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Performance Audit

# **The Armidale Class Patrol Boat Project: Project Management**

**Department of Defence**

Australian National Audit Office

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of Australia 2005

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Canberra ACT  
25 February 2005

Dear Mr President  
Dear Mr Speaker

The Australian National Audit Office has undertaken a performance audit in the Department of Defence in accordance with the authority contained in the *Auditor-General Act 1997*. Pursuant to Senate Standing Order 166 relating to the presentation of documents when the Senate is not sitting, I present the report of this audit and the accompanying brochure. The report is titled *The Armidale Class Patrol Boat Project: Project Management*.

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

Yours sincerely



P. J. Barrett  
Auditor-General

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

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# Abbreviations

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AAS	Australian Accounting Standard
ABR	Australian Book of Reference
ACPB	Armidale Class Patrol Boat
ADF	Australian Defence Force
AEO	Authorised Engineering Organisation
AI	Australian Industry Involvement
AMSA	Australian Maritime Safety Authority
ANAO	Australian National Audit Office
ASDEFCON	Australian Defence Contracting Standard
ASLAV	Australian Light Armoured Vehicle
AUSTAL	Austal Ships Pty. Ltd.
CCB	Configuration Control Board
CCP	Contract Change Proposal
CEO	Chief Executive Officer
CEPMAN	Capital Equipment Procurement Manual
CN	Chief of Navy
CNE	Chief Naval Engineer
COD	Capability Options Document
COI	Critical Operational Issue
COTS	Commercial Off The Shelf
CSIG	Corporate Services and Infrastructure Group
DCIC	Defence Capability and Investment Committee
DGNCSA	Director General Navy Certification Safety and Acceptance
DI(N)	Defence Instruction (Navy)
DI(N) Log	Defence Instruction (Navy) Logistics
DMS	Defence Maritime Services Pty. Ltd.

DNV	Det Norske Veritas
DPPM	Defence Procurement Policy Manual
DSTO	Defence Science and Technology Organisation
ECP	Engineering Change Proposal
EVM	Earned Value Management
FCPB	Fremantle Class Patrol Boat
FIMA	Fleet Intermediate Maintenance Authority
FMA	Financial Management and Accountability (Act)
FOC	FYDPFirst Of Class
FOCT	First Of Class Trials
FPS	Functional Performance Specification
FYDP	Five Year Defence Plan
GFE	Government Furnished Equipment
HMAS	Her Majesty's Australian Ship
ILS	Integrated Logistic Support
IOR	Initial Operational Release
IP	Intellectual Property
IMO	International Maritime Organisation
ISS	In-Service Support
JCPAA	Joint Committee of Public Accounts and Audit
LOTE	Life Of Type Extension
MARPOL	International Convention for the Prevention of Pollution from Ships
MLOC	Minimum Level of Capability
MOE	Measure of Effectiveness
NAVSAFE	Naval Safety Program
NAVSYS	Navy Systems Command
NOTE	Naval Operational Test and Evaluation

NPV	Net Present Value
NSC	National Security Committee
NTRF	Navy Technical Regulatory Framework
OCD	Operational Concept Document
OPEVAL	Operational Evaluation Program
OQE	Objective Quality Evidence
OR	Operational Release
PA	Project Authority
PBFEG	Patrol Boat Force Element Group
PBGRPHO	Patrol Boat Group Headquarters
PBSPO	Patrol Boat Systems Program Office
PFI	Private Financing Initiative
PMP	Project Management Plan
PSP	Professional Service Provider
QEMS	Quality and Environmental Management System
RAN	Royal Australian Navy
RFT	Request For Tender
SOLAS	Safety of Life at Sea
SPO	Systems Program Office
T&E	Test and Evaluation
TCD	Test Concept Document
T&ECD	Test and Evaluation Concept Document
TEMP	Test and Evaluation Master Plan
TRA	Technical Regulatory Authority
USDM	Under Secretary Defence Materiel
V&V	Validation and Verification

# **Summary, Key Findings and Recommendations**



### **Armidale Class Patrol Boat**

Source: Defence.

# Summary

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## Background

1. The Royal Australian Navy (RAN) currently operates 15 Fremantle Class Patrol Boats (FCPBs), which have exceeded their designed life of type by in excess of six years. In October 2002, the Government approved a Capital Acquisition Project, Project Sea 1444, with an acquisition Project Budget of \$436.8 million, to provide a replacement Patrol Boat capability<sup>1</sup>. The approved Project Budget has increased by \$17.6 million, as a result of price and exchange variations, to \$454.4 million, in September 2004.
2. Following a competitive tender process, Defence signed a contract with Defence Maritime Services Pty. Ltd. (the Contractor)<sup>2</sup> in December 2003, worth \$552.86 million, to deliver and maintain 12 Armidale Class Patrol Boats (ACPBs) for 15 years, with a five year extension option. The cost of the acquisition component of the Contract was approximately three-fifths, and the whole of life in-service support element was approximately two-fifths, of the total contract value. The ACPBs are being built in Fremantle, Western Australia, by Austal Ships Pty Ltd (the Ship Builder), as a sub-contractor.
3. Defence considered two innovative acquisition options, namely: direct purchase, with contracted in-service support under the same contractual vehicle; and a Private Financing Initiative (PFI). The PFI model involved private sector owned and supported boats, delivered and supported to meet defined output performance terms. Implementing this style of capability delivery mechanism for the RAN had implications for the allocation of risk, and how the lease transaction would be classified. Following direction from the Government in June 2002, Defence chose the direct purchase model, as the preferred option, to acquire the ACPB capability.
4. The 12 ACPBs will be required to deliver up to 3600 sea days per year, and will be operated by 18 separate RAN crews<sup>3</sup>. The ACPB capability is being delivered as a fixed cost build contract, followed by a fixed cost in-service support contract to maintain the availability of the specified capability requirements. The same Contractor is responsible for delivering both the build

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<sup>1</sup> The Project budget includes the costs of: the Prime Contract; the provision of Government Furnished Equipment (GFE); infrastructure facilities for the new Patrol Boats; and project management.

<sup>2</sup> Defence Maritime Services Pty. Ltd. (DMS) is a wholly owned by P&O Maritime Services, and SERCO, and is a Defence specific service company.

<sup>3</sup> In addition to the crews, the RAN will provide victualling, fuel, ammunition and small arms outfits, RAN publications, medical supplies, access to maintenance facilities, and up to 30 RAN personnel for employment within the Contractor's maintenance organisation. The RAN will also provide RAN specific training.

program and the in-service capability which, in principle, serves to provide an arrangement where the risks associated with delivering a less than reliable ship are borne by the Contractor, through loss of profits during the in-service phase of the Contract. Payment for in-service support will be based on a single fee per day, for the ships that are made available.

5. The ACPBs, when delivered, will be designed, constructed and maintained to commercially-based classification society<sup>4</sup> rules, under full survey, supplemented by Navy technical regulatory and safety rules, where required to meet Naval requirements<sup>5</sup>.

6. Complementary infrastructure projects, not within the control of the ACPB Project, yet contributing to the success of the Project, include the Darwin Naval Base Patrol Boat Facilities Project, and the HMAS CAIRNS Redevelopment Project.

## Audit Approach

7. The audit was undertaken during the initial build stage of the first ship, when less than 10 per cent of total acquisition costs had been expended. The objective of the audit was to provide an independent assurance of the effectiveness of Defence's management of the acquisition, and future provision of the ACPB capability, relating to the in-service support contract, provision of infrastructure, and crewing sustainability.

8. The final Safety Case Report<sup>6</sup> had not yet been delivered to Defence at the completion of field work, and so was outside the scope of this audit. The audit also did not address the ability of the delivered ACPBs to meet the requirements of their intended operational employment, as the trials period, and 21 day mission trial associated with the acceptance of the First of Class (FOC) was not completed at the completion of field work.

## Overall audit conclusions

9. The ANAO found that the contractual construct employed by the Defence Materiel Organisation (DMO) is a sound approach that will encourage the Contractor to deliver reliable, fully capable ships for use by the RAN. The DMO has sought to allocate significant risks associated with cost, and meeting

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<sup>4</sup> Det Norske Veritas (DNV) is the classification society used for the build program.

<sup>5</sup> The ACPBs are also being built, and are intended to be maintained, to Australian Maritime Safety Authority (AMSA), International Maritime Organisation (IMO), Safety of Life at Sea (SOLAS), and Maritime Pollution (MARPOL) specifications.

<sup>6</sup> The Safety Case report for new systems and vessels is developed to certify that the system is safe to operate in a defined manner. The Director General of Navy Certification, Safety and Acceptance is responsible for accepting the safety case for maritime systems.



a delivery schedule, to the Contractor, by rewarding timely delivery with a milestone payment regime, and discouraging schedule slippage by the capacity to invoke liquidated damages for delays against agreed ship delivery dates. The Project had met all contractual milestone payment dates as of August 2004.

10. The Project has adopted a whole-of-life, capability life cycle approach, which will maximise partnering benefits with the Contractor over the contracted life-of-type of the capability. The ANAO found that, to mitigate the risks associated with performance over the period of the Contract, the Contractor is responsible for delivering the training of crew, non operational maintenance, and general upkeep of the vessels, against a fixed cost, performance based contract. The payment to the Contractor for ship availability is at risk in the event that system failures, or platform non-availability, prevent the RAN from undertaking prescribed, operational activities.

11. The ANAO considers that Defence's acquisition processes could have been made more effective by ensuring that:

- capability documents were fully implemented, and approved, prior to awarding an acquisition contract;
- Government Furnished Equipment (GFE), procured separately to the prime contract, is supported by a comprehensive analysis that accurately defines the through life costs; and
- complementary Defence Corporate Services and Infrastructure Group (CSIG) facilities projects are programmed, prioritised, and co-ordinated, to deliver capability in a timely fashion, to support the requirements of the capability being delivered by the DMO.

## Key Findings

### Capability and Approval Processes (Chapter 2)

12. Defence requested that each tenderer for the new capability specified two financial solutions to provide the capability. The first solution was to be a PFI solution, based on the concept of providing patrol boats under lease to Defence. The alternate solution was to be the traditional direct purchase, with a follow-on support contract solution.

13. The structure of the PFI was considered not to involve the allocation of sufficient risk that would permit it to be classified as an operating lease<sup>7</sup>. On subsequent advice from Government, Defence adopted a direct purchase option, in lieu of a PFI solution, for the replacement capability.

### **Build and Support Contract (Chapter 3)**

14. Prior to issuing a Request For Tender (RFT), Defence were required to fully develop a Concept of Operations, which translates to an Operational Concept Document (OCD)<sup>8</sup>, and then a Functional Performance Specification (FPS)<sup>9</sup>, which in turn addresses the total capability requirements. The FPS usually translates into a Mission System Specification, and a Support System Specification. Defence then develops a Test Concept Document (TCD) that describes the measures of effectiveness associated with each individual functional performance specification. The ANAO found that the TCD was not developed prior to the award of the Contract<sup>10</sup>.

15. The Project stipulated the contractual deliverables via the Ship and Support specification documents, in the absence of an endorsed TCD. This could increase the risk that the resulting contract may not specify the required outcomes in sufficient detail to demonstrate that the delivered vessels are able to meet the desired Naval capability.

16. The acquisition element of the Prime Contract was initially structured to deliver capability against 108 individual milestones, for which payment is awarded. Support payments for the service related element of the contract will not be made until delivery, and acceptance, of the first delivered patrol boat by the DMO from the Contractor.

17. Following a competitive tender, Defence chose a TYPHOON 25 mm main armament system, at a cost of \$8 million instead of the \$30 million in the design specification. Defence chose the Cannon to be installed to the system in an effort to maximise commonality across Defence. The Cannon is similar, in

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<sup>7</sup> An operating lease would have allowed Defence to amortise the payments for the capability over the Contract's life for Commonwealth budgetary presentation purposes.

<sup>8</sup> The OCD is used to: describe the characteristics of the required capability from an operational perspective; facilitate an understanding of the overall system goals for both the mission system and support system; detail missions and scenarios associated with operations and support; and provide a reference for determining 'fitness for purpose'.

<sup>9</sup> The FPS specifies the requirements for the system and provides the basis for design and qualification testing of the system. Defence guidance states that initial versions of the FPS should address the total system capability, which will later be developed into a mission system specification, and a support system specification, usually by the prime contractor.

<sup>10</sup> The TCD is developed by identifying the Critical Operational Issues (COIs) indicated in the OCD. The agreed COIs are to be satisfied through the process of test and evaluation, and the agreed operational scenarios successfully trialed to accept the delivered capability, prior to full operational release.

many respects, to that used in the Bushmaster 25 mm system, installed on the Army's Australian Light Armoured Vehicles (ASLAVs). The choice of calibre was undertaken on a cost-benefit basis, and represents value for money for Defence. The projected savings associated with choosing a 25 mm calibre round, over a 30 mm calibre round, while providing a similar capability, was estimated to be \$11 million in through-life ammunition costs.

**18.** The ANAO found that a RAN safety case for the introduction of the main armament system had not been undertaken prior to choosing the main armament system, and prior to contracting for its delivery. The ANAO notes that there was a pre-existing safety case developed for a United States Navy platform, and that the decision to procure the gun system was based on that assessment. At the time of audit fieldwork completion, the system, although in contract for delivery, had not been proved to be acceptable for use, without modification.<sup>11</sup>

**19.** The electronic radar surveillance system chosen for the ACPB capability was sole sourced at a cost of \$13 million. The PRISM III system was selected primarily because it is already in service with the RAN's Mine Hunter Coastal vessels. The ANAO found that the system required for the ACPBs is not the same as that already deployed. Obsolescence development work of \$1.0 million is required to ensure the system on the Mine Hunter Coastal Vessels can be adapted for use with the ACPB capability. The ANAO also found that the in-service support costs for the PRISM III systems were not comprehensively evaluated prior to purchasing the equipment.<sup>12</sup>

**20.** The ANAO found that the DMO had not applied standard audit access clauses to the sole source contract associated with procuring the PRISM III radar detection equipment. Defence investigated the costs associated with delivering the updated PRISM III capability. However, the ANAO did not have direct access to information held by the relevant contractor, and third party sub-contractors, and was unable to verify the work undertaken by the cost investigators.

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<sup>11</sup> Defence advised the ANAO in February 2005 that: 'the weapon system safety was assessed prior to the selection as much as was practically possible based on its proven use in service elsewhere and the Safety Study conducted for US Navy. A final safety case, reflecting the installation design on the Armidale Class vessel, is nearing completion for review and endorsement by the relevant Naval Technical Regulatory Authority, Director Navy Weapons Systems.'

<sup>12</sup> BAE Systems advised the ANAO in January 2005 that: 'the PRISM III system proposed for the Armidale Class is functionally identical in performance to the PRISM system installed on the Mine Hunter Coastal Vessel program but includes a small amount of non-recurring engineering required for minor interface differences between the Armidale Class and Mine Hunter Class platforms.'

## Project Management (Chapter 4)

21. The ANAO found that the Maritime Technical Regulatory Materiel Requirements Set Specifications underpinning the Naval Technical Regulatory System<sup>13</sup>, which are used by projects to develop functional performance specifications, were not fully populated at the time of Contract signature.

22. The ANAO was advised by Defence that the Ship Specification, endorsed through the Chief Naval Engineer approval process, and defined by the Contract for the delivery of the Patrol Boats, was used as the Certification Basis<sup>14</sup>. The ANAO notes that the Project Certification Plan was conditionally endorsed by the Chief Naval Engineer in September 2004<sup>15</sup>, eight and a half months after Contract signature.

23. The ANAO found that the TEMP had not been approved prior to Second Pass Government Approval in December 2003. The task of developing build specifications is made more difficult in the absence of the specified measures of effectiveness, against which the ships will be assessed for delivery, and acceptance.

24. In an effort to remain on schedule, the Contractor, and the Ship Builder, are required to make design decisions at commercial risk, and are reliant on the DMO to assess proposed design changes against Naval Regulatory Requirements.

25. The ANAO found that Defence access to the Ship Builder's build and design information would be strengthened, in the unlikely case of corporate failure, by the introduction of escrow arrangements to ensure the retention of the documentation supporting the design and build of the ACPBs. The ANAO considers that the DMO would be well served by a post delivery audit of the full Intellectual Property (IP) arrangements.<sup>16</sup>

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<sup>13</sup> The Naval Technical Regulations Manual states that prior to Second Pass Government approval, the identified need for a new capability is subject to requirements analysis and functional analysis to better define the capability required, especially the functions it is to perform, the level of performance required, and the conditions under which this is to be achieved. Technical Regulatory requirements are also incorporated, including how they will be measured and certified through the Platform Specification, Certification Basis, and Test and Evaluation Master Plan (TEMP). The TEMP includes design, production, and operational test and evaluation.

<sup>14</sup> The Certification Basis constitutes the suite of standards against which materiel is to be certified, derived from, or judged to be equivalent to, a subset of the materiel standards, approved by the Technical Regulatory Authority.

<sup>15</sup> The stated purpose of the Certification Plan is to define the Navy certification process required to facilitate initial, final and in-service certification for the ACPBs.

<sup>16</sup> Defence advised the ANAO in February 2005 that it is their intention to periodically undertake post delivery audits as recommended.

26. The absence of detailed Earned Value Management (EVM), or cost schedule control data, precluded the ANAO from fully assessing the real progress of the build program. In the absence of EVM data, the ANAO used the estimated data, provided by the Contractor to the DMO, to assess that the rate of effort required to complete the FOC prior to the scheduled trials period. The ANAO found that Defence would have benefited from an enhanced ability to oversight the project progress, as well as being better able to plan for delivery of GFE, and other Defence resources, had it been afforded access to the Ship Builder's EVM system.

## **Delivery Management (Chapter 5)**

27. The successful deployment of the new ACPB capability will largely depend on upgrades required to the existing facilities in Darwin, and Cairns. The upgrade proposed for the Darwin Naval Base is being undertaken as a separate project, at a proposed cost of \$21.6 million. The Darwin Naval Base Patrol Boat Project received Public Works Committee approval in July 2004, to develop the wharf and engineering services package of the Darwin Naval Base Patrol Boat Facilities Project, at a cost of \$5.53 million. The ANAO found that the proposal for an upgrade to the lift facility used to relocate Patrol Boats to a hard stand ashore (the Synchrolift), has not been approved, despite the cyclonic risk exposure of the Darwin region<sup>17</sup>.

28. The HMAS CAIRNS Redevelopment Project has been approved at a cost of \$65 million. This will provide for upgraded support infrastructure at HMAS CAIRNS in preparation for the introduction into service of the new ACPB capability. Expenditure has been earmarked to commence in 2005–06. The capital development work specifically attributable to the ACPB capability is estimated by Defence to account for \$10.44 million; and is to be provided in addition to the existing \$65 million budget, courtesy of the ACPB Project. The ability to satisfy the operational requirements associated with the delivery of the ACPB capability in Cairns hinges on the selection of suitable wharf space to meet the introduction of the new class to HMAS CAIRNS, commencing October 2006.

29. The in-service support Contract facilitates the continuing transfer of detailed, deep level maintenance skills from contracted maintainers to operational Defence staff, by providing the ability for Defence to choose to second up to 30 Defence staff to the Contractor, at all times, at no extra cost,

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<sup>17</sup> The existing lift facility takes FCPBs from the harbour, and lifts them onto railway tracks for stowage on a hard stand ashore during maintenance periods, and periods during which Darwin is threatened by cyclones. The lift facility was installed after Cyclone Tracey damaged four of the Attack Class Patrol Boats in 1974. The lift facility is not capable of receiving the new ACPBs bow first without substantial upgrade modification. The bow first lift method is, for safety reasons, the preferred method of lifting ships in anything other than calm weather.

during the 15 year support period for each ACPB. The ANAO found that this innovative method of knowledge transfer will serve to assist the RAN in its aim to remain an informed operator, capable of maintaining the ACPBs under operational conditions at sea.

30. The ANAO found that Defence is proactively seeking to assess and monitor the characteristics associated with operating a ship constructed wholly of aluminium. The Patrol Boat Force Element Group (PBFEG) has sought to involve the Defence Science and Technology Organisation (DSTO) in an effort to design a methodology to monitor hull fatigue, corrosion, and subsequent cracking of the vessels as they age. Defence advised the ANAO that an industry alliance is being developed between DSTO and the Ship Builder to cover a number of areas of research and development that are of mutual interest.

31. The support phase of the contract between Defence and the Contractor is structured to utilise an abatement point system,<sup>18</sup> whereby the Contractor may accumulate abatement points for defects associated with the performance and non-availability of the delivered ACPBs. Once a critical number of abatement points have been accumulated within any one calendar year quarter, contracted payments are withheld, in accordance with a pre-agreed schedule. The ANAO found that the contractual arrangements may provide appropriate incentives for the build process to deliver a cost-effective and reliable Patrol Boat capability, under a combined build and service delivery construct. The ANAO notes that the abatement points management system does not necessarily guarantee the repair, in any one operational reporting period, of those defects that may be important to Defence capability.<sup>19</sup>

## Recommendations

32. The ANAO made three recommendations directed at strengthening Defence's project management and whole of capability delivery and in-service support processes.

## Agency Responses

33. Defence agreed with all the recommendations.

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<sup>18</sup> Abatement points represent a cumulative tally of contractual failures to meet operational requirements for the provision of capability by DMS to the RAN following delivery, and Interim Operational Release (IOR) of ACPBs. Abatement points are applied if the Contractor: is issued, and receives a Request for Support from a deployed ship; does not make an ACPB available for use by the RAN as programmed in the Fleet Activity Schedule; or does not provide surge availability in reply to a valid request for surge availability.

<sup>19</sup> Defence advised the ANAO in February 2005 that: 'the risk of repair not being effected is expected to be minimised with critical mission essential defects having higher abatement.'

34. Finance agreed with all the recommendations. Finance advised the ANAO in its response to the audit that:

The Armidale Class Patrol Boat project had commenced development prior to the completion of the *Review of Defence Procurement* and the Government's subsequent endorsement of the key recommendations. I note as a result, a more transparent process of documentation and earlier commitments from supporting areas in Defence, such as the Corporate Support and Infrastructure Group over facilities, would be required were the project to be developed now.

# Recommendations

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*Set out below are the ANAO's recommendations, with report paragraph references and the responses from the Department of Finance and Administration, and the Department of Defence. The recommendations are discussed at the relevant parts of this report.*

## **Recommendation No.1 Para. 3.24**

The ANAO recommends that Defence ensure that Critical Operational Issues are identified, documented, and incorporated with applicable Test Concept Documentation, prior to Second Pass Government Approval and subsequent Contract award, for the procurement of major capital equipment.

*Finance response:* Agreed.

*Defence response:* Agreed.

## **Recommendation No.2 Para. 3.63**

The ANAO recommends that Defence undertake comprehensive analysis, to ensure that material Government Furnished Equipment procured separately to a Prime Contract, is supported by accurately defined through-life costs, prior to inviting a Prime Contractor to initiate a Contract Change Proposal to facilitate its ongoing support.

*Finance response:* Agreed.

*Defence response:* Agreed.

## **Recommendation No.3 Para. 5.10**

The ANAO recommends that Defence ensure that complementary Defence Corporate Services and Infrastructure Group facilities projects are well programmed, prioritised, and co-ordinated, to deliver capability in a timely fashion to support the requirements of the capability being delivered by the DMO.

*Finance response:* Agreed.

*Defence response:* Agreed.



# **Audit Findings and Conclusions**



# 1. Introduction

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*This chapter provides an overview of Defence Project Sea 1444—The Armidale Class Patrol Boat Project. It also examines the environment in which this project was developed and sets out the scope and objectives of the audit.*

## Background

**1.1** The FCPBs were designed to have a service life of 15 years, and entered service over the period 1980–84. In 1995, the vessels commenced a four-year life extension, with the aim of increasing their lives to 2000–04. In August 1998, the Defence Capability Committee decided to retain the FCPBs in service for a further eight years, thereby extending their lives to 2008–12.

**1.2** Projected operating costs for the FCPB capability for 2003–04 was \$289.7 million, comprising \$149.4 million in employee costs (51.6 per cent); \$100.6 million in supplier and inventory expenses (34.7 per cent); and \$39.7 million in other costs (13.7 per cent), of which most are depreciation costs.

**1.3** Military employee expenses comprise 85 per cent of all employee expenses, with supplier expenses being just over 80 per cent of supplier and inventory expenses. These percentages are not forecast to vary markedly once the ACPBs are fully operational. Operational costs are forecast to increase from \$289.7 million in 2003–04, to \$311.0 million in 2007–08 (the first full year of ACPB operation).

**1.4** The acquisition of future capability attracts substantial levels of capital investment, and impacts significantly on national security. Defence uses a ‘Two Pass’ system to engage Government both formally, and informally, at critical stages during the respective requirements and acquisition phases. During the requirements phase, Defence formally engage the Government on two occasions, known as First Pass<sup>20</sup>, and Second Pass<sup>21</sup> approvals. Defence

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<sup>20</sup> First Pass approval seeks Government agreement to:

- include the proposal in the early years of the Defence Capability Plan and the Major Capital Investment Program;
- the broad functions and performance of the proposed capability;
- the proposed year of decision and in service date;
- the generic options to be explored in detail;
- the timings for development of the options;
- industry engagement in developing the business case for the Second Pass; and
- any expenditure necessary to develop the options.

state that Second Pass approval is the most important as it seeks government approval to proceed with capital investment.

1.5 Table 1.1 provides a history of the key activities associated with the approval, and management of the delivery of the new, ACPB capability.

**Table 1.1**

**Approval and Delivery History for the ACPB Capability**

Date	Activity
<b>Concept Development</b>	
Dec 1998	FCPB LOTE approved at \$140 million
Nov 1999	Phase 0 ACPB project, the scoping component, approved at \$0.321 million. Total end costs of Phase 0 analysis was \$3.43 million.
Dec 1999	FCPB LOTE Halted
<b>First Pass Approval</b>	
Jun 2001	Government provided approval for Defence to solicit industry in an effort to establish the costs associated with a replacement patrol boat capability.
Sep 2001	Stage 1 of a Request For Tender (RFT) issued for a replacement capability, to be offered as both as a Private Finance Initiative using a leasing finance construct; and as a Direct Purchase option, with follow on support option.
May 2002	Tenix, Australian Defence Industries Ltd. (ADI) and Defence Maritime Services Pty. Ltd. (DMS) announced as successful tenderers following 9 respondents to the Stage 1 RFT.
Jun 2002	Stage 2 RFT authorised for issue, citing a requirement to proceed with a direct purchase option combined with an integrated follow on in service support contract.
Nov 2002	Stage 2 Tenders received.
Feb 2003	Clarification Workshops were held with ADI, DMS and Tenix.
Jun 2003	Defence announced DMS and Tenix as preferred tenderers for further negotiations, setting aside the ADI offer, and the DMS steel hull bid.
Jul 2003	Contract definition workshops were convened, with developed solutions being delivered to Defence in Late Jul 2003.
Aug 2003	DMS was announced as the preferred tenderer.

<sup>21</sup> Second Pass (Project) approval is the process by which Defence seeks formal Project Approval from the Government to garnish formal offers from suppliers. This leads to the selection of a materiel or facilities solution, and the expenditure of capital investment funds. Second Pass approval is also where Defence seeks Government agreement to the boundaries of the preferred solution, especially in terms of capability, costs and schedule. Defence develop an Acquisition Business Case as the avenue through which to seek Second Pass approval. The Business Case is extracted from a Capability Options Document, which in turn, is to be supported by an OCD, a FPS, a Test and Evaluation Concept Document (T&ECD), and a Project Management Plan (PMP).

Date	Activity
<b>Second Pass Approval</b>	
Dec 2003	Defence signed a contract with DMS to deliver 12 ACPBs, each with a 15 year support package. Total contract worth, as signed, was \$552.86 million.
Jul 2004	Defence wrote to the Public Works Standing Committee, with Ministerial approval to request consideration of the works required to prepare Darwin Naval Base for the new ACPBs.
Sep 2004	Government announced that 2 extra ACPBs would be purchased.
Jan 2005	ACPB #1 Harbour Acceptance Trials and Sea Acceptance trials scheduled.
Apr 2005	ACPB #1 21 day mission trial scheduled.
<b>Delivery Phase – ACPB #1</b>	
May 2005	Scheduled Contracted delivery of ACPB #1 to the DMO.
Jun 2005	ACPB #1 commissioning, and Initial Operational Release for RAN service is scheduled.

Source: ANAO analysis of Defence documentation.

## Audit approach

**1.6** The audit was undertaken during the initial build stage of the first ship, when less than 10 per cent of total acquisition costs had been expended. The objective of the audit was to provide an independent assurance of the effectiveness of Defence's management of the acquisition, and future provision of the ACPB capability, relating to the in-service support contract, provision of infrastructure, and crewing sustainability.

**1.7** The final Safety Case Report had not yet been delivered to Defence at the completion of field work, and so was outside the scope of this audit. The audit also did not address the ability for the delivered ACPBs to meet with their intended operational employment, as the trials period and 21 day mission trial associated with the acceptance of the FOC, were not completed at the completion of field work.

**1.8** Audit fieldwork was conducted from June 2004 to October 2004. The audit team met with areas within Defence, including: the Project Office; Maritime Development Division; Maritime Command; the Minor War Vessels System Program Office; and various areas within the Navy responsible for in-service support, certification, and training.

**1.9** The ANAO examined documentation relating to concept development and subsequent phases of the Project, as well as the preparation and management of the contract.

**1.10** The audit was conducted in accordance with ANAO auditing standards at a cost of \$265 000.

## **Report Structure**

**1.11** The remainder of this Report is structured into four chapters. Chapter 2 outlines the approval management of the project, as well as discussing the acquisition options considered by Defence. Chapter 3 discusses the contract structures put in place to create the environment against which the ships will be delivered, and then supported. Chapter 4 reviews the project management practices in place to govern the delivery, and ongoing support of the required capability. Chapter 5 examines support arrangements put in place by Defence to ensure the capability remains viable, throughout its planned life of type.

## 2. Fremantle Class Patrol Boat Replacement Strategy

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*This chapter examines the capability requirement and approval processes of the project.*

### Background

**2.1** The Project comprises two distinct phases, which are spread across the 'Two Pass' approval system:

- Phase 0, which was used to provide consultancy and Professional Service Provider (PSP) assistance to develop acquisition strategies for the supply of replacement patrol boats; and
- Phase 1, which was the build, and support phase of the Project.

**2.2** Phase 0 was approved in November 1999, with an initial budget of \$0.321 million. Phase 0 provided the seed funding required to develop a business case associated with preparing documentation for Government First Pass analysis. The final budget allocated to Phase 0 was \$3.43 million.

**2.3** Within Phase 0, Defence undertook a two-stage Request For Tender (RFT) process in an effort to limit the cost to industry for preparing tenders by requesting only high level information in the first stage. The Stage 1 RFT was released in September 2001, and closed in November 2001<sup>22</sup>.

**2.4** Defence defined the capability requirements for the ACPBs in the Stage 1 RFT and, in lieu of defining the number of boats required, specified the number of patrol boat days per annum to be delivered. The aim was to facilitate an industry based solution that demonstrated the best value for money solution available to achieve the required capability outcomes.

**2.5** A total of nine responses were received in response to the Stage 1 RFT<sup>23</sup>. Defence assessed six to offer detailed proposals for both procurement options, one to offer a direct purchase offer, and two to be incomplete tender responses. Eight of the nine responses were from Australian based shipbuilders.

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<sup>22</sup> The RFT was designed to provide Defence with sufficient information from prospective contractors to allow decisions to be made about the use of private financing for the project, and to ensure Defence could limit the number of potential Stage 2 contractors to those which provided the most effective proposals offering value for money for Defence.

<sup>23</sup> Stage 1 of the evaluation process aimed at undertaking three distinct outcomes:

- screening, to ensure tenders that did not meet the 'essential' criteria were rejected;
- evaluation, to determine a preferred acquisition strategy, based on the tenderers' responses; and
- shortlisting tenderers to be invited to submit tenders to Stage 2 of the RFT process.

**2.6** The exercise of ranking of tenders, on the basis of value for money, involved ranking the tenders received from Stage 1 in relative order of merit. In May 2002, Defence announced that there were 3 successful tenderers from Stage 1. Unsuccessful tenderers were notified in writing, and afforded a post evaluation interview, if requested.

**2.7** Defence assessed that value for money was the key discriminator associated with making the decision whether or not to proceed with either procurement option. They also considered four further important elements: guaranteed operational control of the boats; guaranteed availability of the boats; the extent of risk allocation; and the quantitative analysis of costs<sup>24</sup>.

## **Financial Considerations**

**2.8** Stage 1 of the RFT process, initiated in August 2001, sought tenders for the supply of the replacement boats under one of two options:

- supply, 'based upon a PFI'<sup>25</sup>; or
- supply as a capital acquisition using a 'direct purchase option'<sup>26</sup>.

**2.9** The Defence tendering strategy documents specified that a private financing arrangement was the preferred replacement option. Defence pursued the PFI option as the majority of the risks associated with the supplies and support for a capability are transferred to the contractor, primarily because the payment regime is based on performance criteria expressed in terms of output.

**2.10** All leases<sup>27</sup> must be classified as either a finance, or operating lease, at the inception of the lease<sup>28</sup>. The significant difference between finance and operating leases is the allocation of risk to the lessee in the case of a finance lease, or to the lessor, under an operating lease. In May 2002, Defence sought accounting opinions to identify which lease option would be appropriate for

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<sup>24</sup> Defence assessed that there were no force related impediments to the PFI approach, provided they could deploy and operate the replacement patrol boats as they saw fit. The ANAO notes that, in contractual terms, this right would only be modified by the obligation to accept the risk of consequential damage through action, or a decision made, by Defence leading to reduction on the value, or use of the patrol boat asset.

<sup>25</sup> The term 'private financing' refers to a Government procurement process utilising private sector capital to partly, or wholly, fund a major asset, or other infrastructure, used to deliver Government outcomes.

<sup>26</sup> The Direct Purchase option involved Defence procuring the prime equipment, with through-life support being provided under the same contract, for the life of the platform.

<sup>27</sup> The Australian Accounting Standards (AAS17) define a lease as an agreement conveying the right from a lessor to a lessee to use an asset for a stated period of time in return for payment by the lessee to the lessor.

<sup>28</sup> Under a finance lease, the lessor transfers the risks and benefits of ownership of the asset to the lessee. Legal ownership may or may not eventually be transferred. In the case of an operating lease, the risks and benefits of ownership of the asset are retained by the lessor.



the procurement of the patrol boat capability in the event that the direct purchase option was not pursued. The private sector accounting firm advice noted that:

the adopted leasing structure will result in Government bearing substantially all of the risks and rewards of ownership of the [patrol boats] and as a consequence the lease should be classified as a finance lease under AAS 17/AASD 1008. The primary basis for this conclusion is that Government bears substantial risks and rewards of the [patrol boats] given they have use of the ships for the first 15 years and retains substantially all the residual benefits of the [patrol boats] at the end of the lease period.

**2.11** The advice also stated that the PFI option could be structured to represent an operating lease, if the lessee's risk were to be reduced by excluding the option of purchasing the assets at the end of the lease at a fixed residual value.

### *Finance Lease and Direct Purchase Considerations*

**2.12** Defence commissioned a Report to undertake a quantified risk analysis of two indicative procurement options. The Report indicated that there was a greater risk to Defence associated with undertaking the direct purchase option over the PFI acquisition model. Defence noted, in the comparison of the options, that in the PFI option, the risks allocated to the contractor are built into the interest charged by the financier, coupled with the contractor estimates of risk. The Report found that the Net Present Value (NPV) of the payment stream for the whole of project costs, under the commercial arrangement, would offer an eight per cent advantage over a traditional acquisition and support approach.

**2.13** The Department of Finance and Administration (Finance) advised that the discounting rates to be employed in the calculations were to be the Commonwealth long term bond rate of 5.5 per cent, less the inflation rate, which was 2.19 per cent.

**2.14** Defence added \$65 million over direct purchase tender prices to take account of the risks associated with a direct purchase option. In doing so, Defence stated that a like-for-like analysis could be made with the PFI option for consideration of whole-of-life costs.

### *Risk Treatment*

**2.15** Defence, assisted by a contracted supplier, undertook a risk analysis of the two procurement options under consideration. The analysis addressed the uncertainty of major cost areas of Project interest, in terms of cost elements, in an effort to compare the risks associated with each option. Defence found that the direct purchase option was likely to incur a larger percentage increase in costs, based on the identified risks, when compared to the PFI option.

**2.16** A breakdown of the outcomes shows that of the 112 risks identified, the direct purchase option presented a greater risk in 39 of the cases, whereas the PFI option presented a greater risk in five of the cases. In 61 of the cases considered, the risks associated with both options were classed as being the same. Seven risks were not applicable to either procurement option.

**2.17** Critically, in presenting the business case for the Project, Defence assumed that the lease underpinning the PFI would classify as an operating lease. In considering the business case, Finance, and Treasury advised Defence that any such lease should be structured to form an operating lease, thus avoiding the full amount of the contract being treated as an accrual charge against the Commonwealth Budget in the year of acquisition.

### *Cost Effectiveness*

**2.18** Using the rates advised by Finance, Defence found that three of the four PFI bids were more cost effective than the direct purchase bids (risk adjusted). The margin in favour of these PFI bids increased in favour of the PFI solution as the discount rate increased<sup>29</sup>.

**2.19** The outcome of the analysis indicated that, based on the report Defence commissioned, the risk adjusted, whole-of-life costs for both options, over the four best bids, indicated the present value of financing bids were, on average, approximately one per cent less than the present value of direct purchase bids. Defence noted that the margin increases in favour of the private financing option as the discount rate increases.

**2.20** The cost figures provided by the respective respondents to Stage 1 of the RFT showed a variation of five per cent to fifteen per cent on accuracy of cost data, which largely invalidates any like for like assessment of the financial value of the PFI acquisition option against a direct purchase option.

**2.21** In seeking Government approval to proceed to Stage 2 of the tendering process, Defence advised Government that, on balance, a private financing arrangement was considered better value for money for the replacement patrol boat project than the pursuit of a traditional, direct procurement approach.

**2.22** The ANAO provided an opinion in May 2002, clarifying the classification of the proposed lease, at the request of Defence, Treasury and Finance. In doing so, the ANAO referred to the private sector firm's accounting opinion, as well as the nature of the Stage 1 Request For Tender (RFT), and Draft Project Agreement documents provided by Defence. The ANAO concurred, in part, with the private sector firm's opinion, finding that the lease

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<sup>29</sup> Project costs were compared using NPV of cash flows, using a discount rate, which approximated the 10 year bond rate, as recommended by Finance.

option, as presented, and based on the use of the capability as defined by the Defence documents, should be classified as a Finance Lease.

**2.23** Following advice from the Government, Defence chose to adopt a direct purchase option for the assets underpinning the required patrol boat capability. In doing so, Defence entered into a contract for purchase, and subsequent in-service support, under the same funding construct. Defence thus obviated the requirement to show an accrued draw down from the Defence budget for the totality of the costs associated with providing the ACPB capability within one financial year, as would have been required, had a PFI finance lease been entered into.

**2.24** In December 2003, Defence sought, and received the Minister for Finance and Administration's authorisation, in accordance with Regulation 10 of the *FMA Act 1997*, for Defence officials to consider approving a spending proposal involving a multi-year acquisition, maintenance and support program. Later in December 2003, the DMO Head of Maritime Systems subsequently acted as both the Proposal Approver<sup>30</sup>, and the Liability Approver<sup>31</sup> for the ensuing contract, to the value of \$553 million, exclusive of GST, for the construction, maintenance and support of 12 ACPBs.

**2.25** The ANAO considers that a review of the Defence Contracting Policy, with the aim of clearly specifying the requirements and conditions associated with initiating PFI style major equipment acquisition contracts, would benefit future projects considering this style of capability delivery.

## Stage 2 Tender Process

**2.26** In June 2002, following consideration of external advice, and the evaluation of Stage 1 of the RFT responses, the Government directed Defence to proceed with the acquisition of a direct purchase acquisition model, at an estimated cost of \$436.8 million (2002–03 price basis) for the acquisition component.

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<sup>30</sup> The Defence Procurement Policy Manual (DPPM) states that Proposal Approval is the delegation that approves a proposal to spend public moneys. The Proposal Approver is responsible for ensuring sufficient budget allocation remains available in the Annual Liabilities Program to cover the cost of the proposal. The delegate is also responsible for ensuring that, inter alia, the proposal has been developed in accordance with the policies of the Commonwealth, and the proposed expenditure will make effective and efficient use of public money.

<sup>31</sup> The DPPM states that Liability Approval is the final step in the purchasing framework for Defence, and binds the Commonwealth to making a payment of public money. The delegate is required to ensure that the extent of the contract has not differed to that which was given proposal approval. The delegate is also responsible for ensuring final funds availability for the project, and certifies that value for money has been achieved by selecting the candidate for the contract.

**2.27** The three short listed companies were invited to tender for Stage 2 of the tendering process. Their responses were received in November 2002. Defence held clarification workshops on the submitted offers in February 2003.

**2.28** In June 2003, following probity and legal advice, as well as consideration by Government, Defence announced that DMS with Austal Ships Pty. Ltd. (AUSTAL) as a subcontractor, and Tenix, remained in competition. In July 2003, parallel contract definition workshops were undertaken to further negotiate with the remaining tenderers. Tenix and DMS delivered developed solutions to Defence in July 2003. Defence based its assessment of the offers from the tenderers on these revised offers.

**2.29** The DMS offer<sup>32</sup>, while carrying some risks associated with devaluing<sup>33</sup> the maintenance work available for land based uniformed maintenance staff, and risks associated with contractual arguments, was assessed as having a whole of life NPV cost to Defence of \$33 million more than the Tenix<sup>34</sup> offer<sup>35</sup>.

**2.30** Defence advised the Government, in August 2003, that, based on the professional judgement of Navy staff in the Maritime Development Branch of the Capability Systems Division, Navy Systems Command, and the Patrol Boat Force Element Group, the DMS solution offered tangible additional performance of operational value to the Navy. The evaluation team assessed that this outweighed the three per cent higher whole-of-life costs associated with the DMS offer.

**2.31** In September 2004, the Government announced that two additional Patrol Boats would be ordered to cater for security surveillance requirements in the area of the North West Shelf<sup>36</sup>.

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<sup>32</sup> The DMS offer specified a 12 boat solution based on aluminium construction.

<sup>33</sup> The DMS offer was thought to reduce the technical exposure Navy shore borne staff would have to deep maintenance activities. This was managed by integrating up to 30 Defence maintenance staff with DMS shore based maintenance organisation via a no additional cost secondment arrangement.

<sup>34</sup> The Tenix offer tendered a 13 boat solution, constructed in steel.

<sup>35</sup> The costs were worked out as NPV Costs, based on October 2002 prices.

<sup>36</sup> The current Contract pricing schedules, as well as support contracts already negotiated, are structured to cater for a ship set build of 12 Patrol Boats. There are no provisions in existing contracts, without renegotiation with equipment suppliers, that would allow the DMO to exercise options to cater for two additional Patrol Boats.

## 3. Build and Support Contract

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*This chapter outlines the considerations made by Defence in awarding the Contract and the considerations made when choosing major elements of GFE.*

### Build Contract Outcomes

#### Australian Industry Involvement (AII)

**3.1** The preferred levels of Local Content indicated in Stage 1 of the RFT were 65 per cent of the capital costs, and 90 per cent of the integrated support costs of the capability, which have now been contracted.

**3.2** The Contractor AII plan includes a requirement for the Contractor and major subcontractors to meet AII commitments of \$207.2 million. Other minor subcontractors are to contribute a further \$21.8 million to the AII target. The Ship Builder is required to contribute 72.2 per cent of the AII input for this phase, in the design, build, and delivery of the ACPBs. Other major firms also contribute to the AII target. The total AII component of the production phase exceeds the contracted target of 65 per cent.

**3.3** The Contractor plan includes required AII commitments for the in-service support element of the contract, amounting to \$213.1 million, which represents in excess of 90 per cent of the contracted In-Service Support (ISS) phase costs.

#### Requirements Specification

**3.4** One use of the FCPBs is to patrol the Australian Exclusive Economic Zone, and intercept, where possible, potential illegal immigrants trying to enter Australia by sea. Defence states that the replacement patrol boat will provide the primary patrol and response element of the integrated Civil Surveillance Program<sup>37</sup>. In addition, the replacement patrol boats are intended to provide a surface surveillance capability to support Defence in wide area surveillance. Defence requires the replacement patrol boats to occasionally operate in low southern waters, without necessarily being able to operate in the higher southern latitudes around Macquarie and Heard Islands.

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<sup>37</sup> Defence contributes, through Navy, to the Civil Surveillance Program, through 15 FCPBs, all of which have exceeded their initial design lives of 15 years. Defence asserts that increasing maintenance requirements, and a reduction in reliability, have jeopardised the ability for Defence to cost-effectively deliver the Government's Civil Surveillance Program requirement of 1800 sea days per year with the existing FCPB force. The existing FCPB force is also required to contribute 860 sea days per year in their military role, in direct support of ADF operations. In 2002–03, Defence reported that the Patrol Boat Force achieved 93 per cent delivery of the total available capability.

**3.5** DSTO used the Defence operational concept and determined, via modelling techniques, that a fleet of 15 replacement patrol boats would be required to reliably meet the requirement for concurrency of operations in both northern and southern waters.

**3.6** Defence chose to allow industry the option of proposing the number of vessels needed to satisfy the operational requirements, cognisant of the personnel constraints imposed by the Defence crewing management policies. The current fleet of 15 FCPBs, each 42 metres long and 220 tonnes, with crews of 23 personnel, are tasked subject to the Maritime Commander's 'Pers Tempo' Policy. This policy effectively limits the deployment of individual ships to ensure they do not normally exceed 150 sea days per financial year, assuming there is only one crew per ship<sup>38</sup>. It also states that occasional fluctuations may be necessary to allow individual ships to reach and maintain Minimum Level of Operational Capability (MLOC), and as required for specific operations.

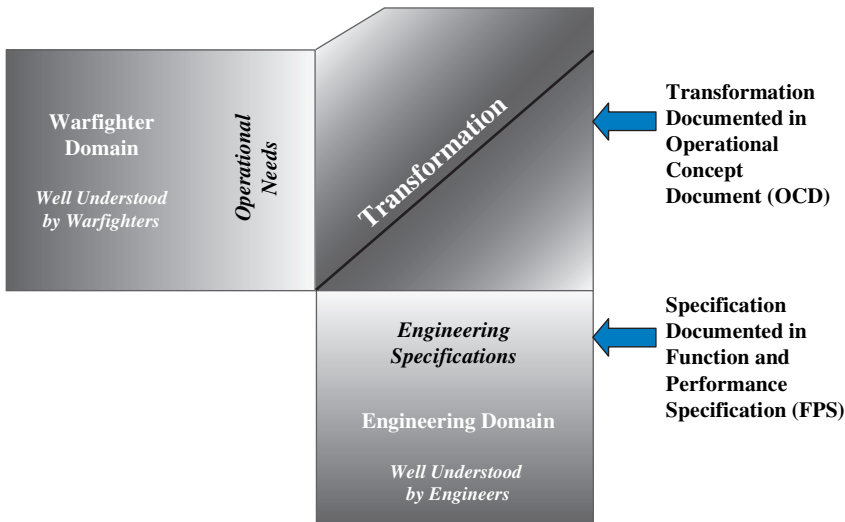
**3.7** During the initial stages of the acquisition phase of a project, Defence guidelines recommend that an OCD, an FPS, and a TCD, for the selected solution, are required for inclusion in the solicitation package for acquisition. The ANAO did not observe the inclusion of the TCD in the documentation made available for potential candidates for the award of a build contract for the ACPBs.

**3.8** The Defence guidelines state that all stakeholders, including ends users and system developers, rely on the OCD as the basis for common understandings. Defence advised that the OCD<sup>39</sup> can be viewed as a translation vehicle between the various specialty domains of the stakeholders, as represented by Figure 3.1.

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<sup>38</sup> The 'Pers Tempo' Policy actually limits the time any one crew can normally expect to serve at sea in any one year to 150 days, and states that they should spend at least 120 days in their homeport per year.

<sup>39</sup> Defence guidance states that the OCD should not be written as a technical specification, but rather it should provide a narrative overview. It is a complementary document to the FPS, and provides an operational context for the system. It is a source of information for technical specification development, logistic support requirements definition, project planning and enhanced decision-making especially during the design process.

**Figure 3.1****Relationship between the Operational Concept Documents and Functional Performance Specification**

Source: Defence Guidance for the Preparation of an OCD, FPS and TCD

**3.9** Defence guidelines further stipulate that the OCD and FPS are to be used by the Contractor in developing and validating Mission System and Support System specifications. The guidelines state that traceability is to be established, and maintained, between the Mission and Support System specifications, and the FPS and OCD. The guidance states that scenarios to be used for system validation and acceptance are to be based on those described in the OCD. These scenarios will cover the scope of acceptance validation, and be used to assess the system's 'fitness for purpose'<sup>40</sup>. This commercial reliance on the OCD requires that it be well prepared and accurately reflect the warfighter's understanding and intended use of the system.

**3.10** The ACPBs are required to be designed, built and maintained to Australian Maritime Safety Authority (AMSA) approved civilian classification society standards, which will concomitantly meet the International Maritime Organisation (IMO), SOLAS and Maritime Pollution (MARPOL) requirements. Defence advised that the IMO requirements should be inclusive of the High Speed Craft Code.

<sup>40</sup> Defence defines a system's 'fitness for purpose' as its ability to perform as specified in its operational environment to satisfy the warfighter's intended purpose.

**3.11** Defence contracted for specific ship characteristics, all of which are underpinned by the requirement to meet three levels of specific source documentation. The levels of source documentation are as follows:

- Level 1 requirements, which include: sponsor requirements; top level functional and performance requirements; requirements from the operational concept document; and certification and regulatory policy requirements.
- Level 2 requirements, which include: RFT documents; statements of work; ship requirements documents; integrated support requirements documents; and conditions of contract governing the contracted deliverable requirements list.
- Level 3 requirements, which include: contractual documents; the conditions of contract; the statement of work; the ship specification; and the integrated support specification.

**3.12** The tests associated with ensuring the DMO accepts the required ships for the RAN from the delivering contractors, are articulated by the RAN Test and Evaluation (T&E) process. The evaluation planned by the DMO is to be conducted against Level 3 requirements. The outcome of these tests is reflected in what is known as a Form TI 338, which is a report of the material and equipment performance state of the delivered ship. The Form TI 338 is also the formal document used to facilitate Initial Operational Release, and eventually, Operational Release<sup>41</sup>.

## **Tracing the Requirements into Build**

**3.13** Defence used T&E to obtain information to support the objective of a capability system with known confidence. Defence advised that the results of T&E are fundamental for decision-making when validating operational concepts and end-user requirements, evaluating designs or modifications, identifying alternative designs, comparing and analysing trade-offs when capability specifications cannot be met, verifying contract compliance, and

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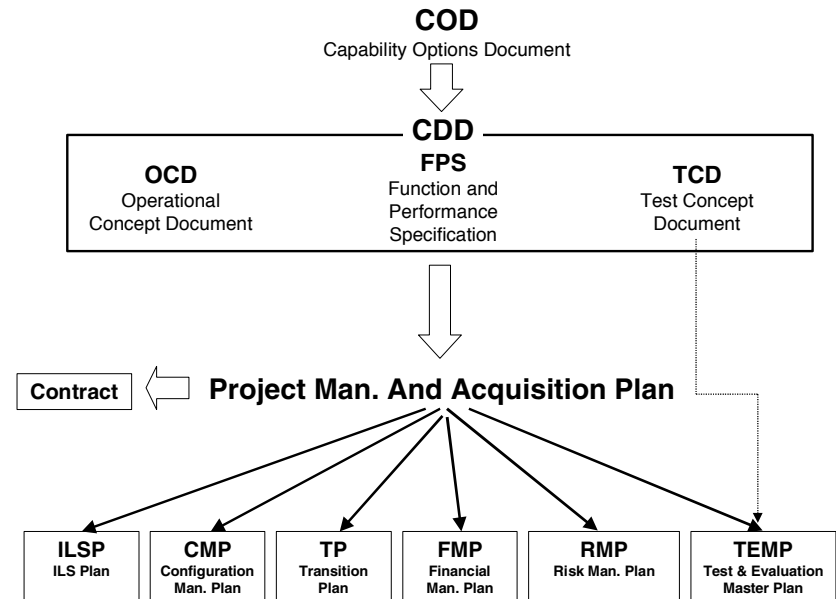
<sup>41</sup> Operational Release is the final milestone in the acquisition process. It is achieved when Chief of Navy, on the recommendation of the Navy Systems Commander (as advised by the Director of Navy Trials) and endorsement of the Maritime Commander, is satisfied that the equipment is, in all respects, suitable for operational service in the Navy, and that sufficient information on the capability is held to allow for the safe, and effective employment of the capability. The date of promulgation of the Operational Release represents the in-service date of the vessel. To achieve Initial Operational Release, following Delivery of the vessels from the Contractor to the DMO, the FOC will Commission and Store, undertake Harbour Trials and a Safety Workup, undergo an examination and Safety Assessment, undergo an Initial Material and Personnel Certification. The FOC will also undertake a FOC Trials Cruise. Following the Initial Operational Release, the RAN typically undertake a maintenance period, complete Combat System Sea Qualification Trials, Sea Trials and Workup, Readiness Evaluations, Operational Evaluations, and an Operational Deployment, before certifying that the vessel is ready for Operational Release. (See Australian Book of Reference 6205, Chapter 6).



evaluating system performance. The key documents associated with the development and management of the test and evaluation program are represented by Figure 3.2.

Figure 3.2

Defence Test and Evaluation Key Project Documents



Source: Defence – RAN Test and Evaluation Manual ABR 6205

3.14 Test concepts, and resources needed to support T&E, are to be included when seeking Project Approval for new or upgraded capability systems. This is done using the TCD<sup>42</sup>, which should be submitted together with the OCD and the FPS, in preparation for Second Pass Government consideration.

3.15 Defence stated that requirements for the Contractor to support testing should also be included in the TCD, as these requirements need to be incorporated into the acquisition contract. Identification of these requirements is essential in estimating the cost of operational evaluation, associated testing, and to allow sufficient time for planning the availability of assets so they are available when required.

<sup>42</sup> The TCD captures the end user's intended test approach, and hence the strategy for acceptance between the DMO and its customer. The TCD describes the approach, duration for testing as well as identifying any significant cost drivers, such as the use of major assets, the need to perform live firings, and the number of test flight hours.

**3.16** The TCD is used by DMO to prepare a TEMP, which will contain the project's high-level test approach. The TCD provides a common understanding of the test and evaluation processes, in sufficient detail to define the scope of the effort to be undertaken by all parties<sup>43</sup>.

**3.17** Current Defence Policy states that the Defence Capability Development Group (formally, in the case of maritime development projects, the Maritime Development Division) is responsible for ensuring the development of a TCD is undertaken by an Integrated Project Team, and subsequently endorsed by a relevant Capability Development Board.

**3.18** The ANAO found that the Maritime Development Division did not produce a prescriptive TCD, inclusive of measures of effectiveness<sup>44</sup>, prior to Second Pass approval, or prior to entering into Contract to deliver the ACPB capability<sup>45</sup>.

## **Test and Evaluation Master Plan**

**3.19** The Contract provides the yardstick by which Defence measures and controls contractor verification and validation, as well as performance and deliverables. The Contract does not form a component of the Naval Operational Test Evaluation process<sup>46</sup>.

**3.20** The TEMP establishes the T&E authorities, responsibilities and milestones, and provides for the integration, coordination and direction of the T&E process, which had not been completed at the time the ANAO completed fieldwork for this audit. The ANAO notes that the TEMP is to be supported by

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<sup>43</sup> The TCD should address all of the significant T&E requirements in order to identify the funding and resources required for the total T&E program, culminating with Contractual Delivery and Acceptance-Into-Service (AIS) of future systems/capabilities. The TCD is also used to facilitate the timely planning, including both personnel and assets, to support the Developmental T&E, Production/Acceptance and Operational T&E, all of which should include elements of Supportability T&E.

<sup>44</sup> Each functional performance specification should be supported by a stand-alone measure of effectiveness.

<sup>45</sup> The TCD issued in September 2004 makes reference to the OCD and Ship Requirement Documents when defining the required outcomes associated with critical operational issues.

<sup>46</sup> Armidale Class Patrol Boat Test and Evaluation Master Plan Draft Version 2.3 September 2004.

subsidiary plans, represented by the Technical Test Plan<sup>47</sup>, the Supportability Test Plan<sup>48</sup>, and the Naval Test Plan.

## Operational Evaluation

**3.21** The final tests associated with gauging the ability for the ACPBs, to undertake the tasks for which they were intended, are undertaken by the RAN Test, Evaluation and Analysis Authority, in terms of the conduct of an Operational Evaluation (OPEVAL).

**3.22** The OPEVAL seeks to evaluate the performance of the ACPBs against specific Critical Operational Issues. These issues are derived from the TCD and the TEMP, which are required to reflect the requirements articulated in the Defence Joint Operational Command Operational Preparedness Requirements. They are then separated into operational effectiveness and operational suitability issues.

**3.23** The ANAO found that, by not fully specifying the measures of effectiveness against for the ship characteristics within the TCD, prior to Contract signature, Defence increased the risk that the DMO may not have had sufficient information to fully represent all of the requirements associated with testing for compliance against the Defence Joint Operational Command Operational Preparedness Requirements in the Contract. This subsequently increases the risk that the Contractor may be left in doubt as to how the Ship and Support requirements would be tested for acceptance<sup>49</sup>.

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<sup>47</sup> The Technical Test Plan is required to ensure the contracted validation and verification program is integrated with the technical test and evaluation program in an effort to reduce the chance of duplication of effort. It also serves to improve the probability of ensuring technical certification is achieved prior to delivery, and that compliance with RFT functional and performance specifications is clearly demonstrated.

<sup>48</sup> The Supportability Test Plan is required to ensure the contracted validation and verification program is integrated with the supportability test and evaluation program in an effort to reduce the chance of duplication of effort. It also serves to improve the probability of ensuring integrated support certification is achieved prior to delivery, and that compliance with RFT functional and performance specifications and the approved certification matrix are clearly demonstrated.

<sup>49</sup> Defence advised the ANAO, in November 2004, that: *the ACPB TCD was endorsed out of phase with current policy, and written after contract signature. While not ideal, the documentation does provide a sound basis for Operational Test and Evaluation activities. There is no requirement for the TCD to provide, or specify measures of effectiveness, as this detail is articulated in the Operational Evaluation Test Plan. The Operational Evaluation Test Plan's critical operational issues, which are drawn from higher level concept documents, will determine if the ACPB meets contemporary capability requirements in the current environment, as well as measuring the full capability of the ACPB, which may, in some circumstances, exceed the contracted requirements.*

## Recommendation No.1

**3.24** The ANAO recommends that Defence ensure that Critical Operational Issues are identified, documented, and incorporated with applicable Test Concept Documentation, prior to Second Pass Government Approval and subsequent Contract award, for the procurement of major capital equipment.

### *Finance response*

**3.25 Agreed.** The project had commenced prior to the *Review of Defence Procurement* (Kinnaird process) was implemented and that issues addressed by this recommendation will be addressed more robustly in future projects as a result of implementation of the Kinnaird processes.

### *Defence response*

**3.26 Agreed.** Critical Operational Issues have been identified and documented in the Test Concept Document, which has now been produced and agreed. A Test and Evaluation Master Plan has since been developed from the Test Concept Document.

## Contractor Milestone Payments

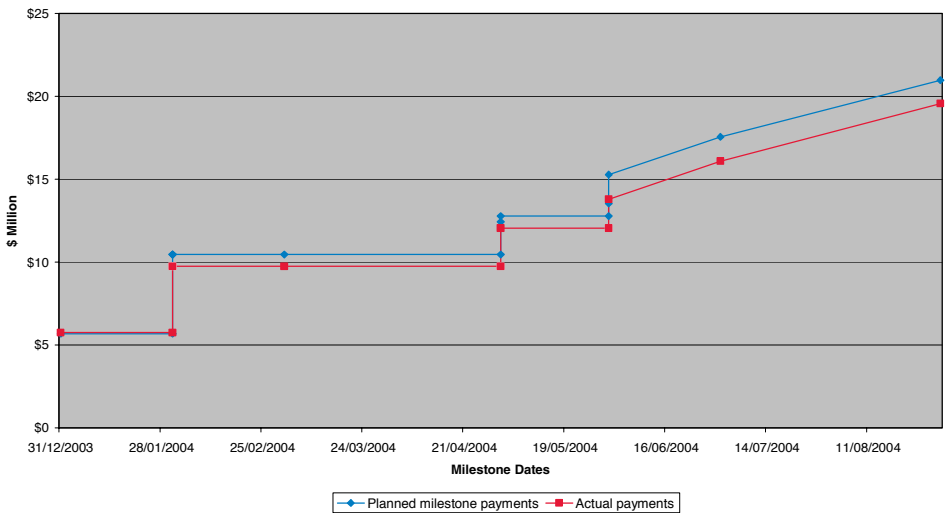
**3.27** Stage 1 of the RFT strategy advised tenderers that the Stage 2 Draft Contract was to reflect a milestone payment regime only. The number and value of milestone payments were to be such that payments were linked to actual work achieved, and that they provided an objective measure of contract progress. The system acceptance milestone constitutes approximately 10 per cent of the total price of all the ACPBs delivered. Defence elected not to utilise earned value payments for this project.

**3.28** Defence specified that they would make no support payments to the Contractor until delivery of the first ACPB, and then each payment would be conditional on, and proportional to, the extent to which the ACPB capability is made available in accordance with the contractual agreement.

**3.29** Milestone payments to date are being made as per the schedule. Figure 3.3 illustrates the payment claims made against expected contract payments, as of August 2004.

**Figure 3.3**

**Sea 1444 Contract Milestone Payments to August 2004**



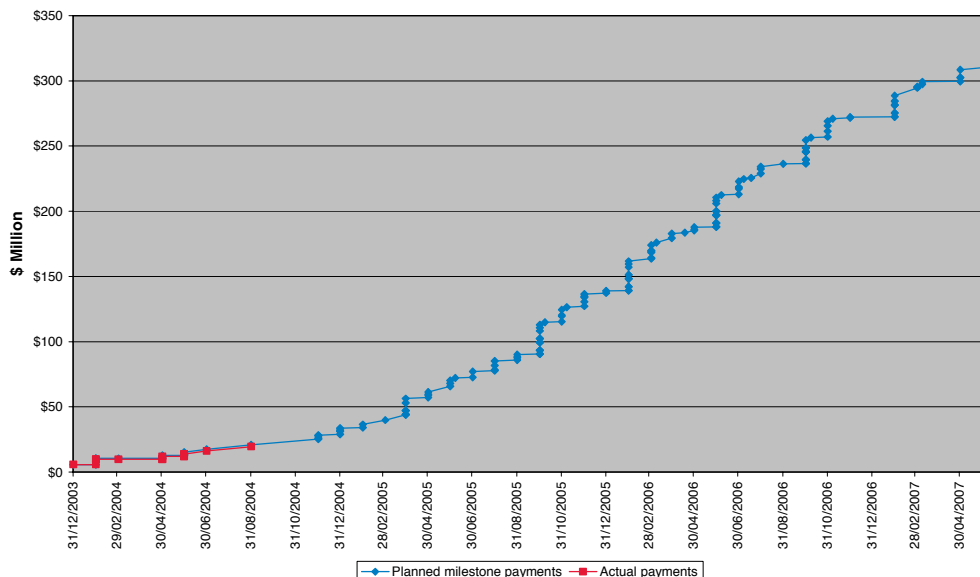
Source: Defence Financial Records

**3.30** Although there appears to be a lag in payments compared to anticipated costs, the ANAO could not, in the absence of access to the Ship Builder's earned value records, determine whether this lag corresponded to any production or delivery delays.

**3.31** The full costs associated with building the capability are represented at Figure 3.4. The costs of delivery increases, as expected, with the number of hulls under construction. The total amount paid to the Contractor prior to the deliver of the first hull is 15 per cent of the total acquisition cost. The remaining 85 per cent of costs is attributable to the delivery of the full capability, as well as to a component for the in-service costs associated with the boats already delivered.

**Figure 3.4**

### Sea 1444 Capability Acquisition Costs



Source: Defence Finance and Contractual Records

## Government Furnished Equipment

**3.32** Defence is providing key elements of the ACPB capability to the Contractor for integration and support, as Government Furnished Equipment (GFE). The GFE for this Project includes, amongst other elements, the cannon, as part of the larger main armament system and the radar detection system.

### The Main Armament System

**3.33** The endorsed, top-level requirement for the main armament for the ACPB required a stabilised weapon of no greater calibre than 30mm, in order to leverage on commonalty with existing Naval systems employed on the Mine Hunter Coastal ships already in service. Defence was expecting to be able to leverage from the ability to minimise training and logistics costs, and maximise economies of scale in ammunition production within Australia.

**3.34** The DMO extended the criteria for commonalty across the whole of Defence, and in doing so, included the Bushmaster 25 mm weapon as a potential candidate, noting the Army used these weapons in their ASLAVs.

**3.35** The DMO undertook an analysis of the available options, comparing their capability, and through life ammunition costs. It was demonstrated that by choosing a 25mm cannon, the through life ammunition cost savings

amounted to \$11 million, when compared to the ownership costs of supporting a 30mm cannon. This represented a saving of 167 per cent of the whole of life costs for the 25mm cannon ammunition costs. The savings are attributable to the overall cost of providing ammunition of differing calibres, given the unit cost of whole systems, differed by less than \$250 000 per unit. Table 3.1 illustrates the comparative costs associated with providing each round of ammunition for both 30mm and 25mm cannon variants.

**Table 3.1**

**Costs of Cannon Ammunition**

	30mm Calibre Round	25mm Calibre Round
Training Round	\$92	\$30.46
High Explosive Round	\$197.37	\$88.92
Penetrating Round	Not Available	\$52.61

Source: Defence

*System Choice*

**3.36** Procurement approval was given to Defence to purchase the cannons in July 2002.

**3.37** The main armament system chosen comprises a TYPHOON Mk 25 stabilised gun system, utilising an M-242 25 mm Bushmaster Cannon<sup>50</sup>, coupled to a TOPLITE electro-optical sensor and director system, with a laser range finder. There will be one weapon system per boat, plus a spare system for training application or to be used as an operational spare.

**3.38** Three tenderers offered different weapon systems. Defence chose the TYPHOON system over the initially preferred option, because it was determined that the TYPHOON system provided significantly better value for money, as well as offering additional functionality not otherwise available in other offers. Defence determined that the TYPHOON system had significantly higher AII content than other contenders, and a significant \$10 million cost advantage, representing approximately 20 per cent of whole of life costs.

**3.39** The chosen option required Defence to outlay \$US 2.98 million of the total contract price as a down payment. The estimated, whole of life costs associated with providing the required maintenance, training and support for the chosen system was assessed, based on estimates provided by equipment suppliers, prior to contracting for the delivery of the main weapon system. It

<sup>50</sup> Delivery of the TYPHOON system is included in the Contract, whereas the Cannon was provided to the Contractor for integration as GFE.

was inclusive of the cost estimates tendered for the in-service support element of associated tenders.

**3.40** In May 2004, Defence formed an ACPB Gun Working Group. The stated goal of the Working Group is to monitor and assist with the installation, test and certification of the gun, and gun control systems.

**3.41** As of September 2004, the development of an Armament Safety Case for the armament system had not been accomplished. The Working Group is charged with addressing the development of: interface requirements; a safety case; test and acceptance criteria; both maintenance and operator training; and the required documentation to support the ongoing ownership of the gun system.

**3.42** The Director of Naval Weapons System advised the Project Office in June 2004 that the armament system installed in the ACPBs must comply with the requirements that form part of the Certification Basis. In addition, two areas of concern were highlighted. The first was design verification; the second was safety. The Project Office advised the ANAO in November 2004 that a company had been engaged to conduct a System Safety Study, for delivery in early 2005, prior to the scheduled Ship Mission Trial<sup>51</sup>.

**3.43** The Director of Naval Weapons Systems further stipulated that the safety program associated with the armament system, must result in the incorporation of risk control mechanisms associated with the use and maintenance of the entire armament system. The safety program must also result in the identification and quantification of the level, and nature of residual risk associated with the use and maintenance of the armament system. Only then, can Navy determine whether this risk is tolerable.

**3.44** The ANAO found that the development of a Preliminary Safety Case for each tendered option, as a tender deliverable, and prior to contract signature, would have strengthened the ability for Defence to discern the benefits and pitfalls associated with each option, prior to committing to one or the other.

#### *The TOPLITE Naval Electro Optical Director*

**3.45** The TOPLITE system is used for detecting, acquiring, and tracking naval and air targets. Data from the TOPLITE system is used for fire control and direction of the TYPHOON weapons system. The system is a line of sight,

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<sup>51</sup> The Director of Naval Weapons Systems expressed concern that there was no evidence that the Project Office had verified the design of the gun system to ensure it met the requirements specified of it. The Director of Naval Weapons Systems further noted that the ability to develop comprehensive safety cases that satisfactorily verify the design of weapons systems is not widespread in either industry, or Defence, and that Defence would benefit from developing an organic capability to develop, and manage safety cases, for weapons systems .



stabilised system, capable of operation during both day and night. The TOPLITE system is used as the main director for the TYPHOON gun system.

**3.46** System components include a closed circuit, directional, television camera, a thermal imager, and an automated video tracker.

**3.47** The TOPLITE system was chosen in July 2004 via a non-competitively tested decision by the DMO to replace the originally selected Electrotech Vistar 350 Electro Optical System. Defence state that the TOPLITE system provided a better capability for integration with the main weapons system, because: the TOPLITE system would be integrated directly for use as the weapons sight for the gun; the duplication of joystick controls for TYPHOON and TOPLITE systems increased control redundancy; and a laser range finder provided an enhanced capability. The ANAO notes that the payment schedule associated with delivering the TOPLITE system, as a result of the enhanced capability, has increased the cost of the acquisition by \$0.7 million.

## Radar Detection System

**3.48** The electronic surveillance systems are required to provide ACPB Ships' Staff with information on the presence, location, and identity of aircraft and surface vessels, employing radar systems for navigation, and weather avoidance, as well as communicating across various radio frequency bands. Defence specified more detailed performance specifications against these requirements, including future system growth capabilities, allowing specialised analysis of the signals being received.

**3.49** As part of the whole electronic surveillance suite, the Project submitted a procurement proposal in May 2004 to sole source a PRISM III Electronic Surveillance system from BAE Systems, to satisfy the Radar Detection capability requirements in various bands<sup>52</sup>. This capability is designed to assist the ACPBs to detect and intercept contacts of interest<sup>53</sup>.

**3.50** The DMO states that a market survey was conducted in April 2003 to identify existing systems suitable for small maritime platforms, as well as to gather information to gain an appreciation of the rough order of magnitude cost estimate for those systems. BAE Systems were not included in that survey.

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<sup>52</sup> The Procurement Proposal states the DMO assessed that, from a commonality point of view, and operational reasons, better value for money could be achieved by sourcing the PRISM III system. The Procurement Proposal notes that the PRISM III system is already in service with the Royal Australian Navy's Mine Hunter Coastal vessels. Albeit, as of September 2004, there was no in-service support contract in place to support the equipment.

<sup>53</sup> The DMO stated that there was a lack of definition of the requirements and sourcing arrangements for a radar detection surveillance system at the time of the Prime Contract signature. The ACPB was designed for, but not with, an electronic surveillance system. The requirements were finalised by the Defence Maritime Development Branch, with input from DSTO, and the Directorate of Naval Command, Control, Communications and Computers, Information Systems and Electronic Warfare.

The DMO advise that their analysis shows that none of the companies surveyed could provide any existing systems suitable for application in small maritime platforms.

**3.51** The ANAO found that the full life cycle costs associated with providing the required electronic surveillance capability was not publicly contested. Therefore, competitive pricing structures associated with alternate potential suppliers with modified systems, able to achieve the stated requirements, were not determined. Defence cost investigators advised that the costs associated with the delivery of the proposed PRISM III capability, compared favourably with the unit costs associated with delivering a similar capability for the Navy's Mine Hunter Coastal vessels<sup>54</sup>.

**3.52** The Procurement Proposal states that the PRISM III can sustain future capability growth, against which Defence can benefit, and that the Intellectual Property and software source code for PRISM III is accessible by the Commonwealth, facilitating the ease of future product growth. The DMO noted that significant benefits in logistic support would be obtained by introducing the PRISM III into the ACPB, observing that it is an identical system as that in the Mine Hunter Coastal Class.

**3.53** The Procurement Approval document indicated that the unit cost of the PRISM III capability is approximately \$1 million per system. The estimated through life support costs, as provided by the sole source supplier, are approximately \$0.8 million per unit. The ANAO did not observe any Defence analysis underpinning the appraisal of the estimated support costs.

**3.54** Defence anticipated a total acquisition and support cost for a 12 ship fleet size as \$25 million, over a 15 year support term. The DMO has stated that it intends to task the Contractor with managing the in-service support requirements for the system via a contract with the PRISM III supplier<sup>55</sup>.

**3.55** The contract to deliver 12 PRISM III systems to the DMO was signed on 8 September 2004, at a fixed cost of \$13.02 million. The contract is structured such that payments are made against 28 individual milestones, the last 12 of which represent delivery of each ship system. An initial mobilisation payment of \$628 399 is to be made and, subsequently, an additional \$917 790 for the

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<sup>54</sup> Subsequent to the market survey activity, a USA based company, offered an alternate electronic surveillance system to Defence. The DMO stated that they assessed the alternate system, and it relied on significant operator control and interaction to operate, whereas the ACPB requirement was for an operator-less system. The Procurement Proposal states that there is a Navy wide shortage of sailors qualified to operate electronic surveillance equipment. The DMO stated that the PRISM III system is the only suitable naval system available that does not require a specially trained operator.

<sup>55</sup> In September 2004, the proposal to procure 12 PRISM III systems was approved, at an estimated cost of \$13.02 million (excluding GST). The expenditure is to be phased over three financial years. The DMO proposed to ask the Contractor for a CCP to the head Contract to cater for the in-service support costs associated with the PRISM III equipment.

placement of the order for the required antenna cable, and associated equipment, all within two months of contract signature. Against this, the equipment vendor is to provide the DMO financial security for performance of the contract to the value of 10 per cent of the contract, no later than 30 days from contract signature.

**3.56** In total, the DMO is providing for a payment of \$1.55 million, without the delivery of any product. This constitutes an equivalent 12 per cent mobilisation payment. Payments associated with system deliveries constitute 23 per cent of the total contract worth. Of the remaining \$8.45 million, representing 65 per cent of the total contract value, obsolescence management issues account for \$1 million of the total contract worth.<sup>56</sup>

**3.57** The ANAO notes that, whereas the Procurement Proposal states that the PRISM III system is already in service with the Mine Hunter Coastal vessels, there is a substantial amount of obsolescence development work required to ensure the system, as already deployed, can be adapted for use with the ACPB capability.<sup>57</sup>

**3.58** The ANAO found that the provision of the PRISM III system, as GFE to the Contractor for installation to the platform, absolves the Contractor of much of the risk for integration and suitability to operate against a prescribed user requirement<sup>58</sup>. The ANAO also found that the DMO did not exercise sufficient due diligence to ensure that the level of support required to operate the PRISM III system was appropriately represented by the estimate tendered by the equipment supplier. As well, any future contract change negotiated with DMS to manage the operability of the system in service, will necessarily come at a commercial premium to any contract negotiated directly with the equipment supplier.

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<sup>56</sup> BAE systems advised the ANAO in January 2005 that: 'the elements of mobilisation funding are directly attributable to the number of high cost long lead items which must be procured prior to the manufacture of a complex system, and project start up costs associated with achieving the aggressive Commonwealth delivery schedule. BAE also advise that technology products such as PRISM III develop a number of obsolescence issues during their operational life, and of the eleven system elements requiring redesign, eight are considered minor.'

<sup>57</sup> See footnote 12.

<sup>58</sup> Had the user requirement for this element of the whole capability been formulated in detail, prior to the Contract signature, the risks associated with delivery, integration and suitability for the prescribed requirement could have been successfully allocated, in part, to the Contractor. The Contractor could also have been offered the responsibility for the reliability of the equipment, and its ongoing support in service under the ACPB ISS contract. The Procurement Approval for this system states that the Contractor advised Defence that it was able to absorb the responsibility for providing through life support of the PRISM III system, and were capable of adding this to their overall support task, through an appropriate contract amendment. The DMO advised that the Contractor is to undertake a scoping study with the equipment supplier for the support of the PRISM III system, and subsequently subcontract the equipment supplier to provide an appropriate level of support to ensure a required level of availability.

## *Audit Access*

**3.59** The DMO did not include standard audit access clauses in the sole source contract. As a result, the ANAO does not have direct access to information held by the private sector contracting parties.

**3.60** The Auditor-General wrote to all agencies, including Defence, in 1997 and 2001, seeking the inclusion in contracts of clauses designed to provide access by both agencies and the ANAO to records, information and assets associated with contractors' responsibilities for the delivery of services and/or equipment<sup>59</sup>. In its 2000 Report on *Contract Management in the Australian Public Service*, the Joint Committee of Public Accounts and Audit reaffirmed '... the need for the Auditor-General to have access to contractors' premises ...'<sup>60</sup>.

**3.61** Finance has provided guidance relating to the requirement for Agencies to provide for ANAO access to Contractors' information<sup>61</sup>. Specifically, the guidance states that:

The inclusion of standard access clauses provides the ANAO and Commonwealth agencies access to information held by contractors and third party subcontractors, including access to records, information and assets directly relevant to the contract performance.

**3.62** The ANAO notes that specific arrangements were made in the contract between the Commonwealth and the Prime Contractor for the supply and support of the ACPB capability that facilitates access by the ANAO to the contractor's premises and records. This same contractual condition has not been extended to the contract between the DMO and the supplier of the PRISM III equipment, for the delivery of the radar detection systems.

## **Recommendation No.2**

**3.63** The ANAO recommends that Defence undertake comprehensive analysis, to ensure that material Government Furnished Equipment procured separately to a Prime Contract, is supported by accurately defined through-life costs, prior to inviting a Prime Contractor to initiate a Contract Change Proposal to facilitate its ongoing support.

### *Finance response*

**3.64** Agreed.

### *Defence response*

**3.65** Agreed.

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<sup>59</sup> Such clauses are considered by the ANAO to be particularly important in large outsourcing contracts for services and/or facilities.

<sup>60</sup> JCPAA Report 379, *Contract Management in the Australian Public Service*, 2000, p. 55.

<sup>61</sup> <[http://www.finance.gov.au/ctc/standard\\_contract\\_clauses\\_to\\_p.html](http://www.finance.gov.au/ctc/standard_contract_clauses_to_p.html)>.

## 4. Project Management

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*This chapter examines the project management exercised by Defence for the delivery of the capability.*

### Background

**4.1** Oversight of Project Sea 1444 rests with the DMO Shipbuilding Governance Board, utilising the framework outlined in the DMO's Project Governance Guidelines. The Shipbuilding Governance Board<sup>62</sup> commenced oversight of the ACPB Project in early 2002. The Board considered issues related to the ACPB Project six times (including an extraordinary meeting) in 2002, four times in 2003, and four times in the year to end September 2004. The Shipbuilding Board has engaged the Project Management team on a number of issues<sup>63</sup>.

**4.2** Early briefings received by the Shipbuilding Board from the Project Office, indicated that the Commercial Off The Shelf (COTS) approach to the ACPBs would be able to deliver the required solution. However, a briefing provided to the Board in April 2004, by the Project Office, indicated that a key risk associated with the project was the Ship Builder not understanding the Navy specific boat requirements.

**4.3** The April 2004 briefing also indicated that the Project remained 'low risk', despite aggressive scheduling. The briefing also noted that the Project was the first to use multi-crewing, and to have RAN personnel embedded in the Contractor providing in-service support.

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<sup>62</sup> Defence stated that Governance Boards aim to promote improved performance in the four key areas of: accountability, transparency, disclosure and independence. The Governance Boards provide advice and guidance to Project Managers by assessing the key deliverables of performance/capability, costs, scheduling and risk management associated with a project as well as reviewing tender evaluation and contract management practices.

<sup>63</sup> These included:

- the relocation of project team members to Darwin during the acquisition phase of the project. The Shipbuilding Board recommended the move be delayed until after class acceptance had been achieved;
- the Board noted that crewing had the potential to become an issue with the multi-crewing approach being proposed resulting in a possible shortfall of between 3 and 5 crews;
- draft contract issues relating to charge rates for support of days at sea and insurance matters. In both cases the Project Team resolved the matter to the satisfaction of the Board; and
- the Governance Board recommended that sources of funding for the project be reviewed following the contingency reserve in place being absorbed by a design change relating to the galley and bridge. The ANAO notes that the contingency allocated to this element of the project represented less than 2.5 per cent of overall unallocated contingency.

**4.4** In early 2004, the Board noted that the Project required close observation, citing in part, slippage of the contract signing date from that of February 2003 (as expected in May 2002), to July 2003 (as expected at the end of 2002), with award of the Contract actually occurring in September 2003 (the Contract was signed in December 2003)<sup>64</sup>.

## **Technical Regulation – Standards and Processes**

**4.5** The Navy Technical Regulatory System is a subset of the Navy Regulatory System, which in itself, is part of the ADF Regulatory System. The Navy Technical Regulatory System requires organisations that undertake design, construction and/or maintenance of ADF maritime materiel to be authorised by the Chief Naval Engineer to perform that task<sup>65</sup>.

**4.6** The ACPBs are ostensibly built to commercial standards, supplemented by RAN standards, as necessary. The ANAO notes that the definition of the commercial standards is prescribed, amongst other standards, by the Classification Authority, as well as in accordance with IMO codes. These commercial standards, supplemented by Naval Technical Regulatory Requirements<sup>66</sup>, are the standards against which the end product is certified for use. Defence advised that the standards can be accepted by Navy only if they are endorsed by the Navy regulators, which include the Chief Naval Engineer. Defence advised the ANAO in November 2004 that: the Chief Naval Engineer has stated the Contract is the Certification Basis. The ACPB Certification Plan states that the contracted Ship Specification, negotiated by the PBSPO, and endorsed by the RAN regulating authorities, is the platform component of the Certification Basis. The Ship Specification is the basis for the provision of

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<sup>64</sup> The Patrol Boat Force Element Group (FEG) Commander commissioned a series of studies, which were delivered in April 2003. The studies undertook to discern the appropriate level of manning required to meet the operational commitments expected from the ACPB capability. In doing so, the Board's concerns relating to the potential shortfall of 3 to 5 crews were addressed. The studies showed that the most effective, sustainable model was to adopt a structure that supported three separate Divisions of 4 ACPBs, where each Division is supported by 6 separate crews. Two of the Divisions are to be home ported in Darwin, with the other in Cairns. The model Defence has chosen to adopt, is anticipated to allow for posting stability, as well as an ability to meet operational requirements. The FEG is reliant on the conversion of existing positions within the Fleet Intermediate Maintenance Authority (FIMA) in Darwin to cater for the growth in manning requirements from 15 crews of 23 personnel (345 staff), to 18 crews of 21 personnel (378 staff). The plan to utilise a multi-crewing workforce does not come into effect until the delivery of the fourth ACPB.

<sup>65</sup> Regulatory requirements are to be justified in terms of risks to fitness for service, safety and the environment. For each acquisition, the appropriate Technical Regulatory Authority is to approve a Technical Certification Plan that defines the certification process for each acquisition, including the certificates that are required, and the certification authority so authorised, to raise each certificate. Defence advised that the Technical Certification Plan may be incorporated with an overall Certification Plan, as is the case with the ACPB. The Technical Regulatory Authority, or delegate, is to assess and recognise the competency of suppliers and their compliance with regulatory requirements.

<sup>66</sup> The Naval Technical Requirements are underpinned by the ADF Maritime Materiel Requirements Set.

objective quality evidence required to assure compliance with the Certification Basis.

**4.7** The ANAO notes that, as the Contract was written in the absence of a fully developed TCD, key measures of effectiveness for performance based outcomes may not have been finalised at the time of Contract signature. Also a safety case, certifying the safe operability of the main armament system, had not been developed or accepted by the appropriate Defence authorities. The ANAO found that the DMO was not in a position to adequately define all of the stand-alone documents to be used in a comprehensive Certification Basis, prior to contract signature, and that provisional acceptance of the Certification Plan occurred in excess of six months following Contract signature.

**4.8** The certification process for the ACPB encompasses all aspects associated with delivery of the ACPBs, from development of the specification, to the final disposal of the ships at the end of their service life. The certification process engaged to ensure the ships remain appropriately certified is applied to four distinct phases of the life cycle of the capability<sup>67</sup>.

**4.9** Defence advised that, throughout the life cycle phases, the PBSPO will include any approved change or deviation to the ACPB Certification Basis, in the Certification Database.

### *Precontract*

**4.10** During the precontract phase, Defence advised that the ACPB Certification Basis was negotiated by the PBSPO, and agreed, through the Project Stakeholder's Group, by the RAN Regulatory Authorities. The technical component of the ACPB Certification Basis is the Contract Ship Specification<sup>68</sup>.

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<sup>67</sup> The four phases are as follows:

- Precontract—Certification requirements are included in contractual documents. The phase culminates with a contract to include an agreed Certification Basis.
- Production—Certification Objective Quality Evidence (OQE) is developed, verified and/or validated, and Initial Certification is provided to allow delivery. During this phase, preliminary and detailed design reviews are conducted as well as Harbour and Sea Acceptance Trials. For the FOC, a Mission Trial is conducted.
- Post Delivery (Transition)—Further certification is completed and allows Initial Operational Release (IOR). The issue of Final Certification allows Operational Release (OR). During this phase, FOC trials are conducted, as well as Navy Operational T&E.
- In Service—Periodic revalidation of the Certificate Set occurs, along with the renewal and/or issue of Certificates. The phase culminates in disposal.

<sup>68</sup> Defence advised that the Contract Ship Specification can only be changed by the Commonwealth issuing an amendment to the Contract. This would only follow approval by the Commonwealth of a Contract Change Proposal (CCP), accompanied by an Engineering Change Proposal (ECP), provided by the Contractor. All changes to, and deviations from, the technical component of the Certification Basis, require the endorsement of the CNE (the Technical Regulator, or a designated delegate), the approval of the Project Manager, and the authorisation of DGNCSA.

## *Production*

**4.11** Initial design validation has been undertaken through the preliminary, and detailed design review process, without formal Defence approval of the Certification Plan for the build program. To ensure the build schedule could be maintained, the DMO were obligated to approve the design of the ACPB, in the absence of an approved Certification Plan.

**4.12** Defence stated that the Prime Contractor supplies OQE through the verification and validation requirements of the ACPB Certification Basis. Where there are differences between the Ship Specification Requirement and the System Design, the Contract specifies that the stricter requirement is to prevail. That is, where, for example, the DNV High Speed, Light Craft and Naval Surface Craft (HSLC) rules contradict the Naval requirements, and the Naval requirements are more strict, the Classification Society is required to ensure that the additional Naval requirements are annotated in an appendix to the Class Certification.

**4.13** The ANAO found that, through an observer status system, the DMO site team was proactive in assisting the Ship Builder with interpreting the Ship Specifications, in an effort to ensure the Ship Builder delivers a compliant product to the Contractor for subsequent delivery to the DMO and RAN. The ANAO also noted that, the Class Certification rules were a strong, validating influence over the method by which the Ship Builder managed configuration control.

**4.14** Where the Navy, through the Chief Naval Engineer, invokes a military technical standard, these standards could be derived from the DEF (AUST) 5000 ADF Maritime Materiel Requirements Set, if an appropriate standard exists within that Set. The ANAO found that the DEF (AUST) ADF Maritime Materiel Requirements Set is an immature document set. A sample from the document set, as might be required to specify generic naval ship building requirements applicable to the ACPB, is shown at Table 4.1.

**4.15** Defence advised that the Maritime Technical Materiel Requirements Set is a collection of requirements, from which appropriate standards are applied to various types of ships, and that the ACPB Certification Basis only contains those selected standards that were approved at the time the Ship Specification was developed. Defence noted that they were considered mature enough for this purpose.



**Table 4.1****Status of Selected Maritime Technical Regulatory Materiel Requirements Set Specifications**

<b>Ship Design Requirement</b>	<b>DEF AUST 5000 Maritime Materiel requirements Set Volume</b>	<b>Extant Issue</b>	<b>Last Reviewed by Defence</b>
Surface Ship Structure	Vol 3 – Hull System Requirements	Under Development	Not reviewed
Welding and Allied Processes	Vol 3 – Hull System Requirements	Under Development	Not reviewed
Anchoring, Berthing, Towing and Securing Buoys	Vol 3 – Hull System Requirements	Draft	Not reviewed
Ship-Board Boat Lifting Appliances	Vol 4 – Propulsion and Auxiliary Systems Requirements	Draft (issue 2) Issue 1	June 2000
Shore Electrical Power Supply Facility for RAN Ships and Submarines	Vol 5 – Electrical Systems Requirements	Draft Issue 2	November 2003
Combat System Safety Requirements	Vol 6 – Common Combat System Requirements	Draft	Not reviewed
Combat System Human Machine Interface	Vol 6 – Common Combat System Requirements	Under Development	Not reviewed
Combat System Capability Analysis	Vol 6 – Common Combat System Requirements	Under Development	Not reviewed
Electro Optical Tracking System	Vol 6 – Common Combat System Requirements	Under Development	Not reviewed
Electronic Support Measures System	Vol 6 – Common Combat System Requirements	Under Development	Not reviewed
Explosive Ordnance Safety	Vol 6 – Common Combat System Requirements	Under Development	Not reviewed
Zoning	Vol 7 – Total Ship Survivability	Under Development	Not reviewed
Firemain and Ballast Systems	Vol 7 – Total Ship Survivability	Under Development	Not reviewed
Sprinkler Systems	Vol 7 – Total Ship Survivability	Under Development	Not reviewed
Fixed AFFF Systems	Vol 7 – Total Ship Survivability	Under Development	Not reviewed
Portable Fire extinguishers	Vol 7 – Total Ship Survivability	Under Development	Not reviewed

Ship Design Requirement	DEF AUST 5000 Maritime Materiel requirements Set Volume	Extant Issue	Last Reviewed by Defence
Structural Fire Protection	Vol 7 – Total Ship Survivability	Under Development	Not reviewed
Flammable Locker Stowage	Vol 7 – Total Ship Survivability	Under Development	Not reviewed
Internal Deck Coverings	Vol 8 - Habitability	Under Development	Not reviewed

Source: DEF (AUST) 5000 Australian Defence Force Materiel Requirements Set dated 23 August 2004.

**4.16** The Ship Builder advised the ANAO that standard commercial shipbuilding practice is for the Ship Builder to engage the Classification Society to certify that the ship being constructed meets with the appropriate Classification Society standards. In practice, the commercial shipping industry utilises this construct to relieve the customer of the onus of managing a Classification Society, whilst simultaneously accounting for the requirement to satisfy insurance authorities that the vessel being produced meets specified standards. The customer rarely gains full access to the deliberations that occur between the Classification Society and the Ship Builder, if only because the Classification Society is under no obligation to liaise directly with the customer.

**4.17** In terms of building a vessel for an informed customer, Defence would have benefited from engaging the Classification Society directly, and novating the contract to the Contractor. This would have afforded Defence an ability to access all the observations, tests and trials undertaken by the Classification Society, in their efforts to certify the vessels being built. In doing so, Defence would have been able to better prepare for risk events that could impact on schedule, cost, or capability, particularly in the absence of access to the Ship Builder's EVM environment, while retaining oversight of proposed deviations from class offered for acceptance by the Classification Society.

**4.18** Prior to delivery of the ACPBs by the Ship Builder to the Contractor, DNV<sup>69</sup> annotate their Class Certification documents, in each case, with the departures from the commercial standards for which they have been contracted to certify compliance. Defence advised that, whilst DNV is providing all statutory certificates, DNV is not necessarily certifying against all commercial standards. Defence advised that the Project Office is responsible

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<sup>69</sup> DNV represents the chosen Classification Society contracted by Austal Ships Pty. Ltd. (AUSTAL) to certify the ships meet specified build standards.

for ensuring that all/any remaining standards not certified by DNV, are certified by the appropriate authorities.

**4.19** Notwithstanding the commercial classification system, the Navy remains responsible for a range of technical certification activities, and the end certification of the vessel against the RAN Technical Regulatory Requirements. Table 4.2 outlines the ANAO's assessment of the level of accomplished compliance with the stated Navy requirements, as applied to the ACPBs.

**Table 4.2**

**Naval Technical Regulatory Responsibilities**

Responsibility	Achieved	Achieved with qualification	Not yet achieved
Establish the appropriate Materiel Standards to be employed in the construction of the ACPBs.	✓ <sup>(a)</sup>		
Ensure Materiel standards reflect the operating environment envisaged for the ACPBs, meet, or exceed the civil safety standards established by the Navigation Act 1912, and other applicable Acts, as far as mission requirements allow.		✓	
Authorise engineering organisations to ensure the design, construction and maintenance of the ACPBs is conducted by competent and authorised individuals which are acting as members of organisations that are assessed as competent to undertake the scope of work.		✓ <sup>(b)</sup>	
Conduct audits/assessments to ensure that instructions, policy and RAN materiel standards governing design, construction and maintenance of the ACPBs is being followed.		✓ <sup>(c)</sup>	
Establishing the professional standards and ongoing operating and maintenance competencies required of Navy engineering personnel and provision of advice on training and employment structures.			X <sup>(d)</sup>

**Notes:**

- (a) The Certification Plan, which is required prior to Second Pass Government Approval, received conditional endorsement by CNE in September 2004, 9 months after DMO contract signature with DMS.
- (b) Defence advised the ANAO in July 2004 that the responsible engineering organisation that ensures the design, construction and maintenance of the ACPBs is the PBSPO, which is also responsible for certifying contributing contractors. The CNE did not approve the Certification Plan produced by the SPO prior to the start of the build program. Conditional endorsement for the Certification Plan was granted by CNE in September 2004. Defence advise that the Certification Plan also addresses non-technical issues, and should be endorsed by other Navy regulators, as well as CNE.

- (c) The Conditional Endorsement of the Certification Plan states that the design inputs for the ACPBs are represented by the contracted requirements, and these form the basis of the Certification Basis. The Preliminary and Critical Design Reviews provided opportunities to monitor the synthesis of these inputs into the ACPB design, however without further detail of the requirement validation approach undertaken, which is the purpose of the Certification Plan, very few, if any requirements, were validated.
- (d) Defence advised the ANAO that the professional standards required of the RAN staff engaged in the ongoing operating and maintenance requirements of engineering personnel are developed by the Director of Naval Professional Requirements (Engineering and Logistics), following a review of the training material against which staff are trained. The ANAO notes that at the end of fieldwork for this audit, the training material required for the ACPB's had not yet been developed, or delivered by the Contractor, and the Detailed Design of the ACPB's had not yet been finalised. These constraints do not allow detailed analysis of the required operator and maintainer competencies.

Source: ANAO analysis of Defence records.

## Configuration Management

**4.20** Implementation of a multi crewing regime for the ACPB capability requires identical configuration across the class. In managing a single configuration, safety and training commonality are the prime beneficiaries of a single configuration across the class.

**4.21** Configuration management of the ACPBs is undertaken in accordance with the Class Configuration Plan. This Plan provides guidance on the configuration management process for all entities associated with procurement or through life support of the class. The conduct of the configuration management activity is the responsibility of the Contractor. The DMO stated that the decision to task the Contractor with managing the configuration of the class, is an essential component of the DMO risk mitigation strategy. Any deficiencies in support during the ISS phase due to configuration management shortcomings are directly attributable to the Contractor, and subject to the payment abatement process prescribed in the ISS contract. The ANAO notes that this condition extends to all ISS elements of the delivered ILS product, including training<sup>70</sup>.

**4.22** Defence retains the responsibility to manage the configuration management process for the ACPBs. The day-to-day management has been outsourced to the Contractor. Any changes to the Ship Specification, however, that impact on the outcomes required by the Ship Specification, or Integrated Support Specification, must be authorised by the ACPB Configuration Control Board.

**4.23** Prior to the sea component of the Contractor's Test and Trials Program, the Contractor is obligated to deliver the required statutory certificates to the Project Manager, as represented at Figure 4.1. The PBSPO Director is then

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<sup>70</sup> The Contractor is also responsible for delivering the Contractor Configuration Management Plan, which is required to meet specified Naval Engineering Requirements, incorporating the Certification Basis.

required to confirm these certify that the Contractor has provided a safe, and fit for purpose, environment<sup>71</sup>.

**4.24** The PBSPO Director is also obligated to ensure that, following the sea safety training period, equipment readiness meets RAN certification requirements. The Certification Plan is designed to identify the certificates required for each element of the requirement for compliance, and is designed to stipulate the required objective quality evidence associated with demonstrating the delivered capability.

**4.25** The Materiel Certification Plan for the contracted ACPB ship specification is, in many places, a reference to an applicable part of the Contract Ship Specification, which, in itself, was not developed against a pre-determined test methodology, and any associated specific measure of effectiveness.

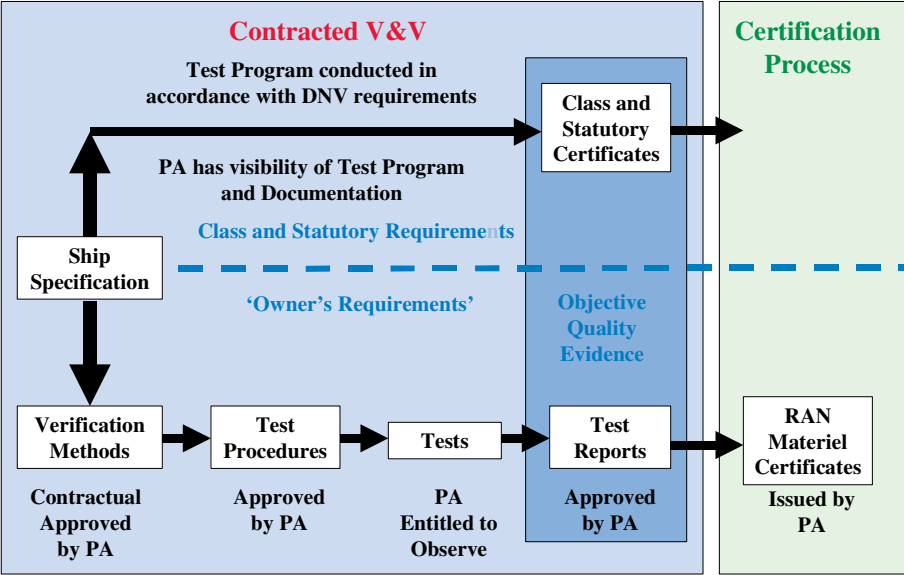
**4.26** Delivery marks the completion of the production phase, at which time the PBSPO Director is to provide initial certification (class and statutory certificates), and a TI 338 Report of Material and Equipment State to the RAN. This is represented as contractual acceptance. The ANAO notes that the Contractor is not obligated to nominate those issues for which it intends to make a warranty claim against the Ship Builder.

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<sup>71</sup> Defence advised that the Statutory Certificates are usually issued after the production test and evaluation phase, and that prior to the production test and evaluation phase, the shipbuilder requires interim approval from the Port Authority and/or Classification Society, in order to undertake Harbour and Sea Trials.

Figure 4.1

ACPB Project Validation and Verification to Certification process



Source: ACPB Certification Process presentation dated 18 August 2004.

4.27 The Contractor has advised the ANAO that the FOC is subject to a very aggressive build schedule, and the need has arisen for contractors to make commercial risk decisions to ensure that a fully compliant product is delivered on time. Figure 4.2 illustrates the state of build of the FOC, nine months after contract signature. In September 2004, the Contractor reported that the FOC is 48 per cent complete, which takes into account a 92 per cent complete fabrication process, and a design component which is 71 per cent complete. The DMO advised that the site team validates that Contractor claims represents actual work completed, as far as can be ascertained, without direct access to the manufacturer's EVM or performance management system.

**Figure 4.2****Armidale Class Patrol Boat Build Facility**

Source: Defence file photograph.

**4.28** The ANAO considers that the DMO reporting, and subsequent schedule assessment responsibilities, could be strengthened by contractual access to the shipbuilder's performance management data.

**4.29** The Contractor advised that, from time to time, it needs to make decisions to deviate from the contracted specification, in expectation that the specification will subsequently be amended by formal change management processes. In doing so, they state that they need to accept commercial risks to maintain the schedule to deliver the ACPBs against the agreed schedule. The commercial risk being accepted by the Contractor is that contract changes, or requests for waivers, do not get approved in time to meet schedule commitments, and rework is required. The Contractor advised that such decisions are not examples of wilful non-compliance. Rather, they demonstrate contractors' deciding that they are prepared to take commercial risks to maintain the delivery schedule. The Contractor advised that there is no intention on its part to attempt to deliver ACPBs that are anything other than totally technically compliant.

*Post Delivery (Transition)*

**4.30** The ACPB delivery schedule is represented at Table 4.3. Transition spans the period between delivery, and Operational Release. The processes undertaken prior to Operational Release includes First of Class Trials (FOCT), Interim Operational Release (IOR), and the Naval Operational Test and Evaluation (NOTE) period. The PBSPO Director is responsible, during this

phase, to provide the inputs necessary to achieve IOR and, subsequently, Operational Release.

**Table 4.3**

**ACPB Delivery Schedule**

Boat	Delivery time following contract signature (months)	Time following previous delivery (months)	Delivery Date	Home Base
HMAS ARMIDALE	17		May 2005	Darwin
HMAS LARRAKIA	21	4	September 2005	Darwin
HMAS BATHURST	22	1	October 2005	Darwin
HMAS ALBANY	25	3	January 2006	Darwin
HMAS PIRIE	26	1	February 2006	Darwin
HMAS MAITLAND	29	3	May 2006	Darwin
HMAS ARARAT	30	1	June 2006	Darwin
HMAS BROOME	33	3	September 2006	Darwin
HMAS BUNDABERG	34	1	October 2006	Cairns
HMAS WOLLONGONG	38	4	February 2007	Cairns
HMAS CHILDERS	38	4	February 2007	Cairns
HMAS LAUNCESTON	41	3	May 2007	Cairns

Source: Defence – Patrol Boat Force Element Group (PBFEG)

**4.31** The transition phase is used to fully complete the Certificate Set, as required by the ACPB Certification Basis. The PBFEG is obligated to ensure, at IOR, that RAN crew efficiency, and equipment readiness, following the sea safety training period, meets the RAN Personnel Certification Requirements.

**4.32** Operational Release, and the provision of an Operational Capability Statement (OCS), marks the completion of the transition phase, at which time, the Navy provides Final Certification; and updates the TI 338.

*In-Service*

**4.33** ‘In-Service’ is the operational phase of the ACPBs, and covers the period from operational release, to disposal. The PBFEG is responsible for ensuring that the ACPB has a complete certificate set at all times during the In Service phase. The ANAO has not been able to fully assess the in-service environment.



**4.34** The ANAO notes that, as highlighted by the DMO Shipbuilding Governance Board, in the unforeseen event that the Ship Builder, a publicly listed company, either corporately fails, or is taken over, there is no explicit escrow condition within any contractual construct between the Ship Builder and the DMO, that provides for the design information relating to the ACPBs to be placed in escrow<sup>72</sup>.

**4.35** The ANAO notes that Defence could have further reduced its risk profile via strengthened contractual arrangements with the Ship Builder and the Contractor, by ensuring future contractually binding access to all design and build information pertaining to the ACPBs, to reflect the requirement to maintain the design and build documentation through the entire life of the class. In the unforeseen event of a corporate failure, or company restructure, Defence may benefit from an explicit escrow arrangement that allows for Defence access to the IP data pertaining to the ACPB class.

**4.36** The ANAO was not able to discover an audit plan whereby Defence had agreed with the Contractor and the Ship Builder to audit the IP against which the Contractor is required to maintain a library. The ANAO notes that the Defence control of contractor IP would be strengthened by regular audits of the available IP technical data library.

## **Safety Certification**

**4.37** The Navy Certification, Safety and Acceptance Agency is responsible for assessing the effectiveness of at least three elements of the Naval Technical Regulatory System, all of which have applicability to the Project<sup>73</sup>. The ANAO notes that the ACPB Certification Plan was forwarded to the Director of Naval Certification in September 2004. The DMO advised the ANAO in October 2004 that not all the Naval Regulators had endorsed the Plan and, as a consequence, the Naval Certification and Safety Acceptance Agency had not yet authorised the Plan. Table 4.4 illustrates the ANAO's assessment of the Project's compliance with the requirements.

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<sup>72</sup> The ANAO notes that, in March 2002, the then Chair of the Naval Ship Building Board wrote to USDM and recommended consideration be given over to highlighting, and managing unquantified risks. The example quoted was the risk of company collapse over the 15 year in service support period.

<sup>73</sup> As prescribed by the Navy Technical Regulations Manual, July 2003, Section 1 Chapter 2 para 2.8.

**Table 4.4****Safety Certification Compliance**

Responsibility	Achieved	Not Yet Achieved
Comply with the Navy certification and acceptance system, ensuring fitness for service, safety and environmental compliance and operational integrity.		X <sup>(a)</sup>
Comply with the RAN regulatory, certification, safety and acceptance policy.		X
Compliance with the RAN Test Evaluation and Acceptance Authority requirements in readiness for Initial Operational Release and Operational Release <sup>74</sup> .		X

Notes: (a) The Contractor is to deliver a safety case prior to the acceptance of ACPBs.

Source: Defence records demonstrating compliance with Defence Policy.

**4.38** The Project Office supports the Safety Certification of the capability by a combination of documents. These include a Systems Safety Program Plan, a Human Systems Integration Plan, and a Safety Case Report.

### *System Safety Program*

**4.39** The System Safety Program Plan describes the system safety management and engineering tasks associated with identifying, evaluating and managing hazards. The plan provides a formal basis of understanding between the Contractor and the Project Office, describing how the System Safety Program is to be executed to meet contractual requirements.

**4.40** The ANAO reviewed the System Safety Program Plan, and found that it was divided into separate stages, representative of the design, construction, repair and maintenance, and operational phases of the contract. The ANAO noted that the Plan excludes operational procedures not within the contracted scope of supply for which the Contractor is responsible, and is therefore not wholly representative of a complete System Safety Program<sup>75</sup>.

**4.41** The Plan is designed to provide assurance that, inter alia, the system being delivered is safe, fit for purpose, and environmentally compliant. The Plan was approved by the Project Office in March 2004. The ANAO considers

<sup>74</sup> Defence advised that the July 2003 Navy Technical Regulations Manual has been superseded by the RAN Test and Evaluation Manual in this regard, and that Acceptance Into Naval Service has been replaced with Operational Release Assessments.

<sup>75</sup> Deliverables from the plan will include a class certificate, an international tonnage certificate, an international load line certificate, an international oil pollution prevention certificate, an international air pollution prevention certificate, an international anti-fouling system certificate, a stability certificate, a safety equipment certificate, a fire detection, protection and extinction certificate, ISM code documents of compliance, and ISM code safety management certificates.

that the Plan would have been strengthened by review, and endorsement, by the Director General of Navy Certification, Safety and Acceptance, or a delegated representative, prior to acceptance of the Plan from the Contractor by the DMO<sup>76</sup>.

### *Safety Case Report*

**4.42** Defence advised the ANAO that the purpose of the Safety Case Report is to document how safety considerations have been incorporated into the patrol boat and the integrated support system design. Defence stated that the Safety Case Report is used to determine whether or not the Certification Requirements have been satisfied, and that system hazards have been identified and reduced to defined, acceptable levels. The Safety Case Report is required to meet the objectives of the RAN Safety Manual (NAVSAFE) and, to that end, utilises NAVSAFE guidance.

**4.43** The ANAO reviewed Version 2 of the Safety Case Report<sup>77</sup> and noted that Defence found deficiencies with the Report. The ANAO notes that the Safety Case is incomplete and, at the completion of field work for the audit, did not include many of the elements required of the full report. The ANAO also notes that, appropriately, the Director of Navy Certification had not accepted the Safety Case from the DMO<sup>78</sup>.

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<sup>76</sup> Defence advised that the Director of Naval Certification was forwarded a copy of the DMS Systems Safety Program Plan for comment in April 2004. Defence noted that neither endorsement, nor acceptance was sought, or received, from the Director General of Navy Certification, Safety and Acceptance.

<sup>77</sup> The ACPB Safety Case outline states that the Safety Case is to demonstrate, with the aid of written documentation that:

- the ACPB has a Safety Management System that will serve to ensure safe design and operation of the ACPBs during the life of type;
- a detailed and systematic formal safety assessment in demonstration that overall safety goals were achieved, and target criteria set for respective levels of risk are met; and
- as far as is reasonably practicable, safe escape, temporary shelter, evacuation and rescue facilities are provided to ensure personnel safety for identified major accident events.

<sup>78</sup> The guidance received from the Director of Navy Certification was that the Safety Case was not to be limited to the design of the vessel.

## Build Performance

**4.44** The liability of the Contractor to the DMO for any delivery obligations and warranties on loss of, or damage to, the contracted deliverables is limited to an aggregate amount of \$420 million during production, and \$200 million during the integrated support activity<sup>79</sup>.

### Performance Assessment

**4.45** The DMO and the Contractor hold weekly meetings at the build site to review the build progress, and to review Class Certification performance by the Ship Builder. The Contractor supplies the DMO with interpreted, comprehensive, rolled up progress plans for high level activities associated with building and delivering the capability against contracted outcomes. As of August 2004, the Contractor advised the DMO that the FOC is assessed as being 28 per cent complete, with 80 per cent of the hull and superstructure fabrication completed.

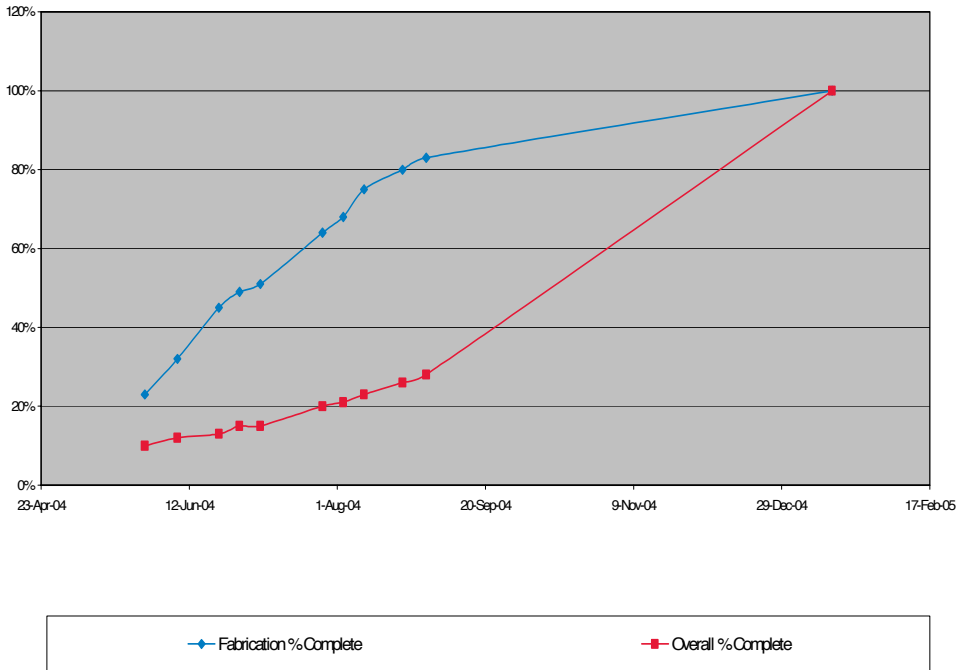
**4.46** Notwithstanding the reports provided by the Contractor, the DMO has no formal access to the EVM system being employed by the Ship Builder, and cannot readily ascertain real project cost or schedule deviations. The ANAO notes that, under the style of contract entered into with the Contractor for delivery of the capability, the financial risks associated with failure to deliver against a contractual milestone, in the absence of a delay caused by the DMO, remain with the Contractor. Conversely, the ANAO notes that the DMO cannot reliably judge the full schedule and cost impact of changes they propose to the ship specification, during the build process, which may impact on Defence's ability to deliver GFE as and when required to support the build program.

**4.47** Figure 4.3 illustrates, by the process of simple extrapolation, that the rate of effort required to finish the overall production of the first boat, prior to harbour and sea trials in January and February 2005, will need to be increased from the current activity level<sup>80</sup>.

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<sup>79</sup> This liability is subject to claims for personal injury or death; loss of, or damage to, third party property; the intellectual property indemnity provided by DMS, or any abatement to the integrated support charges incurred.

<sup>80</sup> Defence advised the ANAO in November 2004 that the rate of effort projects to complete the first vessel has been raised as an issue with AUSTAL, and AUSTAL has assured the DMO that the rate of effort has been planned, and that AUSTAL has a proven record of achieving it. The ANAO was not afforded any objective quality evidence demonstrating the projected earned value assessment of the work required to complete the tasks associated with delivering the HMAS ARMIDALE on schedule. Defence subsequently advised the ANAO in February 2005 that the fabrication work for the First Of Class is complete, and the vessel was launched on schedule on 5 January 2005.

**Figure 4.3****Estimated Rate of Effort to Complete ACPB Build 1**

Source: Defence assessment reports dated September 2004

### *Liquidated Damages*

**4.48** The Contractor and the DMO agreed, under the Contract, to liquidated damages at a rate of \$17 000 per day<sup>81</sup>, for failure to deliver each and every ACPB boat against the contracted milestone delivery plan. The total maximum liquidated damages, in respect of the production phase, is capped at 10 per cent of the total combined value of the milestone payments payable for the production phase.

**4.49** The DMO has also agreed with the Contractor that, upon becoming entitled to recover liquidated damages, and within a four month period following the end of the period of delay, they may elect to recover the amount of liquidated damages as a debt due to the Commonwealth, or accept an

<sup>81</sup> Liquidated Damages are defined at paragraph 7.14 of the head contract between the DMO and DMS. The actual amount payable is indexed and are to be adjusted based on the Australian Bureau of Statistics Catalogue 5206, Chain Price Index, Domestic Final Demand—Table 8.

agreed compensation from the Contractor to the extent that liquidated damages are not recovered by any other means<sup>82</sup>.

**4.50** The Contract specifies that, where the DMO elects to accept compensation in lieu of liquidated damages, the Contractor is to propose a Contract Change, where the compensation to be provided is in the form of goods or services<sup>83</sup>.

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<sup>82</sup> Such compensation, together with any liquidated damages elected to be otherwise collected, are to be equivalent in value to the total liquidated damages recoverable for that period of delay.

<sup>83</sup> The DMO Policy relating to the treatment of recovered liquidated revenue damages states that the event must be recognised in the accounts immediately. Defence states that, in general, the proceeds received from exercising a right to recover liquidated damages, or compensatory work, received in lieu of liquidated damages, are to be provided to the parties within Defence that have suffered the damage. The project, or contract authority specified in the contract, is responsible for resolving with stakeholders where the proceeds or compensatory work activities are to be allocated.

## 5. Delivery Management

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*This chapter examines the management of the delivery and acceptance of the Armidale Class Patrol Boats, as well as the arrangements put in place to manage the transition within Defence.*

### Infrastructure Requirements

**5.1** The delivery, and subsequent operational success of the ACPB capability, are largely dependent on the support infrastructure put in place by Defence. There are two main contributors to the design and provision of infrastructure to support the ACPB capability, namely; the HMAS CAIRNS Redevelopment Project, and Darwin Naval Base Patrol Boat Facilities Project.

**5.2** In September 2003, Defence received a Report that sought to identify the scope and cost of the required infrastructure to support the introduction of the ACPBs to HMAS CAIRNS and Darwin Naval Base. The Report found that substantial work is required to upgrade both bases in preparation for the ACPBs. The estimated cost for Darwin Naval Base was \$10.94 million, and HMAS CAIRNS was \$10.44 million.

**5.3** The Report identifies significant risks associated with the construction of the HMAS CAIRNS wharf facility. The most prevalent of which are; the proposed orientation of the new wharf is perpendicular to currents and prevailing winds, which will increase the risks associated with berthing; wharf mooring dolphins require relocation; construction and maintenance dredging are required; covered berthing capacity will be reduced; and lease boundaries will require renegotiation.

**5.4** The ANAO notes that the Report recommends an upgrade of the lifting facilities associated with undertaking Patrol Boat maintenance in Darwin.

**5.5** The Report recommends Defence apply to the lift manufacturer for detailed analysis to verify the lift's ongoing ability to support the ACPB capability and that the lift is designed to operate with a vessel weighing 750 tonnes<sup>84</sup>. The Report notes, however, that the lifting platform, which is 42 metres long, will be insufficient, and will require an 11.6 metre extension to accommodate the 56.8 metre LOA<sup>85</sup> for the ACPB, when received bow first. The extension will add, inter alia, two extra piers, and two extra lifting hoists. The

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<sup>84</sup> The Report assumes the ACPBs will weigh no more than 273.38 tonnes, which includes growth capacity.

<sup>85</sup> LOA is the Length Over All for the ship, and is measured from the extremities of the bow, and the stern.

lift will be used by the PBFEG to secure ships alongside during periods of risk from cyclones<sup>86</sup>.

5.6 Defence wrote to the Chair of the Public Works Committee in July 2004, requesting that the Committee agree to wharf extension works being brought forward from the Darwin Naval Base Patrol Boat Facilities Project, at an estimated cost of \$5.53 million, and that these works be further reported and presented to the Committee with the remainder of the project in 2005. The Committee Chair approved the wharf extension works for implementation at a cost of \$5.53 million in July 2004. The approval came with the understanding that the entire Patrol Boat Facilities Project is to be referred for inquiry at a future date.

### *HMAS CAIRNS Redevelopment Project*

5.7 Defence states that HMAS CAIRNS is a strategically important base in supporting Naval operations in Australia's north-eastern maritime approaches. The aim of the HMAS CAIRNS Redevelopment Project is to redevelop the current facilities at HMAS CAIRNS, to support all RAN fleet units operating in Far North Queensland. The Project also aims to deliver, at a total capital cost of \$65 million, upgraded support infrastructure in preparation for the introduction into service of the ACPBs to be located at HMAS CAIRNS. The capital funding has been scheduled in the Major Capital Facilities Program for 2006–07. However, Defence now states that the release of funds will need to be brought forward to 2005-06 to meet the requirements of the support required for the ACPBs.

5.8 Defence stated that the base is currently suffering from an inability to adequately support the current 15 Cairns based fleet units, and the situation will become unmanageable with the replacement of the current Cairns based FCPBs with four in number, larger ACPBs. The work attributable to the introduction of the ACPB capability is estimated to be \$10.439 million. This constitutes an estimated minimum cost associated with delivering a standby crew facility, shore services for the ACPBs, and sufficient wharf space<sup>87</sup>.

5.9 Defence noted that the \$10.439 million funding for the introduction of the ACPBs is to be provided from Project Sea 1444 funding, and is in addition to the \$65 million programmed for the base and water-front redevelopment

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<sup>86</sup> During the December 24, 1974 cyclone in Darwin, known as Cyclone Tracey, four Attack Class Patrol Boats were substantially damaged. HMAS ATTACK, HMAS ADVANCE, HMAS ASSAIL and HMAS ARROW all suffered varying degrees of damage. HMAS ARROW sunk under the approach ramp to Stokes Hill Wharf, with two crew lost, while HMAS ATTACK was left high and dry underneath Larrakeyah Cliffs.

<sup>87</sup> The base redevelopment is focused on refurbishment or reconstruction of base facilities, including the waterfront, medical and dental facilities, office accommodation, gymnasium, bosun and divers' facilities, in-ground services and car parking.



component. In January 2004, the ACPB Project Office advised the Defence Infrastructure Group that there may be a shortfall in the available project funding, should the estimated amount change, in the event an unfavourably expensive wharf option is chosen<sup>88</sup>.

## Recommendation No.3

**5.10** The ANAO recommends that Defence ensure that complementary Defence Corporate Services and Infrastructure Group facilities projects are well programmed, prioritised, and co-ordinated, to deliver capability in a timely fashion to support the requirements of the capability being delivered by the DMO.

*Finance response*

**5.11** Agreed.

*Defence response*

**5.12** Agreed. Defence Corporate Services and Infrastructure Group has aligned its project infrastructure approval process with the Kinnaird two pass system. Sign-offs with respect to infrastructure requirements, time lines and costs are now required by the Defence Capability Committee before projects can proceed beyond second pass.

## SPO Relocation

**5.13** The Defence Infrastructure Group requested Ministerial approval, in June 2003, for \$5 million for the purpose of providing facilities for the Patrol Boat Group Headquarters (PBGRPHQ) and the PBSPO at Larrakeyah Barracks, Darwin.

**5.14** The submission sought approval to construct a purpose built facility to accommodate 60 staff at Larrakeyah Barracks, Darwin. The submission stated that the availability based model, adopted for the ACPB ISS contract, requires PBGRPHQ and PBSPO staff to be co-located on site at the existing Darwin Naval Base to ensure the patrol boat capability is effectively supported and managed.

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<sup>88</sup> Defence has identified the following key issues associated with this project:

- There is a risk associated with delivering the required works to meet the introduction of the ACPBs at Cairns from October 2006. Compounding this risk is the additional risk that the current facilities will be inadequate to support both the residual FCPBs, and the new ACPBs, during the class transition period.
- The scope of works for the redevelopment may exceed existing budget allocations. Defence state that estimates provided for the base redevelopment component do not include any lease / acquisition costs. Defence assess this as a high risk, which may result in the requirement to redesign the complete wharf.

**5.15** The submission considered four options, which included leasing commercial office space in Darwin for the PBSPO, while leaving the PBGRPHQ at Larrakeyah Barracks in the existing accommodation. Even though this option offered some financial advantages over a 20 year period, Defence assessed that the facilities savings are likely to be outweighed through the inefficiencies the lease option would introduce to relationships between the PBGRPHQ, the PBSPO and the Contractor, and their subsequent effect on patrol boat support.

**5.16** Defence also considered an option that combined leasing in Darwin for the PBSPO and constructing a new building at Larrakeyah for the PBGRPHQ. This option proved to be the most expensive and did not take advantage of the synergies offered by location in a common facility. Another option was to fit out a purpose built building at Larrakeyah Barracks. However, Defence assessed that this did not offer significant savings; and carried the risk of complicating any future consideration of long-term Defence occupation of the naval base within Larrakeyah Barracks.

**5.17** Defence concluded that the required level of interaction through periodic visits to the base by PBSPO staff, out-placed in the Darwin central business district, would not provide the level of contract management necessary to ensure the highest level of in-service support is maintained. Nor would it provide the appropriate level of interaction between SPO, Contractor, PBGRPHQ and the individual elements of the PBFEG. Defence advised the then Minister for Defence that any option, other than a co-location, would serve to formalise the PBGRPHQ and PBSPO relationship, making it paper-based and cumbersome, thereby reducing the effectiveness of dealing with the Contractor and the level of support available for the PBFEG<sup>89</sup>.

**5.18** Funding for the proposed facility was identified by Defence through the Patrol Boat Project, supplemented, where necessary, by the programming provision for Major Capital Facilities. Government did not approve the submission. Defence were provided with Government advice to rent the SPO office space in Darwin.

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<sup>89</sup> The long term future of Larrakeyah Barracks, and of the Darwin Naval Base, is to be determined during the Force Disposition Study.

## In Service Support Arrangements—Defence Commitments

### Maritime Headquarters Chief Staff Officer Engineering—Assessment Obligations

5.19 The Navy Technical Regulatory System mandates a series of responsibilities that are to be accomplished by Maritime Headquarters for all ships in service with the RAN. Table 5.1 illustrates the ANAO's assessment of the Maritime Command's preparedness in meeting these future, in-service, obligations.

**Table 5.1**

#### Maritime Headquarters—Chief Staff Officer (Engineering) Responsibilities

Responsibility	Accomplished	Not Yet Accomplished
Definition of the auditing standards for operational safety, performance, and availability.		X
Ensuring operational units comply with Technical Regulatory requirements.		X <sup>(a)</sup>
Promulgation of an audit schedule and standards against which to audit the material condition of the ACPBs.		X <sup>(b)</sup>
Promulgation of audit criteria, which is inclusive of an assessment of engineering delegations, and an audit schedule, to ensure the ACPBs are manned with authorised personnel, adequately trained in operation and maintenance.		X
Assurance that the follow-on in-service maintenance of the ACPBs is being undertaken by organisations (within Maritime Headquarters control) that have been authorised under the Navy's Technical Regulatory System, the standards used in the in-service environment have been approved, and certification audit criteria has been established for implementation when assessing the competence of individuals undertaking the work.		X <sup>(c)</sup>
Implementation of a system to provide feedback to NAVSYS Branch to ensure operational 'lessons learnt' are incorporated in future ADF Maritime Material Standards.		X <sup>(d)</sup>

Notes:

- (a) Defence advised the ANAO in August 2004 that the task of ensuring operational units comply with the NTRF is achieved by: the conduct of Departmental Management audits; material condition assessment audits; setting of technical policy via technical directives; review of extant technical

policy; monitoring the progress of URDEFs and providing advice to FEG Commanders as required; and delegation of Engineering Authority to ship / vessel engineers.

- (b) Defence advised the ANAO in 2004 that the promulgation of the schedule for the conduct of the Materiel Condition Assessment audit for the ARMIDALE Class will be dependent on the provision of the Usage/Upkeep Plan from the PBFEG.
- (c) Defence advised the ANAO in August 2004 that the in-service support for design, construction and maintenance will primarily be conducted under contract by DMS, the PBSPO, as the relevant Authorised Engineering Organisation (AEO), will be responsible for ensuring that work is undertaken in accordance with the NTRF. The Maritime Command Engineering Division will have oversight through the MCA process.
- (d) Defence advised the ANAO in August 2004 that the Maritime Engineering Division is implementing a management system to achieve full AEO status by March 2005, and that feedback on lessons learnt is a required element in achieving AEO status. Defence also advise that Maritime Command Engineering Division status, with respect to AEO, is currently provisional.

Source: ANAO analysis of Defence records.

## **Force Element Group Commander's Responsibilities**

**5.20** The Patrol Boat Force Element Group Commander (PBFEG Commander) is responsible for delivering the capability to the Maritime Commander for operational employment. In doing so, the PBFEG Commander is responsible for a series of technical management activities.

**5.21** In planning to deliver a system that can ensure the technical integrity of the ACPB capability, the PBFEG Commander has proposed the adoption of a tri-level approach. The first level requires that the Contractor certify the capability to the SPO, capturing the requirement to undertake verification. The second tier seeks to ensure the PBSPO certifies the product for use by the RAN, in meeting a requirement to undertake validation activities. The third tier seeks to achieve FEG whole of capability certification for operational deployment.

**5.22** Table 5.2 represents the ANAO assessment of the FEG Commander's capability to deliver against the tier three requirements of the proposed methodology.

**Table 5.2****Force Element Group Technical Regulatory Management Readiness**

<b>Responsibility</b>	<b>System Operational</b>	<b>System yet to be developed.</b>
Compliance management to ensure only organisations authorised under the Navy Technical Regulatory System undertake design, construction and maintenance of the ACPBs following delivery into service.		X
Implementation of a system to provide feedback to NAVSYS Branch to ensure operational 'lessons learnt' are incorporated in future ADF Maritime Material Standards.		X
Promulgation of audit criteria, which is inclusive of an assessment of engineering delegations, and an audit schedule, to ensure the ACPBs are manned with authorised personnel, adequately trained in operation and maintenance.		X
Implementation of a system that will manage the configuration of the ACPBs, and supporting systems.		X

Source: Defence records.

***Condition Monitoring***

**5.23** Aluminium, by nature, reacts differently to steel when used as the construction medium for manufacturing a ship. Aluminium fatigues in relation to the stresses being applied to it. Its fatigue life is different from that of steel.

**5.24** Manufacturing processes, and subsequent service at sea, bring about these stresses. Aluminium has a definitive fatigue life, driven largely by the imposed stress levels it encounters. The fatigue eventually leads to material breakdown, characterised by cracking. Aluminium fatigue can be assessed based on its usage cycle, whereas steel is less prone to fatigue, and has a longer fatigue life.

**5.25** The PBFEG has recommended that the RAN should monitor hull fatigue, corrosion, and subsequent cracking, preferentially from the build of the vessels, instead of trying to determine the characteristics of the hull late in the life of the vessels, in trying to determine their remaining serviceable life. DSTO advised that an industry alliance is being developed with the Ship Builder to cover a number of areas of research and development that are of mutual interest<sup>90</sup>.

<sup>90</sup> Discussions relating to this alliance were planned for late 2004 and, central to this activity, DSTO recommended that a collaborative project on Aluminium Fatigue Analysis would be an opportune initial activity under the alliance. Defence advised that this is a joint DSTO and Navy initiative, supported by AUSTAL.

**5.26** Defence advised the ANAO in February 2005 that it has undertaken a comprehensive hull material study as well as initiating a structural fatigue monitoring program. The study is proposed to start with one of the later built vessels so that it will not disrupt the construction program.

## **In-Service Support Arrangements**

**5.27** The nature of the contractual construct governing the procurement, and subsequent operation of the ACPB capability has been undertaken in an effort to shift design and product quality risk to the Contractor. In doing so, Defence has agreed an abatement payment system<sup>91</sup> for failure to provide specified capability during the in-service phase of the capability life cycle.

**5.28** The Contractor is required to maintain an integrated support system to support the ACPB capability through the 15 year service life of each delivered boat. Should Defence uncover a defect with any of the delivered boats, the Contract allows for Defence to request that the Contractor rectify the defect and, in doing so, Defence specifies the priority of the request against predetermined criteria. Defence also provides advice to the Contractor relating to likely causes contributing to the defect.

**5.29** In operational scenarios, where Defence may have a very high request for support, and the specific ACPB does not remain in port or proceed immediately to the nearest suitable port<sup>92</sup>, Defence has agreed that the specified cure period for that request for support will be suspended until the ACPB next arrives at a suitable port. The ANAO notes that the Contract stipulates that the Contractor will incur abatement points against the specified payment schedule for the initial failure<sup>93</sup>. This provides incentives for the Contractor to maximise its in-service payments, by ensuring reliable equipment is used in the build and subsequent operation of the ACPBs at sea.

**5.30** The contract also allows for the Contractor to offer a substitute ACPB in a designated homeport, in replacement of a defective ACPB that has suffered from a seagoing essential failure, or mission essential failure precluding

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<sup>91</sup> See footnote 18.

<sup>92</sup> The contract between the Contractor and Defence stipulates that a suitable Port is one that the Commanding Officer of the ACPB determines to be suitable, taking into account the safety of the crew and the vessel, the operational requirements of the vessel, and the ability of the defect to be rectified at that location.

<sup>93</sup> The abatement point system is designed to provide the Contractor with flexibility associated with delivering a value for money solution to Defence, without necessarily increasing the costs associated with delivering that service during peak demand periods. The Contractor is entitled to accumulate a number of abatement points each quarter without in service support payment deductions being implemented. The Contractor is not liable to accept abatement points for a Defence request for support issued for a defect, or the requirement to provide availability to the extent that the defect or unavailability is caused by operational damage or a specified expected risk.

continued operations<sup>94</sup>. Under these circumstances, Defence is obligated to accept the substitute ACPB as a remedy<sup>95</sup>.

**5.31** The ANAO notes that the interoperability required to implement an operational system, agreed to under the terms of the existing contract, will require a stringent, fully standardised configuration baseline across the class, in an effort to obviate the requirement to allocate time to crew familiarisation and training to account for differences in specific ACPB platform design and operational capability. Audit and management of that baseline is a key feature of the responsibilities imposed on the PBFEG under the governance requirements of the RAN Technical Regulatory System.

### *Support Work Undertaken by Defence Staff*

**5.32** The Contract provides for the ability, but does not obligate Defence, to provide the Contractor with up to 30 RAN staff, to be seconded to the Contractor at all times during the 15 year support period for each ACPB<sup>96</sup>. The Contractor is obligated to provide work for these Defence personnel. It remains responsible, however, for the outputs associated with the specified activities against which Defence may provide staff, irrespective of whether Defence chooses to provide those staff.

**5.33** The work undertaken by Defence staff is contracted to be performed on behalf of, and under the direction and control of, the Contractor, who is contractually entitled to supervise, direct and control Defence personnel during their secondment. The Contractor is also empowered with the ability to request the removal of specific RAN staff from their secondment. The Contractor has agreed with Defence that;

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<sup>94</sup> If the ACPB is not alongside in a designated Homeport, then Defence may reject the substitute ACPB, in which case the Contractor will continue to incur abatement points in respect of the defective Patrol Boat. If Defence accepts the substitute ACPB, then the substitute ACPB will only be programmed in the Fleet Activity Schedule for use by Defence from the time that the crew of the defective ACPB has been repatriated from the location of the defective ACPB to the location of the substitute ACPB, or a replacement crew can be made available in the location of the substitute ACPB. Defence has retained the ability to accept, or reject, a substitute ACPB at its absolute discretion. If Defence accepts the substitute ACPB, the Contractor will cease to incur abatement points in respect of the defect from the time that the substitute ACPB is available. If Defence does not accept the substitute ACPB, the Contractor will continue to incur abatement points in respect of the defect until such time as it is rectified.

<sup>95</sup> The Contractor has agreed that the integrated support activities will be performed in a climate in which the prevalent conditions include seasonal storms, tempests, cyclones and other associated weather patterns and that they have investigated, and are fully aware of the potential impact of the Support Environment on the Integrated Support Activities.

<sup>96</sup> The Contractor has agreed to take all steps as would be taken by an expert, professional provider, to ensure that, the performance of the integrated support activities is not hindered by the support environment, including; employing additional staff, performing those activities outside of normal working hours, reprogramming the performance of the integrated support activities, programming those activities to be performed only during an appropriate season, expediting or adjusting those activities, or deploying all such additional resources in the performance of the integrated support activities, as may be required to ensure that that performance is not delayed, or interrupted, as a result of the support environment.

- it will remain vicariously liable for all work performed by RAN staff while they are on secondment;
- it will be liable for any costs, damages or losses incurred by seconded RAN personnel as a result of personal injury arising from, or in conjunction with, its failure to comply with its obligations under the contract, or otherwise at law; and
- it is not entitled to make any claim against Defence in respect of any costs, damages or losses incurred by it or any third party, arising out of, or in connection with, the performance by seconded RAN personnel of their duties while on secondment.

**5.34** The Contractor has also agreed with Defence that an act or omission of seconded RAN staff does not constitute an act or omission on the part of Defence.

**5.35** The ANAO notes that these conditions of contract hold the potential to effect the transfer of detailed deep level maintenance skills from system designers and maintainers to Defence staff. The ANAO further notes that the risk that the Contractor must manage, in the event Defence choose not to provide 30 skilled, uniformed personnel, is the retention of the availability of suitably skilled civilian staff who can be employed on otherwise unpredictable occasions, as and when required, in the Cairns and Darwin support regions.

## **Defence Monitoring, Assessment, and Abatement Management**

**5.36** Defence had not, as of the completion of audit field work, implemented a system to monitor, assess and process abatement points<sup>97</sup> in managing the in-service support element of the contract with the Contractor.

**5.37** The contractual requirements between Defence and the Contractor stipulate that the Contractor is entitled to a number of permitted abatement points each quarter.

**5.38** The Contractor and Defence have agreed that abatement days will be taken to occur in any quarter during which the Contractor incurs abatement points in excess of the number of permitted abatement points. The number of abatement days cannot be in credit to the Contractor.

**5.39** If in any quarter there are abatement days, the integrated support charges claimed by the Contractor are abated in accordance with an agreed formula. Examples of potential for misuse of the abatement point system are illustrated when the total abatement points awarded within the reporting period do not necessarily mandate a contract payment reduction; or where the

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<sup>97</sup> See footnote 18.



costs of repair exceed the cumulative costs associated with the accumulation of quarterly abatement point contract payment reductions by the Contractor, and is therefore not a commercially sound driver for the Contractor to remedy the deficiency.

**5.40** The ANAO notes that the system being incorporated to manage the integrated support charges, may in fact lend itself to unfavourable behaviour, whereby the Contractor may utilise available abatement points to minimise expenses in any one quarter in an effort to maximise cash flow, at the expense of operational capability. Defence advise that the formation of a partnering arrangement, accompanied by its ability to reflect poor contractor performance using the Defence balanced scorecard, will serve to strengthen Defence's ability to avoid the potential perverse treatment of the abatement system.

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Canberra ACT  
25 February 2005



P. J. Barrett  
Auditor-General

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