The Auditor-General

Audit Report No.44 1998–99 Performance Audit

Naval Aviation Force

Department of Defence

Australian National Audit Office

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Canberra ACT 27 May 1999

Dear Madam President Dear Mr Speaker

The Australian National Audit Office has undertaken a performance audit of the Department of Defence in accordance with the authority contained in the *Auditor-General Act 1997*. I present this report of this audit, and the accompanying brochure, to the Parliament. The report is titled *Naval Aviation Force*.

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

Yours sincerely

huet

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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Audit Team Anton Muller Kon Prin

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Abbreviations

ABM	Activity Based Management
ACIM	Availability Centred Inventory Model
ADF	Australian Defence Force
ANAO	Australian National Audit Office
AST OPD	Commander Australian Theatre Operational Preparedness Directive
CAMM	Computer-Assisted Maintenance Management
CANA	Commander Australian Naval Aviation
CDF	Chief of the Defence Force
CMDR	Commander, Royal Australian Navy
CN	Chief of Navy
CNPD	Chief of Navy Preparedness Directive
CNSAC	Chief of Navy Senior Advisory Committee
COALB	Commanding Officer, HMAS Albatross
COMAST	Commander Australian Theatre
COMFLOT/ COS	Commander Flotilla/Chief of Staff
COMSPT-N	Commander Support—Navy
COMTRG-N	Commander Training—Navy
CPD	Chief of the Defence Force Preparedness Directive
DCC	Defence Capability Committee
DCN	Deputy Chief of Navy
DD AVN POL	Deputy Director Aviation Policy
DFS-ADF	Director Force Structure—Australian Defence Force
DGCM-N	Director General Chief of Materiel—Navy
DGNER	Director General Naval Engineering Requirements
DGNPRM	Director General Program and Resources Management
DGPP-N	Director General Plans and Policy—Navy

Director General Technical Airworthiness
Defence Instruction
Defence Management Committee
Director Navy Aviation Systems Project Office
Director Warfare Policy and Doctrine—Navy
Equipment Acquisition Strategy
Electronic Counter Measures
Fleet Air Arm
Fleet Aviation Engineering Unit
Force Element Group
Guided Missile Frigate
Forward Looking Infra-Red Radar
Force Structure Policy and Programming Committee
Five Year Defence Program
Integrated Logistics Support
Lead Authority—Aviation
Maritime Commander Australia
Major Capability Submission
Minimum Level of Capability
Maintenance Man Hours Per Flying Hour
Naval Aviation Force
Naval Aviation Force Management Review
Naval Aviation Logistics Management Squadron
Naval Aviation Logistics Organisation (replaced by NALMS)
Naval Aviation Review
Naval Air Station, Nowra
Navy Aviation Systems Projects Office
Navy Intermediate Helicopters

Naval Personnel and Operating Costs
Outfit Allowance List
Operational Level of Capability
Offshore Patrol Combatant
Royal Australian Navy
Request For Tender
Reorder/Buys
Rate of Effort
Ships Automated Logistics Information Retrieval System
Superintendent of Aircraft Logistics
Search and Rescue
Supplementary Allowance Spares
Standard Defence Supply System
Ships Logistic Information Management System
Support Command (Air Force)
Ten Year Defence Program
Weapon System Logistics Management Squadron

Summary and Recommendations

Summary

Introduction

1. Naval Aviation Force (NAF) is part of the Naval Combat Forces Sub-Group (2.1) of the Navy Group in the Defence portfolio. NAF's main function is to provide air support for Navy ships. Its main 'platforms' are shore- and ship-based helicopters. NAF makes a significant contribution to overall Navy capability and therefore to Defence outcomes.

- **2.** The main components of NAF are:
- the Office of the Commander Australian Naval Aviation, located at Naval Air Station, Nowra;
- three Squadrons operating and maintaining NAF aircraft at Naval Air Station, Nowra;
- helicopters embarked on Naval ships; and
- the Naval Aviation Logistics Management Squadron (NALMS), which provides logistic support for Naval aircraft.
- **3.** The NAF fleet comprises 36 aircraft as follows:
- five Bell 206 B1 Kiowa helicopters (three on permanent loan from Army);
- six Aerospatiale AS350BA *Squirrel* helicopters (restricted largely to nonmaritime tasks);
- seven Westland SK50/50A Sea King helicopters;
- 16 Sikorski S70B2 Seahawk helicopters; and
- two HS748 fixed-wing electronic warfare and transport aircraft.

4. Assets used by NAF have a book value of some \$600 million,¹ excluding facilities and some armaments. The ANAO estimates that the call on the Commonwealth budget related to NAF in 1998–99 is in the order of \$438 million. There were about 700 Service and 216 civilian personnel in NAF in January 1999.

¹ \$593.5 million at 30 June 1998

Audit objectives

5. The objectives of the audit were to assess whether planning, management and resource allocation mechanisms and practices for NAF were conducive to achieving the latter's objectives in a cost-effective manner.

6. The focus of the audit was on the efficiency and effectiveness of Defence's management of NAF in achieving its required capability within budgeted resources.

Overall conclusions

7. Given the current state of development of the NAF preparedness planning framework and available performance measures and data, the ANAO could not identify a comprehensive and integrated military framework for the NAF embracing each of the strategic, operational and tactical levels. As a result, it was not possible to form an audit opinion on whether NAF meets Defence's military requirements overall. The ANAO recommends a strengthening of the strategic planning framework for NAF and a broadening of the measures used by Defence for performance assessment and reporting on NAF to provide a more comprehensive perspective of its performance.

8. On the basis of written and oral evidence, the ANAO found that NAF personnel are considered to perform professionally in their activities. The ANAO concluded that, in general, embarked helicopters on ships met the requirements of their ships and that, with few exceptions (mainly related to the level of technical proficiency reached at the time of Navy inspection), they met Navy's operational standards.

9. The audit found that the effectiveness and efficiency of the Defence resources employed in NAF could be improved. Of greatest concern is the low rate of availability of aircraft, which is a major difficulty in meeting operational and training requirements. NAF helicopter operating costs are a further concern; operating costs per hour are \$22 950 for the *Seahawk* and \$24 941 for the *Sea King.* NAF overall costs are expected to rise in the next few years. NAF does not regard its costs as unusually high but has not benchmarked against performance measures used by other operators such as the US and UK Navies.

10. The ANAO considers that the effective and efficient management of the Defence resources employed on NAF could be improved, mainly by:

• making clear linkages between military preparedness requirements and resource allocations and usage;

- providing more cost-effective logistical support by reviewing maintenance and support policies and practices and setting appropriate benchmarks and performance targets for key cost drivers; and
- completing a comprehensive planning framework for NAF.

Report structure

11. The structure of the report is outlined below.

Figure 1:





Key Findings

NAF and military operational and strategic objectives

12. NAF performance is reported in the Defence Annual Reports. This reporting has focused on the degree to which NAF meets planned annual flying hours of each aircraft type. There are a number of compelling reasons for Defence to continue and enhance public performance reporting on NAF, including:

- the significant resources invested in and expended on NAF;
- the importance of NAF's military role as a part of the Australian Naval combat forces; and
- the risks inherent in the complexity of organisational arrangements, the wide range of resources involved and the intricacies of interactions between investments in future capability and current activities, training and operations.

13. Performance assessment of NAF would be enhanced by comparing resources used against outcomes achieved and by broadening performance measures to include a wide range of military effectiveness components which make up NAF's military capabilities.

14. The audit found that Defence has in place the structure of a military planning framework for NAF through a series of hierarchical preparedness requirements and planning documents. That framework provides conceptual links between NAF's military preparedness and higher-level preparedness requirements. The planning framework for NAF could be made more effective by integrating the military requirements to be met by NAF at the strategic, operational and tactical levels and by providing clear linkages between preparedness requirements and resource allocations and usage.

15. Since 1990–91 the two main aircraft types in NAF (*Seahawk* and *Sea King* helicopters) have generally not met their annual planned hours of flying, the only constant measure of NAF's performance reported by Defence. For example, the *Seahawks* achieved actual rates of effort (RoE) of less than 3000 hours p.a. against targets of 3550, 4050 and 3400 hours from 1995–96 to 1997–98 respectively (see Appendix 1). However, RoE as a single measure is inadequate in itself for assessing and reporting performance. NAF has generally met requirements set by Maritime Command and the ships that NAF serves.

16. Given the current state of development of the NAF preparedness planning framework and available performance measures and data, it was not possible to form an audit opinion on whether NAF meets Defence's operational requirements overall. The ANAO recommends a broadening of the measures used by Defence for performance assessment and reporting on NAF to provide a more comprehensive perspective of its performance.

17. The Government's strategic policy contains a requirement for military aircraft to be able to undertake high levels of activity, for protracted periods, at "crisis warning" notice. There are no plans regarding the way NAF is to meet that particular Government requirement. Planning to meet that requirement should be initiated as a matter of priority.

Logistic support to NAF

18. Actual maintenance hours for the *Seahawk*, the main combat helicopter in NAF, exceed the original project estimates by more than three and a half times. NAF aircraft maintenance policy and practices need to be updated to ensure that NAF's maintenance resources are being used to best effect. Improved results in logistic support would also be promoted by appropriate benchmarking and setting challenging but achievable performance targets for maintenance hours per flying hour and for the availability of operational aircraft.

19. NAF uses a number of systems for inventory management and aircraft parts and repairable items control and management. These systems contain outdated information and there is a lack of connectivity between them. Removal of these deficiencies would enhance NAF inventory and repair management, thus reducing costs and providing more effective logistic support to the NAF fleet of aircraft.

20. There are a number of important tasks which the Naval Aviation Logistics Management Squadron (NALMS) should complete in the long-term interests of safety, improved logistic support and minimisation of the long-term cost of ownership to Defence. These tasks include:

- bringing maintenance policy and practices up to date with modifications and changes in aircraft and the logistic and economic environments;
- benchmarking and setting performance targets for the aircraft maintenance effort and aircraft availability;
- rectifying inaccurate information and data in requirements lists of aircraft parts and the management and control systems for inventory,

and removing obstacles to connectivity within and between management and control systems for aircraft parts and repairable items;

- exploring with industry cost-effective ways to increase in-country repair and maintenance; and
- progressing cooperation on the management of common aircraft parts and repairable items across the ADF.

Supporting an expanding NAF: Financial resources requirement

21. Navy has recognised that NAF, which has been unable to meet its peace-time rate of effort flying requirements in the past, faces a major challenge in meeting a planned significant expansion with the introduction of another aircraft type, the *Super Seasprite*. The *Super Seasprite* is to provide naval aviation capability to the ANZAC frigates which are entering Naval service and are increasing the number of helicopter-capable ships in the Navy fleet.

22. Defence has been seeking to link the planned funding of NAF more closely with the planned flying effort of its aircraft. Costing models and budgeting for NAF are being refined. Defence funding allocations to NAF have been made on the basis of incomplete and in some cases erroneous bid compilations. The ANAO considers that NAF's funding allocations should be reviewed and adjusted in the light of better costing information and to correct omissions and duplications contained in the previous bids for resources.

23. The ANAO estimates the cost of NAF in 1998–99 at about \$188 million, excluding major capital acquisitions. With planned flying for that period of 9177 hours, the estimated average cost (excluding major capital acquisitions) per flying hour for the 36 aircraft in NAF is \$20 500. NAF's projected financial allocations are rising significantly into the next century. Navy should endeavour to benchmark NAF costs, including flying hours per aircraft per week and aircraft availability with those of other relevant operators, with a view to containing rising costs.

NAF capital acquisition projects

24. The ANAO reviewed the tender, evaluation and the acquisition processes in the project to acquire *Super Seasprite* helicopters (Project Sea 1411 Phase 1). The ANAO found that tenders had been evaluated in accordance with the approved Tender Evaluation Plan. Defence Procurement Guidelines in the pre- and post-project approval phases were generally adhered to. However, after the tender evaluation phase, life-

cycle costing was not pursued in accordance with a 1992 Defence Instruction, which requires life-cycle costing at decision points throughout the life-cycle of equipment or weapon system. Furthermore, consolidated personnel and operating costs were not incorporated in Defence's financial planning for NAF until October 1997, two and a half years after Government approval of the project.

25. Project Sea 1431, activation of four attrition *Seahawk* aircraft, was intended to cover the capability forgone through a reduction in the number of *Super Seasprite* helicopters to be acquired. The original milestones for the activation of these aircraft were not met. Effectiveness of the project would be enhanced by the incorporation of revised timelines for bringing these aircraft into operation, to be synchronised with NAF's operational plans.

NAF performance management systems

26. There are a number of useful operational performance reporting streams in NAF. Development of a consolidated NAF Business Plan is progressing. To provide effective and comprehensive planning for the development of the NAF as a force element, the NAF Master Plan should be completed and supported by an integrated framework for operations, training, logistic support, equipment acquisition, airfield support services and resource planning.

NAF organisational structure and personnel planning

27. NAF's organisational arrangements are complex, crossing Command and Program boundaries which tends to diffuse responsibility. To provide an optimal framework for resources planning and management in NAF, the ANAO suggests that Defence monitors NAF's organisational arrangements to ensure that they allow CANA to effectively carry out the coordination role for NAF and that there are clear customer/provider relationships and satisfactory flows of information between the organisations involved in managing and supporting NAF.

28. The ANAO notes that NAF is benefiting from an increase in staffing positions and personnel numbers as a result of a need to grow its workforce in anticipation of the logistic support to be provided to the *Super Seasprite* helicopters when they enter Navy service. To promote optimal use of its work-force, NAF should review and prioritise the staffing requirements of squadrons as part of the process of reallocating positions as the *Super Seasprite* helicopters enter Naval service.

ANAO recommendations and Defence response

29. The ANAO made 12 recommendations aimed at improving the efficiency and effectiveness of the management of NAF. Defence advised that it generally agrees with the thrust of the audit report's recommendations but that it should be recognised that NAF is not a discrete Defence output. Rather, NAF contributes to three Defence Outputs (Surface Combat Force, Amphibious and Afloat Support). Defence also advised that comparison of operating costs to number of hours flown does not present a true picture of NAF's ability to meet Defence's military response options or to respond to such requirements as Defence Force Aid to the Civil Community. Defence agreed all 12 recommendations, concluding that the ANAO report will provide useful support to many Defence initiatives already under way and that it should help achieve the Chief of Navy's goal of reinvigorating Naval Aviation.

Recommendations

Set out below are the ANAO's recommendations with report paragraph references. Defence agreed to all of these recommendations. The Department's detailed comments are included in the body of the report. The ANAO considers that Defence should give priority to Recommendations 4, 5, 6, 7, 9, 10 and 11. Priority recommendations are shown below with an asterisk.

Recommendation	The ANAO recommends that, to ensure appropriate
No.1	accountability for the significant resources expended
Para. 2.9	on NAF particularly taking into account its operational importance to the Naval combat forces, Defence provide regular and results-oriented public performance reporting on NAF's operations.

RecommendationThe ANAO recommends that, to enhance the planning
and resource decision-making processes for NAF,Para. 2.20Defence strengthen its strategic planning to provide
clear linkages between preparedness requirements
and resource allocations and usage.

Recommendation	The ANAO recommends that NAF performance
No.3	measurement and public reporting of NAF
Para. 2.30	performance be enhanced by assessing the level of
	resources used against results being achieved.

*Recommendation	The A	NAO	recomme	ends t	that Defence plan	to ensure
No.4	that	NAF	meets	the	Government's	military
Para. 2.54	requi	rement	s contai	ned ir	n its strategic guid	dance as a
	matte	r of pr	riority.			

*Recommendation The ANAO recommends that, to give effect to No.5 recommendations contained in recent Defence reviews Para. 3.37 of Naval logistics and to undertake important logistic tasks needing attention now, the Naval Aviation Logistics Management Squadron increase the number of its logistic personnel and their range of expertise. *Recommendation The ANAO recommends that, in order to promote No.6 more efficient use of its personnel and for Para. 3.41 accountability purposes, the Naval Aviation Logistics Management Squadron establish appropriate performance indicators and performance review mechanisms.

*Recommendation The ANAO recommends that, to improve the cost-No.7 effectiveness of NAF logistics, the Naval Aviation Para. 3.47 Logistics Management Squadron incorporates the following tasks in its work schedule:

- a) reviewing maintenance policy and practices in NAF with a view to controlling costs and increasing aircraft availability;
- b) setting challenging but achievable performance targets for the aircraft maintenance effort and aircraft availability and reporting on their achievement;
- c) enhancing management systems and controls over the logistic inventory, in particular updating requirements lists and providing systems for tracking, controlling and recording serviceability across the repair and stores boundaries, and effective and efficient connectivity between ship and shore based systems;
- d) giving priority and setting time-lines to updating inventory data bases, including deletion and disposal of obsolete items;
- e) exploring with Australian industry ways of increasing in-country repair and maintenance where this can be done cost-effectively; and
- f) progressing cooperation on the management of common aircraft parts and repairable items across the ADF.

RecommendationThe ANAO recommends that, to ensure appropriate
funding in relation to expected rates of effort,No.8Funding in relation to expected rates of effort,Para. 4.17Defence review the financial allocations for NAF on
the basis of improved costing information and taking
into account any omissions and duplications contained
in previous bids.

*Recommendation The ANAO recommends that Defence benchmark No.9 NAF's aircraft availability, flying hours per aircraft Para. 4.29 per week and flying costs per hour with appropriate better practice operators and examine NAF's cost structure to enable informed management decisions aimed at containing or reducing costs.

*Recommendation The ANAO recommends that Defence:

No.10	(a) put in place a project time-line for <i>Project Sea 1431:</i>
Para. 5.33	Activation of Four Attrition Seahawk Helicopters,
	linked to capability requirements of the ANZAC ships; and

(b) address the funding requirement necessary to bring these aircraft to operational standards.

*Recommendation The ANAO recommends that, to help provide a more No.11 comprehensive and effective performance Para 6.15 management framework for naval aviation, NAF finalise its Master Plan and the supporting plans to enable their implementation in 1999–2000.

Recommendation	The ANAO recommends that, to promote optimal use
No.12	of its workforce, NAF review and prioritise the
Para. 7.18	staffing requirements of NAF squadrons as part of
	the process of more effectively reallocating positions
	as the Super Seasprite helicopters enter Naval service.

Defence agreed to all of these recommendations.

Audit Findings and Conclusions

1. Introduction

This introduction sets out background information on the Naval Aviation Force, its functions, structures and resources. It also sets out the audit objectives, criteria and methodology and lists previous reviews.

Naval Aviation Force

1.1 Naval Aviation Force (NAF) is part of the Naval Combat Forces Sub-Group (2.1) of the Navy Group in the Defence portfolio. Its main land location is at the Naval Air Station (NAS) in Nowra, NSW. NAF's function is to provide air support for Navy ships. Its equipment 'platforms' are shore and ship-based helicopters. NAF makes a significant contribution to overall Navy capability and therefore to Defence outcomes.

1.2. Naval aviation in Australia has a long history dating back to *Sopwith Pup* aircraft deployed on cruisers in 1917 and later to the aircraft carriers HMAS *Sydney* and HMAS *Melbourne*. The present organisational structure of NAF is the result of the *Naval Aviation Review* (NAR), an internal report in 1995. The NAR identified significant shortcomings in policy and doctrine for naval aviation; a lack of clear direction and delegation of authority; and shortcomings in operational airworthiness management.

1.3 To provide higher-level corporate policy and doctrine with an aviation focus, Navy established a position (at Captain RAN level) of Commander Australian Naval Aviation (CANA) at NAS with the new organisation formed on 1 March 1996. The organisational arrangements are complex, crossing Command and Program boundaries, which tends to diffuse responsibility (see Figure 2 in Chapter 7).

1.4 CANA is Navy's principal aviation operations and policy adviser but does not exercise operational command over squadrons, flights or detachments. CANA oversees and manages the Maritime Command elements of the Naval Aviation Force, with particular attention to safety standards, operational airworthiness, flying standards and aviation engineering standards. CANA also provides policy advice and technical expertise for aviation policy (to the Deputy Chief of Navy) and for aircrew training requirements (to Commander Training—Navy).

1.5 Mission, outcome and output objectives for NAF were derived, in very general form, in 1997 in the *Naval Aviation Force Management Review* (NAFMR), but detailed and more practically useful statements had not

been agreed at the time of the audit field work. Responsibility for action to complete these fundamental documents lies with Maritime Command. The development of key result areas and related performance measures is a part of the Performance Measurement Project established by Maritime Command in July 1998 to give effect to the Chief of Navy's direction for Maritime Command to develop strategic performance measures for reporting preparedness. Commander Support Australia, who provides materiel support to NAF, is to address the issue of sustainability² measurement in a separate study.

1.6 The main components of NAF are:

- the Office of the Commander Australian Naval Aviation, located at NAS, which has a coordination, oversight and advisory role;
- three Squadrons (HS816, HS817 and HC723) operating and maintaining NAF aircraft at NAS);
- helicopters embarked on naval ships— at the time of the audit, five *Seahawks*, one Bell *Kiowa* and one *Sea King*; and
- the Naval Aviation Logistics Management Squadron (NALMS), located in Sydney and with a detachment at NAS. NALMS is responsible for providing logistic support for Naval aircraft and associated equipment, including the supply of spares and engineering services.

1.7 The Navy Aviation Systems Projects Office (NASPO) in the Defence Acquisition Organisation manages capital equipment acquisition projects related to NAF aircraft.

- **1.8** The NAF fleet comprises 36 aircraft as follows:
- five Bell 206 B1 Kiowa helicopters (three on permanent loan from Army);
- six Aerospatiale AS350BA *Squirrel* helicopters (restricted largely to nonmaritime tasks);
- seven Westland SK50/50A Sea King helicopters;
- sixteen Sikorski S70B2 *Seahawk* helicopters (four of which are held in reserve as attrition aircraft, planned to be gradually incorporated into the operational fleet); and
- two HS748 fixed-wing electronic warfare and transport aircraft (currently subject to Commercial Support Program (CSP) proposals).

NAF will also include the pilotless target aircraft *Kalkara*, which will replace *Jindivik*, and 11 *Super Seasprite* helicopters being procured under Project Sea 1411.

² The ability to support forces after their deployment until completion of their assigned tasks.

1.9 Assets used by NAF had the following book values³ at 30 June 1998:

Şm
23.0
534.5
36.1
593.5

1.10 No reliable estimate of the value of NAF facilities was available. However, the ANAO notes that major facilities investment at NAS, approved by the parliamentary Standing Committee on Public Works since the 2nd World War to 1997 amounted to \$112.4 million at 1997 prices. In an informal estimate, Defence facilities staff attributed about 90 per cent of NAS facilities use to NAF purposes. Stage 1 of planned facilities major capital expenditure at NAS with an estimated out-turn cost of \$69.3 million over three years, is under way. Most of that expenditure is for the purpose of aviation support to the Navy fleet. Stage 2 of the redevelopment of NAS is estimated to cost \$82.486 million at September 1997 prices. Stage 2 has not yet been considered by the Standing Committee on Public Works.

1.11 The number of naval helicopters on board RAN ships will be increased significantly, mainly to provide naval aviation support to the eight ANZAC frigates coming into naval service. To meet this requirement, 11 *Super Seasprite* helicopters are being acquired and four attrition *Seahawk* aircraft held in reserve are to be activated. NAF draft embarcation plans indicate that the mature embarcation size (the number of helicopter flights⁵ and detachments⁶ on naval ships) is to be achieved by 2005 with 13 embarked flights and four detachments. In the middle of 1998 there were six flights and one detachment.

1.12 NAFMR (1997) put the annual cost of NAF at "broadly \$122.8 million." Subsequently, the Navy's Activity Based Management (ABM) costing model calculated a cost of \$139.7 million for 1997–98. That model includes depreciation for capital in use but does not include investment expenditure on capital equipment and spares paid for but not consumed in the accounting period.

³ Provided by the Department of Defence, based on the deprival valuation methodology

⁴ Excludes armaments which Defence could not separate because of their generic/multi-purpose function or because the items were not separable from the value of other assets not related to NAF.

⁵ Flights are dedicated aircraft, aircrew, and support personnel placed on a ship permanently.

⁶ Detachments are aircraft, aircrew and support personnel placed on a ship for a defined, usually short period.

1.13 The Naval Aviation Force is not a discrete entity in the parliamentary appropriations for Defence. Reliable expenditure figures on the totality of NAF related purposes are not readily available. From data provided by Defence, the ANAO compiled the following <u>indicative</u> estimate of NAF related outlays in *1997–98*⁷:

Capital outlays

	Şm
Project Sea 1411 Ph.1-	
Acquisition of Super Seasprite Helicopters	161.143
Project Sea 1411—Phase 2—	
Attrition Helicopters for ANZAC Ships	6.358
Project Sea 1431— <i>Seahawk</i> ECM and FLIR upgrade	0.896
total capital outlays	168.397
Operating expenditure	
Personnel (including allowances and superannuation)	53.808
'Cash expenditure' (including contractors) and fuel	49.820
Equipment	25.412
Facilities	10.639
total operating expenditure	139.679

1.14 From Defence estimates of resource requirements and estimated expenditures for capital items, personnel and operating costs, the ANAO estimates that the call on the Commonwealth budget related to NAF in 1998–99 is in the order of \$437 million (capital outlays of \$249 million and operating expenditure of \$188 million). The rise in expected outlays on NAF of about \$129 million from 1997–98 reflects an increase in capital outlays for the *Super Seasprite* helicopters; new facilities capital expenditure at NAS; increases in the personnel and operating costs for the *Seahawks* and the *Sea Kings*; higher rates of effort for the *Seahawks* and the *Sea Kings*; higher rates of effort for the *introduction into Navy* of the *Super Seasprite* helicopters; and Navy's continuing refinements of estimates of resources required to carry out stipulated levels of NAF activity.

1.15 Navy personnel in NAF as a proportion of the total uniformed strength of Navy is to rise from about seven per cent now to 10 per cent over the next nine years. NAFMR estimated a requirement of 860 Service positions and 233 civilian positions by 2007. There were about 700 Service and 216 civilian personnel in NAF in January 1999.

⁷ Dec .1998 prices

Background to the audit

1.16 The audit topic was selected for the following reasons:

- high costs of operating navy helicopters per hour;
- under-performance in meeting the annual rate of effort targets set for the NAF fleet;
- low availability of aircraft, which had been identified as a major underlying cause of difficulties in meeting operational as well as training commitments; and
- the integral role of NAF as part of the naval combat forces, which play a major role in defending Australia's sea/air barrier.

Audit objectives

1.17 The objective of the audit was to assess whether the planning, management and resource allocation mechanisms and practices for NAF were conducive to achieving the latter's objectives in a cost-effective manner. In particular, the audit reviewed:

- underlying reasons for the high costs of operating the aircraft in NAF;
- factors that have led to poor availability and failure in achieving annual rate of effort targets;
- areas that impact on the cost-effectiveness of NAF such as military and resource planning, maintenance and logistics;
- NAF's performance management systems;
- the administration of NAF capital acquisition projects; and
- risks which could adversely impact on NAF effectiveness.

1.18 The focus of the audit was on the efficiency and effectiveness of Defence's management of NAF in achieving its required capability within budgeted resources.

Audit criteria and methodology

1.19 Audit criteria were developed to address the areas of planning, logistic management, capital acquisition and operations of NAF.

1.20 Audit field work was conducted at the Navy Aviation Systems Projects Office, Canberra, the Naval Air Station Nowra and the Naval Aviation Logistics Management Squadron in Sydney. Consultation also included Army Aviation Headquarters in Oakey, 5th Aviation Regiment in Townsville, Support Command Australia, Melbourne, and private-sector firms in the aviation industry. The audit utilised the services of a consultant, Mr John Moten from John Moten & Associates, to assist the audit team in the collection and analysis of information.

1.21 Audit issues papers were sent to Defence during audit fieldwork. The proposed report of the audit was put to Defence in April 1999 for comment and revised having regard to comments provided in May 1999. The audit was conducted in accordance with the ANAO Auditing Standards. The cost of the audit was \$365 000.

Previous reviews and audits

1.22 Since 1983 there have been over 30 internal Defence reports or studies affecting or addressing the Naval Aviation Force (NAF). These included the following:

- Command, Control and Support of Naval Aviation (Ralph review)— 1984;
- Director General Program & Resources Management (DGNPRM) and subsequent Director General Naval Engineering Requirements (DGNER) Reviews of Naval Aviation 1989–90;
- Aviation Command, Control and Administration of the Fleet Air Arm (FAA) (Cremen report)—1992;
- Naval National Command and Control Arrangements (York review) —1992;
- Review of the Naval Aircraft Logistics Office (Bailey review)-1992;
- Naval Aviation Review (Ramsay review)—1995;
- Aviation Training Needs Analysis (Craig report)-1995;
- Aircrewman reviews—1996;
- Naval Aviation Planning Conference—1996;
- Review of the Naval Aviation Logistic Organisation (Mulcare review) and the NALO Reform Program—1997; and
- Naval Aviation Force Management Review (NAFMR) 1997.

1.23 NAFMR was the broadest and most influential review of Naval aviation. Commissioned by the Deputy Chief of Navy, NAFMR provided an overall framework encompassing logistics, organisational structure, recruitment, training and future resource planning for the revitalisation of NAF. Its recommendations have been widely accepted by Navy. The other reviews were more narrowly focused, addressing specific organisational, logistic or training matters.

1.24 There are no recent audit reports on NAF as an entity.

Acknowledgements

1.25 The ANAO wishes to acknowledge the time, effort and expertise contributed by Defence managers and staff to this audit, in particular the contributions of personnel at the Naval Air Station, Nowra, Support Command Australia, Maritime Command, the Defence Acquisition Organisation and co-ordinating and policy staff in Canberra.

2. NAF and military operational and strategic objectives

This chapter reviews Defence's reporting on NAF performance, Defence processes for setting performance objectives for NAF and the extent to which NAF meets military requirements.

Public Reporting on NAF Performance

2.1 The audit traced the planning processes for determining the performance objectives of NAF. As a first step, the ANAO identified the measures used for reporting operational performance of NAF in the Defence Annual Reports, which are tabled in Parliament and are the sole regular source of public reporting on NAF performance. The only constant measure publicly reported on NAF's performance is Rate of Effort (RoE), which is the number of flying hours by each aircraft type, against planned flying hours in each reporting year. RoE is the naval aviation's performance measure equivalent of ship availability for vessels of the Naval Combat Force. Details of NAF aircraft RoE planned and achieved since 1990–91 are shown in Appendix 1. RoE is discussed later in this chapter.

Accrual budgeting and outputs/outcomes-based performance reporting

2.2 The Government is introducing accrual budgeting and an output and outcomes-based performance reporting framework from 1 July 1999. Maritime Command, the operational command for NAF, has been undertaking work on public performance reporting to accord with this framework. Defence's outputs from 1 July 1999 under this framework are at Table 1, which also lists the manager responsible for each output.

	Output	Output Manager
1	Command of operations	Commander Australian Theatre
2	Strategic Intelligence	Deputy Secretary Strategy and Intelligence
3	Capability for major surface combatant operations	Chief of Navy
4	Capability for patrol boat operations	Chief of Navy
5	Capability for submarine operations	Chief of Navy
6	Military geographic information	Vice Chief of the Defence Force
7	Capability for afloat support.	Chief of Navy
8	Capability for mine countermeasures and mining.	Chief of Navy
9	Capability for amphibious lift.	Chief of Navy
10	Capability for special forces operations.	Chief of Army
11	Capability of land task forces operations	Chief of Army
12	Capability for logistic support of land operations.	Chief of Army
13	Capability for air strike/reconnaissance.	Chief of Air Force
14	Capability for tactical fighter operations.	Chief of Air Force
15	Capability for ground-based air defence.	Chief of Army
16	Capability for strategic surveillance.	Chief of Air Force
17	Capability for maritime patrol aircraft operations.	Chief of Air Force
18	Capability for airlift.	Chief of Air Force
19	Capability for combat support of air operations.	Chief of Air Force
20	Effective international relationships and contribution to international activities.	Deputy Secretary Strategy and Intelligence
21	Effective contribution to national support tasks.	Vice Chief of the Defence Force
22	Strategic policy and direction.	Vice Chief of the Defence Force Deputy Secretary Strategy and Intelligence

Table 1:

Defence's outputs from 1 July 1999

Source: Prepared by the ANAO from the Portfolio Budget Statements, 1999–2000, Defence Portfolio, Budget Related Paper No.1.4A

2.3 Naval aviation is not a separate output in the proposed Defence outputs. Given its capabilities, it could contribute to a number of outputs, notably no.3 (Capability for major surface combatant operations), no.7 (Capability for afloat support) and no.9 (capability for amphibious lift).

2.4 The audit team was briefed on the recent work undertaken by Maritime Command on putting in place an improved performance reporting system on military effectiveness of naval combat forces. In respect of the Naval Aviation Force, the ANAO understands that the

proposed system is intended to encompass reporting on the operational effectiveness of the ship-based components of NAF (embarked flights and detachments) through regular reports by the ships' commanding officers on the operational performance of the weapon systems on board the ship. No decision had been made on whether or how to incorporate NAF's other components: the land-based units engaged in training, support and maintenance and on a variety of operational tasks such as search and rescue and support to the Navy fleet.

New Maritime Command performance assessment framework

2.5 The ANAO asked about public reporting on NAF's performance under the new Maritime Command performance measurement system being developed for the Defence accrual-based output and outcomes framework. Defence advised that the new framework does not require reporting on NAF performance as a separate entity and public reporting would be largely directed to the 22 discrete Defence outputs.

2.6 NAF uses significant resources, with estimated expenditure in 1998–99 of some \$438 million (for current and capital purposes) and book value of assets at the beginning of that year of \$593.5 million not including facilities. The ANAO notes that, in terms of budgetary allocations for operating and personnel costs, Defence treats NAF as a separate entity. There are good reasons for this. The totality of the training, logistic and operational efforts of squadrons and NAF support organisations contributes to the maintenance and development of naval aviation support for the fleet. There are inherent risks in the complexity of the interactions and trade-offs within the NAF system, which cross different groupings in the Defence program structure 1998–99.

2.7 For example, before any increase in the number of embarked helicopters, training must be expanded, which could reduce the resources available for current operations. To provide meaningful performance information on the resources made available to NAF in any given period, reporting needs to contain a representative picture of NAF. Information on sustainability and investment in military capability in the future needs to be captured in addition to the currently-reported achieved flying hours (RoE). A wider range of outcome-oriented military capability measures in performance assessment and reporting is discussed later in this chapter.

Need for meaningful public reporting on NAF performance

2.8 There are a number of compelling reasons for Defence to continue public reporting on NAF in Defence Annual Reports or budget-related
papers, and to enhance that reporting rather than to diminish or discontinue it. These can be summarised in terms of:

- the significant resources invested and expended on the activity—in the output/outcomes based performance reporting framework from next financial year, the results obtained from the resources allocated to NAF should be reported in the context of the relevant Defence outputs;
- its important military role as a part of the Australian Naval combat forces; and
- the risks involved as a result of the complexity of the arrangements across groups and the range of resources involved in maintaining and enhancing a distinct military capability (military Naval helicopter operations) and the intricacies of interactions between investments in future capability and current activities, training and operations.

Recommendation No.1

2.9 The ANAO recommends that, to ensure appropriate accountability for the significant resources expended on NAF particularly taking into account its operational importance to the Naval combat forces, Defence provide regular and results-oriented public performance reporting on NAF's operations.

Defence response

2.10 Agreed.

Setting NAF's military operational objectives

2.11 In order to assess the usefulness of RoE (see paragraph 2.1) as a major performance measure for NAF, the audit considered the way it was derived and how it related to agreed Defence operational objectives.

Formal Defence process for setting NAF operational objectives

2.12 The process of determining NAF's operational objectives was described by Defence staff as a "hierarchical cascading" through the following documents and plans:

- the Government's White Paper Australia's Strategic Policy, December 1997;
- Chief of the Defence Force Preparedness Directive (CPD)—"setting out CDF's requirement to maintain core warfare skills and minimum safety standards to maintain certain Naval forces at levels of preparedness commensurate with COMAST's requirements to conduct operations";⁸

⁸ CANA minute 656/98 (CANA 98/87/1(1)(LC) of 15 September 1998, paragraph 3

- Commander Australian Theatre Operational Preparedness Directive (AST OPD);
- Chief of Navy Preparedness Directive (CNPD), which sets out the Chief of Navy's requirements to meet AST OPD and CPD;
- Maritime Commander's Embarkation Plan; and
- Naval Aviation Force plans, which take the form of the planned Rate of Effort (the equivalent of the Fleet Activity Schedule for ships).

2.13 Only the first of the documents listed above is available publicly. The audit team sought to follow the cascade step by step. The Government's direction for Australia's defence planning into the 21st century is contained in *Australia's Strategic Policy*. It does not mention NAF as an entity but has implications in it for NAF that are discussed later in this chapter.

2.14 The CPD 1998–99 does not stipulate availability or RoE requirements for specific force elements such as NAF or the aircraft types in it. CPD lists the contingency plans which have to be met by the ADF, including assistance to the civil community (eg. search and rescue carried out by NAF), evacuation tasks overseas and military contingencies.

2.15 In the AST OPD, the only specific reference to a component of NAF is a requirement for the *Sea Kings*.

2.16 CNPD (Provisional) 1998 contains general requirements concerning the maintenance of core skills, professional standards, as well as specific tasks for Navy Sub-Program managers. These tasks included implementing the endorsed NAFMR recommendations and, as a Navy preparedness priority, reinvigorating NAF.

2.17 The Maritime Commander's Embarkation Plan lists the NAF Operational Command's planned flights and detachments by ship and time-period. Naval Aviation Force plans provide details of the planned flights and detachments and rates of effort, arrived at through the processes mentioned at paragraph 2.23 below.

2.18 The ANAO was unable to obtain through any Defence document, a zero-based derivation of the rates of effort for the years 1996–97 and 1997–98 for the two main operational aircraft types in NAF: the *Seahawk* and the *Sea King*. The processes of setting and modifying the rates of effort did not involve an iteration of rates of effort derived from various military contingency plans. (See paragraphs 2.24–2.27 on RoE as a performance measure.)

2.19 Defence advised that it would progress the CPD framework by developing detailed Military Response Options in the 1999–2000 time-

frame. This would help in the integration of military requirements from the strategic to the operational and tactical levels. Further strengthening of the Defence military planning framework would enhance in-put to the resource decision-making processes in Defence by identifying and making transparent the resource costs inherent in various preparedness requirements, an issue highlighted in the ANAO's 1996 report on management of ADF preparedness⁹. It would also assist Defence planning and resource allocation decisions relating to NAF by helping to draw out the totality of the specific higher-level operational preparedness requirements for this force element.

Recommendation No.2

2.20 The ANAO recommends that, to enhance the planning and resource decision-making processes for NAF, Defence strengthen its strategic planning to provide clear linkages between preparedness requirements and resource allocations and usage.

Defence response

2.21 Agreed. Navy is progressing work in this area. This does not only apply to naval aviation, but to all of Navy's Defence Output preparedness. NAF provides support to three of Navy's Outputs (Support Combat Force, Amphibious and Afloat Support) and is an integral part of this process.

Expanding the measures of NAF performance

2.22 The CPD requires force elements to meet the requirements implicitly contained in the contingency plans listed in it. This is the ultimate test of a force element's ability to meet highest-level Defence military requirements.

2.23 The information available showed that, in practice, RoEs were not a simple reflection of operational requirements. Operational requirements, as initially compiled by Maritime Command and training squadrons, are modified through complex processes within Defence. The processes involve considerable consultation and professional deliberation, taking account of:

- RoEs set in the past and the achievements against them;
- new operational requirements and relinquishment of past functions;
- bids by the operational units, set against the capacity of the maintenance and support organisations to meet them;

⁹ Audit Report No. 17 1995-96 Management of Australian Defence Force Preparedness

- training to meet curriculum-dictated requirements (for example Naval Lead-in Helicopter Training and Operational Flying Training);
- the Maritime Commander's Embarcation Plan and Fleet Activity Schedule;
- air crew currency flying requirements;
- procurement-related trials programs;
- resources available, including the planned (agreed) financial allocations in the Five Year Defence Program and the Ten Year Defence Program projections and competing demands for those resources within Defence; and
- the availability of trained aircrew and maintenance and support personnel and the capacity to contract-in support.

2.24 RoE is not derivable from the CPD or from the iteration of unmodified requirements by customers (Maritime Command and other users of NAF), at least for the two aircraft types in the two years examined in the audit. It is therefore not possible to conclude that, by reaching the planned RoEs, these aircraft would have achieved the CPD's operational objectives for that period, ie. whether higher-level Defence strategic operational objectives had been met. Similarly, it cannot be assumed that, by meeting the RoE targets, all original customer requirements were met; for example, whether all tactical operational requirements had been fulfilled.

2.25 The ANAO notes, however, that the processes mentioned in paragraph 2.23 provide reasonable mechanisms for ranking NAF customer requirements and sharing the resources Defence allocates to NAF in line with those priorities.

2.26 Conversely, shortcomings in meeting RoE do not necessarily mean a failure to meet CPD operational objectives or customer requirements in the period in question. It is theoretically possible, though not demonstrable practically, that the requirements of all the relevant contingency plans might have been met by NAF. Under these circumstances, RoE on its own is not a practical sole measure of assessing whether NAF meets Defence's strategic and tactical operational requirements.

2.27 RoE is inadequate as a sole measure of performance against military objectives and consequently also as a sole measure for Defence public reporting on its performance in the Defence Annual Reports tabled in the Parliament or other public performance reporting avenues.

Performance measures: Assessing resource use against outcomes achieved

2.28 Commander Australian Naval Aviation (CANA) is making progress in expanding the range of military internal NAF performance measures against Defence objectives. CANA's work includes development of supply support effectiveness measures such as demand satisfaction rates and Provisioning Lead Times. CANA is also considering wider measures of military effectiveness such as the ability to provide the required number of mission capable aircraft and proficient aircrew to meet contingency plans.

2.29 As part of the Naval combat forces NAF fulfils a number of operational roles, contributing to several Defence outputs listed at Table 1. To give a more meaningful view of performance, NAF would need to assess and report performance both within Defence and publicly in terms of the resources used and the military capabilities (and other agreed objectives) achieved (outcomes). Thus, the performance measures should include the components which make up NAF military capabilities such as:

- the ability to provide the required number of mission capable aircraft and proficient aircrew within the period of notice to be stipulated by Defence operational and contingency planning;
- matching of aircraft numbers with helicopter-capable ships;
- total number of embarked flights, detachments and ship outfits;
- flying experience of aircrew and the proportion of ship-based flying as part of their flying;
- logistic capability to sustain flying activity for defined contingencies including capacity to undertake battle repairs; and
- the ability to provide aircrew and maintenance staff to sustain protracted periods of high activity.

Recommendation No.3

2.30 The ANAO recommends that NAF performance measurement and public reporting of NAF performance be enhanced by assessing the level of resources used against results being achieved.

Defence response

2.31 Agreed. Steps are already in place to monitor expenditure against Rate of Effort to ensure the appropriate level of logistic support is provided. It is stressed that results achieved cannot be monitored by simply comparing flying hours achieved to funds expended. Navy's ability to meet Defence's Military Response Options (MROs) and other tasking will continue to be a valid measure of effectiveness of performance.

Meeting Operational Requirements

Extent to which NAF meets the planned Rates of Effort

2.32 The operational roles of the various aircraft types in NAF differ:

- the five Bell *Kiowa* 206B helicopters have training and utility roles and also supported the hydrographic survey ship HMAS *Moresby* before its decommissioning;
- two *HS* 748 aircraft (fixed wing) share between them an electronic warfare support and a transport role;
- the six *Squirrel* AS350BA aircraft have training and utility helicopter roles;
- the main roles of the seven *Sea King* SK50/50A aircraft are operational fleet utility helicopter support for the Navy fleet; training; and search and rescue (SAR); and
- the 16 *Seahawks* S-70B-2 perform a surface and sub-surface warfare role, as well as providing utility, boarding and SAR functions.

Table 2: Flying Hours 1997–98

Aircraft Type	Inventory	Planned Flying Hours	Achieved Flying Hours	Variation
Kiowa	3	962	1,083	121
HS748	2	896	872	-24
Squirrel (1)	6	1,896	696	-1,200
Sea King	7	1,513	1,546	33
Seahawk	16	3,596	2,963	-633

Source: Defence Annual Report 1997–98, Appendix B, Ship and Aircraft Availability, p. 55 Note:1. Aircraft grounded November 1997—March 1998 with hydraulic problems

2.33 Table 2 shows that the *Kiowa* helicopters exceeded planned flying hours, making up part of the shortfall caused by limited operational flying of the *Squirrel* helicopters. On Navy's current plans, the *Kiowas* should be phased out of NAF fleet by 2000–01.

2.34 The HS748s fixed wing aircraft achieved 97 per cent of planned flying hours. The functions served by these aircraft are subject to testing for competitive tendering, to be completed by mid-1999 under Defence's Commercial Support Program.

2.35 Navy plans for the *Kiowa* and HS748 aircraft reflect the fact that their roles do not fall within the core utility helicopter and combat roles of NAF. The ANAO therefore has not analysed the degree to which these two aircraft types fulfilled their military function in NAF.

2.36 The *Squirrel* helicopters were severely limited in their operational flying in 1997–98 (achieving only 36.7 per cent of Planned Flying Hours) due to component failure in their hydraulic system. As a component of NAF, these aircraft clearly did not meet the military requirements expected of them that year. They continue to have restrictions in relation to flying over water and night flying and are therefore still only partially able to fulfil their military roles in NAF.

2.37 The *Sea King* slightly exceeded planned flying hours in 1997–98, but the *Seahawk* aircraft achieved only 82.4 per cent.

NAF Difficulty in meeting required Rates of Effort

2.38 Appendix 1 shows that since 1990–91 the two main aircraft types in NAF (*Seahawk* and *Sea King*) have generally not met allocated flying hours, with under-flies of up to 46 per cent of the target hours. The reasons for the under-achievement have been attributed by NAFMR largely to logistics issues, leading to poor availability of aircraft. Chapter 3 of this audit report considers the reasons underlying low availability of NAF aircraft.

2.39 The operational impact of low availability and therefore low RoE is difficult to assess. As discussed in paragraphs 2.24–2.26, RoE as a single measure does not indicate whether operational requirements have been met. However, it provides a measure of the activity levels Navy expects of NAF. In operational terms, underachievement of RoE for the *Seahawks* meant that, in 1997, Navy's planned growth in flight numbers was not achieved and the number of *Seahawks* embarked on ships was reduced to three active frigate flights and one training detachment.

2.40 Although the number of embarked helicopters on Navy ships has been increased in 1998–99 to seven (five *Seahawks*, one *Kiowa* and one *Sea King*) the expansion capacity of NAF remains limited by past constraints. For example, NAF did not recruit pilot trainees this year because so many of its pilots could not be placed on operational flying training in the past. This was the result of a lack of available flying hours in previous years, creating a backlog of pilots waiting to undertake operational flying training after completion of their basic flying and Naval Lead-in Helicopter training. Planning for the expansion of NAF, however, is proceeding, and Navy has taken the initiative of making use of an opportunity to send aircrews overseas to maintain and deepen their flying experience.

2.41 With the present number of embarked helicopters, NAF currently provides the required number of embarked helicopters to meet the Maritime Command's planned embarcations.

Embarked helicopters meeting Naval ship requirements

2.42 In considering how well the embarked helicopters and their personnel met the requirements of Navy ships, the audit team sighted performance reports of ships with embarked aircraft and held discussions with Maritime Command staff and NAF personnel involved in present and past operations.

2.43 On the basis of written and oral evidence, the audit team found that NAF personnel are considered to perform professionally in their activities. Maritime Command personnel stated that the Command's requirements of the helicopters on board ships are being met and that the Command's inspections and flight audits confirmed the adequacy of the training standards for authorised missions. This confidence in the professional ability of NAF to meet operational requirements is supported by a number of recent operational involvements. Availability of the aircraft on board ships also has generally met Maritime Command staff requirements, reflecting the priority given to these aircraft in the numbers and quality of maintenance personnel and crew and the extensive logistic support package placed on board of the ships.

2.44 Navy has in place a stratified system of evaluation of embarked helicopters including:

- Aviation Facilities Certification Inspection;
- Post Refit Safety Assessment and Air Sea Safety Assessment;
- Operational Readiness Evaluation; and
- periodic and short-notice sea checks on operational readiness.

2.45 The above reviews are checks on safety and operational readiness related to specific operational tasks. Operational assessments of ships' helicopter flights from 1996 to 1998 show that, with few exceptions, the flights met the standards.

Meeting the Government's strategic policy requirements

2.46 The Government's main strategic policy document is *Australia's Strategic Policy* of December 1997. Excerpts of particular relevance to NAF from that document are at Appendix 2. The ANAO noted the following policies and positions:

For maritime forces, the key elements of preparedness are the state of platforms and systems, crew availability, holdings of critical consumable items, especially weapons; the availability of support services such as battle damage repair and depot level maintenance. [p. 39] We will ensure that we have sufficient crews to operate available aircraft at an appropriate rate of effort to meet the demands of operations. This could include mounting air operations on a 24 hour basis over extended periods of time. [p. 40]

All these considerations impact on the availability of forces to deal with situations for which Australia would only have 'crisis warning'. Such forces would have to deal with the initial response to a crisis and then be capable of operations for a significant period until other forces could be brought to a level of capability suitable for commitment to operations. This process would require a significant training effort and higher than normal logistic support. [p. 40]

2.47 Thus, the Government's strategic guidance requirements include air operations, at short notice, for long hours, and over protracted periods.

2.48 On inquiring how sudden increases in operational requirements had been met by NAF in the past, the responses received by the audit team indicated that the approach had been to "empty the shelves" to cater for urgent priority requirements. In the *Seahawk* fleet, this was reported to have occurred through an accelerated introduction into service of the aircraft and its deployment to the Gulf War. The reported legacy was a long-term dent in logistical support capability for the aircraft fleet from which it never fully recovered.

2.49 The ANAO notes advice by Defence that NAF holds a number of options to meet increased requirements. Short-term measures mentioned as options to cope with contingencies include:

- stopping training;
- waiving limitations normally placed on aircrew and aircraft;
- making use of the reserve force; and
- priority changes by internal management of the flights and squadrons.

2.50 There was no consolidated information available about the positive effects which recent significant increases in resources for NAF (detailed in Chapter 4) had on operational capability. However, comments from the operational and support areas indicated that the main positive effect has been to prevent further deterioration of the state of the aircraft and their availability. A comment on the *Seahawks* was to the effect that, without the increases, availability of aircraft on shore would have dropped to one aircraft on the squadron, whereas now at least two could be relied upon to be available within short notice.

2.51 Collateral evidence in the audit tends to confirm that, up to now, the additional resources allocated to NAF have largely gone to remedy deficiencies and backlogs. Genuine sustained improvement in capability is some time off, as indicated by the shortfall in the *Seahawks'* actual rate of effort of less than 3000 hours p.a. against targets of 3550, 4050 and 3400 hours 1995–96 to 1997–98 respectively (see Appendix 2).

2.52 Having been preoccupied with meeting the immediate peace-time operational requirements, logistic and operational planners for NAF have not planned for a protracted period of high activity (including 24 hour operations) that might occur *"at crisis notice"* in Defence strategic guidance. The military requirements could involve the achievement of flying hours significantly above those currently achieved and planned over the Ten Year Defence Program.

2.53 The infrastructure and the resources available (logistic support including maintenance capacity, spares and parts and the management systems to locate and distribute them), as well as the number of trained aircrew are constraints which on the evidence available would require long lead-times to overcome. Planning on how NAF is to meet the Government's military requirements contained in *Australia's Strategic Policy* (1997) should be initiated to put in place arrangements to meet contingency requirements.

Recommendation No.4

2.54 The ANAO recommends that Defence plan to ensure that NAF meets the Government's military requirements contained in its strategic guidance as a matter of priority.

Defence response

2.55 Agreed. The NAF contributes as an integral part of Navy's Defence Outputs in meeting Military Strategic Options (MSOs) and MROs. It is therefore inappropriate to consider naval aviation as a separate entity with an independent ability to meet strategic guidance.

ANAO comment

2.56 Whilst acknowledging that NAF is an integral part of Navy's overall contribution to Australia's military preparedness, the ANAO considers that Defence should endeavour to ensure that NAF can demonstrably meet specific operational requirements prescribed in the Government's strategic policy.

3. Logistic support to NAF

This chapter discusses the logistic support provided to NAF and recommends measures to enhance the effectiveness and efficiency of that support.

Background

3.1 Attention by Navy to the state of naval aviation was heightened by a number of developments and events over the last few years:

- greater importance and prominence of NAF in the Australian Navy with the introduction of the ANZAC frigates, which are intended to carry helicopters;
- the loss of a *Sea King* helicopter in July 1995 at Bamaga Qld;
- the findings of a Navy Board of Inquiry and a Coronial Inquiry following the death on 20 December 1995 of Lieutenant Geoffrey Brooks RAN, which resulted from injuries sustained in a fall from a *Seahawk* helicopter during winching training. Both inquiries raised concern about the ability of the then Naval Aviation Logistics Office to ensure airworthiness and flight safety standards; and
- the Army's tragic *Black Hawk* helicopter accident at Townsville on 12 June 1996.

3.2 Concern in Defence about the operational state of naval aviation was also generated by the persisting inability of naval helicopters to meet planned flying hours. See the 'Underfly' statistics in Appendix 1.

3.3 Military aircraft are heavily dependent on logistics, including maintenance (servicing and repairs) and supply of parts and armaments to sustain operations. Logistic constraints have been identified by Navy as a major factor restricting the rates of effort of the two main aircraft types in NAF (*Seahawk* and *Sea King*). Logistic complexities were also identified as the most significant problem facing the operating and maintenance squadron of the other three aircraft types managed by NAF.

3.4 This chapter focuses on logistic issues that should be addressed, irrespective of the amount of resources which Defence applies to support NAF.

Maintenance hours and policy

3.5 Maintenance hours for the *Seahawks*, the primary combat aircraft in NAF, have been far above the original project estimate. The estimate in the 1980s was for 15 maintenance man hours per flying hour

(MMHPFH), based on US Navy data for common systems and on engineering calculations for unique systems by the manufacturer Sikorski. Actual MMHPFH stated in Navy's NAFMR 1997 report were 38.8 in 1995–96 and 48.7 in 1996–97. Table 3 shows the ANAO's calculations from information provided by Defence.

Year	maintenance hours	flying hours	MMHPFH
1995-96	147,110	2,510	53.9
1996–97	153,185	2,757	55.6
1997–98	155,885	2,865	54.4

Table 3:

Seahawk Maintenance	Man Hours	Per Flvina	Hour (MMHPFH
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Source: Calculated by the ANAO from Department of Defence information

3.6 The average MMHPFH over the three years 1995–96 to 1997–98 was 54.6, more than three and a half times the original project estimate. A US Navy study showed increases in the order of six per cent per year in the annual maintenance cost for aging helicopters. The MMHPFH figures calculated by the ANAO suggest that for the NAF *Seahawk* helicopters, a peak in the MMHPFH was reached in 1996–97, followed by a small reduction in 1997–98.

3.7 NAF maintenance policy is based on the concept of *flexible servicing* whereby servicing tasks are individually programmed and controlled to permit the total routine servicing requirement to be performed progressively. *Flexible servicing* has been adopted by NAF because of the flexibility it is seen to provide in the timing of servicing tasks on each item. It allows servicing tasks to be programmed to coincide with unscheduled work on an item and to take advantage of occasions when an aircraft is not required to be operationally available. Flexible servicing is considered by Navy to be particularly suitable for small numbers of aircraft, where one or two must be capable of being operationally available at short notice.

Need to review maintenance policy and practices

3.8 To ascertain whether servicing is inadequate, optimal or excessive, an operator needs updated information on the servicing requirements of an aircraft over time. Such information about military aircraft is not available form public sources nor, because of differences in aircraft configuration, environment and operating patterns, is it readily obtainable from other operators. Operators of military aircraft need to compile, analyse and update their own information on the servicing requirements of their aircraft.

3.9 During their many years of Navy service, the two main operational NAF aircraft types have aged and have been significantly modified and allocated new operational tasks and flight envelopes. A Maintenance Policy Statement made in 1986 forms the foundation of maintenance planning for the *Seahawks*. That statement is based on the assumption that eight aircraft would be acquired. NAF is now planning for 16 aircraft to be in the operational fleet, providing greater economies of scale in the logistic support of that aircraft type.

3.10 It is now time to make use of NAF's long practical experience with *Seahawks* and to take account of modifications and changes since the 1986 assumptions and in the logistic and economic environments. The ANAO notes that NALMS has sought access to major servicing reviews carried out by the US and Greek military on similar aircraft. As part of managing air worthiness and cost of ownership, Defence should undertake a review of its aircraft servicing policies and practices to ensure that these meet the requirements of NAF aircraft in their present state and with their present operational needs. Recommendation No.7(a), at the end of this chapter, addresses this aspect.

Availability Centred Inventory Model (ACIM)

3.11 NAF's *Seahawk* Maintenance Policy Statement was the baseline for the procurement of spares to support the repair pipeline for that aircraft type. The ANAO understands that the ACIM model had significant influence in the Defence assessment of the number of parts required in the repair pool. Defence advised that ACIM was purchased in 1986 for about US\$1 million to determine the *Seahawk* spares requirements. An agreement with a US company was negotiated in 1989 to provide product support for the model at a cost of about US\$100 000. In 1991 a decision was made by NALO not to proceed with the development of ACIM and to adopt a spares assessment model (Opus 9) used by the Air Force and other parts of Defence.

Reducing cost of ownership: Setting targets for maintenance and availability of aircraft

3.12 NAF is aware that low availability of aircraft is a major underlying cause of its difficulties in meeting operational requirements. It has also led to problems in meeting training requirements to ensure the long-term availability of sufficient numbers of proficient aircrew. Low availability of aircraft is still a problem. For example, availability of *Seahawk* helicopters at 816 Squadron at Nowra, for the months of July and August 1998 was 36 per cent and 41 per cent respectively.

3.13 Maintenance activity is a major contributor to low availability of NAF aircraft. For example, monthly squadron reports for July and August 1998 show that maintenance activity was responsible for about 90 per cent of down-time. This emphasises the need for a review of servicing policies and practices. It would provide essential information which Navy needs to manage the cost of ownership of its aircraft and thereby help to reduce costs and to remedy the protracted problem of low availability of aircraft.

3.14 NAF has not set any targets for MMHPFH or availability of operational aircraft. These two elements are an important cost driver and a military outcome indicator, respectively. The ANAO considers that NAF should set challenging but achievable targets for them and include them in its performance reporting.¹⁰ Recommendation No.7(b) takes up this point.

Improvement to inventory and parts and repairable items control systems and practices

High inventory values

3.15 The value of stores associated with Naval Aviation was estimated by Defence stores personnel to be \$48.4 million as at 25 February 1998. However, that figure comprises only items captured under the Standard Defence Supply System (SDSS) at NAS. Each ship containing an 'embarked flight' (a helicopter assigned to the ship) has 'embedded' stores (detailed in the Outfit Allowance List—OAL) to support helicopter operations. Defence estimates that the value of these embedded stores is \$5.7 million for a *Seahawk* and \$1.2 million for a *Sea King*. In addition, there are Supplementary Allowance Spares (SAS) for the Guided Missile Frigates, the value of which Defence puts at \$1.8 million. Furthermore, for out-of-area operations and large exercises with other frigates and embarked flights, a spare T-700 helicopter engine (valued by Defence at approximately \$1 million) is also placed on board the ship.

3.16 Thus, the value of helicopter parts on board a ship with an embarked flight, based on Defence estimates, is about \$7.5 million per embarked *Seahawk* flight (OAL and Supplementary Allowance Spares), or \$8.5 million if a spare T700 engine is carried on board. With five *Seahawk* flights, the helicopter parts inventory value on board ships would be of the order of \$40 million.

¹⁰ The ANAO understands that Air Force expects about 60 per cent of the operational fleet to be on line and that another country's Navy aims for 65 per cent to 75 per cent availability of its operational naval helicopters.

3.17 In addition, there are Repairable Items and Breakdown Spares held for the two main NAF aircraft types. NALMS estimates of the values of these are at Table 4.

Table 4:

Value of *Seahawk* and *Sea King* Repairable Items and Break-down spares— Dec 1998

Aircraft type	Repairable Items	Break-down Spares	TOTAL
Sea King	\$ 77m	\$36m	\$113m
Seahawk	\$ 70m	\$48m	\$118m
	\$147m	\$84m	\$231m

Source: Estimate provided by the Naval Aviation Logistics Management Squadron

Need to update Outfit Allowance Lists

3.18 OALs for the *Seahawks* and *Sea Kings* are outdated, containing duplications and superseded items. At the time of audit field work, action was under way in Defence to review the *Sea King* OAL as part of a major assessment of the spares requirement of that aircraft for its planned remaining life of type to 2008. The review of the *Sea King* OAL was scheduled to be completed in March 1999. The *Seahawk* OAL review was to commence after completion of the *Sea King* OAL review.

3.19 Validation and review of the *Seahawk* OAL in particular are long overdue. As modifications were introduced to the aircraft, new items tended to be added to the OAL without deletion of surplus and obsolete items. Defence estimated that, up to April 1998, 492 items had been added to the OAL but only 15 had been removed.

3.20 NALMS is aware of the need for such a review but considers that it has insufficient resources to carry out the task (estimated at 6–8 staff years to review 6000 to 12 500 line items, at one staff-hour per line item). The ANAO considers that there would be advantages in undertaking this work, which should help to reduce NAF's inventory holdings and produce savings from doing so. Assuming inventory holding costs of 12 per cent (derived from an Air Force internal study and applied in the ANAO's report Performance Management of Defence Inventory),¹¹ significant savings should be obtained by reducing the Repairable Items and Break-down Spares holdings for the *Seahawk* and the *Sea King*, estimated at \$231 million as shown in Table 4. Recommendation No.7(c) addresses this aspect.

¹¹ ANAO Audit Report No.5 1997-98, *Performance Management of Defence Inventory, October* 1997.

Problems locating individual repair components and establishing serviceability status

3.21 Problems concerning parts management extend beyond OALs. Updated parts and equipment lists are a prerequisite if NAF management systems are to ensure that only items still used by the helicopters are put and kept on board ship. There was also a major deficiency in tracking individual serialised repair components to and from repair facilities and stores. Up to the time that these components reach the repair facilities, they are recorded on the CAMM (Computer-Assisted Maintenance Management) system. Introduced into Air Force in 1978 and into Navy in 1990, CAMM records the movement of these components through operational areas. However, as the components move into the repair areas, and from the repair areas to stores, there is no more updating of their movement and serviceability data onto CAMM. This has created problems for locating components and ascertaining their state of serviceability.

3.22 These deficiencies have been known in NAF since 1990, when CAMM was introduced into NAF. In 1995 a Process Action Team investigated the problems and recommended remedial action. However, the problems have not been resolved. Lack of interface between SDSS (an inventory management system, not a configuration and maintenance/ repair management system) and CAMM, and 'deficiencies in SDSS as well as personnel deficiencies have perpetuated poor control of serialised repair parts."¹² This has resulted in numerous and costly physical census action (reported as up to five a week) to locate and check components and to investigate procurement and repair documentation. Defence has advised that the raising of a repairable management software module will address the loss of visibility of components from repairs to stores and that the personnel deficiencies mentioned above have been addressed.

Sub-standard aircraft parts

3.23 More effective tracking of the location and serviceability status of aircraft components can also be relevant to air safety by helping to trace suspect items. NAF has set aside \$2.5 million in 1998–99 for replacement of aircraft parts of unverified manufacturing quality. In December 1997 NALMS amended the Naval Aircraft Logistic Office Instruction *Flight Critical Safety Parts—Source Control* to try to ensure that aircraft parts are sourced from suitably-qualified and approved sources with verified manufacturing quality. Continued vigilance is required to prevent the procurement and use of substandard parts.

¹² CANA memo 4/99 of 19 January 1999, paragraph 41.

Stripping aircraft of parts (cannibalisation)

3.24. Better control of aircraft components should also help to reduce the labour-intensive and last-resort measure of keeping aircraft operational through cannibalisation of parts from aircraft in the operational and attrition fleets. Although NAF has reasonable controls in place to avoid removal of parts from aircraft unless required for operational reasons, cannibalisation is a problem.

Aircraft type and Period	No. of items	work hours expended
Seahawk July and August 1997	21	55.5
Seahawk July and August 1998	14	51.0
Sea King July and August 1997	24	111.0
Sea King July August 1998	30	65.5

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Table 5:

Source: Compiled by the ANAO from monthly returns by NAF squadrons

Connectivity of information systems

3.25 NAF recognises the benefits of greater connectivity between the various information systems used to account for and monitor aircraft components and parts. In particular, there should be an efficient and effective system for allocating aircraft components and spares for ships with helicopters and monitoring their consumption and stock-holdings. To achieve this, effective and timely linkages need to be established between SDSS used on shore and the systems used on ships (such as SLIMS (Ship Logistic Information Management System) and SALIRS (Ships Automated Logistics Information Retrieval System)), and also between CAMM and SDSS. Recommendation No.7(c) addresses this.

Work being undertaken

3.26 The following work aimed at remedying deficiencies in NAF inventory and repair management and controls is under way:

- a progressive program of physical checks of item location and numbers against records at stores at Naval Air Station, Nowra. The effort is showing worthwhile results—over one and a half months, inventory discrepancies of the order of 31 per cent were found, of which 13 per cent could be resolved, leaving an 18 per cent discrepancy;
- NALMS in co-operation with other ADF units such as Air Force's Support Equipment Logistic Management Unit is seeking to reduce inaccuracies in the SDSS data base; and
- NALMS is reviewing inventory items against usage, to identify obsolete items with the aim of culling them from the inventory.

Setting time-lines and priorities

3.27 The ANAO notes that the work mentioned above has no firm time-lines or priority. Improved inventory management systems and accurate inventory data bases are important in cost management of NAF operations as well as for the effective operation of NAF as a force element. This work should be accorded priority and be completed to set time-lines. See Recommendation No.7(d).

Enhancing logistic support to NAF

3.28 A recommendation in the *Defence Efficiency Review* (DER) report (published in March 1997) was that the management of logistics in the Australian Defence Force should be reorganised, with logistics functions being brought within a single joint national logistics and base support organisation. As part of the changes in logistics arrangements in Defence following the DER, responsibility for Naval aviation logistic support was transferred from Navy to Support Command Australia Air Force (SCA (AF)). The organisational and staffing changes proposed for NAF since the Naval Aviation Logistic Organisation Review (NALO) (July 1997) incorporate the Defence requirements for naval aviation logistics to be part of SCA(AF) and organised along weapon system lines as are Air Force Weapon System Logistics Management Squadrons. NALO became part of SCA(AF) in June 1998 and was renamed Naval Aviation Logistics Management Squadron (NALMS).

Staffing of NALO and NALMS

3.29 The *NALO Review* had been prompted by concern in Defence about the adequacy of the structure and staffing of NALO following a Navy Board of Inquiry and a Coronial Inquiry into the death of Lieutenant Geoffrey Brooks RAN in December 1995.

3.30 At the time of the *NALO Review*, NALO had 168 staff (37 Service and 131 civilian) staff against an approved establishment of 216. The review identified an indicative human resource requirement of 218 staff (36 Service and 182 civilian positions, excluding any requirements for the *Super Seasprite* helicopter). The *NALO Reform Program*¹³ of December 1997 recommended a total of 223 positions (39 Service, 184 civilians—including seven positions for the *Super Seasprite* and *Kalkara*, but after transfer of 12 Automatic Test Equipment Service positions to HMAS *Albatross*).

¹³ NALO Reform Program. A report by the NALO Reform Team. 19 December 1997

3.31 At the end of September 1998 NALMS had an allocation of \$5.503 million for civilian staff, equating to 133 positions. The organisation was in the later stages of implementing fundamental changes in organisation and management systems and processes used. Of its civilian staff of about 130:

- 39 (30 per cent) had been granted or intended to apply for redundancies;
- 15 (12 per cent) had been redeployed or intended to be redeployed; and
- 26 (20 per cent) had obtained positions in the new organisation.

With most losses in staff scheduled after 30 September 1998, NALMS faced the prospect of significant shortages in trained staff to keep pace with work.

3.32 The personnel requirements set out in the various recent reviews of NALO/NALMS were largely based on functional models for the logistic support of the NAF aircraft fleet. The emphasis in the reviews was on effectiveness and improvement in logistic support for NAF aircraft. There were no detailed work-load figures available which would allow testing of positions against accepted work-load benchmarks.

3.33 Given the present stage in organisation change in NALMS, the ANAO noted the effort by the existing staff to process ongoing work with reduced staff numbers and on unfamiliar systems used by Support Command Australia—Air Force. Some work-level indicators were available, such as the number of line items managed by inventory managers (reported as a minimum of 3500 ranging up to 17 000, far more than in Air Force where 2500 to 3500 was quoted as a corresponding benchmark). On main indicators of backlogs such as the outstanding numbers of Reorder/Buys (ROBs), NALMS staff kept up with the higher priority workload while considerable training and familiarisation with new systems and processes occurred. Management sought to minimise the effect of changes in staff through the use of contractors for selected work. Contractor effort was of the order of 30 contractors at the time of audit field work.

3.34 NALMS sought to retrain, recruit and increase the proficiency of staff over time, while seeking to improve customer services. In view of past limitations in NALMS' and NALO's logistic support of NAF, emphasis is presently placed on effectiveness (enhancing customer support). NALMS has sought funding additional to the budget 1998–99 allocation, to allow it to fill high-priority positions within the total recommended by the *NALO Reform Program* recommendations. Positions

for which funding has been sought include aeronautical engineers to work on aspects of airworthiness such as design approvals and investigation of defects; configuration managers; data managers; maintenance requirements analysts; and inventory managers.

Logistic Expertise in NALMS

3.35 There is merit in providing resources to NALMS to deepen its logistic expertise, provided that this is accompanied by clear performance targets, work-load standards and a review of work-loads against reasonable benchmarks to help in assessing the value of the investment. Once the organisation provides solid assurance of high-quality and sustainable logistic support to NAF, efficiency criteria should become the focus. The current state of NAF calls for an effectiveness focus. The lack of meaningful work-load data for NALMS positions and the changes it is undergoing are likely to thwart efforts to give appropriate direction to a rigorous focus on efficiency issues in NALMS at this stage.

Tasks to be done

3.36 The ANAO notes the recommendations for personnel increases in recent Defence reviews of Naval aviation logistics mentioned earlier. The ANAO also notes that there are a number of important tasks which NALMS should complete in the long-term interests of safety, improved logistic support and minimisation of the long-term cost of ownership to Defence:

- Airframe, engine, and integrated systems defect investigations;
- Configuration Management Plans for the Seahawk and the Sea King;
- Integrated Logistic Support Plans;
- review of *Seahawk* maintenance engineering analysis;
- technical analyses of the requirements for in-country deeper-level maintenance facilities for the *Seahawk*;
- clearing a backlog of technical assistance requests from aircraft logistic support organisations;
- updating of technical manuals and reference documents; and
- development of modifications.

Recommendation No.5

3.37 The ANAO recommends that, to give effect to recommendations contained in recent Defence reviews of Naval logistics and to undertake important logistic tasks needing attention now, the Naval Aviation Logistics Management Squadron increase the number of its logistic personnel and their range of expertise.

Defence response

3.38 Agreed. The Naval Aviation Logistics Management Squadron will be relocating from Sydney to Nowra next year, presenting an opportunity in the longer term to stabilise personnel. However, considerable turbulence can be expected over the next two years. The implementation of this recommendation will therefore prove challenging in the short term.

Accountability and performance indicators

3.39 As NAF's logistics manager, NALMS is responsible for delivery of:

- aircraft parts and components acquisition planning;
- maintenance planning and reviews covering the aircraft for which it is responsible;
- prompt investigations of aircraft defect reports and promulgation of advice flowing from them;
- up-to date integrated logistic plans;
- prompt development of modifications and responses to technical assistance by maintenance and repair organisations; and
- reference documents, technical manuals and safety related documentation.

3.40 These functions are vital to NAF's performance. Performance indicators and monitoring systems should be established to assist NALMS in performing these functions and to assist in assessing its efficiency and effectiveness in doing so. The ANAO notes Defence advice that action has been taken to put in place an effective performance assessment framework covering NALMS within the context of Support Command Australia's balanced scorecard.

Recommendation No.6

3.41 The ANAO recommends that, in order to promote more efficient use of its personnel and for accountability purposes, the Naval Aviation Logistics Management Squadron establish appropriate performance indicators and performance review mechanisms.

Defence response

3.42 Agreed.

In-country support facilities

3.43 According to the *Seahawk* Maintenance Policy Statement, significant in-country support facilities were to be developed in support of the aircraft. No consolidated information was available to the audit team on the amount and details of work of logistic support carried out overseas and in Australia, respectively. The development of in-country facilities has been slow in the seven years that the aircraft have been in Navy service. Reasons given to the ANAO for this were:

- delays in the development of Test Program Sets (designed to check and validate repairs)—NALMS advised that significant advances in their development have now been made and they expect 91 per cent completion by March 1999 for the flight data recorder;
- long-standing reliance on the quality offered by the original equipment manufacturer overseas;
- endemic shortages of staff able to undertake technical analyses to determine the requirements for and the feasibility of establishing such facilities;
- higher priority given to immediate pressing logistic needs of the aircraft fleet; and
- low numbers of aircraft and therefore service and repair turn-over, making the establishment of support facilities uneconomical.

3.44 Recent experience by Army in using Australian industry to repair Black Hawk helicopter rotor blades indicates significant savings in turnaround time and cost of work previously carried out overseas. The ANAO notes that investigation of in-country support facilities is part of the priority tasks identified by NALMS. Industry has in the past offered to carry out additional logistic support work for NAF aircraft. Recommendation No.7(e) proposes that NALMS explore with Australian industry ways to increase in-country repair and maintenance where this can be done cost-effectively.

3.45 The ANAO also notes that there is considerable commonality between Navy's Seahawk and the Army's Black Hawk aircraft, including in their engines. Army Logistics Management Squadron identified 300 repairable items (out of about 600 on these two aircraft) which could be common to both. Combining their pools, stock and maintenance and management personnel as well as other common stores and their logistic management offers potential for considerable savings. In addition, by increasing the number of aircraft in the pool of logistic support work and therefore turn-over, merging management of the common elements in the two aircraft would enhance the potential of cost-effective maintenance facilities being established in-country. Recommendation No.7(e) and (f) addresses these issues.

3.46 Synergy advantages in managing common aircraft parts and repairable items across the ADF should be exploited without delay by agreeing on a set of business rules for managing these items. Finalising arrangements for managing common aircraft parts and repairable items could be part of a priority task to be undertaken in a re-invigorated NALMS. Recommendation No.7(f) addresses this issue.

Recommendation No.7

3.47 The ANAO recommends that, to improve the cost-effectiveness of NAF logistics, the Naval Aviation Logistics Management Squadron incorporates the following tasks in its work schedule:

- a) reviewing maintenance policy and practices in NAF with a view to controlling costs and increasing aircraft availability;
- b) setting challenging but achievable performance targets for the aircraft maintenance effort and aircraft availability and reporting on their achievement;
- c) enhancing management systems and controls over the logistic inventory, in particular updating requirements lists and providing systems for tracking, controlling and recording serviceability across the repair and stores boundaries, and effective and efficient connectivity between ship and shore based systems;
- d) giving priority and setting time-lines to updating inventory data bases, including deletion and disposal of obsolete items;
- e) exploring with Australian industry ways of increasing in-country repair and maintenance where this can be done cost-effectively; and
- f) progressing cooperation on the management of common aircraft parts and repairable items across the ADF.

Defence response

3.48 Agreed. Recommendation No. 7(b) is already incorporated into NAF planning and is monitored by Maritime Command, and reported by CANA and Squadrons on a monthly basis. The remainder of this recommendation's subparagraphs are being addressed by SCA.



Seahawk helicopter—Photo courtesy of the Department of Defence

4. Supporting an expanding NAF: Financial resources requirement

This chapter examines financial resource requirements of and Defence financial allocations to NAF, military capability consequences of those allocations and the increasing cost of ownership of NAF aircraft.

Naval Aviation Force Management Review and Financial Bids—Linking resources and rates of effort

Background

4.1 Navy has recognised that NAF, which has been unable to meet its peace-time rate of effort flying requirements in the past, faces a major challenge in meeting a planned significant expansion with the introduction of another aircraft type, the *Super Seasprite*. The *Super Seasprite* is to provide naval aviation capability to the ANZAC frigates which are entering Naval service and are increasing the number of helicopter-capable ships in the Navy fleet.

4.2 The Naval Aviation Force Management Review (NAFMR) of 1997 sought to develop a strategy to rectify personnel, logistic, organisational and training shortcomings which stood in the way of operational objectives planned for NAF. The NAFMR identified underresourcing of the expected rates of effort (RoE) for NAF aircraft and of the logistic organisation as a major problem.

4.3 NAFMR was complemented by resource bids compiled by NAFMR team members in conjunction with logistic and financial staff. Those bids sought to establish clear linkages between the agreed capability to be provided by NAF, and the resourcing of that capability, based on RoE to be provided by NAF's two main aircraft types (*Seahawk* and *Sea King*) and an estimate of personnel and operating costs for the *Super Seasprites* in the period 1998–99 to 2001–02.

4.4 The NAFMR bids were for substantial additional funds for personnel and operating costs totalling \$112.1 million for the *Seahawks* and *Sea Kings* for the period 1998–99 to 2001–02 but in December 1997 the Defence Management Committee (DMC) endorsed increases of only \$80.0 million. This was in addition to allocations totalling \$88.1 million

previously approved for these two aircraft types. Table 6 shows agreed Defence financial allocations for the *Seahawk* and *Sea King* aircraft before and after the December 1997 DMC decision. The table shows that there was a shortfall in approved funding of \$32 million against the NAFMR bids.

Financial Bids and allocations— operating costs	1998–99 \$m	999–2000 \$m	2000–01 \$m	2001–02 \$m	Total – 1998–99 – 2001–02 \$m
Allocation before	23.6	21.3	21.9	21.3	88.1
Increase sought by NAFMR 1997	17.9	26.1	33.6	34.4	112.0
Increase approved by DMC Dec 1997	14.3	20.9	22.4	22.4	80.0
Shortfall against NAFMR bids	3.6	5.2	11.2	12.0	32.0

Financial Bids and Allocations for Seahawk and Sea King operating costs*

Source: Compiled by the ANAO from Defence documents.

*Financial allocations for Naval Personnel and Operating Costs (NPOC) 1998-99 to 2001-02

Military capability implications

Table 6:

4.5 In February 1998 the Chief of Navy Senior Advisory Committee (CNSAC) considered the implications of the shortfalls. CNSAC deliberations assumed that the NAFMR related NPOC (Naval Personnel and Operating Costs) bids represented the true cost of achieving specified RoEs for the aircraft types considered in the bids, and that to reduce these bids necessitated a corresponding reduction in RoEs.

4.6 CNSAC concluded that reductions had to be made in planned activity levels to absorb the gaps between funding sought and provided. The \$32 million shortfall for the *Seahawks* and *Sea Kings* was to be borne by the *Seahawks* with a reduction in planned annual RoE to 4600 hours from the figure of 5650 hours endorsed by the Force Structure Planning and Programming Committee in February 1997. The savings were to be achieved by deleting \$22 million in the outer four years of the Five Year Defence Plan (FYDP) for *rotatable spares* included in the NAFMR bids. The savings in *variable costs* of not providing an additional effort of 1050 hours were considered by Navy to be of the order of \$10 million, thus a saving of \$32 million was to be achieved. CN wrote to advise the Defence Capability Committee (DCC) of this decision.

4.7 The *capability penalty* of the above lies in changing two *Seahawk* flights on ANZAC ships (that is, attached permanently to the parent ship) to two non-concurrent detachments, therefore leaving those ships for

protracted periods without the war-fighting and expansion of operational range capabilities provided by the helicopters.

4.8 *Seahawk* and *Sea King* planned rates of effort resulting from the NAFMR financial bids and the approved Defence financial guidance are listed in Table 7.

Aircraft	RoE achieved 1997–98	RoE planned 1998–99	RoE planned 1999–00	RoE planned 2000–01	RoE planned 2001–02
Seahawk	2 963	3 500	4 000	4 450	4 600
Sea King	1 546	1 750	2 000	2 000	2 000

Table 7:

Seahawk and	Sea King Rates	of Effort (RoE)—annual hours

Source: Compiled by the ANAO from Defence documents

Errors in bidding process

4.9 The NAFMR related NPOC bids constitute a commendable Navy initiative in seeking to link outputs (rates of effort) to the resources required to achieve them. However, the audit found some significant errors contained in the financial bids which formed the basis of the Defence NPOC allocations for the Seahawk, Sea King and Super Seasprite aircraft. These amount to an over-estimate of \$20.177 million for the Sea King and Seahawk operating costs in the FYDP period, and an underestimate of \$47 million for the Super Seasprite. Appendix 3 shows an analysis of the bids.

4.10 The audit sought to trace the basis of the calculations made. Records were incomplete but the evidence available showed that the NAFMR team had made considerable efforts to determine the actual costs of operating NAF aircraft and to estimate future costs. Logistic, operating and maintenance personnel had been consulted and professional best efforts appeared to have been made in the calculations.

Difficulties in reconstructing the compilation of the bids

4.11 It was obvious that a greater priority was given to the need to complete the 1997 review than to preserving an audit trail, making it impracticable for the audit to trace in detail the justifications for, and the basis of, the totality of the cost estimates and all models used in compiling the bids. The compilation of the total bids therefore was not auditable.

4.12 The errors listed in Appendix 3 do not constitute a comprehensive list of possible omissions or duplications underlying the NAFMR bids. It was outside the scope of the audit to review all Defence minor and major capital projects for possible implications for NAF, and a complete reconstruction and verification of the NAFMR bids was impracticable.

Deficiencies in available data and systems

4.13 The ANAO notes that the information available to the NAFMR team on the historical costs of the logistic support was incomplete and would have made extrapolation difficult. In particular, prior to 1998–99, the funding and accounting for the logistic maintenance and support costs, a major contributor to the operating costs, was based on a functional discipline-related model (eg. propulsion systems management across all aircraft types). Attribution of logistic costs to particular aircraft types prior to 1998–99 was at best approximate because it had to be done manually, without compelling methodology, from data not readily amenable to separation in this way.

4.14 Historical logistic costs were based on expenditure on a financial year basis, which did not take into account draw-downs or accumulation of stock during the year or the level of depletion or restoration of aircraft held in attrition and in the operational fleet.

4.15 In making its decision on the partial funding of the NAFMR related bids for increased resources, the Defence Management Committee did not prescribe the military capability implications of its funding allocation. Implicitly, that was left to Navy to work through.

Refining links between resource use and outputs

4.16 The link between resource use and outputs (rate of effort) can be further refined by Defence. NALMS has adopted new charts of accounts which now allow logistic expenditure to be readily traced to aircraft types. The errors in bids shown in Appendix C suggest that NAF may need to transfer resources from the Seahawk and Sea King to the Super Seasprite to resolve over-and under-estimates within NAF. A review of funding for NAF would be a good opportunity to test the validity of the bids using updated costing models and data.

Recommendation No.8

4.17 The ANAO recommends that, to ensure appropriate funding in relation to expected rates of effort, Defence review the financial allocations for NAF on the basis of improved costing information and taking into account any omissions and duplications contained in previous bids.

Defence response

4.18 Agreed. All Navy guidance allocations are reviewed annually. This is particularly the case for new capabilities where estimated operating costs are continually revised, as more information becomes available.

Decisions on Navy Output funding continue to be made within the context of a finite budget, taking into account capability priorities and the strategic circumstances for the NAF contribution to the three Outputs it supports.

Increases in cost of ownership and operation of NAF aircraft

4.19 The identified funding requirements for operational and personnel costs of NAF's two main operational aircraft (*Seahawk* and *Sea King*) show a considerable escalation. Both are aging aircraft. The US Navy's Naval Aviation Maintenance Office evaluated cost trends for a range of aircraft, including their SH-60B *Seahawk* and SH-3H *Sea King*, over a ten-year period. Trends identified in relation to those two aircraft types were as follows:

- direct labour costs at the organisational level increasing with age at an annual rate of 6.0 per cent for the *Seahawk* and 3.3 per cent for the *Sea King*—increasing corrosion control efforts for the *Seahawk* account for the higher rate for that aircraft;
- cost of overhaul and support at depot-level maintenance (direct labour, overhead, and direct material) rising at the rate of 6.6 per cent (*Seahawk*) and 4.97 per cent (*Sea King*). The causes were age-related higher rework costs and increased frequency of servicing;
- long-term trend for increases in petrol, oil and lubricant consumption per aircraft flight hour (at an average annual rate of about 0.75 per cent);
- an increase in average direct consumable spares costs per flight hour of rotary wing aircraft in the order of 6.0 per cent for consumable and repair part usage as a result of greater maintenance efforts; and
- annual average increases in the order of 6.4 per cent in the cost of repairable items. Annual increases in the number of failed repairable items returned for repairs were 28.7 per cent for the *Seahawk* and 12.8 per cent for the *Sea King*.

4.20 The financial bids prepared in the context of NAFMR contain annual cost escalation factors for logistic support of NAF's *Seahawk* and *Sea King* helicopters of the order of six per cent per annum, which is in line with the US experience outlined above. However, in the FYDP period 1998–99 to 2001–02 the total NPOC increases of \$80 million in financial allocations for NAF agreed by Defence after NAFMR are over 90 per cent as indicated shown in Table 6. Defence regards this as remedying an inadequate allocation initially to support the aircraft. However, the

NPOC allocations to NAF need further refinement to take account of errors.

4.21 The financial allocations in the NPOC bids were based on the costs from Defence's financial information system (DEFMIS) and were generally confined to direct costs such as purchasing and repairing equipment and stores, administration costs and personnel costs excluding superannuation. Activity-Based Management (ABM) on the other hand seeks to capture all significant costs by collecting expenditure data on a consumption basis and attributing costs incurred in support of an activity outside the organisation directly responsible for that activity. ABM provides a more comprehensive picture of the real costs of an activity, although with a historical perspective. Defence does not use ABM for budgeting purposes.

4.22 Table 8 shows the full cost per flying hour of the aircraft types in NAF in 1997–98, from ABM.

Aircraft Type	Full cost per flying hour 1997–98*
Seahawk	\$22 950
Sea King	\$24 941
Squirrel **	\$31 046
Bell Kiowa	\$ 686
HS748	\$13 008

Table 8:

NAF Aircraft Cost per Flying Hour 1997–98

Source: Department of Defence, Navy Activity-Based Costing Model

* Includes depreciation

** This aircraft was grounded for a large part of 1997–98, spreading fixed overhead costs over few hours of flying.

4.23 Comparable figures of other navies' aircraft operating costs are not readily available. However, NAF may be able to benchmark its costs and aircraft availability rates against those of the UK Navy's Sea King and the US Navy's Seahawk helicopters and allow for differences in operating patterns and platforms. A commercial helicopter operator indicated to the ANAO that its total operating costs (excluding depreciation) were about \$630–640 for a Squirrel helicopter and \$485–495 for a Bell Kiowa.

4.24 NAF does not concede that its costs are unusually high and has reservations about any attempt to compare its costs with those of commercial operators. NAF points out the high cost of flying per hour includes unavoidable unique costs of military aircraft. For example, their operators are responsible for managing technical airworthiness but for

civil operators that role is left to Airservices Australia and the Civil Aviation Safety Authority. Other factors such as the number of aircraft and the number of hours flown also influence costs.

4.25 NAF operates five types of aircraft, all in small numbers. The *Super Seasprite* will introduce a sixth type. A mixed fleet of this kind, with small numbers of aircraft types, inevitably adds to costs.

4.26 The ANAO calculated from ABM data that in 1997–98, 53 per cent of the total costs of NAF were overhead costs. Table 9 indicates generally that the smaller the size of the fleet of the aircraft type managed, the greater the overhead per aircraft.

Table 9

Aircraft type	Average hours flown by each aircraft per week*	Number in NAF fleet	Annual Overhead cost per aircraft	Overhead as % of total cost
Seahawk	4.75*	16*	\$1 8m*	41.4 %
Sea King	4.25	7	\$3.3m	59.4 %
Squirrel (some Army logistic support given)	2.23	6	\$2.5m	70.3 %
<i>Kiowa</i> (even more logistic support given by Army)	4.17	5	\$86 000	69.4 %
HS748	7.95	2	\$3.5m	65.4%

NAF flying hours and overheads

Source: Compiled by the ANAO from Defence documents.

* Calculations based on the operational fleet of 12 Seahawks. There are also four attrition aircraft.

4.27 Navy cites a figure of 19 per cent from US Navy experience as the operating cost penalty of introducing a different aircraft type. The cost penalty of operating a small aircraft fleet in NAF is exacerbated by low flying-rates per aircraft. Except for the fixed wing HS748, NAF aircraft in 1997–98 all averaged less than five hours flying per week. Increased flying would reduce the overhead component shown in Table 9. The ANAO considers that Navy should investigate the advantages of improving availability and increasing the rate of flying per aircraft per year, before considering any further increase in the number and type of aircraft.

4.28 The ANAO estimates the NAF average cost per flying hour as \$20 500 in 1998–99, based on estimated total expenditure of \$188 million (excluding capital expenditure).¹⁴ The ANAO considers that the apparently high overall cost of flying and high cost per flying hour require

¹⁴ see paragraph 1.14

close study by Navy to ensure that costs are reasonable. In making such a study, Navy should endeavour to benchmark NAF costs, flying hour per aircraft per week and aircraft availability with those of other operators taking account of unavoidable differences between military and commercial cost structures and operations. Containment of costs is all the more important given the rising trend in financial allocations for the operation of NAF aircraft as shown in Table 12.

Recommendation No.9

4.29 The ANAO recommends that Defence benchmark NAF's aircraft availability, flying hours per aircraft per week and flying costs per hour with appropriate better practice operators and examine NAF's cost structure to enable informed management decisions aimed at containing or reducing costs.

Defence response

4.30 Agreed. It is agreed that NAF's cost structure requires continued analysis aimed at reducing costs wherever possible. Benchmarking against other operators, however, is not a simple process, because any such benchmarking would only provide relevant information if the operator flew the same aircraft, to meet the same goals, with a fleet the size of the RAN's fleet. For example, comparison of the RAN's sixteen S-70B-2s (Seahawk) with the USN's 260 strong SH60B or SH60F fleet would not provide meaningful data, due to the significant difference in the size of the fleet, and consequential efficiencies the USN enjoys supporting a larger fleet.

ANAO comment

4.31 Although adjustments would need to be made on those aspects where benefits of economies of scale apply (eg. cheaper purchases by bulk), meaningful comparisons should be possible on maintenance and repair efforts, policies, practices and costs, servicing intervals and availability rates.



Sea King utility helicopter on Montagu Island— Photo courtesy of the Department of Defence

5. NAF capital acquisition projects

This chapter reviews Defence's management of Project Sea 1411 Phases 1, 2 & 3—'Purchase of Intermediate Helicopters for ANZAC ships' and Project Sea 1431—'Activation of Attrition Seahawks.'

5.1 The audit reviewed Project Sea 1411—the acquisition of Navy Intermediate Helicopters (NIHs), missiles, integrated logistics support (ILS) and other helicopter related equipment for ANZAC ships. It is by far the most materially significant capital project in NAF. The audit also examined a smaller project, Sea Project Sea 1431 (operational activation of four attrition Seahawk aircraft), which has capability linkages with Project Sea 1411.

Project Sea 1411: Intermediate helicopters for ANZAC ships

Phase 1: Acquisition of intermediate helicopters for ANZAC ships

5.2 Project Sea 1411—Phase 1 was approved in the context of the 1995–96 Budget at a total project cost of \$745.61 million.¹⁵ The capability agreed by Defence's Force Structure Policy and Programming Committee (FSPPC) in December 1994 was for the acquisition of 14 helicopters to satisfy the ANZAC ship requirements with an option for further procurement of the same type of helicopter later to satisfy the Offshore Patrol Combatants (OPC) requirements.

5.3 The Major Capability Submission (MCS) and the FSPPC found the purchase of an intermediate-sized helicopter to be the most cost-effective option because it was compatible with the ANZAC ships and OPC and had the ability to operate from other aviation-capable ships.

Tender and Evaluation Processes

5.4 A Request For Tender (RFT) for Project Sea 1411 sought delivery of 14 intermediate helicopters for eight ANZAC ships, with an option of up to nine additional helicopters for the OPCs. The helicopter was to be fitted with sensors and communications weapons to enable it to operate beyond the parent ship and its visual and electronic horizon with a secure

¹⁵ December 1994 prices

data link for tactical information. The helicopter was to provide the ship with an enhanced ability to detect, intercept, track, classify, identify and engage surface contacts.

5.5 The Request for Tender was primarily aimed at a complete helicopter package comprising:

- a. helicopter and sensor suite;
- b. simulator/operational flight trainer capability;
- c. air to surface missiles; and
- d. integrated logistic support for the helicopter, operational flight trainer, and air to surface missile.

5.6 Tenders were evaluated in accordance with the approved Tender Evaluation Plan. The Tender Evaluation Working Groups covered the areas of:

- a. Operations;
- b. Engineering;
- c. Integrated Logistic Support Contract;
- d. Management, Production and Finance;
- e. Australian Industry involvement; and
- f. Quality Assurance.

5.7 Defence's Tender Evaluation Board recommended the *Super Seasprite* helicopter (SH-2G(A) configuration) from Kaman Aerospace International Corporation (Kaman) incorporating the Penguin Air to Surface Missile supplied by Kongsberg Gruppen. The Board also recommended adoption of the contractor-managed integrated logistic support.

Reduction of number of aircraft

5.8 Tender responses from the two competing tenders exceeded the approved total project cost by significant amounts. It was decided that project costs for the successful bid by Kaman would need to be reduced to within the approved level. (The other tenderer had earlier been dropped from further consideration on other grounds.) Cost and capability trade offs were made and the number of helicopters was reduced to 11 to stay within the approved budget.

5.9 The FSPPC noted that a reduction by at least three of the total number of intermediate helicopters originally sought for the ANZAC ships would be consistent with advice provided to Government when it approved the activation of four attrition *Seahawk* aircraft in Project Sea

1431 (discussed later in this chapter). This would provide two additional Seahawk flights which could be used on ANZAC ships. Given the expected lives of FFG ships and ANZAC ships, a need was identified to acquire attrition intermediate helicopters. The FSPPC agreed that these aircraft be acquired in a subsequent phase of the project along with any additional aircraft considered necessary for Offshore Patrol Combatants.

Overview of Phase 1

5.10 The ANAO reviewed the acquisition processes in Phase 1 of the project and found that the procedures outlined in the Defence Procurement Guidelines in the pre and post project approval phases were generally adhered to. Exceptions found were as follows:

- after the tender evaluation stage, life-cycle costing was not pursued in accordance with Defence Instruction DI(G) LOG 03-4, which requires life-cycle costing at decision points throughout the life-cycle of equipment; and
- consolidated personnel and operating costs for Project Sea 1411 were not incorporated in Defence's financial planning for NAF until the time of the NAFMR financial bids in October 1997.

In-Service Support Contract

5.11 In the acquisition process Defence paid considerable attention to logistic support. Defence has outsourced logistic support requirements to the helicopter supplier at a total cost of \$96.625 million for 10 years. The primary aims of the contract are to achieve the desired operational availability and mission effectiveness throughout the life-of-type of the aircraft. Under the contract, Kaman Aerospace Corporation is required to provide management and administrative services for the logistic support of the helicopter.

5.12 The in-service support contract addresses problems arising from the backlog of aircraft maintenance that have hindered the S-70B-2 *Seahawk* helicopter in reaching its expected mature rate of effort.

5.13 Provisions in the contract for the outsourcing of maintenance including corrosion control in Project Sea 1411 reduce the risk of the Super *Seasprite* incurring cost, maintenance and support problems similar to those experienced with the *Seahawk*. Defence's approach has recognised the importance of logistic issues and demonstrates that it has learnt lessons from operating the S-70B-2 aircraft. Defence has transferred these lessons to the acquisition of the *Super Seasprite* helicopter. By way of example, the contractor is required to develop an ongoing reliability-improvement program by tracking all reported failures across the entire fleet of aircraft.
Life-Cycle Costing and Commonality Issues

5.14 Life-cycle costs and fleet commonality issues were considered by Defence in the pre and post approval stages of the project. Commonality and life-cycle cost data (provided by the manufacturers) were examined as part of the tender and evaluation processes. In the evaluation Defence assessed that there was a high degree of commonality between the engine offered with the *Super Seasprite* and the engine fitted to the *Seahawk*. The savings identified to Defence were primarily in tooling and test stands. Commonality of avionics equipment fitted to the aircraft with other ADF aircraft was also identified.

5.15 Expected life-cycle costs were assessed to provide indicative costs of each tendered helicopter package. The results from this assessment produced indicative annual operating costs for the helicopter. However, the sweeping range of through-life cost data tendered by each of the two competing bids was considered too great to establish a significant difference between the two helicopter packages. Thus life-cycle cost comparisons were not a material factor in the decision to select the successful tender.

5.16 Defence Instruction (DI (G) LOG 03-4 of 1992 requires life-cycle costing at decision points throughout the life-cycle of equipment or weapon system. However, the audit found no evidence that, after the tender evaluation stage of Project Sea 1411, life-cycle costing in the project was pursued in accordance with that Defence instruction. Furthermore, consolidated personnel and operating costs, which form an element of life-cycle costs, were not incorporated as part of NAF financial planning until the time of the NAFMR financial bids in October 1997. These expected costs constituted the basis of the October 1997 NPOC bids for the *Super Seasprite* helicopters, set out in Table 10.

1998–99	1999–00	2000–01	2001–02	Total
34.1	30.0	38.3	59.8	162.2

 Table 10:

 NPOC bids October 1997— Super Seasprite—\$m

Source: Department of Defence, revised NPOC Bid - Super Seasprite Project March 1998

5.17 Defence explored commonality issues in considering an option to purchase additional Seahawk helicopters. This option lapsed on the grounds that, given its through-life support costs, it would be unlikely to be cost-effective in providing the required capability for ANZAC ships.

5.18 Since then, Defence has agreed to Recommendations Nos 2(a) and 3(a) in ANAO's Audit Report No.43 1997–98 *Life-cycle costing in the*

Department of Defence. Accordingly the ANAO assumes that Defence has taken steps to ensure that:

- life-cycle costing is addressed in capability proposals; and
- life-cycle costing in tenders is adequate and given due weight in source selection considerations.

Reduction in NPOC Super Seasprite funding

5.19 On 4 December 1997 the DMC considered funding requirements for *Super Seasprite* personnel and operating costs in the period 1998–99 to 2001–02. The submission was part of the Naval Aviation Force Management Review (NAFMR) Navy Personnel and Operating Costs (NPOC) financial bids. The NPOC bids for the *Super Seasprite* amounted to \$115.2 million. The DMC agreed to a reduced amount of \$107 million. See Table 11.

Table 11:

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October 1997	NPUC blus and D	NC adreed fundin	a for Suber	Seasonice-Sin

Bids/allocations for Super Seasprites	1998–99	1999–00	2000–01	2001–02	Total
NPOC bid	25.1	22.0	26.2	41.7	115.2
DMC reduction in training bid	5.7	2.4	-	-	8.1
DMC agreed allocation	19.4	19.6	26.3	41.8	107.0

Source: Compiled by the ANAO from Defence documents

5.20 The reduction of \$8.18 million for the *Super Seasprite* from the amounts sought is spread over the first two years. Because the remainder of planned expenditure in those years was contractually committed, it was decided that the reductions would be absorbed in the provision of training. This reduction in funding exposes the project to risk if not planned properly, since training is fundamental in implementing a new aircraft type. On the other hand, if the reductions can be absorbed without affecting essential elements of project implementation, this may indicate that there is potential for additional savings by closer examination of the basis of the *Super Seasprite* bids.

5.21 Appendix 3 shows a significant omission amounting to \$47 million for 'Other Expenditure' over the FYDP in the NAF NPOC submission of October 1997. 'Other Expenditure' is based on the life-cycle cost analysis conducted during tender evaluation for Project Sea 1411 and includes: packaging; modifications; travel; administration overheads; and contingency.

5.22 The omission of 'Other Expenditure' for the *Super Seasprite* helicopters in the October 1997 NPOC bids and the DMC reductions of

December 1997 amount to \$55.1 million in the period 1998–99 to 2001–02. This represents a shortfall in financial allocations to NAF compared to the expected cost of operating the *Super Seasprites*, as compiled by Navy, in that time period.

5.23 Table 12 shows the revised financial requirements as identified by Navy in March 1998. These requirements address the shortfall of \$55.1 million mentioned above. The identified funding requirements for operational and personnel costs for the *Super Seasprite* and the *Seahawk* show a worrying increase. Defence's explanation is that the 1998 NPOC bids were to address the deficiency in NAF resources by increasing the funding base. Recommendation No.7 addresses the issue of appropriate funding for NAF.

Table 12:

Financial Requirements—Naval Personnel and Operating Costs—*Super* Seasprite and Seahawk—March 1998—\$m

Aircraft type	1998–99	1999–2000	2000–01	2001–02	Total 1998–99— 2001–02
Super Seasprite	34.1	30.0	38.3	59.8	162.2
Seahawk	14.0	19.1	25.3	30.0	88.4

Source: Department of Defence, revised NPOC bids, March 1998

Phases 2 and 3: Helicopter airframes

5.24 Project Sea 1411 Phase 2—'Attrition Helicopters for Anzac ships' was endorsed by the Defence Capability Committee (DCC) in September 1997. Its purpose was the acquisition of seven Seasprite airframes configured to the SH-2F standard at a cost of \$7 million. These airframes were purchased with a view to converting three to the SH-2G(A) configuration for use on ANZAC ships (Phase 3A) and an unspecified number to be converted for in-service attrition use (Phase 3B). The precise operational capability for these airframes is yet to be determined. A decision has yet to be made on the scope of Phase 3 of the project. Government approval has not yet been sought.

Project Sea 1431: Activation of four attrition Seahawk helicopters

5.25 Project Sea 1431 as approved in the May 1996 Budget was for the acquisition of logistic support items at a cost of \$42.1 million (1996–97 prices) to support the introduction into service of the four attrition S-70B-2 *Seahawk* helicopters stored at Naval Air Station, Nowra.

5.26 The project cost was to cover modification of the aircraft to operational standard and provide a package of spares and test equipment that would enable the aircraft to be operated from additional ship or shore based sites. The project was to enhance management of the operational Seahawk fleet and enable two additional Seahawk flights to be formed in a military emergency. The current capability being delivered under the Project is two non-current detachments per year and a RoE increase in the Seahawk fleet of 150 hours a year. The proposal for this additional logistic support for the attrition aircraft is separate from the logistic program for the existing operational fleet, and was not intended to rectify logistic shortfalls in the operational fleet.

Budgeted Expenditure

5.27 There is a large discrepancy between actual expenditure for Project Sea 1431 and planned expenditure. The planned expenditure for the project is set out in the Major Capability Submission. Cumulative planned expenditure up to the end of June 1998 was to be about \$11.9 million (28 per cent of approved budget). Actual total expenditure to that date was only \$0.924 million (1.8 per cent of approved budget adjusted for price variations), which represents a shortfall of over 90 per cent of planned expenditure. There were no documented reasons explaining this shortfall.

Planned Milestones

5.28 Neither the first flight planned for June 1998 nor the second flight planned for December 1998 was achieved. It was envisaged that the first attrition *Seahawk* would regain its fully-fitted configuration by October 1997 with the remaining aircraft regaining fully-fitted status by the end of 1998. These milestones were not met and original planned completion of the project by the year 2000 is highly unlikely. Milestones are summarised in Table 13. During field work the audit team could not locate any documentation with clear fixed dates for the activation of these attrition aircraft.

Date	Proposed	Actual
June 98	First additional Seahawk flight available	Not achieved
December 1998	Second Seahawk flight available	Not achieved
December 2000	All equipment delivered	Not likely to be achieved

Milestones for Project Sea 1431

Table 13:

Source: Compiled by the ANAO from Defence documents

5.29 An additional sum of \$4.2 million has recently been identified as being necessary to rectify 'cannibalisation' from the attrition aircraft which have occurred over the years to help keep other aircraft operational. The cost includes replacement of parts and comprises \$3.7 million for spares and \$0.5 million for labour costs. This amount is unplanned and is unfunded but is critical for the aircraft to be able to be put into operational service.

Capability Shortfall

5.30 The capability agreed by the FSPPC in December 1994 for Project Sea 1411 was for the acquisition of a sufficient number of helicopters to satisfy ANZAC ship requirements with the possibility of the same type of helicopter satisfying the OPC requirements at a later time. The FSPPC agreed to the initial procurement of 14 helicopters to meet ANZAC flight requirements, with the option for further procurement of up to 13 helicopters for the OPC. The number of helicopters for the ANZAC flight requirements was later reduced by three because tender responses from the two competing tenders exceeded the approved total project cost.

5.31 In 1996 the FSPPC noted that the capability shortfall in Project Sea 1411 caused by the decision to reduce the number of helicopters by three would be made good by the activation of the four *Seahawk* attrition aircraft. The FSPPC also noted that this would be consistent with advice provided to the Government when it approved the activation of these attrition aircraft. The 1996 Budget Submission for Project Sea 1431 stated:

Activation of the attrition Seahawks would reduce the total number of new intermediate helicopters needed for ANZAC frigates and Offshore Combatants.

5.32 The audit found that activation of the attrition aircraft program is significantly behind the original schedule, with no fixed date for completion. This leaves two ships without helicopter capability. The FSPPC agreed in April 1995 that ANZAC ships should be provided with helicopter capability at the time of ship delivery or as soon as possible thereafter and noted that a helicopter is an integral and important part of the combat system of the ANZAC ship.

Recommendation No.10

- **5.33** The ANAO recommends that Defence:
- a) put in place a project time-line for *Project Sea 1431: Activation of Four Attrition Seahawk Helicopters*, linked to capability requirements of the ANZAC ships; and

b) address the funding requirement necessary to bring these aircraft to operational standards.

Defence response

5.34 Agreed. Funding to bring the four attrition Seahawks to operational availability is being provided.

6. NAF performance management systems

This chapter reviews the adequacy of the performance management systems of NAF. It analyses existing performance management systems as well as changes flowing from NAFMR recommendations.

6.1 The ANAO considers that an effective performance management system should be able to:

- identify the policy and corporate objectives of an entity;
- incorporate those objectives in the entity's corporate or strategic planning process;
- identify what successful achievements of those corporate objectives would mean in terms of practical achievements, and record these as performance targets;
- develop strategies for achievement of the desired performance outcomes;
- monitor costs and progress against planned targets;
- evaluate the effectiveness of the final outcome against intended objectives; and
- report on the outcomes together with recommendations for subsequent improvement.

Background

6.2 Naval aviation is undergoing change, particularly flowing from recommendations of the 1997 Naval Aviation Force Management Review (NAFMR) which impact on its performance management systems. NAFMR considered the strategic environment of the NAF and then developed outcomes and outputs to be fed into NAF business planning. It also proposed a planning framework model to facilitate coordination of NAF activities.

6.3 The most significant change impacting on NAF's performance management system is the current reform processes within the Naval Aviation Logistics Management Squadron (NALMS).

6.4 NALMS was officially established on 1 June 1998 and was formed by the transfer of the Naval Aviation Logistics Organisation (NALO) from Navy into Support Command Australia—Air Force. The key changes to occur within the organisation are:

- adoption of common Air Force processes and systems and a restructuring consistent with Air Force Weapon System Logistic Management Squadrons (WSLMS), which are organised along weapon platform lines;
- recruitment and training of staff to establish a WSLMS capable of supporting the needs of the NAF; and
- redevelopment of the chart of accounts and a reorganisation of its human resources along weapons system lines.

6.5 The level of logistic support is a key determinant of the operational effectiveness of NAF. A key factor in the level of logistic support will be the effectiveness of NALMS. The integration of an effective performance management system within the reformed NALMS will act as a gauge for the performance of the NAF.

Current Performance Reporting

6.6 The development of a holistic performance management system has been progressed by the Office of Commander Australian Naval Aviation (CANA). CANA is developing performance indicators for NAF as a whole and it is envisaged that this will involve components such as aircraft availability, inventory management reports and the utilisation of Navy's activity-based management system for costing.

6.7 NALMS is producing detailed reports outlining aircraft availability, satisfaction rates and maintenance statistics. In addition, the squadrons analyse aircraft availability and flying rates in Monthly Flying Maintenance reports, which are forwarded for performance monitoring purposes to CANA, NALMS and elsewhere in NAF.

NAF Business Planning

6.8 NAFMR identified deficiencies over the past five or more years stemming from a lack of an overall Business Plan for the NAF that integrates all its activities.

6.9 As a result of the lack of a central Force Element Group (FEG) Plan that integrates the individual outcomes of the NAF, NAFMR recommended the establishment of a planning framework that links a central FEG master plan to six functions, each of which has its own plan. NAFMR stated that a key requirement for coordination and reduction of fragmentation in NAF is the need for these plans to be 'owned'. It was envisaged that a NAF Master Plan identify the specific performance measures and target levels to match the Five Year Defence Plan (FYDP) and provide the integrating framework for six supporting plans (listed below) issued under CANA's authority:

- Operations Plan;
- Training Plan;
- Logistic Support Plan;
- Project Plan;
- Airfield Support Services; and
- Resources Plan.

6.10 This recommendation was endorsed by Chief of Navy Senior Advisory Committee.

Findings

6.11 The Master Plan and the six supporting plans remain to be completed. Completion of these plans is necessary for NAF to have an effective performance management system which covers the activities identifed in paragraph 6.1. Recently a position was created and filled within the Office of CANA to develop and monitor these plans.

6.12 The final draft Master Plan follows the guidelines as set out in NAFMR but at the time of the audit it was not possible to assess its adequacy. It was noted that performance indicators in this draft plan do not have managers assigned to them.

6.13 The critical NAFMR recommendation on developing a business planning process for NAF has yet to be implemented. NAFMR provided a skeletal planning framework and suggested that the Naval Aviation Planning Conference would be suitable for formally reviewing and updating the NAF Master Plan. NAFMR did not provide a prescriptive methodology for business planning, a task it left others to do.

6.14 CANA is working towards making business planning an integrated phased and timely process in NAF. However, the ANAO notes that this task still needs a timeframe and a completion date.

Recommendation No.11

6.15 The ANAO recommends that, to help provide a more comprehensive and effective performance management framework for naval aviation, NAF finalise its Master Plan and the supporting plans to enable their implementation in 1999–2000.

Defence response

6.16 Agreed. The inaugural master planning conference for NAF has recently taken place and is building on significant planning work already conducted by Navy.

NAF Performance Reporting

6.17 The audit team reviewed the Naval Aviation Force Business Plan of May 1997 and the NALO Business Plan 1997–98. The ANAO is aware that these documents are to be replaced following the NAFMR initiatives. Performance information in these documents could be enhanced, as indicated below.

Key Performance Indicators should be linked to benchmarked targets

6.18 Performance information collected by the NAF can be categorised into two main areas, namely rate of effort and aircraft availability rates.

6.19 Monthly Flying Maintenance reports produced by the squadrons provide comprehensive information on the operational performance of each aircraft. Also, fleet staff conduct a series of comprehensive evaluations of a helicopter, its crew and support team once it is embarked on a ship, with the aim of ensuring that they achieve Minimum Level of Capability¹⁶ (MLOC). The process is designed to allow for a gradual improvement in the level of training, experience and readiness of the ship.

6.20 However, performance information collected by NAF is only at an operational level and is not linked to broader strategic military objectives. Targets should be bench-marked to capabilities so that shortfalls can be assessed as a measure of military effectiveness at both the tactical and strategic levels. For example, availability rates and rates of effort should be linked to the required number of mission capable aircraft and proficient aircrew required within the period of notice stipulated by operational and contingency planning.

6.21 Performance information that shows 'how much' should also attempt to show 'how well' so as to addresses efficiency and effectiveness issues. Benchmarking will convert what is essentially statistical information into performance management information.

6.22 The proposed Maritime Command performance assessment framework discussed in Chapter 2 is aimed at providing performance information at the operational command level. However, in the form currently envisaged, it does not produce performance information for the NAF as a discrete entity. This is because the system treats the helicopter as one of the many weapon systems on board a ship and, as

¹⁶ MLOC is defined as the lowest level of operational capability from which a force element can achieve Operational Level of Capability (OLOC) within readiness notice, which encompasses the maintenance of core skills, professional standards and safety.

such, does not capture information on Naval Aviation outside the domain of individual ship's operations.

6.23 Chapter 2 discussed the components of NAF military capability which should be included in performance reporting of NAF. To provide a comprehensive output/outcomes based performance framework, the NAF performance management system should also include assessments of achievement against military capabilities.

Responsibility for key results areas/key performance indicators need to have relevant program managers assigned to them.

6.24 NAF's Business Plans contain its high-level performance indicators. Responsibility for these key performance indicators are not allocated directly to managers. The benefits of assigning direct responsibility to managers include:

- engendering greater financial awareness on the part of policy and line managers;
- encouraging closer budgetary control by managers who are accountable; and
- motivating and encouraging managers to be more efficient and innovative.

Client service standards need to be identified

6.25 Service delivery standards are not defined and separately identified by the NAF. A service quality evaluation of the needs of specific customer groups of the NAF could identify any gaps in service delivery expectations.

6.26 Customer service standards for NALMS still need to be defined. This should be done in the context of the service level agreement still to be finalised between NALMS and its Defence customers.

Need for an evaluation strategy for NAF

6.27 Formal periodic in-house evaluations to assess the costeffectiveness of program outcomes are a normal and accepted part of program management. The development of a program evaluation plan for the NAF would help make clear how particular activities meet objectives set by Government, Defence and NAF. It should also contribute to an environment enhancing the extent to which individuals, whether providers of specialist policy and services or line managers, can make an effective contribution to operations. **6.28** A program evaluation strategy in NAF would help to facilitate an objective review and assessment of NAF programs to determine, in the light of present circumstances, the adequacy of its objectives, design as well as both intended and unintended results. Such a strategy should be built into the NAF Master Plan.

7. NAF organisational structure and personnel planning

This chapter discusses the organisational structure of NAF and personnel planning issues involved in its expansion.

Organisational structure of NAF

7.1 At the commencement of the audit there was no authoritative organisation chart available to show the chains of responsibility for NAF. Figure 2 has been prepared on the basis of the informal chart provided by Defence in August 1998.

7.2 The NAF's organisational structure, shown in Figure 2, is complex, involving both responsibility and work-flow lines. NAFMR noted the complexity of the NAF business processes and their fragmentation across Command and Program boundaries as well as the lack of unambiguous ownership of activities. The lines of responsibility, particularly in the client/provider relationships, are complicated by CANA's general coordination function for NAF. For example, for logistic support, NALMS has a direct provider/customer link to the Squadrons (HS816, HS817 and HC723). However, in determining the total quantum and the quality of logistic support for planning and resource allocation purposes, CANA has a coordinating role, as does Support Command Australia—Air Force. This tends to diffuse responsibility.

7.3 CANA is Navy's principal aviation operations and policy adviser. CANA's responsibilities include oversight of the operations and development of NAF. To achieve a holistic management of both the capital and the recurrent resources that sustain the NAF, clear definitions of the respective responsibilities and authority are necessary to match CANA's coordination role for the development of the force element with commensurate authority and resources. In particular, there should be a system so that CANA, as coordinator of NAF, receives information and can coordinate capital acquisitions, personnel and logistic planning. Information flows through NAF have been convoluted and slow on occasion. CANA should be able to coordinate naval aviation support to be provided to new ships. Effective development of NAF requires a holistic planning approach, by coalescing the elements involved in its development, that is:

- operational plans;
- capital equipment and facilities acquisition schedules;

Figure 2: NAF Organisation—CANA linkages



SPTCOM-AF

Support Command Australia (Air Force)

Director General Plans and Policy-Navy

Director General Technical Airworthiness

DGPP-N

DGTA

- personnel;
- logistic support; and
- financial considerations.

This is particularly important to ensure an effective and seamless integration of NAF assets into operational service.

7.4 The ANAO notes that CANA has taken strategic planning action by putting together the present plans of the various elements. Further refinement of the tools used and the presentation of data is planned. CANA's longer-term planning indicates that, on present schedules, resources and rates of effort, NAF will have difficulty in meeting both the planned increased operational support to Maritime Command and the expanded flying training requirements to meet increases in the number of NAF operational aircraft. By further refinement and development of the planning tools, CANA should gain a valuable means of resource planning for NAF. These tools should also help to make transparent the capability implications of changes in schedules and resource allocations, thereby improving decision-making in the Defence management of NAF.

Conclusion

7.5 The ANAO suggests that, to provide an optimal framework for resources planning and management in NAF, Defence monitor NAF's organisational arrangements to ensure that they allow CANA to carry out the coordination role for NAF effectively and that there are clear customer/provider relationships and satisfactory flows of information between the organisations involved in managing and supporting NAF.

Personnel planning

7.6 Navy's average funded strength in 1997–98 was 14 206 personnel. A reduction to 13 850 has been agreed for 1998–99, with an annual "buyback" of 50 to build up to 14 000 agreed in the Defence Reform Program implementation. Against a background of constrained resources in Navy, NAF's requirements are taking up an increasing proportion of resources—its share of Navy personnel in uniform is planned to rise from about seven per cent in 1997 to about 10 per cent by 2007.

7.7 The main factor underlying real growth in NAF's personnel requirements is associated with the introduction of the *Super Seasprite* helicopters.

7.8 It is difficult and time-consuming to track the establishment 'billets' (positions) associated with NAF, their funding status, planned duration and the reasons for variations. At the time of audit field work, NAF was undertaking considerable work to trace billet decisions and

the reasons for them. This work had been prompted by concern about the number of temporary billets in NAF.

7.9 Temporary billets were of particular concern at HC723 Squadron. Squadron management stated that they were just able to meet current and prospective operational and training requirements with their present staffing numbers, but there was no assured funding for a significant number of their personnel because they were held against temporary billets.

7.10 The creation of 46 temporary billets in NAF can be traced to Schemes of Complement Amendment Authorities in 1996. They made certain billets temporary, and nominated them as future offsets for other purposes, including 30 billets for the *Super Seasprite* Squadron (805 SQN). The ANAO understands that it was envisaged at the time that savings from within Navy would be found to absorb new billets required by new projects.

7.11 Activation of billets for the *Super Seasprite* project commenced in 1998–99 and proceeds through to 2002–03. Activation and funding of these billets occur ahead of the time when all of the personnel held against the billets are actually required to support the new helicopter. Thus, billet slots have become available for personnel to be held in NAF billets prior to the creation of 805 SQN. This allows personnel to prepare for and become proficient for the billets they are planned to take up in support of the *Super Seasprite*. It also constitutes an addition to the personnel available in support of the current NAF fleet.

7.12 Table 14 shows the number of "tagged" billets. These billets are funded from the *Super Seasprite* Project to grow the Navy workforce to support the *Super Seasprite* helicopters when they enter naval service. Pending the activation in direct support of the *Super Seasprite* helicopter as individual aircraft enter service and require operational maintenance support, these billets are available to carry out other NAF duties.

<u> </u>			00		
tagged billets	1998–99	1999–2000	2000–01	2001–02	2002–03
used on current NAF fleet	77	41	21	11	0
transferred to Project Sea 1411	4	36	20	10	11
total tagged billets	81	77	41	21	11

Table 14:

Super Seasprite Project (Project Sea 1411) — "tagged" billets

Source: Department of Defence documents

7.13 Billet management in Navy was part subject of a 1996 ANAO audit of workforce planning in the Australian Defence Force.¹⁷ The relevant part of the audit report commented as follows:

Requirements for which an offset could not be found have in the past been met by the use of temporary billets. Navy now seeks to control this by requiring an offset. Some comparable billet must be temporarily barred for the duration of the temporary billet required. This also seems a complex process. For example, changes to Naval Aviation were achieved by a complex mechanism of creating and disestablishing both temporary and permanent billets, and transferring billets from temporary to permanent and vice versa. This would have been much simpler if Naval Aviation were given a workforce budget within which it could control its own workforce expenditure. [report paragraph 3.26]

7.14 In relation to workforce planning in the Services, the ANAO report concluded as follows:

However, there was considerable scope to improve effectiveness and efficiency. In particular, the ANAO observed the use of the establishment system to reflect requirements for personnel to be inflexible, and sometimes inefficient and ineffective. The ANAO recommended a reduction of emphasis on establishment controls, together with more reliance on financial controls to manage workforce usage, while retaining central control of the military workforce structure. Potential benefits from this approach include reduction of complexity, increased ability for managers to improve effectiveness through flexible use of workforce resources, and greater ability to maintain a strategic perspective on the overall military workforce. Implementation of ANAO recommendations should also achieve savings in salary costs. [report paragraph 7]

7.15 The ANAO recommended in that report that each Service allocate personnel resources in the form of a single monetary allocation. Defence did not agree to that recommendation (Recommendation No. 4(b)), stating that it would increase the complexity and cost of the management and administration of the total Service workforce. Given the considerable research effort now involved in tracing the justification for the NAF billets, it is difficult to understand how managing personnel numbers through the billet system involves less complexity and cost than managing personnel numbers through monetary allocation. Furthermore, there has been a trend in NAF to outsource significant maintenance and repair work over time. Under these circumstances, Net Personnel and Operating Costs, which contain both staffing and contractor costs, are a more meaningful cost trend indicator than billet numbers.

¹⁷ ANAO Audit Report No 17 1996-97, *Workforce Planning in the Australian Defence Force,* 27 November 1996

7.16 The ANAO notes Navy's need to grow the workforce required to carry out operational support to the *Super Seasprite*. From 1998–99 to 2002–03 the 'tagged' billets will constitute a 'structural overlay.' This refers to the requirement, resulting from the largely closed nature of the military workforce system, for additional people in junior ranks to maintain the strength of senior ranks in the future. The ANAO audit report referred to above stated that structural overlay was particularly high in Navy and expensive.

7.17 Navy uses the "tagged" billets to extend temporary billets and their funding to maintain existing staff in NAF for on-going work. The effect of the "tagged" billets is that NAF obtains a reprieve for its temporary billets. However, the reprieve is short-term, and Navy needs to plan what to do about these billets at the various times they are transferred to 805 Squadron in support of the *Super Seasprite*. The long-term future of those billets should be determined through an analysis of the work-load and matching staffing requirements in NAFsquadron workshops, particularly in the light of current outsourcing proposals for a number of NAF tasks.

Recommendation No.12

7.18 The ANAO recommends that, to promote optimal use of its workforce, NAF review and prioritise the staffing requirements of its squadrons as part of the process of more effectively reallocating positions as the *Super Seasprite* helicopters enter Naval service.

Defence response

7.19 Agreed. The thrust of this recommendation is strongly agreed. The requirement to audit the billet structure and profile of NAF has already been identified and is proceeding under the auspices of the NAF master plan.

Huset

Canberra ACT 27 May 1999

P. J. Barrett Auditor-General

Appendices

Appendix 1

NAF Rates of Effort—Annual Flying Hours Per Aircraft Type

Year	90–91	91–92	92–93	93–94	94–95	95–96	96–97	97–98	98–99
Seahawk S-70B-2 12 operational*, 4 attrition aircraft									
Allocated	3550	3550	3550	3535	4450	3550	4050	3400	3500
Flown	2568	1908	2879	2940	3412	2899	2978	2963	
Underfly	982	1642	671	595	1038	651	1072	437	
% flown	72.3	53.7	81.0	82.8	76.6	81.6	73.5	87.1	
Sea King SK50/50A	7 aircraf	t*							
Allocated	2400	1900	1800	1700	1700	1750	1750	1500	1750
Flown	1944	1035	1801	1783	1605	1049	1161	1546	
Underfly	456	865	-1	-83	95	701	589	-46	
% flown	97.2	54.4	100.1	104.8	94.4	59.9	66.3	103.0	
Squirrel AS350BA 6	aircraft	ł							
Allocated	1700	1800	1800	1730	1800	1800	2200	2200	2200
Flown	2312	2075	1754	1814	1716	1636	1892	696.4	
Underfly	-612	-275	46	-84	84	164	308	1503.6	
% flown	136.0	115.2	97.4	104.8	95.3	90.8	86.0	31.6	
Kiowa Bell 206B 5 a	ircraft*								
Allocated	900	900	900	770	770	770	1100	1100	727
Flown	872	822	828	774	609	676	857	1083	
Underfly	28	78	72	-4	161	94	243	17	
% flown	96.8	91.3	92.0	100.5	79.0	87.7	77.9	98.4	
HS748 2 aircraft*									
Allocated	1160	1200	1040	1067	1000	1000	1000	1000	1000
Flown	1009	1044	1017	1041	783	880	733	827	
Underfly	151	156	23	26	217	120	267	173	
% flown	86.9	87.0	97.3	97.5	78.3	88.0	73.3	82.7	

Source: Department of Defence

Yearly flying hour allocations to squadrons and embarked helicopters are made in the Navy's Short Term Air Plans.

*Number of aircraft as at 1 July 1998

Appendix 2

Excerpts from Australia's Strategic Policy

Set out below are excerpts from the Government's defence policy statement Australia's Strategic Policy (Department of Defence—December 1997) that are relevant to the audit report. Report paragraph 2.43 refers.

There is no apparent reason to expect that Australia will face armed threats within the next few years. But it is not a chance we should be prepared to take. [p. 4]

There are three basic tasks which could require the ADF to undertake combat operations: defeating attacks on Australia, defending our regional interests and supporting our global interests. [p. 29]

Australia must have the military capability to prevent an enemy from attacking us successfully in our maritime approaches, gaining a foothold on our territory or extracting political concessions from us through the use of military force. [p. 29]

The capabilities of the ADF will therefore be developed to defeat attacks against Australia, and provide substantial capabilities to defend our regional strategic interests. Priority will be given to the first of these tasks, but decisions will be influenced by the ability of forces to contribute to both tasks. Our planning will also take account of the possibility—albeit unlikely—that we could need forces for both. [p. 36]

For maritime forces, the key elements of preparedness are the state of platforms and systems, crew availability, holdings of critical consumable items, especially weapons; the availability of support services such as battle damage repair and depot level maintenance. Past experience has shown that a policy of "fitting for but not with" a particular capability—in the expectation that there would be time in which to acquire, fit and develop proficiency in the use of a particular capability—is a flawed concept. [pp. 39, 40]

We will ensure that we have sufficient crews to operate available aircraft at an appropriate rate of effort to meet the demands of operations. This could include mounting air operations on a 24 hour basis over extended periods of time. [p. 40]

All these considerations impact on the availability of forces to deal with situations for which Australia would only have 'crisis warning'. Such forces would have to deal with the initial response to a crisis and then be capable of operations for a significant period until other forces could be brought to a level of capability suitable for commitment to operations. This process would require a significant training effort and higher than normal logistic support. [p. 40]

For considerations under capability warning—that is related to the ability to mount a major attack on Australia—normal planning considerations would apply to the development of ADF capabilities. [p. 40]

But not withstanding the important role of land forces in a maritime concept, combat aircraft, submarines and surface combatants, supported by well-developed intelligence, surveillance and command and control systems, would be our first line of defence and are our highest priority. Focussing in this way on defeating attacks in our maritime approaches enables us to exploit our national strengths in technology, where Australia should be able to sustain a significant national advantage, if we work hard at it and recognise it as a strategic priority. [p. 45]

Similar issues determine the priority we should give to developing different types of capability to contribute to in defending our regional strategic interests. ... The higher inherent mobility of air and naval units means they are in general quicker and easier to deploy from bases in Australia. And air and naval forces can exploit Australia's comparative advantages in technology and personnel. [p. 45]

The ability to draw upon the civil community to augment our personnel numbers for specific operations or in times of crises is an important component of our defence planning. [pp. 48,49]

Industry and Technology. ...In most cases we will make decisions about such purchases [of military systems and platform, communications, financial services, transport and storage] on a strictly commercial basis. ... There remains, however, a part of industry in which Defence is the major and in some cases the only customer. But where it might be important to us to have national industrial capabilities—that would not easily survive under open international competition—special considerations will apply. [p. 49] Force Structure Priority 1: Surveillance of our Maritime Approaches: "Consistent with the priority we recommend to denying our air and sea approaches to hostile forces, our objective is an integrated surveillance system which will provide continuous real-time, allweather detection and identification of aircraft and ships in our maritime approaches. ... Our priority for enhancing surveillance in our maritime approaches is to develop an integrated system able to provide continuous, real time coverage of our air and sea approaches by: ...integrating all surveillance assets into a single system. [pp 59, 60]

Force Structure Priority 2:. "We now have fourteen major ships in service or on order. We have no plans, at this stage, to invest in new major surface combatants to increase that number. Rather we are planning to invest substantially in helicopters, Harpoon missiles, ASM defences and other upgrades for the FFGs and ANZACs. That would provide us with a substantial fleet of capable ships able to operate throughout our maritime approaches and beyond, under land based air cover where possible and with some capability to operate without air cover, especially in task groups. [p.62]

Appendix 3

Review of NAFMR NPOC Bids¹⁸

1. The Naval Aviation Force Management Review (NAFMR) related Naval Personnel and Operating Cost (NPOC) bids constitute a commendable effort to seek to establish the cost of military capabilities, particularly to relate rates of effort to the resources required to achieve them.

2. The audit sought to trace the basis of the calculations made. The evidence indicates that the NAFMR team had made considerable efforts to determine the actual costs of operating NAF aircraft and to estimate future costs. Logistic, operating and maintenance personnel had been consulted and professional best efforts appeared to have been made in the calculations. Some evidence of the detailed work undertaken was preserved and available to the audit team, leading to the above conclusion.

3. However, it was obvious that the need to get the job done was given a greater priority than preserving an audit trail, making it impracticable to trace in detail the justifications for and the basis of particular cost estimates and models used in compiling the bids.

4. Analysis of the available information leads to the following conclusions on the basis of current Defence 'financial guidance' (planned funding) in the NAFMR financial bids:

- an *over-estimate* by the *duplication* of \$6.590 million for spares/ground support equipment for the 3rd operating base for the *Sea Kings*, already included in project JP2027 as part of the \$9.379 million for spares/ground support equipment for that operating base;
- an *over-estimate* by duplication of **\$22 million** (plus **\$6 million** outside the FYDP period) for spares and GSE for 2 additional *Seahawk* detachments/flights on ANZAC ships, for spares and ground support equipment;
- an *under-estimate* through a spread-sheet error, amounting to **\$8.413 million** in the line for the 4450 hour rate of effort of the *Seahawk* fleet, by omission of additional Net Operating Costs (an analogous omission amounting to **\$1.2 million** in the FYDP period occurred on the 5650 rate of effort line by not adding all of the personnel, operating and logistics costs—however, in practical terms, this will only become material to 'financial guidance' (planned funding) above the current RoE limit of 4600 hours)

¹⁸ report paragraph 4.12.

 under-estimates, assessed by Defence staff to amount to \$47 million (\$194 over the Ten Year Defence Program (TYDP)), in the operating costs for the Super Seasprite helicopters, resulting largely from the omission of the In-Service Support (ISS) contract from the aircraft's Net Operating Costs¹⁹. The ISS contract was estimated at \$33.137 million over the FYDP (\$96.625 million over the TYDP), but the additional bid for a new item titled "Other Expenditure²⁰" was for \$47.0 million over the FYDP, and \$194 million over the TYDP.

5. The net effect of the above error is an **over-estimate** in the additional financial guidance allocations for the Sea King and Seahawk operating costs in the FYPD period of **\$20.177 million**, and an **under-estimate** for the Super Seasprite of **\$47 million**. This suggests that the need for the capability implications of the NAFMR based planned financial allocations should be revisited. The reduction by the Defence Management Committee of \$32.047 million from the full bids for the Seahawk and Sea King in effect is only a reduction of \$11.87 million, if the errors in their bids are taken into account.

NAFMR bid errors—summary

Overbids	Underbids
\$6.590 million —an <i>over-estimate</i> by the <i>duplication</i> of \$6.590 million for spares/ground support equipment for the <i>Sea Kings.</i>	\$8.413 million —an <i>under-estimate</i> in the line for the 4450 hour rate of effort of the <i>Seahawk</i> fleet
\$22 million — an <i>over-estimate</i> by duplication of (plus \$6 million outside the FYDP period) for spares and GSE for two additional <i>Seahawk</i> detachments/flights on ANZAC ships.	\$1.2 million —omission for the <i>Seahawk</i> in the FYDP period on the 5650 hour rate of effort line.
	\$47 million — <i>under-estimate</i> , by Defence (\$194 over the Ten Year Defence Program (TYDP)), in the operating costs for the <i>Super Seasprite</i> helicopters.
NET	EFFECT
An over -estimate of \$20.177 million guidance allocations for the <i>Sea King</i> and <i>Seahawk</i> (up to 4600 RoE p.a.) operating costs in the FYPD period.	An under -estimate for the <i>Super</i> <i>Seasprite</i> of \$47 million .

¹⁹ The ANAO understands that the ISS contract was included as a separate item, then deducted from "Other Expenditure", by the staff compiling the bids. They believed that the ISS contract had already been included in "Other Expenditure"

²⁰ Other expenditure comprised packaging, handling, storage and transport; modifications, travel, administration and overheads; contingency, based on the Life Cycle Cost analysis conducted during the tender evaluation for Project SEA 1411.

Appendix 4

Performance audits in the Department of Defence

Set out below are the titles of the ANAO's performance audit reports in the Department of Defence tabled in the Parliament in recent years.

Audit Report No. 5 1993–94 *Explosive Ordnance*

Audit Report No. 11 1993–94 ANZAC Ship Project—Monitoring and Contracting

Audit Report No. 19 1993–94 Defence Computer Environment Supply Systems Redevelopment Project

Audit Report No. 27 1993–94 US Foreign Military Sales Program Explosives Factory Maribyrnong

Audit Report No. 2 1994–95 Management of Army Training Areas Acquisition of F-111 Aircraft

Audit Report No. 13 1994–95 ADF Housing Assistance

Audit Report No. 25 1994–95 ADF Living-in Accommodation

Audit Report No. 29 1994–95 Energy Management in Defence ANZAC Ship Project Contract Amendments Overseas Visits by Defence Officers

Audit Report No. 31 1994–95 *Defence Contracting*

Audit Report No. 8 1995–96 *Explosive Ordnance* (follow-up audit)

Audit Report No. 11 1995–96 Management Audit

Audit Report No. 17 1995–96 Management of ADF Preparedness Audit Report No. 26 1995–96 Defence Export Facilitation and Control

Audit Report No. 28 1995–96 Jindalee Operational Radar Network (JORN) Project

Audit Report No. 31 1995–96 Environmental Management of Commonwealth Land

Audit Report No. 15 1996–97 Food Provisioning in the ADF

Audit Report No. 17 1996–97 Workforce Planning in the ADF

Audit Report No. 27 1996–97 Army Presence in the North

Audit Report No. 34 1996–97 ADF *Health Services*

Audit Report No. 5 1997–98 Performance Management of Defence Inventory Defence Quality Assurance Organisation

Audit Report No. 34 1997–98 New Submarine Project

Audit Report No. 43 1997–98 Lifecycle Costing in the Department of Defence

Audit Report No. 2 1998–99 Commercial Support Program

Audit Report No. 17 1998–99 Acquisition of Aerospace Simulators

Audit Report No. 41 1998–99 General Service Vehicle Fleet

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Audit Report No.4 Performance Audit *Client Service Initiatives* Australian Trade Commission

Audit Report No.5 Performance Audit Commonwealth Agencies' Security Preparations for the Sydney 2000 Olympics

Audit Report No.6 Audit Activity Report Audit Activity Report: January to June 1998 Summary of Outcomes

Audit Report No.7 Performance Audit Management of the Implementation of the New Employment Services Market Department of Employment, Education, Training, and Youth Affairs

Audit Report No.8 Performance Audit Safeguarding Our National Collections

Audit Report No.9 Performance Audit Accountability and Performance Information Australian Sports Commission

Audit Report No.10 Performance Audit Sale of One-third of Telstra

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Audit Report No.12 Performance Audit *Taxation Reform* Community Education and Information Programme

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Audit Report No.15 Performance Audit *Postal Operations* Australian Customs Service

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Audit Report No.18 Performance Audit Accounting for Aid–The Management of Funding to Non-Government Organisations Follow-up Audit Australian Agency for International Development (AusAID)

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Audit Report No.20 Financial Statement Audit Audits of the Financial Statements of Commonwealth Entities for the Period Ended 30 June 1998 Summary of Results and Financial Outcomes

Audit Report No.21 Financial Control and Administration Audit *Costing of Services*

Audit Report No.22 Performance Audit Getting Over the Line: Selected Commonwealth Bodies' Management of the Year 2000 Problem

Audit Report No.23 Performance Audit Accountability and Oversight Arrangements for Statutory Bodies in the Former Primary Industries and Energy Portfolio

Audit Report No.24–27 Performance Audit DAS Business Unit Sales No.24 Sales Management No.25 DASFLEET Sale No.26 Sale of Works Australia No.27 Sale of DAS Interiors Australia Audit Report No.28 Performance Audit Sale of SA Rail, Tasrail and Pax Rail

Audit Report No.29 Performance Audit *Provision of Migrant Services by DIMA* Department of Immigration and Multicultural Affairs

Audit Report No.30 Performance Audit *The Use and Operation of Performance Information in the Service Level Agreements* Department of Social Security Department of Employment, Education, Training and Youth Affairs Centrelink

Audit Report No.31 Performance Audit The Management of Performance Information for Special Purpose Payments—The State of Play

Audit Report No.32 Performance Audit Management of Parliamentary Workflow

Audit Report No.33 Audit Activity Report Audit Activity Report: July to December 1998 Summary of Outcomes

Audit Report No.34 Performance Audit *Fringe Benefits Tax* Australian Taxation Office

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