

**SENATE FOREIGN AFFAIRS, DEFENCE AND TRADE  
REFERENCES COMMITTEE**

**INQUIRY INTO DEFENCE MATERIEL ORGANISATION**

**SUBMISSION**

**Submission No:** 2

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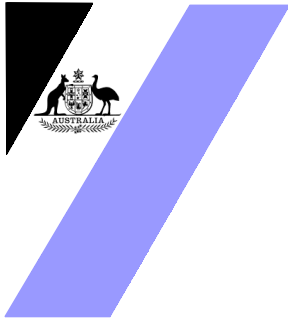
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**No. of Pages:** 44

**Attachments:** YES



Auditor-General for Australia



23 May 2002

Mr Brenton Holmes  
Secretary  
Senate Foreign Affairs, Defence and Trade References Committee  
Room S1.57  
Parliament House  
CANBERRA ACT 2600

Dear Mr Holmes

**Inquiry into the Materiel Acquisition and Management Framework  
of the Department of Defence**

I refer to the Committee's invitation for submissions to its inquiry into the materiel acquisition and management framework of the Department of Defence.

A submission by the Australian National Audit Office is attached. We would be pleased to discuss it with the Committee and to assist in the inquiry. Our contact for the inquiry is Warren Cochrane, Group Executive Director, Performance Audit Services Group (phone 6203 7594).

Yours sincerely

P.J. Barrett



**Senate Foreign Affairs, Defence and Trade References Committee  
Inquiry into the Materiel Acquisition and Management Framework of the  
Department of Defence**

**Submission by Australian National Audit Office  
May 2002**

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## Background

1. The Senate agreed, on 13 March 2002, to the following motion by Senator Hogg:
  - (1) That the following matter be referred to the Foreign Affairs, Defence and Trade References Committee for inquiry and report by 2 December 2002:

Whether the current materiel acquisition and management framework of the Department of Defence is effective in meeting the organisation's equipment requirements.
  - (2) In considering this matter, the committee is to examine and report on the following issues:
    - (a) whether the current materiel acquisition and through-life support system is meeting, and will continue to meet, the needs of Defence and Defence industries in a timely, cost-effective and qualitative manner;
    - (b) the impact of the Defence Materiel Organisation (DMO) acquisition reform program on materiel acquisition and management;
    - (c) the current status of major equipment projects in meeting the organisation's requirements;
    - (d) the impact of the creation of decentralised System Program Offices on materiel acquisition and management; and
    - (e) any other issues relevant to the effectiveness of the current acquisitions framework which arise in the course of the inquiry.<sup>1</sup>
2. Subsequently the Committee invited the public to lodge submissions on this matter by 11 June 2002.

## Introduction

3. The matter before the Committee is whether Defence's materiel acquisition and management framework is effective in meeting its equipment requirements. An effective framework is one that enables Defence to manage its program of individual projects to acquire equipment on time, within cost budget and according to specification. Defence acquisition project management has been the focus of consideration by the Australian National Audit Office (ANAO) and the Joint Committee of Public Accounts and Audit (JCPAA) for some time, beginning with a 1983 Audit Office report on this topic which was reviewed by the then Joint Committee of Public Accounts in 1986.<sup>2</sup>
4. Major capital equipment projects involve negotiation and management of contracts for development and production of special military equipment (usually combat systems and their 'platforms', such as aircraft and ships). The equipment includes advanced weapons and computer technology to be acquired from large, often international, corporations operating in a market which can be opaque and with limited competitive pressure to contain prices.

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<sup>1</sup> Senate Hansard 13 March 2002, p694.

<sup>2</sup> JCPA Report 243 *Review of Defence Project Management*, February 1986. The JCPA review is summarised in the ANAO's 1998 report on the New Submarine Project, together with an outline of reviews since then and until 1998. See Audit Report No.34 1997-98 *New Submarine Project*, Appendix 1.

5. These projects require expenditure of substantial amounts of public funds. The private sector is contracted to deliver the equipment, but Defence remains accountable for overall project outcomes. Projects must be managed in a business-like manner, consistent with the statutory requirement that Defence's Chief Executive must manage Defence's affairs in a way that promotes efficient, effective and ethical use of Defence resources.<sup>3</sup> The ANAO appreciates that management of the 'time, cost and quality' aspects of these projects is a substantial task, involving significant corporate governance issues.

6. Defence Materiel Organisation (DMO) was formed by the amalgamation of the Defence Acquisition Organisation, Support Command Australia and part of National Support Division in Defence's organisational restructure that took effect from 1 July 2000. DMO's stated purpose is to equip and sustain the Australian Defence Force (ADF) and it is responsible for acquisition and through-life support of equipment and systems used by the ADF. During 2001-02 DMO will spend \$2.5 billion on 245 capital equipment projects valued at \$47 billion. It will also spend \$2 billion on support and hold around \$3 billion of inventory. DMO has some 8200 people – 5500 civilians and 2700 military - in over 50 locations throughout Australia and overseas.<sup>4</sup>

7. Defence has reported that its materiel reform program combines its previous acquisition reform and logistics reform programs and encompasses a range of measures to:

- integrate the acquisition and support elements of DMO's businesses and locate them appropriately with customers;
- reform its processes based on commercial approaches and best practice;
- adopt a more strategic approach to its relationship with industry;
- improve its relationship with stakeholders and customers; and
- create a climate where people are valued and can do their best.<sup>5</sup>

8. The ANAO has not examined DMO's overall management framework or the implementation of its materiel reform program. However, recent ANAO reports that appear to be relevant to the Committee's inquiry are listed in Attachment 1 to this submission, together with JCPAA report references. The ANAO's and JCPAA's reports have made numerous recommendations aimed at enhancing project management. Defence maintains a database, known as the Audit Recommendations Management System, to enable the Defence Audit Committee to monitor progress in implementing such recommendations.

9. Two Defence projects that the ANAO and JCPAA have given particular attention to are the Jindalee Operational Radar Network (JORN) Project and the New Submarine (Collins) Project. Those projects were managed by DMO's predecessor, Defence Acquisition Organisation. Attachment 2 is an extract from the 1998 report of the latter project that sets out management issues the ANAO perceived as common to both projects. The ANAO considers that the experience gained on those projects provides lessons to be learned and to be applied for the benefit of future projects.

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<sup>3</sup> Section 44 of the *Financial Management and Accountability Act 1997*.

<sup>4</sup> *22 Months On – DMO Report Card* – Address to Defence Watch by the Under Secretary - Defence Materiel Organisation, Mr Mick Roche, Canberra, 4 April 2002.

<sup>5</sup> *Portfolio Budget Statements 2002-03 – Defence Portfolio* (May 2002) p98. That document also indicates the initiatives to be taken in the reform program.

10. The McIntosh/Prescott report on the Submarine Project<sup>6</sup> (1999) commented on the project and also made general recommendations on materiel acquisition projects. The recommendations are consistent with those made by the ANAO. An extract from the report is at Attachment 3.

## **ANAO's recent reports and proposed audits**

### **Recent reports**

11. Five recent ANAO reports would appear to be of particular relevance to the Committee's inquiry. The findings and conclusions are summarised below.

#### **Audit Report No.13 1999-2000 *Management of Major Equipment Acquisition Projects - Defence***

12. This 1999 report arose largely from the JCPAA's concerns about the JORN and New Submarine projects. Although the report pre-dates the establishment of DMO, Defence's acquisition reform program and creation of decentralised System Program Offices, it raises project management issues relevant to the Committee's inquiry. It concluded that overall management of acquisition projects has experienced systemic problems arising from a traditional top-down management of Defence's various functional groups ('stovepipes') without effective lateral communication and other processes by which capability outcomes can be managed better.

13. The report commented that Defence Groups often had a limited perspective on decisions that may affect other Defence Groups further along the capability management continuum. For example, tasks such as maintaining a balanced view of capital expenditure and recurrent costing were often hampered by inadequate life-cycle cost estimates. The report was reviewed by the JCPAA (*Report 378*), which recommended that the ANAO consider carrying out a follow-up audit. The ANAO intends to begin that audit in 2003.

#### **Audit Report No.45 1999-2000 *Commonwealth Foreign Exchange Risk Management Practices***

14. The report concluded that foreign exchange risk was not effectively and prudently managed by Defence and other agencies because they did not have systems to identify, analyse and assess the risk. Despite a requirement to assess foreign exchange risk and manage it, agencies relied on budget supplementation to meet the cost. Also, agencies' tendering and approval processes were deficient in the treatment of foreign exchange risk. This can adversely affect the achievement of intended outcomes.

15. In the project to acquire helicopters for the ANZAC Ships, Defence's approach to foreign exchange risk understated the likely cost of the acquisition, which gave decision-makers the mistaken impression that a contract could be signed within the approved budget. Had Defence chosen to manage contract exposures in a project to acquire Chinook helicopters, contract costs could have been maintained at \$56.0 million, a saving of \$15.2 million.

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<sup>6</sup> Sir Malcolm K. McIntosh and John B. Prescott AC, *Report to the Minister for Defence on the Collins Class Submarine and Related Matters*, Commonwealth of Australia, Canberra, 20 June 1999.

**Audit Report No.11 2000-2001 *Knowledge System Equipment Acquisition Projects in Defence***

**16.** Defence's military and administrative information systems, known as knowledge systems, combine to form the Defence Information Environment and assist Defence in gaining the 'knowledge edge.' Approved and planned projects that will have a substantial impact in this area have a total estimated value of \$8.5 billion.

**17.** Defence's total knowledge system consists of a vast 'system of systems'. Necessarily decentralised across all Defence outputs, it needs centralised management to preserve system integrity. Defence is endeavouring to ensure that its knowledge systems provide their maximum contribution to ADF capability, by maximising synergies and improving coherence and integration. Defence is aware of the need to exploit its knowledge systems and is working to achieve improvements.

**18.** However, knowledge edge development is a demanding area of defence capability development. Institutional, organisational and procedural difficulties in Defence need to be overcome if the above aims are to be achieved. There is much to be done to bring the systems under adequate managerial control. The most substantial risks to knowledge system projects may be those associated with development and retention of skilled individuals needed in all parts of the Defence Information Environment.

**Audit Report No.24 2001-2002 *Status Reporting of Major Defence Equipment Acquisition Projects***

**19.** This was an interim report, pending a full audit that was postponed last year at the request of DMO, which was concerned to be able to progress its reform agenda prior to the audit being conducted. The report commented that periodic and accurate reporting of project status is an important element of good project management. DMO project status reports do not always indicate whether major projects are meeting agreed timeliness, cost performance or quality criteria, or report against key performance indicators.

**20.** DMO proposes to test a new system for reporting project progress on cost and time performance. A sound project reporting system would assist in DMO's reform program and in managing risks in major projects. A recent Defence analysis indicated that the risk of failure of Defence's major capital equipment acquisition projects is very high, and will continue to be so for several years. The ANAO expects to conduct a full audit of status reporting in 2003.

**Audit Report No.30 2001-2002 *Test and Evaluation of Major Defence Equipment Acquisitions***

**21.** This recent report concluded that there was little evidence of effective corporate initiatives to implement Defence's test and evaluation (T&E) policy, which aims to promote a unified approach to T&E to guarantee effective and efficient use of all T&E resources and avoid unnecessary duplication of effort. The policy needs to be reviewed and to articulate how the 'unified approach' is to be implemented. Records relating to the acquisition of Navy major capital equipment indicate the need for DMO to improve aspects of its T&E policy and practice.



22. Some vessels and systems that DMO has offered to Navy for operational T&E have been accompanied by insufficient T&E data and with significant engineering modifications and defect rectifications still under way or planned. The report indicates that a major acquisition project continues after DMO transfers the new equipment to the client Service and ceases only when the Service has tested and accepted the equipment.

23. Attachments 4 to 8 to this submission set out the Summary (Background, Conclusion and Key Findings) of the five reports mentioned above. Printed copies of the full reports can be provided to the Committee.

### **Proposed audits**

24. The ANAO's proposed annual performance audit work programs are reviewed by the JCPAA, which has statutory power to determine the audit priorities of the Parliament. The annual audit work program in Defence continues to give attention to aspects of Defence's management of major capital projects, in view of the substantial amounts of public funds involved and the risks inherent in such projects. The JCPAA has indicated that this approach is satisfactory.

25. An audit of Defence management of explosive ordnance safety and suitability for service (conducted in DMO) is expected to be reported in November 2002. Performance audits in the area of the Committee's inquiry are scheduled to begin soon, but would not be completed until 2003. These concern Defence and industry involvement; and management of the \$2 billion 'Wedgetail' Airborne Early Warning and Control Project.

26. As indicated above, the ANAO intends to conduct a follow-up audit of the 1999 report on management of major projects and an audit of the status of major projects. Those two audits have been postponed to 2003, when DMO's reform program is further advanced and the outcome of the Committee's inquiry is known. An audit of DMO's Company ScoreCards system for assessing contractor performance would also begin in 2003.

### **Materiel acquisition and management framework**

27. As indicated earlier, an effective materiel acquisition and management framework is one that produces successful project outcomes. The appropriate framework to achieve this is for Defence to determine, subject to any decision or guidance by Government on the matter. It is not for the ANAO to opine on the most appropriate framework, although the 1999 report on management of major projects commented on the framework in place at the time – see Attachment 4 to this submission.

28. The ANAO considers that the framework must take account of the requirements of sound corporate governance. Corporate governance is the integrated framework of overall agency management of its objectives, strategies and performance including its relationship with its various stakeholders. The ANAO's guide on corporate governance<sup>7</sup> outlines key concepts that underpin public sector corporate governance. The following paragraphs summarise these concepts.

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<sup>7</sup> See ANAO *Applying Principles and Practice of Corporate Governance in Budget Funded Agencies* 1997.

**29.** Effective public sector governance requires leadership from the executive management of agencies and a strong commitment to quality control throughout the agency. Corporate governance is concerned with structures and processes for decision-making, with the controls and behaviour within organizations that support effective accountability for performance outcomes.

**30.** Corporate governance frameworks include the formation of strategy by assessing the external environment and possible future events, and translation of strategy into policies to guide the agency's senior executives. They also include leadership structures that monitor and supervise the activities and performance of the organisation. These structures require:

- internal accountability structures that provide assurance to the chief executive on internal control and management of the organisation, the planning and review of its operations and progress, and ensure consultation and constructive feedback on all its activities;
- financial management structures within agencies that provide assurance to the chief executive that Commonwealth resources are being managed efficiently, effectively and ethically. They include regular monitoring and reporting of progress against budgets and planned milestones;
- resource management structures that provide assurance to the chief executive that human resources, facilities, equipment and records are managed effectively, efficiently and ethically. They identify who is responsible, and for what areas, and provide assurance to the chief executive that responsibilities have been delegated in a systematic manner with clear accountability for results; and
- external accountability and reporting structures that provide, to those with legitimate claims to accountability, information about performance, decision and actions, and correcting the agency's deficiencies and improving its performance. This requires reporting structures that make agency performance visible. An agency which has a clear understanding of its responsibilities and an open approach to the way in which they are discharged will assist the chief executive, the Minister and the Government in framing and winning support for these strategies. It will also increase general confidence in the operation of the public sector.

### **Factors in successful project outcomes**

**31.** As with the overall management framework, it is for Defence to decide the appropriate form of individual project management; the structure and location of individual project offices; and the form of contract. The numerous forms of contract available include fixed price, cost-plus or incentive contracts; performance-based or specification-based contracts; development and production by one main contract or by staged contracts from prototype to full production. We recognise that DMO's numerous major projects can each be regarded as unique and that the particular contractual approach to be taken must be decided case by case, with risks allocated to the party better placed to manage them.

32. From our experience with audits of major projects, however, we would summarise factors relevant to successful project outcomes as follows.

- Given that each project is unique, with its own construction method and contract form, it is important that projects are managed under a standardised method, preferably one recognised internationally such as the Standard Project Management Method, which was to be introduced in DMO.<sup>8</sup> This should be accompanied by a standardised process for internal reporting that gives Defence's senior management a clear view of project progress and early warning of any need to take remedial action.
- External reporting is important, too. Frank disclosure of project progress in Defence's annual reports would enhance accountability and help to promote good project management. Annual report summaries of a major project should enable the Parliament to follow progress on that project from one year to the next and to make an informed assessment of project management.
- Equipment to be produced from other than an established design may need prior development as a prototype model before full production, in order to learn from prototype testing and to avoid producing units that may need costly and time-consuming correction or modification later. A research and development contract may need to precede a production contract.
- Much of Defence project management is essentially contract management. Experienced commercial legal advisers are needed at the critical stages of tender preparation, contract negotiation and contract preparation. Such advisers should be available during contract management. The client Service should also participate at those stages.
- Contracts should have adequate provision to encourage performance and to deal with any under-performance. This could be by provision for prompt payment on achieving costly milestones; provision for incentive payments or credits; or liquidated damages payable in the event of non-performance. Liquidated damages (a pre-agreed estimate of the financial costs to the principal in the event of delayed delivery by the contractor) are unlikely to recognise fully that the costs to the Commonwealth of delayed delivery of military equipment are in the form of lost military capability. Accordingly, Defence contracts need to be clear that progress payments will be paid only on contract performance.
- Although each project is unique, project management can benefit from the experience gained on similar projects. Project managers should disseminate lessons to be learned from their projects and, in turn, be alert to lessons from other projects. Future project managers would benefit from having access to a database of lessons to be learned from previous experience on projects.<sup>9</sup> Similarly, a database in DMO of recommendations made by Defence's internal auditors (Management Audit Branch), the ANAO and parliamentary committees

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<sup>8</sup> See Audit Report No.13 1999-2000 *Management of Major Equipment Acquisition Projects – Department of Defence* paragraph 7.2.

<sup>9</sup> For example, a project to acquire and modify second-hand equipment raises issues additional to those involved in acquiring new equipment. See Recommendations and Lessons to be Learned in Audit Report No.8 2000-2001 *Amphibious Transport Ship Project* pp 17 and 18.

on project management issues would help make sure that the recommendations are implemented.

- New equipment, once it enters service, must be supported and maintained throughout its service life. Through-life support costs tend to exceed the original acquisition cost, and should be estimated and budgeted in conjunction with acquisition cost. Arrangements for through-life support need to be considered early in a project. Equipment tenderers' assertions relating to reliability, operating costs and life-cycle support costs could be translated into contractual arrangements, with incentives for reliability and lower costs and recourse in the event of unserviceability and higher costs.<sup>10</sup>
- Contract milestones should be expressed in terms of substantive progress and paid only on evidence of achieved performance or earned value. Without such evidence, the project manager should withhold relevant progress payments until the terms of the contract have been met. The contractor's system for assessing progress on the project needs to be validated by Defence at the outset of the contract and validated periodically to ensure that Defence can rely on it.
- Project managers should act decisively when problems arise. Experience shows that it is unsafe to postpone such action in the expectation that a fixed price contract will require the contractor to meet requirements after all payments have been made. Delayed action involves risks in delayed military capability and risks that the contractor will have inadequate resources to complete the contract.
- Senior management should be alert, at key review points, to the need to decide whether a project experiencing significant cost increases, delays or other problems should proceed, be modified or be cancelled. Similarly, care needs to be taken that any changes to capability requirements or specifications that emerge after contract signature do not significantly add to cost or delay delivery.
- Defence should avoid pressure on project managers to achieve budget spending estimates. Contract payments to achieve budget estimates are not in the Commonwealth's contractual or budgetary interests. Such payments send the wrong signals to industry and are unlikely to assist in meeting the Government's objective regarding defence industry – see below.
- Project management should proceed on the basis of a systematic risk analysis, since complex technology projects are inherently risky. Problems can be expected to arise, but management should aim to be in a position to foresee risks and forestall them.
- Defence's project managers (in effect, contract managers) should have appropriate training and experience in project management, knowledge of contract law and a close familiarity with their project requirements as expressed in the contract. Managers need to be alert to project developments.
- The acquisition area of Defence must keep the client Service informed of progress and involved in major decisions, since the Service is to be responsible for operating the equipment and for its safety and suitability for service. Documentation of equipment test and evaluation during the acquisition phase

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<sup>10</sup> See Audit Report No.43 1997-98 *Life-cycle Costing in the Department of Defence*.

needs to be adequate for the Service to conduct its final testing for acceptance into service.

- Project management costs should be collated for benchmarking with industry work of a similar kind and to demonstrate that the services represent good value. The ANAO's 1999 report indicated that project management costs were above industry standards at the time.<sup>11</sup>

**33.** Successful project outcomes depend largely on contract management and relationship management. The following general comment, from our report on the New Submarine Project, remains relevant today:

47. As Appendix 1<sup>12</sup> illustrates, there are close parallels between Defence's management of the New Submarine Project and the JORN Project, which the ANAO audited in 1996. Both projects are complex and high risk, incorporating expensive design and employing construction ventures using leading technologies. Both audits identify areas for improvement in project risk management as well as business management. The ANAO considers that the main messages from the two audit reports would be to encourage Defence to give high priority to improving the effectiveness of its contracts for major capital acquisitions and its project management capabilities.

48. The ANAO acknowledges the inherent complexities in managing such large projects but nevertheless considers that a more business-like and commercial approach by the department to project management would better protect the Commonwealth's financial and other interests. It is essential that the inevitable risks in projects of this nature be managed sensibly in the interests of all parties. This should be done in a strongly-disciplined and systematic fashion throughout the project which inevitably means having to take the difficult decisions that could lead to short-term criticism of the management of the project but would help ensure a cost effective outcome. Project management has to reflect the integration of risk, control and quality outcomes. This demands mutual understanding and commitment of all parties to ensure successful integration and is best achieved through a real sense of partnership based on goodwill by each party in a positive endeavour to help achieve their respective objectives.<sup>13</sup>

## **Defence industry**

**34.** Management of major projects is relevant to the Government's objective concerning the defence industry. The Defence White Paper comments as follows:

### **Industry**

Industry is a vital component of defence capability. A combination of government policy and market pressures has brought significant improvement in the capability of Australian defence industry. In many areas, it is now highly cost-competitive. Major projects, when well managed, can introduce new technologies and skills into Australian industry. The Government's objective is to have a sustainable and competitive defence industry base, with efficient, innovative and durable industries, able to support a technologically advanced ADF. ...

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<sup>11</sup> Audit Report No.13 1999-2000 *Management of Major Equipment Acquisition Projects - Department of Defence* p84.

<sup>12</sup> See Attachment 2 to this submission.

<sup>13</sup> Audit Report No.34 1997-98 *New Submarine Project* p xxiii.

Australian defence industry needs to be competitive on an international basis. ... The Government is committed to strengthening the defence industry base, without encouraging inefficiency or dependence.<sup>14</sup>

35. To assist in achieving the Government's objective, Defence management of major capital projects involving Australian industry need to be managed in a way that promotes efficient use of resources by Defence and within the terms of the contract. Payment of progress claims only on evidence of achieved progress helps promote industry efficiency. As mentioned above, an ANAO audit of Defence and industry involvement is scheduled to begin in the near future.<sup>15</sup>

### **Access to records**

36. The ANAO considers that Commonwealth contracts should provide the Commonwealth agency with sufficient access to records, information and assets directly relevant to contract performance. This should allow an adequate level of control and performance monitoring of contractual arrangements. Agencies should determine, as part of tender specifications, the level and nature of information to be supplied under the contract and the level of access to contractor records, information and assets they may require to monitor contract performance.

37. The ANAO also may require access to records, information and assets directly related to contract performance. The ANAO considers its own access would generally be equivalent to that which would reasonably be specified by the contracting agency in order to fulfil its own performance management and administration responsibilities. The ANAO has formulated standard access provisions for inclusion in contracts.

38. The Commonwealth Procurement Guidelines provide that, as part of their accountability responsibilities, agencies must consider, on a case-by-case basis, including a provision to enable ANAO access to contractors' records and premises to carry out appropriate audits.<sup>16</sup> Model access clauses have been developed for agencies to tailor and, where appropriate, incorporate into relevant contracts. Model access clauses are among the resources available under the Guidelines.

### **Disclosure of contract terms and conditions**

39. Contract terms and conditions regarding delivery dates, payment milestones, insurance, indemnities, quality assurance, warranties, liquidated damages, recourse for under-performance and other provisions to protect Commonwealth interests are of interest to the Parliament in its role of reviewing Executive Government.

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<sup>14</sup> Defence White Paper *Defence 2000 – Our Future Defence Force* (December 2000) pp xv, 101 and 102.

<sup>15</sup> Chapter 10 of Audit Report No.34 1997-98 *New Submarine Project* discussed achievement of Australian industry involvement objectives for the project.

<sup>16</sup> *Commonwealth Procurement Guidelines and Best Practice Guidance - 2001* issued by the Minister for Finance and Administration, October 2001, section 1.2. Officials must have regard to the Guidelines when procuring property or services.

**40.** The ANAO suggested to Defence, in 1999, that it would be in the public interest to disclose terms and conditions in major Defence acquisition contracts,<sup>17</sup> when signed, and that this would encourage improved management of the contract and monitoring of contractor progress, which in turn would enhance the prospects of achieving successful outcomes from the particular acquisition project. It would also prompt improved negotiation of contracts from the Commonwealth's viewpoint and better protection of Commonwealth's interests.

**41.** Defence considered, however, that disclosure would be contrary to the Commonwealth's interests because any concessions agreed for a particular contract would be revealed to industry, which would seek to adopt such modified terms and conditions as baseline negotiations points on later acquisition projects. Defence would prefer to continue to disclose only its preferred standard contract terms and conditions.

**42.** The ANAO accepted that disclosure of actual contract details raises issues beyond the Defence portfolio and which would need to be dealt with in the broader context of accountability by the Government and the Parliament.<sup>18</sup>

**43.** More recently, the ANAO reported, in response to a Senate motion, on the use of confidentiality provisions in Commonwealth contracts.<sup>19</sup> The report supported the principle that Government accountability obligations are such that contractual material should be protected as confidential only if there are sound reasons to do so. In recognising that there was an absence of comprehensive material to assist agencies in determining whether contractual provisions should be treated as confidential, the ANAO developed criteria to assist in such decisions. The criteria included that:

- the information to be protected must be identifiable in specific rather than global terms;
- the information must have the necessary quality of confidentiality; and
- detriment to the confider of the information is generally necessary.

**44.** The report also categorised information that the courts have held to be confidential (for example, trade secrets and information having a commercial value that would be diminished or destroyed if disclosed). In addition, the report provided guidance on a possible new framework for dealing with the issues of confidentiality in contracts and disclosure to parliamentary committees. It also emphasised that the fact that information is confidential does not, by itself, provide grounds for refusing disclosure to parliamentary committees.

**45.** A subsequent ANAO report noted that the Senate Finance and Public Administration Committee had endorsed the application, and immediate use, of the criteria developed by the ANAO for agencies to assess private sector claims and to determine what is genuinely confidential in advance of signing a contract.<sup>20</sup>

**46.** The Commonwealth Procurement Guidelines (October 2001), advise that agencies should:

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<sup>17</sup> Particular contract specifications could be withheld if public disclosure would prejudice commercial or national interests ('public interest immunity').

<sup>18</sup> Audit Report No.13 1999-2000 *Management of Major Equipment Acquisition Projects – Department of Defence* p110.

<sup>19</sup> Audit Report No.38 2000-2001 *The Use of Confidentiality Provisions in Commonwealth Contracts*.

<sup>20</sup> Audit Report No.33 2001-2002 *Senate Order of 20 June 2001 (February 2002)*.

- include provisions in tender documentation and contracts that alert prospective tenderers to the public accountability requirements of the Commonwealth, including disclosure to Parliament and its Committees; and
- consider, on a case-by-case basis, what might be commercial-in-confidence when designing any contract.<sup>21</sup>

47. The approach indicated in the Guidelines was confirmed in the Government's recent response to a JCPAA report on contract management in the Australian Public Service.<sup>22</sup>

ANAO  
May 2002

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<sup>21</sup> *Commonwealth Procurement Guidelines and Best Practice Guidance - 2001* issued by the Minister for Finance and Administration, October 2001, section 1.2.

<sup>22</sup> See response to Recommendation 2 in *379<sup>th</sup> Report of Joint Committee of Public Accounts and Audit: Contract Management in the Australian Public Service – Whole of Government Response to Recommendations 1-5*, Senate Hansard 14 May 2002, P1369–P1371.



**ANAO reports relevant to Defence materiel acquisition and management  
(with JCPAA report reference)**

Audit Report No.28 1995-96  
*Jindalee Operational Radar Network Project (JORN Project)*  
(Reviewed in JCPAA Report 357 March 1998)

Audit Report No.34 1997-98  
*New Submarine Project*  
(Reviewed in JCPAA Report 368 June 1999)

Audit Report No.43 1997-98  
*Life-cycle Costing in Defence*  
(Reviewed in JCPAA Report 370 November 1999)

Audit Report No.13 1999-2000  
*Management of Major Equipment Acquisition Projects - Defence*  
(Reviewed in JCPAA Report 378 October 2000)

Audit Report No.45 1999-2000  
*Commonwealth Foreign Exchange Risk Management Practices*

Audit Report No.8 2000-2001  
*Amphibious Transport Ship Project*  
(Reviewed in JCPAA Report 383 June 2001)

Audit Report No.11 2000-2001  
*Knowledge System Equipment Acquisition Projects in Defence*  
(Reviewed in JCPAA Report 383 June 2001)

Audit Report No.24 2001-2002  
*Status Reporting of Major Defence Equipment Acquisition Projects*

Audit Report No.30 2001-2002  
*Test and Evaluation of Major Defence Equipment Acquisitions*

**Extract from Appendix 1 of Audit Report No.34 1997-98  
New Submarine Project**

**JORN Project and New Submarine Project**

18. The \$1 billion JORN<sup>23</sup> Project and the \$5 billion New Submarine Project are different kinds of project. JORN involves construction of a radar network that cannot be assessed as successful until project completion in 2001 or later.<sup>24</sup> New Submarines involves construction of six submarines that can be assessed individually during successive inspections, tests and trials. In many areas, Australian Submarine Corporation (ASC) and its subcontractors have produced a world-class product, but much needs to be done to resolve lingering deficiencies. Both projects involve development and integration of software-intensive systems, in which key elements have not been managed well. The ANAO identified several common weaknesses in Defence's business management of the projects. These can be summarised as follows:

- The project offices lacked a sense of the time-cost of money by allowing payments in key areas of the projects to exceed actual value earned. They were reluctant to determine the true state of progress on the project, and came to regard the amount of money paid to the contractor as the value of the work completed. They were not firm in quizzing contractors on progress measurements and failed to pursue deficiencies in quality of product deliveries or to insist that contractors meet their contract deliverables. (In some areas the contracts were weak from the Commonwealth's viewpoint in terms of progress measurement and providing recourse for under-performance.) The real extent of progress within the advanced technology areas of the projects seemed not to be fully appreciated by Defence until detailed progress reviews were conducted by the contractors themselves.
- The project offices, knowing that the contractors were inexperienced (Telstra had no experience in over-the-horizon radar and ASC was a newly-formed company), were not active enough in trying to minimise risks on these inherently risky developmental projects. The Commonwealth would have benefited had project office management been experienced in all core competencies of business management and the particular engineering field of the project.
- The project offices appeared over-confident that Defence was protected by a fixed-price contract. Even with payments to the contractors running ahead of effective progress on the projects, the project offices remained unconcerned on the grounds that the contractors would be required to deliver the final product for no more than the total contract price. There was little appreciation of the extent of development work still to be done on these complex software-intensive projects, and this remains a high-risk area requiring firm and expert management in both projects.

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<sup>23</sup> Jindalee Operational Radar Network.

<sup>24</sup> Audit Report No.28 1995-96 *Jindalee Operational Radar Network Project* (JORN Project).

- Located mainly in Canberra, the project offices had limited day-to-day knowledge of actual project progress in Melbourne or Adelaide. This affected their ability to monitor and control early departures from the agreed development and quality standards. This adversely affected the value added by the project offices. Even with a large staff (JORN had 45 staff and New Submarines had 113) the project offices lost sight of significant issues which remain unresolved as they engaged in churning of issues in meetings, reports and correspondence with the contractor and others in Defence. The same output of work could have been achieved with fewer staff, had the project offices been better located and more decisive and focused in dealing with the contractor.
- Senior management in Defence lacked a clear view of actual progress on major projects and risks that were emerging on them. Since Defence spends some \$2.2 billion a year on 200 major capital equipment projects with an approved value of \$35 billion, senior management monitoring of such projects is a major corporate governance issue. Project managers should be required to provide regular reports in a prescribed format that set out clearly the salient issues for senior management. These would include data on scheduled and actual progress and scheduled and actual expenditure to date, expected and achieved milestones, emerging or expected risks and summaries of quality assurance and other expert reports. Senior management needs such information not only to monitor project progress but also to check that project offices add value commensurate with project office cost. On New Submarines and JORN the prime contractors and Defence project managers were unduly optimistic about progress and completion, but this optimism was eventually moderated by critical internal reviews by the contractors themselves.
- The project offices were under pressure from senior management in Defence to keep spending the Defence Budget appropriation. This was reported in the 1996 JORN audit report (p30). There were indications that this had occurred on the New Submarine Project. Defence Efficiency Review papers in 1997 indicated that there was still pressure on managers elsewhere in Defence to spend their annual appropriation. This issue must be resolved; payments should be made only on reliable and objective evidence of real progress. Payments limited to actual progress are a tangible way of clearly indicating dissatisfaction with any under-performance and prompting action to achieve full performance. While recourse to such action may be seen as a potential breakdown in contractual relations and only used as necessary, it is nevertheless one of the few effective ways by which a purchaser can achieve required outcomes.
- The *Defence Annual Report 1994-95* tabled in the Parliament, in commenting on JORN, said inter alia that design activity was nearing completion and that confidence that the specifications would be met was high. The *Defence Portfolio Budget Statements 1996-97* tabled in the Parliament, in commenting on New Submarines, said inter alia that 'Submarine 01 [*Collins*] had completed contractor's sea trials ... To date, the performance of the submarine has met or exceeded the specified requirements'. The ANAO queried the basis for these comments and believes that Defence needs to give more attention to public accountability for expenditure of public funds. This issue also compromises Defence's ability to properly manage its risks through appropriate public disclosure of contractor performance.

### **Extract from McIntosh/Prescott Report on Collins-class Submarines**

The McIntosh/Prescott report on the Submarine Project,<sup>25</sup> made the following general comments that appear relevant to the Senate Committee's inquiry:

Inadequate reporting of these issues ['key deficiencies' in the Submarine Project] and their significance within Defence and to the Government, and lack of sufficient action to deal with them in a timely manner, partly caused by the structure of the original contracts, too great an adherence to some of the philosophies on which these were based even when circumstances have changed and the way in which the principal contractor and sub-contractors have been progressively released from their obligations (in Boeing's case) or not adequately held to the relevant performance standards (ASC and Boeing). ...

The main issue is to improve the managerial and contractual structures so that the deficiencies are recognised and addressed much more quickly and robustly.

The report made recommendations relating specifically to the Submarine Project, and the following general recommendations on Defence procurement:

- Opportunities be found for Defence officers pursuing procurement careers to spend time in large commercial procurement projects and friendly, foreign procurement organisations.
- Coordinating committees be established for all major procurements under the relevant Service head to ensure that all aspects of the procurement, manning, support and operations are properly considered and integrated for a smooth transition into service.
- A study be made of procurement strategies for software-intensive projects, whether stand-alone or embedded in large hardware projects.
- In future major projects, there should be more attention to the Commonwealth's own role and some new approaches in contractual arrangements to achieve better assessments of costs including more realism and transparency in provisionally costed items and contingency; processes to ensure the Commonwealth is a smart buyer; other improved risk management processes; clear requirements for performance, supported by a full range of advance tests; clear milestones; and a different approach to mid-contract reviews. (report pp 31-33)

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<sup>25</sup> Sir Malcolm K. McIntosh and John B. Prescott AC, *Report to the Minister for Defence on the Collins Class Submarine and Related Matters*, Commonwealth of Australia, Canberra, 20 June 1999.

**Audit Report No.13 1999-2000**  
**Management of Major Equipment Acquisition Projects**  
**Department of Defence**

### **Summary**

1. The Defence organisation comprises the Department of Defence and the Australian Defence Force (ADF), which in turn consists of the three Services (Navy, Army and Air Force). Major Defence equipment acquisitions result from proposals approved by the Government regarding the military capability that Defence needs to achieve its mission: *to prevent or defeat the use of armed force against our country or its interests*. Defence's prime business during peacetime is developing and maintaining capability. The large amounts spent by Defence on acquiring weapons and the risks inherent in the acquisition process require well-developed acquisition management principles applied by suitably skilled and experienced personnel.

2. Total Defence expenditure in 1997–98 amounted to \$10.9 billion, of which \$2.4 billion was spent on major equipment acquisition projects. Defence currently manages over 200 major acquisition projects with a total estimated cost of some \$43 billion of which \$26 billion will have been spent to June 1999. Of the balance of \$17 billion, Defence plans to spend \$2.8 billion in 1999–2000.

3. The Defence acquisitions process involves several of Defence's 12 functional Groups. Seven of these, including the Defence Acquisition Organisation (DAO) and Support Command Australia (SCA), are Enabling Groups that provide products and services to Defence's 22 identified 'Outputs'. Australian Defence Headquarters (ADHQ) develops new capability proposals such as new weapon systems and platforms for Government approval. Once the proposals are approved, DAO manages the acquisition of the new capabilities. When acquired, the new capabilities are operated by the three Services during trials and evaluations and after their acceptance into service. SCA provides logistics policy and in-service logistics support for all new and existing weapon systems and equipment platforms.

4. The efficiency and effectiveness of Defence capital equipment acquisition depend upon sound requirement definitions and sound costings and timetables, as well as skilful management of the acquisition projects. Defence has some 1770 personnel and over 350 contracted-in professional service providers managing capital equipment acquisition projects. The projects range in size from the \$6.1 billion ANZAC Ship project to the \$21 million army specialised surveillance vehicle project. They vary greatly in complexity: from the technologically advanced \$1 billion JORN project to basic commercially-available off-the-shelf equipment.

### **Outcomes and outputs framework**

5. The complexity of modern public-sector management requires an overarching management framework that enables managers to focus on the issues which contribute most to organisational success. The audit adopted the resource management perspective provided by the Government's new accrual-based outcomes and outputs budgeting framework. This management framework will seek to reinforce a more business-like management of Commonwealth resources by funding agencies on the basis of agreed prices for outputs. The term 'outputs', as used in this audit, generally refers to the weapon systems and platforms acquired for and maintained by the ADF.

6. Defence is developing a capability management framework, which seeks to achieve ‘seamless management’ of its capabilities from their initial concepts through acquisition and deployment to their disposal at the end of their useful life. Of Defence’s 22 outputs, 16 involve force element groups that depend on major acquisitions of weapons and other military equipment.

### **Audit objective and scope**

7. The audit arose largely from concerns expressed by the Parliamentary Joint Committee of Public Accounts and Audit (JCPAA) during its reviews of the audit reports on the \$1 billion JORN project and the \$5 billion New Submarine Project. Those audit reports had commented on the need for Defence to improve its risk management of the projects, take firm and prompt action with the contractors to resolve contractor performance and quality issues and to pay only for achieved progress. The audit objective was to assess Defence’s arrangements for higher-level management of major equipment acquisition projects. The principal aim was to formulate practical recommendations that would both enhance Defence’s management of major acquisition projects and provide a degree of assurance about its ongoing apparent capacity to do so efficiently and effectively.

8. The audit scope adopted a wide perspective of Defence’s management of acquisition projects. The audit scope embraced aspects of Defence’s corporate governance framework, outputs/outcomes budgeting and financial management, performance monitoring and reporting, business process improvement and personnel management. The audit drew on a range of ANAO audits and other reviews in order to focus on performance management trends that have emerged in Defence over the last decade.

### **Overall conclusion**

9. Management of acquisition projects in Defence is a complex task that relies on sound planning, programming, budgeting and implementation activities within at least four functional groups—ADHQ, DAO, the relevant Service and SCA. The size and nature of the acquisition activity have no comparison in the Southern Hemisphere. As such, to maintain an effective acquisition activity, Defence in effect seeks to be a leader in the development of its acquisition management activities.

10. Overall management of acquisition projects has, however, experienced systemic problems arising from a traditional top-down management of Defence’s various functional groups without effective lateral communication and other processes by which capability outcomes can be managed better. Defence groups have often had a limited perspective on decisions that may affect other Defence groups further along the capability management continuum. For example, tasks such as maintaining a balanced view of capital expenditure and recurrent costing are often hampered by inadequate life-cycle cost estimates. As well, views about the practicability and/or clarity of acquisition objectives are not always shared by those concerned. Consequently, Defence and the ANAO see scope for improving Defence’s arrangements for higher-level management of major acquisition projects and the efficiency and effectiveness of the acquisition function.

11. Defence has relied on committees to try to achieve suitable coherence and integration between the functional groups that contribute to capability management. However, given the increased numbers of functional groups (now 12) and the increasing complexity of capability management tasks, reliance on committees needs

to be balanced against the advantages that could accrue from strong lateral management processes underpinned by modern business management practice, including a supportive information infrastructure.

**12.** Management information systems and performance monitoring systems that view capability management as a continuum across several functional groups have not yet been sufficiently developed to support sound decision-making. Consequently, Defence has still to implement key performance indicators and benchmarks covering all aspects of capability management. Defence is seeking to improve its capability management processes so that it may better manage capability planning, programming and budgeting, acquisitions and in-service support. However, given the absence of appropriate output management systems and agreed key performance indicators, any objective measurement of process improvements over time may be some years off.

**13.** Despite the large investment in capital equipment acquisitions over recent decades, Defence has not yet established the career structures it requires to be reasonably self-reliant in developing suitably experienced professional project managers who know and understand the Defence environment including capability outcomes. DAO remains reliant to a large extent on ADF officers posted-in from the Services as project managers and on increasing numbers of contracted-in professional service providers.

**14.** The Defence Executive's initiative of 'seamless management' of Defence capability combined with the Government's accrual-based budgeting outcomes and outputs framework should, if properly implemented, enhance the focus on performance and accountability by providing a more effective basis for stronger project management of major acquisitions. However, much will still depend upon Defence's capacity to further develop and maintain a corps of skilled, knowledgeable and experienced acquisition professionals within DAO and in other parts of the Defence capability management continuum.

**15.** The effective management of major acquisition projects is a business critical function for the department and warrants the ongoing involvement of the Defence Executive to progress, and build on, the initiatives for improvement currently under way.

**16.** This audit report makes six recommendations that aim to reinforce changes now under way in Defence. The recommendations propose that Defence:

- reconsider the benefits of allocating budgets for Defence's capability outputs to the relevant Output Managers, who, in turn, would fund the functional Groups through purchaser-provider agreements, when internal financial and costing systems permit such an approach;
- seek approval for cost-effective annual budget carryovers to support project managers in adopting a more commercial approach and paying contractors for achieved value for money, thereby reducing any incentive for managers to expend funds for the purpose of utilizing annual budget allocations;
- provide for project managers to produce regular reports in a format that gives an objective overview of progress on major acquisition projects for review by senior managers; provide Output Managers with authority, in accordance with agreed protocols, to intervene in project management when appropriate and to implement contingency measures in response to adverse variations from approved schedule, cost

or quality; and provide exception reports to senior executives to allow consideration of contingency plans where progress has not proceeded according to requirements;

- reinforce and support initiatives to develop a standard project management method across all functional Groups involved in major equipment acquisition;
- align equipment acquisition project team focus with customer needs by making Project Boards accountable to the Output Manager responsible for delivering the output; and
- maintain an up-to-date DAO personnel workforce plan, in consultation with Output Managers, that integrates better current workforce initiatives and manages workforce demographics to increase the availability of experienced project managers.

### **Key findings**

17. The Defence Executive aims *‘to meld together all of the elements that go into building an effective defence force: people, equipment, training, acquisition, doctrine, logistic, disposition, facilities and so on.’* This ‘seamless management’ of whole-of-life capability will require new processes and systems that assign clear responsibility to Output Managers for delivering effective capability. The ‘seamless management’ concept should, if properly implemented, significantly improve the management of acquisition projects through better planning, programming and budgeting, as well as ensuring greater coherence and integration between all the Defence groups that contribute to Defence capabilities as a means of improving Defence’s effectiveness.

18. Until recently, Defence’s capability planning and programming process did not look at the whole of capability (that is, support requirements, personnel and training needs and recurrent costs). Consequently, not all personnel and operating costs associated with new capability were factored into the Defence budget, and Defence allowed the three Services to bid for supplementary funds under the Net Personnel and Operating Cost (NPOC) process. Since 1995–96 NPOC bids have risen at about \$75 million per year, representing some three per cent of the average annual capital equipment investment over the last decade. Total NPOC is expected to be comparable to the total Defence Reform Program (DRP) savings by the end of the next decade.

19. It is likely that NPOC will continue to rise with the costs associated with maintaining, enhancing or replacing aging high-cost weapon platforms such as Navy’s DDG destroyers and FFG frigates and Air Force’s F-111 and F/A-18 aircraft.

### **Corporate governance**

20. Defence capability relies on planning, programming, budgeting and implementation activities within at least four functional groups—ADHQ, DAO, the relevant Service and SCA. The Defence Executive has a critical role in coordinating and overseeing this capability management continuum. In addition, the Executive has to ensure that integration across Defence’s functional groups does occur and that no functional group puts its own more immediate interests before the long-term interests of the capability management continuum as a whole.

21. Defence’s traditional focus on its functional groups required extensive use of committees to try to integrate the various capability management processes. This led to a general lack of clearly defined lines of authority, responsibility and accountability across the functional groups. The Defence Efficiency Review Secretariat found this approach often resulted in flawed decisions, unnecessary delay, an undue focus on process, and an over-emphasis on achieving consensus.



22. Within the corporate governance framework the Defence audit committee will make a greater contribution to Defence's corporate governance when it begins the practice of reviewing audit reports, advising the chief executive on matters of concern raised in them and perhaps even indicating appropriate remedial action.

### **Capability management**

23. Defence's capability management framework issues underscore the importance of the Defence Executive's 'seamless management' concept, which has significance for Defence's major equipment acquisitions. Defence did not effectively implement program management and budgeting in the 1990s and, as a consequence, its programs and information systems were not structured in relation to the Force Element Groups; that is, the users of major military equipment. Prompted by the Government's initiatives in Commonwealth agencies, Defence has a new external focus on outputs and their relationship to identified outcomes but the advantages to flow from this may not be realised without a stronger focus on their management.

24. Defence is implementing 'seamless management' of whole-of-life capability via a number of business process initiatives that apply across its 12 functional Groups. These should effectively link ADHQ, DAO and SCA with the three Services and focus on increased efficiency, effectiveness, transparency and necessary consultation, particularly in relation to major equipment acquisitions. However, much remains to be done to improve the analytical processes involved in capability planning, programming and budgeting. Defence identified these as issues of importance nearly 30 years ago, and they now form part of the new outputs/outcomes budgetary arrangements.

### **Output budgeting**

25. Defence's 12 functional groups are the primary basis for internal budget allocations and management in seeking to produce defence capability, the key deliverable to government. Rather than placing the budgets with the Output Managers responsible for military capabilities, Defence has allocated budgets for management by the Group Budget holders.

26. In line with Output Managers' responsibility and accountability for delivering effective capability, and in accord with the Defence Executive's 'seamless management' initiative, budgets could be allocated to the relevant Output Managers so that they could 'purchase' the services they need from the functional groups through purchaser-provider agreements. This should encourage a more disciplined approach to achieving value for money both in terms of acquisitions and Defence outputs. Although Defence has reservations about changing to a purchaser-provider model, the costs and benefits of such a change should be reconsidered in the longer term when internal systems permit such an approach. This model encourages greater accountability, efficiency and effectiveness through a virtual contractual arrangement which imposes greater management discipline in a more contestable environment.

### **Financial management**

27. Defence's financial management information system has to provide a range of data and functions suitable for outputs management. Defence's \$44 million Project ROMAN is to replace the present inadequate systems for the outputs management task. Defence recognised the need for an effective system as early as 1992. The ANAO considers that the new system should contain a project management system with the functionality and performance information required to enable Output

Managers to manage the tasks for which they are responsible and accountable. This requires the system to contain all the data necessary to manage costs and required timing and quality, codified in key performance indicator form, on which a project will be reported and evaluated before acceptance into service.

**28.** Defence has not yet developed the systems required to measure systematically the actual cost of its outputs and their relationship to outcomes, nor has it implemented policies and procedures which allow full attribution of inter-group costs. This leads to difficulties in identifying fully the financial and other resources used to perform activities and achieve specific outputs. This is inadequate for the outcomes and outputs framework, which requires fully-developed, cost-conscious management techniques that seek to improve the cost efficiency and effectiveness of agreed outcomes and outputs.

**29.** This and past audits indicate that Defence's cash-based accounting emphasised the achievement of each year's budgeted expenditure estimates. This presents capital equipment budgeting problems at times when earned value on projects has not been achieved because of progress delays. It follows that Defence requires flexible funds carryover arrangements under both external and internal budgeting arrangements to enable cost-effective re-programming of its capital equipment budget program. This would allow project managers to properly link progress payments to commensurate earned value. Given the changes to department funding and decentralised banking introduced under the Government's financial management reforms, it would be timely for Defence to review current practices to encourage a more commercial focus on contract management and outcomes.

### **Acquisition performance monitoring and reporting**

**30.** In 1997, a joint performance information review (PIR) by Defence and the then Department of Finance (DOF) found major shortcomings in Defence's performance monitoring and reporting process. In response to the PIR, Defence plans to implement a new performance management framework. The information system needed to manage the capability management framework systematically is now being developed but its full implementation may be some years off.

**31.** DAO uses quantitative measures such as target dates, milestones and funds expended for most of its principal project management activities. The organisation is developing benchmarks, key performance indicators (KPIs) and performance targets to monitor its project management performance. These would identify projects that are not progressing according to plan. The draft KPIs are reasonably well-developed and could be used to report progress of major acquisition projects to the Defence Executive. However, DAO has not collected the KPI data required to report on all of its projects.

**32.** The capability management framework will require not only KPIs specific to Defence Groups, but also a general set of KPIs that cover the full planning, programming, budgeting and implementation continuum from a Defence capability perspective.

**33.** There would be considerable advantage for Defence if project managers produced regular reports on actual progress against objective criteria on major projects. A system of uniform reporting is needed to show clearly which projects are exceeding approved schedule or cost or not meeting required quality. This would assist senior managers, who have a wider perspective than the project managers, in assessing the

value added by the project managers and in deciding when to intervene and when to implement contingency measures in response to variations from planned progress.

### **Business process improvement**

**34.** DAO's business process re-engineering (BPR) project is developing a standard project management method (SPMM) capable of providing a project management framework that covers all project phases from project first conception, through the capital equipment acquisition, to equipment operational service, and including logistic support and final disposal. DAO's evaluation of proposed re-engineered processes indicates that, if properly implemented across the capability management continuum, the SPMM offers the clear potential to improve acquisition project outcomes; improve corporate governance generally; and provide some of the basic information required by the outputs management framework.

**35.** DAO, Australian Defence Headquarters and Support Command Australia are now strengthening their business process interconnections through three business process re-engineering projects based to varying degrees on SPMM. There is a need to ensure that cross-functional elements of DAO proposed SPMM are effectively merged to minimise any adverse effects of the organisational boundaries between the three main areas.

**36.** Defence is seeking to improve the quality of decision information by ensuring that stakeholders provide input to capability development proposals and to take proper account of that input. To facilitate this arrangement, the Defence Executive decided that Integrated Project Teams (IPTs) be trialed in the pre-approval stage of some major projects. DAO has proposed integrated acquisition teams (IATs) as a means of shortening the acquisition cycle time. However, at the time of the audit DAO had not completed an IAT trial.

### **Personnel management**

**37.** JCPAA reviews and ANAO's previous audits have drawn attention to the lack of project management career streams within the military and the high turnover of project managers within the life of a project leading to a loss of such skills and experience as were available. DAO's 70—30 per cent mix of civilians and military personnel respectively makes the development of a professional project management career structure within DAO very challenging and increases management risks. This is because the Services post military personnel to senior positions in DAO projects for approximately three-year periods, thus increasing risks of skill gaps on long-lived projects typical of Defence acquisitions. The Defence Efficiency Review recommended that Defence reduce its military staffing in DAO from about 30 per cent to about 10 per cent.

**38.** A DAO survey shows that many officers posted as project managers have little or no prior project management experience. DAO often benefits from the specialist advice that military personnel involved in project management can provide on systems engineering, systems operational requirements and integrated logistics support. However, not all personnel involved in project management have had extensive experience of this kind.

**39.** DAO has implemented project manager training programs including post-graduate assistance and graduate recruiting programs, and is now proposing to standardise its project management procedures as part of its business process re-engineering initiatives. The latter may help overcome some of the identified problems. Defence

records indicate similar staff turnover and career structure problems in the acquisition planning phase upstream from DAO as well as the in-service support phase downstream from DAO in the capability management continuum.

**40.** To assist in protecting Commonwealth interests and achieving satisfactory outcomes on acquisition projects, Defence should progress the implementation of the JCPAA's recommendations on improving project management by building a corps of skilled and experienced acquisition professionals. A practical way of endeavouring to achieve this would be to maintain DAO's personnel strategic plan, in consultation with Output Managers responsible for capability outputs, as a plan that brings together current personnel and workforce initiatives and manages workforce demographics to increase the availability and continuity of experienced project managers. The plan should be revised as necessary to take account of any changed work practices from initiatives such as business process re-engineering.

**Response to audit report**

**41.** There was considerable consultation between Defence and the ANAO on the recommendations in the proposed report of the audit. Defence agreed to the recommendations, with some qualifications, and commented that the final outcome was worth the effort of the officials in both agencies.

**Audit Report No.41 1999-2000**  
**Commonwealth Foreign Exchange Risk Management Practices**

**Summary**

1. The Commonwealth has significant foreign exchange risk exposures arising from purchases and sales of foreign currency by agencies. In 1998-99, Commonwealth agencies undertook \$A8.4 billion of foreign currency transactions with the Reserve Bank of Australia (Reserve Bank) comprising \$A7.0 billion in purchases from the Bank and \$A1.4 billion in sales to the Bank.<sup>26</sup> Payment exposures also exist where contract terms generate or increase foreign exchange risk and where Australian dollar denominated transactions can be increased or decreased in line with exchange rate movements. ANAO audited four agencies that have substantial foreign currency payment exposures, namely: the Department of Defence (Defence); the Australian Agency for International Development (AusAID); the Department of Foreign Affairs and Trade (DFAT); and the Department of Finance and Administration (DoFA).

2. The size of the Commonwealth's foreign exchange exposure emphasises the importance of effective and prudent risk management at the whole of government level as well as by individual agencies. ANAO's legal advice confirms the responsibilities of officials in each agency to manage such risks, particularly under the provisions of the *Financial Management and Accountability Act 1997* and accompanying Regulations. However, there is no centrally issued overarching Commonwealth position statement on foreign exchange risk management. Very recently, DoFA issued a Finance Circular titled *Budget Framework for the Management of Foreign Exchange Exposure* that notified agencies that come within the scope of the Financial Management and Accountability Act of their responsibilities and opportunities for managing foreign exchange exposures. It seems as if some of the impacts of inadequate Commonwealth management of such exposures is due to a long period of self-insuring at the whole-of-government level and budget funding of exchange rate risk for particular agencies.

3. The Commonwealth's current approach to assessing and managing such risks is set out in Figure 1. This devolved and decentralised approach to managing foreign exchange risk solely at the agency level is in marked contrast to normal commercial practice in managing specialised and highly material financial risks. In comparison, many major

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<sup>26</sup> All Commonwealth agencies subject to the *Financial Management and Accountability Act 1997* are required to undertake foreign exchange transactions with the Reserve Bank, unless the Bank agrees that some or all low value transactions may be conducted through an agency's transactional banker.

corporations and the Australian State Governments<sup>27</sup> centralise the implementation of exposure management strategies as a means of achieving economies of scale in obtaining commercial cover for exposures and ensuring an appropriate internal control framework for exposure management. Any move by the Commonwealth to adopt a centralised risk management model and dealing activities would not absolve individual agencies from their responsibility for managing the underlying business transactions and associated risks. As with other centralised treasury operations, agencies would remain primarily responsible and accountable for developing risk management policies, identifying exposures, deciding when to cover exposures and for monitoring the implementation and effectiveness of their risk management strategies. This dichotomy has to be recognised by agencies covered by the Financial Management and Accountability Act.

**Figure 1**

**Framework for Non-Public Debt Foreign Exchange Risk Management**

<i>Better practice principles</i>	<i>Commonwealth approach</i>
Exposures are identified and quantified over an appropriate timeframe.	The size of exposures and their effect is not identified and quantified.
Select an appropriate objective to optimise risk/return trade-offs.	No overriding exposure management objective. There is also no central agency guidance to agencies on appropriate objectives, with markedly different and inconsistent approaches adopted by agencies.
Limits set on the maximum allowable exposure.	No limit is set on the level of acceptable risk. Agencies are not aware of the impact risk exposures are having on financial performance.
Responsibility for exposure management decisions is clearly identified.	Four agencies receive budget supplementation for exchange rate variations, a process that transfers foreign exchange risk from the individual agencies to the Commonwealth Budget as a whole. All agencies, including those that receive supplementation, are required to manage their exposures.

<sup>27</sup> Each Australian State has its own treasury unit. The State treasury units usually have an overview role for the management of the State's balance sheet. This role includes acting as a treasury facilities required to manage the exposure themselves. The treasury units also provide specialist financial advice to client agencies.

<b>Better practice principles</b>	<b>Commonwealth approach</b>
Specification of authorised risk management instruments and permissible providers of exposure management services.	Foreign exchange exposure management services are to be provided by the Reserve Bank but there are no guidelines on the permissible instruments.
Systems exist for reporting of exposures and the results of action taken to manage risk.	Absence of management reporting systems at both agency and whole-of-government levels.
Centralised provision of risk management advice and dealing activities.	No central agency guidance, risk management advice or coordination of dealing activities.

Source: ANAO analysis.

## Audit objectives

4. The Australian/New Zealand Standard on Risk Management recognises that exchange rate exposures are a potential source of risk that organisations should identify and manage.<sup>28</sup> Similarly, the Management Advisory Board's 1996 *Guidelines for Managing Risk in the Australian Public Service* recognise financial and market risks as an issue that requires management attention from Commonwealth agencies. The audit objectives were to:

- identify the Commonwealth's foreign exchange risks in selected agencies;
- assess the efficiency and cost-effectiveness of the management of foreign exchange risk; and
- identify opportunities to improve the management of foreign exchange risk, including any associated potential financial savings that could accrue to the Commonwealth.

## Commonwealth exposure management

5. This audit report draws a distinction between agency responsibility for managing foreign exchange risk and budget funding of exchange rate movements. Each of the agencies included in the audit has significant foreign exchange risk exposures that have to be managed. The Commonwealth's devolved approach, with no central agency guidance until very recently, has been reflected in the audited agencies adopting markedly different approaches to their foreign exchange risk exposures. Furthermore, these agencies did not have any stated policies in relation to foreign exchange risk management or consistent management practices.

### Figure 2

#### Audited Agencies' Foreign Exchange Risk Policies and Management Approaches

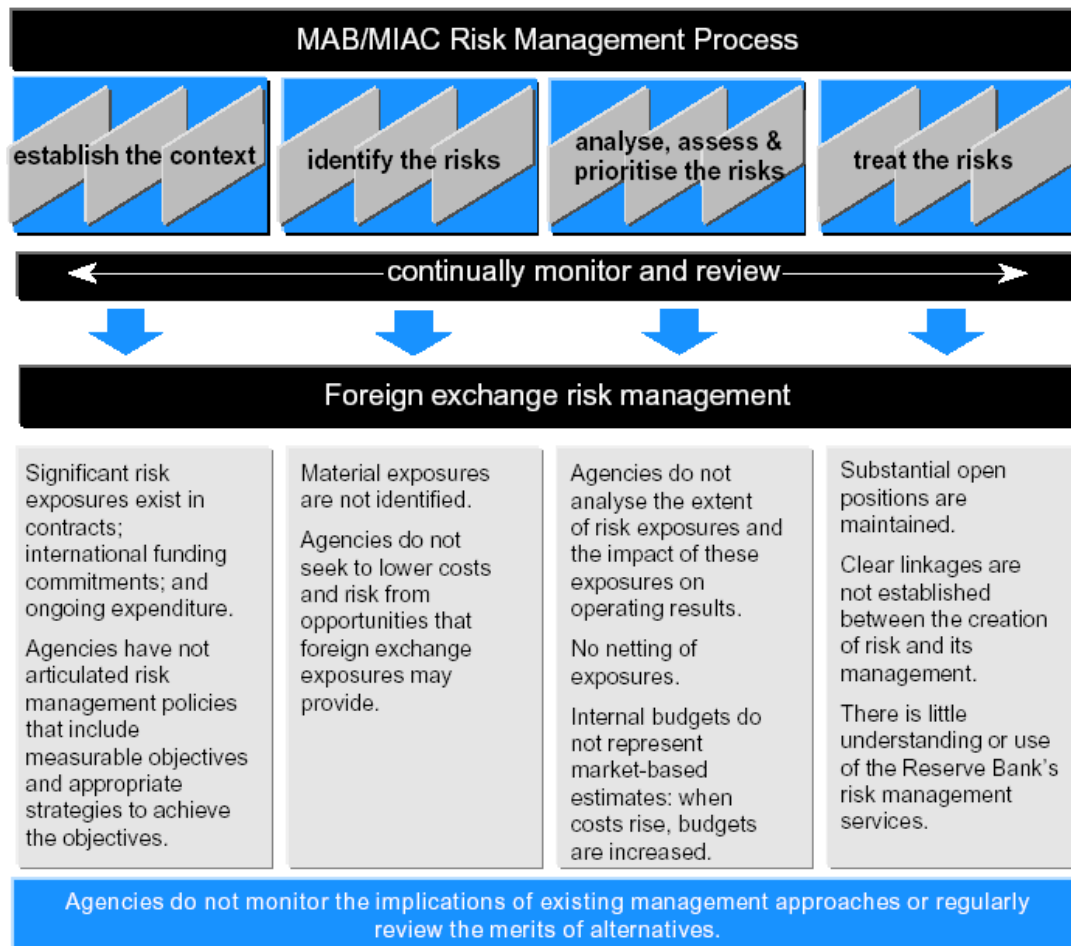
<sup>28</sup> Standards Australia and Standards New Zealand, *AS/NZS 4360:99 Risk Management*, April 1999, pp. 24 and 30.

<i>Agency</i>	<i>Exposure</i>	<i>Stated Policy</i>	<i>Management Approach</i>
Defence capital procurement	\$A1.4 billion in overseas capital expenditure in 1998–99. Substantial exposures exist in individual contracts.	None	Significant <b>open</b> positions. Risk <b>transferred</b> to Commonwealth budget by budget supplementation arrangements. Up to April 1999, budgets for projects in progress had increased by \$A2.98 billion due to exchange rate movements.

6. ANAO concluded that foreign exchange risk was not effectively and prudently managed by the audited agencies because they did not have systems and procedures to: identify their exposures; analyse the extent of these exposures; assess their impact; and take steps to cost-effectively manage the resultant risks (see Figure 3). Furthermore, agencies have not made a proper assessment of foreign exchange risk and the measures available to manage it as part of procurement and expenditure approval processes. In this context, DFAT advised ANAO that it is of the view that it took all steps available to it within the terms of its resource agreement with DoFA to address and manage its foreign exchange risks.



**Figure 3**  
**Management of Foreign Exchange Risk by Selected Agencies**



Source: ANAO analysis applying the *Guidelines for Managing Risk in the Australian Public Service*, published by the Management Advisory Board and its Management Improvement Advisory Committee in October 1996.

7. Of note, is that agencies do not seek to address value for money considerations in relation to payments involving an actual or potential exposure to exchange rate fluctuations. Minimal attention is given by agencies to managing any potentially negative impacts of exchange rate risk with none of the audited agencies seeking to take advantage of any opportunities that foreign exchange exposures can provide, as the following illustrates:

- Defence and DFAT have relied upon budget supplementation as their management response to foreign exchange risk. Budget supplementation does not obviate the legislative requirement for agencies to assess foreign exchange risk and manage it as part of procurement and expenditure approval processes. However, as budget supplementation substantially reduces the incentive, Defence and DFAT do not identify or manage their foreign currency exposures and no central

agency has been allocated responsibility for managing these risk exposures.<sup>29</sup>

### **Improvement opportunities**

8. Better practice in financial risk management is to centralise risk management and dealing activities as this can: minimise the exposure management task; deliver economies of scale in obtaining commercial cover for exposures; and ensure an appropriate internal control framework for exposure management. On a whole-of-government basis, there is therefore merit in Commonwealth central agencies investigating and advising the Government as to whether centralised provision of treasury functions for foreign exchange could improve management of the Commonwealth's substantial foreign exchange risks.

9. Under a centralised risk management model, the role of a central treasury unit would be to provide guidance and advice to agencies and to manage residual risks on behalf of the Commonwealth (see Figure 4). This approach recognises that agency managers are best placed to identify risk exposures and take management decisions about those exposures. This is also consistent with agencies' financial management responsibilities under the Financial Management and Accountability Act and its accompanying Regulations.

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<sup>29</sup> The budget supplementation arrangements have had a pervasive influence in the multi-billion dollar Defence capital equipment program:

- Project budgets and tender processes do not identify the degree to which expenditure is subject to foreign exchange risk so as to inform decisions about whether and how foreign exchange risk should be managed;
- Project budgets are periodically updated by the Department to match movements in spot exchange rates. This approach lessens financial incentives to effectively manage risk and reduces Defence accountability for its preparation of project budgets and management of foreign exchange risk; and
- Defence's practice of remaining exposed to foreign exchange risk has significantly increased project costs.

**Figure 4**  
**Better Practice in Foreign Exchange Risk Management**

Individual agency functions	Risk Management Process	Central Commonwealth treasury functions
Establish agency risk management policy including measurable objectives	Establishing context	<ul style="list-style-type: none"> <li>• Establish Commonwealth policy.</li> <li>• Advise agencies on suitable objectives, appropriate strategies and instruments.</li> </ul>
<ul style="list-style-type: none"> <li>• Risk audits of contracts</li> <li>• Estimate cash flows and internal offsets</li> <li>• Determine time horizon of exposures</li> </ul>	Risk identification	Identify strategic exposures, such as those resulting from budget supplementation arrangements.
Sensitivity analysis including quantifying the effect of exchange rate changes and comparing the exposure to tolerances.	Analysis	<ul style="list-style-type: none"> <li>• Analyse net Commonwealth position</li> <li>• Advise/assist with agency analysis.</li> </ul>
Make management decisions including whether to accept, restructure or manage exposures	Implement management programs	<ul style="list-style-type: none"> <li>• Net offsetting exposures</li> <li>• Arrange hedging transactions with the Reserve Bank</li> </ul>
<ul style="list-style-type: none"> <li>• Monitor exposures against objectives</li> <li>• Review effectiveness of management strategies and consider alternatives</li> </ul>	Monitor and review	Monitor and report on the overall Commonwealth exposure position.

Source: ANAO analysis.

**Audit Report No.11 2000-2001**  
***Knowledge Systems Equipment Acquisition Projects in Defence***

**Summary**

**Background**

1. The Defence mission is *to prevent or defeat the use of armed force against Australia and its interests*. This calls for effective command and control of the Australian Defence Force (ADF). ADF command and control depend on a wide range of information and administrative system technologies to assist the analysis of requirements, allocation of resources, integration of effort, management of logistics and coordination and monitoring of force behaviour.
2. The Government's national defence policy identifies the highest capability development priority as 'the knowledge edge' to allow Australia to use its relatively small force to maximum effectiveness. The knowledge edge depends on effective exploitation of human intellectual capital, as well as on command and control structures and decision processes coupled with information, information systems and associated infrastructure. Defence's military and administrative information systems combine to form the Defence Information Environment (DIE) and are known as *knowledge systems*.
3. Defence is pursuing the knowledge edge by investing extensively in knowledge system acquisition projects. Approved and planned projects that will have a substantial impact on the DIE have a total estimated value of almost \$8.5 billion.
4. The audit objective was to assess Defence's arrangements for higher-level management of its knowledge system projects and to provide a degree of assurance about its ongoing capacity for efficient and costeffective management in this area. A principal aim was to formulate, where circumstances required it, practical recommendations that would enhance Defence's management of those projects and their coherence with Defence's other knowledge systems. The focus of the audit was on the opportunities for Defence to adopt a much more coherent and integrated approach to knowledge systems management prospectively rather than on emphasising current system compatibility issues.

**Overall conclusion**

5. Defence's new arrangements for a Chief Knowledge Officer, supported by revised governance and accountability arrangements, aim to achieve a holistic approach to knowledge edge development. This will help ensure that Defence's numerous separate knowledge systems provide their maximum contribution to ADF capability, particularly by maximising synergies and improving coherence and integration between those systems.
6. Defence is aware of the need to exploit its knowledge systems and is working to achieve improvements. In particular, the Vice Chief of the Defence Force's Owner Support Executive is working to take the lead in knowledge system program management so that Defence's information environment may be developed as a coherent whole. However, knowledge edge development is a demanding area of defence capability development. Institutional, organisational and procedural difficulties in Defence remain and these need to be overcome if the above aims are to be achieved.

7. Defence's total knowledge system consists of a vast 'system of systems'. It is necessarily decentralised across all Defence outputs but it needs centralised management to preserve system integrity and maximize synergies. Defence's new approach is to regard the knowledge system as a virtual capability and to manage it accordingly. This seems to be a sound approach, since it provides the required focused responsibility, accountability and authority for formulating and adopting strategies and plans for knowledge system policy and capability development.
8. The goal of building a knowledge system based on a coherent architectural framework is necessarily long-term and challenging, given the rapid advances in technology, wide-ranging tasks that the ADF may be called on to perform and Defence's evolving organizational relationships and business processes.
9. The Chief Knowledge Officer and his staff have much to do to bring the Defence information environment under adequate managerial control. Many knowledge system elements now in service were selected on the basis of individual functionality and not on the basis of their architectural compliance with the broader system of systems.
10. The program management and architectural goals are worthwhile due to the many substantial benefits that knowledge system coherence and integration will provide from Defence's military and business process perspectives. Critical success factors relate to the degree of program management discipline that can be applied to knowledge edge development and maintenance. The most substantial risks to knowledge system projects may be those associated with development and retention of skilled individuals needed in all parts of the Defence information environment.

### **Key Findings**

11. The task of improving synergies and coherency between Defence's knowledge systems requires the Chief Knowledge Officer and the Knowledge Staff, with the backing of the Defence Information Environment Board, to examine all significant equipment and application projects, approved and planned, for their contribution to the DIE and their dependence on it. The objective is to have the ability to move information readily to any area in the DIE that might have a legitimate need for it and to apply required information to a particular purpose.
12. The Chief Knowledge Officer is establishing the processes needed for effective program management of the \$4.5 billion in knowledge system projects that he sponsors. Subject to some caveats, processes to achieve inter-operability between these projects are now being put in place. The Chief Knowledge Officer's staff are confident of achieving improved coherency between these projects. The importance of that achievement should not be underestimated and, if successful, it should result in much improved knowledge system capability.
13. The situation is much less clear for the many other projects, estimated to cost some \$4 billion, that will contribute to, or depend on, the DIE. It is not clear that processes are sufficiently robust to allow the Chief Knowledge Officer to scrutinise these projects and, where appropriate, to challenge a perceived lack of coherency between the project and the DIE.
14. From an information coherency perspective, Defence's business systems are the area of greatest concern to the Chief Knowledge Officer. Business and other administrative systems assist in financial, personnel, logistics and information management functions. Defence uses about 150 logistics systems and many personnel

and administrative information management systems. This is a result of business processes that allowed managers to acquire information systems to satisfy their individual functional requirements. As a consequence, the degree of commonality and ability to exchange information between these systems is limited.

**15.** During acquisition, many technical decisions are taken that can, and do, seriously affect DIE integrity and coherence. The UK Ministry of Defence recently addressed the need for formal management of integration issues during acquisition by establishing an Integration Authority in its Defence Procurement Agency. The Integration Authority seeks to maintain technical visibility of all relevant projects under procurement and to bring to attention any developments that could adversely affect information coherency. Defence could adopt a similar arrangement by establishing a close working relationship between an integration authority and the Chief Knowledge Officer.

**16.** An effective and consistently applied standard project management method<sup>1</sup> is an important foundation for good program management. Defence is adopting a Standard Project Management Method (SPMM) for some 200 major equipment acquisition projects. However, progress to date indicates that not all acquisition projects will be converted to SPMM until 2001. Moreover, there appear to be problems in achieving effective application of the SPMM. As at April 2000, for example, there were 64 acquisition projects subject to the SPMM but only two of these were assessed as controlling their projects well using the SPMM. Some action may be warranted not only to ensure that SPMM in Defence does not come in too many variations, but also to remove any confusion about the role of SPMM and any associated Project Boards, Integrated Product Teams, Integrated Acquisition Teams and Integrated Project Teams.

**17.** The Defence Science and Technology Organisation (DSTO) believes that the Evolutionary Acquisition (EA)<sup>2</sup> project management technique can deliver functionality sooner than other acquisition methods, and that it should be adopted for a range of projects, including software-intensive projects and other projects subject to rapid technological change. DSTO has found that, even though EA has become an approved acquisition strategy in Defence, there is a widespread view in Defence that EA guidance is either lacking or poorly developed and that EA's full potential is not being realised.

**18.** The military and civilian workforce that supports the DIE is spread across a wide range of projects and endeavours. Shortages of skills in one area are addressed by denying essential skills to another. The DIE is vulnerable to shortages in staff with the appropriate skills and experience. Statistics indicate that the three Services encounter difficulties in recruiting and retaining the skilled personnel needed to support the DIE.

**19.** The ANAO made seven recommendations designed to address these issues. Defence agreed to the recommendations, one with qualification. The Secretary of the Department has indicated that aspects of the report would serve as action statements in Defence in this area.

**Audit Report No.24 2001-2002**  
**Status Reporting of Major Defence Equipment Acquisition Projects**

## **Summary**

### **Background**

1. Major capital equipment contributes importantly to the capabilities of the Australian Defence Force (ADF) to achieve the Defence mission, that is, the defence of Australia and its national interests. The Defence Materiel Organisation (DMO) is the relatively new Defence organization responsible for the acquisition and through-life support of Defence equipment and systems. DMO's stated purpose is to equip and sustain the ADF. In 2001–02, it will spend \$2.9 billion on progressing some 270 major capital equipment acquisition projects.
2. DMO was created from the amalgamation of the Defence Acquisition Organisation, Support Command Australia and part of National Support in Defence's organisational structure that took effect from 1 July 2000. The amalgamation was to facilitate major reforms to improve the timeliness, cost performance and quality of Defence's major capital acquisitions and support and their through-life management. Given the extent and nature of DMO's activities, reform of these operations involves significant activity in many areas of the acquisition and support process. Holistically, the reforms should lead to substantial improvements in project management.
3. Project management is the means by which a project is planned, organised, directed and controlled. It involves the use of a range of methods and techniques tailored for the individual circumstances of a specific project. Defence's ability to manage major acquisition projects to meet military capability requirements on time and within budget has been the focus of ANAO and Joint Committee of Public Accounts and Audit consideration for some time. The ANAO therefore scheduled a performance audit to assess the status of major acquisition projects, and the validity of project status reports provided to Government.
4. The preliminary study for the audit focused on DMO reporting on the status of major equipment acquisition projects. This significant area was identified in earlier ANAO reports as in need of improvement and is important from a governance perspective in providing management with an early warning of problem areas. The study concluded that there was sufficient basis to proceed to a performance audit.
5. DMO was concerned, however, to be able to progress its reform agenda, including reporting initiatives, prior to the performance audit being conducted. On the basis of information provided by DMO about its reform agenda, the ANAO agreed with DMO's request to postpone the audit for 12–18 months to enable the reforms to be implemented. The reforms include a pilot project to test a new reporting system.
6. The ANAO will monitor the progress of the reforms and consider scheduling a performance audit of the status of major Defence capital equipment acquisition projects at a more appropriate time. A full audit would include in-depth examination of the status of a sample of the larger acquisition projects in order to verify the accuracy and completeness of Defence's project status reporting.
7. This interim report is based on findings from the preliminary study and information provided by DMO. The report provides information on some of the issues facing DMO with regard to the status reporting of major acquisition projects, and indicates how DMO is seeking to address these issues in the context of its wider reform agenda.

## Conclusion

8. DMO is implementing a comprehensive reform program to enhance its capability to deliver materiel systems to Defence on time and within budget and to provide associated through-life support. The DMO Reform Plan is wide-ranging and covers organisational and structural change; people reforms; and materiel reform and process change. In implementing its Reform Plan, DMO is also addressing issues raised in the past about Defence's management of major capital equipment acquisition projects.

9. Periodic and accurate reporting of project status in terms of time, cost and quality is an important element of good project management. At present, DMO project status reports do not always indicate whether major capital equipment acquisition projects are meeting agreed timeliness, cost performance or quality criteria, or report against key performance indicators.

10. As part of its reform agenda, DMO will commence a project to test a new system for reporting project progress on cost and schedule performance, and against a properly integrated schedule and project work breakdown structure. The pilot project is to be tested on three major capital equipment projects in the Electronic Systems Division. If successful, it will be rolled out across that Division, and can be considered for introduction across DMO.

11. A sound project reporting system would assist in assessing DMO's progress in implementing its broader reform objectives. It would also assist in managing the very significant risks in major capital equipment acquisition projects.

## Key Findings

### DMO Reform (Chapter 2)

12. As a relatively new organisation, DMO is seeking to reform the process of acquiring and supporting major equipment for the ADF. The DMO Reform Plan comprises three parts: organisational and structural change; people reforms; and materiel reform and process change.

13. As part of the reform agenda, a project to improve the status reporting of projects is being undertaken in the Electronic Systems Division. A reporting methodology similar to the applied earned value method and a new management information system are to be tested.

14. Improving risk management, particularly emphasising increased investment in risk reduction prior to committing to acquisitions, is one of the acquisition reform initiatives to be pursued in 2001–02. It is an important reform initiative as a Defence risk analysis indicates that the risk of failure of major capital equipment acquisition projects is very high, and will continue to be so for several years.

### Management Information Systems (Chapter 3)

15. PROMIS (Project Reporting and Monitoring System), the management information system used in DMO, has the potential to provide a useful framework for project status reporting. However, the full functionality of the system is not being realised as only financial data can be entered directly. Project schedule (time) data must be entered manually but its entry is not consistent. A quality module to record information on the quality of a project has not yet been fully developed.

16. The DMO recognises that there are opportunities to rationalize its various management information systems. It is developing a Business Information System



Architecture to provide a common framework and promote better integration, consistency and evolution of the information environment.

17. Under DMO's new reporting procedures, Branch Heads and Division Heads will provide certification sign-offs on major reports to management and other stakeholders. The new procedures will assist in improving the consistency of reported data. Reports to those outside the DMO are to be coordinated through a newly-established Executive Support Unit.

#### **Quantity of Reporting (Chapter 4)**

18. Individual project teams in DMO are required to produce a large quantity of project status reports. Overlap between the range of reports being produced is an issue that DMO is addressing. Data on costs associated with the preparation of reports by DMO project teams cannot presently be captured. However, as part of the acquisition reform initiatives for 2001–02, an activity-based costing model is to be implemented in DMO.

19. Quantifying the levels of resource usage and estimating the indicative costs and production time associated with the production of project status reports would indicate to DMO the extent to which resources are being directed to the reporting process. With such information, DMO would have a basis on which to make decisions with respect to the rationalisation of its reporting processes to ease pressure on project managers and facilitate more consistent and efficient status reporting.

#### **Completeness of Reporting (Chapter 5)**

20. DMO project status reports do not always indicate whether projects are meeting agreed timeliness, cost and quality, or report against key performance indicators. Some DMO project status reports indicate the overall status of individual projects but many generally take the form of point-in-time reporting without reporting trends and comparisons over time. Notably, DMO reports produced for the Defence Committee now include an indication of the overall project status and an indication of the trend of this status.

21. Key Performance Indicators (KPIs) can be used to provide information on the progress of a project in terms of meeting its targets. DMO has put considerable effort into developing a comprehensive set of KPIs that are linked to DMO's objectives, and ultimately to its organisational goals.

22. Information on major capital equipment acquisition projects in reports external to DMO, such as the Defence Annual Report, does not always indicate what phase of a project is being reported and where this fits into the whole project. The absence of published information on variations to projects is an issue that Defence has accepted as being a valid criticism by the Senate Foreign Affairs, Defence and Trade Legislation Committee.

**Audit Report No.30 2000-2001**  
***Test and Evaluation of Major Defence Equipment Acquisitions***

**Summary**

## Background

1. The Australian Defence Force (ADF) relies on advanced technology, complex logistics support systems and skilled personnel to provide defence capabilities. Defence manages some 270 major equipment acquisition projects with a total estimated cost of \$46 billion. Defence spent \$2.7 billion on purchasing specialist military equipment in 2000–01.
2. The costly, advanced technologies involved in military equipment require well-developed test and evaluation (T&E) procedures and appropriately skilled T&E personnel within the organisations that acquire, support and operate the equipment. The fundamental purpose of T&E, whether at concept, design, acquisition or in-service phase of an equipment's life cycle, is to reduce the risk that equipment will not satisfy user expectations regarding cost, quality, delivery time (schedule), mission success, system vulnerability and personnel safety.
3. Defence has T&E organisations in the Defence Materiel Organisation (DMO), Navy, Air Force and the Defence Science and Technology Organisation (DSTO). DMO's Land Engineering Agency (LEA) conducts T&E for Army. Joint projects, such as those that will form part of the 'knowledge system' shared by the individual Services, are subject to T&E by DMO and the Service that would have most use of the particular project. The audit included T&E case studies of single- Service and joint projects.
4. The objective of the audit was to assess Defence's management of the T&E aspects of its capital equipment acquisition program. The audit sought to identify, from Defence T&E practice, any barriers that might limit the efficiency and effectiveness of its T&E activities. A principal aim of the audit was to formulate practical recommendations that would both improve Defence's T&E practices and provide a degree of assurance about Defence's ongoing capacity to manage its T&E program efficiently and effectively.

**Conclusion**

5. Defence's T&E policy aims to promote a unified approach to T&E to guarantee effective and efficient use of all T&E resources and to avoid unnecessary duplication of effort and resources. In practice, however, there was little evidence of effective corporate initiatives to promote that approach. The individual Defence groups have formulated their own individual policies and practices and personnel training. Accordingly, the policy needs to be reviewed and to articulate how the '*unified approach*' is to be implemented. The policy also calls for T&E resources to be costed, to assist in management and funding of T&E. However, in practice the cost of the resources applied to T&E is unknown.
6. Proposed improvements to Defence's force development process may improve T&E implementation on a project-by-project life-cycle basis, by establishing stronger incentives for T&E to contribute much more to the development of defence capability. Defence could also benefit by establishing an office responsible for common standards for, and independent oversight of, operational T&E (OT&E), which is conducted in the

final stage of acquiring major equipment, before acceptance into service. This would also help in achieving the desired '*unified approach*' to T&E.

7. T&E records relating to the acquisition of Navy major capital equipment indicate the need for the DMO to improve aspects of its T&E policy and practice. Some vessels and systems that DMO has offered to Navy for OT&E have been accompanied by insufficient T&E data and with significant engineering modifications and defect rectifications still under way or planned. Navy projects with well planned and managed T&E benefited from easier progress towards acceptance into naval service.

8. T&E of Army and Air Force projects examined during the audit was well planned and managed. T&E of a Bushmaster vehicle prototype, the Army project selected in the audit, has helped identify the vehicle's strengths and weaknesses and thus mitigate project risk. T&E of Air Force's F-111s, C-130J and AEW&C aircraft programs was found to benefit from close working relationships established between contractors, the DMO and Air Force T&E personnel. This is necessary for greater effectiveness given the highly integrated nature of aircraft systems engineering.

9. The audit examined two 'knowledge system' projects—the JORN radar project and the Deployable Joint Force Headquarters-Afloat. JORN shows the benefits of recent application of careful T&E. The Joint Headquarters-Afloat project reveals a need for careful T&E for projects involving extensive software and compressed development and installation schedules.

## **Key Findings**

### **Introduction (Chapter 1)**

10. Defence's T&E policy notes that the cost of T&E for a weapon system using electronic technology could amount to 25 per cent of total project costs. Even though the policy calls for costing of T&E, the resources applied to T&E cannot readily be disaggregated from systems engineering and other project costs. Given the amounts involved in Defence's equipment acquisitions (\$2.7 billion in 2000–01), expenditure of 10 per cent of total project costs on T&E would amount to some \$270 million a year. Information on T&E costs is needed for management purposes to assist in proper project costing and budgeting and for overall organisational efficiency, but DMO's business systems at present do not provide this information.

### **Corporate Governance (Chapter 2)**

11. Defence links its capability-related corporate governance arrangements with systems engineering and capability development processes, and treats T&E as a secondary process. Many positions have responsibility for elements of the T&E process without the benefit of proper integration across areas of responsibility. Defence policy calls for a unified approach to T&E to guarantee effective and efficient use of all T&E resources and to avoid duplication of effort and resources. In practice, however, there was little evidence of effective corporate initiatives to achieve a unified approach to T&E to ensure that use of T&E resources has been effective and efficient.

12. The individual Defence groups have formulated their own policies and practices. Although individual T&E groups and practitioners in Defence seek to maintain contact

with each other, there would seem to be advantage in having a more formal, coherent and coordinated approach to T&E throughout Defence.

**13.** Proposed improvements to the Defence force development process may assist T&E implementation on a project-by-project life-cycle basis. A draft instruction on Defence capability systems life cycle management would assign accountability for monitoring compliance with approved capability baselines, technical regulatory frameworks and in-service performance of elements of capability. This should establish stronger incentives for T&E to contribute more to the development of defence capability.

**14.** Further, it would be useful for Defence to assess the merits of establishing, in its Owner Support Executive,<sup>1</sup> an office responsible for common standards for, and independent oversight of, operational T&E (OT&E), which is conducted in the final stage of acquiring major equipment. Improvements over current arrangements would come from improved OT&E strategic management and better integration of T&E efforts from improvements in OT&E standards and reporting of any capability shortfalls. It would also assist major equipment technical regulation and facilitate Defence's policy of a '*unified approach*' to T&E. The proposal would be similar to the US Department of Defense's Director of Operational Test and Evaluation.

### **Defence Materiel Organisation (Chapter 3)**

**15.** DMO's role in delivering major capital equipment to the Services and coordinating the delivery of all elements of capability makes its Systems Program Offices responsible for a large portion of the overall 'T&E continuum'—developmental, production and some operational T&E.

**16.** A review of 23 projects transferred from DMO to Navy found that seven had no T&E master plan. However, some projects, such as the Navy's Minehunter project, give T&E a high managerial priority, which is evident in the quality of T&E planning and funding, and in configuration control. Others, such as the New Submarine Project and Kalkara project, require improved T&E.

**17.** Project outcomes would be more satisfactory for the Services if DMO enforced its T&E policy; made T&E provisions in its capitalequipment manual more consistent with Defence's T&E policy; and ensured its project management method contains adequate provision for T&E management.

### **Navy Test and Evaluation (Chapter 4)**

**18.** Navy has extensive T&E policy, backed by technical regulations and an operational T&E agency in support of its safety and capability management responsibilities.

**19.** Navy has a substantial capability development program, with new ships and submarines in various stages of development and operational T&E. The program incorporates high levels of risk because the vessels proceeded from design to full-scale production without first completing development T&E and operational T&E of a first of class. Under these circumstances the Commonwealth is heavily dependent on T&E to assess the extent of which program risks have been successfully managed by project management and systems engineering processes.

20. Evidence indicates significant variations in the way T&E is planned, funded and conducted prior to capital equipment being offered to the Navy for acceptance. Defence records show projects that experienced improved paths to acceptance into service, such as the Minehunter project, have detailed operational requirements documents, sound T&E planning and implementation and good records of T&E conducted during full-scale development. However, some projects suffer protracted post-delivery T&E and were not supported by basic T&E documentation.

21. OT&E on the Collins-class submarines is experiencing significant difficulties caused mainly by the amount of engineering development still under way in the program as well as significant in-service support problems. The Collins class has shifted from development into operational service without a distinct end to development T&E, placing further demands on the overall program.

22. Many Collins-class performance deficiencies were not corrected prior to DMO offering the submarines to Navy for acceptance into service. These have caused extra cost and delays in gaining required naval capability and in achieving acceptance into naval service. The need to spend substantial amounts on modifications to achieve 'limited capability level' improvements in two submarines, and to extend the Collins program by seven years to accommodate modifications and upgrades to all Collins submarines, reinforces the importance of this issue. The submarines' existing and planned redesign, modification, upgrade and sustainability enhancement costs represent an increase of 39 per cent on the approved submarine project cost of \$5.09 billion (December 2000 prices).

23. Shortages of Navy technical personnel have led to a chronic shortage of T&E trained personnel in Navy's T&E agency (RANTEAA).

#### **Army Test and Evaluation (Chapter 5)**

24. Army policies and procedures enable it to assess the integrity of vehicles and other equipment offered for acceptance into service. Army uses as its T&E organisation the DMO's Land Engineering Agency (LEA). LEA is equipped to conduct developmental T&E as its primary role and, as required, operational T&E on a wide range of vehicles and other landbased military technology. LEA's T&E of a Bushmaster prototype vehicle has mitigated risk to the Commonwealth in terms of cost, reliability and safety. This highlights the value in ensuring competent and effective T&E of prototypes before full-scale production commences.

#### **Air Force Test and Evaluation (Chapter 6)**

25. Air Force is responsible for the airworthiness of all Service aircraft. It implements extensive technical regulations and T&E policies to ensure aircraft comply with essential operational and technical standards.

26. The Aircraft Research and Development Unit (ARDU), as Air Force's T&E organisation, performs the full spectrum of military flight testing for Air Force and Army Aircraft. Some Air Force Groups such as the Strike Reconnaissance Group Force Element Group (SRG FEG), Tactical Fighter Group and Air Lift Group conduct their own OT&E with support from ARDU for management, planning and reporting as may be necessary.

27. Developmental T&E results for aircraft are submitted to airworthiness boards. Defence advised the ANAO that the boards consider OT&E results and assess overall suitability but are not known to review effectiveness in the context of, for example, weapons effectiveness.

28. Review of the F-111 Block Upgrade Program indicates that DMO, Air Force and contractors are conducting their T&E tasks on this project with care. It has a test plan working group and detailed T&E documentation. A software verification and validation contractor assists in oversight of software development. These arrangements allow application of a broad range of expertise, while ensuring stakeholder interests are managed and represented.

29. Like the F-111 project, the \$2.2 billion Wedgetail Airborne Early Warning and Control (AEW&C) project has benefited from close integration of DMO, Air Force and contractor expertise. The Wedgetail project recently proceeded to the acquisition phase. DMO is completing the aircraft's Test Verification Matrix and will amend the project's T&E management plan to reflect a revised testing concept, strategy and sequence. Although these T&E documents and arrangements should already be complete, action is in hand to meet the requirements.

30. Records of the OT&E program on the C-130J Hercules aircraft project indicate that the aircraft is experiencing significant operational shortfalls which await resolution by the manufacturer, and that may justify contractual changes to define and fund future modifications.

31. Audit examination of these projects indicates the T&E is proceeding satisfactorily in identifying problems and possible remedial action.

### **Knowledge System Test and Evaluation (Chapter 7)**

32. The audit examined two projects sponsored by Defence's Head Knowledge Systems (HKS) that aim to make significant contributions to the ADF's knowledge edge. The Jindalee Operational Radar Network (JORN) project is attempting to overcome numerous technical difficulties. The project is conducting T&E carefully with a view to ensuring the project achieves its objectives.

33. The Deployable Joint Force Headquarters-Afloat is to be a complex software-based communication and intelligence system. It has undergone compressed development and installation schedules to satisfy tight delivery schedules. However, some fundamental systems engineering effectiveness measures are not available to Navy's T&E agency (RANTEAA) to enable it to gauge the project's success systematically. In view of the accelerated development and installation, it would seem reasonable to expect that the project would receive increased systems engineering and integrated logistics support to overcome performance shortfalls that can occur under those circumstances. Records indicate that the system was falling short of expectations.

### **Defence Science and Technology Organisation (Chapter 8)**

34. DSTO is responsible for assessing future Defence science and technology trends, but Defence records indicate that it will provide this service only if tasked by the Services or other Defence groups. Therefore any deficiencies in the Services' strategic management of T&E capabilities would reduce the opportunity for forward planning or priority being

placed on defining future T&E needs. This adds to Defence's difficulties in strategically managing its major investments in T&E research and infrastructure.

### **Training in Test and Evaluation (Chapter 9)**

**35.** Major Defence equipment such as aircraft, ships and submarines depend almost entirely on advanced and complex safety-critical systems. Relevant Defence personnel, especially its T&E personnel, should have expertise in assessing such systems in the various acquisition and inservice support stages.

**36.** Training of T&E personnel in DMO, the Services and DSTO is decentralised and ad hoc, and not well linked in terms of coordination or information sharing. The absence of a standardised policy on T&E training has resulted in a 'shopping cart' approach to T&E training, with decisions on training largely left to individual preferences. Defence advised the ANAO that RANTEAA is currently formally developing a training course to provide its staff the requisite training. Although this training may not reflect a standardised ADF approach to T&E, it will be appropriate to RANTEAA's quality accredited system and Navy's approved processes.

**37.** The use of T&E-related tertiary training and education services by Defence provides an important on-going government agency and university interaction and it links with the universities' collaboration with industry. It also represents an opportunity for Defence and industry to work toward the aims of both the Defence White Paper and the Defence and Industry Strategic Policy.

**38.** Standardised training programs recognised by professional bodies would help improve strategic management of T&E training; analysis of T&E training needs and skills gaps; and planning, sourcing and scheduling of appropriate training.

**39.** DMO's internal survey of competency-based training and work experience of its professional and technical staff indicates the probability of gaps between the knowledge edge expected by Defence and the actual capabilities of personnel involved in T&E. It also indicates a need to ensure that T&E is conducted by competent and skilled practitioners.

### **Test and Evaluation Ranges and Facilities (Chapter 10)**

**40.** Defence has maintained its own T&E ranges and facilities, in order to protect sensitive information and maintain objectivity in T&E operations. The Services and DMO have extensive ranges and facilities for T&E, with an estimated facilities replacement cost of nearly \$400 million. DMO recently accepted responsibility for strategic management, acquisition and logistic support of Maritime and Land ranges. This assists their strategic management.

**41.** A consultant's report has indicated that there was negligible coordination of aerospace range resources; duplication of some range facilities; and diffusion of responsibility for range problems. The ranges had a systems acquisition process that omitted an obligation to invest in long-term infrastructure and that often included 'cost-effective' range solutions based on the use of overseas facilities. The report also indicated that, even though the ADF had a number of basic aerospace range facilities and capabilities, there were significant range capability shortfalls.

**42.** The developments and growth in mobile radio communications in the last 10 years have resulted in radio spectrum congestion and commercial pressures being particularly acute below 3 GHz. This could restrict availability of the radio frequency spectrum for aeronautical telemetry systems with a T&E role. Defence access to the radio spectrum to meet its own requirements, including interoperability (or connectivity) with coalition forces, needs careful strategic management, as it has a direct impact on current and future Defence capabilities. Defence's Knowledge Staff is preparing a biennial Defence Spectrum Strategic Plan for endorsement by senior Defence committees to meet this strategic requirement.