractor to manage and coordinate all schedule activities to ensure schedule performance is maintained and to better manage risks and issues.
Skilled personnel, particularly in engineering and Test and Evaluation, are at a critical level. This is the highest priority risk under management.	Resources are closely managed with supplementation and transfer within Branch and Divisional Assets as required. Rebaselined Integrated Master Schedule is being developed to optimise the resources and scheduled activities in order to meet the critical milestones.
A sustained high rate of effort is required to complete aircrew training and introduce the operational capability.	Rate of effort achievement has been good since the negotiated resolution to the dispute. Improvements in design are dependent on Original Equipment Manufacturer certification effort and Australian Aerospace's ability to implement the required Through Life Support network (i.e. staffing, Repairable Item management, Breakdown Spares, establishment of effective logistic pipelines, engineering advice etc). As design and Through Life Support network matures, anticipate improvements in Armed Reconnaissance Helicopter availability. The performance based Through Life Support contract model aims to support improving reliability due to high performance logistics pipelines.

4.2 Major Project Issues

Description	Remedial Action
The Tiger was a far more developmental aircraft than envisaged at contract signature.	The French equivalent to Defence Materiel Organisation, Delegation General Pour l'Armement, provided and continues to provide excellent support to the certification of Tiger. Commonwealth engineers worked tirelessly to not suffer the same engineering delays of the French and German programs.

Development of gap training requirements caused by an evolving system configuration.	Management of air and ground crew training and employment by Army Aviation Training Centre and provision of deployed training staff to 1st Aviation Regiment for follow up training as required.
Timely establishment of supply and maintenance support networks.	These are being closely managed during the transition period. Changes to the Through Life Support Contract following the dispute resolution will ease this issue once in place.
Assuring continuing staff supplementation to the Armed Reconnaissance Helicopter Project Office to ensure project outcomes are delivered.	Additional resources are being applied from other project and support areas within the Branch and Division as required.

4.3 Linked Projects

Project	Description of Project	Description of Dependency
N/A		

Section 5 – Lessons Learned

5.1 Key Lessons Learned

Lesson
Aircraft still undergoing development by their parent defence force or Original Equipment Manufacturer should not be classed as off-the-shelf.
Resolve or escalate minor disputes as they arise to prevent escalation to major contract dispute.
Use integrated teams with strong processes and empowered staff facilitated by appropriate contractual arrangements.
Delays in the French program flowed through to the Australian Defence Force’s Armed Reconnaissance Helicopter program and delivery of operational capability to the Army. This has caused slippage in the aircraft and system certification, simulator development and aircrew training. The delays in the program have resulted in the contractor failing to achieve the Initial Operational Capability critical milestone.

Section 6 – Addendum

6.1 Addendum

Material events post 30 June 2008

The Aerospace Operational Support Group successfully conducted a weapons test campaign for Armed Reconnaissance Helicopter at Woomera in September 2008. The Project plans to achieve an operational clearance for Hellfire missile and the 30mm chin mounted turreted cannon during 2008.

In September 2008 the Contractor's Integrated Master Schedule was agreed between the Prime Contractor, Australian Aerospace, and the Commonwealth Armed Reconnaissance Helicopter Project Office and frozen as the baseline for delivering the remainder of the acquisition project and finalising the negotiations on the contract changes required by the Deed of Agreement.

Armed Reconnaissance Helicopter number 12 and the Instrumented Armed Reconnaissance Helicopter have been accepted by the Commonwealth.

While Armed Reconnaissance Helicopter rate of effort achieved since June 2008 has continued to support training, it has not increased sufficiently to support the development of capability. Performance of the Through Life Support Contract will be managed intensively during the remainder of 2008 and 2009 to ensure contractual obligations to deliver Army's requirements are met.

C-17 Globemaster III Heavy Airlifter – AIR 8000 Phase 3 Royal Australian Air Force



Description

The \$1.838 billion Air 8000 Phase 3 Project is to provide the Australian Defence Force with a global heavy airlift capability based upon four Boeing C-17 Globemaster III heavy lift aircraft. The project also includes the acquisition of associated logistics support provisions, role equipment, training devices and facilities required to completely attain the Heavy Airlift capability.

This Project was first reported in the 2007–08 Major Projects Report.

Section 1 – Project Summary

1.1 Project Management

30 June 2008	Name		
General Manager	Mr Kim Gillis		
Division Head	Air Vice Marshal Clive Rossiter		
Branch Head	Air Commodore Steven Drury		
Project Director	Group Captain Andrew Doyle		
History	Name	Start	End
Project Manager	Group Captain Andrew Doyle	Jul 07	–
	Group Captain Axel Augustin	Jan 06	Jul 07

1.2 Project Context

Project	Explanation
Description	The \$1.838 billion Air 8000 Phase 3 Project is to provide the Australian Defence Force with a global heavy airlift capability based upon four Boeing C–17 Globemaster III heavy lift aircraft. The project also includes the acquisition of associated logistics support provisions, role equipment, training devices and facilities required to completely attain the Heavy Airlift capability.
Background	<p>The project received combined first and second pass Government approval in March 2006 to acquire up to four C–17 aircraft, complete with logistics support through the C–17 Globemaster Sustainment Partnership. Critical project approval considerations incorporated an acquisition method utilising a sole source to the Boeing Company, through the United States Government Foreign Military Sales process, to access pre-existing contracting arrangements.</p> <p>The aircraft are capable of providing a global Heavy Airlift Capability for the Australian Defence Force covering the movement of military personnel and outsized cargo that cannot be transported by the Australian Defence Force's Hercules aircraft. Previously, this capability had been provided through commercial arrangements.</p>
Uniqueness	The aircraft acquired were Military Off The Shelf with no Australian-unique modifications.
Major Risks and Issues	<p>The major risk for the project is to deliver mature logistics support to match the aircraft delivery schedule.</p> <p>To date, no major risks have been realised in this project.</p>
Current Status	<p>Cost Performance All four C–17 Globemaster aircraft have been delivered within budget.</p> <p>Schedule Performance All four C–17 Globemaster aircraft have been delivered ahead of schedule. Role Expansion activities are progressing on schedule with Air Drop and</p>

	<p>Aero Medical Evacuation trials conducted successfully.</p> <p>Capability Performance</p> <p>Significant project activity remains to deliver outstanding long lead-time logistics support provisions, role equipment, training devices and facilities required to completely attain the Heavy Air Lift capability.</p> <p>Full Operating Capability will be achieved when permanent C-17 Globemaster facilities have been established at major Royal Australian Air Force bases, and the training systems have been set up in Australia, anticipated to be by 2011.</p>
--	--

1.3 Project Approvals

Approval	Original	Achieved	Variance
First Pass	N/A	Mar 06	N/A
Second Pass	N/A	Mar 06	N/A

1.4 Prime Acquisition Contract(s) Details

Prime Contractor(s)	Scope Outline	Type (Price Basis)	Template	Signature
United States Government	Procurement of C-17 Globemaster III Aircraft, Training and Support Systems	Foreign Military Sales	Foreign Military Sales	May 06

1.5 Other Current Project Phases or Sub-Projects

Phase or Sub-Project	Description
N/A	

1.6 Project Maturity Score and Benchmark

Benchmark Stage	Current	Benchmark	Explanation
Acceptance Into Service	65	67	The current score reflects that although the Heavy Air Lift Project has finalised, the delivery of aircraft and initial support provisions, other project deliverables including spares, support equipment, role equipment and training equipment are being progressively accepted into service in the 2008 to 2011 timeframe.

Section 2 – Financial Performance

2.1 Project Budget Approval History

Original Approved (\$m Base)	Price Indexation Variation (\$m)	Exchange Variation (\$m)	Rea Variation I (\$m)	Current Approved (\$m Current)
1864.4	106.5	(132.5)	0.0	1,838.4

2.2 Project Real Variation History

Date	Amount (\$m)	Factor	Explanation
N/A	N/A	N/A	N/A
Total	N/A	Real Variation	

2.3 Project Budget and Expenditure as at 30 June 2008

Approved Budget (\$m Current)	Life to Date Expenditure (\$m Cumulative)	Remaining Balance (\$m)
1838.4	1295.7	542.7

2.4 End of Financial Year Total Project Expenditure Performance

Estimate (\$m)	Actual (\$m)	Variance (\$m)
75.7	163.5	87.8

2.5 End of Financial Year Total Project Expenditure Variance Attribution

Variance (\$m)	Variance Factor	Explanation
2.8	Defence Materiel Organisation Processes	Variation primarily attributed to Non-Prime (Foreign Military Sales) activity, the 'net' of over and under-achievements associated with the Support Equipment, Project Administration, Technical Support and Administrative Expenses elements of the Project Cost. Financial Year expenditure was substantially higher than planned as a result of accelerated aircraft delivery and achievement of final C-17 Globemaster aircraft milestone payment in Financial Year 2007-08, which was previously programmed for Financial Year 2008-09.
85.0	Foreign Government Negotiations/ payments	
87.8	Total Variance	

2.6 Prime Acquisition Contract(s) Real Price Increases and Capital Equipment Quantities Required

Prime Contractor(s)	Price (\$m Base) at		Equipment	Quantities at	
	Signature	30 Jun 08		Signature	30 Jun 08
United States Government	1568.3	1453.9	C-17 Globemaster III Aircraft	4	4
			F117-PW Jet Engine	18	18
			Training Devices, Aircraft Training System, and Spares (Simulator)	1	1
			Common Support Equipment Lay-In	1	1
			Contractor Logistics Support	1	1
			Large Aircraft Infrared Counter-measure Systems	4	4
			Training Evaluation Performance Aircraft Training Set	1	1
Explanation	Original Contract value based on accelerated schedule with some scope items not included in initial version of Foreign Military Sales Case. Three Foreign Military Sales Case amendments have been made to date to capture these residual scope items.				

2.7 Prime Acquisition Contract(s) Price and Progress Payments

Prime Contract(s)	Price (\$m Base) at Signature	Price (\$m Base) at 30 Jun 08	Progress Payments (\$m Base) at 30 Jun 08
Foreign Military Sales	1568.3	1453.9	1266.5
Total	1568.3	1453.9	1266.5
Explanations	See Table 2.6 for explanation of real contract price adjustments.		

Section 3 – Schedule Progress

3.1 Design Review Progress

Event	Major System/ Platform Variant	Original Planned	Current Planned	Achieved/ Forecast	Variance (Months)
System Requirements Review	C–17 Globemaster III Aircraft	(1)			
	System Requirements Review / System Design Review Australian Visual Database Data/Requirement Review	(2)	Apr 08	Apr 08	0
	Virtual Cargo Load Model	(2)	Aug 07	Aug 07	0
Preliminary Design Review	C–17 Globemaster III Aircraft	(1)			
	Weapon System Trainer Simulated Avionics Package	(2)	Apr 07	Apr 07	0
	Australian Visual Database	(2)	Nov 08	Nov 08	0
	Virtual Cargo Load Model	(2)	Aug 07	Aug 07	0
Critical Design Review	C–17 Globemaster III Aircraft	(1)			
	Weapon System Trainer Simulated Avionics Package	(2)	Aug 07	Aug 07	0
	Australian Visual Database	(2)	Nov 08	Nov 08	0
	Virtual Cargo Load Model	(2)	Nov 07	Nov 07	0
Variance Explanations	<p>Note 1 The project was not involved in Design Reviews as the C–17 Globemaster III Aircraft was a Military Off The Shelf acquisition under the United States Air Force Specification. ie Mature Design with no Australian Defence Force unique changes.</p> <p>Note 2 Not listed in original Materiel Acquisition Agreement as a milestone deliverable.</p>				

3.2 Contractor Test and Evaluation Progress

Event	Major System/ Platform Variant	Original Planned	Current Planned	Achieved/ Forecast	Variance (Months)
System Integration Test & Evaluation	C–17 Globemaster III Aircraft	(1)			
	Simulated Avionics	(2)	Jul 08	Dec 08	5
Acceptance Test & Evaluation	C–17 Globemaster III Aircraft A41–206	(1)	Nov 06	Nov 06	0
	C–17 Globemaster III Aircraft A41–207	(1)	May 07	May 07	0
	C–17 Globemaster III Aircraft	(1)	Feb 08	Dec 07	(2)

	A41–208				
	C–17 Globemaster III Aircraft A41–209	(1)	Mar 08	Jan 08	(2)
	Australian Visual Database On Site Review	(2)	Oct 09	Oct 09	0
	Weapon System Trainer	(2)	Dec 09	Dec 09	0
	Virtual Cargo Load Model	(2)	Jul 08	Jul 08	0
Variance Explanations	<p>Note 1: Engineering acceptance under Military Off The Shelf. Product acquired under United States Air Force Specification.</p> <ul style="list-style-type: none"> C–17 Globemaster III Aircraft Developmental Test & Evaluation not required as it is a Military Off The Shelf product, ie; Mature Design with no Australian Defence Force unique changes Aircraft A41–208 and A41–209 were completed early by the manufacturer (Boeing). <p>Note 2: Not listed in original Materiel Acquisition Agreement as a milestone deliverable.</p> <ul style="list-style-type: none"> Simulated Avionics Design Test & Evaluation – Sub-contractor Intellectual Property issues resulted in delay in Weapon System Trainer Simulated Instruments integration, although no delay is anticipated in overall Aircrew Simulator delivery date. 				

3.3 Progress toward Initial Operational Capability

Item	Original	Achieved/ Forecast	Variance (Months)	Variance Explanations/ Implications
Initial Operational Capability	Aug 07	Sep 07	1	Variance is minimal at approximately ten days. Nil operational implication.

3.4 Progress toward Final Operational Capability

Item	Original	Achieved/ Forecast	Variance (Months)	Variance Explanations/ Implications
Final Operational Capability	Dec 11	Jan 11	(11)	Final Operational Capability is achieved when the C–17 Globemaster facilities and Final Operational Capability related milestones are completed. The majority of these milestones are forecasted to be earlier than original planned and the last milestone is "Maintenance Training Device commissioned" which is forecasted to be completed by January 2011. Therefore, Final Operational Capability is also predicted to be achieved by January 2011 ahead of schedule.

Section 4 – Risks, Issues and Linked Projects

4.1 Major Project Risks

Description	Remedial Action
Due to accelerated nature of the Heavy Air Lift Project, there is a risk that long-lead specialist role equipment will not be available for desired C-17 operations.	Sponsor-identified role equipment items are being progressively delivered through acquisition and as required through loan from the United States Air Force in accordance with user-agreed timelines.
Due to accelerated nature of the Heavy Air Lift Project, there is risk in delivery of mature effective logistics support to allow sustained C-17 operations of all four aircraft.	This risk is being managed by obtaining critical spares and support equipment incrementally and participating in the United States Air Force-led Globemaster Sustainment Partnership.

4.2 Major Project Issues

Description	Remedial Action
N/A	

4.3 Linked Projects

Project	Description of Project	Description of Dependency
N/A		

Section 5 – Lessons Learned

5.1 Key Lessons Learned

Lesson
Greater emphasis on developing support concepts for Military Off The Shelf up front in the project.
Considerable acceleration of the standard acquisition cycle is possible when the major supplies being procured are off-the-shelf production items. However, acceleration of establishment of support systems maybe more difficult and should attract early management focus.

Section 6 – Addendum

6.1 Addendum

Material events post 30 June 2008
N/A

Guided Missile Frigate Upgrade Implementation – SEA 1390 Phase 2.1 Royal Australian Navy



Description

The \$1.504 billion Sea 1390 Phase 2 Guided Missile Frigate Upgrade Project seeks to regain a comparative regional maritime capability by upgrading four (originally six) Adelaide Class Guided Missile Frigates, and to ensure that they remain effective and supportable until their removal from service between 2015 and 2021. Each Guided Missile Frigate is receiving an improved Anti–Ship Missile Defence system; an On Board Training System; an Electronic Support System; an upgraded Underwater Warfare System, upgraded diesel generators and other ship systems. The upgrade project is also establishing a shore–based Operator and Team Trainer system, and a Warfare System Support Centre.

This Project was first reported in the 2007–08 Major Projects Report.

Section 1 – Project Summary

1.1 Project Management

30 June 2008	Name		
General Manager	Mr Kim Gillis		
Division Head	Rear Admiral Boyd Robinson		
Branch Head	Commodore Drew McKinnie		
Project Director	Mr Mal Adams		
History	Name	Start	End
Project Manager	Mr Mal Adams	Sep 03	–
	Captain Mal Adams, RAN	Jan 02	Aug 03
	Captain Peter Law, RAN	Apr 98	Jan 02
	Captain John Walton, RAN	Jul 96	Jun 98

1.2 Project Context

Project	Explanation
Description	<p>The \$1.504 billion Sea 1390 Phase 2 Guided Missile Frigate Upgrade Project seeks to regain a comparative regional maritime capability by upgrading four (originally six) <i>Adelaide</i> Class Guided Missile Frigates, and to ensure that they remain effective and supportable until their removal from service between 2015 and 2021. Royal Australian Navy Guided Missile Frigates are a derivative of the United States Navy <i>Oliver Hazard Perry</i> FFG-7 class Guided Missile Frigates. Each Guided Missile Frigate is receiving an improved Anti-Ship Missile Defence system; an On Board Training System; an Electronic Support System; an upgraded Underwater Warfare System, upgraded diesel generators and other ship systems. The upgrade project is also establishing a shore-based Operator and Team Trainer system, and a Warfare System Support Centre.</p>
Background	<p>The Request for Tender for Project Sea 1390 Phase 2 was issued in November 1997 and closed in March 1998. Australian Defence Industry (now trading as Thales Australia) was selected as the preferred tenderer in November 1998. Contract clarifying discussions commenced immediately. Formal negotiations began in March 1999.</p> <p>The project's implementation phase commenced in June 1999, when the Prime Contract with Australian Defence Industry (now Thales Australia) was signed. The contract provides for Thales to have total contract performance responsibility and sole responsibility for the upgrade of each Guided Missile Frigate. The role of the Systems Program Office in relation to the technical aspects of the upgrade has been and is generally limited to reviewing and commenting upon the activities proposed to be conducted by the prime contractor.</p> <p>As a result of the contractor taking substantially longer than the original schedule, the project was re-baselined in April 2004 and again in May 2006. The re-</p>

DMO Project Data Summary Sheets

ANAO Report No.9 2008–09 Defence Materiel Organisation Major Projects Report 2007-08

	<p>baselining deferred the delivery of all Guided Missile Frigates with the last ship being deferred by four and a half years.</p> <p>In November 2003 the Government determined that the Guided Missile Frigate fleet would be reduced from six to four ships with the two oldest Guided Missile Frigates to be removed from service, prior to their planned upgrade and life extension. In mid 2006 the prime contract was changed with scope reduced from six to four ships (oldest Guided Missile Frigates, HMA Ships <i>Adelaide</i> and <i>Canberra</i> not upgraded), settlement of delay claims, changes to the master schedule and milestones, and changes to provisional acceptance processes of upgraded ships from the prime contractor all contributed to the delays. The financial impact of this global settlement was reflected by a reduction in prime contract price of \$40 million (base date prices). This recognises the engineering development investment and six ship sets of equipment were not affected by the reduction in the number of upgraded ships from six to four.</p> <p>Subsequent difficulties with compliance led Defence Materiel Organisation to refuse approval of contractors test procedures. In April 2005 Thales elected to proceed 'at its own risk' with a test and trial regime outside of the contractual terms. The contractor saw this as the only feasible approach to completing the project.</p> <p>The complexity of the program was initially underestimated. The performance specifications were not formalised and agreed before contract signature and this has impacted the delivery and agreement of the offered capability and development of the test program.</p> <p>Provisional Acceptance of HMA Ships <i>Sydney</i>, <i>Melbourne</i> and the Team Trainer, located at HMAS <i>Watson</i> were achieved in December 2006, October 2007 and November 2007 respectively. HMAS <i>Darwin</i> is on schedule for Provisional Acceptance as currently contracted in August 2008.</p> <p>HMA Ships <i>Sydney</i> and <i>Melbourne</i> now operate under Navy control and continue to work towards the achievement of Initial Operational Release by Navy. This has been delayed by performance shortcomings/deficiencies in the underwater warfare systems and electronic support system. The prime contractor will continue to rectify these shortcomings/deficiencies before contractual acceptance scheduled for November 2008.</p> <p>The combat system Operator and Team Trainers are being used for Navy training.</p> <p>In October 2007, HMAS <i>Sydney</i> conducted Evolved Sea Sparrow Missiles firings on a United States Navy range off Hawaii, United States. This demonstrated several key components of the Guided Missile Frigate Upgrade; namely, the Evolved Sea Sparrow Missile System, along with the new Vertical Launching System Mk41, Australian Distributed Architecture Combat System and software confirming their capability against hostile air threats.</p> <p>HMAS <i>Newcastle</i>, the last Guided Missile Frigate to be upgraded, commenced its upgrade in October 2007; completing the docking phase of the upgrade in April 2008 and at 30 June 2008 was undertaking combat system installation and production work, with the set to work and initial harbour acceptance trials of the platform systems scheduled for August 2008. The Prime Contractor has continued to maintain the revised schedule approved in June 2006 and is on target to meet the Provisional Acceptance date of June 2009 for HMAS <i>Newcastle</i>.</p>
Uniqueness	<p>This project presents challenges due to the complex and extensive weapon, sensor, combat, and command and control systems upgrades that are required to</p>

	<p>be integrated into an Australian developed combat data system architecture. The integration work includes the world's first Guided Missile Frigate installation of a Vertical Launching System for firing Evolved Sea Sparrow Missiles and Mk 92 Mod 12 fire control system into the Royal Australian Navy <i>Adelaide</i> class Guided Missile Frigate.</p> <p>The Guided Missile Frigate upgrade project includes the development of the Australian Distributed Architecture Combat System, which contains over one million source lines of newly developed computer code. This software development is occurring in conjunction with electronic system hardware development and integration. The Australian Distributed Architecture Combat System processes and displays radar, sonar and electronic support system data, assisted by a new Australian developed Radar Integrated Automatic Detection and Tracking system.</p>
Major Risks and Issues	<p>The Combat System Upgrade's risk profile ranges from low-risk installations of Military Off The Shelf equipment modification kits; and mid-range risks involving the installation of standard United States Navy equipment, such as the Mark 41 Vertical Launch System, combat system operator consoles, Radar Data Distribution System, and the Link 16 data communications system.</p> <p>The project also has high-risks associated with the development and integration of new systems such as the Australian Distributed Architecture Combat System, the Underwater Warfare System, and the Electronic Support System. These systems have contributed to most of the project delays in delivery of specified capability.</p> <p>Major contributing factors to delays include the initial underestimation of the command and control software design and integration complexity; underestimating systems integration and test and trials efforts needed to verify contractual requirements achievement; coupled with the need to develop a new command and control system software solution; and late identification of emergent work resulting from the concurrent maintenance refit for the retained systems and equipment.</p> <p>There are known performance shortcomings with the underwater warfare systems and electronic support system. The significant risks remain with meeting the contracted requirements and Measures of Effectiveness for these systems.</p>
Current Status	<p>Cost Performance</p> <p>Project cost estimate remains within the current approved Project budget.</p> <p>Schedule Performance</p> <p>Schedule re-baselines in April 2004 and May 2006 have deferred the delivery of all upgraded Guided Missile Frigates and their associated land-based systems and facilities by four and a half years. The Prime Contractor has continued to perform to the revised schedule approved in June 2006.</p> <p>Capability Performance</p> <p>Two of the four Guided Missile Frigates have received their upgraded equipment and are undergoing tests and evaluations and limited operational use by Navy. As at 30 June 2008:</p> <ul style="list-style-type: none"> • HMAS <i>Sydney</i> was Provisionally Accepted by Defence Materiel Organisation in December 2006, but has not achieved Initial Operational Release by Navy; • HMAS <i>Melbourne</i> was Provisionally Accepted by Defence Materiel

	<p>Organisation in October 2007, and has not been offered by Defence Materiel Organisation to Navy for Initial Operational Release. The ship completed an operational deployment in the period December 2007 – January 2008;</p> <ul style="list-style-type: none"> • HMAS <i>Darwin</i> is scheduled for Provisional Acceptance by Defence Materiel Organisation in August 2008; and • HMAS <i>Newcastle</i> is currently undertaking combat system installation and production work having commenced the set to work, and initial harbour acceptance trials of the platform systems is scheduled for August 2008. • HMAS <i>Sydney</i> and <i>Melbourne</i> have conducted operational exercises, completed additional trials on and off the Australian station, conducted Navy Operations, and continue to work towards the achievement of Initial Operational Release. <p>The Prime Contractor has elected to deliver three incremental combat system software builds, known as Baseline Builds 1, 2 and 3, as a risk mitigation strategy allowed by the contract. Baseline Build 1 was delivered in December 2006 and Baseline Build 2 was used to demonstrate Evolved Sea Sparrow Missile capability on HMAS <i>Sydney</i> in October 2007. Baseline Build 3 will commence contractor sea trials in HMAS <i>Darwin</i> in August 2008. Conformance to Standard Testing of the Baseline Build 3 Link 16 software was also scheduled for August 2008.</p> <p>The Initial Operational Release of the first upgraded Guided Missile Frigate, HMAS <i>Sydney</i>, has not been achieved, in part due to performance deficiencies in the C–Pearl Electronic Support System. This could limit Navy's ability to deploy the Guided Missile Frigate to an area of conflict.</p> <p>As at June 2008, electronic support, torpedo defence and combat systems have known performance shortcomings/deficiencies. Cooperative strategies are in place with the Prime Contractor to address these, in order to achieve planned contractual acceptance of the first three upgraded Guided Missile Frigates, complete with the combat system software in November 2008. At 30 June 2008 good progress had been made.</p> <p>Software acceptance requires satisfaction of contracted software Problem Report metrics, subject to Commonwealth risk assessments of impacts. There remains a medium risk that these metrics will not be compliant at acceptance.</p>
--	---

1.3 Project Approvals

Approval	Original	Achieved	Variance
First Pass	N/A	N/A	N/A
Second Pass	N/A	Jun 99	N/A

1.4 Prime Acquisition Contract(s) Details

Prime Contractor(s)	Scope Outline	Type (Price Basis)	Template	Signature
Australian Defence Industry Ltd (now Thales Australia)	Procurement of upgrades to its Guided Missile Frigates; associated Supplies; provision of a Warfare Systems Support Centre; improvements to the Royal Australian Navy's Operator Trainer and Team	Variable	DEFPUR	Jun 99

	Trainer; and logistic support infrastructure and relevant facilities.			
--	---	--	--	--

1.5 Other Current Project Phases or Sub-Projects

Phase or Sub-Project	Description
Sea 1390 Phase 4A	Purchase of the Mk698 Test Set for logistic support and all up round depot level maintenance of the Standard Missile 2 at Defence Estate Orchard Hills, Sydney
Sea 1390 Phase 4B	Acquire and integrate the Standard Missile 2 into four Royal Australian Navy Adelaide Class Guide Frigates at the Mid Course Guidance standard, and acquisition of Initial Ship Outfit and Inventory Stock missiles.

1.6 Project Maturity Score and Benchmark

Benchmark Stage	Current	Benchmark	Explanation
System Integration and Test	53	55	Project Maturity should be in the range of System Integration and Test (55) and Acceptance into Service (67) depending on the ship delivery status. To reduce technical risk the prime contractor has elected to deliver the capability progressively in ships, systems and three software baselines. Software Baseline Builds 1 and 2 are delivered with known deficiencies, where the contractor has until contractual Acceptance to reduce Problem Reports to contracted metrics. Baseline Build 3 software will commence contractor sea trials in August 2008. The maturity score is influenced by the three software baselines which underpin the capability level being delivered and design maturity.

Section 2 – Financial Performance

2.1 Project Budget Approval History

Original Approved (\$m Base)	Price Indexation Variation (\$m)	Exchange Variation (\$m)	Real Variation (\$m)	Current Approved (\$m Current)
1266.0	203.7	187.6	(153.4)	1503.8

2.2 Project Real Variation History

Date	Amount (\$m)	Factor	Explanation
Nov 98	(0.1)	Budgetary Adjustment	Overseas travel not required
Jul 99	(152.6)	Transfer	Transfer to Project Sea 1428 Phase 2A for the procurement of Evolved Sea Sparrow missiles on behalf of Sea 1390 Phase 2
Aug 04	(0.7)	Budgetary Adjustment	Administrative Savings harvest
Total	(153.4)	Real Variation	

2.3 Project Budget and Expenditure as at 30 June 2008

Approved Budget (\$m Current)	Life to Date Expenditure (\$m Cumulative)	Remaining Balance (\$m)
1503.8	1172.2	331.6

2.4 End of Financial Year Total Project Expenditure Performance

Estimate (\$m)	Actual (\$m)	Variance (\$m)
96.3	103.8	7.5

2.5 End of Financial Year Total Project Expenditure Variance Attribution

Variance (\$m)	Variance Factor	Explanation
7.5	Australian Industry	On the Prime Contractor's past performance, the Division and Branch level review of the 2007–08 estimates underestimated the prime contractor potential for achievement of some outstanding and programmed milestones. The Prime Contractor achieved some outstanding and most contract Milestones in 2008 as per their indicative dates that resulted in achievement ahead of the budget plan. A reduction to the 2008–09 forecast expenditure will now be implemented.

7.5	Total Variance
-----	----------------

2.6 Prime Acquisition Contract(s) Real Price Increases and Capital Equipment Quantities Required

Prime Contractor(s)	Price (\$m Base) at		Equipment	Quantities at	
	Signature	30 Jun 08		Signature	30 Jun 08
Australian Defence Industry Ltd (now Thales Australia)	898.6	1027.4	Upgraded Ships and concurrent refit	6	4
			Ships Equipment	6	6
			Team Trainer	1	1
			Warfare Systems Support Centre	1	1
			Buildings 66, 67 and 80	3	3
			Upgrade Software	1	1
			Spares	0	(1)
			Operator Training	2	4
			Operator Trainer	0	3
Explanation	<p>The original contract was structured requiring price increases to be agreed at the time for each ships major refit concurrent with Upgrade production. Contract price increases (Contract base date \$) can be categorised as follows:</p> <p>\$59.8 million ^(a)</p> <p>\$19.3 million ^(b)</p> <p>\$(40.0) million ^(c)</p> <p><u>\$89.7 million</u> ^(d)</p> <p>\$128.8 million Total</p> <p>Note a. Concurrent maintenance refit HMA Ships Sydney, Melbourne, Darwin and Newcastle</p> <p>Note b. Delay claims (in addition to the delay agreed under the May 2006 Deed of Settlement and release (global settlement).</p> <p>Note c. \$40 million (base date \$) reduction for Partial Termination at Commonwealth Convenience under May 2006 Deed of Settlement and Release (global settlement).</p> <p>Note d. Changes related to Commonwealth obligations for capability, capability enhancements, additional scope including spares packages and ship crew training.</p> <p>Note 1 \$28.7 million worth of spares not originally included in the contract.</p>				

2.7 Prime Acquisition Contract(s) Price and Progress Payments

Prime Contract(s)	Price at Signature (\$m Base)	Price at 30 Jun 08 (\$m Base)	Progress Payments (\$m Base) at 30 Jun 08
Commercial	898.6	1,027.4	936.0
Total	898.6	1,027.4	936.0
Explanations	<p>For price increase refer to explanation in Table 2.6 above.</p> <p>Note that Performance Incentive Fee was Outside Original Contract Price and Current Contract Price and Payment Schedule and therefore not included in the total contract price detailed above.</p> <p>The contract price at 30 June 2008 and the progress payments include the cost of ship concurrent planned maintenance availabilities (ship repair). These costs are met by in-service support funds.</p>		

Section 3 – Schedule Progress

3.1 Design Review Progress

Event	Major System/ Platform Variant	Original Planned	Current Planned	Achieved/ Forecast	Variance (Months)
System Requirements Review	Completion of all Software Specification Reviews	Aug 00	Aug 00	May 01	9
Preliminary Design Review	Completion of all Preliminary Design Reviews	Oct 00	Oct 00	May 01	7
Critical Design Review	Completion of all Critical Design Reviews (Critical)	Apr 01	Nov 06	Apr 07	72
Variance Explanations	<p>Software development and design was delayed due to Australian Defence Industry (now Thales Australia) repatriating the Combat System Design Authority role from Lockheed Martin in early 2001 and implementing the Australian Distributed Architecture Combat System. Thales then elected, as allowed by the Prime Contract, to deliver the contracted capability in three software baselines for technical risk mitigation.</p> <p>Critical Design Review to Baseline Build 2 software completed by 20 December 2006. Critical Design Review for Baseline Build 3 software completed by 27 April 2007.</p>				

3.2 Contractor Test and Evaluation Progress

Event	Major System/ Platform Variant	Original Planned	Current Planned	Achieved/ Forecast	Variance (Months)
System Integration Test and Evaluation (Category 4 Testing)	HMAS Sydney	Dec 02	Jun 06	Feb 06	38
	HMAS Melbourne	Jul 03	Feb 07	Jun 07	47
	HMAS Darwin	Feb 04	Feb 08	May 08	51
	HMAS Newcastle	Jul 04	Feb 09	Feb 09	55
Final Developmental Test and Evaluation and System Verification (Completion of Category 5 Testing and Provisional Acceptance)	HMAS Sydney	May 03	Dec 06	Dec 06	43
	HMAS Melbourne	Jan 04	Oct 07	Oct 07	45
	HMAS Darwin	Jul 04	Aug 08	Aug 08	49
	HMAS Newcastle	Jan 05	Jun 09	Jun 09	53
	Team Trainer	Apr 02	Feb 07	Nov 07	67
	Warfare Systems Support Centre	Apr 04	Nov 08	Nov 08	55
Acceptance Test and	HMAS Sydney	Apr 04	Nov 08	Nov 08	55
	HMAS Melbourne	Sep 04	Nov 08	Nov 08	50

DMO Project Data Summary Sheets

ANAO Report No.9 2008–09 Defence Materiel Organisation Major Projects Report 2007-08

Evaluation	HMAS Darwin	Mar 05	Nov 08	Nov 08	44
	HMAS Newcastle	Sep 05	Dec 09	Dec 09	51
	Team Trainer	Sep 06	Dec 09	Dec 09	39
	Warfare Systems Support Centre	Sep 06	Dec 09	Dec 09	39
Variance Explanations	<p>Schedule delays to this program have resulted from the program complexity being underestimated from the outset.</p> <p>Two schedule re-baseline activities have been required; the latest as Contract Change Proposal 255, which encompassed:</p> <ul style="list-style-type: none"> the Commonwealth partial termination for convenience of the Upgrade of HMA Ships Adelaide and Canberra; settlement of an Australian Defence Industry Ltd HMAS Sydney delay claim; a revised viable contract master schedule with a Contract Final Acceptance of December 2009 but within the variable fixed price; improved payment terms going forward; and more certainty in the process and criteria for contract Provisional Acceptance whilst maintaining Australian Defence Industry Ltd, trading as Thales Australia, capability upgrade contract obligations for the remaining program. <p>Contract Change Proposal 255, signed in May 2006, closed out a major contract renegotiation effort. This has assisted in achieving performance improvements against the contract. Further schedule adjustment to project end date has not been required.</p>				

3.3 Progress toward Initial Operational Capability

Item	Original	Achieved/ Forecast	Variance (Months)	Variance Explanations/ Implications
HMAS Sydney	May 03	Dec 06	43	Delays to achieving Provisional Acceptance due to underestimating the complexity of the program and additional work required that was unrelated to the upgrade and due to cracking detected in the hull doubler plates. Rectification was necessary to maintain hull certification. Navy has had access to and control of ship since Provisional Acceptance date, allowing ships to participate in training, exercises and additional tests and trials. Acceptance planned for November 2008 and Navy Initial Operational Release ⁽¹⁾ in December 2008.
HMAS Melbourne	Jan 04	Oct 07	45	Delays to achieving Provisional Acceptance due to underestimating the complexity of the program. Navy has had access to and control of ship since Provisional Acceptance date, allowing ships to participate in training, exercises and additional tests and trials. Acceptance planned for November 2008 and

				Navy Initial Operational Release ⁽¹⁾ in December 2008.
HMAS Darwin	Jul 04	Aug 08	49	Delays to achieving Provisional Acceptance due to underestimating the complexity of the program. Navy has had access to and control of ship since Provisional Acceptance date, allowing ships to participate in training, exercises and additional tests and trials. Acceptance planned for November 2008 and Navy Initial Operational Release ⁽¹⁾ in December 2008.
HMAS Newcastle	Jan 05	Jun 09	53	Delays to achieving Provisional Acceptance due to underestimating the complexity of the program.

Note 1. Initial Operational Release represents a point in time when the Capability Manager is satisfied that operational test and evaluation can commence.

3.4 Progress toward Final Operational Capability

Item	Original	Achieved/ Forecast	Variance (Months)	Variance Explanations/ Implications
HMAS Sydney	Jul 04	Jul 09	60	<p>Variance of the Achieved/ Forecast reflects the flow on effect from Initial Operational Capability</p> <p>There are performance deficiencies/ shortcomings with the Electronic Surveillance and Underwater Warfare systems fitted during the Guided Missile Frigate Upgrade, with certification of the retained Link 11 tactical data information capability still to be achieved. Baseline Build 2 software approval for use by the Defence Tactical Data Link Test Authority is anticipated in July 2008, on Link 11 networks in accordance with the provisions and caveats detailed in the approval correspondence.</p> <p>Thales Australia retains responsibility to correct the deficiencies in upgraded systems by November 2008 when the first ship acceptance is expected.</p> <p>Key components of the Guided Missile Frigate Upgrade program have been successfully demonstrated, particularly for Above Water Warfare Systems and Sensors. Sea trials have demonstrated the Evolved Sea Sparrow Missile System, along with the new Vertical Launching System Mk41, Australian Distributed Architecture Combat System,</p>

DMO Project Data Summary Sheets

ANAO Report No.9 2008–09 Defence Materiel Organisation Major Projects Report 2007-08

				upgraded Air Search radars and Missile Fire Control systems and software, confirming their capability against hostile air threats. These systems are capable of achieving Operational Capability.
HMAS Melbourne	Dec 04	Jul 09	55	As per HMAS Sydney
HMAS Darwin	Jun 05	Jul 09	49	As per HMAS Sydney
HMAS Newcastle	Dec 05	Feb 10	50	As per HMAS Sydney

Section 4 – Risks, Issues and Linked Projects

4.1 Major Project Risks

Description	Remedial Action
For Lead Ship Acceptance and Operational Release the Electronic Surveillance System (C–Pearl) contracted performance may not be met.	An Electronic Surveillance Stakeholder Group was formed in December 2007 to work collaboratively in problem solving and reaching contracted performance levels. Commonwealth, Australian Defence Industry and Rafael personnel are working collaboratively to remedy performance shortcomings and determine a way ahead for C–Pearl Electronic Surveillance as a matter of urgency.
For Lead Ship Acceptance and Operational Release the Torpedo Defence Systems integration and performance may not be met.	The Defence Science and Technology Organisation, engaged to support analysis and further testing, conducted thorough analysis of trials data, with Defence Science and Technology Organisation assistance to Prime and Sub–Contractor at Defence Science and Technology Organisation facilities and Land Based Test Site, Sydney.
For Lead Ship Acceptance and Operational Release the Hull Mounted Sonar (Spherion) performance may not be met.	Defence Science and Technology Organisation engaged to support analysis and further testing. Overseas trials have indicated small improvements in performance. Engaged Navy and Royal Australian Navy Technical Evaluation and Analysis Authority assistance for performance assessment. Working collaboratively with the Prime and Subcontractor, Defence Science and Technology Organisation and Royal Australian Navy Technical Evaluation and Analysis Authority in an Integrated Product Team framework to assess and resolve system perceived deficiencies.
Thales Australia may not meet Combat System Software product and schedule contract requirements.	Defence Materiel Organisation is monitoring progress and proactively engaging contractor to improve problem report close out rate through Problem Report Screening Conferences.

4.2 Major Project Issues

Description	Remedial Action
Project may not meet current Navy Technical Regulatory requirements/expectations within the bounds of the Contract.	Project team is working closely with Contractor and Navy (Certification agencies) in developing safety case and fully developed Delivery Certificate and Report of Materiel and Equipment Performance State, to meet Navy regulatory requirements. Senior Representative Stakeholder Group is also assisting in managing expectations, remedial actions and required evidence for key systems where performance shortcomings have been evident.

4.3 Linked Projects

Project	Description of Project	Description of Dependency
Sea 1390 Phase 4B Standard Missile 1 Missile Replacement	Acquire and integrate the Standard Missile 2 missile into four Royal Australian Navy Adelaide Class Guide Frigates at the Mid Course Guidance standard, and acquisition of Initial Ship Outfit and Inventory Stock missiles.	Sea 1390 Phase 4B builds on the capability from SEA 1390 Phase 2 and depends on the capability to be sufficiently mature for the inclusion of this additional capability. The initial in-service date for the Guided Missile Frigate Standard Missile 2 leadship is 2009.

Section 5 – Lessons Learned

5.1 Key Lessons Learned

Lesson
<p>Requirements and specifications must be well defined and agreed before contract signature.</p> <p>Where detailed specifications cannot be defined fully prior to contract signature, such as when systems definition and new design work must be undertaken within a developmental project phase, then the end capability requirements and priorities must be well defined and agreed.</p>
<p>A fundamental issue to consider at the time of capability and project definition is how the capability should be acquired. If the project is developmental, then consideration should be given to methods other than a fixed price contract for achieving the capability.</p> <p>Contracts should include appropriate clauses that recognise the complexities of verifying and validating a software development project.</p> <p>Multi platform upgrades should allow for implementation and testing/acceptance of the first platform without committing to a full class upgrade of all platforms.</p> <p>Conducting an upgrade of an existing capability concurrent with scheduled maintenance availability requires very detailed planning and careful consideration of the supporting contract clauses.</p>
<p>Procurements that include significant change to software-intensive systems and complex system integration have many inherently high-risk activities, which must be analysed and appropriate risk mitigation processes applied. Such risks are often under-estimated in the planning phase.</p>
<p>The contract schedule must be accepted by all parties as realistic and achievable from the outset. Each party must be committed to achievement of the schedule and aware of the consequences of non-achievement, plus any provisions for delay outside the contractor's control.</p> <p>The contract should contain:</p> <ul style="list-style-type: none"> • milestones which enable the Commonwealth to unambiguously assess Contractor performance from the outset of the Contract; • with the exception of non-recurring engineering effort, payment of all or a substantial part of the contract price should be subject to achievement of clear project milestones; • milestones should reflect delivery of contracted requirements to the Commonwealth, not just reaching intermediate points on the timeline; • milestones which enable use of the equipment and supplies (such as integrated logistics support and training) should be given similar weight as delivery of the equipment itself; • payment on achievement of milestones should be conditional on achievement of previously scheduled milestones; • payment of milestones should also be tied to remedies under the contract to allow the Commonwealth to seek redress; and • clear entitlements of the Commonwealth to access all contractor project data (including internal workforce planning data) so as to be able to make informed assessments if a milestone is not achieved.
<p>For very large developmental contracts, project managers must ensure that the contractor maintains sufficient focus and resourcing on documenting what is being delivered and how to</p>

DMO Project Data Summary Sheets

ANAO Report No.9 2008–09 Defence Materiel Organisation Major Projects Report 2007-08

use it (through Integrated Logistics Support, configuration management and training).

Milestones must be structured so that the contractor is not tempted to focus on equipment deliverables only. Payment for equipment milestones should be conditional on achievement of related Integrated Logistics Support milestones.

The contract should be clear on configuration management requirements of Integrated Logistics Support products in an incremental delivery software development project. This should align to milestones and remedies in the contract.

Objective acceptance criteria are required to ensure there is no scope for dispute as to whether the criteria have been met.

Criteria for determining contractual achievement should support those criteria used by Defence for determining achievement by Defence Materiel Organisation of the measures of effectiveness in the Materiel Acquisition Agreement.

Section 6 – Addendum

6.1 Addendum

Material events post 30 June 2008

HMAS Darwin has achieved Provisional Acceptance on 22 August 2008 (4 days early), marking delivery of the ship from the prime contractor to Defence Materiel Organisation. HMAS Darwin is now available for Navy use, and is conducting further trials leading to Initial Operational Release planned for early 2009. In August and September 2008, HMAS Darwin was able to participate with a United States Navy ship to assess interoperability of an initial Link 16 capability.

Electronic Surveillance Trials conducted in Western Australia have allowed the Contractor to further refine the product software and firmware, and in particular the sensitivity, to better display actual targets. Requirements for improved Electronic Surveillance operator training are now being scoped.

HMAS Sydney and HMAS Darwin have upgraded their Australian Distributed Architecture Combat System software to Baseline Build 3 Software. The test program for Baseline Build 3 is now complete.

The fourth upgraded Guided Missile Frigate, HMAS Newcastle, proceeded to sea in October 2008 for Maritime Skill Evaluation and has commenced Platform Sea Acceptance Trials. Harbour Acceptance Trials are on schedule for completion in time for Combat System Sea Acceptance Trials.

Appendix

Appendix 1: Acquisition Category Definitions

ACAT Definitions

The definition of each of the four Acquisition Categories is as follows:

- ACAT I – ACAT I projects are major capital equipment acquisitions that are normally the ADF's most strategically significant. They are characterised by extensive project and schedule management complexity and very high levels of technical difficulty, operating, support and commercial arrangements. They are normally assigned to a Certified Professional Project Manager Level 1.
- ACAT II – ACAT II projects are major capital equipment acquisitions that are strategically significant to the ADF. They are characterised by significant project and schedule management complexity and high levels of technical difficulty, operating, support arrangements and commercial arrangements. They are normally assigned to a Certified Professional Project Manager Level 2.
- ACAT III – ACAT III projects are major or minor capital equipment acquisitions that have a moderate strategic significance to the ADF. They are characterised by the application of traditional project and schedule management techniques and moderate levels of technical difficulty, operating, support arrangements and commercial arrangements. They are normally assigned to a Certified Professional Project Manager Level 3.
- ACAT IV – ACAT IV projects are major or minor capital equipment acquisitions that have a lower level of strategic significance to the ADF. They are characterised by traditional project and schedule management requirements and lower levels of technical difficulty, operating, support arrangements and commercial arrangements. They are normally assigned to a Certified Professional Project Manager Level 4.

Glossary

Acquisition Business Case	Part of the Second Pass approval documentation, the Acquisition Business Case (ABC) provides an overview and the effects of the proposed option, describing the nature of the option, the capability effects, key advantages and a detailed timeline, including costing and risk assessment. Information on proposed industry involvement over the life cycle is also included.
Acquisition Categorisation (ACAT) Framework	A framework that provides a graduated scale for projects from the most demanding and complex to those that are less so.
Acquisition Phase	This is the third of the five-phase Defence capability life cycle. The acquisition phase is the process of procuring an appropriate materiel system to meet the identified requirements while achieving best value-for-money over the life of the system.
Acquisition Strategy	A document that sets out the intended strategy for acquiring the materiel elements of a major capability investment.
Assets under construction	Assets under construction by Defence for Defence or for the use of another entity according to a construction contract where Defence controls the asset until completion, or assets under construction or otherwise being made ready by another entity for use by Defence.
Capability Definition Documents	A suite of documents comprising the Operational Concept Document (OCD), Function and Performance Specification (FPS) and Test Concept Document (TCD).
Capability Development Board	Capability Development governance committee with a focus of quality control ensuring that documentation produced is complete and of a standard that allows effective decision making by the higher Defence committees and Government.
Capability Manager	The role of a Capability Manager is to raise, train and sustain in-service capabilities through the coordination of Fundamental Inputs to Capability.
Capability Realisation	When a capability system or subset has proven effective and suitable for its intended role and that Fundamental Inputs to Capability are ready for operational service.
Capital expenditure	Expenditure by an agency on capital projects—for example, purchasing a building.

Certified Professional Project Manager	A recognition of competence in the field of project management.
Commercial Off the Shelf	Products which can be bought, ready-made, from a manufacturer's virtual store shelf (e.g., through a catalogue or from a price list).
Defence Capability and Investment Committee	A committee whose role is to ensure resourcing, including capital investment and operating costs, is consistent with Defence's strategic priorities and resourcing strategy.
Defence Capability Committee	A committee whose role is to consider and develop options for current and future capability, focusing on individual major capital equipment projects. It is a sub-committee of the Defence Capability and Investment Committee.
Defence Capability Development Manual	A Defence manual that describes the capability lifecycle of Defence military assets with an emphasis on the capability development phase of this lifecycle.
Defence Capability Plan	The Defence Capability Plan (DCP) outlines the government's long-term Defence capability plans. It is a detailed, costed, 10-year plan comprising the unapproved major capital equipment projects that aim to ensure Defence has a balanced force that is able to achieve the capability goals identified in the 2000 White Paper and subsequent strategic updates.
Disposal Phase	The last of the five-phase Defence capability life cycle, it occurs once the materiel system reaches the end of its life.
Final Operational Capability	The point in time at which the final subset of a capability system that can be operationally employed is realised.
Financial Management and Accountability Act	The Act establishes the regulatory framework for financial management within Defence and other public sector agencies.
First Pass approval	The process that gives government the opportunity to narrow the alternatives being examined by Defence to meet an agreed capability gap. First Pass approval allocates funds from the Capital Investment Program to enable the options that government endorses to be investigated in further detail, with an emphasis on detailed cost and risk analysis.

Fundamental Inputs to Capability	The standard list for consideration of what is required to generate 'capability', comprising organisation, personnel, collective training, major systems, supplies, facilities, support, command and management.
Initial Operational Capability	The point in time at which the first subset of a capability system that can be operationally employed is realised.
Initial Operational Release	A point in time when the Capability Manager is satisfied that operational test and evaluation can commence.
Legacy Project	Project that existed pre the formation of the Defence Materiel Organisation.
Major Capital Equipment	Equipment projects of \$20 million or more, or of less than \$20 million but with individual items of \$1 million or more, or equipment projects of less than \$20 million with strategic significance.
Major Projects	Projects established for the acquisition of Major Capital Equipment.
Materiel Acquisition Agreement	An agreement between CDE and the DMO which states in concise terms what services and products the DMO (as supplier) will deliver to CDE, for how much and when.
Materiel Audit Committee	Established in July 2005 in recognition of the DMO's independent accountability under the Financial Management and Accountability Act 1997. The primary objective is to provide independent assurance to the CEO in discharging his responsibilities.
Materiel Sustainment Agreement	An agreement between a Capability Manager and the DMO, which states in concise terms what in-service support services and products the DMO (as supplier) will deliver, for how much and when.
Materiel System	A sub-set of the capability system, this is the combination of the mission system(s) and the support system(s). The materiel system covers those aspects of FIC that are provided by the DMO.
Measures of Effectiveness	Measures of Effectiveness represent key capability performance attributes of a project which if not satisfied would have a significant effect on the eventual suitability for operational service.
Military Off The Shelf	Military products can be bought, ready-made, from a Defence supplier.
Needs Phase	The phase of a capability life cycle that commences when a capability gap is identified and a materiel solution is required. This may occur when a system needs to be introduced, improved or replaced.

Operational Concept Document	The primary reference for determining fitness for purpose of the desired capability to be developed, this is a complementary document to the Function and Performance Specification (FPS) and the Test Concept Document (TCD), which form the Capability Definition Documents (CDD) to define the Capability System Baseline.
Second Pass approval	The final milestone in the requirements phase, at which point (project) government will endorse a specific capability solution and approve funding for the acquisition phase. The project cannot proceed to the acquisition phase until this approval is obtained from government.
Service Release	The milestone at which the Capability Manager is satisfied that the initial operational and material state of the capability system, including any deficiencies in the FIC, are such that it is safe to proceed into a period of OT&E, leading to an endorsed capability state.
Specialist military Equipment	Items of a specific military nature that are not available through the normal external market in their current form to other than government military purchasers. Includes the prime military equipment plus the direct support items associated with the equipment.
Test and Evaluation	A process to obtain information to support the objective assessment of a capability system with known confidence and to confirm whether or not a risk is contained within acceptable boundaries across all facets of a system's life cycle.
Test and Evaluation Master Plan	The plan for traceability between Test and Evaluation (T&E) activities and the endorsed critical issues, to further ensure that only the required testing is undertaken. Results of T&E planned in the TEMP are used to provide proof that new or upgraded capability meets its baseline and is safe and fit for purpose throughout its life cycle.
Test Concept Document	Provides the basis for the DMO's development of the Test and Evaluation Master Plan (TEMP) and is the highest level document that considers T&E requirements within the capability system's life cycle management.
Two-pass approval Process	The process by which major capital investment proposals are developed for consideration and approval by the Government.

Index

A

Acquisition Categorisation, 46
Acquisition projects, 13
Assets Under Construction, 41
Auditor-General Act 1997, 19
Australian Defence Force, 11, 16, 21
Australian industry, 25
Australian Industry Capability, 33
Australian Non Farm Gross Domestic Product Index, 63
Australian Standard on Assurance Engagements, 16, 19, 102
Australian Strategic Policy Institute, 83

B

Base Date Dollars, 69
Base date prices, 17, 18

C

Capability Development Group, 30
Capability life cycle, 36
Capability Managers, 16, 21, 103
Certified Professional Project Manager, 50

D

Defence Capability Development Manual, 36
DMO's professionalisation program, 49

F

Final Operational Capability, 21, 41
Financial Management and Accountability Act, 30, 33, 35, 243
First Pass approval, 38
Foreign Affairs, Defence and Trade References Committee, 55
Foreign exchange variations, 63

G

Gates Reviews, 46

I

Initial Operational Capability, 21, 41

J

Joint Committee of Public Accounts and Audit, 11, 13, 14, 25, 55

K

Kinnaird Review, 30

L

Lessons learned from the 2007-08 Major Projects Report, 88

M

Materiel Acquisition Agreements, 30, 34, 87
Materiel Sustainment Agreements, 34, 41
Military Off The Shelf, 50

O

Operational Release, 41

P

PDSS Guidelines, 15, 19
Pilot, 14, 25
Project Data Summary Sheet Guidelines, 95
Project Managers Certification Framework, 49
Project Maturity Score, 45, 69
Project Risks Scores, 44
Project selection, 56

R

Rapid acquisitions, 51
Real Cost Increase, 84
Real Variations, 62
Review criteria, 102
Review methodology, 19
Risk management, 43
ROMAN – Resource and Output Management Network, 70

S

Second Pass approval, 38, 39, 241
Senate Foreign Affairs, Defence and Trade Reference Committee, 13

Senate Foreign Affairs, Defence and Trade
References Committee, 25
Specialised Military Equipment, 41
Spreadsheets, 70
Statement by the CEO DMO, 105

Unclassified, 15

V

Verification and validation processes, 40

U

UK Ministry of Defence, 25
UK National Audit Office, 29, 56, 83

Series Titles

ANAO Audit Report No.1 2008–09

Employment and Management of Locally Engaged Staff

Department of Foreign Affairs and Trade

ANAO Audit Report No.2 2008–09

Tourism Australia

ANAO Audit Report No.3 2008–09

Establishment and Management of the Communications Fund

Department Department of Broadband, Communications and the Digital Economy

Department of Finance and Deregulation

ANAO Audit Report No.4 2008–09

The Business Partnership Agreement between the Department of Education,

Employment and Workplace Relations (DEEWR) and Centrelink

Department Department of Broadband, Communications and the Digital Economy

Department of Finance and Deregulation

ANAO Audit Report No.5 2008–09

The Senate Order for Departmental and Agency Contracts (Calendar Year 2007 Compliance)

ANAO Audit Report No.6 2008–09

Illegal, Unreported and Unregulated Fishing in the Southern Ocean

Australian Customs Service

ANAO Audit Report No.7 2008–09

Centrelink's Tip-off System

Centrelink

ANAO Audit Report No.8 2008–09

National Marine Unit

Australian Customs Service

Current Better Practice Guides

The following Better Practice Guides are available on the Australian National Audit Office Website.

Developing and Managing Internal Budgets	June 2008
Agency Management of Parliamentary Workflow	May 2008
Public Sector Internal Audit	
An Investment in Assurance and Business Improvement	Sep 2007
Fairness and Transparency in Purchasing Decisions	
Probity in Australian Government Procurement	Aug 2007
Administering Regulation	Mar 2007
Developing and Managing Contracts	
Getting the Right Outcome, Paying the Right Price	Feb 2007
Implementation of Programme and Policy Initiatives:	
Making implementation matter	Oct 2006
Legal Services Arrangements in Australian Government Agencies	Aug 2006
Preparation of Financial Statements by Public Sector Entities	Apr 2006
Administration of Fringe Benefits Tax	Feb 2006
User-Friendly Forms	
Key Principles and Practices to Effectively Design and Communicate Australian Government Forms	Jan 2006
Public Sector Audit Committees	Feb 2005
Fraud Control in Australian Government Agencies	Aug 2004
Security and Control Update for SAP R/3	June 2004
Better Practice in Annual Performance Reporting	Apr 2004
Management of Scientific Research and Development Projects in Commonwealth Agencies	Dec 2003
Public Sector Governance	July 2003
Goods and Services Tax (GST) Administration	May 2003
Building Capability—A framework for managing learning and development in the APS	Apr 2003
Administration of Grants	May 2002
Performance Information in Portfolio Budget Statements	May 2002

Some Better Practice Principles for Developing Policy Advice	Nov 2001
Rehabilitation: Managing Return to Work	June 2001
Business Continuity Management	Jan 2000
Building a Better Financial Management Framework	Nov 1999
Building Better Financial Management Support	Nov 1999
Commonwealth Agency Energy Management	June 1999
Security and Control for SAP R/3	Oct 1998
Controlling Performance and Outcomes	Dec 1997
Protective Security Principles (in Audit Report No.21 1997–98)	Dec 1997