

Part I

Background

For many years, Defence's program for the procurement of major capital equipment has been dogged by delays and cost overruns for which there are tangible consequences for the taxpayer and Australians engaged in active military service. This appears to have remained unchanged since the committee's last report on the subject in March 2003.* Indeed, as noted in the committee's preliminary report, a number of the projects in the White Paper that have progressed to the DCP stage and beyond have experienced significant problems that have warranted their placement on DMO's list of projects of concern. Some projects that pre-date the 2009 White Paper are still in production and have many years to go before they finally emerge as completed projects. Some have been cancelled, costing billions of dollars of taxpayers' money. Any slowdown or mishap in their delivery and acceptance into service will have an effect on those not yet in the DCP; those waiting for first or second pass approval or those currently under construction. Among other things, a delayed or unsuccessful project creates a capability gap, fails to meet the government's strategic requirements, damages Defence's relationship with industry and undermines public and parliamentary confidence in Defence's procurement program.

In Part I of the report, the committee examines a number of the acquisition projects that have experienced difficulties and the reasons for their underperformance. While acknowledging that defence organisations face particular and significant challenges in managing their major acquisitions, the committee seeks to understand the extent to which improved practices using qualified and experienced personnel or behaviour or fundamental changes to the management structure could have helped Defence better manage its procurement processes.

* Senate Foreign Affairs, Defence and Trade References Committee, *Materiel acquisition and management in Defence*, March 2003 and also *Bluewater ships: consolidating past achievements*, December 2006.

Chapter 2

Project performance

2.1 In its preliminary report, the committee drew attention to a number of projects that had underperformed or were underperforming. In this chapter, the committee looks in greater detail at individual projects that have experienced difficulties in order to identify the source of the problem. It then considers the projects collectively to determine whether there are common or recurring problems that indicate deep seated or persistent problems in Defence's acquisition program.

2.2 A number of the projects date back to the 1990s when they were approved: that is pre Kinnaird and Mortimer reforms. Even so, many still remain in the procurement pipeline and carry with them certain risks, some of which have materialised. In this sense, they are today's problems. Keeping in mind that they are major projects, any delay or capability shortfall may have a cascading effect and cause difficulties for other projects with serious implications for Australia's defence capability for decades to come. Also, these problem projects, the origins of which may go back many years, have generated a substantial body of knowledge and experience from which Defence should have learnt lessons. The committee believes that these particular projects, often dismissed as legacy projects, cannot be ignored, even those that have been cancelled, including the Super Seasprite helicopters and landing watercraft. More to the point, the committee is concerned that despite assurances to the contrary, more recent projects are showing similar symptoms of failure.

Super Seasprite

2.3 Approved in 1996, the Super Seasprite project was intended to acquire Super Seasprite helicopters for the Navy's ANZAC ships. But, having failed to deliver the required capability, the project was eventually cancelled in March 2008 with a total expenditure of \$1.4 billion.¹ According to the then Parliamentary Secretary for Defence Procurement, the program 'cost us more than one billion dollars for no result'.² He stated that the project had been mismanaged which meant that not only had Defence lost this money but Australia's naval aviation capability, especially in the area of anti-submarine warfare, had suffered.³

1 ANAO Audit Report No. 41 2008–09, *The Super Seasprite*, pp. 13–14 and The Hon Joel Fitzgibbon MP, Minister for Defence, 'Seasprite Helicopters to be cancelled', MIN14/08, 5 March 2008, <http://www.defence.gov.au/minister/70tpl.cfm?CurrentId=7480> (accessed 2 April 2012).

2 The Hon Greg Combet MP, Parliamentary Secretary for Defence Procurement, Speech, Defence Watch Luncheon, 22 May 2008.

3 The Hon Greg Combet MP, Parliamentary Secretary for Defence Procurement, Address to Australian Command and Staff Course Members, Australian Defence College, 24 November 2008.

2.4 The Super Seasprite project stands out as an example of where Defence, through the requirement definition process, did not fully comprehend the risks associated with the acquisition.⁴ The ANAO attributed the failure of the project to a range of factors, some of which are common across many projects that have suffered from poor performance, such as:

- inadequate understanding of risks during the early stages of the acquisition and tender evaluation process;
- underestimation of costs;
- difficulties attracting and retaining appropriately qualified personnel; and
- disparity between contractual and ADF certification requirements for fit for service.⁵

2.5 More specifically, the committee has evidence that, in the later part of 1999 and the beginning of 2000, a subject matter expert advised the Director of the Naval Aviation Systems Project Office and the Head of the Aerospace Systems Division that the Super Seasprite project required a lot of development work. The advice noted that 'Developmental work brings with it considerable risks though, if able to be managed accordingly, should be addressed effectively'. At that time, the consultant recommended that if the Project Office or Department were unable to fund the required T&E function then they should 'get out of the contract now, or as soon as practicably possible'. According to the expert, the same advice was provided around 1997 to the Naval Aviation Systems Project Office by experts in Defence through the Officer in Command, Aircraft Maintenance and Flight Test Unit.⁶

2.6 Despite early warnings from subject matters experts, the project proceeded without any effective risk management. In early 2008, briefs prepared for senior Defence personnel outlined a series of inadequacies in the Super Seasprite capability, some of which had been identified as early as 1998. These matters had also been covered in the 2005 Deficiency Review which, according to an ANAO audit report, had 'effectively recommended that the Project be cancelled'. The ANAO concluded that the Project was:

...high risk from the outset and the scale of these risks escalated rapidly in the early stages and remained high prior to the Government's decision to cancel the Project. The issues encountered were fundamental to the Project's success and were not overcome during the 12 year life of the Project. From an accountability perspective, this leads to a question regarding how the Project was allowed to continue for so long...Factors contributing to this outcome include a degree of optimism surrounding the ability to achieve outcomes, a reluctance to make firm decisions based on

4 ANAO, *Submission 22*, paragraph 19.

5 ANAO, Audit Report No. 41 2008–09, *The Super Seasprite*, pp. 16–17.

6 Air Power Australia, *Supplementary Submission 40A*.

the information available; and a lack of visibility of information to decision makers...⁷

2.7 This failed project provides a raft of lessons for any future project. It especially drives home the need not only for the adequate resourcing of early T&E activities but to ensure that the advice from subject matter experts is communicated to key decision-makers, who are able to comprehend and heed such advice and take decisive action—that is take responsibility.

Landing Watercraft for HMAS Manoora and HMAS Kanimbla (LCM 2000)

2.8 The LCM 2000 project was meant to purchase six watercraft that would transfer personnel and supplies from Navy's Landing Platform Ships (LPAs) to shore. Originally approved in 1997, the landing watercraft project was on the projects of concern list in 2010.⁸

2.9 The government cancelled the project in February 2011 with the accompanying explanation that the dimensions and weight of the watercraft meant that they were 'unsuitable to be launched' from HMA Ships *Kanimbla* and *Manoora* and 'not fit' for alternative ADF use.⁹ At that time, Mr Warren King explained:

The aspiration of the project was to get a capability that was more competent in sea lift than existed anywhere in the world at that time. A tender was placed around the early 2000s and, because a new design that had not been tested or proven offered potentially more capability than existed in existing designs, the decision at the time was made to go with this new design.

...

The problem was that the tender was actually based on a very early concept design to be produced by a company that had never built a landing craft using aluminium, which had never been used in such a manner.¹⁰

2.10 According to Mr King, the LCM 2000 project highlighted the need to establish early that the 'solution would not deliver what the capability managers wanted and [that] a considered discussion around that at that time would have been a very valuable undertaking'.¹¹

7 ANAO Audit Report No. 41 2008–09, *The Super Seasprite*, paragraphs 94–95.

8 The projects of concern list was established in 2008 to focus Defence and industry's efforts on 'solving the issues required to remediate listed projects'. The Hon Stephen Smith, Minister for Defence, and the Hon Jason Clare MP, Minister for Defence Materiel, 'Projects of Concern—Update', 15 October 2010.

9 Stephen Smith MP, Minister for Defence, 'Minister for Defence, Minister for Defence Materiel: Projects of Concern—Update', 1 February 2011.

10 Senate Foreign Affairs, Defence and Trade Legislation Committee, Estimates, *Committee Hansard*, 23 February 2011, pp. 36–37.

11 *Committee Hansard*, 7 October 2011, p. 30.

2.11 Both the Super Seasprite and the landing watercraft projects were cancelled due to very poor risk analysis at the early capability definition stage and the failure to identify and mitigate this deficiency.

Wedgetail

2.12 The Wedgetail project is intended to provide the ADF with an airborne early warning and control capability. It involves the provision of six aircraft and associated supplies and support.

2.13 The government gave the equivalent of first pass approval for Phase 3 of this project in 1997. The airborne early warning and control system is based on Boeing's next generation 737 aircraft, modified to accommodate sophisticated mission parts. The committee notes that this project is a 'highly developmental project'—the core of the surveillance capability, the phased array radar, had never previously been integrated into an operational system.¹²

2.14 In 2007, Boeing announced a two-year slippage in the program. The following year, Boeing advised that continuing problems with radar and electronic support measures and systems integration had caused further delays. While the government recognised that this developmental project had experienced some 'well publicised issues', it noted that the aircraft was a 'vital capability for the ADF' and needed the project to succeed.¹³

2.15 According to the Chief of Air Force, Air Marshal Geoffrey Brown, there was 'a large degree of underestimation of the complexity' of the Wedgetail program right from the start. In his opinion, 'everybody viewed it as a much easier program than what it was, and that probably led to the way it was staffed'. According to the Air Marshal, the original strategy was for Australia to be the second purchaser following the Royal Air Force (RAF) through the development process. Australia, however, ended up being in the lead and taking a lot of the development load. He explained:

You have to remember that we ended up being the leading-edge customer on this. We had not intended being the leading-edge customer; the RAF were supposed to be, but they ended up doing a PPP, which delayed them. So the initial acquisition strategy was all about a public-private partnership. They had some significant problems in standing that up.¹⁴

2.16 As at the end of 2011, the Final Operational Capability (FOC) milestone had been pushed back 48 months from December 2008 to December 2012 and Initial

12 ANAO Report No. 20 2011-12, *2010-11 Major Projects Report*, pp. 198-199.

13 The Hon Greg Combet MP Parliamentary Secretary for Defence Procurement, Address to Australian Command and Staff Course Members, Australian Defence College, 24 November 2008.

14 *Committee Hansard*, 5 October 2011, p. 31.

Operational Capability had been pushed back 54 months.¹⁵ In February 2012, Defence announced that the first fully configured aircraft would be accepted in July 2012, representing a 68 month delay against the original baseline.¹⁶

2.17 Mr George Pappas' audit report noted that slippage has an inherent cost risk attached to it:

For every year that a project slips, costs are incurred across a number of areas including: project team salaries and allowances; administration costs such as travel and support contracts; financial costs (indices); operational costs (time based services and warranty rundown); and capability related costs (the cost of not having a capability, or maintaining an expensive ageing capability).¹⁷

2.18 He cited Wedgetail as an example of costs incurred due to schedule slippage. According to his audit, schedule delays were costing USD \$1.5 million per month, about two-thirds of which were personnel related costs. Additionally, the project's forecast additional exposure to index inflation was estimated at AUD \$15 million over the next 5 years.¹⁸

2.19 The main lessons to be learnt from this project stem from its developmental nature. Thus, DMO recognised that greater effort was required to understand and better appreciate:

- what is involved in being a customer of a first-of-type program;
- the time and effort required to undertake such a complex project;
- the challenges in contractor management; and
- the importance of pro-active risk management and stakeholder engagement throughout the project.

2.20 DMO also noted the need to allocate adequate resources and allow sufficient lead-time to develop and execute the evaluation and negotiation phases for the in-service component. With regard to industry, DMO recognised that industry must 'pay greater attention to adequately resourcing complex and highly developmental projects'.¹⁹ But it is not clear to the committee who was responsible—RAAF or DMO, or any other part of Defence—and whether it was ever flagged that part of this project was very developmental with a high risk of failure and non-delivery as it transpired.

15 ANAO Report No. 20 2011–12, *2010-11 Major Projects Report*, p. 203.

16 Defence Materiel Organisation, 'February 2012 Estimates: DMO Statement on Projects of Concern', 9 February 2012, p. 3.

17 Department of Defence, *2008 Audit of the Defence Budget*, Commonwealth of Australia, 3 April 2009, p. 76.

18 Department of Defence, *2008 Audit of the Defence Budget*, Commonwealth of Australia, 3 April 2009, pp. 76–77.

19 ANAO Report No. 20 2011-12, *2010-11 Major Projects Report*, p. 206.

Tiger Armed Reconnaissance Helicopter

2.21 The proposal to purchase 22 Tiger Armed Reconnaissance Helicopters (ARH) received government approval in 1999. They were to replace the Army's aerial reconnaissance and fire support capability, which dated back to 1960's technology.²⁰ The helicopter is based on the Eurocopter French and German Tiger Helicopters with some modifications ('Australianisation'). The acquisition of this helicopter was deemed to be an 'off the shelf' (OTS) procurement and hence represented a low risk to Defence.²¹

2.22 This assessment of low risk, however, is at odds with the Aircraft Research and Development Unit (ARDU) pre-contract report which highlighted that there were a large number of identified deficiencies and also a significant body of development and certification remaining that the manufacturer was unlikely to complete in the time allowed under the proposed contract.²² Evidence received by the committee shows a deliberate decision by the Defence Acquisition Organisation (DAO) not to advise the capability manager (and by extension it is assumed government) of this information.²³ It appears that while DAO preferred to believe the manufacturer's undertakings in respect to the maturity of the product, subsequent ANAO audits, Project of Concern Summaries and briefings to the Parliament have validated the predicted impact of the risks identified in the report.

2.23 According to a 2006 ANAO audit report, the DMO understood that 'flying Tiger helicopter prototypes had been demonstrated prior to the award of the Australian Acquisition Contract' although they were yet to receive full certification and design acceptance by the French Government.²⁴ In effect, ARH 1 and 2, the lead Australian helicopters, were the first of type to undergo production acceptance by any nation's Defence Force.

2.24 Indeed, while presented as a military-off-the-shelf (MOTS) acquisition, the aircraft was still undergoing development and was delivered into service 'as an aircraft type more developmental than that which was originally intended by the initial requirement'.²⁵ Additionally, airworthiness certification for the ADF relied on France's certification of the French aircraft, and delays in the French program flowed through to the Australian program. There were also some major issues associated with

20 ANAO Report No. 20 2011-12, *2010-11 Major Projects Report*, p. 272.

21 ANAO Audit Report No. 36 2005-06, *Management of the Tiger Armed Reconnaissance Helicopter Project—Air 87*, May 2006, p. 11.

22 Aircraft Research and Development Unit.

23 The DAO was DMO predecessor.

24 ANAO Audit Report No. 36 2005-06, *Management of the Tiger Armed Reconnaissance Helicopter Project—Air 87*, May 2006, p. 12.

25 ANAO Audit Report No. 36 2005-06, *Management of the Tiger Armed Reconnaissance Helicopter Project—Air 87*, May 2006, paragraph 5.

the through life support contract as noted in a 2006 ANAO report. In May 2008, the then Parliamentary Secretary announced that a Deed of Agreement had been formalised between the Commonwealth and the contractor, Australian Aerospace, that resolved some of the outstanding contractual issues that were constraining the project.²⁶

2.25 The final operational capability, originally planned for June 2009, is now forecast for December 2012, 42 months late.²⁷ According to DMO, the main lessons to be learnt from this project are:

- aircraft still undergoing development by their parent Defence Force or Original Equipment Manufacturer (OEM) should not be classified as OTS;
- resolve or escalate minor disputes as they arise to prevent escalation to major contract dispute; and
- use integrated teams with strong processes and empowered staff facilitated by appropriate contractual arrangements.²⁸

2.26 It should be noted that the ANAO audit report found that the DMO accepted the first of the assembled aircraft on the basis of the draft acceptance procedure. Importantly, that acceptance followed a Production Acceptance Test and Evaluation Report compiled by the Defence Aircraft Research and Development Unit Test Team that recommended the aircraft should not be accepted in its delivered state.²⁹ The ANAO recommended:

- prior to accepting aircraft against specified capability, technical and operational airworthiness standards, DMO completes the required testing activities, unless there is a demonstrable case for not doing so;
- project authorities liaise and consult closely with capability managers prior to finalising product acceptance, where significant operational capability issues exist; and
- DMO incorporates into final contract documentation unambiguous specifications, including required configurations for airborne weapon systems, so that the impact on the platform is fully understood.

2.27 Suggestions that DMO should complete the required testing activities prior to accepting aircraft and consult closely with capability managers before finalising product acceptance are patently obvious. They are not about adding processes but about establishing appropriate priorities—not cutting corners on vital test and

26 The Hon Greg Combet MP, Parliamentary Secretary for Defence Procurement, Speech, Defence Watch Luncheon, 22 May 2008.

27 ANAO Report No. 20 2011-12, *2010-11 Major Projects Report*, p. 276.

28 ANAO Report No. 20 2011-12, *2010-11 Major Projects Report*, p. 280.

29 ANAO Report No. 36 2005-06, *Management of the Tiger Armed Reconnaissance Helicopter Project—Air 87*, paragraph 29.

evaluation activities; ensuring that technical advice from subject matter experts informs discussions in submissions; and involving capability managers in specifying capability, technical and operational worthiness standards and the required testing to those standards.

Guided Missile Frigate Upgrade Project

2.28 The Guided Missile Frigate (FFG) Upgrade sought to upgrade four (originally six) Adelaide Class FFGs to ensure that they remained effective and supportable until their removal from service between 2015 and 2021.³⁰ The FFG upgrade project commenced in 1999 and was subsequently re-baselined in 2004 and 2006 due to delays. Also, the project scope was reduced from six to four ships. The project suffered from an underestimation of the complexity involved and performance specifications not being formalised and agreed before contract signature.³¹ The then CEO DMO told the Joint Committee of Parliamentary Accounts and Audits (JCPAA) in May 2007 that when the FFG project was put together in 1997 or 1998 'you could probably argue that there were not enough people on the project'.³² The project was placed on the projects of concern list in January 2008.³³ The then Parliamentary Secretary noted in November 2008:

When I first became engaged with the project it became obvious to me that the main players involved including the Navy, the DMO, the prime contractor Thales and the subcontractor Rafael were not communicating with each other. The project was drifting and confidence in any successful outcome was fading.³⁴

2.29 Mr John O'Callaghan, Australian Industry Group, informed the committee that clearly there was a failure on the part of the industry project team and the Defence project team to 'actually work together to get the appropriate outcome' for this project.³⁵ Evidence provided to the committee shows that this was a gross understatement of what was in fact a complete calamity.

30 ANAO Report No. 20 2011–12, *2010-11 Major Projects Report*, p. 317.

31 ANAO Report No. 20 2011–12, *2010-11 Major Projects Report*, p. 319.

32 JCPAA, *Committee Hansard*, 9 May 2007, p. 20. Mr Steve Gumley stated that 'one of the main areas of the up-skilling program is to train our own. We have been out to the market; we have seen what is there. It is a limited pool of qualified people. The industry, obviously, want exactly the same people. There are 7,000 people in DMO, but there are 26,000 people in the industry, and they need the same sorts of people'.

33 Stephen Smith MP, Minister for Defence and Jason Clare MP, Minister for Defence Materiel, Media Release, 'Reforms to Projects of Concern', MR 187/11, 29 June 2011.

34 The Hon Greg Combet MP, Parliamentary Secretary for Defence Procurement, Address to Australian Command and Staff Course Members, Australian Defence College, 24 November 2008.

35 *Committee Hansard*, 12 June 2012, p. 28.

2.30 The Operational Release for the four ships project was successfully completed in July 2011, representing delays of between 67 and 84 months.³⁶

2.31 The problems experienced by the FFG upgrade go to matters including Defence having no informed appreciation of the complexity of the project, especially that the systems-of-systems risk was high, inadequate specifications and consequent misunderstandings between Defence and the contractors.³⁷ An important lesson to be learnt from this project is the need to engage senior people with the necessary authority early in the process to minimise the risk of surprises and to stop the relevant parties 'retreating to their corners' when difficulties emerge.³⁸ As mentioned earlier, having domain expertise with clear channels of communication to these key people is also necessary; otherwise they are making uninformed decisions.

2.32 Regrettably, responsibility for the failure of the FFG Upgrade project cannot be attributed to any one part of the chain, and clearly Chief of Navy was very reluctant to accept the ships into service, thus demonstrating his lack of engagement. Indeed, ANAO observed that DMO and Navy would benefit from working more closely during acceptance test and evaluation. It noted:

A close working relationship is specified in DMO's System Acceptance criteria, but in practice this does not always eventuate. For example, in December 2009, DMO completed contractual acceptance of all four upgraded RAN FFG Guided Missile Frigates with limited engagement of Navy in the verification and validation process leading to contractual acceptance. To date there are significant elements of the upgraded FFG Combat System that are yet to demonstrate the performance, reliability, availability and maintainability expected by Navy, but recourse to contractual remedies is now significantly reduced.³⁹

2.33 The ANAO report highlighted a concern that is repeated throughout this report—non-compliance with policy, guidelines or manuals and capability managers left out of the loop.

2.34 With regard to the FFG project, the committee suspects that the full story of incompetence on this project, including that of the contractor, will never be discovered.

36 ANAO Report No. 20 2011-12, *2010-11 Major Projects Report*, p. 323.

37 ANAO Report No. 20 2011-12, *2010-11 Major Projects Report*, p. 328.

38 Information received during the committee's visit to Western Australia.

39 ANAO Audit Report No. 57 2010-11, *Acceptance into Service of Navy Capability*, paragraph 49.

KC-30A Multi-Role Tanker Transport

2.35 The government gave the equivalent of second pass approval for the KC-30A Multi-Role Tanker Transport (MRTT) in May 2003.⁴⁰ The air-to-air refuelling aircraft is designed to enhance Australia's air combat capability by extending the range and endurance of Australia's fighters and also provide extra air-lift capability. The purchase of this new generation Airbus A330 MRTT is intended to provide in-flight refuelling capability for current and future aircraft as well as providing for the carriage of up to 270 passengers and cargo.⁴¹

2.36 Australia is the lead customer for the A330 MRTT platform, including for the Aerial Refuelling Boom System developed by Airbus Military. The project involves a highly complex developmental effort to 'design, build and test the first-of-type, highly integrated military mission and refuelling systems'. This project has also experienced significant delays and was placed on the projects of concern list in October 2010.⁴²

2.37 Recently, the DMO observed that 'the development and introduction into service of a first-of-type military aircraft mission and support system is always harder than it first appears.' With regard to the MRTT, it stated further:

At contract signature the project appeared a reasonably low risk venture. However, over the course of the project, it became apparent to both the DMO and the contractor that the integration of the fuel delivery systems and military systems on a commercial aircraft introduced many challenges including: software integration issues, underestimation of developmental and certification testing schedule.

...

...due to time constraints and the breadth of review activities, it was not possible to conduct a comprehensive technical review and maturity assessment.⁴³

2.38 This last statement clearly indicates a case of self-inflicted negligence.

2.39 Based on past contractor performance and an independent assessment of remaining technical risk, Defence expected a delay of between 35–38 months for achieving the initial operating capability. According to DMO, the lessons to be learnt from this project are:

- DMO should have exercised greater effort for a longer period of time to support the program;

40 ANAO Report No. 20 2011-12, *2010-11 Major Projects Report*, p. 303.

41 ANAO Report No. 20 2011-12, *2010-11 Major Projects Report*, p. 303.

42 The Hon Stephen Smith, Minister for Defence and the Hon Jason Clare MP, Minister for Defence Materiel, 'Projects of Concern—Update', 15 October 2010.

43 ANAO Report No. 20 2011-12, *2010-11 Major Projects Report*, p. 315.

- prior to contract award, a more robust design maturity assessment should have been undertaken under a funded design development process; and
- a more robust process should have existed to achieve a common understanding of derived requirements and operational intent that should have been agreed to at an early stage in the project's life.⁴⁴

2.40 These lessons are standard diagnoses found after the effect, but which, from what the committee has heard, apply to many other projects. The relative responsibility of RAAF, DMO or others is not known. But again, in the committee's experience, it is not likely to be discovered.

2.41 It should be noted that during its visit to RAAF Edinburgh, the committee gained a greater understanding of the lack of resources and attention Defence gave to the testing and evaluation of the MRTT in France. Thus, the committee believes that another important lesson for Defence, DMO and relevant capability managers is to ensure that any overseas testing and evaluation of an acquisition is closely scrutinised by appropriately qualified and resourced Australian personnel. Such personnel should be accountable to one source of authority, i.e. the client who finally uses the product. Defence should not skimp on the resources necessary to conduct adequate and appropriate T&E activities and make it crystal clear who is responsible.

Multi-Role (MRH-90) Helicopter

2.42 The Multi-Role Helicopter Project received first and second pass approval in 2006. The program is part of a strategic plan to rationalise the number of helicopter types in ADF service and involves the acquisition of MRH-90 helicopters for three separate roles.⁴⁵

2.43 The helicopter received significant negative publicity in early 2010 when a report from the Luftlande und Lufttransportschule (Airborne and Air Transport School) was released. The report highlighted a range of deficiencies and recommended 'using alternative aircraft whenever possible in an operational scenario'.⁴⁶ In Australia, the helicopter underwent a 'high-level comprehensive diagnostic review' during April 2011 that recommended a remediation strategy.⁴⁷ The helicopter was placed on the projects of concern list in November 2011.⁴⁸

44 ANAO Report No. 20 2011-12, *2010-11 Major Projects Report*, p. 315.

45 ANAO Report No. 20 2011-12, *2010-2011 Major Projects Report*, p. 207.

46 Air Commodore (retired) Bushell, *Submission 3, Annex C*; and Thomas Newdick, 'German Army Report Highlights NH90 Deficiencies', *Defense News*, 24 February 2010.

47 Stephen Smith MP, Minister for Defence, 'Minister for Defence, Minister for Defence Materiel: Projects of Concern—Update', 1 February 2011. Also see footnote below.

48 The Hon Jason Clare MP, Minister for Defence Materiel, 'Minister for Defence and Minister for Defence Materiel—Projects of Concern Update', 28 November 2011, <http://www.minister.defence.gov.au/2011/11/28/minister-for-defence-and-minister-for-defence-materiel-projects-of-concern-update-2/> (accessed 30 November 2011).

2.44 The failure of the program to achieve an adequate rate of effort has affected the training of Service aircrew. Additionally, the immaturity of the MRH-90 helicopter design was not considered when it was initially classified as a MOTS acquisition and aircraft already delivered require in-service retrofit to bring them up to the full capability baseline.⁴⁹ Overall, the program has incurred delays of approximately two years and a capability gap has had to be covered by the Army's Black Hawk fleet and potentially Navy's Seahawk helicopters.⁵⁰ The DMO identified the following lessons to be learned from the project:

- it is essential that the maturity of any offered product be clearly assessed and understood; and
- elements of a chosen OTS solution may not meet the user requirements.⁵¹

2.45 The committee considers this analysis to be trite; uninformative as to the real causal issues; and unhelpful when it comes to accountability and remedial action necessary.

2.46 For example, the committee understands that a Preview Evaluation was not conducted despite strong advice from the ADF Flight Test Centre that such an evaluation was a critical part of identifying and quantifying risk prior to contract signature. Once Defence became aware of problems, albeit very late, it should have set about establishing why the maturity of MRH-90 was not clearly assessed and understood. If such an approach were taken, Defence may well have looked at the structure of the organisation in order to identify where things started to go wrong and why remedial action was not taken. This approach would require answers to hard questions about responsibility, accountability, the engagement of the capability manager, the use of trained and experienced teams to test the feasibility and suitability of a capability and the attention given to such expert advice. The lessons to be learnt would then have some relevance and practical application.

2.47 The DMO also noted the problems caused by having only limited intellectual property rights including the provision of adequate data for integration with other platforms such as the Landing Helicopter Deck (LHD). In less precise terms, DMO also referred to the need to set up Commonwealth and industry teams well before the delivery of the first type for projects as well as a range of lessons associated with command and control of assets and people, stakeholder management and relationship with industry.⁵² The committee is not aware of any response from Defence or the relevant capability manager, who are equally responsible for the failure, and hence all responsibility appears to rest with DMO.

49 ANAO Report No. 20 2011–12, *2010–11 Major Projects Report*, pp. 207-209.

50 Defence Materiel Organisation, 'February 2012 Estimates: DMO Statement on Projects of Concern', 9 February 2012, p. 8.

51 ANAO Report No. 20 2011–12, *2010–11 Major Projects Report*, p. 318.

52 ANAO Report No. 20 2011-12, *2010-11 Major Projects Report*, p. 218.

Air Warfare Destroyer

2.48 The Air Warfare Destroyer (AWD) project received first pass approval in 2005 and second pass in 2007.⁵³ The project involves the acquisition of three Hobart Class Air Warfare Destroyers to contribute to Australia's joint air warfare defence capability.

2.49 While the project is progressing within budget, it has experienced schedule delays with early hull block production due to capacity issues at the Melbourne shipyard. In May 2011, a plan to adjust the workload to relieve pressure on the shipyard was announced.

2.50 Mr King informed the committee that when he was the project manager for the AWD, the advice to government was that the developmental solution would take three years longer and have a significant cost risk.⁵⁴ He explained:

The alliance and ASC, who are the managing shipbuilder on the project, were comfortable that they had the skills, capacity and history to take on this task. We had done the analysis. The obvious truth is that...they do not have the capacity...it is demonstrated now that that cannot all come together in the required time frame. So my advice to government at the time was wrong.⁵⁵

2.51 The committee heard similar evidence during its visit to South Australia, where it was told that the Melbourne shipyard was caught out by a cold start in production and a change in management with a smaller workforce remaining. In other words, the government was misled as to readiness of the project to begin, as well as the contractor's real capacity to do the job.

2.52 The main problem with the AWD stemmed from Defence not fully comprehending the ship building component—its 'understanding was shallow'.⁵⁶ The lessons to be learnt go directly to having full knowledge of the capacity of the contractor's shipyards and, based on detailed evaluation, reaching agreement on a schedule that achieves the right balance between commencing production and completing design.⁵⁷

M113 Upgrade Program

2.53 The M113 Upgrade Program—stretching and upgrading the ADF's existing M113A1 fleet which includes seven different variants—was originally an

53 ANAO Report No. 20 2011-12, *2010-11 Major Projects Report*, pp. 185–186.

54 *Committee Hansard*, 7 October 2011, pp. 27–28.

55 Senate Foreign Affairs, Defence and Trade Legislation Committee, Estimates, *Committee Hansard*, 30 May 2011, p. 119.

56 Committee's visit to South Australia.

57 ANAO Report No. 20 2011-12, *2010-11 Major Projects Report*, p. 195.

\$850 million project that has increased to over \$1 billion with the addition of another 81 vehicles under the Enhanced Land Force initiative. In May 2008, the then Parliamentary Secretary announced that the M113 Upgrade project had effectively dealt with the technical problems that had plagued it in its developmental stages. He stated 'we now have a straightforward path to delivering all operational vehicles as originally specified' and which the contractor, Tenix, had undertaken to do by December 2010 in accordance with the original contract.⁵⁸ The minister was clearly misled because this subsequently turned out not to be the case and the final delivery date for the vehicles has been pushed back several times to well beyond the December 2010 date.

2.54 The project was placed on the projects of concern list in December 2007 and removed in May 2008. According to the 2012 audit report, it was taken off this list on the basis of Defence advice that included 'incorrect information regarding production rates and assurances that schedule delay would be recovered'. It found:

Subsequent advice to government in support of the 2008 proposal to acquire a further 81 upgraded APCs and the proposal to extend the AM variant also contained incorrect and unrealistic advice relating to schedule production rates and projections. There have been several such instances of incorrect and/or unrealistic reporting on project status, and issues affecting this, over the life of this project.⁵⁹

2.55 Indeed, the audit report noted that 'accurate information about the status of the project and the full implications of key issues was not always communicated to senior Defence decision-makers and the Government.'⁶⁰

2.56 The audit also commented on capability. For example, it noted that, although the upgraded M113 represented an improvement on the older vehicle and was considered fit-for-purpose when the minor upgrade was first proposed 20 years ago, it 'now lags behind armoured infantry vehicles in use with other armed forces'.⁶¹ It stated further that the development and delivery of the vehicle has occurred in isolation from the development of some of the fundamental inputs to capability.⁶² This last observation highlights the potential for mishaps when the capability manager is removed from the acquisition and sustainment activities.

58 The Hon Greg Combet MP, Parliamentary Secretary for Defence Procurement, Speech, Defence Watch Luncheon, 22 May 2008.

59 ANAO Audit Report No. 34 2011–12, *Upgrade of the M113 Fleet of Armoured Vehicles*, paragraph 31.

60 ANAO Audit Report No. 34 2011–12, *Upgrade of the M113 Fleet of Armoured Vehicles*, paragraph 47.

61 ANAO Audit Report No. 34 2011–12, *Upgrade of the M113 Fleet of Armoured Vehicles*, paragraph 15.

62 ANAO Audit Report No. 34 2011–12, *Upgrade of the M113 Fleet of Armoured Vehicles*, paragraph 35.

2.57 The committee indeed wonders how the project, based on a fundamental misunderstanding of the scale of the engineering task involved, survived for so long.⁶³

Lightweight Torpedo Replacement Project

2.58 The Lightweight Torpedo Replacement Project (JP 2070) was originally intended to acquire a replacement lightweight torpedo and support systems, and integrate the torpedo onto the Adelaide and ANZAC Class Frigates, AP-3C Orion Maritime Patrol Aircraft, Seahawk helicopters and Super Seasprite helicopters. As the project encountered difficulties, the scope was reduced to exclude the Super Seasprite, and then later to exclude the Orion and the Seahawk, leaving just the two surface platforms.

2.59 At the conclusion of Phase 1—where Defence 'effectively removed all competition to the MU90 torpedo'⁶⁴—Defence and DMO believed the MU90 to be an off-the-shelf acquisition already in service with other navies. In fact, the MU90 was a developmental project not yet in service.⁶⁵ According to the ANAO, the Lightweight Torpedo project provides yet another example of where an inadequate description of risk during the capability definition and planning phase of a project contributed to problems with delivering the required capability. Other difficulties experienced by the project included issues similar to those experienced by other troubled projects:

- insufficiently rigorous cost estimates;
- inadequate project planning and management;
- failure to appreciate the risks involved with integrating the weapon onto multiple platforms—inadequate understanding of the weapon and its developmental status; and
- inadequate planning of testing and acceptance.⁶⁶

2.60 The committee also understands that subject matter experts within Defence, the Aircraft Stores Compatibility Engineering Agency (ASCENG), highlighted the developmental nature of the MU90 and the integration issues. DMO ignored its recommendation to conduct basic pre-contract evaluations such as 'fit checks'.

2.61 Acknowledging the long history of project management difficulties and failures, the then Minister for Defence Materiel and Science stated in May 2010 that

63 See Ms Fran Holbert, *Committee Hansard*, 12 June 2012, p. 3.

64 ANAO Audit Report No. 37 2009–10, *Lightweight Torpedo Replacement Project*, p. 21.

65 ANAO, *Submission 22*, paragraph 19.

66 ANAO Audit Report No. 37 2009–10, *Lightweight Torpedo Replacement Project*, pp. 15–16 and *Submission 22*, paragraph 19.

the project should have been 'better defined, costed and managed'.⁶⁷ The final acceptance test and evaluation firings in November 2010 were not a success. In May 2011, Mr King explained that the project was 'a disappointment':

What we have determined since through very thorough analysis is a number of failures of the whole system, not the torpedo, that we have to address. These appear to be minor in a technical sense but major in impact in the deployment of the weapon. They relate to the construction of the torpedo tubes, which need to have a modification carried out...but we have come up with a fix that means we can use that tube both for the Mark 46 and for these MU90 torpedoes.

There were two other matters that contributed to the failures. One was to do with the handling trolleys...to make it align accurately to the torpedo tube when you insert it into the tube so that you do not do any damage to the torpedo. The third element...is one connector cable...What we have found is only one variant of that cable works 100 per cent reliably on the MU90 torpedo, so we are ordering in that particular cable.⁶⁸

2.62 In February 2012, Mr King informed the committee that the project was close to coming off the projects of concern list.⁶⁹

2.63 Again, the committee asks why this failure was not communicated and why it proceeded for so long without someone in the organisation taking action. The committee is not aware of the Chief of Navy's role, if any, in this project.

2.64 The ANAO undertook performance audits of the Super Seasprite and Lightweight Torpedo projects in recognition that they were intended to deliver significant capabilities that the ADF required but, at the time the audits were planned, had already encountered difficulty in delivering the required capability.⁷⁰ For both projects, capability has not been delivered as planned or has been delayed by more than a decade, with significant associated costs. The committee considers ten years delay as scandalous.

2.65 Similar, to the Super Seasprite, the Lightweight Torpedo project demonstrates that from the earliest stages of this project risk was not managed, which then set it on a troubled course. Most particularly, it would seem that the advice on risk by domain experts was not communicated to, or appreciated by, others in the chain. Thus both projects indicate that somewhere in this management structure sound technical advice

67 Senator the Hon John Faulkner, Minister for Defence, media release, 'ANAO Audit of Lightweight Torpedo Replacement Project', MIN52/2010, 19 May 2010. <http://www.defence.gov.au/minister/90tpl.cfm?CurrentId=10322> (accessed 1 March 2012).

68 Senate Foreign Affairs, Defence and Trade Legislation Committee, Estimates, *Committee Hansard*, 31 May 2011, p. 62.

69 Senate Foreign Affairs, Defence and Trade Legislation Committee, Estimates, *Committee Hansard*, 15 February 2012, p. 72.

70 ANAO *Submission 22*, paragraph 18.

from subject matter experts was misinterpreted, reinterpreted or disregarded by non-experts. The Wedgetail and MRH-90 projects highlight the same shortcomings.

The Collins Class Submarine Reliability and Sustainability Project

2.66 The Collins Class Submarine Reliability and Sustainability Project is a program of upgrades to the Collins Class platform systems. The project has exposed problems, some of which can be traced back to the initial acquisition phase, highlighting important lessons for the purchase of the future submarines. The acquisition of the new submarines is discussed in the following chapter.

Common problems—costs, schedule slippage and reduced capability

2.67 The committee has used the above examples, which do not represent an exhaustive compilation of problem projects, to illustrate the main reasons for projects derailing. Currently, Defence's main concern is with schedule slippage.

Schedule slippage

2.68 The ANAO 2010–11 Major Projects Report continued to report on schedule slippage as the most significant challenge for the DMO and industry contractors. It noted that this failure to maintain projects on schedule affected the time that a capability was available for operational release and deployment. The DMO data indicated that at 30 June 2011, the total time for the 28 major projects to achieve their FOC date was expected to be almost one-third longer than was originally planned.⁷¹

2.69 The ANAO recorded that the total schedule slippage for the 28 major projects was expected to be 760 months when compared to the initial prediction when first approved.⁷²

2.70 The table below shows that 88 per cent of the total schedule slippage across the major projects was made up of projects approved prior to the DMO's demerger from the Department of Defence in July 2005. ANAO indicated that this improvement was 'a positive indicator of the benefits that the DMO, as a specialist and sustainment organisation, was able to bring to complex Defence procurement'. It noted, however, the addition of projects in the post 2005 July group that were at 'a comparatively early stage'. According to the ANAO, the effect of 'new' projects, are less likely to have yet recorded schedule slippage.⁷³

71 ANAO Report No. 20 2011–12, *2010–11 Major Projects Report*, paragraph 20.

72 ANAO Report No. 20 2011–12, *2010–11 Major Projects Report*, paragraph 2.35.

73 ANAO Report No. 20 2011–12, *2010–11 Major Projects Report*, paragraphs 27–28 and 2.48 and Table 8, p. 70.

Table 2.1: Project slippage: Project's approved pre and post DMO demerger⁷⁴

Project	No. of months between Approval and Original date	No. of months between Approval and 30/6/11 FOC date	No. of months slippage between Original FOC and 30/6/11 FOC date
Projects Approved pre-July 2005			
Sub Total Projects Approved pre-July 2005	1 421	2 092	667
Percentage of Total—Projects Approved pre-July 2005	57%	64%	88%
Projects Approved post-July 2005			
Sub Total Projects Approved post-July 2005	1 070	1 163	93
Percentage of Total—Projects Approved post-July 2005	43%	36%	12%
Total—All Projects With Slippage	2 491	3 255	760

2.71 The committee also notes that slippage is measured from approval at Second Pass. The committee discusses delays in the earlier stages of a project in chapters 3 and 13.

Costs

2.72 According to the 2011–12 Major Projects Report, the total budgeted costs for the 28 major projects included in the report increased by \$7.8 billion (20 per cent) since the projects received second pass approval. This figure comprised: price (materials and labour) variation increases of \$7.6 billion; real variation (such as scope changes and budget transfers between projects) increases of \$3.7 billion; and foreign exchange rate movement decreases of \$3.5 billion. The DMO reported that all projects were 'delivering capability within the approved budget'.⁷⁵

74 Taken from table 8 in ANAO Report No. 20 2011–12, *2010–11 Major Projects Report*, p. 70.

75 ANAO Report No. 20 2011–12, *2010–11 Major Projects Report*, paragraph 24 and p. 103.

2.73 Although costs do not appear to be a major concern, the committee has referred to Mr Pappas' observation that 'an inherent risk is attached to slippage—project team salaries and allowances, administrative costs and capability related costs, such as a capability gap, or maintaining an ageing capability' (see paragraphs 2.17–2.18). ANAO indicated that schedule delays increase the overall cost of project delivery because both the DMO and industry staffing and administrative resources are tied up for longer than planned. Air Commodore (retired) Ted Bushell, who has analysed all four Major Project Reports (MPRs), drew attention to a statement in the 2010–11 MPR that none of the major projects had exceeded their approved budgeted cost. The MPR noted, however, that 'the cost of schedule slippage provided for in budgetary adjustments can be significant'. According to Air Commodore (retired) Bushell, 'It is amazing that projects that are one to six to ten years late, all still come in within their approved budgeted cost'.⁷⁶

2.74 The committee's view is that the simple assertion made by Defence that costs do not increase as the result of slippage is not credible. In fact, the committee also notes that during the JCPAA's recent consideration of the 2010–2011 ANAO's MPR, the funding is no longer available for post 2010 projects once delivery date has been exceeded. This development demonstrates that government has been forced to impose a discipline which will force the absorption of over run costs.⁷⁷

Capability

2.75 In relation to capability, the DMO expects to deliver almost all capabilities associated with the major projects in the 2011–12 MPR.⁷⁸ This assessment by the DMO was outside the scope of the ANAO's review. Nevertheless, the ANAO stated that it 'continues to engage with the DMO on developments regarding materiel capability measures and the revised Materiel Acquisition Agreement (MAA) framework'. It does so, in order to enhance its 'understanding of the DMO's assessment of its own performance in the delivery of the materiel element of key capabilities'.⁷⁹ The ANAO stated:

There are some indications that the assessment of capability is overly optimistic in some cases. Analysis of the information available indicates that some critical capabilities have been unavailable or are expected to be delivered below that initially approved. For example, numerous recent issues in the sustainment of the submarine capability have gained significant public and political attention, and have limited the availability of this capability to the Navy. Similarly, in respect of the MRH90 Helicopters, ARH Tiger Helicopters and Air to Air Refuel projects, the DMO's

76 Air Commodore (retired) Bushell, *Supplementary Submission 3D*, Executive Summary p. 3.

77 Joint Committee of Public Accounts and Audit, *Joint Report 429, Review of the 2010-11 Defence Materiel Organisation Major Projects Report*, May 2012.

78 ANAO Report No. 20 2011–12, *2010–11 Major Projects Report*, paragraph 21.

79 ANAO Report No. 20 2011–12, *2010–11 Major Projects Report*, paragraph 21.

assessment of the capability expected to be delivered has declined in 2010–11 as compared to the original planned key capabilities for these platforms.⁸⁰

2.76 The committee takes note of ANAO's observation about achieving expected capability and Defence's possible over optimism, and hence remains very sceptical about such assurances. In drawing attention to slippage in the Tiger Reconnaissance Helicopter, the Lightweight Torpedo Replacement, and the MRH-90 Helicopter projects, the ANAO stated that the delays could effectively introduce a capability gap or require extension to the life of the platform they are to replace.⁸¹

Conclusion

2.77 Recent Defence projects have experienced very serious problems, many of which should have been avoided, or at the very least anticipated and managed better. Clearly, in some cases the government had not been advised of the extent of the difficulties. The causes of the problems include:

- risk not managed properly or inadequately described during the capability definition and planning phase—in general poor risk analysis in the early stages of a capability development, which in some cases carried through into the acquisition and delivery phase;
- risk identified by domain or subject matter experts but downplayed, misinterpreted, or ignored by more senior non-experts—important to ensure that risk remains visible all the way to senior decision-makers and remains so until the senior decision-maker is satisfied that it is being actively and appropriately managed;
- failure to appreciate the challenge of being a customer of a first-of-type program;
- underestimation or understatement of the level of technical maturity with programs proceeding without the requisite level of knowledge—numerous examples where developmental projects were deemed incorrectly to be MOTS;
- inadequately planned and scoped developmental projects;
- underestimation of complexity of integration;
- inadequate specifications;
- incorrect, inaccurate or unrealistic reporting to, or failure to advise, senior Defence officials or government on keys matters relating to a project—the reporting regime lacks transparency;

80 ANAO Report No. 20 2011–12, *2010–11 Major Projects Report*, paragraph 22.

81 ANAO Report No. 20 2011–12, *2010–11 Major Projects Report*, paragraph 2.39.

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- poor understanding of overseas certification standards and Australia's requirements and the importance of having sufficient resident project staff, with the requisite qualifications and experience, to ensure overseas contractors understand Australian requirements and expectations;
 - inadequate planning of testing and acceptance;
 - failure to identify support requirements;
 - inadequate testing of contractors claims with a 'shallow' understanding of industry's capacity to deliver;
 - poorly designed contracts with little incentive for the contractor to deliver value for money;
 - misunderstandings between DMO, capability manager and contractors; and
 - shortfalls in skilled labour.

2.78 The committee accepts that the reasons outlined above for the poor performance of a number of Defence's major acquisition projects are well understood. The committee sees no purpose in dwelling on the facts any further—they speak for themselves. The committee, however, uses these identified failings as a starting point from which to examine and determine the deeper underlying causes for poor performance. Moreover, the committee notes that these failures are the same as they have always been, with little sense of improvement except for the genuine OTS purchases which are so relied on by Defence to claim improved performance.

