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Audit Report No.37 2009–10  
Performance Audit

# **Lightweight Torpedo Replacement Project**

**Department of Defence**

Australian National Audit Office

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of Australia 2010

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Canberra ACT  
20 May 2010

Dear Mr President  
Dear Mr Speaker

The Australian National Audit Office has undertaken a performance audit in the Department of Defence in accordance with the authority contained in the *Auditor-General Act 1997*.

Pursuant to Senate Standing Order 166 relating to the presentation of documents when the Senate is not sitting, I present the report of this audit and the accompanying brochure. The report is titled *Lightweight Torpedo Replacement Project*.

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

Yours sincerely

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

Ian McPhee  
Auditor-General

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

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# Contents

Abbreviations.....	7
<b>Summary and Recommendations .....</b>	<b>9</b>
Summary .....	11
Introduction .....	11
Audit approach .....	14
Overall conclusion.....	15
Key findings by chapter.....	20
Defence and DMO response .....	50
Recommendations .....	51
<b>Audit Findings and Conclusions .....</b>	<b>53</b>
1. Introduction .....	55
Background .....	55
JP 2070 .....	55
Audit approach .....	60
Report structure .....	61
2. Project Management.....	62
Phase 1 – The Project Definition Study .....	62
Commencement and management of Phase 2 .....	70
Accelerated commencement of Phase 3 .....	74
Measuring the effectiveness of the acquisition .....	75
3. Contract Management.....	82
Background .....	82
Decision to use an alliance contracting arrangement .....	83
Contractual transition from Phase 1 to Phase 2 .....	88
Business case for Phase 3 to occur under the alliance .....	95
Transition towards a more traditional contract.....	97
Intellectual Property (IP) issues .....	104
4. Torpedo Delivery and Platform Integration .....	109
The development status of the torpedo .....	109
Torpedo delivery .....	115
Platform Integration.....	121
5. Testing and Evaluation.....	136
Background .....	136
Verification of capability achievement.....	137
Achieving Initial Operational Release .....	141
Progress towards operational release .....	148
Risk to completing Operational Test and Evaluation .....	150

6. Financial Management.....	165
Introduction .....	165
Project budget and direct expenditure .....	165
Phase 2 budget insufficient.....	175
Related expenditure .....	182
Related projects .....	184
<b>Appendices .....</b>	<b>187</b>
Appendix 1:     Comments of parties with a special interest in the report .....	189
Series Titles.....	194
Current Better Practice Guides .....	198

# Abbreviations

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ADF	Australian Defence Force
ASW	Anti-Submarine Warfare
AWD	Air Warfare Destroyer
CDG	Capability Development Group
COI	Critical Operational Issues
CTP	Critical Technical Parameters
DCIC	Defence Capability and Investment Committee
DGA	Delegation Generale Pour L'Armement
DMO	Defence Materiel Organisation
DSSB	Defence Source Selection Board
DSTO	Defence Science and Technology Organisation
EAS	Equipment Acquisition Strategy
FFG	Adelaide Class Guided Missile Frigate
FFH	ANZAC Class Frigate
FRAA	Further Revised Alliance Agreement
GEIE	European Group of Economic Interest
IP	Intellectual Property
JP	Joint Project
KPI	Key Performance Indicators
LWT	Lightweight Torpedo

MAA	Materiel Acquisition Agreement
MAB	Management Audit Branch
MOE	Measures of Effectiveness
PEWG	Proposal Evaluation Working Group
PDOR	Provisional Detailed Operational Requirements
PDT	Practice Delivery Torpedo
OQE	Objective Quality Evidence
RANRAU	Royal Australian Navy's Ranges and Assessing Unit
RANTEAA	Royal Australian Navy Test Evaluation and Analysis Authority
SPO	System Program Office
SVTT	Surface Vessel Torpedo Tube
TC	War-shot torpedo
TCU	Torpedo Control Unit
TIAP	Technical and Industrial Action Plan
TVE	Exercise Torpedo



# **Summary and Recommendations**



# Summary

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## Introduction

1. Lightweight torpedoes are self-propelled, underwater projectiles that can be launched from ships and aircraft and are designed to detonate on contact or in close proximity to a target. The Australian Defence Force's (ADF's) primary anti-submarine capability is provided by its maritime patrol aircraft, embarked helicopters<sup>1</sup> and surface platforms<sup>2</sup>. The lightweight torpedo is the main anti-submarine weapon deployed on these platforms.

2. A Defence study concluded in mid-1990, that the lightweight torpedo 'was the most cost and operationally effective anti-submarine warfare weapon in all situations'. In July 1997, the Defence Capability Forum concluded that there was a need to acquire a new torpedo because the ADF's existing Mark 46<sup>3</sup> lightweight torpedo had significant limitations and was not adequate for the ADF's needs.

3. Subsequently, in March 1998, Phase 1 of Joint Project 2070 Lightweight Anti-submarine Warfare Torpedo<sup>4</sup> (JP 2070) was approved by Government<sup>5</sup> to select and procure through subsequent phases, a replacement lightweight torpedo, procure associated support systems, and integrate the torpedo onto the following ADF platforms:

- Adelaide Class Guided Missile Frigates (FFGs);
- ANZAC Class Frigates (ANZAC ships);
- AP-3C Orion Maritime Patrol aircraft (Orion)<sup>6</sup>;

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<sup>1</sup> Embarked helicopters refer to naval combat helicopters that can be boarded on a surface platform.

<sup>2</sup> The ADF's surface platforms include the ANZAC Class ships and the FFGs.

<sup>3</sup> Specifically, Mark 46 Mod 1 Phase II and Mark 46 Mod 5A (SW) torpedoes. Source: Department of Defence, 'Equipment Acquisition Strategy JP 2070 ADF Lightweight ASW Torpedo Phase 1 – Concept and Feasibility Studies', Issue 1 Revision L, 25 November 1998, p. 1.

<sup>4</sup> Also referred to in Defence documents as the 'Lightweight Torpedo Replacement' project; the 'ADF Lightweight ASW [Anti-submarine Warfare] Torpedo Replacement'; or the ASW [Anti-submarine Warfare] Lightweight Torpedo Replacement' project.

<sup>5</sup> This approval occurred within the context of the 1998-99 Budget.

<sup>6</sup> The AP-3C Orion Maritime Patrol Aircraft is used by the Royal Australian Air Force (RAAF) for tasks such as naval fleet support, maritime surveillance, search and survivor supply and anti-surface and anti-submarine warfare.

- S-70B-2 Seahawk helicopters (Seahawk)<sup>7</sup>; and
- SH-2G(A) Super Seasprite helicopters (Super Seasprite).<sup>8</sup>

4. The Super Seasprite was removed from JP 2070's scope in March 2008 when the Government took the decision to cancel that project. Subsequently, in February 2009 the Orion and the Seahawk were also removed from the scope of the approved phases of JP 2070. Accordingly, the currently approved phases involves integration of the replacement lightweight torpedo with only the two surface platforms, the FFG and ANZAC ships.

5. The procurement approach adopted for JP 2070 was one of the Defence Materiel Organisation's (DMO's) first attempts at conducting a major capital equipment acquisition using an alliance contracting model.<sup>9</sup> As a consequence of it being a prototype alliance<sup>10</sup>, JP 2070 carried additional project and contract management overheads in the establishment and initial management phases.

6. JP 2070, as currently approved by Government, is divided into three phases. A fourth phase was proposed in the *Defence Capability Plan: Public Version 2009* but was later deleted in the February 2010 update to that plan. The three approved phases are as follows:

- *Phase 1*, which focussed on selection capability analysis and costing;
- *Phase 2*, which involves the initial acquisition of torpedoes and integration of the torpedo onto the ADF platforms; and
- *Phase 3*, which primarily involves the acquisition of a larger quantity of torpedoes referred to as war stock.<sup>11</sup>

<sup>7</sup> The S-70B-2 Seahawk is a twin-engine helicopter with features designed specifically for ship borne operations. The Royal Australian Navy (RAN) operates 16 Seahawks.

<sup>8</sup> Super Seasprite helicopters were to be acquired for the RAN for the purpose of enhancing the capability of the Navy's eight ANZAC class ships. The project to acquire the Super Seasprites was approved in February 1996.

<sup>9</sup> An alliance contract is defined by Defence as 'a legally enforceable contractual arrangement aimed at sharing risk between Alliance participants and creating mutually beneficial relationships'. *Defence Procurement Policy Manual*, 1 October 2009 edition, Definitions – 1. See paragraphs 2.61 to 2.63 for a further overview of alliance contracting in Defence.

<sup>10</sup> The alliance for JP 2070 is referred to as the Djimindi Alliance which comprises the Commonwealth of Australia, Thomson Marconi Sonar Pty Ltd (Later Thales Underwater Systems) and EuroTorp GEIE.

<sup>11</sup> The DMO provided the ANAO with a March 2008 Security Classification Document which indicates that the number of MU90 torpedoes being acquired and the total inventory holdings to be held of the torpedo, is national security classified information. Key internal DMO documents sighted by the ANAO during this audit were in breach of the classification requirements set out in this document. In April 2010, Defence informed the ANAO that any unclassified documentation, where this issue appeared, should have been appropriately classified and that this issue has now been addressed.

7. The total budget for all three approved phases of JP 2070 is \$665.48 million.<sup>12</sup> Phase 1 was completed in April 2001 and only represented a very small proportion of the total budget for JP 2070 (\$4.96 million or 0.7 per cent of the total budget). Phase 2 (with a budget of \$346.71 million January 2010 prices) and Phase 3 (with a budget of \$313.82 million January 2010 prices) were both ongoing at the conclusion of this audit. As at February 2010, the DMO had spent \$397.51 million of the combined approved budget for JP 2070. Some 12 years after JP 2070 commenced, and nine years after Government approved Phase 2, which was to buy an initial batch of torpedoes and integrate the torpedo onto five ADF platforms, the Project is yet to deliver an operational capability.

8. The Project is managed by the Guided Weapons Acquisition Branch within the Explosive Ordnance Division of the DMO. The Explosive Ordnance Division was established in February 2008.

## The Torpedo

9. Following Phase 1 of JP 2070, a Project Definition Study, the MU90 lightweight torpedo was selected as the new light weight torpedo for the ADF. The MU90 is being acquired through Phase 2 and Phase 3 of JP 2070, which were subject to separate Government approvals in May 2001 and November 2003 respectively. The MU90 is being developed by the EuroTorp (GEIE)<sup>13</sup> consortium, which is comprised of the companies that had been developing separate lightweight torpedoes for France and Italy.<sup>14</sup> Defence is acquiring four versions of the MU90 torpedo under JP 2070, to cover the torpedo's combat-oriented role and the associated roles of practice and training:

- War-shot MU90 Torpedo (TC)—the TC is the combat version of the MU90.
- Exercise MU90 Torpedo (TVE)—the TVE has the same mechanical and electrical interface and physical representation as the TC, but has an exercise section in lieu of a warhead. The TVE enables evaluation of the

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<sup>12</sup> Includes Phases 1, 2 and 3 as of February 2010.

<sup>13</sup> European Group of Economic Interest

<sup>14</sup> EuroTorp GEIE is comprised of DCN International (a French company that in 2001 became a nationalised company); Thales (a French company) and Whitehead Alenia Sistemi Subacquei (WASS) (an Italian company).

MU90 using practice firings, and is used to verify in-water performance.

- Practice Delivery Torpedo (PDT)–the PDT is carried and launched, but is not propelled. It comprises the same mechanical and electrical interfaces and physical representation as the Exercise MU90 torpedo. It will record preset data for analysis of ‘weapon firing’.
- Dummy Torpedo (DT)–the DT can be carried and launched, but is not propelled. It has no recovery system and is not watertight. It has the same mechanical interfaces and physical representation as the MU90 TC.

## Audit approach

10. The objective of this audit was to review the effectiveness of Defence’s and the DMO’s management of the acquisition arrangements for JP 2070. The high-level criteria for the audit were as follows:

- risks should be clearly defined at all stages in the capability development lifecycle, and processes should be in place to monitor and respond to risks as they emerge;
- the tender selection process should involve rigorous analysis of options against clearly defined requirements, to ensure that value for money is achieved;
- contractual arrangements should clearly define requirements, appropriately allocate risks, and facilitate the effective conduct of the acquisition;
- testing and evaluation requirements, to facilitate the transition into service of the capability being acquired, should be identified and progressively addressed as the acquisition proceeds; and
- appropriate project governance, financial controls, and reporting mechanisms should be in place.

11. At the commencement of this audit it was intended to also include within the audit’s scope consideration of technical regulatory and in-service support arrangements. However, once the status of JP 2070 in terms of torpedo delivery, platform integration and introduction into service was established, we concluded that these areas were not sufficiently mature to provide the basis for an audit opinion.

## Overall conclusion

12. JP 2070 is a complex project. It involves the acquisition of a new weapon and the integration of the weapon onto multiple platforms, albeit that over the life of JP 2070 the number of platforms included in JP 2070's scope has been reduced from five to two. There have also been significant interdependencies between this project and other projects related to the platforms onto which the new lightweight torpedo was and is to be integrated. To effectively complete JP 2070, Defence needed to have in place from the outset appropriate risk management processes to identify, monitor and address risks to the project. However, there have been significant weaknesses in the Defence's risk management of JP 2070.

13. Several key areas of risk that have emerged or gained increasing significance over the life of the project include:

- *Initial costing of Phase 2 of the JP 2070 was not sufficiently rigorous or subject to adequate scrutiny.* This has had ongoing implications for project progress, and ultimately was a factor that contributed to a significant reduction in the capability to be delivered by Phase 2, particularly through the removal of all air platforms from the approved phases of JP 2070.
- *Project planning and management was inadequate, and in some instances key project documents were either not developed, or were not developed on a timely basis.*<sup>15</sup> This has inhibited the orderly conduct of the procurement and, ultimately, the delivery of the capability.<sup>16</sup>
- *The decision to use alliance contracting arrangements for JP 2070 was not based on structured analysis of contractual options, and once implemented was not adequately supported.* The alliance arrangement for this project has generated additional risk to this acquisition, did not mitigate risks it was intended to address, and shifted management focus away from project deliverables without demonstrating measurable benefits to project outcomes.
- *An inadequate understanding of the weapon and its development status over the period 1999 to 2004 contributed to an underestimation of project risk. At*

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<sup>15</sup> See paragraphs 2.36 and 2.37.

<sup>16</sup> See Chapter 1.

the conclusion of Phase 1 of JP 2070, Defence and DMO<sup>17</sup> believed the MU90 to be an off-the-shelf acquisition of a torpedo that was already in-service with the other navies.<sup>18</sup> This was not the case. Subsequently, issues identified through production testing of the torpedo contributed to schedule slippage and invalidated planning assumptions with ongoing implications for testing and evaluation.

- *The risk involved in integrating the weapon onto multiple platforms was acknowledged, but not fully appreciated at the outset, and was compounded by a range of factors as JP 2070 progressed.* These included a significant underestimation of the full cost to integrate the weapon onto the various platforms, the absence of defined and developed integration solutions for the air platforms during the time they were in JP 2070's scope<sup>19</sup>, and delays and difficulties being encountered by other projects that were upgrading the platforms with which the torpedo was to be integrated.
- *The planning of testing and acceptance, and the resolution of testing and acceptance issues for JP 2070, by the DMO has been inadequate.* This has impeded the transition of the torpedo, and associated surface platform modifications, into Navy Operational Test and Evaluation.

14. The fundamental purpose of a major capital acquisition is to provide the ADF with a new or enhanced capability, to schedule and within the approved budget. Therefore capability delivery, schedule achievement and cost control represent key indicators of how effectively the DMO has conducted a major capital acquisition. An assessment of JP 2070 against these key indicators shows that the acquisition of the replacement lightweight torpedo has not been managed effectively, as the project:

- will not deliver the capability originally sought by the ADF, with uncertainty surrounding what will be delivered;

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<sup>17</sup> DMO was referred as the Defence Acquisition Organisation prior to June 2000.

<sup>18</sup> The documentation provided by Defence to the ANAO to indicate how the decision makers at the time formed the view that the weapon was in-service with other navies did not say that the torpedo was in-service with other navies. DMO was informed that the torpedo was not in-service with any other navy in March 2004 but did not inform the then Minister of this until 12 months later in March 2005.

<sup>19</sup> See Figure 4.1 and paragraphs 4.65 to 4.72.



- has not achieved schedule, with the successful completion of a range of ongoing activities essential to providing certainty regarding when the capability will be released into Navy service;<sup>20</sup> and
- remains within budget, but this has been achieved by removing three of the five platforms<sup>21</sup> that were originally intended to be integrated with the torpedo from the scope of Phase 2 (in 2008 and 2009)<sup>22</sup>, with ongoing uncertainty surrounding the likely cost of those elements that remain within scope of JP 2070.<sup>23</sup>

15. In 2003, Defence requested the then Government to bring forward the decision on Phase 3 from an originally planned year of decision of 2005-06, with the Government subsequently approving Phase 3 in November 2003. However, the contract for Phase 3 of JP 2070 was not actually executed until August 2005. By the time the contract for Phase 3 was signed, Phase 2 had already been identified by the DMO as a 'Project of Concern' and was known to be encountering capability, schedule and cost difficulties. Some of these issues, relating to the integration of the torpedo onto the air platforms, were not overcome before the Government agreed to reduce the scope of JP 2070 in February 2009<sup>24</sup> to exclude all air platforms.<sup>25</sup> Other issues, primarily related to test and evaluation necessary for operational release of the torpedo and the

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<sup>20</sup> See Table 2.1.

<sup>21</sup> All three air platforms were removed from the scope of JP 2070 with only the two surface platforms (the FFGs and the ANZAC Ships) now remaining in scope.

<sup>22</sup> The Super Seasprite helicopter was removed from the scope of JP 2070 in March 2008 when the project to acquire the Super Seasprite was cancelled by the Government. The Government agreed to the remaining two air platforms (the Orions and the Seahawks) being removed from scope of the project in February 2009.

<sup>23</sup> Similar issues have previously been identified in relation to a range of Defence major capital acquisition projects and significant reforms have been introduced seeking to address them. Indeed, the *2003 Defence Procurement Review* (the Kinnaird Review) stated as follows:

Cost overruns have led to pressure on the financial resources available for Defence. In some instances major capital equipment has been delivered to the Services many years after its planned introduction. Budgets have been balanced by reducing capability. It would be unfair to suggest that Defence has ignored these issues. On the contrary, problems have been recognised, their causes identified and important reforms have been implemented.

<sup>24</sup> In April 2010, Defence informed the ANAO that Government also considered cancelling JP 2070 at this time.

<sup>25</sup> The Super Seasprite had already been removed from the scope of JP 2070 in March 2008 when the Government cancelled the Super Seasprite Project. In February 2009, the Orion and the Seahawk were removed from scope of JP 2070.

ship borne lightweight torpedo systems, continued to represent ongoing risks to capability delivery at the completion of this audit.

16. All of the significant issues surrounding Phase 2 were known at the time the contract for Phase 3 was signed in August 2005. Under this contract the Commonwealth was committed to an additional \$263.86 million (December 2005 prices) in expenditure to purchase additional war stock quantities of the torpedo over the \$179.56 million (December 2005 prices)<sup>26</sup> committed under Phase 2. The primary basis for the DMO committing to Phase 3 in August 2005, notwithstanding the known issues surrounding Phase 2, was that the Phase 2 contract placed the DMO in a such a weak negotiating position<sup>27</sup> that it was DMO's commercial assessment that it was necessary to use Defence's commitment to Phase 3 work as leverage to improve the Defence's poor overall contractual position.<sup>28</sup>

17. Two recent reviews of Defence procurement, the *Defence Procurement Review 2003* and the *Defence Procurement and Sustainment Review 2008*, advocate the increased use of off-the-shelf acquisitions to reduce project risk. The Defence White Paper 2009 confirmed the Government's decision that Military-off-the-Shelf (MOTS) and Commercial-off-the-Shelf (COTS) solutions to Defence's capability requirements will be the benchmark going forward.<sup>29</sup> The experience of this project identifies that claims surrounding the development status of a product offered (as MOTS or COTS) require verification to confirm that what is being offered is actually off-the-shelf. Additionally, where claims

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<sup>26</sup> The commitment to Phase 2 had previously been \$268.71 million under the Revised Alliance Agreement, which was the initial contract for Phase 2. But, at the time the Further Revised Alliance Agreement covering both Phase 2 and Phase 3 was signed in August 2005, the total commitment for Phase 2 was reduced to \$179.56 million due to the removal of the air platforms from the contract scope. The Further Revised Alliance Agreement was signed two years before the Super Seasprite Project was cancelled and three years before the Government agreed to the removal of the Orion and Seahawk from the scope of JP 2070.

<sup>27</sup> This was the case because the Phase 2 contract (the Revised Alliance Agreement) that DMO had negotiated did not include the contractual protections generally included in DMO contracts, for example there was no clause in the contract that permitted termination for default.

<sup>28</sup> In this context, the DMO noted that, following an exchange of correspondence in March 2005, it became apparent to DMO that the Industrial Participants were not prepared to re-negotiate the Revised Alliance Agreement for Phase 2 without an agreed course of action for implementing Phase 3 under the alliance agreement (see paragraph 3.70).

<sup>29</sup> The *Defence Capability Development Handbook 2010*, which was released in interim form in March 2010, indicates that military or commercial off-the-shelf options should be used as a benchmark for considering acquisition options. The handbook indicates that any option that moves beyond the requirements of an off-the-shelf solution must include a rigorous cost-benefit analysis of the additional capability sought so that the full resource risks and other impacts are understood.

about the development status are verified, the method of integration also requires close consideration as this may introduce developmental risk to a project.

18. The *Defence Procurement Review 2003* and the *Defence Procurement and Sustainment Review 2008* both also recommend the use of alternative contracting methods such as alliance contracting. This project demonstrates that alliance-style contracts cannot assure project success by and of themselves. Careful consideration is required at the outset of a project to determine the most appropriate procurement approach for each project, including the suitability of the acquisition to an alliance arrangement. Where an alliance contracting approach is adopted, appropriate governance arrangements need to be in place.

19. At the conclusion of the audit, the full cost of the approved phases of JP 2070 could not be reliably identified as the JP 2070 budget and scope was subject to further revision, with Defence intending to seek approval from the Government to release additional funding to complete integration of the weapon onto surface ships and undertake other activities. A range of important deliverables under Phases 2 and 3 are yet to be completed.<sup>30</sup> The timeframe for the Navy achieving an operational capability has been defined in an April 2010 Materiel Acquisition Agreement, although the transition into and out of Navy Operational Test and Evaluation continued to be an ongoing risk to JP 2070.<sup>31</sup> This was 13 years after the Defence Capability Forum concluded that the existing lightweight torpedo needed to be replaced, 12 years after JP 2070 commenced, and nine years after Government approved Phase 2.

20. It is not uncommon for major capital acquisitions to encounter cost, schedule and capability difficulties. When this occurs, evaluating these difficulties from the perspective of earlier decisions and approaches is likely to provide insight into how similar circumstances might be avoided in the future. In any case, it remains the ongoing responsibility of the procuring agency to deliver the best possible project outcomes to the Commonwealth. In situations where a defence project languishes between acquisition and capability

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<sup>30</sup> Including completing integration with the surface platforms, acquiring equipment for test and evaluation, conducting test and evaluation and torpedo delivery.

<sup>31</sup> In April 2010 Defence informed the ANAO that Defence aims to achieve an initial operational capability in mid-2011, with the torpedo to be fully in service with all equipment delivered in late 2013.

delivery, the ADF is denied the capability being sought, resources may be tied up for extended periods, and future planning decisions involving significant expenditure may be impacted due to the interrelationship with other projects. Where circumstances that impact on project performance arise, they should be readily detectable through the ongoing performance monitoring mechanisms in place. However, this project demonstrates that, in respect of Defence major capital equipment acquisition projects, it remains the case that further enhancement of these reporting and monitoring mechanisms is required to properly inform decision making by both Defence and Government.

## Key findings by chapter

### Project Management (Chapter 2)

#### *Phase 1*

21. JP 2070 commenced with a Project Definition Study under Phase 1. Phase 1 had a total approved budget of \$4.961 million. The Project Definition Study was intended to reduce integration and schedule risk, refine costs, and provide Defence with a sufficient understanding of the options for the acquisition phase of JP 2070. Phase 1 commenced with the release of a Request For Proposal (RFP) to companies that had responded to an earlier Invitation to Register Interest.

22. The RFP closed in July 1999, with four proposals received. The responses to the RFP were reviewed by three Proposal Evaluation Working Groups which each prepared reports for the Proposal Evaluation Board. The Board was tasked with reviewing the reports and endorsing the Source Evaluation Report. The Source Evaluation Report ranked an offer by Thomson Marconi Sonar Pty Ltd for the MU90 torpedo as the preferred option.<sup>32</sup>

23. In October 1999, the Defence Source Selection Board recommended the sole-source of the supplier of the MU90, Thomson Marconi Sonar Pty Ltd, to

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<sup>32</sup> Thomson Marconi Sonar was a joint venture set up in the 1990s between the then British GEC-Marconi (49.9 per cent) (subsequently acquired by the British Company BAE Systems in September 1999) and the former French company Thomson-CSF (50.1 per cent) (Thomson-CSF was renamed the Thales Group in 2000). In July 2001, Thales acquired BAE Systems' share (49.9 per cent) in Thomson Marconi Sonar (TMS). In September 2001, Thomson Marconi Sonar was renamed Thales Underwater Systems. The acquisition resulted in Thales being the sole shareholder of Thales Underwater Systems. The MU90 is manufactured by EuroTorp. EuroTorp is a GEIE, a consortium formed in 1993 comprising two French firms, Thales and DCN, and an Italian firm Whitehead Alenia Sistemi Subacquei (WASS). Source: <<http://www.eurotorp.com/html/prod472.htm>>.

undertake the Project Definition Study. This recommendation was subsequently approved by the relevant Defence delegate. Through this decision Defence effectively removed all competition to the MU90 from consideration in the subsequent acquisition phase.

24. Two key factors influenced Defence's decision to sole-source the Project Definition Study for JP 2070. These were the desire to achieve Australian industry involvement in the project and the perceived development status of the MU90, relative to the other torpedoes offered. Australian industry involvement was an ongoing driver for decisions surrounding JP 2070; the number of torpedoes contracted in August 2005 for acquisition under Phase 3 was exactly the same as the number required<sup>33</sup> to make manufacturing the MU90 in Australia no more expensive than making it in Europe. The desire to maintain local industry involvement was a factor taken into consideration in bringing forward the request to Government for approval of Phase 3, and deciding to enter into a contract for Phase 3 in August 2005 at a time when Phase 2 was experiencing significant difficulty.

25. The Source Evaluation Report indicated that the MU90 was regarded as being the most developed weapon of the four torpedoes considered. Further the report indicated that it was an 'off-the-shelf' acquisition. The then Minister was informed in late 1999 that the MU90 had been selected and that it was the only 'in-service' weapon offered. An 'off-the-shelf' weapon carries a different acquisition risk profile to a weapon that is in the earlier stages of development. Defence's belief that the weapon was in-service subsequently proved to be misplaced.<sup>34</sup> However, it took several years for the DMO to identify this, and during this time Defence committed under Phase 2 to acquiring the MU90 and modifying the associated ADF platforms to integrate the torpedo onto them.

26. The Project Definition Study was accepted by Defence in April 2001. One month later the Government approved Phase 2 of JP 2070 as part of the 2001-02 Federal Budget, at an approved cost of \$287.71 million (December 1999 prices). Phase 2 was planned to commence in 2001 and be completed by 2008. Six months after the Government approved the budget for Phase 2, the

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<sup>33</sup> As indicated to a May 2002 Weapons Project Governance Board.

<sup>34</sup> The documentation provided by Defence to the ANAO to indicate how the decision makers at the time formed the view that the weapon was in-service with other navies did not say that the torpedo was in-service with other navies. DMO was informed that the torpedo was not in-service with any other navy in March 2004 but did not inform the then Minister of this until 12 months later in March 2005.

Defence Capability Investment Committee selected an option that involved a reduced statement of work. Phase 2 was to acquire an initial batch of war-shot, exercise and dummy torpedoes; integrate the torpedo onto ADF Anti-Submarine Warfare platforms<sup>35</sup> and acquire logistic elements necessary to support the MU90 torpedo.

### *Phases 2 and 3*

27. Phase 2 of JP 2070 has been subject to a number of reviews that identified significant issues with project management. By mid-2004, Phase 2 was listed as a 'Project of Concern'<sup>36</sup> due to ongoing concerns surrounding schedule, uncertainty surrounding capability requirements and cost risk associated with integration of the torpedo onto the air platforms. In 2003, it was acknowledged that Defence had sought approval from Government for Phase 2 long before it was ready.<sup>37</sup> A 2004 DMO review commented that JP 2070 had not followed the 'Project Management 101 Rulebook' and that there was no excuse for not implementing sound project management and engineering principles. In 2005, the JP 2070 Project Management Stakeholders Group noted that even the capability development documentation that would have normally been required to be produced under the less stringent 'pre-Kinnaird' capability development process had not been produced.

28. The originally planned year of decision by the Government for JP 2070 Phase 3, which is acquiring a war stock quantity of MU90 torpedoes, was 2005-06. From as early as October 2001, the DMO was considering bringing forward the decision for this phase. In 2002, the Vice Chief of the Defence Force agreed to bring forward the request for Government approval of Phase 3 to realise a two per cent saving associated with the costs of the manufacturing component of JP 2070. Phase 3 of JP 2070 was approved by the then Government with a budget of \$246.431 million in November 2003. In early August 2005, shortly before the contract for Phase 3 was signed, the then Minister was informed that the anticipated savings to have been achieved by

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<sup>35</sup> Specifically the FFG, the ANZAC ship, the Super Seasprite, the Seahawk and the Orion.

<sup>36</sup> In April 2010, the DMO informed the ANAO that in early 2008 the Projects of Concern process was strengthened to include the reporting and discussion of remediation plans with the Parliamentary Secretary for Defence Procurement now the Minister for Defence Materiel and Science.

<sup>37</sup> Department of Defence, Defence Materiel Organisation, minute, 'Lightweight Torpedo Integration into Helicopters', 23 February 2003.

proceeding to Phase 3 earlier than originally planned, would not in fact be realised.

29. At the time the Government approved Phase 3, no torpedoes had been delivered under Phase 2, and the integration of the torpedo onto the FFGs and the three air platforms had made limited or no progress.<sup>38</sup> A DMO review in December 2004 expressed concern surrounding the apparent rush to lock in Phase 3, rather than address outstanding deliverables within Phase 2. The review suggested that the Commonwealth should delay Phase 3 until all Phase 2 issues surrounding Intellectual Property, acceptance, scope and platform integration were resolved. The contract for Phase 3, the Further Revised Alliance Agreement (FRAA), was executed in late August 2005, two years after the *Defence Procurement Review 2003* (Kinnaird Review). Through the development and implementation of the FRAA, the DMO addressed some of the contractual issues affecting the Project that had been identified in the December 2004 review. However, the report of that review also acknowledged that the review had limitations due to time and resource constraints, and suggested that the adoption of the recommendations contained in the review may identify further issues.

30. The introduction of Materiel Acquisition Agreements was an initiative implemented in the DMO following the *Defence Procurement Review 2003*. A Materiel Acquisition Agreement is an agreement between the Capability Development Group and the DMO, which states in concise terms what services and products the DMO will deliver. As part of the DMO's preparation for becoming a prescribed agency under the *Financial Management and Accountability Act 1997*, a due diligence analysis was undertaken resulting in the June 2004 Due Diligence Report. That report indicated the DMO was not in a position to sign a Materiel Acquisition Agreement for JP 2070 due to uncosted work for platform integration. However, a Materiel Acquisition Agreement for Phase 2 of JP 2070 was subsequently signed in June 2005, at which time the costing of the platform integration work had not been resolved.

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<sup>38</sup> In April 2010, Thales Australia informed the ANAO as follows:

Whilst within the scope of JP 2070 Phase 2, the integration onto the FFG and air platforms were not part of the "committed works" of the alliance under the Revised Alliance Agreement. That is, in the period 2002 to August 2005, the alliance was not tasked by the Commonwealth and the Alliance Board to commence integration onto the FFG and the air platforms.

In March 2010, the DMO informed the ANAO that the requirement to execute a Materiel Acquisition Agreement in June 2005 arose because the DMO was to become a Prescribed Agency under the *Financial Management and Accountability Act 1997* in July 2005.

31. The June 2005 Materiel Acquisition Agreements for JP 2070 set out the Measures of Effectiveness of the Acquisition.<sup>39</sup> The eight Measures of Effectiveness included in the June 2005 agreement fell into three broad categories, two of which were fundamental indicators of the success of Phase 2.<sup>40</sup> JP 2070 did not succeed against these two Measures of Effectiveness for the three air platforms originally in the scope of Phase 2. All air platforms were removed from the scope of JP 2070 Phase 2 by early 2009.

32. Until shortly before this audit was finalised, there was not an up to date Material Acquisition Agreement in place for either Phase 2 or Phase 3 of JP 2070 and, in respect of Phase 2, this had been the situation for some years. This was the case notwithstanding that Phase 2 is listed as a 'Project of Concern'. Defence advised that, in the interim, JP 2070 milestone dates were those proposed by Defence, and subsequently agreed to by the National Security Committee of the Cabinet, in early 2009. Subsequently, the DMO advised the ANAO that Materiel Acquisition Agreements were being drafted and on 16 April 2010 revised Materiel Acquisition Agreements for both Phase 2 and Phase 3 were signed.

### **Contract Management (Chapter 3)**

33. Project alliancing is an agreement between two or more parties involving: a sharing of risks and rewards; a no -fault/no-blame arrangement to resolve most issues; a joint leadership arrangement; and a payment arrangement where a contractor receives reimbursement of direct project costs and a fee for overheads and profit combined with a pain/gain share arrangement based on project performance.

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<sup>39</sup> Measures of Effectiveness represent key capability performance attributes of a project which, if not satisfied, would have a significant effect on the eventual suitability for operational service

<sup>40</sup> The two fundamental indicators of success for Phase 2 set out in the 2005 MAA are as follows:

- The MU90 LWT shall be integrated such that all the capabilities of the weapon can be utilised when employed from ANZAC and FFG Class frigates, AP-3C MPA [Orion Maritime Patrol Aircraft] and Seahawk and Seasprite helicopters.
- The MU90 LWT shall be able to be air launched from outside the missile engagement zone of modern submarine-launched surface to air missiles and man portable air defence systems.



34. In November 1999, the Defence Source Selection Board decided that an innovative contracting approach would be used for the JP 2070 Phase 1 Project Definition Study. Following receipt of legal advice, the Director Undersea Weapons Group in the then Defence Acquisition Organisation<sup>41</sup> sought approval in December 1999 to adopt an alliance approach for the Project Definition Study. This was two months after the decision had been made to sole-source the Project Definition Study, meaning that suitability as an alliance partner was not considered as part of the evaluation of the proposals entities had submitted in response to the RFP. It is generally accepted that an assessment of the suitability of an entity to perform in an alliance arrangement is an important factor to be considered prior to entering into this style of contract. A number of internal Defence and DMO audits and reviews of JP 2070 conducted between 2000 and 2003 reaffirmed this view.

35. In December 1999, the Head of System Acquisition (Maritime and Ground) in the Defence Acquisition Organisation approved the alliance contracting approach for Phase 1. In April 2000, an alliance agreement was executed for the Phase 1 Project Definition Study, with JP 2070 becoming the first Defence project to pilot alliance contracting. This alliance is known as the Djimindi Alliance and is comprised of the Commonwealth of Australia, Thomson Marconi Sonar Pty Ltd (later Thales Underwater Systems) and EuroTorp GEIE. At the time the decision was taken to adopt an alliance approach for JP 2070, it was acknowledged in Defence that this would result in additional costs for the project, particularly in the absence of a Defence alliance contract template.

36. Under the Phase 1 Alliance Agreement, two representatives from each of the Alliance Participants formed the Djimindi Alliance Board. The alliance representatives on that Board were required to be authorised to bind any party with respect to any matter within the power of the Board. However, the Defence representative at the time was not delegated to make decisions that bound the Commonwealth, which was seen as disempowering the Board. The Alliance Board was prohibited from making decisions surrounding operational capability without first consulting Defence. As a result a Capability Board was

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<sup>41</sup> The predecessor to the DMO.

established<sup>42</sup>. The Alliance Board and the Capability Board were supported by an Operational Working Group.

37. The Alliance Management Team, which comprised personnel from all Alliance Participants was responsible for tasks assigned to it by the DMO or the Alliance Board. This team was also responsible for the administration of all alliance sub-contracts and sub-alliances.

38. Under the Phase 1 Alliance Agreement, gainshare was defined as 'a risk/reward payment made to or paid by the Alliance Participants, in addition to the Milestone Payments'. The payment of gainshare under Phase 1 was dependent on performance assessed against Key Performance Indicators (KPIs). A 2003 Defence internal audit commented that the measures of success against certain KPIs were very subjective, and that the assessed standard of achievement against the Integration Planning KPI was not supported. The costing of integration of the torpedo onto ADF air platforms developed under Phase 1 was later identified as inadequate, with significant implications for JP 2070 and the achievement of the desired capability.

39. The Phase 2 Alliance Agreement, referred to as the Revised Alliance Agreement, was signed on 4 December 2002 and is an extension of the Phase 1 Alliance Agreement. The Revised Alliance Agreement took more than twelve months to negotiate. This extended negotiation period was inconsistent with advice provided to the delegate at the time of approving the Phase 1 Alliance Agreement that indicated the Phase 1 agreement could be seamlessly amended to include the Phase 2 acquisition, if and when required. In the period following the conclusion of Phase 1 and preceding the execution of the Phase 2 Alliance Agreement, a number of activities for JP 2070 were approved involving just under \$2.8 million in expenditure.

40. The Revised Alliance Agreement only included a high-level Scope of Work, with a 2003 Defence internal audit commenting that this could lead to significant changes in agreed baselines, cost schedule and technical requirements. At the time of the 2003 audit, six months after the Revised Alliance Agreement was signed, Measures of Success for the Phase 2 KPIs had not been agreed. That audit report also found that many of the Phase 2

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<sup>42</sup> Chaired by the Director-General Maritime Division, and consisting of representatives from Capability Systems, DSTO and the relevant Australian Defence Force Headquarters.

activities had not been achieved, and that redrafting the agreement for Phase 3 could be complex.

41. In mid-2003, Defence commissioned an external review of the alliance contracting approaches that the DMO had adopted for this project, and for the ANZAC Ship Project. The review found that DMO rushed into the alliance arrangements for both projects without due consideration of the issues involved. The review identified that many of the problems experienced could have been avoided, or mitigated, if the projects had resulted from a structured procurement process. The review found that Defence's procurement guidelines for alliance contracting had not been followed in relation to JP 2070. Defence commented to the ANAO that the alliance for JP 2070 was established before these guidelines were available. The ANAO notes that this is correct in regard to Phase 1, but that the guidance was available at the time the Revised Alliance Agreement for Phase 2 was executed.

42. There were also a range of significant cultural issues impacting on the alliance arrangements. These were summarised by an alliance facilitator to the Alliance Board in late 2001. The Board acknowledged that these observations were of great concern and that there was a need to take action to address the issues. Consistent with the observations of the facilitator which indicated a degree of uncertainty surrounding the alliance arrangements, some six months later in July 2002, the Weapons Project Governance Board noted it had trouble understanding the alliance. That Board raised concerns surrounding the interaction and integration across five platforms. Given that this Board was to provide external oversight of JP 2070, these statements suggest a high level of uncertainty surrounding the alliance at an important juncture for JP 2070. Five months later, in December 2002, the Phase 2 Revised Alliance Agreement was signed committing the Commonwealth to significant additional expenditure.

43. A Defence internal audit in mid-2003 noted that the alliance had a number of deviations from a traditional alliance model. The DMO commissioned external consultant report, also from mid-2003, notes that, while deviations from the pure alliancing model did not mean that the alliance would be ineffective, there was a need to manage expectations that the arrangement would deliver all the alliance benefits when it was not structured in a way that would result in genuine alliance behaviours. That consultant's report stated that the alliance for JP 2070 was providing better outcomes than a traditional contract; however, this view was based on anecdotal evidence and subjective assessments, and was not supported by a comparative analysis to more traditional contracting approaches. In this circumstance, the conclusion

that the alliance approach was delivering better outcomes for this project was not based on substantive evidence and therefore could not be regarded as a sound basis for decision-making.

44. Following Government approval of Phase 3, the Alliance Management Team prepared a business case outlining the acquisition options for Phase 3 in June 2004. This business case provided three options, two of which represented a more traditional contracting approach. The preferred option outlined in the business case was an extension of the Phase 2 Revised Alliance Agreement, which was seen as providing advantages over the other options. These advantages included that it was estimated to be the lowest price option and was assessed as the lowest risk option. In July 2004, the DMO accepted the Alliance Management Team's recommendation. In April 2010, DMO informed the ANAO that this recommendation was only partly implemented as Phase 3 was only included in the Further Revised Alliance Agreement for Phase 2 and Phase 3 following the inclusion of improvements in this contract compared to the existing contract.

45. In December 2004, the report of a DMO Red Team review<sup>43</sup> of JP 2070 stated that the Commonwealth may have lost direct control of the acquisition due to the nature of the alliance, and that this was a factor behind many of the issues affecting JP 2070. Delays in achieving Phase 2 work resulted in the DMO deciding that the Further Revised Alliance Agreement, to be developed to encompass Phase 3 as well as remaining Phase 2 activities, should include more commercial-style conditions and that aircraft integration should be removed from contract scope. Factors that contributed to this decision included a lack of clarity surrounding the scope of work; a lack of clarity surrounding the Alliance Participants' respective responsibilities; a lack of clarity surrounding the price basis for Phases 2 and 3; and an inability for the Commonwealth to claim damages under the extant alliance agreement.

46. Negotiations for the Further Revised Alliance Agreement (FRAA) commenced in April 2005 and were completed on 31 August 2005, nearly two years after the Government approved Phase 3. The report on the FRAA negotiations indicated that, under the agreement, the Industrial Participants in the Alliance would have a firmly established scope of work on a fixed price basis with risk spread more equitably between the Commonwealth and the

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<sup>43</sup> The purpose of a Red Team Review is to provide an independent analysis of project difficulty, especially with respect to project management, technical, schedule or cost difficulties.

Industrial Participants. The FRAA was seen as improving Defence's commercial position by moving away from an alliance arrangement. A consequence of the arrangements introduced under the FRAA was that a considerable body of project work transferred to the DMO Project Office from the Alliance Management Team.

47. Defence documentation indicates that Phase 3 was used as leverage to negotiate improved contractual arrangements for Phase 2. However, the DMO was unable to provide the ANAO with either a business case or specific legal advice to underpin the decision to use the Commonwealth agreeing to enter into Phase 3 (and so commit to more than \$263 million in 2005 prices of additional expenditure) as leverage to obtain the required improvements to the Phase 2 contract.

48. DMO informed the ANAO that DMO processes do not require a separate business case to be developed in these circumstances, but rather the decision was based on consideration by the relevant DMO decision-maker of a series of documents, the status of the project at the time and available options (albeit that this consideration was not documented at the time). The ANAO notes that the majority of these documents were developed after the decision had been taken to use Phase 3 as leverage to address contractual issues associated with Phase 2 and that none of them included consideration of any alternative options. Unlike the suite of documents provided to the ANAO by DMO, a business case, in these circumstances, would generally include consideration of the various options taking into account relevant issues to inform decisions on the most appropriate course of action.

49. The capacity to use the torpedoes acquired under Phase 3 is contingent on the platform integration program under Phase 2 being completed. The FRAA negotiation resulted in the removal of the integration of the torpedo with the air platforms from the contractual scope of work, but these remained within the scope of Phase 2 of the project until early 2008 for the Super Seasprite and early 2009 for the Orion and Seahawk. The DMO calculated that, by removing the air platforms from the scope of the contract, the contracted amount under Phase 2 reduced from \$268.7 million to \$179.6 million (December 2001 prices). At the time the FRAA was signed, \$101.0 million had been expended on Phase 2. Phase 3 was for a fixed price of \$239.2 million (December 2003 prices), escalated to \$263.9 million (December 2005 prices). The ANAO sought evidence that these figures had been the subject of a cost investigation and was informed by the DMO in April 2010 that the prices in the FRAA were a negotiated price based on estimated scope of work, risk

transfer and commercial basis for the contract. The DMO further advised that the lead negotiator considered these prices to be a fair price based on his involvement in the Alliance for a 12 month period.

## **Torpedo Delivery and Platform Integration (Chapter 4)**

50. Both the *Defence Procurement Review 2003* and the *Defence Procurement and Sustainment Review 2008* advocates the increased use of off-the-shelf solutions, where available, as a mechanism to reduce risk.<sup>44</sup> The Defence White Paper 2009 confirmed that it was the Government's decision that Military-off-the-Shelf (MOTS) and Commercial-off-the-Shelf (COTS) solutions to Defence's capability requirements will be the benchmark going forward.

51. The *2008 Audit of the Defence Budget* (also known as the Pappas Review) recommended that projects do not advance until they reach a required level of technical maturity. The Pappas Review identified JP 2070 as a project that was launched with unproven technology. This statement is inconsistent with the history of JP 2070. The Defence Source Selection Board (DSSB) in October 1999, which agreed to the sole sourcing of the Project Definition Study, noted that the MU90 was the only in-service weapon offered. The decision of the DSSB was based on the content of a Source Evaluation Report which stated that the MU90 was an off-the-shelf weapon and was entering service with other navies. The submission to the delegate seeking approval to sole-source the Project Definition Study used the term 'in-service' with respect to the MU90. The ANAO notes that the terms 'off-the-shelf', 'in-service' and 'entering service' are not identical in meaning.

52. The Source Evaluation Report was based on the report of three proposal evaluation working groups. Two of these reports used differing terminology with respect to the development status of the MU90, with one saying it was in-service while the other stated the torpedo was being purchased by other navies. In-service is significantly further down the development path than being purchased, as an item that is being purchased has not necessarily undergone Operational Test and Evaluation. The

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<sup>44</sup> The *Defence Procurement and Sustainment Review 2008* included the following recommendation:

Any decisions to move beyond the requirements of an off-the-shelf solution must be based on a rigorous cost-benefit analysis of the additional capability sought against the cost and risk of doing so. This analysis must be clearly communicated to Government so that it is informed for decision-making purposes.

documentation provided by Defence to the ANAO to demonstrate how the decision makers at the time formed the view that the weapon was in-service with other navies did not say that the torpedo was in-service with other navies.

53. The Proposal and Liability Approval for the Project Definition Study indicated that \$1.43 million had been allocated to funding an in-water trial of the torpedo as a risk mitigation measure. With the decision to develop an Alliance Agreement, this trial did not go ahead. It is not apparent how the Alliance Agreement removed the requirement to verify torpedo performance.

54. Notwithstanding the inconsistencies in the evaluation documentation for the Project Definition Study, the view that the torpedo was in-service and off-the-shelf was maintained by Defence and the DMO for several years. A 2000 Defence internal audit stated that the MU90 was a proven torpedo and a brief to the September 2002 Project Governance Board stated that the torpedo was fully developed and in-service with other navies. In January 2003, the then Minister was informed that the risk of Project failure was very low as the weapon was already in-service with other nations.

55. In March 2004, Defence were informed that the MU90 was not in-service with any other nation and that there had been technical and production issues. This was more than four years after the decision to sole-source the Project Definition Study and 15 months after the Revised Alliance Agreement for Phase 2 was signed. It is not clear how, under an alliance arrangement, the Defence personnel within the Alliance Management Team did not ascertain sooner that the torpedo was not in-service elsewhere.<sup>45</sup>

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<sup>45</sup> In April 2010, Thales Australia informed the ANAO as follows:

Thales was not aware that senior DMO and Defence staff had been told during the period 2000 to 2004 that the MU90 was “in-service”.

It is not clear to Thales how this characterisation could have been arrived at.

By 2002, there had been extensive meetings between the Project Office and other CoA [Commonwealth of Australia] stakeholders with representatives of the French, Italian, German and Danish navies and defence departments.

The Alliance team (including Commonwealth members) were aware from 2000 to 2004 that the MU90 was still within the process for acceptance into service with all other nations.

In May 2010, EuroTorp GEIE provided the ANAO with similar advice to that provided by Thales Australia.

56. The June 2004 Business Due Diligence report indicated that the main areas of concern for JP 2070 were inter-project dependencies and made no reference to misunderstandings surrounding the development status of the torpedo, and how this might change the risk profile of JP 2070. A December 2004 brief to the Defence Committee indicated the MU90 torpedo was not off-the-shelf and had not been introduced into service elsewhere. In March 2005, some 12 months after Defence became aware the torpedo was not in-service elsewhere, the then Minister was informed that the torpedo was not in-service with European navies as previously advised.<sup>46</sup> That brief indicated that there were issues with trials conducted by the torpedo manufacturer in 2004, but that Defence had been advised that these issues had been resolved and a test program had recommenced.

57. The FRAA was signed in August 2005, prior to any torpedoes having been delivered under Phase 2. At the time, Defence advised the Government that it had misunderstood the French and Italian acceptance processes and, contrary to previous advice, the torpedo had not been accepted by these services and remained subject to trials. This means that in addition to having achieved limited progress towards integrating the MU90 with the air platforms, there were ongoing and unresolved issues surrounding the torpedoes being acquired under Phase 2 at the time the DMO committed the Commonwealth to acquiring a much larger quantity of torpedoes under Phase 3. In April 2010, the DMO noted that before Defence committed to Phase 3 in August 2005 the then Government had been fully informed of the status of the torpedo and progress of integration work.

58. These French and Italian trials referred to in paragraph 57 were conducted under the Technical and Industrial Action Plan (TIAP), which was established by the French and Italian Governments following testing in 2004 that had demonstrated poor performance, which was attributed to industrial and quality issues with the production torpedo. The TIAP was to comprise three technical trials, followed by eight to 10 sea trials. The TIAP was planned

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<sup>46</sup> In April 2010, the DMO informed the ANAO as follows:

The Minister in March 2005 was provided with a comprehensive assessment of the project following several reviews and consideration by the DC [Defence Committee]. The time taken between deciding the torpedo was not off the shelf and providing advice to the Minister was to develop a full picture of the project.



to be completed by mid 2005, but by April 2006 the TIAP was regarded as having achieved mixed success.

**59.** The successful completion of the TIAP was a contractual requirement under the FRAA. In April 2006, the DMO issued a Notice of Default under the FRAA. The TIAP trial was subsequently suspended by the French and Italian Steering Group in May 2006, pending a technical investigation by the torpedo manufacturer. In light of this, the DMO subsequently rejected several claims for milestone payments and, in July 2006, the DMO wrote to the Alliance Participants suspending certain categories of milestone payments and asserting its rights to terminate and recover \$75 million in payments if the TIAP did not achieve success in six months, subject to no alternative arrangements being agreed. In September 2006 the Alliance Board, which included a Commonwealth representative, agreed a resolution, subject to certain conditions, that the Commonwealth give consideration to extending completion of the TIAP until March 2007.

**60.** In December 2006, the DMO informed the Chief of Navy that the last TIAP firing had occurred in October 2006 and, following a result of eight successful firings out of 10, the French/Italian Steering Group had declared the program a success. In March 2007, the then Minister was informed that the TIAP had been declared a success but that further trials had identified a fault introduced by a design change. Subsequently, Defence's acceptance of the torpedoes under Phase 2 was completed in July 2007. This was more than two years behind the original schedule.

**61.** At the completion of the TIAP, an obsolescence review was conducted by the manufacturer that identified the need to modify the components of the torpedo. A new version of the torpedo, the MU90 Mark II, was developed to address the issues identified in the obsolescence review. The torpedoes being acquired under Phase 2 are the original Mark I version of the torpedo. The Mark II version was to be acquired under Phase 3. Australia was the first country to enter a contract to acquire the Mark II.

**62.** The modification of the torpedo to the Mark II configuration created the need to qualify the torpedo with six successful launches prior to conducting Early Proof of Capability launches using Australian manufactured torpedo components. The Early Proof of Capability was contractually required to be complete by November 2009 but, in March 2009, the Djimindi Alliance Board was informed that this schedule might not be achieved.

63. In July 2009, the DMO wrote to the Chief of Navy outlining four options for proceeding with deliveries under Phase 3. These options ranged from doing nothing, to modifying the Early Proof of Capability arrangements, or accepting a portion of the Phase 3 torpedoes in Mark I configuration and the remainder in Mark II configuration. The Chief of Navy agreed to an option which will see two-thirds of the Phase 3 torpedoes delivered in Mark I configuration, and the remainder in Mark II configuration. Defence identified that an advantage of this approach was that France and Italy would enter the Mark II program and thereby reduce the development risk to Australia.

64. In November 2009, the ANAO sought clarification on whether the issues continuing to impact on the Phase 2 timeline, particularly relating to test and evaluation, were considered in determining whether or not to agree to accept this change to delivery arrangements. The DMO responded, advising that 'the associated Contract Change Proposal improves or maintains the schedule for Phase 3 as the National Security Committee confirmed the program as viable for surface integration.'

65. The *Defence Procurement and Sustainment Review 2008* categorised projects based on complexity. JP 2070 exhibits two of the three attributes of a complex project set out in that review. These are: that JP 2070 involves multiple platforms; and it involves varying levels of system and software integration onto these platforms.

66. Table S 1 outlines the integration status of the five platforms originally in the scope of Phase 2.

**Table S 1****Achievement of platform integration under Phase 2 of JP 2070 (as at November 2009)**

Platforms within original scope of Phase 2	Original schedule (2001)	Integration status (late 2009)
Seasprite helicopters <sup>A</sup>	Early 2008	The Seasprite project was cancelled in March 2008.
Orion aircraft	Late 2007	Removed from scope in February 2009.
Seahawk helicopters <sup>A</sup>	Late 2008	Removed from scope in February 2009.
FFG ships <sup>B</sup>	Late 2005	Partially Complete.
ANZAC ships <sup>B</sup>	Early 2008	Substantially Complete.

Note A: The decision to cancel the Seasprite in March 2008 resulted in a decision to bring forward another project, Air 9000 Phase 8 Naval Combat Helicopters. The helicopter to be acquired under this project is to be capable of anti-submarine warfare and will also replace the Seahawk.

Note B: Operational test and evaluation activities need to be completed prior to operational release of the MU90 torpedo and associated platform modifications.

Source: Adapted from Defence documentation.

67. Cooperation between the various platform suppliers and the weapon supplier was seen as critical to the success of the Phase 1 Project Definition Study. Legal advice in 1999 indicated that an alliance approach was being considered to facilitate this cooperation. Based on this advice, a submission was prepared that sought support to adopt an alliance contracting approach. Subsequently, a series of sub-alliance agreements were signed between the Djimindi Alliance and the platform suppliers. The sub-alliance participants were to develop the integration solutions for the various platforms. A 2004 DMO Internal Review identified that responsibility for integration of the torpedo onto all platforms, apart from the FFG, had been transferred out of the Alliance to the respective DMO System Program Offices. In April 2010, the DMO informed the ANAO that the August 2005 FRAA formally removed work from the Alliance which was best managed by the DMO System Program Offices responsible for the platforms, and this included a price reduction to the FRAA.

68. The removal of responsibility for integration from the Alliance is an acknowledgement that the Alliance was not in a position to manage the risk associated with platform integration. It was not apparent to the ANAO that these risks were adequately understood at the commencement of Phase 2. A significant risk factor to JP 2070 from the outset was that many of the platforms

to be integrated with the weapon were associated with other ongoing or yet-to-be-commenced projects which had the potential to impact on this project.

**69.** The ANAO identified four broad categories of risk for JP 2070 relating to platform integration. These included: risk related to integrating onto platforms that are also subject to a number of other upgrades; planning assumptions for JP 2070 being framed around unapproved projects; integrating to a platform while other projects relating to that platform are encountering difficulties; and seeking to develop an Australianised integration solution for the Orion and the Seahawk. Management of the first category of risk should occur as a fundamental component of the DMO's management of its program of procurement projects.

**70.** Risk for JP 2070 that related to planning assumptions being framed around unapproved projects primarily relates to the Seahawk and Orion Maritime Patrol Aircraft. For the Seahawk, the delays in the progression of planning for the Seahawk Midlife Upgrade and Life Extension (SMULE) impacted on JP 2070, although the delays to the Seahawk became increasingly linked to the integration solution being developed for the Orion.

**71.** Planning during 2004 and 2005 for the integration of the MU90 onto the Orion platform proceeded on the basis that the MU90 and the Follow-On Stand-Off Weapon (FOSOW) would be integrated through a single Stores Management Processor. The FOSOW was to be acquired under Project Air 5418 which was to be considered for Second Pass approval by the Government in December 2005. By that time \$6.72 million had been spent on purchase orders relating to joint integration, with \$1.92 million attributed to the torpedo project. A decision was subsequently taken not to integrate the FOSOW onto the Orion. Consequently, baseline information that had been developed on the basis of a joint integration of the MU90 with the FOSOW was then regarded as being of almost no value.

**72.** Risk related to integrating while other projects on the same platform encountered difficulties impacted on the integration of the torpedo onto the FFG, the Super Seasprite and the Seahawk. For the FFG, the integration of the MU90 has proceeded but has not been completed. This is primarily due to ongoing issues encountered under the FFG Upgrade Project associated with the Underwater Weapons System. The resolution of these issues has delayed the integration of Torpedo with the Sonar Operator Console. This interface needs to be in place to provide the desired level of integration being sought by the Navy. This interface was not in place at the conclusion of this audit.

73. The Super Seasprite Project encountered ongoing difficulty and was ultimately cancelled in 2008. However, the integration effort for this platform was limited as the Super Seasprite was regarded as being unsuited to an anti-submarine role, therefore it is not clear why the Super Seasprite was ever in the scope of JP 2070.

74. Delays in Project Sea 1405 Phase 1 and 2 Forward Looking Infrared and Electronic Support Measures impacted on the integration of the MU90 onto the Seahawk. In May 2007, the Chief of Navy wrote to the Chief of the Capability Development Group indicating that the integration of the MU90 onto the Seahawk was likely to be delayed until at least 2009, due to ongoing issues with Sea 1405, combined with structural issues associated with carrying the torpedo. The Chief of Navy commented that delays to JP 2070 were so great that the continuing integration onto the air platforms needed to be given consideration, as by the time the capability was to be realised, the platforms would be approaching their planned withdrawal date.

75. The risk related to developing an Australianised solution primarily relates to the efforts to integrate the MU90 onto the Orion and the Seahawk. Subsequent to the decision not to proceed with the integration of the torpedo onto the Orion in tandem with the FOSOW, an alternative integration approach needed to be developed. In March 2006, the Maritime Patrol System Program Office identified that no suitable Torpedo Control Unit (TCU) was available to achieve the desired level of integration between the weapon and the aircraft. Effectively, four years after the contract for Phase 2 had been executed, limited progress had been achieved towards integrating the torpedo onto the Orion and the Seahawk.

76. By 2007, a further \$3.2 million had been spent on developing an integration solution for the Orion, against a work package which was not to exceed \$2.8 million under the approved purchase order. The \$3.2 million was sourced from the Project Budget for Joint Project 2070 which was managed by the DMO's Guided Weapons and Explosive Ordnance Branch. Work was defined and payments were made by the Maritime Patrol System Program Office (SPO) which is responsible for the Orion. It became apparent that the arrangements did not provide adequate control over this expenditure, with purchase orders not being adequately detailed and work being undertaken that was regarded by Guided Weapons and Explosive Ordnance Branch as beyond the scope of work of the purchase orders. In April 2007, the cost and schedule overruns related to the development of the TCU were attributed to: the failure of the Lightweight Torpedo Replacement Project to deliver essential

input documents and plans to schedule; and the need for the Orion Weapons Integration Integrated Project Team to expend significant unplanned effort and time workshopping essential interface documents for the torpedo systems that were represented as mature, but were in fact highly developmental. In April 2010, the DMO informed the ANAO that undertaking integration study work to de-risk technical activities is consistent with Defence standard practice particularly following the 2003 *Defence Procurement Review*.

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

77. Test and evaluation is the means by which the DMO and Defence are assured that a materiel solution meets its required specification. Fundamental to test and evaluation is an appropriate hierarchy of capability definition documents including an Operational Concept Document, Functional Performance Specifications and a Test Concept Document. The absence, or late development of these documents, has impacted on the capacity to confirm capability achievement, and transition the torpedo and associated ship borne systems into Navy service.

78. A 2004 review of JP 2070 noted that key capability documents had either never been developed or not progressed beyond draft. Included amongst these documents was the Functional Performance Specifications. This review was conducted two years after the contract was signed for Phase 2. Subsequently, Defence's Functional Performance Specifications<sup>47</sup> for the project were included in the contract as part of the 2005 FRAA negotiations. However, in the event of a conflict between the French specifications for the torpedo and Defence's Functional Performance Specifications included in the FRAA, the French specifications have precedent.

79. A 2009 draft Materiel Acquisition Agreement defined the project risks at that time. That draft agreement noted that the capability requirements for JP 2070 were defined through a Detailed Operational Requirements and not in a contemporary Operational Concept Document, and as a result JP 2070 did not have a clear concept of testing to meet requirements. The draft agreement stated that JP 2070 needed to define the torpedo capability based on poor quality capability requirement documentation and also indicated that significant unknowns existed that had the potential to cause schedule delays.

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<sup>47</sup> The Functional Performance Specifications for a capability details the necessary functional performance criteria including a definitive list of the user requirements to be delivered.

80. A key element of Acceptance Testing and Evaluation of a new capability is confirming contractual compliance. Acceptance Testing and Evaluation was ongoing for the Lightweight torpedo and the Ship borne Lightweight Torpedo System for the ANZAC and the FFG at the time of audit fieldwork. This testing was being conducted outside the provisions of the FRAA, as the initial batch of torpedoes procured and Ship borne Lightweight Torpedo System (both procured under Phase 2) had already been accepted by the DMO. In April 2010, Defence informed the ANAO that where work under a major project is conducted under several contractors the transition from Acceptance Test and Evaluation under those contracts to Operational Test and Evaluation rests with the DMO and Defence. Defence indicated that to do otherwise would attract expensive risk premiums.

81. In 2008, the Djimindi Alliance Board was informed that the Project Office was reviewing Critical Operational Issues (COIs)<sup>48</sup> from the Detailed Operational Requirements to confirm that acceptance test and evaluation has been achieved. The Test Concept Document and the Operational Concept Document should list the required COIs for a capability. At the time the Board was informed of this activity, the Test Concept Document was not finalised and was not approved until some 12 months later.

82. The ANAO reviewed the compliance matrix attached to the report on the December 2009 sea trials of the MU90 conducted aboard an FFG. That matrix indicated compliance primarily against the Detailed Operational Requirements. The compliance assessment within that matrix indicated that compliance was yet to be verified against a large number of Detailed Operational Requirements with compliance having been fully verified against a small proportion of requirements. This means that eight years after the contract was signed for Phase 2, and two years after the initial batch of torpedoes procured under that Phase were accepted by the DMO, the DMO was yet to fully verify the capability acquired under Phase 2. In April 2010, Defence informed the ANAO that the conduct of trials were not only delayed by JP 2070 but also by the FFG Upgrade project.

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<sup>48</sup> COIs are the operational effectiveness and operational suitability issues (not parameters or thresholds) that must be resolved in OT&E in order to determine that the system has the capability to perform its mission(s). Source: *Defence Materiel Verification and Validation Manual 2008*.

83. Naval Operational Test and Evaluation<sup>49</sup> commences following Initial Operation Release (IOR). IOR is the milestone where the Chief of Navy is satisfied that the operational and material state of the equipment is such that it is safe to proceed with Naval Operational Test and Evaluation. Operational release occurs at the conclusion of Naval Operational Test and Evaluation.

84. The Joint Test and Evaluation Master Plan for JP 2070 states that the Project Office will manage the conduct of a number of firings of Practice and Exercise Torpedoes to finalise acceptance testing prior to handing over the capability to the Royal Australian Navy Test Evaluation and Analysis Authority (RANTEAA) for Operational Test and Evaluation. At the time of this audit, one sea trial involving an ANZAC ship had been cancelled in 2005, one had occurred involving an ANZAC ship in 2008 and two had occurred in late 2009 involving an ANZAC ship and an FFG.

85. The trial in 2008 aboard the ANZAC ship involved six PDT firings and one TVE firing. The DMO report on the trial concluded that Acceptance Test and Evaluation COIs had been met, could be worked around, or were sufficiently well-advanced and, as such, a recommendation for proceeding to Operational Test Evaluation could be made. The COIs reported against in the DMO report on this trial were based on COIs set out in draft documentation. The COIs used for trials in 2009 were different to those used for trials in 2008.

86. Critical Technical Parameters (CTPs) are quantitative and qualitative test measurements of technical data that provide information on how well a system, when performing mission-essential tasks as specified in the Operational Concept Document, is designed and manufactured. Verification of CTPs is part of the IOR process. The Trial Plan for the FFG and ANZAC for the 2009 trials included an assessment of compliance against 12 CTPs. Of these compliance was indicated against five CTPs; partial compliance against one; not-yet compliant against two CTPs; and compliance was yet to be determined against two CTPs. With respect to the remaining two CTPs, one was assessed as non-compliant with work ongoing to achieve compliance, and a waiver has been granted against the other.

87. The report on the trial aboard the ANZAC ship in late 2009 indicated that three PDTs were successfully fired, after some issues with the Ship borne

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<sup>49</sup> Operational Test and Evaluation is conducted under realistic operation conditions and in the expected operational context. Responsibility for Acceptance Test and Evaluation and Operational Test and Evaluation rests with the Project Office.



Lightweight Torpedo System were overcome. The planned TVE firing could not go ahead due to adverse weather conditions.

88. The report on the trial aboard the FFG in late 2009 indicated that three PDTs were successfully fired, after some issues with the Ship borne Lightweight Torpedo System were overcome. The first TVE was ejected from the torpedo tube, but failed to start. A second TVE was fired, and started successfully. Investigation of the issue surrounding the firing of the first TVE was ongoing in February 2010 and there were also concerns surrounding the torpedo endurance demonstrated by the second firing, which was also subject to investigation.

89. The DMO prepared a ministerial submission on these trials and sought input from Navy on this submission. Navy expressed concern about the content of this submission, particularly the suggestion in that submission that the trials were key to Navy accepting the MU90 system. It is apparent that the DMO needs to review its approach to test and evaluation, in consultation with the Navy, to ensure that future trials are conducted in a manner that progresses the capability towards IOR.

90. The Joint Test and Evaluation Master Plan developed in August 2002 planned for acceptance into service of the ANZAC Ships Lightweight Torpedo System in the last quarter of 2007, and the FFG Ships Lightweight Torpedo System was to be accepted into service in second the quarter of 2008. By May 2006 a timeline for IOR, and as such acceptance into service, had not been defined. This was partially attributed to delays in torpedo deliveries. In July 2008, the DMO wrote to the then Minister indicating that additional funding was required to support Test and Evaluation. In 2008, the DMO sought approval to access funding previously allocated to air integration to fund this activity. The Test Concept Document had not been finalised at that time, indicating that agreement between the project stakeholders in Defence on the testing required had not yet been achieved.

91. The Form TI338 is the formal document used in Navy to facilitate IOR and eventually Operational Release of new capability. At the conclusion of this audit, the Form TI338 for the MU90 remained in draft form. Prior to making a recommendation to the Chief of Navy for Initial Operational Release, a number of Navy regulators need to endorse the Form TI338. The draft form TI338 showed that two key documents required for certification were yet to be finalised. These were an Agreed Certification Basis and a Safety Case Report.

**92.** The draft Form TI338 identified three issues which directly impact on the ability to complete Operational Test and Evaluation. These included the lack of a suitable target for testing, the lead time to buy a simulation model, and difficulties with access to Objective Quality Evidence (OQE)<sup>50</sup> to verify prior qualification. All these issues had been identified previously in a 2004 brief to the Director-General, Maritime Development in Capability Development Group of Defence. The brief recommended that ‘consideration be given to delaying committing to Phase 3 as a mechanism to obtain information [relating to the Italian and French navies’ testing and evaluation of the MU90] for IOR’. Notwithstanding this recommendation, the agreement for Phase 3 was signed in August 2005 before the issues surrounding OQE required to support transition to IOR had been resolved.

**93.** A key benefit of receiving this OQE information from the French and Italian testing and evaluation processes would be that it could reduce the number of times that the ADF needs to fire the torpedo to generate operational performance information for the weapon. An April 2004 briefing to the Project Management Stakeholder Group advised that the weapon is inordinately expensive to fire. A 2007 brief indicated that the cost to turn around an exercise torpedo firing was approximately \$330 000. Additionally, each torpedo can only be fired in TVE configuration on three occasions before being permanently consigned to war stock.

**94.** Modelling and simulation permits the Defence Science and Technology Organisation (DSTO) to conduct analysis of weapon performance for Operational Test and Evaluation and tactical development. It was identified very early in JP 2070 that a modelling and simulation tool would be required, and since that time a number of options have been considered with limited progress towards the acquisition of a modelling and simulation tool. The draft 2009 Materiel Acquisition Agreement identified that obtaining a simulation model and analysing MU90 performance was critical to achieving capability assessment. In February 2010, Defence informed the ANAO that a Statement of Work had been prepared for a modelling and simulation tool which was scheduled for release for quotation in the second quarter of 2010.

**95.** Similarly, the requirement for a suitable simulated submarine target was identified very early on in the project, was considered on a number of

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<sup>50</sup> OQE is defined as any statement of fact which is either quantitative or qualitative, pertaining to the quality of a product or service based on observations, measurements, or tests which can be verified.

occasions, and there was very little progress toward the required acquisition of that target for a significant period. There are a variety of simulated submarine targets available, ranging from static or towed targets to high-fidelity autonomous targets. The sea trials of the TVEs from ADF platforms in 2008 and 2009 used a static or towed target, which was regraded by Navy as not being a representative target capable of testing the attack criteria.

96. In 2009, Defence sought approval from the Government to access funds previously allocated in the JP 2070 budget to air platform integration for the acquisition of a mobile target. In February 2010, Defence informed the ANAO that funding of \$9.4 million had been approved for this acquisition and it was scheduled for completion in early 2012. The ANAO notes that this was inconsistent with a briefing prepared by the DMO for a meeting in early 2010 that indicated that 'the target procurement had not progressed.' In April 2010, DMO acknowledged that progress to acquire the mobile target is behind schedule. Defence advised that discussions have been held with stakeholders to recover schedule, which will involve the commercial lease of a target in early 2011, while the acquisition of a target will proceed in accordance with the February 2009 Government approval.

97. Adequate access to sufficient OQE represents a significant issue for testing and evaluation. The September 2009 draft Test and Evaluation Master Plan noted that there were a range of impediments to obtaining OQE and the results of Operational Test and Evaluation conducted by the French and Italian Navies. These impediments included the fact that the French and Italian Governments contracted the development of the MU90, and therefore the torpedo manufacturer did not have the right to release test data and OQE. Additionally, French and Italian Government agencies which undertook Operational Test and Evaluation used targets and countermeasures which were classified under their respective national security guidelines, making access to this information problematic.

98. The draft Test and Evaluation Master Plan attributes Defence's belief at the outset of JP 2070 that the MU90 torpedo was off-the-shelf as a contributing factor to OQE not being sought from the torpedo manufacturer from the outset of JP 2070. However, by the time the FRAA was signed, committing the Commonwealth to Phase 3, Defence had been aware for more than 12 months

that the torpedo was not an off-the-shelf acquisition.<sup>51</sup> The ANAO also notes that the need to access to OQE and technical information was identified in 2000 even though at that time, and for the following four years, Defence and the DMO believed the torpedo to be off-the-shelf.

99. Over the life of JP 2070, a series of correspondence has been exchanged, and agreements have been entered into, with the French and Italian Governments to facilitate the transfer of required data and OQE.<sup>52</sup> In late 2009, the ADF Test and Evaluation Authority acknowledged that the most significant weakness in the draft Test and Evaluation Master Plan for JP 2070 relates to the inability to access foreign OQE. In February 2010, DMO informed the Project Management Stakeholder Group that some progress had been made in reaching an agreement to access data, but if this data was not forthcoming, a major testing and evaluation campaign would need to be undertaken. In March 2010, the DMO informed the ANAO that additional OQE from the TIAP program had recently been provided but that this needed to be translated and then analysed by Defence. In April 2010, Defence informed the ANAO that there had been progress on the OQE issue since audit fieldwork concluded with data provided in March 2010 and technical workshops planned to occur in France in May 2010 to work through data requirements.

## **Financial Management (Chapter 6)**

100. As at February 2010, the budget for Phase 2 had increased from \$287.71 million (December 2001 prices) to \$346.71 million (January 2010 prices), as result of price and exchange rate movements, of which \$219.43 million had been expended. The budget for Phase 3 had increased from \$246.43 million (January 2004 prices) to \$313.81 million (January 2010 prices), as result of price and exchange rate movements, of which \$173.13 million had been expended. Expenditure during 2006-07 for Phases 2 and 3 was significantly less than forecast expenditure due to delays associated with the finalisation of the TIAP.

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<sup>51</sup> In April 2010, Defence informed the ANAO that Government to Government arrangements were put in place around the time that the FRAA was signed to obtain OQE information not available from the Industry Participants. Table 5.4 sets out Chronology of Objective Quality Evidence and technical cooperation issues for JP 2070.

<sup>52</sup> In May 2010, EuroTorp informed the ANAO as follows:

EuroTorp has continually tried to facilitate transfer of OQE data from these government agencies. However, the ultimate responsibility for this data transfer devolves on the DOD/DMO through its various agreements with France and Italy.

There have been no real cost increases within the budget for any of the approved phases of JP 2070, however the scope of Phase 2 has been significantly reduced without commensurate reductions to the approved budget.

**101.** Defence's Annual Report includes a section on Defence's Top 30 Projects. In the 2008-09 *Defence Annual Report* Phase 3 was included in the list of Top 30 Projects, whereas Phase 2, which has a higher overall budget, did not appear in that list. This was on the basis that projects are included in the list based on forecasted expenditure. A comparison of actual expenditure under Phase 2 during 2008-09 revealed that Phase 2 had a higher level of actual expenditure than other projects included in the Top 30 Projects list.

**102.** Up until 2005, there was uncertainty surrounding the appropriate mechanisms to make payments under the alliance arrangement for JP 2070. Initially payment arrangements under Phase 2 involved three monthly prepayments to the Alliance for disbursement to Alliance Participants, Sub-Alliance Partners and sub-contractors. Concern was expressed in mid-2003 about the advance payment arrangements. At that time the banking arrangements were also subject to review, as the Project Governance Board had been informed that there were no means for the DMO to make payments to Djimindi Alliance for onward disbursement.

**103.** In November 2003, the DMO entered into an agreement with Thales Underwater Systems to take over from the Commonwealth in providing banking, associated cash management activities and purchasing for work performed by the Alliance Participants under the Alliance Agreement. This was implemented by issuing a purchasing card to the Djimindi Alliance and establishing two interest-bearing Trust Bank Accounts, one in Australian Dollars and the other in Euros. Under this agreement, the Commonwealth was required to make an initial payment into the Trust Accounts and then make subsequent payments upon request from the Djimindi Alliance Business and Finance Manager. In September 2004, DMO received advice that the Trust Account arrangements breached provisions of the *Financial Management Accountability Act 1997*.<sup>53</sup>

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<sup>53</sup> Namely, Section 11 of the *Financial Management Accountability Act 1997*-Public Money not to be paid into non-official account and Section 48-Accounts and records.

**104.** Two years after the agreement establishing the Trust Account was executed, the DMO negotiated new payment arrangements that were implemented under the August 2005 FRAA. These arrangements removed the requirement for the Alliance Trust Account. In October 2005, the Djimindi Alliance Board resolved to terminate the November 2003 Project Djimindi Alliance Trust Bank Account and Purchasing Card Agreement; transfer the residual Trust Account balances to an account to be nominated by the Industrial Participants, with residual balances to be offset from upcoming milestones. The purchasing card was also to be cancelled. The DMO informed the ANAO that at the point the Trust Account was closed, in May 2006, \$1.65 million was refunded to the JP 2070 Project Office.

**105.** The November 2002 Proposal and Liability Approval for Phase 2 indicated that the contingency budget for that phase was \$10 million. Of this figure, \$7.5 million was transferred to the Alliance to manage, \$500 000 was allocated to testing and \$400 000 was allocated to the integration of the torpedo onto the ANZAC ship. At the July 2005 Project Management Stakeholders Group Meeting it was noted that in a software-intensive project 'a contingency of \$1.6 million is woefully inadequate'. That meeting was informed that further contingency was held in the budget figures for platform components. However, 11 months earlier the DMO's Head of Electronic Systems wrote to the Head of Capability Systems advising of a likely shortfall in funding arising from an underestimate of the aircraft integration costs.

**106.** The minutes of an August 2004 meeting of the Weapons Project Governance Board questioned how JP 2070 obtained Government approval without cost estimates. The JP 2070 Project Office advised that it had obtained ballpark figures, which had since been found to be completely inaccurate. The Project Office indicated that integration of this type of system onto an aircraft could cost between \$50 to \$100 million, but that the approved budget was \$35 million for the Orion, and \$30 million for each helicopter. In March 2005, the then Minister was informed that the budget for JP 2070 might not be adequate for the required level of integration across all platforms.

**107.** The August 2005 FRAA negotiation report indicated that JP 2070 was also under cost pressure because Net Personnel Operating Costs<sup>54</sup> were not included in JP 2070 budget approvals. These were estimated to be \$3.3 million a year out to 2021, bringing the whole-of-life capability cost for the MU90 to an estimated \$1.13 billion. That report also stated that significant additional resources would be required, as under the FRAA the Project Office was to undertake work that was previously the responsibility of the Project Djimindi Alliance. In March 2010, DMO advised the ANAO additional resources were allocated to the Project Office including through the hire of professional service providers.

**108.** In October 2005, a minute to the Chief of the Capability Development Group indicated that there was very little contingency left in the Phase 2 budget and that a real cost increase might be required. This minute was drafted two months after the FRAA was signed, committing the Commonwealth to significant Phase 3 expenditure. As noted above, the shortfall in the Phase 2 budget had been identified at least 12 months prior to the FRAA being signed in August 2005.

**109.** The November 2005 Project Management Stakeholders Meeting was informed that the then Minister had directed that the platform project budgets not be varied. This resulted in the quarantining of \$111 million of the Phase 2 budget, thereby preventing the budget for integration of the torpedo onto one platform being reallocated to a different platform without ministerial agreement. In May 2006, the CEO of DMO wrote to senior Defence Personnel indicating that Phase 2 of JP 2070 was listed as a Project of Concern. The primary reason for this related to issues with MU90 torpedo performance; delayed integration to aerospace platforms and an increasing understanding that the budget was insufficient to cover the approved scope.

**110.** In April 2007, the then Minister was informed that detailed cost estimates were being developed for integration of the torpedo onto the Orion, Seahawk and Super Seasprite. This indicates limited progress had been made in developing cost estimates in the three years following the advice to the Weapons Project Governance Board that the budget for integration onto the air

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<sup>54</sup> The *Defence Capability Development Manual 2006*, p. 111 defines NPOC as '...the difference between future and current mature operating costs associated with a capability, facility, system or specific item of equipment. It reflects the net difference between the cost estimates to operate a new, upgraded or replacement capability offset by the [Defence Management and Financial Plan funding] available to operate the current capability'.

platforms was likely to be insufficient. During that period the FRAA was signed committing Defence to the acquisition of a much larger quantity of torpedoes under Phase 3. In April 2010, Defence informed the ANAO that until issues related to the progress of Seasprite and Seahawk upgrade projects were resolved, it was not practical to develop detailed cost estimates.

111. In July 2007, the Chief Capability Development Group informed several senior Defence Personnel that the integration of the torpedo onto the Orion would cost in the order of \$106 million and \$80 million for the Seahawk. It was recommended that integration onto the Super Seasprite not proceed.<sup>55</sup> In July 2008, the then Minister was informed that integration onto the Seahawk and Orion would cost \$220 million, more than double the available budget. According to the original project schedule, integration was intended to be complete for the Orion and the Seahawk by the time this brief was provided to the Minister.

112. In July 2008, the then Minister agreed to the release of \$5 million of the air integration funds that had been quarantined within the JP 2070 budget to ensure that acceptance and integration of the surface platforms could continue. At that time, Defence advised the Minister that, in total, \$77.4 million would be required.

113. Subsequently, in October 2008, Defence provided a submission to the Government seeking approval to use funds quarantined for air integration, to allow for the completion of surface platform integration. The Department of Finance and Deregulation expressed concern that the costings were not of 'Second Pass quality'.<sup>56</sup> As a result Defence withdrew the submission. Given that this submission was prepared more than seven years after Phase 2 was first approved, nearly six years after the contract for Phase 2 was signed and over five years after the *Defence Procurement Review 2003* which recommended a strengthened two-pass approval process, it is of concern that the DMO did

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<sup>55</sup> The Government subsequently cancelled the Super Seasprite acquisition in March 2008.

<sup>56</sup> The two-stage decision making process directed by the Government consists of:

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

Source: *Defence Capability Development Manual 2006*, Para. 3.13.



not have a more detailed understanding of the cost to complete integration onto the surface platforms.

**114.** In February 2009, the Government considered a further submission from Defence and agreed to the removal of air integration from the scope of Phase 2, and a two-stage approach to complete JP 2070. The JP 2070 budget was not reduced to reflect this reduction in scope; instead, \$29.5 million was released from the previously quarantined funding for air platform integration to fund activities under stage one of the two-stage approach to complete the project for the two sea platforms (the FFG and the ANZAC Ship). This funding is intended to address a range of areas including the acquisition of support and test equipment, publications and training, spares and in-service support, targets, and operational test and evaluation. The funding is also being used to develop quality cost, schedule and risk information to include in a further submission to the Government to consider funding for stage two.

**115.** The approved budget for a major capital acquisition does not include all costs associated with a project, for example salary costs for Project Office staff, Commonwealth personnel in the Alliance Management Team and personnel within the ADF responsible for testing and evaluation and certification. Where a project encounters difficulty and experiences schedule delays, such as this project has, resources which could otherwise be allocated elsewhere may be tied up for extended durations and this impact can be felt across a number of areas within the DMO and Defence. Defence's financial systems do not capture this type of costing information.

**116.** The MU90 is also to be integrated to the Air Warfare Destroyer (AWD). The cost of integration to the AWD will be borne by Project Sea 4000, which is acquiring the AWD capability. The *Defence Capability Plan: Public Version 2009* includes a Phase 4 for JP 2070, which is concerned with assessing the need to supplement Orion's Lightweight Torpedo Capability provided by the Mark 46, with the MU90 or some other form of torpedo. This phase was subsequently deleted from the *Defence Capability Plan: Public Version 2009* in early 2010. The Defence Capability Plan also outlines that both the Orion and the Seahawk are to be replaced. As part of this process consideration will need to be given to what type of Lightweight Torpedo the replacement platforms will carry.

## Defence and DMO response

Defence welcomes the ANAO audit report on Lightweight Torpedo Replacement Project which reviewed the effectiveness of Defence's and DMO's management of the acquisition, introduction into service and through-life support arrangements for the torpedo. This report demonstrates many of the project's challenges from its inception, including weaknesses in aspects of the Defence Organisation's management of alliance-style contracts, tendering arrangements and management of risk in complex projects. Many of the weaknesses pre-dating the contract renegotiations, as highlighted by the ANAO during this audit, were identified by the DMO in 2003 and 2004. Defence and the DMO accept the three recommendations of the ANAO report.

Although the project has encountered numerous challenges, the acquisition of a modern lightweight torpedo remains a high priority for Defence. The 2009 Defence White Paper states the Government's intention to be able to detect and respond to submarines in the ADF's primary operational environment. JP 2070 is an important element of this plan. This modern weapon has recently entered or is entering service with three NATO Navies and it has the potential to deliver substantial improvement over the ADF's existing Mk 46 torpedo.

Defence/DMO acknowledges that planning for and implementation of the current test and evaluation program has not been as proactive as it should have been. Senior management intervention has recently occurred to ensure that these problems are being resolved quickly. Defence and DMO are working closely with the manufacturer, the French Navy and the French Defence materiel agency to address the remaining issues with JP 2070, through information exchange, sharing of data on weapon firings and obtaining advanced targets and test equipment. Defence will not release this weapon for operational use until completely satisfied that it is fully supported, safe and fit for purpose. Defence aims to achieve an initial operational capability in mid-2011, with the torpedo to be fully in service with all equipment delivered in late 2013.

**117.** Extracts of the proposed report were also provided to EuroTorp (GEIE) and Thales Australia. The comments provided by these two companies are included at Appendix 1 of the report.

# Recommendations

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*The ANAO made three recommendations encompassing various aspects of JP 2070. While the recommendations are derived from findings in relation to JP 2070, they are not specific to the Lightweight Torpedo Replacement Project. Instead, they focus on governance arrangements for alliance style contracts, verifying the development status of equipment prior to committing to acquisition and the management of programmatic risks to projects across Defence and the DMO.*

## **Recommendation No. 1**

### **Para. 3.73**

The ANAO recommends that Defence and the DMO review governance arrangements surrounding alliance-style contracts to confirm that reporting arrangements, external to the alliance, provide effective oversight of alliance and project performance.

**Defence and DMO response:** Agreed

## **Recommendation No. 2**

### **Para. 4.22**

The ANAO recommends that the DMO review its tendering arrangements with a view to ensuring that sufficient objective or independent evidence is obtained to enable verification of any claims that an item being offered is 'off-the-shelf', prior to the selection of the preferred tenderer.

**Defence and DMO response:** Agreed

## **Recommendation No. 3**

### **Para. 4.78**

The ANAO recommends that Defence and the DMO implement appropriate mechanisms to identify and address programmatic risks associated with projects that are modifying a number of platforms.

**Defence and DMO response:** Agreed



## **Audit Findings and Conclusions**



# 1. Introduction

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*This chapter provides background information on various phases of Joint Project (JP) 2070 Lightweight Torpedo Replacement, describes the torpedo that JP 2070 is acquiring and sets out the audit approach.*

## Background

**1.1** The Australian Defence Forces' (ADF's) primary anti-submarine capability is provided by its maritime patrol aircraft, embarked helicopters<sup>57</sup> and surface platforms.<sup>58</sup> The lightweight torpedo is the main anti-submarine weapon deployed on these platforms. Lightweight torpedoes are self-propelled, underwater projectiles that can be launched from ships and aircraft and are designed to detonate on contact or in close proximity to a target.

**1.2** In mid-1990, a Defence study concluded that the lightweight torpedo 'was the most cost and operationally effective anti-submarine warfare weapon in all situations'. In July 1997, the Defence Capability Forum decided that the ADF's existing Mark 46<sup>59</sup> lightweight torpedo had significant limitations, was not adequate for the ADF's needs and that a new torpedo should be acquired. In February 1998, Defence established JP 2070 Lightweight Torpedo Replacement Project<sup>60</sup> (JP 2070) to acquire a replacement lightweight torpedo.

## JP 2070

**1.3** JP 2070, as currently approved by Government, is divided into three phases.<sup>61</sup> JP 2070 involves the selection and procurement of a replacement lightweight torpedo and associated support systems and their integration onto

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<sup>57</sup> Embarked helicopters refer to naval combat helicopters that can be boarded on a surface platform.

<sup>58</sup> The ADF's surface platforms include the ANZAC Class ships and the FFGs.

<sup>59</sup> Specifically, Mark 46 Mod 1 Phase II and Mark 46 Mod 5A (SW) torpedoes. Source: Department of Defence, 'Equipment Acquisition Strategy JP 2070 ADF Lightweight ASW Torpedo Phase 1 – Concept and Feasibility Studies', Issue 1 Revision L, 25 November 1998, p. 1.

<sup>60</sup> Also referred to in Defence documents as; the 'ADF Light Weight ASW [Anti-submarine Warfare] Torpedo Replacement'; the ASW [Anti-submarine Warfare] Light Weight Torpedo Replacement' project; or JP 2070.

<sup>61</sup> A fourth phase was proposed in, and subsequently deleted from, the *Defence Capability Plan 2009*.

ADF platforms. JP 2070 was originally planned to include the integration of the torpedo onto the following five ADF platforms:

- Adelaide Class Guided Missile Frigates (FFGs);
- ANZAC Class Frigates (ANZAC ships);
- AP-3C Orion Maritime Patrol aircraft (Orions);<sup>62</sup>
- S-70B-2 Seahawk helicopters (Seahawks);<sup>63</sup> and
- SH-2G(A) Super Seasprite helicopters (Super Seasprites).<sup>64</sup>

**1.4** The total budget for the three approved phases of JP 2070 is \$665.48 million.<sup>65</sup> The scope of JP 2070 has changed over time as technical, schedule and cost problems have arisen.

**1.5** JP 2070 is complex. It involves the acquisition of a new weapon for which all of the risks were not appreciated at the outset. Additionally, the integration of the torpedo onto the ADF platforms has encountered a range of difficulties.

**1.6** JP 2070 was one of the Defence Materiel Organisation's (DMO's) first attempts at undertaking a major capital equipment procurement using an alliance contracting model.<sup>66</sup> The alliance for JP 2070, known as the Djimindi Alliance, comprises the Commonwealth of Australia, Thales Underwater Systems (formerly Thomson Marconi Sonar Pty Ltd) and EuroTorp GEIE. As a prototype alliance it carried additional project and contract management overheads in the establishment and initial management phases. Arrangements put in place to support the alliance proved to be ineffective and were compounded by inadequate planning and documentation, which has had ongoing implications for JP 2070.

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<sup>62</sup> The AP-3C Orion is used by the Royal Australian Air Force (RAAF) for tasks such as naval fleet support, maritime surveillance, search and survivor supply, and anti-surface and anti-submarine warfare.

<sup>63</sup> The S-70B-2 Seahawk is a twin-engine helicopter with features designed specifically for ship borne operations. The Royal Australian Navy (RAN) operates 16 Seahawks.

<sup>64</sup> Super Seasprite helicopters were to be acquired for the RAN for the purpose of enhancing the capability of the Navy's eight ANZAC class ships. The project to acquire the Super Seasprites was approved in February 1996. In March 2008, the Government cancelled the Super Seasprite project.

<sup>65</sup> Includes Phases 1, 2 and 3 as of September 2009.

<sup>66</sup> An alliance contract is defined by Defence as 'a legally enforceable contractual arrangement aimed at sharing risk between Alliance participants and creating mutually beneficial relationships'. *Defence Procurement Policy Manual*, 1 October 2009 edition, Definitions – 1. See paragraphs 2.61 to 2.63 for a further overview of alliance contracting in Defence.



**1.7** JP 2070 is yet to deliver an operational capability, over 12 years after it commenced. Phase 1 of JP 2070 has been completed. Phase 2 has experienced schedule slippage and there have been significant scope reductions to this phase, including the removal of all air platforms from JP 2070 scope. Phase 3 primarily involves the acquisition of a war stock quantity of MU90 torpedoes. Both Phases 2 and 3 were ongoing at the time of audit fieldwork. The Government agreed to the reallocation of a portion of Phase 2 funding, that was intended to fund air integration, to other aspects of JP 2070 in February 2009. The DMO plans to seek approval from the Government for the final portion of this funding in late 2010.

**1.8** As at February 2010, the DMO had spent \$397.51 million of the combined approved budget for JP 2070 of \$665.48 million (February 2010 prices). Table 1.1 provides a summary of the key project dates.

**Table 1.1**

**Key Project Dates**

Date	Issue
Jul 1997	Defence decides that existing Mark46 lightweight torpedo should be replaced.
Feb 1998	JP 2070 established to acquire a replacement lightweight torpedo.
Mar 1998	JP 2070 Phase 1 (Project Definition Study) approved.
Feb 1999	Defence released an Invitation to Register Interest.
Apr 1999	Defence released a Request for Proposal (RFP) <sup>67</sup> for JP 2070, inviting proposals for a suitable lightweight torpedo.
Jul 1999	RFP closed.
Oct 1999	Sole-source selection of Thomson Marconi Sonar's (now Thales Underwater Systems) proposal for the MU90 lightweight torpedo for Phase 1 (Project Definition Study).
Dec 1999	Defence decides to adopt an alliance contracting model for JP 2070 Phase 1 (Project Definition Study).
Apr 2000	Alliance Agreement for JP 2070 Phase 1 (Project Definition Study) signed.
Apr 2001	The Project Definition Study report delivered and Phase 1 completed.
May 2001	JP 2070 Phase 2 (acquisition) approved by Government.
Nov 2001	Defence Capability and Investment Committee approved scope of Phase 2.

<sup>67</sup> The RFP comprised of two parts. Part One – 'Conditions of the RFP' and Part Two – Statement of Requirements (SOR). Source: Department of Defence, RFP Part 1 of 2.

Date	Issue
Dec 2002	The Revised Alliance Agreement is signed combining Phases 1 and 2 of JP 2070 into one agreement.
Nov 2003	JP 2070 Phase 3 (acquisition of war stock) approved.
Aug 2004	JP 2070 Phase 2 is listed as a Project of Concern.
Aug 2005	Further Revised Alliance Agreement (FRAA) contract signed covering a portion of Phase 2 work and the entire Phase 3.
Jul 2007	Acceptance of MU90 torpedoes purchases under Phase 2 completed.
Jun 2008	First firing of an MU90 torpedo by an ANZAC class ship.
Feb 2009	Government agrees to remove air platforms from the scope of Phase 2 and releases \$29.5 million of air integration funding to cover other aspects of JP 2070.
Nov 2009	First firing of an MU90 torpedo by an FFG.

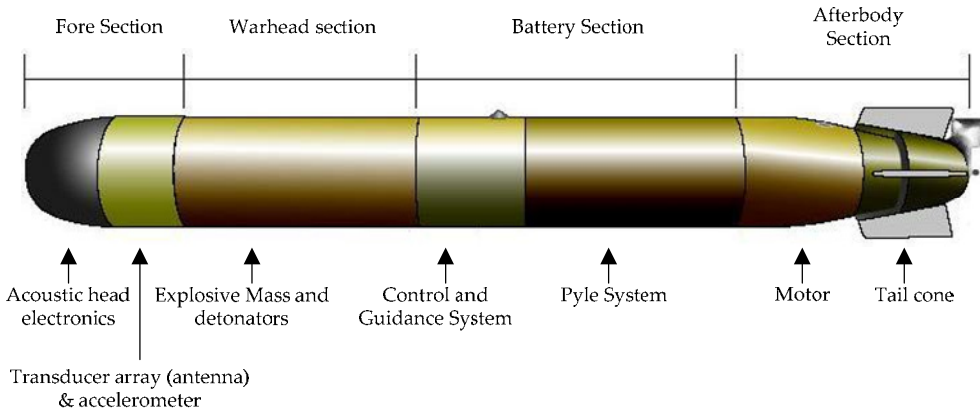
Source: ANAO analysis of Defence and DMO documentation.

**1.9** The Project is managed by the Guided Weapons Acquisition Branch within the Explosive Ordnance Division of the DMO. The Explosive Ordnance Division was established in February 2008.

## **The torpedo that is being acquired by JP 2070**

**1.10** JP 2070 is acquiring the MU90 lightweight torpedo. The MU90 lightweight torpedo originated in the 1980s, when France and Italy separately engaged companies to develop new lightweight torpedoes. In 1991, both countries signed a Memorandum of Understanding for the development of a common lightweight torpedo (the MU90). The torpedo is being developed by the consortium EuroTorp GEIE, which is comprised of the companies that had been developing separate lightweight torpedos for France and Italy.<sup>68</sup> Figure 1.1 provides a physical description of the MU90 torpedo.

<sup>68</sup> EuroTorp GEIE is comprised of DCN International (a French company that in 2001 became a nationalised company); Thales (a French company) and Whitehead Alenia Sistemi Subacquei (an Italian company).

**Figure 1.1****Physical description of MU90 Lightweight Torpedo**

Note: The Pyle System contains the primary energy source of the torpedo.

Source: Defence Materiel Organisation.

**1.11** Defence is acquiring four versions of the MU90 torpedo under JP 2070, which will cover the torpedo's combat-oriented role and the associated roles of practice and training:

- War-shot MU90 Torpedo (TC)–the TC is the combat version of the MU90.
- Exercise MU90 Torpedo (TVE)–the TVE has the same mechanical and electrical interface and physical representation as the TC, but has an exercise section in lieu of a warhead. The TVE enables evaluation of the MU90 using practice firings, and is used to verify in-water performance.
- Practice Delivery Torpedo (PDT)–the PDT is carried and launched, but is not propelled. It comprises the same mechanical and electrical interfaces and physical representation as the Exercise MU90 torpedo. It will record preset data for analysis of 'weapon firing'.
- Dummy Torpedo (DT)–the DT can be carried and launched, but is not propelled. It has no recovery system and is not watertight. It has the same mechanical interfaces and physical representation as the MU90 TC.

## Audit approach

**1.12** The objective of this audit was to review the effectiveness of Defence's and the DMO's management of the acquisition arrangements for JP 2070. The high-level criteria for the audit were as follows:

- risks should be clearly defined at all stages in the capability development lifecycle, and processes should be in place to monitor and respond to risks as they emerge;
- the tender selection process should involve rigorous analysis of options against clearly defined requirements, to ensure that value for money is achieved;
- contractual arrangements should clearly define requirements, appropriately allocate risks, and facilitate the effective conduct of the acquisition;
- testing and evaluation requirements, to facilitate the transition into service of the capability being acquired, should be identified and progressively addressed as the acquisition proceeds; and
- appropriate project governance, financial controls, and reporting mechanisms should be in place.

**1.13** At the commencement of this audit it was intended to also include within the audit's scope consideration of technical regulatory and in-service support arrangements. However, once the status of JP 2070 in terms of torpedo delivery, platform integration and introduction into service was established, we concluded that these areas were not sufficiently mature to provide the basis for an audit opinion.

**1.14** Audit fieldwork was conducted from March 2009 to August 2009. The audit team met with the following areas in the DMO: Guided Weapons Branch, Maritime Patrol System Project Office (SPO), FFG SPO and ANZAC SPO. In Defence, the audit team met with the Capability Development Group (CDG), Air Force Headquarters, Navy Headquarters, the Royal Australian Navy Test Evaluation and Analysis Authority (RANTEAA), the Royal Australian Navy Ranges and Assessing Unit (RANRAU), and the Defence Science and Technology Organisation (DSTO). The audit team also met with representatives from Thales Underwater Systems and EuroTorp personnel.

**1.15** This audit was conducted in accordance with the ANAO auditing standards at a cost to the ANAO of \$436 000.

## Report structure

**1.16** The remainder of the audit report is organised into five chapters.

- Chapter 2 examines the various approved phases of JP 2070 from a project management perspective. It identifies key decisions taken over the period from 1998 to late 2005 for each phase and significant factors that influenced these decisions.
- Chapter 3 examines the various phases of JP 2070 from a contract management perspective. It examines the decision to use an alliance contracting arrangement, the transition of the alliance between JP 2070 phases, and the governance arrangements put in place to monitor and support the alliance. The chapter also examines the management of Intellectual Property issues over the life of JP 2070.
- Chapter 4 examines the development status of the torpedo and how this impacted on the risk profiles for JP 2070 Phase 2 and 3. The chapter also examines the progress towards integrating the torpedo onto the various ADF platforms, including the impact other projects on those platforms have had on the progress of this integration.
- Chapter 5 examines the status of the testing and evaluation process for JP 2070. It outlines the status of capability verification and outlines the outcomes of sea trials undertaken in 2008 and 2009. It examines progress towards Operational Test and Evaluation and outlines risks to completing this testing and how they have been managed by the DMO.
- Chapter 6 examines JP 2070 from a financial management perspective. It outlines changes to payment arrangements under the alliance over the course of JP 2070. It examines the initial costing of Phase 2 and the reallocation of the Phase 2 budget subsequent to significant scope reductions. The chapter also examines the costing of activities undertaken in support of JP 2070 using funds derived from outside JP 2070 budget.

## 2. Project Management

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*Chapter 2 examines the various approved phases of JP 2070 from a project management perspective. It identifies key decisions taken over the period from 1998 to late 2005 for each phase and significant factors that influenced these decisions.*

### Phase 1 – The Project Definition Study

**2.1** In February 1998, Defence established JP 2070 to acquire a replacement lightweight torpedo for the ADF. Phase 1 of JP 2070 was to provide Defence with a range of cost and capability options to inform the acquisition phase (Phase 2) of JP 2070. This was to be achieved through the release of a Request for Proposal (RFP),<sup>69</sup> which was intended to allow Defence to develop a shortlist of potential suppliers that would then be issued with a Request for Tender (RFT) for the provision of a Project Definition Study. The aim of the Project Definition Study was to:

- determine the extent of the modification and technical risk associated with the integration of each contender weapon with each desired platform;
- establish the level of ownership and access to intellectual property (IP) necessary for through-life support;
- identify support infrastructure options for each weapon; and
- determine the risk and estimated acquisition costs, life-cycle costs and risks associated with the weapon/infrastructure combinations.

**2.2** The information provided in the Project Definition Study was intended to assist the Maritime Development Branch within the Capability Systems Division with the generation of a submission to the Defence Capability and Investment Committee (DCIC) seeking funding approval for Phase 2 of JP 2070.

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<sup>69</sup> An RFP is a method of obtaining information from industry prior to the development of formal tender documentation and is sometimes used where the acquirer has been unable to define the requirement, specifications or other equipment options. An RFP differs from a Request for Tender (RFT) in that it does not form a basis for contract negotiations. Source: Department of Defence, CEPMAN 1, Chapter 9, Glossary, p. 9-40.

**2.3** The project strategy contained in Defence's November 1998 Equipment Acquisition Strategy for Phase 1 of JP 2070 noted:

there are a limited number of ASW [Anti-submarine Warfare] light weight torpedoes on the world market that may satisfy ADF requirements and that the lack of detailed information currently available on these weapons highlights the need for a number of studies to be undertaken prior to acquisition.

**2.4** Phase 1 of JP 2070 was intended to reduce subsequent integration risks, minimise schedule risk, refine costs and provide the Commonwealth with sufficient understanding of the various options to inform judgements on cost/capability tradeoffs required for the acquisition phase of JP 2070.

**2.5** On 11 December 1998, the Defence Source Selection Board (DSSB) endorsed the Equipment Acquisition Strategy for Phase 1 of JP 2070. In approving the Equipment Acquisition Strategy, the DSSB noted that there was some high-level concern within Defence that the 'strategy was too capability driven' and directed that the RFP should seek a sufficiently broad set of data to permit the short-listing of Project Definition Study contractors to extend beyond cost and capability considerations.

**2.6** Phase 1 of JP 2070 was approved in the context of the 1998–99 Defence budget at a cost of \$4 million. This approval was increased to \$4.88 million as part of Defence's 1999–2000 Additional Estimates Omnibus Submission due to price and exchange rate movements. In 2003–04, the total approved project budget for Phase 1 of JP 2070 had reached \$4.961 million as a result of price and exchange supplementation, with all these funds expended by the end of Phase 1.

## **The Request for Proposal**

**2.7** On 9 April 1999 Defence released a Request for Proposal (RFP)<sup>70</sup> for JP 2070, inviting proposals for a suitable lightweight torpedo. The RFP was released to companies that had responded to a February 1999 Invitation to Register Interest (ITR), which sought responses from manufacturers interested in participating in Phase 1 of JP 2070. The RFP closed on 9 July 1999. Defence received four responses to the RFP from:

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<sup>70</sup> The RFP had two parts. Part One-'Conditions of the RFP' and Part Two-Statement of Requirements (SOR). Source: Department of Defence, RFP Part 1 of 2.

- Bofors Underwater Systems (Torpedo Weapon System 90);
- Marconi Underwater Systems (Sting Ray Mod 1 torpedo);
- Thomson Marconi Sonar Pty Ltd<sup>71</sup> (MU90 torpedo); and
- the United States Navy (Mark 54 torpedo).

**2.8** The four responses to the RFP were evaluated by Defence between July and October 1999. The evaluations were based on a set of short-listing criteria documented in the Proposal Evaluation Plan for Phase 1 of JP 2070. The plan stated that the aim of these criteria was to determine the extent to which each response to the RFP:

- met the functional and other requirements laid down in the Statement of Requirement (SOR);
- minimised the risk;
- offered value for money; and
- had the ability to provide the weapon under Phase 2.

**2.9** Defence established three Proposal Evaluation Working Groups to evaluate sections of the RFP responses. These Proposal Evaluation Working Groups covered the areas of Engineering and Operations, Logistics and Australian Industry Involvement, and Business and Finance. Each Proposal Evaluation Working Group was responsible for providing a report to the Proposal Evaluation Board,<sup>72</sup> which was tasked with reviewing the reports and endorsing the resulting Source Evaluation Report.

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<sup>71</sup> Thomson Marconi Sonar was a joint venture set up in the 1990s between the then British GEC-Marconi (49.9 per cent) (subsequently acquired by the British Company BAE Systems in September 1999) and the former French company Thomson-CSF (50.1 per cent) (Thomson-CSF was renamed the Thales Group in 2000). In July 2001, Thales acquired BAE Systems' share (49.9 per cent) in Thomson Marconi Sonar (TMS). In September 2001, Thomson Marconi Sonar was renamed Thales Underwater Systems. The acquisition resulted in Thales being the sole shareholder of Thales Underwater Systems. The MU90 is manufactured by EuroTorp. EuroTorp is a GEIE (European Group of Economic Interest), a consortium formed in 1993 comprising two French firms, Thales and DCN, and an Italian firm Whitehead Alenia Sistemi Subacquei. Source: <<http://www.eurotorp.com/html/prod472.htm>>.

<sup>72</sup> Chaired by the Director-General of Undersea Warfare Systems.



## The decision to sole-source the Project Definition Study

**2.10** The Source Evaluation Report ranked Thomson Marconi Sonar's offer for the MU90 torpedo as the preferred offer on the basis that it best met the RFP requirements with the lowest risk and strongly recommended Thomson Marconi Sonar for selection.

**2.11** On 27 October 1999, the DSSB considered the Source Evaluation Report and recommended the sole-source selection of Thomson Marconi Sonar (MU90 torpedo) to undertake a Project Definition Study for Phase 1 on the basis of cost, capability and the potential for a substantial level of involvement of Australian industry. The delegate accepted this recommendation of the DSSB. The alternative option would have been for multiple Project Definition Studies to be undertaken simultaneously for the torpedoes assessed as most suitable. At the conclusion of these studies a decision could have been made based on the outcomes of these studies on which torpedo would be acquired under later phases of JP 2070. By deciding to sole-source the Project Definition Study to the company offering the MU90 torpedo the field for subsequent selection was limited to one type of torpedo. This approach may have limited Defence's capacity to properly evaluate the risk associated with the various torpedoes being offered, particularly in the area of platform integration (see Chapter 4)

### *The MU90 torpedo was regarded to be an 'off-the-shelf' procurement*

**2.12** Each respondent to the RFP was required to provide a Response Against the Statement of Requirement. The Statement of Requirement (SOR) was based on the joint Maritime Aerospace Provisional Detailed Operational Requirement (PDOR) and additional required data that, in Defence's view, was sufficient to enable top-level analysis of likely acquisition and initial logistics costs. The project strategy for Phase 1 noted that the provisional nature of the Detailed Operational Requirement was due to the fact that 'no endorsed capability<sup>73</sup> existed for a new lightweight torpedo'. Phase 1 was to provide the

<sup>73</sup> According to Defence's 'Capital Equipment Procurement Manual (CEPMAN1)', the prime reference document for the procurement of Defence capital equipment at the time, endorsement of a capability:

'acknowledges the existence of a requirement without necessarily considering the ways and means of implementing it. It permits staff planning to advance towards the point where 'Project Approval' may be sought, but does not convey any authority to commit the Commonwealth and cannot be used to justify entering into any obligations on associated proposals'.

Source: CEPMAN1, 1996, Part 1, Chapter 9, Glossary, p. 9-20.

Endorsement of a capability is 'achieved when a Defence Force Capabilities Options Paper (DFCOP) is endorsed'. Source: CEPMAN1, 1996, Part 1, Chapter 3, pp. 3-3 to 3-4.

data necessary to develop an endorsed capability. The RFP required respondents to:

indicate the development status of each of the elements of their Proposal...against each paragraph or section as appropriate for the LWT [Lightweight Torpedo] system and its associated equipment.

**2.13** This was required 'in addition to the specific information sought in the SOR Proposal Response'.

**2.14** Additionally, the RFP required respondents to complete a pro forma table which:

- provided a summary of the characteristics of the lightweight torpedo being proposed by the respondent; and
- required that, where any of the listed characteristics of the proposed lightweight torpedo were under design or development, the respondent indicate the development status in the table.

**2.15** A key influencing factor in Defence's decision to proceed with the sole-source selection of Thomson Marconi Sonar for the Project Definition Study was the 'in-service' nature of the MU90 lightweight torpedo. Throughout the proposal evaluation and selection process the 'off-the-shelf' and 'in-service' nature of the MU90 torpedo was cited repeatedly as the most significant reason for it succeeding over the nearest contender. The findings of the Operations and Engineering Proposal Evaluation Working Group and the Business and Finance Proposal Evaluation Working Group, as summarised in the October 1999 Source Evaluation Report, refer to the MU90 torpedo as proven, extensively tested, and the only off-the-shelf product offered in the four proposals received. The ANAO notes that there were inconsistencies in what the various Proposal Evaluation Working Group reports said in regard to the development status of the torpedo, and the DMO subsequently became aware that the torpedo was not in-service with other Navies. The implications of this are discussed in paragraphs 4.11 to 4.21.

**2.16** On 23 November 1999, Defence advised the then Minister for Defence of the sole-source selection of Thomson Marconi Sonar on the basis that the solution proposed:

...offers superior speed, range, depth, and shallow water performance capability, a higher level of confidence in TMS's [Thomson Marconi Sonar's] 'turn around' costs, ILS [integrated logistic support] proposal and AII

[Australian Industry Involvement] packages, and because the TMS MU90 [torpedo] is the only “in-service” weapon offered.<sup>74</sup>

**2.17** In March 2010, the DMO provided the ANAO with a copy of the Executive Summary of the Thomson Marconi Proposal from 1999, as a possible explanation as to why the Defence decision makers at the time considered that the torpedo was in in-service. The ANAO reviewed this document and noted to the DMO that it indicated that the torpedo was in series production for other navies but it did not say the torpedo was in-service with these navies.<sup>75</sup>

### *Australian industry involvement*

**2.18** Another factor that influenced the decision to sole-source the Project Definition Study from Thomson Marconi Sonar was the level of opportunity for Australian Industry Involvement (AII) offered in its proposal. The RFP required respondents to ‘specify the likely levels of local content that can be achieved and to respond to the particular activities’ identified in the draft Australian industry objectives included in the RFP. The AII objectives were to be further developed as part of the Project Definition Study.

**2.19** The draft Australian industry objectives were to develop ‘sustainable domestic capabilities that support and upgrade the Lightweight torpedo weapon system’. These capabilities included integration, through life support, potential manufacture of explosives filling, and the ability to maintain, adapt and modify the relevant software systems.

**2.20** As noted in paragraph 2.16, Defence’s advice to the then Minister indicated that one of the reasons for Thomson Marconi Sonar’s selection to conduct the Project Definition Study was Defence’s ‘higher level of confidence’ in Thomson Marconi Sonar’s AII packages. Specifically, Defence advised the then Minister that the ‘TMS [Thomson Marconi Sonar] proposal has the potential to achieve a substantial level of AII [Australian Industry Involvement]’.

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<sup>74</sup> The ANAO notes that the Mark 54 Lightweight Torpedo, which was one of the four options offered, integrated existing torpedo hardware from the Mark 46, Mark 50 and Mark Torpedo programs with other off-the-shelf technology. The Mark 54 achieved Initial Operational Capability with the US Navy in 2004, from <[http://www.navy.mil/navydata/fact\\_display.asp?cid=2100&tid=1100&ct=2](http://www.navy.mil/navydata/fact_display.asp?cid=2100&tid=1100&ct=2)> [accessed 4 February 2009].

<sup>75</sup> In April and May 2010 respectively, Thales Australia and EuroTorp GEIE each informed the ANAO that they had not advised Defence that the torpedo was in-service instead informing the ANAO that they had advised that the torpedo was in series production for four of the world’s navies.

**2.21** Subsequently, in May 2002 the Weapons Project Governance Board<sup>76</sup> was advised in respect of the MU90 that:

- it would be more expensive to make the weapons in Australia than Europe if less than a specified (classified<sup>77</sup>) number of weapons were made; and
- the Commonwealth would achieve a saving of two per cent per weapon if more than 500 weapons were made.

**2.22** Phase 3 of JP 2070 is intended to acquire additional MU90 torpedo war stock to satisfy ADF explosive ordnance<sup>78</sup> stock-holding requirements. The Weapons Project Governance Board was advised that the MU90 torpedoes to be purchased under Phase 3 were to be 'assembled and part manufactured in Australia to meet Government AII Policy' with the actual number to be procured under this phase dependent on an ongoing study due for completion in mid 2002.

**2.23** One of the supporting arguments set out in a November 2001 minute to the Under Secretary Defence Materiel, which recommended that approval of Phase 3 of JP 2070 be brought forward, was that it would enhance the commercial alliance participants' ability to meet the Australian Industry Involvement key performance indicator (KPI) for JP 2070<sup>79</sup>. The number of torpedoes eventually approved to be acquired under Phase 3 was exactly the

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<sup>76</sup> The DMO established the project governance board function in November 2001. The governance boards reported to the Under Secretary Defence Materiel and from February 2004 to the CEO of the DMO. These boards were to provide independent oversight and assurance of Defence's materiel projects. In February 2006 the governance boards were replaced by five material assurance boards. Source: Department of Defence, *Annual Report 2003–04*, Chapter Six, p. 305 and Department of Defence, *Annual Report 2006–07*, Chapter 6, p. 105.

<sup>77</sup> The DMO provided the ANAO with a March 2008 Security Classification Document which indicates that the number of MU90 torpedoes being acquired and the total inventory holdings to be held of the torpedo, is national security classified information. Key internal DMO documents sighted by the ANAO during this audit were in breach of the classification requirements set out in this document. In April 2010, Defence informed the ANAO that any unclassified documentation, where this issue appeared, should have been appropriately classified and that this issue has now been addressed.

<sup>78</sup> Explosive ordnance includes: bombs and warheads; guided and ballistic missiles; artillery, mortar, rocket and small arms ammunition; all mines, torpedoes and depth charges, demolition charges; pyrotechnics; clusters and dispensers; cartridge and propellant actuated devices; electro-explosive devices; clandestine and improvised explosive devices; and all similar or related items or components explosive in nature. Source: Defence Policy for the Management of Explosive Ordnance, DI(G) LOG 4-1-013 (in draft).

<sup>79</sup> In May 2008 EuroTorp GEIE informed the ANAO that:

....any delay to Phase 3 would have necessarily delayed the delivery of Australian manufactured torpedoes and the work for Australian industry into Europe.

same as the number of torpedoes required to make manufacturing the torpedoes in Australia comparable to the cost of acquiring complete torpedoes from Europe (as set out in the first dot point of paragraph 2.21).<sup>80</sup> The preservation of local production capability,<sup>81</sup> and associated cost implications related to delaying arrangements for Phase 3, were factors taken into consideration in bringing forward the request for Government approval on Phase 3 (see paragraphs 2.41 to 2.46) as well as the decision to proceed into contract for Phase 3, notwithstanding that Phase 2 was in significant difficulty (see paragraphs 3.51 to 3.72).

## The outcome of the Project Definition Study

**2.24** The Project Definition Study report was delivered to, and accepted by, Defence in April 2001. The Project Definition Study stated that the Djimindi Alliance members:

...have established a program for the manufacture, platform integration, and support of the MU90/IMPACT Lightweight Torpedo (LWT) that meets all of the Commonwealth's requirements for the new LWT capability for the ADF.

**2.25** The Project Definition Study also stated that the Djimindi Alliance had achieved all the key aspects of the ADF's requirements including:

- a) Leverage off the existing EuroTorp European MU90 production cycle to provide a proven LWT capability that meets all of the Commonwealth's performance requirements.
- b) The implementation of a low risk program, providing strong linkage between industry and all necessary ADF stakeholder organisations throughout the program through the Alliance organisation structure.

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<sup>80</sup> In April 2010, Defence indicated that the number acquired was consistent with capability analysis. The ANAO notes that ANAO report No. 24 2009-10 *Procurement of Explosive Ordnance for the Australian Defence Force* considered the reserve stockholding requirements set out in Chief of Defence Force Preparedness Directive 2006. That report noted that a Defence internal review (the Orme Review) had identified concerns surrounding the process used to establish the Explosive Ordnance Stockholdings set out in that document and suggested as follows:

Reviewing the EO [Explosive Ordnance] reserve stock liability presented in Annex C to CDF Preparedness Directive to provide a more consistent (and in some cases more realistic) basis to inform provisioning.

Source: ANAO report No.24 2009-10, *Procurement of Explosive Ordnance for the Australian Defence Force*, para. 3.56-3.61

<sup>81</sup> This was primarily a facility operated by Thales Underwater Systems in Sydney, second tier suppliers in Sydney and positions within the Djimindi Alliance Team in Canberra.

c) Provision of a high level of Australian Industry content by utilising the existing infrastructure and manufacturing capabilities established by TMS Pty [Thomson Marconi Sonar] and the other Australian industrial partners, and by implementing the platform integration via the local Platform/C2<sup>82</sup> suppliers.

d) Provision of a low risk program for the integration of the LWT capability into the Air and Sea platforms via the implementation of Sub-alliances with the local Platform/C2 suppliers.

e) Establishment of a complete Australian industrial capability for ongoing In-Country support, maintenance and evolution of the Australian LWT capability through life.<sup>83</sup>

**2.26** The Capability Options Document (COD), prepared with the assistance of the Alliance Team following the completion of the Project Definition Study, was presented to the DCIC<sup>84</sup> on 1 November 2001. The DCIC agreed to the preferred options, initial weapon numbers, overall budget and schedule as set out in the COD.

**2.27** In a January 2003 briefing, Defence advised the then Defence Minister that Phase 1 had delivered:

Determination of scope, costs and risks associated with the acquisition, integration into the proposed platforms and through-life-support considerations for the preferred MU90 Impact LWT.

## Commencement and management of Phase 2

**2.28** Phase 2 of JP 2070 was considered in the context of the May 2001 Federal Budget at an approved cost of \$287.71 million (December 2001 prices). Phase 2 was originally planned to commence in late 2001, with the bulk of the Phase 2 activities to be completed by late 2008. Since the initial approval in

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<sup>82</sup> C2 denotes Command and Control.

<sup>83</sup> In February 2010 DMO informed the ANAO that the selected response to the RFP provided the best Australian Industry Involvement proposal of the four contenders.

<sup>84</sup> In 2001–02 the Defence Capability and Investment Committee (DCIC) a Defence senior committee, comprised the Vice Chief of the Defence Force (chair), Deputy Secretary Strategic Policy (deputy chair), Under Secretary Defence Materiel (representative), Deputy Secretary Intelligence and Security, Deputy Secretary Corporate Services, Chief Finance Officer, Chief Defence Scientist, Deputy Chief of Navy, Deputy Chief of Army, Deputy Chief of Air Force, Head Capability Systems, Head Knowledge Systems, Head Defence Personnel Executive, Department of Finance and Administration representative and First Assistant Secretary Capability, Investment and Resources (secretary). The role of the DCIC at the time was 'to endorse, for Government consideration, affordable options for current and future capability that will achieve the Defence outcome in a cost-effective way, taking into account risk'. Source: Department of Defence, *Annual Report 2001–02*, p. 44.

May 2001, the approved budget for Phase 2 has increased to \$346.71 million (January 2010 prices), due to budget supplementation for price and exchange rate variations. By the end of February 2010, \$219.43 million of this budget had been spent.

**2.29** On 1 November 2001, the DCIC approved a reduced statement of work for Phase 2 compared to that proposed in the Project Definition Study, but which was considered by Defence to provide 'a sound basis for establishing the new capability'. The scope of Phase 2 of JP 2070 included:

- (a) acquisition of an initial batch of European-manufactured war-shot MU90 torpedoes;
- (b) acquisition of a limited number of exercise and dummy MU90 torpedoes;
- (c) integration of the MU90 torpedo onto the ADF Anti-submarine Warfare Platforms<sup>85</sup>; and
- (d) acquisition of the associated logistics elements required to support the MU90 Lightweight Torpedo system.

**2.30** Since Phase 2 was approved the capability to be delivered to the ADF under this phase of the project has been significantly reduced (See Table 4.2. Phase 2 was ongoing at the conclusion of this audit.

## Review of JP 2070

**2.31** Between 2000 and 2004, JP 2070 was the subject of a number of internal reviews and audits including: internal audits by Defence's Management Audit Branch in 2000 and 2003; a DMO commissioned review by external consultants in 2003; a DMO Peer Review;<sup>86</sup> and a DMO Red Team Review<sup>87</sup> in 2004.

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<sup>85</sup> Originally, the five ASW platforms into which the MU90 was to be integrated were the ANZAC Class Ships, the FFGs, the Orion Maritime Patrols Aircraft and the Seahawk and Super Seasprite Helicopters.

<sup>86</sup> The stated objective of the DMO's Peer Review process was to improve the delivery of systems to the ADF through the early recognition of critical issues and the application of remedial action based on the collective skills and knowledge of the (then) Electronic Weapons Systems Divisional executive and project staff. The process required the project manager to complete a 'self assessment' questionnaire of various aspects of the Project's health on the Divisional Peer Review database before the Peer Review. The final Peer Review assessment was also to be maintained in this database. Source: DMO Peer Review instructions and guidance materials. On 26 November 2009, DMO provided the ANAO with a draft of the 2004 Peer Review of Joint Project 2070. This was the only version of the Peer Review report they could locate. A 2005 document, marked 'final', was also provided, however, this only contained the project manager's assessment of the Project, not the conclusion of the Peer Review.

**2.32** These audits and reviews identified a range of shortcomings in the management of JP 2070, many of which continue to impact on Project outcomes. Issues identified by these audits and reviews included:

- lack of key capability definition documentation for JP 2070;
- organisational, cultural and personnel issues; and
- a range of issues with the establishment of the alliance arrangements (see Chapter 3).

**2.33** In June 2003, six months after the Phase 2 contract was signed and two years after the commencement of Phase 2 activities, a Defence internal audit of JP 2070 <sup>88</sup> found that:

Planning for JP 2070 is in process but is not yet sufficient for the efficient conduct of the project.

**2.34** JP 2070 Phase 2 was listed as a 'Project of Concern' in July 2004 due to ongoing schedule slippage, uncertainties relating to capability requirements and cost risks associated with the integration of the MU90 onto air platforms in particular. This occurred 14 months prior to the contract being signed for the conduct of Phase 3 and a portion of Phase 2 activities (see paragraphs 3.56 to 3.72).

### ***Capability definition documents***

**2.35** Defence's 2002 *Capability Systems Life Cycle Management Manual* was the primary source of guidance for major capital equipment purchases during the planning and commencement of Phase 2. The manual stated that, after the need for a new capability has been identified and agreed to, the need is:

...then subject to requirements and functional analysis to better define the capability required, especially the functions it is to perform, the level of performance required and the conditions under which this is to be achieved. These three considerations are the core of the capability baseline which a future capability must meet within the boundaries imposed by affordability

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<sup>87</sup> The purpose of a Red Team Review is to provide an independent analysis of project difficulty, especially with respect to project management, technical, schedule or cost difficulties. The Red Team Review for this project was instigated by the then Head Electronic Weapons System to assess the project's response to a number of action items raised during the Peer Review of Joint Project 2070 on 7 September 2004.

<sup>88</sup> The aim of the audit was to 'evaluate the general preparedness of JP 2070 and Alliance management to undertake the project, and in particular whether the planning was sufficient for the efficient conduct of the project'.



and the availability of people. This baseline may be modified as the life cycle progresses but it remains the foundation of the life cycle management for a particular capability.

**2.36** In 2003, the DMO acknowledged that:

The project proceeded to Second Pass approval long before it was ready. In particular there were no conceptual documents, FPS [Functional and Performance Specification(s)] or business case for any of the platforms....

**2.37** The 2004 Red Team Review of JP 2070 found:

An area of significant concern has been and continues to be the lack of key project documentation despite the pitfalls of not having this planning and documentation in place as highlighted by a MAB [Management Audit Branch] Audit and DMO Governance Boards. Many issues that the Project has had to manage or continue to battle with are as a direct result of not following the "Project Management 101" rulebook.

There has been and to some degree still exists a level of thinking that because they are using an Alliance contracting mechanism then there is no requirement for such a suite of documentation.

Key documents that have either never been developed or never progressed beyond draft are an Equipment Acquisition Strategy (EAS), Project Management Plan and Functional Performance Specification(s).

**2.38** The Red Team Review also concluded:

...there was and continues to be no excuse for the failure to implement sound project management and engineering principles. The belief within the Project that they were not required to develop a comprehensive suite of project documentation and implement process controls because they were in an Alliance has been detrimental to the Commonwealth in that it is now exposed to substantial risk and given rise to governance issues in a number of areas.

**2.39** In late July 2005, at a meeting of the Project Management Stakeholder Group, the DMO noted the continued absence of key capability definition documents:

...the documentation that would normally have been produced under, even, pre-Kinnaird project processes has not been produced under the Alliance and is only now being addressed...

**2.40** The absence of fundamental capability baseline documents has had a significant impact on JP 2070 including the areas of capability verification and test and evaluation (see Chapter 5).

## Accelerated commencement of Phase 3

**2.41** From as early as October 2001, only three months after the government approval of Phase 2 and more than a year before the agreement for Phase 2 was signed, the DMO was considering bringing forward the year of decision for Phase 3. In November 2001 a minute was submitted to the then Under Secretary for Defence Materiel requesting that the year of decision for Phase 3 be brought forward from 2005-06 to 2000-01. In this minute, the DMO claimed that, based on discussions with Thales Underwater Systems and EuroTorp, early approval of Phase 3 would provide the necessary 'commercial certainty' to the commercial alliance participants and result in a guaranteed two per cent or more saving,<sup>89</sup> which would mean an additional two torpedoes, and possibly more, could be purchased. Additionally, it was claimed that early approval of Phase 3 of JP 2070 would enhance the commercial alliance participants' ability to meet the Australian Industry Involvement KPI.

**2.42** Subsequently, in 2002, the Vice Chief of the Defence Force (VCDF) approved a proposal to bring forward government approval of Phase 3 of JP 2070 'in order to realise further savings in the overall costs associated with the manufacturing component of the project'. Defence also planned to 'combine Phases 2 and 3 financially to save administration and reporting costs'.

**2.43** As noted in paragraph 2.23, Phase 3 of JP 2070 was primarily for the acquisition of additional MU90 torpedo war stock to satisfy EO [explosive ordnance] stock holding requirements. Phase 3 was approved at a cost of \$246.43 million by the then Government on 26 November 2003. The torpedoes to be acquired under this phase were to be 'assembled and part manufactured in Australia to meet Government AII Policy'. Phase 3 was also ongoing at the conclusion of this audit.

**2.44** The December 2004 Red Team Review expressed concern about the DMO's apparent rush to lock in Phase 3 of JP 2070 rather than addressing outstanding issues and deliverables from Phase 2:

The Peer Review highlighted the need to lock in the delivery dates for Phase 2 work packages. There is no indication that this will be achieved in a timely manner, in fact the PO [Project Office]/ Alliance seem to be distracted from

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<sup>89</sup> As noted in Paragraph 2.21 the May 2002 Weapons Project Governance Board was informed that a two per cent saving could be achieved if more than 500 weapons were made for Australia. This figure is somewhat larger than the number of torpedoes being acquired under Phase 3.

achieving this task, [the] danger is that members of the Alliance are more concerned about locking in Phase 3 rather than bedding down Phase 2 work packages. Additionally, pressure must be applied to the Alliance to address significant Phase 2 deliverables before taking on additional tasks under Phase 3.

**2.45** Additionally, the Red Team Review report stated:

Serious doubt has arisen as to whether the Commonwealth will obtain Value-for-Money by proceeding with Phase 3 within the current Alliance structure and planning framework.<sup>90</sup> The Commonwealth should consider delaying Phase 3 until all Phase 2 issues are resolved, particularly the fundamental replanning of IP, Acceptance, Scope and Platform integration issues.

**2.46** In early August 2005, the DMO advised the then Minister that the DMO's previously advised reasons for advancing Phase 3 in order to achieve an anticipated cost saving of approximately \$11.2 million were no longer valid and the cost saving would not be realised.<sup>91</sup> The approved budget for Phase 3 at that time was \$262 million

## Measuring the effectiveness of the acquisition

**2.47** Materiel Acquisition Agreements are an initiative implemented in Defence following the *Defence Procurement Review 2003*.<sup>92</sup> The *Defence Capability*

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<sup>90</sup> Five months prior to this Red Team Review, the DMO accepted a recommendation contained in a business case prepared by the Alliance Team that Phase 3 occur under an extension to the alliance arrangement. See paragraph 3.50.

<sup>91</sup> This timing coincides with the execution of the FRAA, which committed the Commonwealth to significant additional expenditure under Phase 3.

<sup>92</sup> Department of Prime Minister and Cabinet, *Defence Procurement Review 2003*. Also known as 'The Kinnaird Review'.

*Development Manual 2006* defines a Materiel Acquisition Agreement<sup>93</sup> as follows:

An agreement between CDG [Capability Development Group] and the DMO, which states in concise terms what services and product the DMO (as supplier) will deliver to CDG and when.<sup>94</sup>

**2.48** In February through May 2004, the DMO undertook a due diligence analysis as part of its preparation for becoming a prescribed agency. The June 2004 Business Due Diligence report stated as follows with respect to this Project:

This project is assessed as not yet in a position to sign an Acquisition Agreement due to the uncoded work elements for the integration work with related projects.

**2.49** A Materiel Acquisition Agreement was signed in July 2005 for Phase 2 and 3 of JP 2070. As identified in paragraphs 6.30 to 6.51, costing issues surrounding Phase 2 had not been resolved by that time. A Materiel Acquisition Agreement sets out the Measures of Effectiveness of the

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<sup>93</sup> In 2005 the DMO became a Prescribed Agency under the provisions of the *Financial Management and Accountability Act 1997*. As a Prescribed Agency, the DMO remains part of the Department of Defence for the purposes of general administration, and the CEO of the DMO remains accountable to the Secretary of the Department of Defence under the *Public Service Act 1999* and to the Chief of the Defence Force under the *Defence Act 1903*. To reflect the agency status, a framework of agency agreements was established. At the highest level, these agency agreements involve a directive from the Minister for Defence to the CEO of the DMO. There is also a Memorandum of Agreement between Defence and the DMO that outlines the responsibilities and arrangements existing between the two agencies. Below these high-level documents are detailed agency agreements to clarify what Defence expects of the DMO, in terms of outcomes, and what price Defence agrees to pay the DMO for those outcomes. They are the basis on which the DMO receives most of its budget. There are three main categories of agreement: Materiel Acquisition Agreements (MAAs), Materiel Sustainment Agreements (MSAs) and Shared Service Agreements (SSAs). The first category covers all major and minor acquisition projects managed by DMO; the second covers all fleets sustained by DMO; and the last outlines the allocation of responsibilities and services for which there is no transfer of funds, available from <<http://www.defence.gov.au/defencemagazine/editions/200607/groups/dmo.htm>, [accessed 28 March 2010].

<sup>94</sup> Department of Defence, *Defence Capability Development Manual 2006*, p. 111.

Acquisition. The DMO component of the *2008-09 Major Projects Report*<sup>95</sup> states as follows with respect to Measures of Effectiveness:

MOEs [Measures of Effectiveness] represent key capability performance attributes of a project which if not satisfied would have a significant effect on the eventual suitability for operational service.<sup>96</sup>

**2.50** The eight Measures of Effectiveness included in the June 2005 Materiel Acquisition Agreement (MAA) for JP 2070 fell into three broad categories, namely: fundamental indicators of the success of JP 2070 (two); specific MU90 lightweight torpedo capabilities (five) (see Table 5.1); and logistics support (one). The two fundamental indicators of success for Phase 2 set out in the 2005 MAA are as follows:

- The MU90 LWT shall be integrated such that all the capabilities of the weapon can be utilised when employed from ANZAC and FFG Class frigates, AP-3C MPA [Orion Maritime Patrol Aircraft] and Seahawk and Seasprite helicopters.
- The MU90 LWT shall be able to be air launched from outside the Missile Engagement Zone of modern Submarine launched Surface to Air Missiles and Man Portable Air Defence Systems.

JP 2070 did not succeed against these Measures of Effectiveness in relation to any of the three air platforms included in the original scope (see Table 4.2).

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<sup>95</sup> The Major Project Report 2008-09 covers the cost, schedule and capability progress achieved by 15 DMO projects, which had an approved budget totaling \$37.8 billion as at 30 June 2009. The report is organised into three parts. Part 1 comprises an ANAO overview, incorporating the Auditor-General's Foreword, a summary of projects' performance and acquisition governance issues arising from the ANAO's review. Part 2 comprises the DMO's Major Projects Report, including the CEO of the DMO's Foreword, lessons from last year's report, developments in DMO's business and longitudinal analysis of projects. Part 3 incorporates the Auditor-General's Review Report, the statement by the CEO of the DMO and the information prepared by DMO in the form of standardised Project Data Summary Sheets covering each of the 15 projects.

<sup>96</sup> ANAO Audit Report No.13 2009–10, *2008–09 Major Projects Report*, para. 3.20.

**2.51** The 2005 MAA set out JP 2070 risks as follows:

- re-negotiation of Phase 2 Alliance Agreement to decrease Commonwealth exposure (see paragraphs 3.56 to 3.72);
- technical, schedule and financial risks are associated with all three air platforms (see paragraphs 4.49 to 4.74 and 6.30 to 6.50);
- the lack of suitable and compatible Range facilities in Australia will limit the extent to which testing and evaluation of the MU90 Lightweight Torpedo System can be conducted (see paragraphs 5.61 to 5.63); and
- the lack of any suitable Target facilities in Australia will limit the extent to which testing and evaluation of the MU90 Lightweight Torpedo System can be conducted (see paragraphs 5.65 to 5.76).

**2.52** The ANAO notes that the requirement to undertake the renegotiation of the Alliance Agreement to reduce the Commonwealth's exposure to risk was largely attributable to inadequacies in project management arrangements, the manner in which the alliance was established, and how it was subsequently supported. The air integration risks referred to in the MAA were not overcome prior to all of the air platforms being removed from JP 2070's scope by 2009, and the risks identified relating to ranges, and particularly targets, remain ongoing risks to JP 2070.

**2.53** In March 2009, the DMO prepared a revised draft of the MAA. This draft MAA was circulated again in March 2010 with minor amendments. The Measures of Effectiveness included in this draft reflected the reduced scope under Phase 2. The draft MAA included a schedule of risks to JP 2070. These are summarised as follows:

- key documentation not providing a clear concept of the testing necessary to confirm requirements have been met (see paragraphs 5.6 to 5.11);
- inadequacies in capability definition documentation adversely impacting upon the capacity to gain capability acceptance (see paragraphs 5.4 to 5.12);
- scope of the in-service support elements not fully understood, and JP 2070 was yet to implement a transition arrangements for an in-service support program;

- JP 2070 has a limited number of skilled staff to complete testing, engineering and logistic activities required to prove the capability and allow it to be accepted by in-service agencies<sup>97</sup>;
- the FFG Upgrade project has priority in modifying the FFG Underwater Weapons System delaying integration activities required to achieve a 'partial plus' integration level on the FFG (see Table 4.1);
- the need to acquire simulation equipment including a 12-month procurement lead time (see paragraphs 5.48 to 5.58); and
- the requirement for a target to fully test the MU90 torpedo (see paragraphs 5.65 to 5.76).

**2.54** The above list indicated that much of the risk associated with the successful completion of Phase 2 now resides in test and evaluation. The form TI338 is a key form developed in support of transitioning into and out of Naval Operational Testing and Evaluation. The form TI338 for JP 2070 is currently in draft and was prepared in April 2009. It stated the following with respect to JP 2070 schedule and the status of the MAA:

The current approved MAA [Materiel Acquisition Agreement] (dated 5 July 2005) milestone dates have lapsed. A new MAA with revised contemporary dates has been in draft for some time but is not-yet-approved. The JP 2070 Master Project Schedule (developed in OPP [Open Plan Professional]) has been developed based on the not-yet-approved milestone dates and it is therefore problematic to formally report on progress against a not-yet-approved MAA. However, the CDG signatory (through DGMD [Director-General Maritime Development] staff) is well aware of the revised MAA milestone dates and a lack of agreed MAA has not raised any Capability agreement issues to date.

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<sup>97</sup> The 16 April 2010 MAAs for Phase 2 and 3 rated project staff and skill sets as a high risk to JP 2070. Both MAAs indicated that there may be insufficient staff with the required skills to deliver project outcomes. ANAO Audit Report No. 41 *The Super Seasprite* included a number of lessons from that project. Lesson No. 1 from that report was as follows:

Defence major capital equipment procurement is a complex long term venture that is heavily reliant on the skills of personnel employed within DMO. Careful consideration is required in the planning of major capital acquisition projects to confirm that personnel with the requisite skills will be available, in sufficient numbers, to facilitate the smooth conduct of procurement and technical activities required to support capability delivery.

**2.55** In early February 2010 Defence informed the ANAO as follows:

The revised MAA milestone dates are those proposed and agreed by NSC [National Security Committee of Cabinet] in early 2009 and represent the Defence understanding of the revised Project Schedule. The most up to date MAA remains a draft pending the outcome of the CABSUB [Cabinet Submission] to be present in Q2 [Quarter 2] 2010 regarding the redistribution of air integration funds.

**2.56** In late February 2010 the DMO revised this advice as follows:

The milestone dates in the present Draft MAA are those proposed and agreed by NSC in early 2009. However, noting the project progress since the Draft MAA was prepared, some of the dates in this document are no longer representative of planned project progress. As at February 2010, a revised MAA has been produced by Defence and will be considered for approval through the normal Defence channels, including discussion at the Project Management Stakeholder Group meeting to be held in late February 2010. The revised MAA contains an updated project schedule that more accurately reflects the key project milestones and deliverables, including IOR. This revised schedule will be included in the final draft of the TI338 presented for Navy consideration.

**2.57** This means that for a significant period of time Phase 2, which is included on the Project of Concern<sup>98</sup> list has not had a current MAA. The minutes for the February 2010 Project Management Stakeholder Group, state as follows:

The PMSG [Project Management Stakeholder Group] discussed the status of the project MAAs and was advised that the existing MAAs were approved in July 2005, and that current planning was for the MAAs to be updated pending the outcome of the stage 2 RPF [Release of Preserved Funds<sup>99</sup>]. The PMSG directed that new MAAs be agreed and signed by 15th April 2010. The PMSG agreed that the MAAs will need to address the procurement of an appropriate mobile target to enable Operational Test and Evaluation (OT&E) of the weapon prior to approval by CN.

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<sup>98</sup> In 2002 the Head Materiel Finance of DMO informed the Senate Foreign Affairs, Defence And Trade References Committee as follows when asked for a definition for the term 'project of concern':

We have a risk profile on our projects in terms of cost, schedule and capability. The projects we identify as being serious problems in those particular areas are the ones we provide to cabinet.

Source: <<http://www.aph.gov.au/Hansard/senate/commtee/s5925.pdf>> [Accessed 11 March 2010].

<sup>99</sup> See paragraphs 6.45 to 6.52.



**2.58** On 16 April 2010, revised MAAs were signed for Phase 2 and Phase 3. Those agreements set out a range of risks to the Project. These risks are listed in Table 2.1 which includes references to the relevant section(s) of this report that discusses these issues.

**Table 2.1**

**High risks included in the April 2010 MAAs for Phases 2 and 3 of JP2070**

Phase	Risk description	Risk rating	Report paragraph references
2	Cost of project completion	High	6.45 to 6.53
2	Target delivery	High	5.65 to 5.79
2	Weapon performance	High	5.4 to 5.39 and 5.80 to 5.85
2	Weather issues with MU90 test program	High	5.31
2	MU90 torpedo tube loading (and maintenance) capability	High	5.24 to 5.31
2	ANZAC Magazine modification dependant on Air 9000 Phase 8 outcome	High	6.65 to 6.67
2	MU90 compatibility with Australian ranges	High	5.61 to 5.64
3	Prior qualification	High	5.80 to 5.85
3	Simulation model	Medium	5.51 to 5.60
2 and 3	Project staff numbers/staff skill sets	High	2.53

Source: Materiel Acquisition Agreements for Phase 2 and Phase 3 of JP 2070 signed on 16 April 2010.

## 3. Contract Management

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*This chapter examines the various phases of JP 2070 from a contract management perspective. It examines the decision to use an alliance contracting arrangement, the transition of the alliance between JP 2070 phases, and the governance arrangements put in place to monitor and support the alliance. The chapter also examines the management of Intellectual Property issues over the life of JP 2070.*

### Background

**3.1** Project alliancing was first used in Australia in the 1990s for major energy projects. Some public sector agencies have subsequently used project alliancing to deliver construction projects. These include Sydney Water's Northside Storage Tunnel Project and two Australian Government agency projects, the National Museum of Australia and the Australian Institute of Aboriginal and Torres Strait Islander Studies.

**3.2** Some of the features of a project alliance agreement between two or more parties are:

- a sharing of the project risks and rewards between the parties;
- agreement between the parties not to resort to litigation to resolve issues, that is, no fault and no blame except in very limited circumstances;
- a joint group (e.g. an Alliance Board) with members from all the alliance participants to lead and manage the alliance;
- unanimous principle-based decision-making on all key project issues; and
- a payment arrangement structured around:
  - the contractor receiving reimbursement of direct project costs and a fee related to overheads and profit; and
  - a pain/gain sharing regime where alliance participants share in the results of both outstanding and poor performance.

## Decision to use an alliance contracting arrangement

**3.3** In November 1999, the DSSB decided that innovative contracting strategies would be investigated for Phase 1 of JP 2070. On 2 December 1999, Defence received external legal advice on the option of using alliance contracting for Phase 1 of JP 2070. On the same day, the Director of Undersea Weapons Group in the then Defence Acquisition Organisation<sup>100</sup> sought approval to adopt an alliance contracting approach for Phase 1 of JP 2070. The minute requesting approval from the delegate recommended the approach on the basis that:

...an Alliance contracting approach may be worthwhile pursuing, particularly in light of the integration risks associated with the project; and

...the Alliance structure also has the potential to assist the Commonwealth in obtaining the platform OEMs [Original Equipment Manufacturers] co-operation in the release of their proprietary intellectual property for the Project, another major risk area.

**3.4** Because JP 2070 was a prototype alliance for Defence, the minute noted that an alliance contracting approach would result in additional costs for the Project, including increased legal fees due to the lack of a template for an alliance contract.

**3.5** On 13 December 1999, the Head of System Acquisition (Maritime & Ground) approved an alliance contracting approach for Phase 1. The Alliance Agreement for the Project Definition Study was signed on 18 April 2000.<sup>101</sup> JP 2070 therefore became the first Defence major capital equipment acquisition project to pilot alliance contracting. The alliance for JP 2070 was known as the Djimindi Alliance.

**3.6** In a January 2003 brief to the then Minister, Defence described the alliance approach to JP 2070 as being:

...about working collectively towards a common goal with shared objectives, risks, outcomes and rewards, based on a “no blame” culture. This is achieved through establishing collective obligations with all parties winning or losing together. Alliance contracting seeks to share risk, provide transparency of costs and profit and utilise Integrated Project Teams. One of the specific agreements is about ‘doing business better’ and all participants sharing in the cost savings.

<sup>100</sup> The predecessor organisation to DMO.

<sup>101</sup> Between the Commonwealth of Australia, Thomson Marconi Sonar Pty Ltd and EuroTorp GEIE.

This translates to the Industrial Participants achieving a higher profit margin and the Commonwealth procuring more torpedoes for the Project Target Cost.

**3.7 In May 2010, EuroTorp informed the ANAO as follows:**

The Alliance and Management system was dictated to EuroTorp by the contract agency without a choice for an alternative arrangement. In an alliance contractual framework cultural difficulties will always arise particularly where government personnel are mixed with Industry. These differences were exacerbated in this case by the industry partners including companies from France and Italy as well as Australian industry. Nevertheless EuroTorp, Thales and WASS [an Italian company also involved in the Alliance] have fully supported the alliance contracting arrangement.

**Selection of the alliance partner**

**3.8** The capacity to perform successfully in an alliancing relationship<sup>102</sup> was not part of the DMO's considerations in selecting the preferred candidate for Phase 1 of JP 2070. The September 2009 *Journal of Chartered Secretaries Australia Ltd*, indicated that typically, setting up an alliance arrangement includes 'a competitive tendering process to evaluate the capabilities, cost structures and fee margins of consortium members'.<sup>103</sup> While this journal was published some 10 years after the Djimindi Alliance was established, the concept of confirming a tenderers' suitability as an alliance partner during the selection process is not new. For example, a December 2000 internal audit report on alliance contracting in Defence's Undersea Weapons Group noted that:

The Project Alliance arrangement [for JP 2070] was only considered after the RFP had been evaluated and the Source Evaluation Report recommending TMS [Thomson Marconi Sonar] had been prepared. TMS was not selected initially on the basis they would make a superior alliance partner, rather it was on the capability offered by their solution. In contrast, the conventional<sup>104</sup> alliance contracting approach practice is for a rigorous evaluation process

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<sup>102</sup> If it is considered that the project demands an alliancing process, then it is reasonable that the bidder's ability to deliver through that process should be the subject of assessment. Source: [Australian Government Solicitor, 'Relationship and Alliance Contracting by Government', AGS Commercial Notes No.4, 28 November 2001. <<http://www.ags.gov.au/publications/agspubs/legalpubs/commercialnotes/comnote04.htm>> [accessed 2 October 2009].

<sup>103</sup> *Journal of Chartered Secretaries Australia Ltd*, 'Keeping good companies', September 2009, Vol.61, No.8, p. 471.

<sup>104</sup> For example, selection by the Commonwealth of Alliance contract participants for the construction of the National Museum of Australia at Acton Peninsula in the A.C.T. involved both careful evaluation of the solutions offered and the suitability of the tenderers to participate in an Alliance contract.

which gives heavy weighting to the ability of the client and all of the Alliance participants to work harmoniously together.

**3.9** The 2000 internal audit report, while noting that alliance contracting is a significantly different approach to the traditional contracting within Defence and the DMO, also identified a number of shortcomings in the management of the alliance arrangements for JP 2070 at the time including:

- the absence of policy and procedural guidance in relation to alliance contracting;
- significant departures from conventional alliance contracting practices; and
- structural and cultural issues related to the management of JP 2070.

**3.10** The audit report also questioned whether any analysis of the suitability of the alliancing approach for JP 2070 had been undertaken ahead of the decision to use it for JP 2070 and stated:

Audit considers that before the Alliance Contract model is used, a preliminary analysis should be conducted to ensure whether, in fact, it is suitable for the acquisition in question. Policy guidance is needed from DGCPO [Director-General Contracting Policy and Operations] to assist the choice of contracting strategies by Projects.

**3.11** In a 2002 brief to the DMO's Weapons Project Governance Board<sup>105</sup> the DMO acknowledged that the Djimindi Alliance was a:

'hybrid' alliance and that it did not follow the general rules in that it commenced as an RFT, a sole-source selection was made and then the Project converted to an Alliance.

**3.12** In June 2003, a further internal audit report on JP 2070 noted:

Ideally the Alliance Participants should be selected first (based on their Alliancing skills, attitudes and experience) and then a technical solution is developed in conjunction with the CoA [Commonwealth of Australia]. It is important to note that the Djimindi Alliance was formed after an RFP process through which the weapon system solution was identified by the CoA. The

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<sup>105</sup> The DMO established the project governance board function in November 2001. The governance boards reported to the Under Secretary Defence Materiel and subsequently to the CEO of the DMO after February 2004. The governance boards were to provide independent oversight and assurance of Defence's materiel projects. In February 2006 the governance boards were replaced by five materiel assurance boards. Source: Department of Defence, *Annual Report 2003–04*, Chapter Six, p. 305 and Department of Defence, *Annual Report 2006–07*, Chapter 6, p. 105.

fact that ET [EuroTorp] and TUS [Thales Underwater Systems] offered the technical solution confirmed their participation in the Alliance.

## **Alliance oversight arrangements for Phase 1**

### ***Weapons Project Governance Board***

**3.13** At the commencement of JP 2070, the DMO Weapons Projects Governance Board, which was external to the Djimindi Alliance structure, was charged with providing the then Under Secretary Defence Materiel (USDM) with independent and objective project assurance on materiel acquisition and support for JP 2070.

### ***Alliance Board and Capability Board***

**3.14** The Alliance Agreement established the function and composition of an Alliance Board that was to ensure that the Alliance Charter was satisfied in all respects. The Alliance Board comprised two representatives from each of the alliance participants.

**3.15** The Alliance Agreement stated that each representative of an Alliance Participant shall be deemed authorised to represent and bind such party with respect to any matter which is within the power of the Alliance Board. However, according to advice provided to the Weapons Project Governance Board in July 2002, this was in practice not the case as the Commonwealth representatives on the Alliance Board did not have the delegation to make binding decisions on behalf of the Commonwealth. The Djimindi Project Team advised the Weapons Project Governance Board that having Alliance Board decisions being subject to approval by a Defence delegate, who is not a member of the Alliance Board:

...disempowers the Alliance Board and undermines the alliance principle of joint decision making for better results.

**3.16** Under the Alliance Agreement, the Alliance Board was prohibited from making any decisions affecting operational capability without seeking advice from the Commonwealth sponsors. As a result, Defence established a Capability Board<sup>106</sup> that it was expected would meet as needed 'to support the Alliance Board and to resolve capability issues raised by the Alliance Board,

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<sup>106</sup> Chaired by Director General Maritime Division and consisting of representatives from Capability Systems, DSTO and the relevant Australian Defence Force Headquarters.

especially those issues relating to the proposed system's ability to fully meet the Provisional Detailed Operational Requirements (PDOR)'.

**3.17** Defence also established an Operational Working Group to support the Alliance and Capability Boards, and provide guidance on interpretation of the PDOR.

### *Alliance Management Team*

**3.18** The Alliance Management Team was established under the Alliance Agreement and was responsible for tasks assigned to it by the DMO or the Alliance Board. This team was also responsible for the administration of all alliance sub-contracts and sub-alliances.

## **Measuring performance under Phase 1**

**3.19** A 2002 brief to the Weapons Project Governance Board advised the board that the Industrial participants in the Djimindi Alliance shared in just under \$510 000 in Gainshare payments in relation to Phase 1.<sup>107</sup> The Alliance Agreement defined Gainshare (Phase 1) as 'a risk/reward payment made to or paid by the Alliance Participants, in addition to the Milestone Payments (Phase 1), in accordance with Appendix 5 of this Alliance Agreement'.

**3.20** The Defence internal audit of Phase 1 of JP 2070, completed in June 2003, found that the level of achievement assigned against each of the KPIs included in the Alliance Agreement for the Phase 1 was subjective. Additionally, the audit report did not support the level of achievement reported and consequently paid for by way of Gainshare payments. In terms of the performance recorded against some KPIs, the audit report commented:

The application of Key Performance Indicators (KPIs) (Time, AII and Operator Satisfaction) through measures of success is very subjective.<sup>108</sup> In Phase 1, the Participants achieved a performance score of 84%, which was the average performance after multiplying the weighted factors by their measures of success.<sup>109</sup> The third factor (Integration Planning)<sup>110</sup> was rated at '130%

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<sup>107</sup> In March 2010, Defence informed the ANAO that this advice was not correct and that the available Gainshare under Phase 1 was \$550 000 of which \$475 860 was paid including \$43 260 from New Zealand, as New Zealand were initially involved in Phase 1.

<sup>108</sup> The proposed results were to be approved by the Board.

<sup>109</sup> These were set out in clause 9.3 of Appendix A to the Alliance Agreement.

achieved' which equates to '*Completed an Integration Plan that fully defines the integration solution for four platforms*'. This standard of achievement is not supported by audit as the Seahawk helicopter is undergoing a PDS [Project Definition Study] phase and the Seasprite integration being dependent upon the outcomes of this study.

**3.21** As noted in Chapter 6<sup>111</sup>, the costing for the integration of the torpedo onto the air platforms developed during Phase 1 was reviewed during 2004 and 2005 due to concerns that the budget for this integration was inadequate. At that time of this review JP 2070 scope included the integration of the MU90 torpedo onto three air platforms-being the Orion Maritime Patrol Aircraft, Seahawk and Super Seasprite helicopters. The Super Seasprite Project was cancelled in 2008 and subsequently the two remaining air platforms, the Seahawk helicopter and the Orion Maritime Patrol Aircraft were removed from the scope of Phase 2 in 2009 (see Table 4.2).<sup>112</sup>

## Contractual transition from Phase 1 to Phase 2

**3.22** The Contract for Phase 2 represented an extension of the Phase 1 Alliance Agreement and was referred to as the Revised Alliance Agreement. The Revised Alliance Agreement was signed on 4 December 2002 and combined Phases 1 and 2 of JP 2070 into one phase and a single agreement. It took more than 12 months to negotiate the Revised Alliance Agreement which was at odds with the advice provided to the Defence delegate in the supporting argument within the proposal and liability approval for the Project Definition Study contract in Phase 1 (the Alliance Agreement). This advice stated:

The Alliance has developed an Alliance Agreement, which is initially for the Phase 1 PDS [Project Definition Study], but can be seamlessly amended to include Phase 2 Acquisition if and when required.

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<sup>110</sup> The table defining Contract Data Requirements (CDRs) (Appendix A to the Alliance Agreement) for the PDS includes 'The purpose of this CDR is to provide a **plan for the integration** of the LWT [Lightweight Torpedo] system into each required platform **to the extent desired by the ADF**. It will also determine the nature, price, timing and risk associated with each respective integration effort.'

<sup>111</sup> See paragraph 6.33 in Chapter 6.

<sup>112</sup> These air platforms were removed from the scope of Phase 2 in 2009 as the Phase 2 budget was insufficient to achieve the level of integration of the torpedo into these aircraft sought by the ADF. The residual air platform budget is progressively being reallocated to other areas of the project (see Chapter 6).



**3.23** In the period preceding the Revised Alliance Agreement being executed, a number of 'gap activities' (funded milestones) were carried out by the alliance including drafting the Phase 2 Project Management Plan and outlining the Work Breakdown Structure for Phase 2. The 'gap period' is defined in the Revised Alliance Agreement for JP 2070 as the period between 19 April 2001 and 30 June 2001. In March 2009 DMO advised that just under \$210 000 was spent on gap period activities. DMO also advised that

Following the gap period when Phase 2 was approved, the 'Phase 2 Year 1' activities were approved by the Alliance Board, including the Commonwealth chairman, under the terms and conditions of the Alliance Agreement. The total value of these was \$2.590m.

## **Revised Alliance Agreement**

**3.24** The scope of work under the Revised Alliance Agreement for Phase 2 identified two separate elements of Phase 2 work. One portion of the work was allocated to the Djimindi Alliance and the other portion allocated to the JP 2070 Commonwealth team which was comprised DMO personnel.

**3.25** The work allocated to the Djimindi Alliance under the Revised Alliance Agreement comprised:

- the manufacture and delivery of a classified quantity of European MU90 variants;
- timely and successful delivery and integration of the MU90 launching systems onto the FFGs, AP-3C Orion Maritime Patrol Aircraft, Seahawk helicopters and Super Seasprite helicopters;<sup>113</sup>
- management responsibility for CAT 0 - 5 [Category 0 to Category 5] Production Test and Evaluation;
- establishment of the logistic support infrastructure;
- Initial ISS [In-service Support]; and

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<sup>113</sup> In April 2010 Thales Australia informed the ANAO as follows:

Whilst within the scope of JP2070 Phase 2, the integration onto the FFG and air platforms were not part of the "committed works" of the alliance under the Revised Alliance Agreement. That is, in the period 2002 to August 2005, the alliance was not tasked by the Commonwealth and the Alliance Board to commence integration onto the FFG and the air platforms.

- the establishment of a torpedo maintenance facility, which was to be provided for platform/weapon certification, and some local infrastructure for torpedo maintenance.

**3.26** The work allocated to the JP 2070 Commonwealth team comprised:

- integration of the LWTS onto the ANZAC frigates;
- financial management aspects such as claim verification and funds release;
- governance responsibilities; and
- management of the test and trials, and operational release of the torpedo.

**3.27** The Revised Alliance Agreement included only a high-level agreed scope of work<sup>114</sup>, with the intention being that the detail would be developed over time. In June 2003, a Defence internal audit of JP 2070 noted that a disadvantage of this approach was that it could lead to significant changes in agreed baselines for costs, schedule and technical requirements.

**3.28** That audit report also noted that the Measures of Success for Phase 2 KPIs were still to be determined as at June 2003, some six months after the Revised Alliance Agreement was signed and 18 months after contract negotiations commenced. The report also identified that many of the Phase 2 activities had not been achieved by the dates indicated in the agreement.

**3.29** The audit found that the Alliance Agreements for Phases 1 and 2 of JP 2070 were both complex and costly to develop and that a considerable amount of time and resources might again be required for re-drafting an alliance agreement for Phase 3.

**3.30** In mid-2003, the DMO commissioned an external review of the alliance contracting approach that the DMO was trialling for both JP 2070 and the ANZAC Ship Project. The review found that:

DMO seems to have been rushed by a combination of policy and circumstances into applying the project Alliance approach on the two pilot Alliance projects and the Industry Participants seemed similarly bound to conform with the change in contracting approach, without due consideration or understanding of the issues involved. Consequentially many problems were

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<sup>114</sup> For example, it had no Contract Deliverable Requirements Lists (CDRL).

experienced that could have been mitigated or avoided had the pilot Alliance projects resulted from a structured procurement process.

**3.31** This 2003 review also made a finding that JP 2070 had not followed the recommended procurement process for project alliances as described in Defence's recommended procurement guidelines for alliance contracting ('Guidance on Alliance Contracting in the DMO', version 1.5, 2001). Defence noted in February 2010 that the establishment of the Djimindi Alliance occurred before this guidance was issued. ANAO agrees that the Alliance Agreement for Phase 1 was signed prior to the promulgation of this guidance in April 2000. However, this guidance was extant at the point that the Revised Alliance Agreement was negotiated and signed in December 2002. The Revised Alliance Agreement for Phase 2 committed the Commonwealth to a much higher level of expenditure than was involved for Phase 1 (\$4.88 million at December 1999 prices) versus (\$287.71 million at December 2001 prices) given that it involved the acquisition of the torpedoes and the upgrade of the relevant platforms.

**3.32** The 2003 review also found that there was a lack of full analysis and appreciation of the issues before deciding to adopt an alliance approach for the procurement of the lightweight torpedo. Given that the decision as to whether an alliance approach is a better option than more traditional contracting methods is one of the key decisions for an agency undertaking a major procurement project, it should be based on rigorous analysis of the potential risks and benefits of one method over another. In this regard, the ANAO notes no business case was developed to support the decision to adopt an alliance approach for JP 2070.

**3.33** In February 2010, Defence advised the ANAO as follows:

In late 1999 [the] JP 2070 [Project Office] was directed by the Defence Source Selection Report (DSSB) to investigate innovative contracting methodologies for the PDS Phase with the aim of continuing into the acquisition Phases. The DSSB was keen to explore alliance contracting and innovative contracting methodologies. The Project [Office] and the then DAO Contracting staff, utilising the external legal advisors developed a **report** [emphasis added] which included the Alliance contracting methodology to inform the DSSB consideration of this. Subsequently, the DSSB used this report as the basis deciding upon an Alliance concept for JP 2070.

**3.34** The ANAO requested the DMO to provide a copy of the report referred to in the Defence advice set out in paragraph 3.33. The ANAO expected that this report would be a business case in support of the alliance approach

including a cost/benefit analysis. However, the documentation supplied by the DMO was a higher delegate submission and legal advice that did not specifically address benefits, risks or costs associated with adopting an alliance approach for this project.

**3.35** The *Defence Procurement Review 2003* (the Kinnaird review) stated as follows with respect to alliance contracting:

Alternative forms of contracting will not be appropriate in all cases. Nevertheless, greater consideration should be given to alternative methodologies in strategic procurements, such as incentive contracts and alliance contracting. For example, it might in some cases, be more suitable to use a cost plus incentive fee contract for the development stage of projects and a fixed price contract arrangement for the production phase.

Alliance contracting may also be more appropriate for some major complex acquisitions. In this regard we note that the DMO already has two alliance contracts and is examining their effectiveness.<sup>115</sup>

**3.36** Subsequently the *Defence Procurement and Sustainment Review 2008* (the Mortimer review) contained the following minor recommendation:

The Report suggests (page 46) that 'greater consideration should be given to alternative methodologies in strategic procurements, such as incentive contracts and alliance contracts'.<sup>116</sup>

**3.37** In terms of considerations relevant to entering an alliance arrangement, the *Defence Procurement Policy Manual 2006* states as follows:

An alliance contracting approach should only be considered when the risks in a project are such that a traditional contracting approach is unworkable, and a cost-benefit analysis demonstrates that the benefits of managing risks and opportunities in an alliance contracting arrangement outweigh the costs of establishing and supporting the alliance. The costs of establishing an alliance are significant, sometimes prohibitive, and as such an alliance structure is rarely suitable for projects valued at less than \$80 million. Before proceeding with an alliance acquisition strategy, specialist advice should be sought from General Counsel Division in accordance with DPPI 6/2005.<sup>117</sup>

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<sup>115</sup> *Defence Procurement Review 2003*, p. 46

<sup>116</sup> *Defence Procurement and Sustainment Review 2008*, Annex B14

<sup>117</sup> *Defence Procurement Policy Manual 2006*, pp 2.2.7-2.2.8

**3.38** The ANAO considers that, based on the experience of this project, that the policy requirements set out in the *Defence Procurement Policy Manual 2006* should be the minimum level of analysis applied in all circumstances where consideration is given to undertaking an acquisition using an alliance or other form of non-traditional contracting approach.

## Implementing alliance arrangements

**3.39** The alliance arrangement experienced significant organisational and cultural problems from early on in JP 2070. A December 2000 Defence internal audit report<sup>118</sup> noted that the alliance contract for JP 2070 was a significant departure from Defence's contracting model for major capital equipment purchases in use at the time (DEFPUR 101 Version 46<sup>119</sup>) which focused on project inputs, emphasised risk avoidance and transfer, and included penalties for contractor non-performance.

**3.40** An alliance facilitator was engaged to provide advice on alliance structures and processes and other professional services to support the Project's Djimindi Alliance. Defence had initially engaged the services of an alliance facilitator for the Phase 1 alliance contract. However, concerns about this company's performance and its ability to meet contractual requirements during Phase 1 of JP 2070 led to the DMO's decision to conduct a competitive tendering process<sup>120</sup> for the role of alliance contract facilitator for Phase 2 of JP 2070. The outcome of this process was the appointment, in late 2001, of JMW Consultants Australia Pty Ltd (JMW Consultants), as alliance contract facilitator for year 1 of Phase 2 of JP 2070. In April 2002, the DMO contracted JMW Consultants to undertake this role for year 2 of Phase 2 of JP 2070.

**3.41** At the October 2001 meeting of the Project Djimindi Alliance Board<sup>121</sup>, the alliance facilitators presented a number of observations of 'things not working' with the Djimindi Alliance, based on interviews with some members of the Alliance Board and workers in the alliance team, but not all alliance participants. These observations outlined a range of significant cultural issues

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<sup>118</sup> Defence internal audits are conducted by the Management Audit Branch.

<sup>119</sup> The DEFPUR 101 template was replaced by the SMART 2000 template, which was subsequently replaced by the ASDEFCON suite of contracts.

<sup>120</sup> Utilising the Defence Alliance Facilitator Panel.

<sup>121</sup> An Alliance Board comprised two representatives from each of the alliance participants (the Commonwealth of Australia, EuroTorp GEIE and Thomson Marconi Sonar).

surrounding the establishment, structure and ongoing administration of the alliance, but suggested that everyone wanted the project to succeed.

**3.42** In February 2010 Defence commented that these observations were not included in a formal report and/or study and appeared to be a list of talking points for the Alliance Board to better manage JP 2070. The ANAO notes that the minutes of the Djimindi Alliance Board state as follows with respect to how these issues were identified:

JMW had conducted several telephone interviews with most of the Board Members and many of the team members. From these interviews, JMW has made observations concerning the current status of the Djimindi Alliance. The underlining observation is that everyone wants the project to succeed, however there are a number of things not working that need to be addressed. JMW presented 12 observations which were recurring themes in the interviews.

**3.43** The Alliance Board responded as follows with respect to these observations:

The observations were seriously concerning to the Board and there is acknowledgement the Board needs to make decisions and take actions to address the issues.

**3.44** At a July 2002 meeting, Defence's Weapons Project Governance Board noted that it had trouble understanding the Alliance, and raised concerns about interaction and integration across five platforms. This was two and a half years after the decision to pursue an alliance approach for JP 2070, more than one year after the completion of Phase 1 of JP 2070 under an alliancing arrangement, and more than one year after negotiations commenced on Phase 2 of JP 2070. Given that the Weapons Project Governance Board was responsible for providing independent and objective project assurance on materiel acquisition and support for JP 2070, its comments regarding the alliance were particularly concerning. The comments surrounding integration were also concerning, as the minute to the delegate seeking approval to adopt an alliance identified mitigation of the risks associated with integration as one of the reasons for adopting an alliance approach. This meeting of the Weapons Project Governance Board occurred five months before the contract for Phase 2 was signed.

**3.45** The 2003 Management Audit Branch audit report on JP 2070 noted that the alliance agreement had a number of deviations from a traditional alliance model. In addition, while noting that deviations from a 'pure' alliancing

arrangement may not necessarily mean that the arrangement will be ineffective, the June 2003 report by external consultants on the alliancing arrangement for Phase 2 of JP 2070 (see paragraph 3.30) made the point that it is important to manage expectations of these models, in particular the expectation that such an arrangement will deliver all the benefits of an alliance when it is not structured in a way that will result in the genuine alliance behaviours necessary to realise these benefits.

**3.46** The consultants' report went on to state that the alliancing approach was producing better outcomes than traditional contracting models for JP 2070. However, the ANAO notes that this view was based on anecdotal evidence and subjective assessments of the alliancing arrangement. The report which was based on a survey, stated as follows:

We are aware from the survey that there are some who would prefer to base a decision on hard analysis about why Project Alliancing is better or even as good as the 'normal' contracting by comparing the two trial alliance projects with other Defence projects with meaningful measurable comparisons. However, despite our best endeavours we were obliged to concur with Survey Responses that observed:

eg "There is not a lot of hard facts on traditional procurement projects to contrast with [Project Alliancing]".

## **Business case for Phase 3 to occur under the alliance**

**3.47** As noted in paragraph 2.43, Phase 3 of JP 2070 was approved by the then Government on 26 November 2003. In June 2004 a business case, completed by the Alliance Team, provided three acquisition options for Phase 3 of JP 2070. Two of the three options involved use of a traditional Defence (ASDEFCON) fixed-price contract with the MU90 torpedoes either being:

- manufactured, assembled and tested in Europe (option 1); or
- partially manufactured in Europe and assembled and tested in Australia (option 2).

**3.48** The third option presented in the business case was the recommended option and it was:

Acquisition via an extension to the existing Alliance Agreement of Torpedoes, partially manufactured and fully assembled and tested in Australia. The Australian Industry Involvement will provide the capability to perform Depot Level maintenance for designated torpedo sub-systems and equipment.

**3.49** The business case identified ten specific advantages of the recommended option over the other two options, specifically the recommended option was thought to be superior because it:

- (a) Was the lowest priced option (with an estimated cost of \$227 million with possible further reductions compared with \$243 million and \$239 million plus for options one and two respectively).
- (b) Was the lowest risk option (primarily in terms of cost and Australian through life support capability).
- (c) Met almost all of the objectives for the establishment of local capability (as did one of the other options).
- (d) Delivered a 20 per cent cost saving of the torpedo price for Phase 3 through the involvement of Australian industry, a saving which was expected to be available for future local production.
- (e) Included significant local Australian Industry and provided an enduring capability available for future support and follow on production (as did one of the other options).
- (f) Was the only option that included significant JALO [Joint Ammunition and Logistics Organisation] TMIF [Torpedo Maintenance and Integration Facility] personnel involvement which would provide future flexibility and self sustainment for the Commonwealth.
- (g) Established a local depot level repair capability that would result in lower through life costs for the Commonwealth (as did one of the other options).
- (h) Was the only option to provide a 'simple management structure' for Phase 2 and Phase 3 allowing both phases to be managed by one team without the need for additional management personnel.<sup>122</sup>
- (i) Provided a 'simple consistent framework' for Phases 2 and 3 and secured the Alliance Participants commitment for success of the Project.
- (j) Represented the best contracting option in terms of Value for Money, AII and in-country capability utilising the existing Alliance framework.

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<sup>122</sup> The business case for the Acquisition Strategy claimed that not proceeding under an Alliance framework would result in a shortfall to the budget for Phase 2 of \$11.48 million being costs related to additional project management and system engineering activities and Project Team support. Source: Department of Defence, 'Business Case for the Acquisition Strategy for JP 2070 Phase 3 (Replacement Lightweight Torpedo) The Djimindi Alliance', June 2004, p. 4.



**3.50** In July 2004 the DMO accepted the recommendation of the Alliance Team's business case that option 3 be the acquisition option implemented for Phase 3.

## Transition towards a more traditional contract

**3.51** The December 2004 report of the Red Team Review of JP 2070 stated:

It is apparent that the Commonwealth may have lost direct control of the acquisition process due to the nature of the Alliance relationship and this is a significant factor behind many of the issues currently affecting the project.

**3.52** By 2005, delays in achieving Phase 2 work resulted in the DMO deciding that the Revised Alliance Agreement should be amended to include more commercial-style conditions to mitigate the Commonwealth's risks inherent in the agreement and that aircraft integration should be removed from the Revised Alliance Agreement's scope of work.<sup>123</sup> Factors that the DMO was seeking to overcome by adopting this approach included:

- lack of clarity around the scope of work;
- lack of clarity around the parties responsibilities for the various elements of Phase 2 work;
- lack of clarity around the price basis for Phase 2 and Phase 3;
- limited rights for the Commonwealth in terms of the IP necessary for ongoing in-service support of the weapon (see paragraphs 3.75 to 3.88); and
- the inability of the Commonwealth to claim damages from the Industrial Participants.

**3.53** Many of these issues had been identified in a 2004 DMO Red Team review of the project. However, the Red Team review's report included the following caveat:

Due to the urgency of this review and with the team unable to go off-line and dedicate their total focus to the investigation and analysis, it is suggested that

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<sup>123</sup> In April 2010, Thales Australia informed the ANAO as follows:

Whilst within the scope of JP2070 Phase 2, the integration onto the FFG and air platforms were not part of the "committed works" of the alliance under the Revised Alliance Agreement. That is, in the period 2002 to August 2005, the alliance was not tasked by the Commonwealth and the Alliance Board to commence integration onto the FFG and the air platforms.

the adoption of the recommendations may unearth other issues stemming from the findings stated in this report. A resourced Project Office should be able to fully establish the way forward with respect to all of the issues raised in this report.

**3.54** Consistent with the caveat included in the Red Team review's report, a March 2005 brief to the then Minister for Defence indicated that the risks to Phase 2 were much broader than the issues surrounding the contract. These issues included:

- delay, cost concerns and uncertainty surrounding the integration of the torpedoes onto the air platforms (see paragraphs 4.42 to 4.77 and paragraphs 6.30 to 6.47); and
- poor outcomes of torpedo trials conducted in Europe in 2004 (see paragraphs 4.24 to 4.32).

**3.55** Other Defence documentation from that period identified a range of other issues which are detailed in Chapter 5 including:

- limited access to test results restricting the capacity to verify contractual compliance (see paragraphs 5.80 to 5.85); and
- inability to test the torpedo due to the ADF not having a compatible range or suitable artificial target (see paragraphs 5.61 to 5.77).

### **Further Revised Alliance Agreement (FRAA)**

**3.56** Negotiations for the FRAA for JP 2070 commenced on 4 April 2005. According to the DMO, the renegotiation of the agreement established a more commercial customer/supplier relationship between the Commonwealth and the Djimindi Alliance Team.

**3.57** A report on the outcomes of the negotiations for the FRAA (the Negotiating Report), was completed on 31 August 2005, the same day as the FRAA was signed by the DMO. The report concluded that the:

...negotiated outcome [will] provide the Commonwealth with much greater certainty at significantly reduced risk than the current agreement. The Industrial Participants have a firmly established scope of work on a fixed price basis and the risk is spread more equitably between the Industrial Participants and the Commonwealth.

**3.58** Additionally, the Negotiating Report noted that the FRAA 'will transfer a considerable body of project management and associated work to the fledgling JP 2070 PO [Project Office]' which will require additional personnel

resources as 'an under resourced and non-responsive PO will pose a significant risk to the Commonwealth's contractual position'.<sup>124</sup>

**3.59** The higher delegate submission<sup>125</sup> indicated that the FRAA incorporated:

- A reduction in the Phase 2 scope of work for the Industrial Participants, with this reduction in the Phase 2 scope of work being primarily related to the removal of the integration of the MU90 into the three air platforms from the scope of work. According to the DMO, this equated to a reduction in the contracted amount under the FRAA for Phase 2 from \$268.71 million to \$179.56 million (December 2001 prices). At the time the FRAA was signed in August 2005, \$100.98 million had already been expended on Phase 2.
- Phase 3 (the purchase of an additional classified quantity of torpedoes and associated equipment) for a fixed price of \$239.15 million (December 2003 base date prices escalated to \$263.86 million in December 2005 prices).

**3.60** The ANAO sought clarification on whether the figures for Phases 2 and 3 contained in the higher delegate submission seeking approval for the FRAA had been the subject of a cost investigation. In April 2010, Defence advised that the calculation of these figures were contained in an annex to the FRAA. Defence further advised that the prices in the FRAA were a negotiated price, based on estimated scope of work, risk transfer and commercial basis for the contract. The DMO further advised that the lead negotiator considered these prices to be a fair price based on his involvement in the Alliance for a 12 month period.

**3.61** The ANAO also sought documentation supporting the value for money statement contained in the higher delegate submission as this relied on the competitive nature of the Request for Proposal process which had occurred

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<sup>124</sup> In April 2001 Thales Australia commented to the ANAO that:

This statement in the Negotiation Report is not understood. No Alliance scope in relation to project management and associated work was transferred to the JP2070 project office by the signing of the FRAA.

This is a misunderstanding resulting from the incorrect view held by some that the Alliance was responsible for the management of the Commonwealth JP2070 project.

<sup>125</sup> This higher delegate submission sought procurement, proposal, contract and contract signature approval from the delegate for the commitment to Phase 3.

some six years prior to the FRAA being signed. As noted in paragraphs 6.30 to 6.34 there was a high degree of uncertainty surrounding the adequacy of costing arrangements for Phase 2 by the time the FRAA was signed. The DMO were unable to locate the Financial Investigation Service advice referred to in the value for money statement contained in the higher delegate submission.

**3.62** Under the FRAA, the scope of work for the Djimindi Alliance for Phase 2 and Phase 3 is to:

- a. acquire a new MU90 LWT [Lightweight Torpedo] with the capability (and a growth path to evolve) to defeat modern submarines employing torpedo countermeasures within the ADF maritime operating region;
- b. integrate the new MU90 LWT capability into current maritime frigate, and subject to Commonwealth determination, nominated aerospace platforms, to provide a reliable, operator friendly, effective and safe MU90 LWTs [Lightweight Torpedo and the Shipborne Torpedo System] underwater warfare capability;
- c. provide an IISS [Initial In-service Support] capability for the new MU90 LWT, including the establishment of required in-country support including integration and maintenance capabilities. Training of the ADF will also be provided to allow trained operators and maintainers to employ and maintain the new MU90 LWT capability; and
- d. establish in-country MU90 LWT component manufacture, final assembly and testing capabilities to provide an indigenous capability to support the new MU90 LWT.

**3.63** DMO documentation prepared in relation to the FRAA at the time it was negotiated indicated that the contract:

- contained commercial protections with some risks including limited warranty periods, caps on liability, the limited warranty for Random Failure Defects and possible reliance on the Industrial Participants for future support;
- was based on a clear and up-to-date assessment of risks by the Commonwealth and which includes a clearer approach to mitigation of those risks;
- more clearly set out the required scope of work and each party's individual contractual responsibilities; and

- was based on a fixed price, with limited Direct Costs, and with payments being made in arrears and subject to achievement of specified KPIs and Milestones.

**3.64** The Negotiating Report for the FRAA noted that the FRAA retained alliancing principles and the Alliance Board, but that the role of the Alliance Board was 'now limited to that of a mechanism for communication on high level issues and changes to the Alliance Agreement.'

**3.65** The Negotiating Directive for the FRAA indicated that the inclusion of Phase 3 in the FRAA was subject to the negotiation of amendments for the Phase 2 contract to remove or mitigate commercial or contractual risks to the Commonwealth inherent in the contract. That directive indicated that preferred contractual position had been based on legal reviews. The ANAO sought evidence from the DMO that the risk associated with agreeing to commit to Phase 3, while Phase 2 was in significant difficulty, had been the subject of detailed analysis before committing to this course of action. No such document was provided<sup>126</sup>. In April 2010, Defence advised the ANAO as follows:

The Phase 2 Contract as it stood presented significant risk to the Commonwealth. These risks are detailed in the Red Team review conducted in late 2004 and legal review conducted in September 2004. In order to secure the required changes to the RAA [Revised Alliance Agreement for Phase 2] the DMO had to offer Phase 3 requirements in order to gain the necessary leverage for change. Had DMO not taken this course of actions the Commonwealth would have remained exposed to significant cost, performance, financial, commercial and schedule risk.

**3.66** The establishment of the Revised Alliance Agreement is discussed in paragraphs 3.22 to 3.38. The Red Team review is discussed in a number of places in this report including paragraphs 2.37 to 2.38, 2.44 to 2.45, 3.51 to 3.55, 4.17, 4.47 and 5.8. The review did outline a range of contractual issues. However, it also outlined a range of project management issues that needed to be resolved, and suggested that further issues may be identified through the implementation of the recommendations of that review. The legal review referred to in the quotation after paragraph 3.65 is discussed in paragraph 3.67.

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<sup>126</sup> The preservation of local industry involvement was a factor that influenced the decision to proceed into Phase 3 (see paragraph 2.23).

**3.67** Legal advice provided to DMO in late 2004 focussed on addressing contractual issues for Phase 3. This advice did not specifically address the option of contractually committing to Phase 3 as leverage to negotiate improved contractual arrangements for Phase 2. DMO informed the ANAO that, following an exchange of correspondence in March 2005<sup>127</sup>, it became apparent to DMO that the Industrial Participants were not prepared to re-negotiate the Revised Alliance Agreement for Phase 2 without an agreed course of action for implementing Phase 3 under the alliance agreement. In this context, the DMO stated:

The position taken by the Industrial Participants made it clear that the only negotiating leverage available to the DMO to improve the terms of existing contract was to incorporate Phase 3 requirements in a new contract.

**3.68** Subsequent legal advice, received by DMO in late August 2005 in relation to the FRAA contractual provisions, does suggest that this was the approach adopted. However, the DMO was unable to provide the ANAO with either a business case or relevant legal advice to underpin the decision to use the Commonwealth agreeing to enter into Phase 3 (and so commit to more than \$263 million in 2005 prices of additional expenditure) as leverage to obtain the required improvements to the Phase 2 contract.

**3.69** DMO informed the ANAO that DMO processes do not require a separate business case to be developed in these circumstances, but rather the decision was based on consideration by the relevant DMO decision-maker of a series of documents, the status of the project at the time and available options (albeit that this consideration was not documented at the time). The ANAO notes that the majority of these documents were developed after the decision had been taken to use Phase 3 as leverage to address contractual issues associated with Phase 2 and that none of them included consideration of any alternative options. Unlike the suite of documents provided to the ANAO by DMO, a business case, in these circumstances, would generally include consideration of the various options taking into account relevant issues to inform decisions on the most appropriate course of action.

**3.70** In May 2010, Defence informed the ANAO as follows:

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<sup>127</sup> The ANAO notes that this exchange of correspondence occurred after the conduct of both the 2004 Red Team Review and legal review.

On transfer of the project to EWSD [Electronic Weapon and Systems Division] and in light of concerns about the adequacy of the RAA [Revised Alliance Agreement] to ensure delivery of Phase 2, HEWS [Head Electronic Weapon and Systems] requested a comprehensive legal review of the contract. This was designed to inform the DMO's consideration of whether the project should continue under the current contractual arrangement and regarding any decision as to whether to commit to Phase 3 of the project.

The contract precluded termination for default as it was a contract of best endeavours and no blame. Termination for convenience was not warranted because: acting in good faith on advice from project and product representatives, it was expected that the torpedo would be accepted by the French Navy in early 2006; the need for the capability remained unchanged; and no mechanism would have existed to recover moneys expended.

Termination by agreement was not available as: the requirement continued to exist; the Industrial Participants would have had to agree to this action; and, if the contract was retendered the contenders would have remained the same and the same selection outcome would likely have resulted.

The DMO did consider the likely contractual outcome if the contract was not renegotiated with the Ph3 inclusion, ie Industrial Participants would not have renegotiated, the losses would have been uncapped and the remedies under the contract (as renegotiated) would not have been available.

HEWS deduced, based on the application of commercial judgement to the progressive accrual of information from the series of reviews and legal advice, that the open-ended risks of Phase 2 and the weak negotiating position to remedy the known problems justified the renegotiation option. The DMO renegotiation provided protection to the Commonwealth through inclusion of the TIAP testing regime (and associated contract "off ramps") and incorporated an express right to terminate (that was not in the original contract)."

**3.71** The August 2005 negotiating report for the FRAA outlined the Technical Industrial Action Plan (TIAP) program, then being conducted by the French and Italian Governments, as a protection included in the contract that would allow the DMO to terminate the contract if the French and Italian Government's requirements for the TIAP trials were not met. At the time the negotiating report for the FRAA was drafted, the DMO had not been provided with the entry and exit criteria for the TIAP. The TIAP program is discussed in paragraphs 4.24 to 4.32 of this report.

**3.72** Other contemporaneous DMO documentation indicates that the Early Proof of Capability arrangements for torpedoes being acquired under Phase 3

was a protection negotiated under the FRAA. The Early Proof of Capability process was concerned with the development of torpedoes under Phase 3 and provided contractual leverage if certain milestones in the development of the Mark II MU90 torpedoes being acquired under Phase 3 were not met. The ANAO notes that the DMO reduced the scope and deferred the contractor's obligations under Early Proof of Capability requirements in late 2009 as set out in paragraphs 4.33 to 4.39.

## Recommendation No.1

**3.73** The ANAO recommends that Defence and the DMO review governance arrangements surrounding alliance-style contracts to confirm that reporting arrangements, external to the alliance, provide effective oversight of alliance and project performance.

### Defence and DMO response

**3.74** Agreed.

## Intellectual Property (IP) issues

**3.75** In order for Defence to be in a position to effectively utilise the MU90 lightweight torpedo capability it must have available to it sufficient relevant technical information and IP to ensure that the capability can be developed and sustained throughout its life. From the initial stages of JP 2070, IP issues were identified as one of the key risk factors for this project. The 1999 RFP defined IP as:

...copyright, and all rights in relation to inventions, registered and unregistered trade marks (including service marks), registered and unregistered designs, circuit layouts, and any other rights resulting from intellectual activity in the industrial, scientific, literary and artistic fields.

**3.76** The 1998 Equipment Acquisition Strategy for Phase 1 of JP 2070 stated:

Ownership of all foreground IP generated by Phase 1 studies will be retained by the Commonwealth...The project will adopt a formal Intellectual Property Management Strategy (IPMS) to aid respondents to the tender in their identification of the IP that the Commonwealth considers essential to the project tasks.

**3.77** IP issues were identified as an area requiring attention in the 1999 evaluation of responses to the RFP for Phase 1. The Business and Finance Proposal Evaluation Working Group reported that a major point for



negotiation, in relation to all four proposals submitted in response to the RFP, related to IP. The Business and Finance Proposal Evaluation Working Group report noted that it was difficult to make an adequate assessment of the responses to the IP requirements in the RFP as:

...the RFP only required respondents to indicate their *ability* [emphasis added] to provide IP rights to the Commonwealth. Respondents could have indicated their ability without stating a willingness to provide such rights.

**3.78** Additionally the Business and Finance Proposal Evaluation Working Group also noted that ‘none of the respondents expressly indicated a willingness to provide IP rights to the Commonwealth on the terms stated in the RFP’ and that ‘given the significance of the integration issues associated with JP 2070, substantial consideration should be given to the IP requirements of JP 2070 prior to signing the Project Definition Study and Acquisition contracts’.

**3.79** December 1999 Defence documentation noted that the contractor undertaking the Project Definition Study would need to ‘obtain and use information and intellectual property owned by each of the platform suppliers’ and that Defence was in the process of examining each of the platform supply contracts to identify the Commonwealth’s intellectual property rights for each of these. This documentation noted that Thomson Marconi Sonar, in their RFP response, had resisted the Commonwealth’s intention to own the IP from the Project Definition Study and stated that:

If the Commonwealth does not own all the IP in Phase 1, it will be critical that the Commonwealth has a broad licence to us[e], copy, modify, adapt and sub-licence all of that IP for Defence purposes. Any limitations on the Commonwealth’s rights may interfere with any subsequent integration activities.

**3.80** Additionally, Defence’s discussions with legal advisors noted that important IP issues, which would need to be resolved early to reduce the risk of project delays, should come to light during the setting-up of the initial alliance.

**3.81** The June 2003 Defence internal audit of JP 2070 noted that under the provisions of the Alliance Agreement, Phase 1 Foreground IP<sup>128</sup> vests in and is the property of the Commonwealth. The report also noted that Background IP<sup>129</sup> issues were to be reviewed by Defence to determine what access is required and that:

Government to government negotiations may be required as the Background IP for the torpedo software is owned by the French and Italian governments.

**3.82** The 2004 DMO Red Team review of JP 2070 found that IP issues had not been resolved at the time the review team's report was completed in December 2004 and concluded:

One of the key areas that the Commonwealth needs to win back its position is Intellectual Property, the lack of clarity in the Commonwealth's Background IP rights is untenable as it could prevent the Commonwealth from freely exercising the rights that it has in the Foreground IP.

**3.83** The review team recommended:

A better outcome could be achieved for the Commonwealth if the Commonwealth were able to specify how it intended to use and support the capability and the Industry Participants were obliged to provide, and warrant that they would provide, sufficient IP rights to satisfy that capability requirement. Furthermore, the IP rights must be warranted as sufficient to support the integration of the capability into platforms as planned in the future. In any event, including where the Commonwealth is unable to be definitive in terms of capability and supportability requirements, the IP Plan must be developed in sufficient detail to ensure that limitations on IP are fully understood by the Commonwealth and that the resource value in the Commonwealth's IP rights is recognised and protected.

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<sup>128</sup> Foreground IP is defined in the Request for Proposal for JP 2070 Phase 1 as: 'Intellectual Property which results from or is otherwise created pursuant to or for the purposes of the performance of any subsequent Contract or subcontract as the case may be.' Source: Department of Defence, 'Project JP 2070 ADF Lightweight ASW Torpedo Phase 1 Concept and Feasibility Studies Request for Proposal', RFP No: 98-33731, April 1999, p. 2.

<sup>129</sup> Background IP is defined in the Request for Proposal for JP 2070 Phase 1 as: 'Intellectual Property which:

- is pre-existing IP brought to any subsequent Contract task at the Effective Date or IP subsequently brought into existence other than as a result of the performance of any subsequent Contract; and
- is embodied in, or attaches to, the Supplies or is otherwise necessarily related to the functioning of the Supplies.

Source: Department of Defence, 'Project JP 2070 ADF Lightweight ASW Torpedo Phase 1 Concept and Feasibility Studies Request for Proposal', RFP No: 98-33731, April 1999, p. 2.

It is recommended any Commonwealth approval to progress into Phase 3 should be contingent upon the Commonwealth obtaining a more reasonable position in terms of IP rights.

**3.84** As part of the 2005 renegotiation of the Revised Alliance Agreement, which resulted in the FRAA, the DMO sought to clarify and improve the Commonwealth's position on IP Issues. Legal advice received by the DMO in 2005 prior to signing the FRAA confirmed that the FRAA achieved this.

**3.85** In late 2006, Thales advised the Djimindi Alliance Board of concerns expressed to Thales by the DMO program manager for Project SEA 4000, the Air Warfare Destroyer project, about the availability of necessary IP about the MU90 for this Project SEA 4000. Project SEA 4000 is planned to deliver three Hobart Class Air Warfare Destroyers (AWDs) to the Navy and it is intended to equip the AWDs with MU90 torpedoes. The AWD program manager was advised that this would not be an issue provided the AWD project required IP similar to that provided for the [integration of the MU90 onto the FFGs and ANZAC ships.

**3.86** Despite the apparently improved IP arrangements agreed to under the 2005 FRAA, the management and exercise of IP rights continued to be an issue for Defence. In an April 2007 letter to EuroTorp and Thales Underwater Systems, the DMO stated that although the contractual provisions within the FRAA related to IP were acceptable in theory, for a number of reasons, including the failure of EuroTorp and Thales to meet their obligations under the FRAA, they did not work in practice.

**3.87** The DMO, EuroTorp and Thales Underwater Systems agreed that changes would be required to the conditions of the FRAA to resolve some of the problems in defining and identifying IP under the FRAA. Specifically, the DMO advised Thales and EuroTorp that:

...the Commonwealth expects that it should have a licence for all Background IP required to be delivered under the FRAA. This right to Background IP is...necessary to ensure that the Commonwealth has clear rights to use this IP in support of the Supplies in the future.

**3.88** The issues surrounding access to technical information and IP had not been resolved through an amendment to the FRAA at the conclusion of this audit. In March 2010 the DMO informed the ANAO as follows:

The statement that major<sup>130</sup> IP issues remain today is not correct. These were dealt with through the renegotiation of Phase 2. Practical issues encountered with technical data were later encountered and are still to be resolved.

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<sup>130</sup> The term major IP issues was not used by the ANAO.

## 4. Torpedo Delivery and Platform Integration

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*This chapter examines the development status of the torpedo and how this impacted on the risk profiles for JP 2070 Phase 2 and 3. The chapter also examines the progress towards integrating the torpedo onto the various ADF platforms, including the impact other projects on those platforms have had on the progress of this integration.*

### The development status of the torpedo

**4.1** As discussed in Chapter 2, the initial planning undertaken for the delivery of the torpedoes under JP 2070 Phase 2 was based on the understanding that the MU90 torpedo was in-service with other countries and the torpedo was an off-the-shelf procurement<sup>131</sup>. A number of recent reviews of Defence procurement have all advocated the benefits of off-the-shelf procurement solutions. The *Defence Procurement and Sustainment Review 2008*<sup>132</sup> (also known as the Mortimer Review) notes that ‘off-the-shelf purchases avoid the considerable risk to cost and schedule inherent in developing new weapon systems’.<sup>133</sup> Accordingly, the *Defence Procurement and Sustainment Review* recommended that:

Any decisions to move beyond the requirements of an off-the-shelf solution must be based on a rigorous cost-benefit analysis of the additional capability sought against the cost and risk of doing so. This analysis must be clearly communicated to Government so that it is informed for decision making purposes.<sup>134</sup>

**4.2** The *Defence Procurement Review 2003*<sup>135</sup> (also known as the ‘Kinnaird Review’) made statements similar to this recommendation.<sup>136</sup> Consistent with

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<sup>131</sup> The documentation provided by Defence to the ANAO to indicate how the decision makers at the time formed the view that the weapon was in-service with other navies did not say that the torpedo was in-service with other navies (see paragraph 2.17).

<sup>132</sup> Commonwealth of Australia, *Going to the Next Level, the report of the Defence Procurement and Sustainment Review*, 2008.

<sup>133</sup> *ibid.*, p. 18.

<sup>134</sup> *ibid.*, p. 20.

<sup>135</sup> Department of Prime Minister and Cabinet, *Defence Procurement Review 2003*.

this theme, the *2008 Audit of the Defence Budget*<sup>137</sup> (also known as the ‘Pappas Review’) recommended that projects do not advance to the next phase until they reach the required levels of technical maturity.<sup>138</sup>

**4.3** With respect to JP 2070 the Pappas Review states as follows:

Wedgetail<sup>139</sup> and the Light Weight Torpedo are examples of Projects which were launched with unproven technology.

**4.4** This statement is inconsistent with the history of decision making for this Project.<sup>140</sup> As noted in Chapter 2, the selection process for this Project resulted in a decision of the Defence Source Selection Board (DSSB) on 27 October 1999 to sole-source the conduct of the Project Definition Study for Phase 1 of JP 2070 from the supplier of the MU90 torpedo. The associated ministerial submission stated as follows:

The DSSB (Abr) agreed to sole source the selection for JP 2070 Phase 1 PDS [Project Definition Study] on the basis that the TMS [Thomson Marconi Sonar Australia] solution offers superior speed, range, depth, and shallow water performance capability, a higher level of confidence in TMS’s ‘turn around’ cost, ILS [Integrated Logistics Support] proposal and AII [Australian Industry Involvement] packages and because the **TMS MU90 is the only “in-service” weapon offered** [emphasis added].

**4.5** The Proposal and Liability Approval for Phase 1 indicated that, after the decision was taken to sole-source the Project Definition Study, \$1.43 million was reprogrammed from 1999–2000 to 2000–01 to fund a proposed risk mitigation in-water trial of the torpedo. With the decision to develop an alliance agreement, this trial did not go ahead. The first trial

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<sup>136</sup> *ibid.*, p. 19, Phases 1, 2, 3 of the Project were approved prior to the 2003 Kinnaird Review. However, the contract for Phase 3 and the remainder of Phase 2, known as the FRAA, was signed in August 2005 which was some time after the Kinnaird Review. By this time Phase 2 of the Project was listed as a Project of Concern, it had been identified that the torpedo was not off-the-shelf, and it was acknowledged that the budget for Phase 2 was unlikely to be able to fund the capability that was intended to be delivered under that phase of the Project.

<sup>137</sup> Department of Defence, *2008 Audit of the Defence Budget*, 2009.

<sup>138</sup> *ibid.*, pp. 81-82

<sup>139</sup> Wedgetail is otherwise known as Airborne Early Warning and Control Aircraft (Project AIR 5077 Phase 3).

<sup>140</sup> In February 2010 the Department of Defence noted as follows:

The Evaluation Report and the Defence Source Selection Board both make the statement that the MU90 was the most advanced of the four options offered. The Evaluation Report makes the point that the three unsuccessful contenders were all on the drawing board at the time of offer, and therefore represented an even higher risk than the MU90, whereas the MU90 existed and was in test.

conducted by Australia using the torpedo occurred in 2008, with a further trial conducted in late 2009 (see paragraphs 5.31 to 5.33).

**4.6** The ANAO sought to identify the basis for the DSSB forming the view that the MU90 torpedo was in-service. The DSSB consideration was based upon the October 1999 Source Evaluation Report which indicated that the MU90 torpedo was the only off-the-shelf product offered in the four proposals received. The Source Evaluation Report was based on the reports of three Proposal Evaluation Working Group. Of these the Integrated Logistic Support and Australian Industry Involvement Proposal Evaluation Working Group and the Engineering and Operations Proposal Evaluation Working Group were most relevant. The Integrated Logistic Support and Australian Industry Involvement Proposal Evaluation Working Group stated as follows:

TMS [Thomson Marconi Sonar] proposes a weapon that is already in production and currently in-service with European navies, there is no development required and uses COTS [Commercial Off-the-Shelf] equipment.

**4.7** Whereas the Engineering and Operations Proposal Evaluation Working Group did not use the term off-the-shelf and stated as follows:

The TMS MU90 LWT [Lightweight Torpedo] is a proven weapon which has undergone extensive testing and has been purchased by the French, Italian, German and Danish Armed Forces.

**4.8** The ANAO notes that there is a significant difference between a weapon having being purchased as compared to being in-service. This is clearly demonstrated in Chapter 5 which encompasses test and evaluation and shows that the term purchased and in-service are not synonymous.

**4.9** The Source Evaluation Report states on at least three occasions that the MU90 was the 'only commercially available off-the shelf solution offered'. While the Source Evaluation Report did identify that the torpedo was being purchased by other navies, it stated that the MU90 was currently entering service, which is not the same as in-service. Both the October 1999 Defence Source Selection Board and the minute to the delegate seeking approval to sole-source the Project Definition Study to the supplier of the MU90 identified that MU90 was believed to be, at the time, the only in-service weapon offered.

**4.10** Defence maintained the view that the torpedo was in-service and was an off-the-shelf acquisition for several years. For example;

- a December 2000 internal audit indicated that the MU90 torpedo was a **proven lightweight torpedo**;
- a brief to the Project Governance Board in September 2002 stated that the torpedo was **fully developed and in-service with other navies**;
- a January 2003 brief on JP 2070 to the then Minister stated that the risk of project failure was very low as the weapon is **in-service with other nations**; and
- a further internal audit report released in June 2003 stated that the torpedo was an **off-the-shelf** acquisition.

### **Torpedo was not an off-the-shelf procurement**

**4.11** In March 2004, the DMO became aware that the torpedo was not in-service with any other nation and that there had been technical and production problems with the torpedo. It is unclear how under an alliance arrangement the Defence personnel participating in the alliance team did not ascertain sooner that the torpedo was not in-service elsewhere, or in fact how it was determined the torpedo was in-service at the time of selection in 1999 (see paragraph 2.17).<sup>141</sup>

**4.12** A brief to the June 2004 meeting of the Navy Capability Committee suggests that it may have been known in Defence, at the time of tender, that the torpedo was developmental as it stated as follows:

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<sup>141</sup> In April 2010 Thales Australia informed the ANAO as follows:

Thales was not aware that senior DMO and Defence staff had been told during the period 2000 to 2004 that the MU90 was "in-service". It is not clear to Thales how this characterisation could have been arrived at. By 2002, there had been extensive meetings between the Project Office and other CoA [Commonwealth of Australia] stakeholders with representatives of the French, Italian, German and Danish navies and defence departments. The Alliance team (including Commonwealth members) were aware from 2000 to 2004 that the MU90 was still within the process for acceptance into service with all other nations.

In May 2010 EuroTorp GEIE provided the ANAO with similar advice to that provided by Thales Australia:

The terms "in production", "off the shelf", "entering in service" or "in service". EuroTorp has reviewed the company files back to 1998 and are able to confirm to the ANAO that EuroTorp has never used the foregoing terms, neither in the ITR response nor the RFP response. At all times the company used the term "in series production for four of the World's Navies".

EuroTorp have never concealed the status of the MU90.



The ADF selected the MU90 because it far outperformed all other tenders during the formal tender evaluation process. At the time it was also the most developed torpedo offered in the tendering process and provided the greatest capability in shallow water. The other tenders [details removed] had not reached prototype development, while the MU90 was in the prototype phase and had undergone test firing.

**4.13** The ANAO sought clarification from Defence on the source of this information included in the brief to the Navy Capability Committee since it was substantially different to the information contained in the contemporaneous documentation surrounding the decision to acquire the MU90. Defence informed the ANAO in February 2010 that:

...it is reasonable to assume that (although not confirmed) that the Project would have advised Maritime Development of this fact for inclusion in the brief.

**4.14** The ANAO notes that the information in the brief was much more specific about the development status of the torpedo than other Defence and DMO documentation from that time which was collected as audit evidence, and the terminology in the brief tends to suggest a view from the tender selection period rather than March 2004.

**4.15** The June 2004 Business Due Diligence report prepared in preparation for the DMO becoming a Prescribed Agency under the *Financial Management and Accountability Act 1997* stated as follows with respect to this Project:

In service date is likely to be met but there are a large number of project dependencies. Project has indicated that schedule is on track.

Schedule Risk is assessed as medium.

**4.16** The statement in the Due Diligence report focuses on the aspects of JP 2070 which are concerned with platform integration. While these were significant risks to JP 2070 schedule at the time, the realisation that the torpedo was not in-service as previously thought increased the risk associated with the torpedo, and subsequently impacted on the project schedule. It is unclear, given the significance of this discovery, and the impact on JP 2070 planning assumptions that preceded it, why the Due Diligence report did not identify this issue.

**4.17** A December 2004 brief to the Defence Committee indicated that the MU90 torpedo was not an off-the-shelf torpedo and had not been introduced into service anywhere. A DMO Red Team Review, also from December 2004, stated that:

Complicating the whole scenario is the fact the premise for procuring the MU-90 torpedo was that it was an off-the-shelf, in-service capability has proved to be false.

**4.18** Defence informed the then Minister for Defence in March 2005 that, contrary to its previous advice, the torpedo was developmental and not in-service with European navies. This occurred some 12 months after the DMO had been informed that the torpedo was not in-service elsewhere. The March 2005 brief to the Minister indicated that there were issues surrounding the torpedo trials conducted by the torpedo manufacturer in 2004, but that Defence had been advised that these issues had been resolved, and that a test program had been recommenced by the manufacturer and was reporting positive results.

**4.19** By this time, Phases 2 and 3 of JP 2070 had already been approved by Government but the contract for Phase 3 had yet to be signed<sup>142</sup>. The contract for Phase 3 (the FRAA) was subsequently signed in late August 2005. At the point that the FRAA was signed, and Defence committed to the acquisition of more than \$263.86 million (December 2005 prices) in torpedos for war stock, no torpedoes had been delivered under Phase 2. Defence advised the Government 8 days prior to signing the FRAA that it had misunderstood French and Italian acceptance into service processes and, contrary to previous advice to Government, the MU90 torpedo had not been accepted by these services and was still subject to trials, which the weapon subsequently failed.

**4.20** In February 2010 Defence informed the ANAO that:

Defence has instigated a process to ensure that risk derived from a lack of technical understanding of a system is reduced by early and constant assessment by DSTO.

**4.21** In support of this comment Defence provided a three page policy document which was dated December 2009. The ANAO sought examples of where this policy had been applied but was advised that given the recent release of the instruction there have been no new projects to which the

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<sup>142</sup> In March 2010, DMO informed the ANAO as follows:

Inclusion of Ph3 [Phase 3] in the FRAA was the only leverage available to DMO to renegotiate the RAA [Revised Alliance Agreement]. The companies advised in 2005 that the RAA was a legally binding agreement and as such they were not prepared to renegotiate the terms and other outcomes the CoA [Commonwealth of Australia] was seeking without some commitment to Ph3. The CoA commitment to add additional quantities was covered by the express right to terminate in the event that the TIAP failed. CoA risk exposure to Ph3 was mitigated by this right (see paragraphs 4.24 to 4.32).

requirements of this process have been applied. DMO informed the ANAO as follows in March 2010:

DSTO [Defence Science and Technology Organisation] has been formally involved in technical risk assessment for all major projects since the Kinnaird reforms. Technical risk assessment includes all technical components of the risk assessment of potential projects at first and second pass. The CDG [Capability Development Group] OP instruction No 16 seeks to make more explicit the inclusion of risk aspects of Off-the-Shelf (OTS), Developed OTS, In-service upgrade and Developmental projects to be considered as early as possible in the process. Given the recent release of the instruction there have been no new projects to which the requirements of this process have been applied. However this is a formalisation of a practice that has been in place since the Kinnaird reforms.

## Recommendation No.2

**4.22** The ANAO recommends that the DMO review its tendering arrangements with a view to ensuring that sufficient objective or independent evidence is obtained to enable verification of any claims that an item being offered is 'off-the-shelf', prior to the selection of the preferred tenderer.

### Defence and DMO response

**4.23** Agreed.

## Torpedo delivery

**4.24** As previously noted, the French and Italian Governments were the original customers acquiring the MU90 torpedo.<sup>143</sup> Following the poor performance of the MU90 in sea trials in 2004, which was attributed to industrial and quality issues, the French and Italian Governments established the Technical and Industrial Action Plan (TIAP) program. In February 2005, a status report on the TIAP was provided to the CEO of the DMO by the Delegation Generale Pour L'Armement (DGA), the French equivalent to the DMO. The TIAP program comprised two phases, the first aimed at improving the global success rate for the MU90 torpedo through the conduct of three technical sea trials, and, in the second phase, validation by eight to ten sea

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<sup>143</sup> Denmark and Germany are also acquiring the MU90.

trials. Acceptance processes for the MU90 torpedo by Australia were subject to the successful completion of the TIAP.

**4.25** The TIAP was planned to be completed by mid-2005. The July 2005 JP 2070 Integrated Project Team meeting was informed that two of the three technical trials had been successful, but one had failed, and that a fourth technical firing was imminent. The Project Management Stakeholders Group of July 2005 was informed that the TIAP needed to achieve eight out of ten successful firings, but that this was a French and Italian requirement. Notwithstanding that the TIAP had yet to be completed, Defence signed the FRAA in August 2005, which committed the DMO to procuring a significantly larger quantity of MU90 torpedoes under Phase 3 than were to be acquired under Phase 2. The inclusion of the TIAP as an acceptance gate in the FRAA was regarded by DMO as a significant risk mitigation for the Commonwealth.

**4.26** By October 2005, four technical firings had been completed under the TIAP with plans to complete the ten proof firings required by the end of 2005. This subsequently slipped until March 2006. By April 2006, the TIAP was regarded as having achieved mixed success with two passes, two failures and three planned tests not being able to be undertaken. At this stage the TIAP trials were expected to be completed by May 2006. This was nearly six years after the Source Evaluation Board for Phase 1 had indicated the torpedo was an off-the-shelf acquisition.

**4.27** In April 2006, the DMO issued a Notice of Default for the failure to deliver supplies, including the torpedoes under the Alliance Agreement. In May 2006, the then Minister was informed by the DMO of delays due to further technical problems with the production torpedo. Also, in May 2006, a minute from the CEO of the DMO to senior Defence personnel advised that the TIAP program had been suspended by the French and Italian Steering Group pending a technical investigation by the torpedo manufacturer.

**4.28** The torpedoes to be delivered under Phase 2 were planned to be accepted by Australia in France by July 2006. In May 2006, the DMO wrote to the Alliance Participants outlining its rights under the FRAA to suspend milestone payments if the sea trials were not completed by the end of June 2006. The DMO subsequently rejected several claims for milestone payments on this basis. In July 2006, the DMO wrote to the Alliance Participants suspending certain categories of milestone payments, and asserting its right to terminate and recover \$75 million in payments if the TIAP did not achieve

success within six months, subject to no alternative arrangements being agreed.

**4.29** In July 2006, the then Minister was informed that the Commonwealth had the right to terminate the FRAA and recover damages if acceptance was not achieved by the end of December 2006. In September 2006 the Alliance Board, which included a DMO representative, agreed to a resolution that the Commonwealth give consideration, subject to certain conditions being met, to extending the requirement for completion of the TIAP to the end of March 2007.

**4.30** In December 2006, the Chief of Navy was informed that the last TIAP firing had occurred in October 2006 and that the outcome of eight successful firings from 10 attempts had resulted in the French/Italian Government Steering Committee declaring that the TIAP was successful. In March 2007, the then Minister for Defence was informed that while the TIAP had been declared a success, further trials on European torpedoes had identified a fault introduced by a design change that had been intended to resolve other technical issues. Testing of measures to resolve this issue were expected to commence in May 2007, with the delivery of the torpedoes being acquired under Phase 2 then expected in late 2007.

**4.31** A June 2007 brief to senior officers in Defence indicated that two torpedoes in early configuration were in Australia at that time to assist with other activities, and would be upgraded to the latest configuration in late 2007. The remainder of the Phase 2 torpedoes were to undergo acceptance testing in France in July 2007 and were scheduled for arrival in Australia in November 2007.

**4.32** The acceptance of the torpedoes under Phase 2 was completed in July 2007 and delivery to Australia occurred in early 2008. This was more than two years behind the original schedule under which acceptance was planned to occur by July 2005 and delivery by October 2005.

## Phase 3 deliveries

**4.33** Following the completion of the TIAP, an obsolescence review conducted by the manufacturer identified the need to modify the components of the torpedo.<sup>144</sup> Consequently, the version of the torpedo being acquired by Australia under Phase 2, is the MU90 Mark I, which has not undergone the obsolescence upgrade. Torpedoes to be delivered under Phase 3 were to be MU90 Mark IIs that have undergone the upgrade. Australia was to be the first country to acquire the Mark II.

**4.34** The modification of the torpedo to its Mark II configuration created the need to qualify the torpedo ashore, and at sea, with six successful launches prior to conducting Early Proof of Capability<sup>145</sup> launches using Australian manufactured Prime Items. In March 2009, the Djimindi Alliance Board was informed that Early Proof of Capability for the MU90 Mark II was contractually required to be complete by November 2009, but that it was at risk of not being achieved. Subsequently, the torpedo manufacturer presented options to mitigate this schedule risk.

**4.35** In July 2009, the DMO wrote to the Chief of Navy outlining four options for proceeding with MU90 torpedo deliveries under Phase 3. These options ranged from: doing nothing; to modifying the Early Proof of Capability requirements for the MU90 Mark II; to accepting MU90 Mark I items on loan pending MU90 Mark II delivery; or initially accepting a number of MU90 Mark I items under Phase 3 then accepting the remainder of the torpedoes to be acquired under Phase 3 in MU90 Mark II configuration, when available.

**4.36** In August 2009, the Chief of Navy responded to the DMO minute accepting an option which involved accepting two-thirds of the torpedoes

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<sup>144</sup> In March 2010, the DMO informed the ANAO that it was aware of these issues before the TIAP was completed. In May 2010 EuroTorp GEIE informed the ANAO as follows:

The obsolescence study part of Phase 3 was due to the hiatus between Phases 2 and 3. As a consequence some electronic components of Status 1 torpedoes became obsolescent and it was not sensible to manufacture the Phase 3 torpedoes with obsolescent components.

The outcome of the obsolescence study led to the re-design of all future MU90s (although retaining the same functional characteristics in order to limit the qualification risks). As a result EuroTorp developed the MU90 Mk2. (New acoustic head and guidance unit with unchanged propulsion system and warheads).

<sup>145</sup> The FRAA specifies that early proof of capability is achieved when at least two sea trials using torpedoes integrated in Europe using Australian manufactured prime items [torpedo components] successfully complete test and qualification processes set out in the Integration and Qualifications Test Plans.

delivered under Phase 3 in Mark I configuration and the remainder in Mark II configuration. This approach relied on MU90 Mark I torpedos that were intended to be delivered to France and Italy being redirected to Australia. This was seen as reducing the risk to Australia associated with the MU90 Mark II, as France and Italy would consequently enter the MU90 Mark II program and assume responsibility for the verification and validation program.<sup>146</sup>

**4.37** The DMO advised the Chief of Navy that, based on advice received from the torpedo manufacturer, carrying a mixed fleet of Mark I and Mark II torpedoes long term would have a low to medium cost. Carrying a mixed fleet will also have implications for spares policy, technical manuals and training.

**4.38** In November 2009, the ANAO sought clarification on whether consideration was given to the Phase 2 timeline, particularly for Initial Operational Release and Operational Release (which are discussed in Chapter 5), in determining whether to agree to accept this change to the delivery arrangements under Phase 3. This was on the basis that the successful progression of the torpedo and associated platforms through these phases appears to be a significant factor in identifying a schedule for Phase 3 war stock deliveries. The DMO advised as follows:

Under JP 2070 Phase 2, the Commonwealth took delivery from EuroTorp of X<sup>147</sup> Mk [Mark] I MU90 torpedoes. There is no capability difference between the Mk I and the Mk II Torpedo, the Mk II being the result of an obsolescence review carried out on the Mk I. Under JP 2070 Phase 3, EuroTorp was contracted to deliver to the Commonwealth X Mk II torpedoes commencing in September 2010. The implementation of the CCP [contract change proposal] maintains or improves the schedule for Ph 3 weapons. The link to Initial Materiel Release is irrelevant under Phase 3 as the NSC [National Security Committee of Cabinet] confirmed the program as viable for surface integration, and Phase 3 is the war stock inventory procurement. The driver here is to build the inventory capability under Phase 3 scope to cover the ASW [anti-submarine warfare] contingency gap. We are well down the path of surface integration and T&E [test and evaluation]. This CCP presents nil risk to Phase 2 time lines.

<sup>146</sup> The minute to the delegate seeking approval of the associated Contract Change Proposal indicated that it was cost neutral and maintained Australian Industry Involvement content.

<sup>147</sup> The number of torpedoes was removed from this response for security classification reasons.

**4.39** At the time the DMO provided this response, the MU90 torpedo and associated platforms were the subject of the ongoing Acceptance Test and Evaluation, and the Initial Operational Release of the MU90 torpedo and modifications to integrate the torpedo onto the associated platforms had not been achieved. Initial Operational Release is entry point for Navy Operational Test and Evaluation. Chapter 5 sets out issues surrounding test and evaluation for JP 2070 including capability verification, the outcome of sea trials in 2008 and 2009, and the risk to the progression of the torpedo and Shipborne Lightweight Torpedo System through Operational Test and Evaluation and into service.

### **Number of torpedoes required by the ADF**

**4.40** The number of weapons contracted for under Phase 3 represented the minimum quantity of torpedoes required to make the Australian production line cost effective. In May 2004, it was assessed that the number of torpedoes being acquired under Phases 2 and 3 would not meet ADF stockholding requirements, particularly as the ADF's existing anti-submarine warfare torpedo, the Mark 46, was to be withdrawn from service. This view was reaffirmed in briefs to the Chief of Navy in late 2004 and mid 2007. Options considered for addressing this shortfall included an additional Phase under JP 2070 or acquiring the weapons under Joint Project 2085 Explosive Ordnance War stock, which is concerned with remediating war stocks.

**4.41** At the time of these briefs to the Chief of Navy in late 2004 and mid 2007, five platforms were in project scope, with the three air platforms having shown very little progress, and the sea platforms yet to have the MU90 torpedo modifications accepted into service. The three air platforms<sup>148</sup> were removed from JP 2070's scope by 2009. A July 2008 brief to the then Minister indicated that the number of torpedoes being acquired under Phases 2 and 3 would be sufficient for the surface fleet requirement (that is for the FFGs and the ANZAC ships), but that if a decision was taken to integrate with any other platform additional quantities would be sought.

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<sup>148</sup> The Orion, Seahawk helicopters and the Super Seasprite. The Super Seasprite project was cancelled by the Government in March 2008.



## Platform Integration

**4.42** The 2008 *Defence Procurement and Sustainment Review* categorised projects based on complexity.<sup>149</sup> Phase 2 of JP 2070 exhibits two of the three attributes of a complex project.<sup>150</sup> The first being that this is a project that involves multiple platforms which originally included:

- FFGs;
- ANZAC ships;
- Orion ;
- Seahawk helicopters; and
- Super Seasprite helicopters.

**4.43** The second aspect of this Project meeting the complexity criterion, set out in the 2008 *Defence Procurement and Sustainment Review*, is that JP 2070 involves varying levels of systems and software integration into all these platforms.<sup>151</sup>

**4.44** The information gained from the Phase 1 Project Definition Study was to be used to make a risk assessment of each weapon/platform combination and was intended to facilitate strategies for risk reduction early in the acquisition phase. The DMO received legal advice in late 1999 which noted that cooperation between the weapon supplier and integrator and the various platform suppliers was critical to the Phase 1 Project Definition Study. That advice noted that to facilitate this cooperation an alliance approach to undertaking JP 2070 was being considered by Defence.

**4.45** Based on the 1999 legal advice, a submission was prepared seeking support to adopt an alliance contracting approach. This submission indicated that the alliance approach may be worthwhile pursuing due to the integration risk for JP 2070.

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<sup>149</sup> Commonwealth of Australia, *Going to the Next Level, the report of the Defence Procurement and Sustainment Review*, 2008, p. 15.

<sup>150</sup> The three attributes of a complex project, as outlined in the Mortimer Report, include multi-faceted projects that contain new capability and upgrades for the same capability; projects that impact on multiple platforms; and projects involving systems and software integration.

<sup>151</sup> The review recommended that a complex project should be considered by Government on at least two occasions. Source: Commonwealth of Australia, *Going to the Next Level, the report of the Defence Procurement and Sustainment Review*, 2008, p. 15. As noted in Chapter 1 of the audit report one of the perceived benefits of an alliance approach was to streamline the transition between project phases.

**4.46** Subsequently, sub-alliance agreements were signed in October 2000 with:

- ADI Ltd (now Thales Australia Limited) for the FFG;
- RLM Systems for the P3 Accord (Orion);
- SAAB Systems for the ANZAC ships; and
- CSC Australia for the Seahawk and Super Seasprite.

**4.47** Under these agreements, the sub-alliance participants were to develop the integration solutions for the various ADF platforms. However, the report from the 2004 DMO Red Team Review stated as follows:

The integration of the weapon onto the platforms, which was originally the responsibility of the Alliance, and except for the FFG this has been transferred out now to the respective [DMO] Systems Program Offices (SPOs). The result is an increased workload in the respective SPOs and has now exposed the Commonwealth directly to risk that was initially to be managed within the PDA [Project Djimindi Alliance]. It has not been verified whether the PDA has compensated the Commonwealth for the transfer of this risk.<sup>152</sup>

**4.48** The ANAO notes the removal of responsibility for integration from the alliancing arrangement, apart from the FFG, is an acknowledgement that the alliance for this Project was not in a position to manage the risks associated with integration. However, it is not apparent that at the time Phase 2 commenced, and the sub-alliance arrangements were entered into, that the risks related to the integration of the torpedo onto the five platforms originally included in the scope of JP 2070 were adequately understood. ANAO Audit Report No. 41 2008-09 *The Super Seasprite* provided the following lesson in this respect:

Where a project's success is dependent on systems and software development and integration activities, independent analysis of the risks associated with this development activity is highly desirable. This should include identification of the extent to which the systems and software solution offered comprises proven technology and the record of the contractor(s) in

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<sup>152</sup> The ANZAC Ships were also being managed under a prototype alliance arrangement. In 2001 there were concerns expressed by the ANZAC SPO that the Djimindi Alliance would contract directly to the contractors for the ANZAC rather than through the ANZAC SPO and ANZAC Alliance. The Proposal and Liability Approval for the FRAA noted that integration into the ANZAC was being managed on behalf of the JP 2070 Project Office by ANZAC SPO through the ANZAC Alliance, rather than through the Project Djimindi Alliance.

undertaking the development of similar software and systems. This analysis should form a key input to tender selection and contract negotiation processes.<sup>153</sup>

## Project overlap

**4.49** Many of the risks to integration could not be managed by the alliance as they related to activities beyond the scope of JP 2070, such as concurrent development or upgrade projects on the platforms which were to be integrated with the MU90. Defence was aware of these issues some time before the alliance was formed, or the request for approval of Phase 2 was put to Government. For example, the November 1998 Equipment Acquisition Strategy for Phase 1 noted that there were a large number of projects that were planned to either introduce into service or upgrade platforms with which MU90 torpedo was to be integrated.

**4.50** A risk assessment provided to the Project Governance Board in May 2002, which was six months prior to the Revised Alliance Agreement for Phase 2 was executed, provided the following risk assessments for the platforms:

- FFG and ANZAC Class vessels – Low Risk.
- Orion Maritime Patrol Aircraft – Medium Risk.
- Super Seasprite and Seahawk Helicopters – Extreme Risk.

**4.51** The minutes of that Project Governance Board note that the extreme levels of risk were related to schedule delays in other projects which were also modifying these platforms. Table 4.1 provides an indication of the platform projects that had the most significant implications for JP 2070.

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<sup>153</sup> ANAO Audit Report No. 41 2008-09, *The Super Seasprite*, p. 75.

**Table 4.1**

**Projects linked to JP 2070**

Platform	Project number and title	Project Status	Relationship to JP 2070
Orion <sup>154</sup>	<b>Air 5276 Phase 9</b> AP-3C Orion Component Enhancement	This project formed part of the block upgrade program to the Orion which was the approach used to coordinate a large number of major and minor upgrades and obsolescent treatments on the Orion.	The integration of the lightweight torpedo onto the Orion was to occur under Block 4 of the upgrade program. The inclusion of the integration of the lightweight torpedo in Block 4 upgrade resulted in the budget and responsibility for integration being transferred from the alliance, to the Maritime Patrol System Program Office. <sup>155</sup>
	<b>Air 5418</b> Follow-On Stand-off Weapon (FOSOW)	The integration of the FOSOW to the Orion was to occur under the Block 4 Upgrade. Government made the decision to remove the FOSOW requirement from Orion in December 2005.	It was intended to develop a common airborne launch and control system for the FOSOW and the lightweight torpedo. Planning proceeded based on this assumption until the decision was taken not to proceed with the integration of the FOSOW requirement onto the Orion in 2005.
FFG <sup>156</sup>	<b>Sea 1390 Phase 2</b> FFG Upgrade	Ongoing issues with Underwater Weapons System were yet to be fully resolved in late 2009. <sup>157</sup>	This Underwater Weapons System interfaces with the Shipboard Lightweight Torpedo System and final integration of the torpedo onto the FFG has been delayed by ongoing issues with the FFG Upgrade.

<sup>154</sup> See ANAO Audit Report No. 10 2005-06 *Upgrade of the Maritime Patrol Aircraft Fleet* for further information on this project.

<sup>155</sup> The Block Upgrade Program for the Orion was occurring under an alliance arrangement referred to as the P3 Accord. The Accord comprises Tenix Defence (Aerospace), Australian Aerospace and the Commonwealth.

<sup>156</sup> In November 2003 the Government decided that the FFG fleet would be reduced from six ships to four. At the time of this decision the equipment for the Lightweight Torpedo Project for integration into the FFG had already been ordered and delivered resulting in two spare sets. See ANAO Audit Report No. 11 2007-08 *Management of the FFG Capability Upgrade* for further information on this project.

<sup>157</sup> Defence Materiel Organisation, *Major Projects Report 2008-09*, 2009.

Platform	Project number and title	Project Status	Relationship to JP 2070
Super Seasprite	<b>Sea 1411</b> ANZAC Ship Helicopter Project	Ongoing delays and eventual project cancellation. <sup>158</sup>	Integration of the lightweight torpedo onto the Super Seasprite was contingent on the stabilisation of the platform baseline.
Seahawk	<b>Sea 1405 Phase 1 and 2</b> Forward Looking Infrared and Electronic Support Measures	The project encountered integration challenges that delayed the completion of the final design. Modification of the fleet began in April 2005 and was planned to be complete in late 2009.	The baseline technical configuration for integration of the lightweight torpedo onto the Seahawk could not be completed until Sea 1405 Phase 1 and 2 was completed.
	<b>Sea 1405 Phase 3 and 4</b> Seahawk Midlife Upgrade Life Extension (SMULE) <sup>159</sup>	Decision on whether to proceed with this project was delayed for several years. SMULE was replaced by the Seahawk Capability Assurance Program in the Defence Capability Plan 2009.	In 2001 the Defence Capability and Investment Committee deferred a decision on the lightweight torpedo integration in the Seahawk until the Project Definition Study for SMULE was completed.

Source: Defence documentation.

**4.52** As Table 4.1 shows many of the risks associated with the integration of the torpedo onto the five platforms originally in scope for JP 2070 were linked to the successful progression of other DMO managed projects. Managing these risks proved to be a difficult activity involving a series of complex interactions and interdependencies. In these circumstances, risks needed to be both understood and coordinated at the program level so they can be effectively managed at the project level. The risks in Table 4.1 fall into four broad categories, which include risk related to:

- integrating the torpedo onto a platform that is also subject to a range of other upgrade activities;
- planning assumptions for JP 2070 being framed around unapproved projects;
- integrating the torpedo with a platform while other projects on the same platform are encountering difficulties; and

<sup>158</sup> ANAO Audit Report No. 41 2008-09 *The Super Seasprite*, p. 272.

<sup>159</sup> Later referred to as Project Air 9000 Phase 3C.

- seeking to develop an Australianised integration solution for the Orion and Seahawk.

**4.53** As noted above, the risk related to integrating the torpedo onto platforms that were also subject to other upgrade activities was known risk at the commencement of JP 2070. The other risks identified in paragraph 4.52 changed the risk profile of this Project as it proceeded and are examined in further detail below.

### **Risk related to planning assumptions being framed around unapproved project**

**4.54** Risk related to planning assumptions for JP 2070 being framed around unapproved projects has arisen in the context of other Defence projects examined by the ANAO. For example, ANAO Audit Report No. 41 2008-09, *The Super Seasprite*, identified that an unapproved project to procure Offshore Patrol Combatants had constrained the size of the helicopter to a size smaller than the ANZAC Ship was capable of operating. The Offshore Patrol Combatant project was not subsequently approved, meaning that constraining the size of the helicopter was not ultimately necessary.

**4.55** Audit Report No. 41 2008-09 *The Super Seasprite* identified a number of lessons from the Super Seasprite Project. Lesson number 3 was as follows and could equally be applied to this project, albeit in a slightly different context:

Due to long term planning requirements, it may not always be possible to avoid linking an approved major capital equipment procurement to a project that is yet to be approved by Government. However, care should be exercised to avoid allowing any such linkages to increase the risk profile of the procurement under way such that the primary objective of that procurement is potentially compromised. Where linkages to an unapproved project do exist, they should be regularly reviewed to confirm that the benefits intended to be provided remain valid from a risk management and value for money perspective.<sup>160</sup>

**4.56** In relation to JP 2070, there were linkages to two platform projects that fell into this category. These were the Seahawk Midlife Upgrade Life Extension (SMULE) project for the Seahawk and the plan to integrate the Follow-On Stand-Off Weapon (FOSOW) onto the Orion. Delays in progression of the planning phases for SMULE for the Seahawk impacted on the schedule for JP

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<sup>160</sup> ANAO Audit Report No.41 2008-09, *The Super Seasprite*, p. 72.

2070, although integration risks associated with the Seahawk were also increasingly linked to the progression of the integration of the torpedo onto the Orion. However, prior to this linkage being established work was undertaken to integrate the FOSOW, an unapproved project, and the MU90 torpedo onto the Orion in tandem as set out in Figure 4.1.

**Figure 4.1**

### **MU90 Lightweight Torpedo and FOSOW integration onto the Orion**

The requirement for the lightweight torpedo to be integrated onto the Orion was included in the *Defence White Paper 2000*.<sup>161</sup> Direction provided by the Defence Capability Investment Committee (DCIC) in 2001 and Headquarters Strike Reconnaissance Group required that the MU90 torpedo be fully integrated onto the Orion.<sup>162</sup> The integration solution for the Orion developed during the Phase 1 [of JP 2070] occurred during ongoing development of the aircraft and was regarded as being problematic at the time. In 2002, the Alliance Board directed that work on the Phase 1 solution be halted based on an alternative approach developed by EuroTorp. By late 2003, a range of issues were impacting on the progress of integration onto the Orion, including the development of key documents for the Orion such as the Operational Concept Document, Logistics Support Concept and Functional Performance Specification. As at April 2004, the integration onto the Orion was suffering ongoing delays.

The May 2004 Operational Concept Document for the Orion noted that one of the advantages of the MU90 torpedo was an increased stand-off range.<sup>163</sup> The Operational Concept Document also noted the inclusion of Project AIR 5418 FOSOW in the project scope for the Orion Block Upgrade and that this may have implications for the planned integration of the MU90 torpedo.

From 2004 to 2005 planning for integration of the MU90 occurred on the basis that it would be undertaken under Block 4 of the Orion Upgrade Program. Planning for Block 4 proceeded on the basis that the FOSOW, which was planned to be acquired under Project Air 5418, and the MU90 would be integrated onto the Orion through a single Stores Management Processor (SMP). There was no off-the-shelf SMP available, and Project Air 5418 had not been approved at this time. Project Air 5418 was planned to be considered for Second Pass approval in December 2005.

By December 2005, \$6.72 million had been spent on purchase orders relating to the joint integration of the FOSOW and MU90 torpedo onto the Orion, of which \$1.92 million was attributed to JP 2070. The decision was subsequently taken not to integrate the FOSOW on the Orion, therefore requiring an MU90 torpedo only integration solution be developed. A May 2007 presentation on integration of the MU90 onto the Orion indicated that the decision not to integrate the MU90 in tandem with the FOSOW meant that the December 2005 baseline information prepared on this basis had almost no value. The subsequent approach to integration onto the Orion is set out in paragraphs 4.65 to 4.72.

Source: Defence documentation.

<sup>161</sup> Department of Defence, *Defence 2000 – Our Future Defence Force*, p. 91.

<sup>162</sup> A report prepared on alliance contracting on behalf of the DMO in June 2002 indicated that the Djimindi Alliance considered the full integration of the MU90 into the Orion to be questionable and high risk.

<sup>163</sup> A May 2004 brief to the Director General Maritime Development indicated that the basis for the stand-off requirement was based on a threat that was later determined not to be viable until the Orion's planned withdrawal date.

**4.57** In March 2010, the DMO informed the ANAO that a separate project to acquire suitable ranges and target for testing the torpedo had also had implications for JP 2070 as follows:

A Ranges and Targets Master Plan was used as the vehicle to have targets included in the scope of the then SEA 1418, however this project was cancelled in 2003 before the scope change occurred. Navy then attempted to raise a Minor Project to cover the target requirement but was not successful.

**4.58** The ranges and targets issues are discussed further in Chapter 5.

**Risk related to integrating while other projects on the same platform are encountering difficulties.**

**4.59** For JP 2070, this category of risk relates primarily to the FFG and, when they were in JP 2070's scope, the Super Seasprite and the Seahawk.

**FFG**

**4.60** The integration onto the FFG has proceeded, but has not been completed primarily due to issues surrounding the installation of modifications to the Underwater Weapon System to interface with the ship borne light weight torpedo system which is necessary to provide the level of integration sought by Defence.<sup>164</sup> The completion of this integration work is subject to the acceptance of FFG upgrade modifications to the Underwater Weapons System, and agreement on warranty arrangements for the software modified by both the FFG upgrade and Lightweight Torpedo Replacement Projects.<sup>165</sup>

**4.61** The 2008-09 Major Project Report contains a number of sections. One section includes the Project Data Summary Sheets which were prepared by the DMO. The DMO 2008-09 Project Data Summary Sheet for the FFG Upgrade Project (SEA 1390 Phase 2.1) states:

The majority of high risk development and integration of software products have been addressed and have either been retired or are being managed. The majority of the contractual requirements for the electronic support and

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<sup>164</sup> The MU90 is being integrated into the ANZAC and the FFG's in Partial Plus configuration which involves the passing of some data electronically from the ships combat system to the torpedo presetter. Where these interfaces are not present the torpedoes may be fired in stand-alone mode with data input manually. At the time of the audit, all eight ANZAC class vessels had been integrated to Partial Plus and all FFG's had been integrated to the Stand-alone level.

<sup>165</sup> As noted in Table 4.1 the FFG was being upgraded under Project Sea 1390 Phase 2. The prime contractor for this upgrade is a member of Djimindi Alliance.



Underwater Warfare Systems have been met. DMO is working collaboratively with Navy and Thales Australia to deliver an Electronic Support and Underwater Warfare Systems that will meet the requirements of Navy's operations needs.<sup>166</sup>

### *Super Seasprite*

**4.62** As noted in Table 4.2 the Super Seasprite Project was cancelled in 2008. At the November 2001 meeting of the Defence Capability and Investment Committee, which considered integration of the lightweight torpedo onto the Super Seasprite, there was concern that the Super Seasprite operating in support of an ANZAC ship would provide no increase in ability to detect and fire upon a submerged submarine over an ANZAC ship operating without a Super Seasprite. This was due to the Super Seasprite being regarded as unsuited to an anti-submarine role. Consequently, the Defence Capability and Investment Committee deferred a decision on whether to proceed with integration of the MU90 onto the Super Seasprite. This decision, and the ongoing difficulties associated with the Super Seasprite leading up to cancellation of that Project in March 2008, meant that limited effort was afforded to integrating the MU90 torpedo onto the Super Seasprite, prior to the cancellation of the Super Seasprite Project.

### *Seahawk*

**4.63** In May 2007, the Chief of Navy wrote to the Chief Capability Development Group indicating that the integration of the MU90 torpedo onto the Seahawk was likely to be delayed until at least 2009 due to ongoing issues with Project SEA 1405, there were risks associated with processing capacity, and structural issues associated with carrying the torpedo. The minute stated that:

Of most concern, delays in the Project [SEA 1405] are now so significant that I believe serious consideration needs to be given to the cost-benefit analysis of continuing integration [of the MU90] into the air platforms that, by the time the capability is realised, will be approaching their planned withdrawal date.

**4.64** At the time of this minute in May 2007, the cost estimates developed during Phase 1 of JP 2070 for platform integration had been recognised as significantly deficient (see paragraphs 6.30 to 6.44) and the integration onto the Seahawk was linked to the development of a Torpedo Control Unit (TCU) to

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<sup>166</sup> Source: ANAO Audit Report No. 13 2008–09, *Major Projects Report*, p. 212.

interface with MU90 on the Orion, which emanated from the decision not to proceed with the FOSOW onto the Orion. The development of the TCU is outlined in paragraphs 4.65 to 4.72.

### **Risk related to seeking to develop and ‘Australianised’ integration solution for the Orion and Seahawk**

**4.65** The 2008 *Defence Procurement and Sustainment Review* stated that ‘setting requirements beyond that of off-the-shelf equipment generates a disproportionately large increase to the cost, schedule and risk of projects’.<sup>167</sup> Modification to off-the-shelf items to suit Australian requirements is referred to as Australianisation. The *Defence Procurement and Sustainment Review* notes that minor requirements changes to off-the-shelf acquisitions can have major impacts on cost and schedule risk.<sup>168</sup> With the decision to not integrate the FOSOW onto the Orion, an MU90 lightweight torpedo only integration solution was required (see Figure 4.1)

**4.66** In March 2006, the Maritime Patrol System SPO, the JP 2070 Project Office and the Djimindi Alliance Team identified that no suitable TCU existed to enable the MU90 torpedo to be integrated onto the Orion with the degree of integration required.<sup>169</sup> In November 2006, the CEO of the DMO was provided with the following advice following delays in the development of documentation for the TCU:

Originally, a COTS/MOTS (Commercial Off-the-shelf / Military Off-the-shelf) solution integrated with the aircraft combat system was envisaged and work progressed on that basis using preliminary documentation provided by the Alliance during the period from 2000 to 2005<sup>170</sup>. With the direction away from Air 5418, JP 2070 and MPSPO [Maritime Patrol System Program Office] had to rework the implementation and this required a different design. Available COTS/MOTS for this implementation were determined not to be suitable due to a number of reasons (including component obsolescence, mandated software design standards, and a required simulation mode).

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<sup>167</sup> Commonwealth of Australia, *Going to the Next Level, the report of the Defence Procurement and Sustainment Review*, 2008, p. 18.

<sup>168</sup> *ibid.*, p. 18.

<sup>169</sup> In March 2005 EuroTorp advised DMO that the MU90 had been fully integrated into the EH-101 Merlin Helicopter and partially integrated into the Atlantique 2 Maritime Patrol Aircraft.

<sup>170</sup> It should be noted that the common integration approach for the FOSOW and MU90 was only established in the 12 months preceding FOSOW source evaluation in 2005.

**4.67** Essentially, five years after Phase 2 had been approved by Government limited progress had been made in integrating the MU90 torpedo onto the Orion. However, the lack of progress of integration with this platform was more far-reaching in that the integration of the torpedo onto the Seahawk was also subject to the development and certification of the TCU.

**4.68** In the absence of a suitable off-the-shelf TCU, a number of documents needed to be developed. These documents include a Functional Performance Specification, an Interface Design Documentation and an Interface Control Document. As noted in Figure 4.1 a large amount of work, valued at \$6.72 million, had been undertaken on the basis that FOSOW and the MU90 torpedo would be integrated onto the Orion together. This work was subsequently regarded to be of limited value in facilitating the integration of the MU90 torpedo by itself.

**4.69** By May 2007, a further \$3.2 million had been spent under the P3 Accord<sup>171</sup> arrangements for MU90 lightweight torpedo integration onto the Orion. This work package had been allocated on the basis that it did not exceed \$2.8 million. Consequently, concerns were expressed within the DMO in 2007 about the level of expenditure that had been incurred in this area. At the time that these concerns were raised there was a suggestion that the arrangements under which work on the integration of the torpedo was being undertaken by the P3 Accord would be audited. In April 2010, Defence informed the ANAO that no such audit was undertaken, but that a review of all costs and cost build up was conducted by the JP 2070 Project Director and that these were incorporated into an options paper for consideration by Capability Development Group.

**4.70** The funding for the work carried out by the P3 Accord was derived from the JP 2070 project budget which was controlled by the Guided Weapons Acquisition Branch in the DMO. Work was defined and payments were made by the Maritime Patrol SPO, which is the area in the DMO responsible for upgrade and in-service support of the Orion. It became apparent that these arrangements did not provide sufficient control over this expenditure with Purchase Orders not being adequately detailed and work being undertaken

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<sup>171</sup> In November 2005, Defence Materiel Organisation implemented a Master Agreement between the Commonwealth, Tenix Defence and Australian Aerospace for Through Life Support of the AP-3C Orion using an alliance type arrangement known as the 'P-3 Accord'.

that was considered by the Guided Weapons Acquisition Branch as beyond the scope of the contracted statement of work.

**4.71** In April 2007 the Director-General Aerospace Maritime and Surveillance Support attributed cost schedule over runs in this area to:

- the failure of the JP 2070 Lightweight Torpedo Replacement Project to deliver essential input documents and plans to schedule;
- the need for the Orion Weapons Integration, Integrated Project Team to expend significant unplanned effort and time workshopping essential interface documents for interfaces to the torpedo systems that were represented as mature but were in fact highly developmental; and
- failure of the P3 Accord and the Orion Weapons Integration, Integrated Project Team to manage and report on the implications of the above two dot-points to the Commonwealth and the P3 Accord Board.

**4.72** The development of documentation surrounding the TCU was one of the main areas where the Accord was regarded as having undertaken work that was beyond its scope of work. However, it is not apparent that the JP 2070 Project Office had an alternative strategy for the development of this documentation. Lending weight to this conclusion is that TCU documents developed under these arrangements were provided to the torpedo manufacturer to allow the development of a Request for Quotation for the Airborne Lightweight Torpedo System in January 2007. The Source Evaluation Report, which reviewed a Contract Change Proposal for the FRAA in response to a Request for Quotation for an Airborne Lightweight Torpedo System, noted that the risks associated with the system were high, due in part to the TCU being developmental.

## **Achievement of the platform integration schedule**

**4.73** The original project schedule, defined in the Capability Options Document and presented to the Defence Capability Investment Committee in December 2001<sup>172</sup>, indicated that the integration of the MU90 torpedo onto the five ADF platforms would be complete by late 2008.

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<sup>172</sup> A 2003 brief to the Joint Project 2070 Project Governance Board stated that the minutes of this DCIC meeting show that the committee did not endorse a schedule, however a schedule was presented to the DCIC in the agendum paper and it was a reasonable conclusion that the DCIC had probably accepted this, making the schedule in the agendum 'the most authoritative source'. Source: Department of Defence, 'JP 2070 Djimindi Alliance Brief to PGB [Project Governance Board]', 1 August 2003.

**4.74** While the schedule for the integration of the MU90 onto the Orion aircraft was unchanged as at February 2003, a brief prepared by the DMO at that time for the Weapons Project Governance Board expressed concern as to whether the schedule was ever feasible. That brief outlined what was considered to be a 'feasible' schedule and indicated that integration onto some platforms was already subject to delays when compared to the Performance Measurement Baseline in the Revised Alliance Agreement, but that platform integration could be achieved<sup>173</sup> for all five ADF platforms by early 2009.

**4.75** Table 4.2 shows the schedule slippage occurring across the various platforms in the period preceding the execution of the FRAA in August 2005, which committed Defence to acquiring a much larger number of torpedoes<sup>174</sup> and removed all platforms other than the FFG from the scope of the agreement.

**4.76** This is significant, as the capacity to utilise the MU90 was linked to the integration of the torpedo onto the platforms. Subsequent to the removal of the air platforms from the scope of the alliance agreement the :

- Super Seasprite Project was cancelled in March 2008; and
- Government agreed to the removal of the Orion Maritime Patrol Aircraft and the Seahawk Helicopter from the scope of Phase 2 in February 2009, which was attributed to a budget shortfall in Phase 2 (see paragraphs 6.30 to 6.50).

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<sup>173</sup> This was subject to the Project receiving DCIC direction on the helicopters by February 2004, and suitable personnel resources being allocated to the AP3C MPA Orion aircraft work by early September 2003. Source: Department of Defence, 'JP 2070 Djimindi Alliance Brief to PGB [Project Governance Board]', 1 August 2003, p. 2.

<sup>174</sup> In April 2010 Defence informed the ANAO as follows:

The number of torpedoes committed to under the FRAA for war stock was consistent with the requirements for surface launched requirements. This is consistent with more recent advice to Government that inclusion of additional platforms would require additional war stock [see paragraph 2.25].

**Table 4.2**

**Achievement of platform integration under Phase 2 of JP 2070 (as at November 2009)**

Platforms within original scope of Phase 2	Schedule revision prior to FRAA				Integration status (late 2009)
	Original schedule (2001)	Feb 2003	Aug 2003	June 2004	
Seasprite helicopters <sup>A</sup>	Early 2008	Early 2008	Early 2009	Early 2011	The Seasprite project was cancelled in 2008.
Orion aircraft	Late 2007	Late 2007	Early 2009	Early 2010	Removed from scope in 2009 <sup>B</sup> .
Seahawk helicopters <sup>A</sup>	Late 2008	Late 2008	Late 2008	Late 2011	Removed from scope in 2009.
FFG ships <sup>C</sup>	Late 2005	Early 2007	Early 2008	Early 2008	Partially complete.
ANZAC ships <sup>C</sup>	Early 2008	Mid 2006	Mid 2006	Late 2006	Substantially complete.

Note A: The decision to cancel the Seasprite resulted in a decision to bring forward Air 9000 Phase 8 Naval Combat Helicopters. This helicopter is to be capable of anti-submarine warfare and will also replace the Seahawk.

Note B: However, the *Defence Capability Plan 2009* included an unapproved project, JP 2070 Phase 4, which is planned to integrate a Lightweight Torpedo onto the Orion.

Note C: Operational test and evaluation activities need to be completed before the MU90 torpedo and associated platform modifications are accepted into Navy Service. Test and evaluation activities are covered in Chapter 5.

Source: Adapted from Defence Documentation.

**4.77** This chapter demonstrates that it is essential to understand, evaluate and respond to risk as a project progresses, not just at a project level but also at a program level across the DMO. Several key issues indicate that this was not the case for this project:

- At the time JP 2070 was initiated the development status of the MU90 was not properly understood. Decisions were made and planning proceeded on the basis that the torpedo was an off-the-shelf and in-service weapon. It was not. Subsequent to the DMO becoming aware that the torpedo was not in-service, rather than take stock of JP 2070 and defer committing to further acquisitions until the revised risk profile was properly understood and addressed, the DMO amended the contract to commit the Commonwealth to acquiring a much larger quantity of MU90 torpedoes Phase 3. At the time this occurred no torpedoes had been delivered under Phase 2.
- As noted above, the success of the JP 2070 was inextricably linked to the integration of the torpedo onto the various ADF platforms. JP 2070 failed to achieve this for all air platforms and has partially completed one of the two types of surface platforms in scope and has substantially completed integration of the torpedo onto the other surface platform. The issues that contributed to the difficulties experienced in integrating the torpedo onto the platforms relate to the ADF seeking a high degree of integration onto platforms which had a number of other development and modification projects occurring concurrently. Some of these projects were encountering significant difficulty.

### Recommendation No.3

**4.78** The ANAO recommends that Defence and the DMO implement appropriate mechanisms to identify and address programmatic risks associated with projects that are modifying a number of platforms.

### Defence and DMO response

**4.79** Agreed.

## 5. Testing and Evaluation

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*This chapter examines the status of the testing and evaluation process for JP 2070. It outlines the status of capability verification and outlines the outcomes of sea trials undertaken in 2008 and 2009. It examines progress towards Operational Test and Evaluation and outlines risks to completing this testing and how they have been managed by the DMO.*

### Background

**5.1** The testing and evaluation process (known as Test and Evaluation) is the means by which the DMO and Defence are assured that a materiel solution meets the specified requirements. Fundamental to this process is an appropriate hierarchy of documents including the:

- **Operational Concept Document**-defines the capability requirement;
- **Functional Performance Specifications**-details the necessary functional performance criteria including a definitive list of the user requirements to be delivered; and
- **Test Concept Document**-details the functionality against which Operational Test and Evaluation will be conducted to assess 'fitness for purpose'.

**5.2** In February 2010 Defence informed the ANAO that there are three categories of Test and Evaluation used within Defence during the development, acquisition or modification, and acceptance/release of equipment:

- ***Developmental Test and Evaluation*** is used in the system design and development process and supports verification of technical or other performance criteria and objectives. Acceptance can be by Defence review or through acceptance of Authorised Engineering Authority status of an original equipment manufacturer or other third party integration organisation;
- ***Acceptance Test and Evaluation*** is carried out to demonstrate whether the materiel developed and produced fulfils the contractual requirements and specifications. When Acceptance Test and Evaluation is performed by an External Service Provider, a Defence representative must witness that the Test and Evaluation is conducted in accordance with the approved plan. Acceptance Test and Evaluation may also



include some testing conducted by Trial Agencies, the project office or users to assist in making decisions regarding System Acceptance; and

- ***Operational Test and Evaluation*** is conducted under realistic operational conditions with representative users of the system, and in the expected operational context. The purpose of Operational Test and Evaluation is to determine the system's operational effectiveness and suitability to carry out the role and fulfil the requirement that it was intended to satisfy. Operational Test and Evaluation can be subdivided into Initial Operational Test and Evaluation and Follow-on Operational Test and Evaluation:
  - *Initial Operational Test and Evaluation* is the first time that the system is tested on production representative test articles used by typical operators with typical field equipment in a realistic environment. The objective of Initial Operational Test and Evaluation is to determine operational effectiveness and suitability through resolution of Critical Operational Issues, and to ensure deficiencies discovered in earlier operational assessments/evaluations have been corrected.
  - *Follow-on Operational Test and Evaluation* is to verify operational effectiveness and suitability of the system through testing of any deferred or incomplete test items from Initial Operational Test and Evaluation, and to assess modifications to the original system.

**5.3** At the conclusion of this audit, Phase 2 of JP 2070 was in the process of transitioning from the Acceptance Test and Evaluation category of testing to Operational Test and Evaluation. This chapter focuses on the management of this transition and the known risks to completing Operational Test and Evaluation.

## Verification of capability achievement

**5.4** The Joint Test and Evaluation Master Plan for JP 2070 notes that responsibility for the Acceptance Testing and Evaluation and Operational Test and Evaluation rests with the JP 2070 Project Office in the DMO. A key element of Acceptance Test and Evaluation is linked to confirming contractual compliance. At the conclusion of fieldwork for this audit, Acceptance Test and

Evaluation was ongoing (paragraphs 5.15 to 5.36). This testing was being conducted outside the provisions of the FRAA<sup>175</sup>, which was executed in August 2005, as the MU90 torpedo and the Surface Lightweight Torpedo System had been accepted by the DMO prior to these trials occurring. In this circumstance, most of the risk associated with transitioning JP 2070 from Acceptance Test and Evaluation to Operational Test and Evaluation now rests with the DMO.

**5.5** The June 2004 Business Due Diligence report compiled in preparation for the DMO becoming a Prescribed Agency under the FMA Act stated as follows with respect to this Project:

Only draft documents for the purpose of an OCD [Operational Concept Document] exist. High confidence by the project that capability will be delivered – main areas of concern inter-project dependencies and lack of Defen[c]e Capability approval for some project work.

Capability risk is assessed as medium.

**5.6** The draft March 2009 Materiel Acquisition Agreement (MAA) defined the main schedule risks to JP 2070 at that time (see 2.47 to 2.55). The draft MAA noted that the:

ADF torpedo capability requirements are defined through a detailed operational requirement and not in a contemporary Operational Concept Documents and thus, JP 2070 does not have a clear concept of the testing required to meet these requirements.

**5.7** The implications of this issue were set out in the draft MAA as follows:

To gain capability acceptance, the project needs to define torpedo capability from a poor capability requirement document, gain an understanding of the torpedo and undertake an OT&E [Operational Test and Evaluation] program to prove the torpedo's capability. Significant unknowns exist in each of these areas, with the potential to cause schedule delay.

**5.8** The absence of key project documentation has been a known issue for a long time. The 2004 DMO Red Team Review of JP 2070 stated as follows:

Key documents that have either never been developed or never progressed beyond draft are an Equipment Acquisition Strategy (EAS), Project

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<sup>175</sup> In March 2010 DMO informed the ANAO as follows:

The FRAA transferred this to party best able to manage the risks.

Management Plan and **Functional Performance Specification(s)** [emphasis added].

**5.9** The Negotiating Report for the August 2005 FRAA stated as follows with respect the Functional Performance Specifications:

The Function and Performance Specifications (FPS) has been incorporated in an appendix to the revised Alliance Agreement. There are areas of non-compliance with the FPS. Although this document was developed after this off the shelf weapon had been selected, the FPS has been developed as a statement of Defence requirements. The FPS is retained without modification, and a compliance matrix has been developed linking the FPS and the French equivalent specification document, which the torpedo has been built to. The French requirement takes precedence under the agreement if there are differences between it and the FPS. Reference has also been made to Defence's Detailed Operational Requirement document for information purposes only.

**5.10** In July 2008, the Djimindi Alliance Board was advised by JP 2070 Director as follows:

The Project Office is currently reviewing the Critical Operational Issues from the Detailed Operational Requirements to confirm that the AT&E [Acceptance Testing and Evaluation] had been achieved. The Project Office would then assist RANTEAA [Royal Australian Navy Test Evaluation and Analysis Authority] develop an understanding of the MU90 (estimate three months to achieve), following which RANTEAA will commence OT&E scheduling.

**5.11** At the time the Djimindi Alliance Board was informed that this activity was being undertaken, the Test Concept Document had not been finalised. The Test Concept Document was not approved until some 12 months later in June 2009.

**5.12** In February 2010, Defence informed the ANAO that the concept for meeting the Detailed Operational Requirements for the lightweight torpedo is set out in the Test Concept Document and the draft Test and Evaluation Master Plan (TEMP).<sup>176</sup> In minutes of the late February 2010 Project Management Stakeholder Group stated as follows:

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<sup>176</sup> The TEMP is the single executive long-range planning document that details the testing and evaluation content of a particular equipment acquisition project, and identifies the full range of tests required to support the evaluation of the proposed equipment against specified requirements during the development, production and release phases. The TEMP is underneath the Test Concept Document in the documentation hierarchy. Source: ADBR 6205 Naval Operational Test and Evaluation Manual 9 October 2003.

The PMSG [Project Management Stakeholder Group] was briefed on the intent of AT&E [Acceptance Test and Evaluation] in order to obtain data necessary to explore the MU90's full capabilities. [The Director of] RANTEAA offered to assist the JP2070 project office to complete drafting the Test Evaluation Master Plan (TEMP). An agreed TEMP would then enable completion of the Acceptance Test and Evaluation (AT&E) plan.

**5.13** Defence further advised that the DMO is progressively populating the compliance matrix, which will be included as an annex to the Form TI338 that will then be subject to regulatory review and endorsement prior to being presented by RANTEAA to the Chief of Navy.

**5.14** A compliance verification matrix was included in the December 2009 report on trials conducted aboard an FFG in late 2009. The matrix indicated the assessed level of compliance with the Detailed Operational Requirements, which is the primary document that sets out capability being acquired by the JP 2070. A summary of these compliance findings is shown in Table 5.1, and indicates that as at late 2009, seven years after the contract for Phase 2 was executed, compliance was yet to be fully verified against a large proportion of the assessment criteria.

**Table 5.1**

**Compliance Findings December 2009**

Category	No. of Criteria	Assessment of compliance <sup>^</sup>				
		Compliant	Partially Compliant	To be verified	To be further verified	Non-Compliant
Measures of Effectiveness	7	1	5	2	3	-
Measures of Sustainability	16	4	3	7	3	-
Measures of Performance	20	4	9	7	4	-
Critical Technical Parameters <sup>#</sup>	12	4	5	3	-	1

Note <sup>^</sup>: The number of criteria and the assessment of compliance may not be equal as some criteria have more than one assessment of compliance.

Note <sup>#</sup>: CTPs are quantitative and qualitative test measurements of technical data that provide information on how well a system, when performing mission essential tasks as specified in the Operational Concept Document, is designed and manufactured. CTPs are derived from the Test Concept Document and from technical performance measures as specified in the Systems Engineering Management Plan.

Source: MU90 LWT and HMAS DARWIN FFG LWTS Trials Report, 18 December 2009.

## Achieving Initial Operational Release

**5.15** For Navy platforms and equipment, Operational Test and Evaluation commences following Initial Operational Release (IOR). IOR is the milestone at which Chief of Navy is satisfied that the operational and material state of the equipment, including deficiencies, training and supportability elements, are such that it is safe to proceed into Naval Operational Test and Evaluation. The Naval Operational Test and Evaluation Manual states as follows:

Initial Operational Release (IOR) is a significant milestone in the capability acquisition continuum since it marks the end of production and the start of a concentrated process to evaluate whether the operational requirement for the project has been satisfied.<sup>177</sup>

**5.16** Operational release occurs at the conclusion of Naval Operational Test and Evaluation.

**5.17** The Joint Test and Evaluation Master Plan for JP 2070 states that the JP 2070 Project Office will manage the conduct of a number of firings of PDTs<sup>178</sup> and one of a TVE<sup>179</sup> to finalise the surface platform and MU90 torpedo Acceptance Testing and Evaluation program, prior to the DMO handing over to the RANTEAA for Operational Test and Evaluation testing.

**5.18** Category 5 sea trials (Category 5 testing) is the final category of testing conducted in the Acceptance Test and Evaluation phase. Category 5 testing encompasses the proving of all systems and equipment including, the firing of weapons. At the time of audit fieldwork, there had been:

- one sea trial involving an ANZAC Ship planned to occur in 2005 which was cancelled;<sup>180</sup>
- one sea trial involving an ANZAC Ship completed in 2008; and

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<sup>177</sup> ABR 6205 Naval Operational Test and Evaluation Manual 9 October 2003. Par. 5.1

<sup>178</sup> The PDT is carried and launched, but is not propelled. It comprises the same mechanical and electrical interfaces and physical representation as the Exercise MU 90 torpedo. It will record preset data for analysis of 'weapon firing'. It is also used to train operators, except in-water performance, and to validate torpedo launching systems.

<sup>179</sup> The TVE has the same mechanical and electrical interface and physical representation as the war-shot (TC), but has an exercise section in lieu of a warhead. The TVE enables evaluation of the MU90 utilising practice firings, and is used to verify in-water performance.

<sup>180</sup> The reasons for this cancellation included activity associated with negotiation of the FRAA; limited resources to arrange firing; tight schedule; and value for money in light of French and Italian TIAP technical and trial firings that were about to commence.

- two sea trials in late 2009, involving an ANZAC Ship and an FFG.

## The 2008 sea trial

**5.19** The FRAA, which was negotiated in 2005, did not require the Djimindi Alliance to conduct any PDT or TVE firings as part of Acceptance Testing and Evaluation, instead DMO relied upon European trials conducted by the French and Italian Governments to provide the basis for acceptance of the Phase 2 torpedos.<sup>181</sup> Consequently, a trial needed to be developed to complete Acceptance Test and Evaluation by the DMO. This trial occurred onboard the ANZAC class vessel HMAS TOOWOOMBA in mid 2008. This sea trial was intended to demonstrate that the MU90 torpedo had been successfully integrated onto ANZAC Class ship; and a secondary consideration was to test the MU90 torpedo in-water performance against Critical Operational Issues (COIs).<sup>182</sup>

**5.20** The trial involved six PDT firings followed by one TVE firing at a static target. Figure 5.1 is a photo of an MU90 torpedo being fired during this trial.

**Figure 5.1**

### MU90 torpedo on initial exit from torpedo tube HMAS TOOWOOMBA



Source: DMO

<sup>181</sup> In March 2010, the DMO informed the ANAO that it had only just received the more highly classified reports of these trials, which is over three years after they were deemed a success and the torpedo manufacturer was released from the associated contractual obligations that were inserted into the FRAA to provide protection for the additional Phase 3 commitment.

<sup>182</sup> COIs are the operational effectiveness and operational suitability issues (not parameters or thresholds) that must be resolved in OT&E in order to determine that the system has the capability to perform its mission(s). Source: Defence Materiel Verification and Validation Manual 11 November 2008.

**5.21** The DMO's August 2008 report on this trial concluded that Acceptance Test and Evaluation COIs had either been met, can be worked around, or are sufficiently well advanced that a recommendation for proceeding to Operational Test and Evaluation could be sustained. Subsequently, in April 2009, a draft Test and Evaluation Master Plan was prepared which included different COIs to those included in the DMO's August 2008 report on the firing off the HMAS TOOWOOMBA. The COIs in the draft April 2009 TEMP were in line with the RANTEAA requirements. In February 2010 Defence informed the ANAO that COIs had been changed to ensure that weapon performance testing was measured against operational requirements.

## **Trials in late 2009**

**5.22** Some 12 months after the testing conducted aboard the ANZAC Ship HMAS TOOWOOMBA, both the MU90 torpedo and the ANZAC Ship were yet to achieve Initial Operational Release. In late 2009, a further set of sea trials of the torpedo were undertaken involving both an ANZAC Class ship and an FFG. The trials occurred on the west coast of Australia as the Post Exercise Facility being developed by JP 2070 under Phase 3 to allow trials to occur on the east coast was yet to be completed.<sup>183</sup>

**5.23** The tests conducted aboard both classes of ships were planned to involve a series of PDT and TVE firings with the intent of demonstrating the integration of the MU90 torpedo onto both vessels, prior to handover of the torpedo to RANTEAA for Operational Test and Evaluation. The testing of the torpedo on the FFG was at a lower level of integration than JP 2070 is intended to eventually provide, as completion of this integration has been delayed by the issues in the FFG Upgrade Project (See Table 4.1).

### ***Critical Technical Parameters (CTPs)***

**5.24** Verification of CTPs is required as part of the Initial Operational Release (IOR) process and prior to the commencement of the Operational Test and Evaluation program. The Trials Plans prepared for the 2009 trials of the

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<sup>183</sup> In February 2010 Defence informed the ANAO that the Detailed Design Review for the Post Exercise Facility (East) was completed in October 2009 and the Set to Work was scheduled to occur in mid 2010. In late February 2010 a Project Management Stakeholders Group was informed that delivery of the container would occur in June 2010. The test plan for the PEF(E) was yet to be developed. The availability of the Post Exercise Facility (East) was identified in the 16 April 2010 MAA for Phase 2 as a factor contributing to the high risk that weather might impact on tests planned to be conducted in July 2010. This was because without this facility testing will be constrained to the Western Australia Exercise Area.

MU90 torpedo on the FFG and ANZAC class ships each included an assessment of compliance against the CTPs as set out in Table 5.2.

**Table 5.2**

**ANZAC Ship and FFG Compliance with CTPs**

Critical Technical Parameter	Compliance	
	ANZAC Class	FFG
Explosive ordnance stowage	Partially compliant	Partially compliant
Depot storage	Compliant	Compliant
Ordnance certification	Not yet compliant	Not yet compliant
Explosives qualification	Not yet compliant	Not yet compliant
Torpedo handling	Non compliant	Non compliant
Insensitive munitions <sup>A</sup>	Non compliant	Non compliant
Electromagnetic effects	Compliant	Compliant
Protection of the environment	Compliant	Compliant
Built in test equipment	Compliant	Compliant
Pre-issue testing	Compliant	Compliant
Mission reliability	To be determined	To be determined
Reliability, maintainability and availability	To be determined	To be determined

Note: A

Insensitive munitions are those munitions which reliably fulfil their performance, readiness and operational requirements on demand, but will minimise the violence of a reaction and subsequent collateral damage when subjected to unplanned heat, shock electromagnetic energy, or radiation.

Source: JP 2070 Light Weight ASW Torpedo MU90 LWT and ANZAC LWTS Trials Plan 16 October 2009 and Joint Project2070 Light Weight ASW Torpedo MU90 LWT and FFG LWTS Trials Plan 16 October 2009.

**5.25** The Trials Plans outlined the reasons for particular CTPs being assessed as partially compliant and non-compliant. The assessment of partial compliance for the CTP related to explosive ordnance stowage for the FFG related to the ongoing upgrade of the magazine on those vessels. Of the ADF's four FFGs the magazine upgrade is complete for one, partially complete for one, and there are two yet to be modified. The Trials Plans state as follows with respect to the CTP for explosive ordnance stowage on the ANZAC Ship:

The Surface Vessel Torpedo Tubes (SVTT) are considered to be magazines in their own right. All the SVTT have been modified to accommodate the MU90 LWT...

Because there is no requirement to reload load the ANZAC-Class FFH SVTT at sea, the FFH weapons magazine modification has been put on hold until the future of Seahawk air platform integration is resolved. Should there be a



requirement for the Seahawk or new Navy Helicopter (AIR 9000 Phase 8) to be fitted with MU90 LWT then the modification shall proceed.

**5.26** The assessment of 'non-compliant' against the CTP for insensitive munitions on both ships related to three areas of non-compliance for which a waiver had been raised by the Project Office. In February 2010, Defence informed the ANAO that the waiver was approved in October 2007.

**5.27** The Trials Plans state as follows with respect to the CTP for weapons handling:

The Torpedo Tube Trolley (TTT) (STY-102B) supplied by EuroTorp has been assessed as inadequate (unstable) for operations at sea. The TTT can be used for loading MU90 LWT into Surface Vessel Torpedo Tubes (SVTT) along-side only.

An FPS [functional performance specification] has been developed to specify a TTT that can be used at sea on FFG for SVTT loading, but the prototype has yet to be developed, tested and accepted.

Until the new TTT enters service, this constitutes a performance and operating limitation on FFG and FFH operations.

**5.28** The April 2004 Trolley Test Plan noted that the requirement for the Torpedo Tube Trolley was introduced due to the increased weight of the MU90 torpedo<sup>184</sup> when compared to the Mark 46 torpedo it was replacing. Concerns were first identified in 2004 surrounding the design of the trolley, when at sea, with trials at that time identifying and assessing the hazards. The Safety Case arguments for the late 2009 Sea Trials limited the use of the trolley to when the vessel was berthed. In March 2010, DMO informed the ANAO that:

Trolley funding is part of the 2nd tranche funding request, which is expected to be considered by Government in Jun[e] [20]10.

**5.29** The April 2010 Materiel Acquisition Agreement for Phase 2 classified torpedo tube loading (and maintenance) capability a high risk. The MAA stated that:

At present the MU90 torpedo cannot be safely retracted from the SVTTs [Surface Vessel Torpedo Tubes] for maintenance or loaded while at sea. This capability is necessary for IOR [Initial Operational Release]. Until a means of

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<sup>184</sup> The torpedo weighs over 300 kilograms.

providing for torpedo retraction from the torpedo tubes to provide weapon and SVTT maintenance, the Project cannot obtain IOR. This could lead to an impact on Schedule.

### *Outcomes of late 2009 testing*

**5.30** On 8 December 2009, the DMO provided the ANAO with the initial reports on the sea trials of the MU90 conducted off the west coast of Australia in late November 2009.

#### **ANZAC Trial**

**5.31** The report on the ANZAC Trial indicated the following outcome:

- three PDT's were successfully fired but with some issues associated with the Shipborne Lightweight Torpedo System and some issues with the depth that firings occurred at for two PDTs; and
- no TVE trials were undertaken due to weather conditions impacting on the capacity to safely recover the torpedo.

#### **FFG Trial**

**5.32** The report on the FFG Trial indicated the following outcome:

- three PDT's were successfully fired after some issues with the Shipborne Lightweight Torpedo System were overcome;
- one TVE was ejected from the Shipborne Lightweight Torpedo System but failed to start; and
- a second firing of a TVE was undertaken for which the TVE started successfully.

**5.33** In February 2010, Defence advised that the issue surrounding the failure to start of the first TVE was being investigated by the original equipment manufacturer. The firing of the second TVE was still being assessed as there were some concerns surrounding the demonstrated endurance of the torpedo.<sup>185</sup>

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<sup>185</sup> Under the provisions of the FRAA the warranty for all items other than Shipborne Torpedo System is 12 months. The torpedoes acquired under Phase 2 were accepted in July 2007 meaning that the warranty period lapsed in June 2008. However, depending on the nature of the issues with the torpedo latent defect provisions may apply.

**5.34** In November 2009, concerns were expressed by Navy in an email to the DMO surrounding a proposed ministerial submission prepared to report on these trials. Issues identified included:

...it is difficult to accept that the planned firings can be regarded as “successful” if the torpedo won’t achieve attack criteria against a representative target;<sup>186</sup>

The FFG will be in “standalone” mode for the firing and this is not the final firing configuration (“Partial Plus” not being installed until some time in 2010) – the firing therefore cannot verify or validate the system as it is an interim fit.<sup>187</sup>

**5.35** The email also stated:

Of concern is apparent limited liaison with the nominated Navy SMEs [Subject Matter Experts]... ...about what DMO is trying to achieve with these ASWEX firings and associated Ministerial and media products and, in particular the notion that this activity is key to “Navy accepting” the MU90 system.

**5.36** As identified in paragraph 5.21, there were issues surrounding the COIs used to evaluate the 2008 trial aboard the ANZAC as they were only draft and were subsequently changed to align with RANTEAA requirements. This, combined with the Navy concerns outlined above in relation to the 2009 trials, indicates that it is essential that the DMO review its approach to preparing for and undertaking testing, in consultation with Navy, so that future trials are conducted in a manner that progresses the capability towards Navy acceptance.

**5.37** The minutes of the February 2010 Project Management Stakeholder Group stated as follows with respect to the 2009 trial:

The PMSG [Project Management Stakeholder Group] discussed the reported performance of the weapon as well as the validity of the test data provided by the OEM [Original Equipment Manufacturer]. The PMSG noted that without valid test data, a large number of test firings may be required to establish weapon performance parameters.

**5.38** Subsequent to that meeting the DSTO representative at that meeting prepared a classified report for the Chief of Navy detailing issues on technical performance and information release with the MU90.

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<sup>186</sup> See Paragraphs 5.65 to 5.76.

<sup>187</sup> See Paragraphs 4.59 to 4.61.

**5.39** The April 2010 MAA for Phase 2 indicated that there was a high risk associated with validating weapon performance to the functional performance specifications which may have performance schedule and cost implications for the Project.

## **Progress towards operational release**

**5.40** The Joint Test and Evaluation Master Plan Developed by the Djimindi Alliance in August 2002 set a schedule for operational release of the torpedo for all five ADF platforms that were in scope at the time. As indicated in Chapter 4, Phase 2 originally included three air platforms and two surface platforms, with the three air platforms subsequently removed from scope. For the surface platforms, the August 2002 Joint Test and Evaluation Master Plan indicated an operational release schedule of:

- ANZAC ships-last quarter 2007; and
- FFG ships-second quarter 2008.

**5.41** In May 2006, JP 2070 was yet to identify a timeline for Initial Operational Release for these two platforms, partially attributable to the issues surrounding the delivery of the torpedoes under Phase 2 and the status of other projects such as the FFG Upgrade (see Chapter 4).

**5.42** In July 2008, the DMO wrote to the then Minister for Defence indicating that additional funding was required to support test and evaluation, among other issues (see Chapter 6). The DMO sought approval to use a portion of the Phase 2 budget previously allocated to air integration to fund this activity. As noted earlier in this chapter a key test document, the Test Concept Document, had not been finalised at this stage. The Test Concept Document was subsequently approved in June 2009.

## **The TI338 form**

**5.43** The TI338 form (see paragraph 2.54) is the formal document raised to facilitate Initial Operational Release (IOR) (and eventually Operational Release) of new or upgraded capability for Navy. The TI338 records the materiel and equipment performance state of major new capabilities from the milestone of delivery to Navy for Operational Test and Evaluation until the equipment achieves Operational Release.

**5.44** At the time of audit fieldwork, the TI338 for the MU90 torpedo was in an early draft form. Prior to making a recommendation to the Chief of Navy

for Initial Operational Release of the MU90 torpedo, a number of Navy regulators will need to endorse the TI338. The draft TI338 includes a list of defects, deficiencies and delivery issues. These issues encompass a range of aspects of JP 2070 including platform integration, in-service support, funding and schedule. The draft TI338 also identified that two key documents required for certification<sup>188</sup> were yet to be finalised. These are set out in Table 5.3.

**Table 5.3**

**Status of key certification documents as described in draft Form TI338 as at April 2009**

Issue	Status
Agreed Certification Basis	The technical and operational certification basis needs to be agreed between the JP 2070 project and the appropriate Defence Regulatory Authority, in this case the eight Navy regulators coordinated through the Directorate of Navy Certification (DNC). The FFG and FFH (ANZAC Class Frigate) Project Certification Plans, developed using guidance in ABR 6492 Navy Technical Regulation Manual, have been reviewed in draft by DNC staff and eventual certification compliance with the Project Certification Plans is not anticipated to become an issue.
Safety Case Reports	Formal Safety Case Reports (SCRs) for the MU90 LWT, the ANZAC-Class and Adelaide-Class Surface Launch Torpedo Systems (SLTS) and the MU90 torpedo in-water recovery process have not yet been approved by the Navy Regulators; these are currently going through the DNC-coordinated approval system. For Trials purposes, Safety Case Arguments (SCAs) were presented for the MU90 LWT, the ANZAC-Class SLTS and the MU90 torpedo in-water recovery process and these were approved by the Navy Regulators. Accordingly, the risk of not having approved SCRs for Operational Test and Evaluation is considered very low.

Source: Draft form TI338

**5.45** As at February 2010, Defence's advice was that the DMO was developing a Form TI338 to support Initial Operational Release for the MU90 on each of the ANZAC and FFG and that these forms were scheduled to be submitted to Navy in the first quarters of 2010 and 2011 respectively. In contrast to these timelines, the minutes of the Project Management Stakeholder Group meeting in late February 2010 stated as follows:

The PMSG discussed the progress toward achieving IOR. The PMSG noted that the planned IOR dates in the existing project schedule had not been achieved and that the project schedule should be updated. To enable the schedule to be updated, [Director] RANTEAA offered to update advice on the IOR requirements that the Project is to meet in order to achieve IOR.

<sup>188</sup> ABR 6492 Naval Technical Regulation Manual (July 2003) defines certification as the 'authoritative act of documenting compliance with requirements'.

## Risk to completing Operational Test and Evaluation

**5.46** The draft TI338 reviewed by the ANAO during fieldwork for this audit identified three issues that will directly impact on Defence's ability to complete Operational Test and Evaluation of the MU90. These issues are:

- delay in commencement of Operational Test and Evaluation due to the lack of a valid target;
- delay in commencement of Operational Test and Evaluation due to the lead time to obtain a simulation model; and
- access to required Objective Quality Evidence (OQE) for verifying Prior Qualification.<sup>189</sup>

**5.47** The ANAO notes that all these issues were identified in a May 2004 brief to the Director-General, Maritime Development (DGMD) in Capability Systems Division. That brief contained the following recommendations:

- DGMD note the high risk associated with T&E [Test and Evaluation] that needs to be accepted by the ADF before the MU90 torpedo becomes a viable capability;
- DGMD support the MRSPO [Maritime Ranges System Program Office] Strategic Plan for the acquisition of ranges and targets to make the MU90 torpedo a viable capability; and
- consideration be given to delaying a decision on committing to Phase 3 as vehicle for [getting] Project Djimindi Alliance (PDA) to provide high fidelity information for IOR [Initial Operational Release].

**5.48** As noted in Chapter 3, the Government approved Phase 3 in November 2003, and this decision had been brought forward based on a Defence recommendation. Originally, Phase 3 had been scheduled for a decision by Government in 2005-06. Chapter 3 also notes that, notwithstanding the Government's November 2003 approval of Phase 3, the negotiation of the contract for Phase 3 was not concluded and the contract not signed until mid

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<sup>189</sup> ABR 6492 Naval Technical Regulation Manual (July 2003) notes that OQE provides assurance that the individual requirements have been assessed by a competent authority. OQE can take a number of forms ranging from test result to formal certificates issued by a classification society. The Project Certification Plan should document what OQE is required, who should assemble and provide this OQE and who should review the OQE.

2005. Accordingly, at the point that the recommendations in paragraph 5.47 were made to DGMD there remained the opportunity to improve certainty surrounding the availability of OQE required for Initial Operational Release and eventually Operational Release prior to committing to the contract for Phase 3 to acquire a much larger quantity of torpedoes.<sup>190</sup> In March 2010 the DMO advised the ANAO as follows:

The MOU [Memorandum of Understanding] with the European Navies was intended to provide much of this info as it needed to go Government to Government.

Due to the arrangements in the RAA [Revised Alliance Agreement] DMO did not have a lot of commercial leverage to achieve this. In addition, Government to Government data was required on top of industry data.

It is not unusual for Governments to sanitise results of their T&E programs. They are usually classified and disclose capability so are held closely.

**5.49** The September 2009 draft Test and Evaluation Master Plan stated as follows:

Unless [required] OQE information is obtained acceptance of the weapon by the ADF will be problematic and potentially not be achievable and is compounded by existing ranges, targets and modelling capabilities available. Presently there is likely to be an increased number of MU90 LWT TVE firings needed to develop and validate as the ADF attempts to generate MU90 LWT operational performance information.

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<sup>190</sup> In May 2010 EuroTorp informed the ANAO as follows:

EuroTorp has continually tried to facilitate transfer of OQE data from these government agencies. However, the ultimate responsibility for this data transfer devolves on the DOD/DMO through its various agreements with France and Italy.

**5.50** The April 2010 draft version of TEMP reaffirmed that where access to OQE is not forthcoming additional verification and validation will need to be undertaken. The assessment that an increased number of MU90 LWT TVE firings are likely to be required is of concern for two key reasons. Firstly, the costs associated with firing the MU90 are significant.<sup>191</sup> A 2007 brief, prepared by the acting Director-General, Maritime Development, indicated that the cost to turnaround and exercise firing would be approximately \$330 000<sup>192</sup> per firing.<sup>193</sup> Secondly, there are limitations on the number of firings that can be undertaken of each individual torpedo because, based on a manufacturer's recommendation, each torpedo may only be fired in TVE configuration on three occasions before the torpedo must be consigned to war stock use only.

## **Modelling and simulation**

**5.51** Modelling and simulation permits the Defence Science and Technology Organisation (DSTO) to conduct analysis of weapons performance for the purposes of Operational Test and Evaluation and Tactical Development. In late 2000, Navy endorsed a DSTO Task Plan which covered a range of activities including consideration of the development of a hybrid simulator suitable both for the Heavyweight Torpedo being acquired under Project SEA 1429 and for the Lightweight Torpedo. The tasking directive stated as follows with respect to simulation requirements:

...this task will cover initial planning and development of a hybrid simulator to enable studies of the operational capability of the replacement torpedoes. This has been identified in the past (ASW Capability Study Final Report 2/97) as a shortfall in understanding.

**5.52** The Director-General, Maritime Development was informed in a 2004 briefing that a hybrid simulator for both the heavyweight and lightweight

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<sup>191</sup> A brief prepared for a Project Management Stakeholders Group meeting in April 2004 stated as follows:

The weapons are inordinately expensive to fire and for this reason alone it is most unlikely that a traditional AINS [Acceptance into Naval Service] process will be practical.

<sup>192</sup> In March 2010, Defence informed the ANAO that this cost is based on the price included in the FRAA for the supply of a refurbishment kit to renew an exercise torpedo following firing.

<sup>193</sup> The MU90 is an electrically-driven torpedo utilising an Aluminium Silver Oxide battery. After each TVE firing the torpedo must be safely recovered, with battery flushed and stabilised, before being transported back to the Torpedo Management and Integration Facility for refurbishment.



torpedo was not feasible due to sensitivities of the countries involved<sup>194</sup>, and that, consequently, the JP 2070 Project Office intended pursuing a niche modelling and analysis tool for the lightweight torpedo. At that time, two options for this simulation tool were being considered. It was acknowledged that both would likely have the same capabilities. However, there was a large degree of uncertainty in terms of the likely timeframes for availability of the options, and also surrounding the capacity to fully use the model without appropriate intergovernmental information sharing arrangements.

**5.53** A July 2004 Stakeholders Group meeting was informed that simulators from two companies were under consideration, but that a third one, which had been considered as a potential candidate, was not on offer. This meeting noted that simulation tools need to be run by the DSTO to allow modelling of tests and validation of weapons performance. This view was reaffirmed at a meeting on the Functional Performance Specifications for the torpedo in October 2004. The minutes of that meeting stated as follows:

All stakeholders agreed that simulation tools are important for tactical development of trials and training. Greater priority needs to be focussed on simulation tools options.

**5.54** In February 2005, a representative from the Project Djimindi Alliance provided the following response to a question on modelling asked at a meeting on helicopter integration:

...the PDA [Project Djimindi Alliance] had previously sent a DSTO representative to EuroTorp to have a look at modelling and what was available, however he ran into security and access problems and was not overly successful in gaining any knowledge on modelling capabilities.

**5.55** In late 2008, Defence's Capability Development Group<sup>195</sup> sought advice from RANTEAA on the draft Test Concept Document for the MU90. The RANTEAA response noted that the draft Test Concept Document indicated that modelling was a prerequisite to in-water testing of the MU90 torpedo. The response also indicated that there were issues surrounding funding for the simulation model, and even once the model was delivered there would be delays due to the need to populate the model and learn how to use it.

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<sup>194</sup> France and Italy were the relevant countries in relation to the Lightweight Torpedo and the United States for the Heavy Weight Torpedo.

<sup>195</sup> The Capability Development Group within the Department of Defence is responsible for Defence's capability development process.

RANTEAA advised that, if modelling remained a prerequisite to in-water testing, Initial Operational Release and Operational Test and Evaluation would be delayed for some time.

**5.56** Subsequently, the April 2009 draft Materiel Acquisition Agreement for JP 2070 identified simulation and modelling as a risk to JP 2070 stating:

Prior to commencing OT&E, the project needs to obtain a torpedo simulation model and analyse the MU90 LWT performance. The lead time to obtain a torpedo model is approximately 12 months with another six months required to analyse torpedo capability using the model. Obtaining the torpedo simulation model and analysing MU90 LWT performance is the critical activity to achieving OT&E and ultimately capability acceptance.

**5.57** A May 2009 brief prepared by DSTO on JP 2070 stated that the modelling and simulation tool was to be acquired under Phase 3. That brief outlined that DSTO was unable, at that time, to support detailed simulation and analysis of the weapon due to the delays in the acquisition of this capability.

**5.58** The September 2009 draft Test and Evaluation Master Plan for the MU90 notes that the JP 2070 Project Office is in the process of acquiring a torpedo simulation model under Phase 3. In February 2010, Defence informed the ANAO that a Statement of Work to acquire a simulation model was being prepared by the DMO and is scheduled to be released under a request for quotation during the second quarter of 2010.

**5.59** The DSTO representative at a Project Management Stakeholders Group meeting in February 2010 ‘...advised that validation and verification of the model may not be completed before the end of 2012.’ The minutes of that meeting note that:

...the lack of a verified simulation model may delay declaration of Full Operational Capability (FOC) as the model was essential to test the full range of torpedo performance and for the development of tactics.

**5.60** The April 2010 MAA for Phase 3 assessed the long lead time to acquire obtain and build expertise in the use of a modelling tool as a medium risk to the Project. This delay was predicted to be in the order of 18 months.

## **Ranges**

**5.61** The JP 2070 budget does not include funding for the acquisition of ranges, which are used to track and record weapon performance during trials. Instead, ranges were to be acquired under Project Sea 1418 Phase 2, which was

an unapproved project that was planned to be considered by Government in 2004-05. Subsequently, in May 2004, a JP 2070 Test and Evaluation Integrated Project Team was informed that the Shallow Water Tracking Range had been removed from the scope of Project Sea 1418.

**5.62** In March 2005, the then Minister was informed that the MU90 torpedo is not compatible with existing ADF ranges but that there was an ongoing investigation into whether a modification to the weapon would overcome this issue. It was subsequently determined that these modifications to the MU90 torpedo could not occur. The Minister was also informed that attempts were being made to ensure that a portable tracking range, which was under development for the heavyweight torpedo, would be compatible with the MU90 torpedo. However, in July 2005, an Integrated Project Team meeting was informed that this portable tracking range was not compatible with the MU90 torpedo.

**5.63** Subsequently, a June 2007 briefing to Senior Officers in Defence indicated that the MU90 exercise weapon had sophisticated in-run analysis and recording capability, which provided for post run data to allow reconstruction of the weapon path and performance. In September 2008, RANTEAA indicated that Range Compatibility was not an issue for the conduct of Operational Test and Evaluation and that workarounds were possible. However, the April 2010 MAA for Phase 2, while indicating that the deficiency surrounding ranges could be partially mitigated through third party tracking, indicated that the compatibility of the MU90 with Australian Ranges was a high risk to the Project, with the MAA stating as follows:

At present, the MU90 torpedo cannot be accurately tracked on Australian ranges. MRSPO [Maritime Ranges System Program Office] has a means of tracking the MU90, however the capability is not fully developed. Unless the issue is resolved, there is a risk that the MU90 will not be properly integrated with Australian ranges.

**5.64** The MAA further indicated that this risk will not be resolved in the life of the JP 2070 Project.

## Targets

**5.65** The Joint Test and Evaluation Planning Group was advised in October 2000 as follows:

...a target study is currently being undertaken by the Project Office for both the HWT [Heavyweight Torpedo] and the LWT [Lightweight Torpedo] for AINS [Acceptance into Navy Service] processes...

**5.66** A report was prepared by a professional service provider in May 2002 which considered the ADF's need for a Simulated Submarine Target. That report noted that the targets available to the ADF at that time were the Collins Class submarine and a simulated target that was not sufficiently sophisticated for the heavyweight torpedo and lightweight torpedo that were being acquired. The report noted that Peace Time Safety Firing Rules prevented the Collins Class from being used as a target in shallow water, and the capacity to acquire a target suitable for both weapon types was complicated by the operational difference between the torpedoes and intellectual property and security issues.

**5.67** The report identified that there were a variety of targets available ranging from static or towed targets to high fidelity autonomous targets. The report concluded that due to the sophistication of the weapons being acquired there was a requirement for a sufficiently sophisticated Simulated Submarine Target to present a realistic target for the weapons in all phases of the torpedo attack. The August 2002 Joint Test and Evaluation Master Plan noted that the then current ADF targets were not compatible with the MU90 torpedo but that a study had identified up to four targets which were compatible.

**5.68** In the period since the 2002 report, the issue of the requirement for a target was considered on a number of occasions. In May 2004, a meeting of the MU90 Test and Evaluation Integrated Project Team was informed as follows:

SEA 1418 had the SWTR [Shallow Water Tracking Range] and maritime targets stripped out of the DCP [Defence Capability Plan], which is why there is so much concern about how we test the weapon without a valid target (or artificial one)...

**5.69** A review of the Functional Performance Specifications for JP 2070 in October 2004 noted that a better understanding of targets was needed so that all options could be developed.

**5.70** In July 2005, the Project Manager Stakeholder meeting was briefed on a French target that had been developed. The target was described as follows:

...a simple, submersible, submarine-sized tubular frame, which is suspended under buoys to simulate a submarine hull for warshot firing.

**5.71** The Project Director indicated to the Project Management Stakeholders Group that this target could be used in place of the Collins Class for shallow water firing, but there was no funding in the JP 2070 project budget for its acquisition. Project Management Stakeholders Group agreed that the option of acquiring this target through a separate Minor Capital Project should be investigated. In April 2006, a Project Manager Stakeholders meeting was informed that there was limited prospect of acquiring the target through a Minor Capital Project but consideration was being given to seeking target services using Net Personnel Operating Costs included in the JP 2070 budget. Subsequently, a brief to Senior Officers in Defence prepared in June 2007 stated:

The 2006 ASW [anti-submarine warfare] Capability Roadmap contains a recommendation that the capability gap either be remediated by either a small major project (ROM<sup>196</sup> \$35M [million]) or through sustainment funding on a lease pay per use basis (ROM \$5M [million] pa [per annum]).

**5.72** The June 2007 Senior Officers brief indicated that JP 2070 would obtain a suitable target for Acceptance Testing and Evaluation and Operational Testing and Evaluation through a commercial arrangement. The brief indicated that this should address the needs of JP 2070 and RANTEAA in the short-term while capability development processes acquired an enduring capability.

**5.73** In August 2007, the Djimindi Alliance responded to a request from the JP 2070 Project Office for price and availability information about suitable MU90 torpedo targets. The Djimindi Alliance's response to this request recommended that the initial Australian launch of the MU90 be against a static target of a type proven against the MU90 torpedo. The basis put forward for this recommendation was as follows:

- a. this will provide the opportunity to fully test the launch and running of the torpedo without introducing too many variables, and

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<sup>196</sup> Rough Order of Magnitude.

- b. the lead-time of deploying such a system is likely to be less than that of a more complex target.<sup>197</sup>

**5.74** In September 2007, a minute prepared within Navy's Fleet Headquarters stated as follows:

There remains a requirement to conduct shallow water firings of new weapons, such as MU-90, one of the safety features is stratum separation, which could not be achieved using an SM [submarine]. Therefore, a mobile target would be required in a shallower, more demanding littoral environment for OT&E firings.

**5.75** The issue of a suitable target continued to be the focus of discussion between the Project Office, RANTEEAA, DSTO and Navy Headquarters during 2008. These discussions focussed on alternative approaches, including using a Collins Class submarine, subject to the outcome of a 'not to hit' study, or a submersible vehicle developed by DSTO. The September 2009 draft Test and Evaluation Master Plan for the MU90 torpedo noted that there was an ongoing issue surrounding the availability of a suitable target for the torpedo, and that the acquisition of such a target was beyond the original scope of JP 2070.

**5.76** Defence subsequently sought Government approval to redirect funding originally intended for air platform integration to other areas, including to areas necessary to complete testing of the torpedo. The Government approved Defence's request and this included approval for the acquisition of a mobile target at a cost of \$10.6 million (January 2009 prices).

**5.77** In February 2010, Defence informed the ANAO that funding required for this acquisition was \$9.39 million (January 2010 prices) and that it is scheduled for completion in early 2012. However, the ANAO notes that a brief prepared for the Project Management Stakeholder Group in late February 2010 indicated that the target procurement had not progressed. The Navy representative at that meeting was informed by the DMO that:

..... there was no target currently available that could meet all the MU90 AT&E [Acceptance Testing and Evaluation] and OT&E [Operational Testing and Evaluation] testing requirements and that a suitable target may take approximately 24 months to procure.

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<sup>197</sup> The trial of the TVE from the HMAS TOOWOOMBA conducted during 2008 utilised a target which is categorised as a static or towed target. The trials conducted in late 2009 also used this target.

**5.78** That meeting endorsed a proposal to acquire target services rather than just procure a target. The action items of that meeting required the identification of a suitable mobile target with ongoing consultation required within DMO and with Navy and DSTO on the scope of target services required to support Operational Test and Evaluation.

**5.79** The April 2010 Materiel Acquisition Agreement classified target delivery as a high risk to Phase 2 of JP 2070 and stated the following:

The timeframe for delivery of a suitable target for AT&E [Acceptance Test and Evaluation] and OT&E [Operational Test and Evaluation] poses a high risk and significantly impact on Schedule and Cost.

This will be mitigated by leasing a mobile target to undertake MU90 testing, however risk still remains high that this will not be available within the desired timeframe.

## **Objective Quality Evidence**

**5.80** OQE is defined as:

Any statement of fact, either quantitative or qualitative, pertaining to the quality of a product or service based on observations, measurements, or tests which can be verified.<sup>198</sup>

**5.81** The September 2009 draft Test and Evaluation Master Plan for the MU90 torpedo states as follows:

The French and Italian Governments contracted the development of the MU90 LWTS and therefore they own the system data, including test data (OQE). Accordingly, EuroTorp does not have the right to release Military OT&E reports. To overcome the access issue, a Tri-Partite Agreement was developed between the French, Italian and Australian Governments and the ADF has access to a number of Working Groups which may provide access to some of the OT&E information.

The French and Italian Government agencies which undertook OT&E did so using targets and counter measures that are classified under their respective national security guidelines. Whilst it is doubtful that useful OQE information will be obtained on target signature and counter measure efficacy, attempts will be made to obtain information under the Tri-Partite Agreement.

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<sup>198</sup> PM-essentials.com, 'PM [Project Management] Terminology', Objective Quality Evidence, 2008, available from <<http://www.pm-essentials.com/1001-objective-quality-evidence.html>>, [accessed 20 November 2009].

**5.82** The draft Test and Evaluation Master Plan outlined for both of the above issues that there was an assumption that OQE will be forthcoming but is problematic and, in the event it is not forthcoming, additional ADF verification and validation will need to be identified to demonstrate requirements compliance. The draft Test and Evaluation Master Plan also stated:

Because the system was originally bought as a MOTS [military off-the-shelf] system under an Alliance Agreement, there was no original intent for supporting Objective Quality Evidence (OQE) to be supplied by EuroTorp to the Commonwealth. This Contractual constraint was carried over into the FRAA, reference E, when the Alliance relationship was changed to the more conventional Customer/Supplier contracting model. The JP 2070 PO [Project Office] is working to resolve the issue with EuroTorp to obtain appropriate supporting OQE..

**5.83** As noted in Chapter 4, at the time the FRAA was signed in August 2005 the DMO had been aware for over 12 months that the MU90 torpedo was not an off-the-shelf torpedo.

**5.84** The ANAO notes that the requirement for access to OQE and technical cooperation was identified very early in JP 2070 and, as set out in numerous Defence/DMO documents, represents an ongoing risk to achieving operational release of the torpedo. Table 5.4 sets out a chronology of the OQE and technical cooperation issues and includes the status of these issues at the conclusion of this audit. Key project events have also been included in italics in Table 5.4.

**Table 5.4**  
**Chronology of Objective Quality Evidence and technical cooperation issues**

Date	Issue
<i>April 1999</i>	<i>RFP released for JP 2070 Phase 1.</i>
April 1999	Arrangement between the Minister for Defence Australia and Minister for Defence of the French Republic concerning cooperation in the field of defence armament comes into effect.
<i>October 1999</i>	<i>Defence decides to sole-source the Phase 1 Project Definition Study to the company offering the MU90 torpedo.</i>
January 2000	Defence requests release of reports cited in the RFP response by TMS/EuroTorp from French authorities.
<i>April 2000</i>	<i>Alliance Agreement signed for Phase 1.</i>
October 2000	Members of Joint Test Evaluation Planning Group informed of technical agreement for the sharing of data and advised to consider their needs and submit data requirements as soon as possible.



Date	Issue
<b>May 2001</b>	<b><i>Phase 2 of JP 2070 approved at a cost of \$287.71 million.</i></b>
November 2002	Ministerial submission seeking permission for the Under Secretary of Defence Materiel to enter a technical arrangement with the French Government for the replacement lightweight torpedo.
December 2002	Defence, on behalf of the then Minister, signed a Technical Agreement with France specifically for Phase 1 of the JP 2070 Project Definition Study. Defence advised the then Minister that the agreement was 'necessary to formalise the exchange of information from France to Australia that took place during Phase 1 and was used to develop options for the integration, logistic support and in-country assembly of the MU90 LWT'. By signing the agreement, Australia agreed to disclose specified results of the Project Definition Study to France to enable further development of the capabilities of the torpedo.
<b>December 2002</b>	<b><i>Revised Alliance Agreement signed incorporating Phase 2 into the Alliance Agreement.</i></b>
January 2003	Under Secretary of Defence Materiel signs an agreement with French Government for the replacement lightweight torpedo, which includes arrangements for information exchange.
November 2003	Project Management Stakeholder Group informed of the need to rely on information provided by other users of the MU90 torpedo on torpedo performance and testing.
<b>November 2003</b>	<b><i>Phase 3 of JP 2070 approved at a cost of \$246.43 million.</i></b>
<b>March 2004</b>	<b><i>The DMO became aware that the torpedo was not in-service with any other nation and that there had been technical and production problems with the torpedo.</i></b>
April 2004	Stakeholder meeting informed that lack of data will impede the progress of testing, evaluation and actual use of the torpedo.
May 2004	Chief of Navy writes to Chief of French Navy seeking cooperation.
May 2004	Dot point brief to Director General Maritime Development outlining that, in the past, the ADF has had parent or parent navy support to introduce a new capability but this was not the case for the MU90 torpedo. The brief stated that the ADF lacks the validated performance data normally expected when purchases are made with parent or parent navy support. The brief also indicated that limited technical information held by Australia on the MU90 torpedo had implications for DSTO analysis and modelling.
May 2004	The Chief of the French Navy writes to the Chief of Navy noting that information cannot be made available by the Contractor, but agreeing to enter dialogue for future paths of cooperation.
June 2004	Head Materiel Systems Division wrote to the French Defence Procurement Agency (DGA) detailing information required to receive the first batch of torpedoes, including the likely source of that information.
June 2004	Chief of the French Navy responds to the letter from Head Materiel Systems Division giving an undertaking to assist in providing data and indicating the likely sources of outstanding data.

Date	Issue
July 2004	DGA writes to Chief of Navy indicating that negotiations were underway for the establishment of technical and logistical operators group and suggesting that consideration be given to establishing an operators group.
June 2004	<p>Naval Capability Committee informed that the MU90 torpedo is not Parent Navy supported, with the result that the ADF is poorly placed to commission the system into operational service without the development of significant organic infrastructure. The committee was informed that there were still some significant information gaps that could have the potential to impact on Initial Operational Release and that both technical and tactical employment information for the MU90 torpedo currently held in country did not yet meet the service needs to make the weapon viable. Initiatives underway to ensure the successful introduction of MU90 torpedo included:</p> <ul style="list-style-type: none"> <li>• liaison with the French Navy to develop a formal agreement for the exchange of information;</li> <li>• investigating amending existing Memorandum of Understanding with the Italian Navy to include MU90 torpedo;</li> <li>• seeking an amendment to French Technical Agreement Number for Cooperation in the field of Defence Armament, to include the ADF requirements of Phase 2 and 3 of JP 2070; and</li> <li>• acceptance of an invitation for the RAN to join the MU90 User Group with observer status and the value of full membership is being assessed.</li> </ul> <p>At this time, the DMO planned to delay signing the contract for Phase 3 for at least 12 months.</p>
February 2005	Meeting at Naval Aviation Systems Program Offices informed by Project Djimindi Alliance that, once ADF signs up for Phase 3 and commits to buy war-shot, then maybe the French and other MU90 torpedo user may be more willing to share more information then they do now.
<b>March 2005</b>	<b><i>The Minister for Defence was informed that the torpedo was developmental and not in-service with European Navies as previously advised.</i></b>
March 2005	French Defence Procurement Agency (DGA) provides copy of Technical Agreement to the DMO for signature.
June 2005	Technical Agreement signed between French and Australian Departments of Defence for cooperation surrounding the MU90 weapon system.
July 2005	Integrated Product Team informed that technical agreement finalised between France and Australia with tri-lateral agreement being negotiated between Australia, France and Italy. At that time an operational users group is to be established once the torpedo was in-service in France and Italy. Australia had observer status on an Integrated Logistics Support Group.
<b>August 2005</b>	<b><i>FRAA signed for remainder of Phase 2 and the whole of Phase 3. The negotiating report for the FRAA made no reference to addressing issues surrounding technical cooperation or OQE.</i></b>
November 2005	Minutes of meeting of Djimindi Alliance Team show that continued requests for data including that relating to prior qualification may lead to an expanding requirement beyond that contained in the FRAA Statement of Work.

Date	Issue
March 2006	Letter from Italian Ministry of Defence agreeing to release of TIAP data to Australia and expressing ongoing commitment to the establishment of tri-lateral agreement between France, Italy and Australia.
December 2006	DGA advises that TIAP firings completed and that next step might be for Australia to join the user group for in-service support which DGA intends to create.
December 2006	Brief to Chief of Navy indicated that the recently signed tri-lateral agreement accelerated the transfer of trial data to Australia.
March 2007	Project Management Stakeholders Group informed of marked change in access to data since tri-lateral agreement was signed.
July 2008	RANTEAA provide detail of HMAS TOOWOOMBA's firing report to French Navy through the DMO.
September 2008	RANTEAA identified that the absence of OQE will have implications for the level of testing required or the degree of risk accepted in transitioning the MU90 torpedo into service.
January 2009	Project progress report shows that reaching agreement on the level of OQE required to support prior qualification as an ongoing risk to project.
March 2009	DSTO indicated that very limited OQE was available from TIAP Trials.
September 2009	The draft Test and Evaluation Master Plan notes that 'prior qualification' was the verification method listed against a large number of specifications. This was based on the MU90 torpedo being purchased as an off-the-shelf procurement without supporting evidence. Consequently, the original alliance agreement included no requirement for OQE to be supplied to the Commonwealth and this was an arrangement carried over to the FRAA. The French and Italian Governments undertook Operational Test and Evaluation so the contractor is not in control of the test reports. The tri-partite agreement was established with these governments in the hope that this would provide access to this information but this is yet to provide any information.
September 2009	ADF Test and Evaluation Authority acknowledges that the most significant weakness in the draft Test and Evaluation Master Plan relates to the implications of the inability to access foreign OQE.
September 2009	The Project Office wrote to DGA outlining a requirement for OQE and seeking data used to demonstrate compliance during French Certification Program.
October 2009	RANTEAA identify access to OQE as an ongoing concern. A 'straw man' developed for Operational Test and Evaluation by RANTEAA included the following assumption based on the preceding five years of interaction with JP 2070: <ul style="list-style-type: none"> <li>• Sufficient OQE to identify specific Functional Performance Specification areas of compliance will not be realised from Acceptance Test and Evaluation; and</li> <li>• OQE sourced by JP 2070 via EuroTorp or from the Parent Navies will either not be provided or will not prove all MU90 torpedo FPS requirements.</li> </ul>
November 2009	<b>The DMO agrees, due to development delays, to a Contract Change Proposal which will substitute the delivery of Mark II MU90 torpedos, which were being acquired under JP 2070 Phase 3, with a combination of two-thirds Mark I MU90 torpedoes and remainder in Mark II configuration.</b>

Date	Issue
February 2010	A brief prepared for the Project Management Stakeholder Group in late February 2010 indicated that a major Acceptance Test and Evaluation/ Operational Test and Evaluation campaign would be required if data was not provided by France and Italy. The minutes of that meeting stated that requests had been made to the French Government for data to confirm that the MU90 complies with specification. That meeting was informed the data may reduce the number of firings required during Operation Test and Evaluation.
March 2010	In March 2010 DMO informed the ANAO that access to classified data has occurred with the first batch of OQE delivered in March 10 but will require technical translation and further analysis. The Commonwealth will attend a technical data workshop in France in April 2010 to address access to further OQE.
April 2010	The April 2010 MAA for Phase 2 indicated that there was a high risk associated with validating weapon performance to the functional performance specification partially attributable to issues surrounding data release. The MAA for Phase 3 indicated that acceptance of the MU90 in accordance with the Function and Performance Specifications was a high risk as it may be affected by to a lack of appropriate data to support prior qualification.

Source: Defence documentation.

**5.85** At the conclusion of this audit, the situation surrounding access to required OQE was ongoing. When the timeline for the OQE is set against the project timeline, as has been done in Table 5.4, it is apparent that JP 2070 should have conclusively resolved this issue or developed alternative strategies much sooner. Within the timeline there are key contractual leverage points that could have been used to promote the Commonwealth's interest in relation to access to OQE. These include not agreeing to commit to the acquisition of torpedoes under Phase 3 until the OQE issue was resolved or not agreeing to accept Mark I torpedoes in lieu of Mark II torpedoes under Phase 3 without being given access to required OQE. In the event, as at the end of this audit, the DMO had not resolved the OQE issue, potentially exposing JP 2070 to a protracted test and evaluation program, significant additional cost and ongoing delays to capability delivery.

**5.86** In April 2010, Defence informed the ANAO as follows:

The OQE issue has been progressed since completion of audit fieldwork. The first set of data was provided in Mar[ch] [20]10 and Defence will attend a technical workshop in France in May [20]10 to work through further data requirements. DGA, the French equivalent of the DMO, has formally written to the DMO offering all required assistance to support T&E [Testing and Evaluation] for the MU90.

## 6. Financial Management

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*This chapter examines JP 2070 from a financial management perspective. It outlines changes to payment arrangements under the alliance over the course of JP 2070. It examines the initial costing of Phase 2 and the reallocation of the Phase 2 budget subsequent to significant scope reductions. The chapter also examines the costing of activities undertaken in support of JP 2070 using funds derived from outside JP 2070 budget.*

### Introduction

**6.1** In November 2009, the DMO issued the *Plan to Adopt a More Business-like and Commercial Culture in the DMO*,<sup>199</sup> which states that the DMO aims to provide robust cost, risk and schedule estimates with the underlying assumptions being clearly stated. As noted in Chapter 4 of this audit report, JP 2070 has experienced delays to schedule and the current approved phases of JP 2070 will now deliver capability for two surface platforms only, with the three air platforms originally in scope having been removed for various reasons.<sup>200</sup> Chapters 3 and 5 show that there are ongoing risks to JP 2070's schedule and achieving introduction into service of the MU90 torpedo capability. This chapter examines these issues from a financial management perspective. There are also a range of costs associated with integrating the MU90 torpedoes onto new platforms currently being acquired by Defence and potentially for other platforms that may be acquired. These are discussed in the final section of this chapter.

### Project budget and direct expenditure

**6.2** The Department of Defence's Annual Report includes a section on Defence's Top 30 Projects.<sup>201</sup> The table that lists these projects in that report does so based on the planned expenditure for the year. Consequently, Phase 3

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<sup>199</sup> Department of Defence, Defence Materiel Organisation, 2009, *Plan to Adopt a More Business-like and Commercial Culture in the DMO*, available from [http://www.defence.gov.au/dmo/asr/ss/Cultural\\_Change.pdf](http://www.defence.gov.au/dmo/asr/ss/Cultural_Change.pdf) [accessed 13 November 2009].

<sup>200</sup> The Super Seasprite Project was cancelled in 2008 and in 2009 the Government agreed to the removal of the Orion due to schedule delays and significant cost increases.

<sup>201</sup> Defence determines the 'Top 30 Projects' on the basis of forecasted expenditure for the year as reported in the Department's Annual Portfolio Budget Statements.

of JP 2070 appears in that table in the *Defence Annual Report 2008–09*<sup>202</sup> whereas Phase 2, which has a higher overall budget, does not. However, a comparison of actual expenditure in 2008–09 for Phase 2 to that of other projects listed in the Top 30 Projects revealed that the actual expenditure against Phase 2 was higher than other projects listed as Top 30 Projects in the *Defence Annual Report 2008–09*.

**6.3** Table 6.1 shows the composition of the budgets for the three approved phases of JP 2070.

**Table 6.1**

**JP 2070 Project Budget (February 2010)**

Project Phase	Original budget (\$ million)	Price movements (\$ million)	Exchange movements (\$ million)	Real cost increases (\$ million)	Budget amount (\$ million)
Phase 1	4.000 <sup>A</sup>	0.464	0.502	-0.005	4.961
Phase 2	287.710 <sup>B</sup>	48.296	11.094	-0.395	346.705 <sup>D</sup>
Phase 3	246.431 <sup>C</sup>	62.215	5.280	-0.114	313.812 <sup>D</sup>
<b>Total</b>	<b>538.141</b>	<b>110.975</b>	<b>38.302</b>	<b>-0.514</b>	<b>686.904</b>

A. December 1997 prices.

B. December 2001 prices.

C. January 2004 prices.

D. January 2010 prices

Source: DMO

**6.4** As noted in Chapter 4, under Phase 2 of JP 2070, the MU90 torpedo was originally to be integrated onto five platforms, including two sea platforms and three air platforms. However, in 2008 one of the air platforms, the Super Seasprite dropped out of Project scope due to the cancellation of that project. There was no reduction in the budget for Phase 2 following the cancellation of the Super Seasprite project.

**6.5** In early 2009, the remaining two air platforms were removed from scope. There was no corresponding reduction in the Phase 2 budget following the removal of these platforms from scope. In April 2010, Defence indicated that these were preserved air integration funds which were subject to further

<sup>202</sup> Department of Defence, 2009, *Defence Annual Report 2008–09*, Volume 2, Defence Materiel Organisation, p. 31.

ministerial submissions. The issues surrounding the Phase 2 budget are set out in paragraphs 6.30 to 6.53).

## **Direct project expenditure**

**6.6** To February 2010, \$397.51 million had been expended against a combined budget of \$665.48 million for all three phases of JP 2070. Of this expenditure \$4.96 million relates to Phase 1.<sup>203</sup>

### *Phase 2 Expenditure*

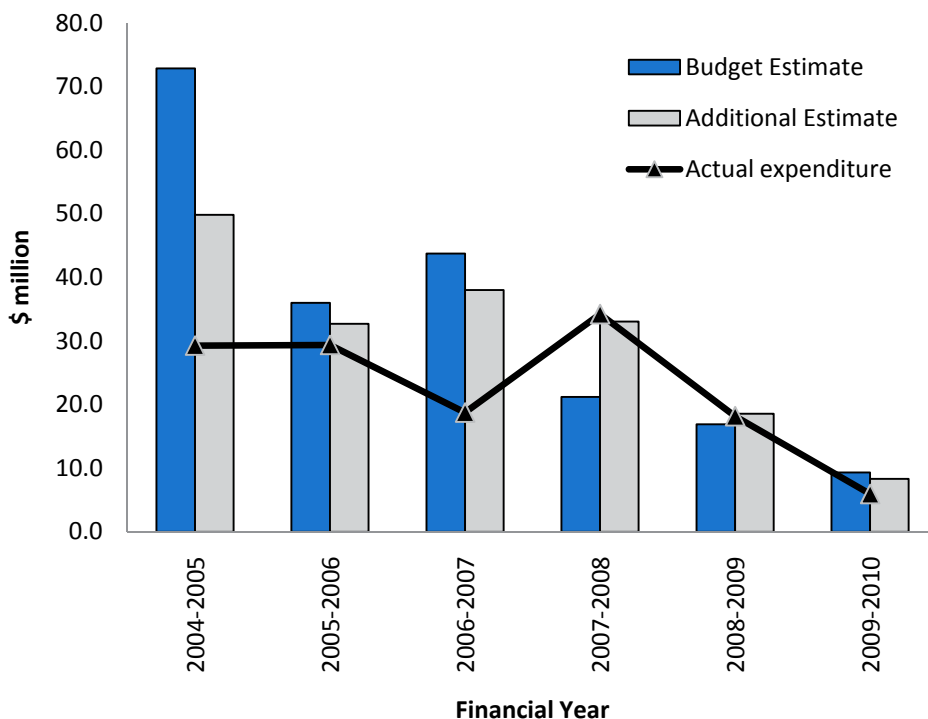
**6.7** The total expenditure against the Phase 2 budget was \$219.43 million as at February 2010, with annual expenditure against budget estimates set out in Figure 6.1.

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<sup>203</sup> The Project was managed by the Directorate Undersea Weapons at the time of Phase 1. In 2000 Management Audit Branch of Defence planned to conduct a preliminary survey of JP 2070, the lightweight ASW Torpedo (Project DJIMINDI). However, following commencement of that audit it was identified that the Directorate Undersea Weapons financial/business management processes merited their own early thorough review. The report on that audit concluded that the business practices adopted in the management of Directorate Undersea Weapons business/financial function were generally ineffective, inefficient and of a low standard, which in turn degraded outcomes and increased risk exposures to the Commonwealth.

**Figure 6.1**

**Annual expenditure against Phase 2 budget (as at February 2010)**



Note: In April 2010, Defence informed the ANAO that budgeted expenditure for 2009-10 for Phase 2 had been updated to \$9.848 million (January 2010 prices) as part of the 2010-11 Portfolio Budget process.

Source: DMO

**6.8** As noted in paragraphs 4.24 to 4.32 the deliveries of torpedoes under Phase 2 were delayed due to problems encountered during trials in Europe. Consequently, the DMO withheld payments during 2006.

**6.9** Table 4.2 shows that during 2008 and 2009 the scope of Phase 2 was reduced with the removal of the three air platforms. Consequently, Phase 2, which should have been largely completed based on the original schedule, continued to have a residual budget of \$127.28 million in February 2010. As noted in paragraphs 6.45 to 6.50 the DMO intends, subject to Government approval, to use a proportion of this residual budget to fund other aspects of JP 2070.

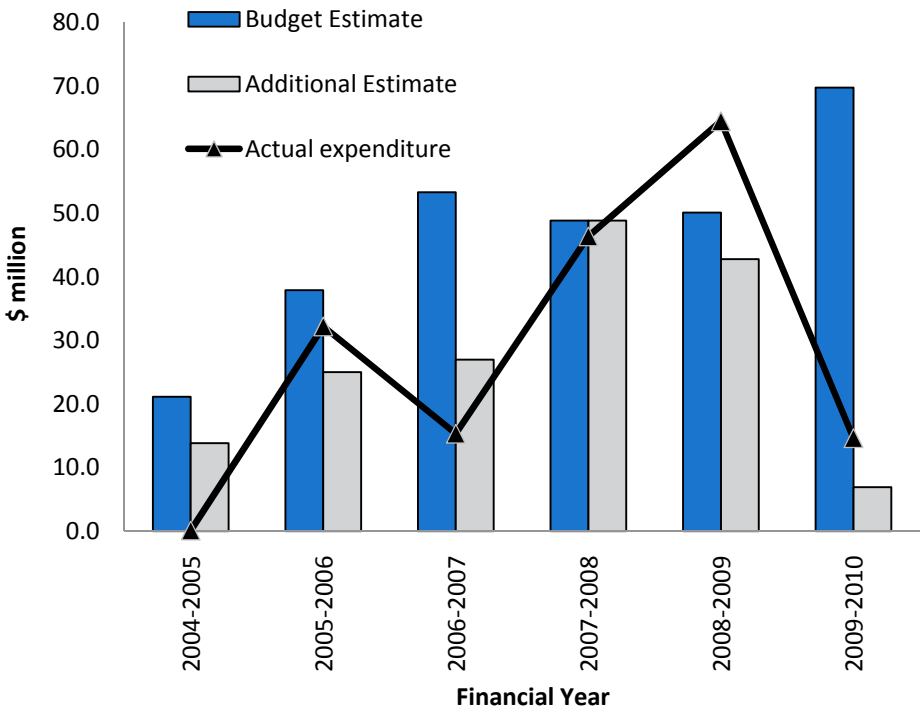


Phase 3 Expenditure

6.10 The expenditure against the Phase 3 budget was \$173.13 million as at February 2010, with annual expenditure against that budget set out in Figure 6.2.

Figure 6.2

Annual expenditure against Phase 3 budget (as at February 2010)



Note; In April 2010, Defence informed the ANAO that budgeted expenditure for 2009-10 for Phase 3 had been updated to \$29.436 million (January 2010 prices) at part of the 2010-11 Portfolio Budget process.

Source: DMO

6.11 The DMO informed the ANAO that one of the major reasons for the Phase 3 underspend in 2006-07 was the suspension of contract payments during 2006 as a result of the issues encountered under Phase 2. The significant reduction in planned expenditure in 2009-10 at Additional Estimates relates to anticipated delays to torpedo deliveries under Phase 3 of JP 2070 as outlined in paragraphs 4.33 to 4.36. In November 2009, the DMO informed the ANAO as follows:

The EPC [Early Proof of Capability] program [for the Mark II version of the MU90] was identified by the project team as presenting significant schedule

risk due to environmental conditions such as the sea state in Europe at the time of programmed firings, the availability of European Naval assets to deploy the weapon, and obsolescence program success being conditional upon all components of the systems engineering program changes being successful through the firing program. In essence the EPC validation program was identified as being on the critical path for Phase 3 deliveries. Hence, all related milestones were reprogrammed into FY 10/11 to account for the risk.

As EuroTorp had a delay in the production line of MkII weapons resulting from this, the French and Italian Governments made to an offer to provide a combination of MkI and MkII weapons. This meant the delivery program could remain on schedule. Chief of Navy (CN) agreed to this change 21 Aug 09. A contract change proposal (CCP) to the alliance agreement (FRAA) was raised to incorporate this change resulting in a revised Milestone Payment Schedule. It should be noted that the CCP is a cost neutral change to the FRAA. FY09/10 is now estimated to achieve \$29.436m.

**6.12** The decision to accept of Mark I weapons in lieu of Mark II weapons under Phase 3 is outlined in paragraphs 4.33 to 4.39. The ANAO notes that the capacity to utilise torpedoes under Phase 3 is contingent on the completion of integration activities under Phase 2 as set out in Chapter 4 and testing and evaluation activities as set out in Chapter 5.

**6.13** The residual budget for Phase 3 as at February 2010 was \$140.69 million.

## **Alliance payment arrangements**

**6.14** The Proposal and Liability Approval<sup>204</sup> for Phase 1 of JP 2070, with a budget of \$2.4 million, was signed in March 1998. The Phase 1 Proposal and Liability Approval did not stipulate the method for making payments, under what was the first alliance style contract entered into by Defence. The Proposal and Liability Approval for Phase 2, signed in April 2004 for \$284.141 million (December 2002 price basis), stated as follows:

The Djimindi Alliance is considered to be a Prime Contractor for the Phase 2 Works, and the CoA [Commonwealth of Australia] will commit the full TAB [Total Alliance Budget] value to the Alliance to manage. The Alliance Financial Management Plan details the procedures the Alliance will follow to have funding transferred from JP 2070 Ph 2 to the Alliance at three month intervals.

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<sup>204</sup> A proposal and liability approval is a standard template used within DMO at the time to seek approval from delegates to enter into a contract liability and gain approval for the spending of public monies.

This three month funding from the CoA will be based on the Alliance time-phased budget (baseline), and then paid by the Alliance to the Alliance Participants, Sub-Alliances, Sub-contractors and other suppliers in accordance with the negotiated payment plans contained in their individual contracts. At the end of each three month period, the transferred funds will be acquitted and the next period funding will be adjusted accordingly.

To meet the Alliance's accounting requirements, and in a similar fashion to the Trust account set up in Phase 1, a separate account has been set up in ROMAN [Defence's financial management information system], for the Alliance which provides the necessary Accounting and Payment Processing support. The methodology has been supported by Head Materiel Finance [in the DMO].

**6.15** A June 2003 internal audit report prepared by Defence's Management Audit Branch stated as follows:

There is now a requirement for the PDA [Project Djimindi Alliance] to manage its own funds (after release from the CoA) and thus new banking arrangements and accounts are being investigated for a Board decision. This situation is complicated by the fact the Alliance is not a legal entity and cannot establish bank accounts in its own right; DAD [Djimindi Alliance Director] is tasked with investigating potential solutions for the PDA.

**6.16** That audit report concluded as follows:

Given the planning effort (reflected in the finance-related documents) and the move to extract CoA-specific financial actions from the duties of the BFM [Business Finance Manager], audit considers that planning and implementation of financial management is incomplete but appropriate for the stage of the project. Re-establishing the banking and payments arrangements is a high priority. There may be increased costs for the Alliance related to banking that were not captured in the approved PTC [Project Target Cost].

**6.17** In July 2003, the payment arrangements for the alliance were discussed at a Djimindi Alliance Board meeting. The Board was informed that the DMO had difficulty paying funds into a trust account in which the Commonwealth retained an interest. To overcome this issue, it was proposed that one of the Djimindi Alliance Participants set up a Trust Account. The Board was informed as follows:

The DOD [Department of Defence] is uncomfortable with the arrangement where they pay funds in advance of payment particularly for high value payments to EuroTorp. The DOD has indicated that they are more comfortable paying over the funds as needed or at least in the month that the payment occurs.

**6.18** A brief prepared for the Project Governance Board in 2003 stated as follows:

There is still no means for the Submarines Branch to make payments to the Djimindi Alliance for onward disbursement. It was determined in late February that the process that had been in place was potentially in breach of the FMA Act<sup>205</sup>. Subsequently, the DGSM [Director General Submarine] directed that a commercial account should be set up under the control of one of the Djimindi Alliance partners – Thales Underwater Systems. It is expected that a new system would be in place by the end of October [2003].

**6.19** In November 2003, the DMO entered into an agreement with Thales Underwater Systems and EuroTorp for Thales Underwater Systems to take over from the Commonwealth in providing banking, associated cash management activities and purchasing for the works performed by the Alliance Participants under the Alliance Agreement. This was implemented through:

- issuing a purchasing card to the Project Djimindi Alliance; and
- establishing two interest bearing Trust Bank Accounts (one in Australian Dollars and one in Euros).

**6.20** Under the agreement the Commonwealth was required to make an initial payment into the account and then make subsequent payments into the account upon the request of the Project Djimindi Alliance Business and Finance Manager.

**6.21** In early December 2003, the DMO received advice from external consultants on a proposed sub-contract between EuroTorp<sup>206</sup> and Thales Underwater Systems,<sup>207</sup> whereby EuroTorp would sub-contract some of the work assigned to it under the Alliance Agreement to Thales Underwater Systems. Under the payment arrangements for the proposed sub-contract, Thales Underwater Systems would issue invoices to the Commonwealth for

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<sup>205</sup> The *Financial Management and Accountability Act 1997*.

<sup>206</sup> The advice noted that Eurotorp did not have any legal status, legal presence, permanent establishment and was not registered for GST in Australia. Eurotorp would therefore not be entitled to claim input tax credits or on-charge GST charged by and paid to Thales Underwater Systems for the services provided under the sub-contract to the Commonwealth under the Alliance Agreement. The input tax credits available would therefore be lost.

<sup>207</sup> The advice noted that Thales Underwater Systems had a subsidiary company permanently established in Australia which was registered for GST purposes.

payment for work that the company carried out under the sub-contract with Eurotorp.

**6.22** Effectively, the Commonwealth would be paying the sub-contractor, Thales Underwater Systems, directly for work the company carried out for EuroTorp under the provisions of the sub-contract.

**6.23** The consultants advised the DMO that:

- ...it was not appropriate or in accordance with probity principles for the Commonwealth to pay Thales Underwater Systems directly for the works that have been sub-contracted [by Eurotorp];
- ...it may be argued that if the Commonwealth were to pay a sub contractor [Thales Underwater Systems] rather than the prime contractor [Eurotorp], it is not the most efficient and effective use of public money, and may also not be in accordance with the policies of the Commonwealth<sup>208</sup>; and
- ...from a probity perspective, because the Commonwealth has no current obligation to pay Thales Underwater Systems due to the operation of the sub contract between Eurotorp and Thales Underwater Systems, payment direct to Thales Underwater Systems by the Commonwealth would not be in accordance with better practice in respect of the payment of accounts, and may also be in breach of Defence's Chief Executive's Instructions.

**6.24** The advice also noted that the proposed Djimindi Board resolution related to this arrangement:

...did not appear to be supported by a background paper, and that legal review and sign-off was not obtained in support of the proposed resolution. From a probity perspective, additional management process should be evident, particularly a paper from management in support of the resolution, and sign-off by legal [services] where the resolution has legal (including tax implications). This would also be more in line with better practice in board processes.

**6.25** In December 2003, the DMO advised EuroTorp that, based on advice from external consultants and finance officials, that payment process for some of the work packages may contravene the *Financial Management and Accountability Act 1997* and *A New Tax System (Goods and Services) Tax Act 1999*.

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<sup>208</sup> The arrangement may therefore breach Regulation 9 of the *Financial Management and Accountability Act 1997*.

**6.26** In September 2004 DMO received legal advice that the trust arrangements were in breach of the *Financial Management and Accountability Act 1997*. This advice stated as follows:

Because the money transferred to the bank account is under the control of TUS [Thales Underwater Systems] acting on behalf of the Commonwealth – and therefore is public money – the FMA Act [*Financial Management and Accountability Act 1997*] imposes certain obligations, including the following:

- public money must be banked in an 'official' account – that is, a Commonwealth account opened in accordance with Part 3 of the FMA Act. It is an offence for an official to deposit public money in an account that is not an official account (section 11). The TUS account does not appear to be an 'official' account;
- public money must be accounted for in the Department's financial statements (section 48 and the Finance Minister's Orders). This does not appear to be the case here where the money is provided to TUS and then expended on the Commonwealth's behalf;
- approval to spend public money must be made by an 'approver' under the FMA Regulations (regulation 9). An approver includes a person authorised by or under an Act to do so (regulation 3 – the practice is for the Secretary to authorise an official under section 44 of the FMA Act). We are not aware whether TUS personnel have such financial delegations from the Secretary.

In addition to these issues, the Funds Agreement includes an indemnity from the Commonwealth for losses incurred as a result of there being insufficient funds in the accounts. We query whether the FMA Regulation 10 process (relating to the authorisation of spending proposals where there is no appropriation for the spending) was conducted to ensure this indemnity was properly approved. It may be arguable that the budget limits in the Alliance Agreement are the limit of the Commonwealth's indemnity for insufficient funds in the bank account. But clause 7.1 of the Funds Agreement, which makes that Agreement subject to the Alliance Agreement, expressly excludes the indemnity from this protection. Therefore, the indemnity stands alone and is unlimited. Potential risks for the Commonwealth are:

- the credit card being overdrawn or misused; and
- TUS misusing its signatory rights.

These are significant risks.

The Funds Agreement obliges TUS to take out Fidelity Guarantee Crime Insurance to cover the funds in the accounts. I understand that this insurance

has been taken out. I am not aware of the extent of protection this insurance offers to the Commonwealth.

The effect of these arrangements is that:

- a bank account has been established which, because of its nature, is in breach of the FMA Act and some actions of Defence officials may be in breach of the FMA Act; and
- the benefit of any performance-based payment regime in the Agreement is dissipated by advance payments being made into the bank account, if this is the case.

**6.27** In establishing the FRAA in August 2005, the DMO negotiated new arrangements which removed the requirement for the Alliance Trust Account established earlier in JP 2070.

**6.28** In October 2005, the Djimindi Alliance Board resolved and agreed to:

- terminate the Project Djimindi Trust Bank Accounts and Purchasing Card Agreement signed in November 2003;
- transfer the residual Trust Account balances to an account to be nominated by the Industrial Participants with the residual balances to be deducted from upcoming milestones of the FRAA; and
- cancel the Purchasing Card.

**6.29** The DMO informed the ANAO that, at the point the Trust Account was closed, \$1.65 million was refunded to JP 2070 in May 2006. This was over two-years after concerns were first expressed surrounding these payment arrangements and more than one-year after legal advice indicated that the arrangements were in breach of the *Financial Management and Accountability Act 1997*.

## Phase 2 budget insufficient

**6.30** The November 2002 Proposal and Liability Approval for Phase 2 indicated that the contingency budget approved by the Government for this Phase was \$10 million. Under the alliance arrangements, \$7.5 million of this

contingency budget was transferred to the alliance to manage<sup>209</sup> with a residual \$2.5 million retained by the DMO. At that time, an amount of \$500 000 of this \$2.5 million was allocated for testing and \$400 000 was allocated to ANZAC integration, leaving \$1.6 million in contingency that was unallocated. At the Project Management Stakeholder Group meeting in July 2005 it was noted that:

...in a software intensive Project, the contingency of \$1.6 million is woefully inadequate’.

**6.31** At that meeting, the Project Management Stakeholder Group was informed that further contingency was held in the budget figures for the platform components. However, some 11 months before this Project Management Stakeholder Group meeting, an August 2004 minute from Head Electronic and Weapon Systems to Head Capability Systems stated as follows:

I have reviewed the project and concluded that there is likely to be a funding shortfall arising from the underestimation of the aircraft integration costs.

**6.32** The June 2004 Business Due Diligence report prepared in preparation for the DMO becoming a prescribed agency under the FMA Act stated as follows with respect to this Project:

Project has indicated low confidence in regard to being within [budget] approval due to some uncostered work. Also contingency is indicated as low.

Cost risk is assessed as high.

**6.33** The minutes of the August 2004 Weapons Project Governance Board stated as follows:

When questioned how the project had achieved government approval without cost estimates, the project office advised that it [had] obtained “ball park” estimates in the 2000 timeframe. These had since been found to be completely inaccurate. The project office indicated that integration of this type of a system into an aircraft could range between \$50m and \$100m. Currently the approval rests at \$35m for the AP-3C [Orion] only. The other two aircraft have an approval in the amount of \$30m each. Once more accurate costings are obtained, there is scope for a real cost increase to be required.

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<sup>209</sup> On November 2002, DMO’s Head Materiel Finance expressed concern surrounding the management of contingency in the Project and was informed by the Business Finance Manager for the Project that the contingency within the Total Alliance Budget (TAB) was referred to as Management Reserve. This reserve was identified against the known risk to the Project Target Cost (Direct cost portion of TAB) being the integration of the MU90 into the five platforms. Any use of the Management Reserve required approval of the Alliance Board, of which the DMO was a member.



**6.34** In March 2005, the then Minister for Defence was informed that the budget may not be adequate to achieve the required level of integration across all air platforms. In late July 2005, the Project Management Stakeholders Group were advised that the cost estimates for JP 2070, which had been produced through the Project Definition Study conducted under Phase 1, were based on 'invalid assumptions' and that this resulted in JP 2070 being 'saddled with funding limits that may be inadequate'.

**6.35** The August 2005 FRAA Negotiating Report indicated that JP 2070 was under cost pressure because:

- Net Personnel and Operating Costs were not included in JP 2070 budget approvals (listed in Table 6.1 above) and these were estimated to be \$3.3 million a year out to 2021, bringing the whole-of-life capability cost to an estimated \$1.13 billion; and
- significant additional resources would be required within the JP 2070 Project Office as a result of an increased level of work, which was previously the responsibility of the Djimindi Alliance Team, that under the FRAA became the responsibility of the Commonwealth.

**6.36** That report also indicated that the FRAA had been de-scoped to remove work associated with integration of the MU90 torpedo onto the Naval Helicopters (the Super Seasprite and the Seahawk).

**6.37** In October 2005, the Head of the Electronic and Weapon Systems wrote to the Chief of the Capability Development Group noting that there was very little contingency available, and indicating that, if the cost of air integration exceeded the Phase 1 estimate, JP 2070 may need to seek a Real Cost Increase. If a Real Cost Increase was not available, then re-prioritisation among the aircraft may be required.

**6.38** The November 2005 Project Management Stakeholder group was informed that the Minister had directed that the platform budget allocations not be varied.<sup>210</sup> This resulted in the quarantining of \$111 million of project funds originally allocated for air integration, meaning that one platform could not be removed from scope to pay for any increased costs of integration of the torpedo onto another platform without ministerial concurrence.

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<sup>210</sup> That meeting noted the possibility of seeking a Real Cost Increase and also considered that the scope could be expanded to include ranges and targets.

**6.39** In May 2006, the CEO of the DMO wrote to senior Defence personnel indicating JP 2070 was a 'Project of Concern' with significant ongoing issues. The minute stated as follows:

The primary issues relate to the MU90 production torpedo performance, the delayed integration into the aerospace platforms and the increasing understanding that the project budget is insufficient to cover the approved scope.

**6.40** In April 2007, the then Minister was informed that detailed cost estimates were being developed for integration of the torpedo onto the Orion, the Seahawk and the Super Seasprite. At this time, the issues surrounding the Super Seasprite project had been known for some time and the then Cabinet was giving consideration to cancelling that project. The then Cabinet decided to continue with the Super Seasprite project subject to certain conditions being met.<sup>211</sup> The then Minister was advised by the DMO in a May 2007 submission that:

It is unlikely that the Phase Two of the project will deliver the full scope within current budget. Integration into the air platforms (AP3-C maritime patrol aircraft, Seahawk and Seasprite) is the main cost driver.

**6.41** At the time of the May 2007 ministerial submission, detailed cost estimates for platform integration were yet to be finalised. This was nearly three years after the August 2004 Weapons Project Governance Board had been informed that the budget for integration onto air platforms was likely to be significantly deficient (see paragraph 6.33). In March 2010, the DMO informed the ANAO as follows:

Delays in getting cost estimates, driven by delays in other projects, [lead] to difficulty in establishing [a] technical baseline for further integration. The lack of a comprehensive OCD [Operational Concept Document] at project initiation also made it difficult to assess the level of integration actually required.

**6.42** In July 2007, the Chief of the Capability Development Group wrote to several senior Defence/DMO officers outlining the cost of integration onto the air platforms as follows:

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<sup>211</sup> ANAO Audit Report No.41 2008–09, *The Super Seasprite*, p. 267.

- the Orion would cost \$62 million<sup>212</sup> plus an additional \$32 million of non-recurring engineering expenditure on the development of a Torpedo Control Unit.<sup>213</sup> It was considered that the integration onto the Orion alone would consume the entire air integration budget for JP 2070 of \$106 million.
- integration onto the Seahawk was estimated to be \$60 million with an additional 30 per cent contingency required due to the high integration risk; and
- integration onto the Super Seasprite was regarded as likely to cost about \$50 million, but it was recommended that integration not proceed onto that platform.<sup>214</sup>

**6.43** The minutes of an August 2007 Senior Officers meeting on the Target Cost Estimate for integration onto the Orion illustrated that the integration costs were significantly underestimated during project development and that technical risk for air integration had become a significant cost driver. It was also noted that air certification was likely to be a major cost driver. Also in August 2007, the Project Director indicated the intent to seek Ministerial approval for release of the remaining \$105 million of air integration funds to complete the weapon and surface platform program and de-risk Seahawk integration.

**6.44** In July 2008, Defence advised the then Minister that approximately \$220 million would be required to complete the current project scope and integration onto the Seahawk and Orion. This was more than double the preserved air integration funds in the JP 2070 budget.

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<sup>212</sup> A Defence Financial Investigation Services review in July 2007 of the \$64.8 million quote for integration into the Orion was unable to form a conclusive opinion on the reasonableness of cost in the quote due to limitations in that review and uncertainty surrounding the nature of the quote.

<sup>213</sup> A Defence Financial Investigation Services review in July 2007 of the EURO18.4 million quote for the TCU was unable to form a conclusive opinion on the reasonableness of prices included in the quote due to limitations in the scope of the review.

<sup>214</sup> As noted in Paragraph 4.62 at the time DCIC considered integration of the Lightweight Torpedo into the Super Seasprite in November 2001 there was concern that the Super Seasprite operating in support of a of an ANZAC ship would provide no increase in ability to detect and fire upon a submerged submarine over an ANZAC ship operating without a Super Seasprite.

## The release of the air integration funds

**6.45** In July 2008, the then Minister approved the release of \$5 million of the preserved air integration funds to ensure that acceptance and integration activities<sup>215</sup> could continue for surface platforms. In the relevant submission, Defence advised the then Minister that these activities would require further funding, estimated to be \$77.4 million.

**6.46** In October 2008, Defence submitted a further request to Government for access to project funds quarantined for air integration to complete the surface platform integration. The Department of Finance and Deregulation expressed concern that the supporting costings associated with the first stage of ship integration that had been provided in this submission to Government and indicated that they were not of Second Pass quality.<sup>216</sup> As a result, Defence withdrew the Cabinet Submission and submitted a revised submission to the then Minister in December 2008 for submission to Government in February 2009.

**6.47** In February 2009, the Government agreed to the removal of air integration from the scope of Phase 2 and to a two-stage approach to the completion of JP 2070's Phase 2 activities. The draft Materiel Acquisition Agreement for Phase 2 set out the stages as follows:

- the first stage releases sufficient funds to allow the Project to progress to end 2009 only those elements of the project required for acceptance and integration of the MU90 onto the ADELAIDE and ANZAC Class frigates, conduct risk mitigation activities, and to develop information to allow the National Security Committee of Cabinet (in late 2009) to consider a request for approval to continue to stage two; and

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<sup>215</sup> These activities included the continuation of weapon acceptance activities, ensuring maintenance of the required skilled personnel, and mandatory certification and sustainment activities.

<sup>216</sup> The two stage decision making process directed by Government consists of:

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

Source: *Defence Capability Development Manual 2006*, Para. 3.13.

- following Government approval, the second stage would complete the acceptance and integration of the MU90 LWT onto the ANZAC and ADELAIDE Class frigates and provide sufficient spares and support to transition the project to the capability manager.

**6.48** The Government agreed to release \$29.5 million of the quarantined funding for air integration for immediate activities under stage one. Expenditure of this funding is allocated to addressing the following areas:

- support and test equipment;
- publications and training;
- DSTO activities;
- spares and in-service support;
- targets;
- ranges;
- Operational Test and Evaluation;
- audits and accreditation; and
- travel.

**6.49** Many of the issues that this funding is to be applied to impact on the capacity to achieve Operational Release. These issues are outlined in detail in Chapter 5.

**6.50** The funding is also being used to develop Second Pass quality cost, risk and schedule information to allow Government to consider a request for approval to continue to stage two of the plan to finalise Phase 2 of JP 2070. In October 2009, a further \$30.1 million of the quarantined funds was estimated as being required to complete the acceptance and integration of the MU90 torpedo onto the ANZAC Class ship and the FFG, provide sufficient spares and support, and to transition JP 2070 into service with Navy. At this time, it was expected that a further submission to Government seeking approval for the funds required to complete JP 2070 would be presented to Government in late 2009 when more information on costs, risk and schedule was known.

**6.51** In February 2010, Defence advised the ANAO that the proposal is to comprise a request for funding for:

- ANZAC Class magazine modifications;
- software updates and costs of acceptance and incorporation;

- purchase of a torpedo trolley;
- range safety template;
- training for in-service support personnel;
- surveillance and certification issues;
- operational Test and Evaluation;
- DSTO tasks;
- personnel; and
- contingency.

**6.52** In March 2010, the DMO informed the ANAO that the cost estimate for the second tranche release of quarantined funding is \$23.7 million. This estimate has not yet achieved the quality required for second pass approval by Government.

**6.53** The April 2010 MAA for Phase 2 includes a series of high risks for that phase of the Project, one of which relates to the cost of project completion of ship integration and weapon acceptance. The MAA indicated that this risk would be mitigated through the release of preserved funds under stage 2. At the conclusion of this audit the stage 2 proposal had not been provided to Government.

## Related expenditure

**6.54** There are a range of costs incurred by Defence and the DMO that are not part of JP 2070 budget but are directly related to the introduction of the lightweight torpedo capability into service. For example, the ANAO identified a range of areas within Defence that will, or are likely to, incur salary costs associated with this Project. Some of these areas are identified in Table 6.2.

**Table 6.2****Areas where salary costs associated with the lightweight torpedo have already occurred or will be likely to occur**

Organisation	Description
The Djimindi Alliance Team	This team comprises a number of Commonwealth positions and has done so for the life of JP 2070.
JP2070 Project Office in the Naval Guided Weapons SPO	Initially the number of personnel in the Project Office for this Project was limited due to the Alliance approach. However, with the changes to the Alliance arrangement as a result of the FRAA the Project Office needed to expand. This SPO also has responsibility for the Torpedo Maintenance and Integration Facility which is responsible for the in-service support of the MU90 torpedo. The SPO also carries out a ranged of other function unrelated to JP2070.
ANZAC SPO	Personnel from this SPO were responsible for the integration of the torpedo onto the ANZAC.
FFG SPO	Personnel from this SPO are involved in integration of the torpedo onto the FFG.
Maritime Patrol SPO	Personnel from this SPO were involved in the development of integration solutions for air platforms which included the definition of an integration solution for the integration of MU90 torpedo onto the Orion.
Naval Aviation SPO	This SPO responsible for Seahawk and Seasprite helicopters which were to have the lightweight torpedo integrated.
RANTEAA	RANTEAA is responsible for Operational Test and Evaluation of the MU90 torpedo and its integration onto the platforms. Planning for this testing commenced some time ago but is yet to commence.
DSTO	DSTO have been involved in JP 2070 to varying degrees since JP 2070 commenced, currently focussing on issues surrounding modelling and simulation of the torpedo.
Navy Regulators	The various Navy Regulators will need to certify that requirements for IOR and OR have been met.
DGTA	DGTA were initially involved in awarding Authorised Engineering Organisation to EuroTorp. DGTA are now involved in the ongoing consideration of awarding the Torpedo Management Integration Facility Authorised Maintenance Organisation for maintenance activities conducted in that facility.
RANRAU	RANRAU is responsible for assessing the in-water performance of the torpedo.

Source: ANAO analysis based on Defence documentation.

**6.55** The ANAO requested that Defence advise what other areas have incurred salary costs in relation to JP 2070 but which have not been paid for out of JP 2070 budget, as well as what other non-salary costs have been incurred in relation to JP 2070 but have also not been paid for by JP 2070. Defence advised the ANAO that this information is captured by Defence's

financial systems but is not cost attributed to JP2070 and is therefore not available.

## Related projects

### Air Warfare Destroyer

**6.56** Project Sea 4000 is planned to deliver three Air Warfare Destroyers (AWDs) to the Navy. It is intended to integrate the AWDs with the MU90 torpedo. This integration is expected to occur within the Project Sea 4000 budget.

### Orion and Orion replacement

**6.57** The public 2009 *Defence Capability Plan* included JP 2070 Phase 4 AP-3C Orion Lightweight Torpedo Integration. The scope of Phase 4 is described as follows in the Defence Capability Plan:

This phase will assess the need to supplement the AP-3C Light Weight Torpedo (LWT) capability provided by the Mark 46 torpedo with either the MU90 LWT entering service with the Royal Australian Navy or another torpedo.<sup>217</sup>

**6.58** The Defence Capability Plan indicates that the cost of this Phase is estimated be between \$100 million to \$500 million (towards the lower end of the band. The ANAO notes that the integration of the torpedo onto the Orion was within the scope of Phase 2, therefore this Phase could be regarded as a Real Cost Increase rather than a new phase. As noted in paragraph 6.42 the estimated cost to integrate the MU90 onto the Orion was \$106 million.

**6.59** In July 2009, EuroTorp offered as follows:

In relation to the Djimindi Phase 4 torpedo supply we are pleased to be able to propose:

- free integration of the MU90 Airborne Lightweight Torpedo System, and
- a reduced delivery schedule.

**6.60** The EuroTorp offer proposed to use existing hardware. The estimated cost for integration was less than \$30 million, which was one-third of what the

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<sup>217</sup> Department of Defence, 2009 *Defence Capability Plan*, p. 105.



estimated cost was to be using the approach developed by Defence (see paragraphs 6.42 and 4.65 to 4.72).

**6.61** In October 2009, Defence responded to this offer as follows:

Your new offer will be assessed as part of the options being considered by Defence to meet the capability sought under Joint Project 2070 Phase 4. Ultimately, the Australian Government will determine the option to proceed when this project is considered in the timeframe outlined in the 2009 Defence Capability Plan.

**6.62** In February 2010, Defence informed the ANAO that the contractor proposed by EuroTorp to undertake this integration did not provide an actual cost estimate, the quoted price did not include the cost of test and evaluation, and provided an integration option with a different level of functionality than that which had been originally sought by Defence.

**6.63** In February 2010 an updated version of the *2009 Defence Capability Plan* was released, which indicated that JP 2070 Phase 4 had been deleted for the following reason:

AP-3C Light Weight Torpedo Integration deleted due to assessment that existing torpedo's capability is adequate and the planned replacement of the AP-3C platform under AIR 7000 Phase 2B.

**6.64** The *2009 Defence Capability Plan* also included Project Air 7000, which is a project to acquire a replacement for the Orion.<sup>218</sup> The plan indicates that the Orion is due to be withdrawn from service in 2018-19 and indicated that the new aircraft to be acquired under Air 7000 will be introduced into service over the period 2017-2019.

## **The Super Seasprite and Seahawk Replacement**

**6.65** The cancellation of the Super Seasprite Project has seen the need to bring forward Air 9000 Phase 8, which intends to provide a combat aviation capability for Navy's surface combatant fleet, primarily through the acquisition of at least 24 new naval combat helicopters.

**6.66** According to the 2009 Defence White Paper<sup>219</sup>, these new aircraft will possess 'advanced ASW [anti-submarine warfare] capabilities'.<sup>220</sup> The *2009*

<sup>218</sup> Department of Defence, Defence Materiel Organisation, 'Projects - AIR 7000: PHASES 1B and 2B', last updated November 2008, available from <<http://www.defence.gov.au/dmo/asd/air7000/air7000.cfm>> [accessed 1 December 2009].

<sup>219</sup> Department of Defence, 2009, *Defending Australia In The Asia Pacific Century: Force 2030 – Defence White Paper 2009*.

*Defence Capability Plan* has the project acquisition cost as greater than \$1.5 billion, with First Pass approval planned to occur between 2009-10 and 2010-11.

**6.67** On 25 February 2010, the Minister for Defence announced that two potential helicopters had been identified for Air 9000 Phase 8, being the Sikorsky-Lockheed Martin MH-60R<sup>221</sup> sourced through the United States, or the NATO Helicopter Industries NH90 NATO Frigate Helicopter (NFH)<sup>222</sup> sourced through Australian Aerospace. The type of torpedo used by the replacement aircraft will have implications for planned modification to the ANZAC ship air weapons magazine, which were to be modified to meet the requirements of the MU90 torpedo. The April 2010 Materiel Acquisition Agreement classified this as a high risk to Phase 2 of JP 2070 and stated the following:

The Project has been advised to delay the modification of the FFH class [ANZAC] frigate until a decision is made on the platform to be acquired under AIR 9000 Phase 8. If the Air Weapons Magazine modification commences in late 2010 (as a result of the release of preserved funds), it is unlikely that all ANZAC magazines could be modified to stow MU90 before Project closure. Linking the decision to commence Air Weapons Magazine modification to another project adds further schedule risk, particularly if the other project's decision date slips.

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Ian McPhee  
Auditor-General

Canberra ACT  
20 May 2010

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<sup>220</sup> *ibid.*, p. 72.

<sup>221</sup> The Aviation Earth Website states as follow with respect to the MH-60R:

The MH-60R is designed to replace the SH-60Bs and SH-60Fs, and be a true multi-mission helicopter...Offensive capabilities are improved by the addition of new Mk-54 air-launched torpedoes...

Source: <<http://www.aviationearth.com/planes/military-planes/patrol-anti-submarine-and-electronic-warfare-aircraft/sh-60-seahawk/>> [accessed 1 March 2009].

<sup>222</sup> The Australian Defence Magazine indicated that Italy is acquiring the NH90 NFH and is integrating the aircraft with the MU90. Source: <<http://www.australiandefence.com.au/3399A630-F807-11DD-8DFE0050568C22C9>> accessed 11 March 2010].

# Appendices



## Appendix 1: Comments of parties with a special interest in the report

### Thales Australia Limited (Mr Chris Lloyd, Vice President)

First of all, Thales would like to draw attention to the significant progress that has been made on JP2070 program and the development of MU90 for Australia. In particular, it should be noted that the MU90 lightweight torpedo has now been in serial production for more than 10 years and, notwithstanding when it was actually achieved, has now been tested and accepted into service by the French and Italian Navies. Delivery to Australia of an initial batch of [X]<sup>223</sup> MU90 torpedos was completed in 2008 and the first Australian successful firing of the exercise weapon was conducted in June 2008 from the ANZAC class frigate HMAS Toowoomba. All ANZAC and FFG frigates have MU90 launch capability installed. Phase 3 MU90 production for Australia has commenced with first delivery expected in mid-2010.

Whilst not highlighted in the draft report, a significant part of the original justification for MU90 selection was Australian Industry Investment in both supply and support of the torpedos. In this respect, it is worth noting that local production facilities have now been established in Australia to manufacture and/or assemble the prime items of the MU90. Significant manufacturing contracts have been signed with a number of Australian firms for precision machining and printed circuit assemblies. The program has enabled Australian industry to invest in developing capabilities in Australia that did not previously exist, and these capabilities will support both the future MU90 requirements and broader defence industry needs. A new torpedo maintenance and assembly facility has also been established at HMAS Stirling in Western Australia.

Thales has no additional observations to make concerning the contracting and project management arrangements for JP2070, other than it would welcome the opportunity to progress proposals to simplify and clarify roles and responsibilities of all participants.

Regarding MU90 performance, the JP2070 Agreements are quite clear that demonstrating the MU90 meets its performance specification would be by reference to previously conducted V&V (verification and validation) information from the French and Italian governments and we believe this remains the most cost effective way to build confidence in the performance of the MU90. Attempting to replicate the full V&V process for the MU90 would take many years and entail significant cost. Torpedo tests and trials are notoriously difficult to conduct not least because of the complex and ever changing underwater environment in which they are performed. Dedicated ranges and extensive instrumentation, both on and off the torpedo, linked to sophisticated analytical models are required to produce reliable data. Without detailed planning and data collection, trial firings of torpedos will not provide sufficient quantitative performance data, particularly in relation to parameters such as endurance and target detection. Nonetheless, Thales acknowledge that a robust program of work needs to be developed to address both the performance demonstration of MU90 and the Operational Test and Evaluation (OTE) in support of MU90 Initial Operational Release. Our suggestion would be to draw on the approach successfully applied to the FFG Electronic Warfare system, for which there were similar issues, comprising a joint Steering Group of all stakeholders chaired by a senior impartial Commonwealth representative. Thales believes this approach will provide the quickest and most cost effective path to operational acceptance.

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<sup>223</sup> Classified number

## EuroTorp GEIE (Mr Nunzio Saporoso, Director)

Thank you for forwarding the extract of the ANAO report on JP 2070 – Light Weight Torpedo Replacement. EuroTorp has carefully studied the extract and have found four key issues we consider should be changed or qualified in the draft report.

- Torpedo status
- Provision of OQE data
- Commencement of Phase 3
- Alliance contracting method

### Torpedo Status

The terms "in production", "off the shelf", "entering in service" or "in service". EuroTorp has reviewed the company files back to 1998 and are able to confirm to the ANAO that EuroTorp has never used the foregoing terms, neither in the ITR response nor the RFP response. At all times the company used the term "in series production for four of the World's Navies".

EuroTorp have never concealed the status of the MU90. On no occasion were EuroTorp asked to clarify the perceived status of the MU90. For the public record, the detailed status from "development" to "in service" is listed below:-

Date	Event
August 1991	MU90 Development contract by French and Italian government (under one contract managed by DGA with options for serial production conditioned by qualification success)
1991-1994	Ashore qualification (V&V with hardware and simulation) of pre-serial torpedoes
1994-1996	Sea qualification trials.
December 1996	MU90 qualified for production
December 1997	Signature of the serial production contract for France and Italy
January 1998	Contract with Germany
1998	Removal of qualifications on production weapons and Navy first Operational launches with pre-serial torpedoes
1998-2001	Serial production setup and start
<b>January 1999</b>	<b>Contract with Denmark</b>
<b>January 2001</b>	<b>Contract with Poland</b>
2001-2002	Industrial launch of serial hardware validation
<b>June 2002- March 2003</b>	<b>First batch (Configuration "Status 0") presented for Acceptance to France and Italy</b>
March 2003	End of Navy Operational launches
2003-2004	Industrial task force to solve the issues discovered during Acceptance firings
2004-2006	Project review by French / Italian governments followed by Technical and Industrial Action Plan (TIAP) (minor modifications to the design but significant improvements in production/quality processes)

Date	Event
December 2006	Successful completion of the TIAP (letter by DGA sent to CoA as to April 2007 indicated in the ANAO Audit report Table 5.1). Formally accepted by a French /Italian Gov. Configuration Control Committee in April 2007- the torpedo configuration is "Status 1"
<b>June 2007</b>	<b>First batch of French torpedoes Accepted (Status 1)</b>
<b>July 2007</b>	<b>JP 2070 Phase 2 MU90 Acceptance in Brest and delivered EXW Brest</b>
<b>20 February 2008</b>	<b>French Chief of Navy signs Operational release of MU90 torpedo</b>
14 Oct 2008	The n <sup>o</sup> 100 MU90 is delivered by DGA to French Navy as per French Gov website < <a href="http://www.defense.gouv.fr">www.defense.gouv.fr</a> >. MU90 (Status 1) is in use in Italy, Germany, Denmark and Poland Defence Forces.
Present status April 2010	55% of the contracted number of torpedoes have been delivered to France and Italy, Accepted and in Service;
Expected status end 2010	70% of the contracted torpedoes to have been delivered to France and Italy. Accepted and in service. French and Italian government have agreed to postpone their last production batches to support the Australian Defence Forces (Djimindi Phase 3 last torpedoes). At the same time the qualification phase of the MU90 Mk 2 will be completed in Europe, with support and under the control of the French and Italian Governments which will allow the navies of France, Italy and Australia to have the same configuration (some of Status 1 and some of MK2).

You will see from the above table that the pg 13, para 50, Pappas Review statement on JP 2070 is misleading. The following sentence"....this statement is correct, based on hindsight" is incorrect based on the facts presented in the table above. EuroTorp request that para 50 lead-in two sentences referring to the Pappas Review and the following comment be removed from the report. <sup>224</sup> It would be useful for the reader if the table above were added to the attachments to the report.

<sup>224</sup> As a recent review underpinning Defence's Strategic Reform Program, the reference to the Pappas Review has been retained but the paragraph as been updated to indicate that the statement in that review is inconsistent with the history of the Project (see paragraphs 51 and 4.4).

Today, the MU90 has been accepted into service in the French, Italian, German and Danish Navies. The MU90 is fully proven. This contemporary fact should also be included in the report.<sup>225</sup>

### **Objective Quality Evidence**

The draft report extract at para 89 and 90 alludes to the fact that Objective Quality Evidence (OQE) data is owned by the French and Italian governments. EuroTorp has continually tried to facilitate transfer of OQE data from these government agencies. However, the ultimate responsibility for this data transfer devolves on the DOD/DMO through its various agreements with France and Italy. The report could make this clear perhaps by a footnote to that effect to para 89 or earlier where OQE is first introduced.

EuroTorp notes that with respect to OQE an important workshop will be held by the DGA in Toulon early May 2010 and the company expects that OQE data will be exchanged with the Australian DODIDMO representatives. The company is also sure that the DODIDMO will receive sufficient detailed information which will allow them to reduce the numbers of launches necessary before the MU90's operational release for Australia. Perhaps the workshop and expectations could be inserted as a comment footnote to para 95.

### **Commencement of Phase 3**

The ANAO report omits the fact that while the Commonwealth decided to have only European manufactured torpedoes included in the Phase 2 Statement of Work, technology transfer (activities and tools) by EuroTorp immediately commenced with Australian Industry (Thales, SITEP, Lovitt, Matrix and Startronix in the main).

Importantly Australian Industry Involvement flowed back into all European MU90s through the manufacturer in Australia of acoustic head PCBs. This realised 22% Australian involvement and the transfer of significant Technology which was a key determinant in the original decision to proceed with the MU90 as the preferred weapon for *JP 2070*.

The report could usefully add that any delay to Phase 3 would have necessarily delayed the delivery of Australian manufactured torpedoes and the work for Australian industry into Europe. EuroTorp suggests an additional phrase in para 2.22 page 30 could read "local production capability, Australian component manufacture for the European torpedo production line, and associated cost implications....."<sup>226</sup>

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<sup>225</sup> The report notes in various places that Defence documentation in support of the acquisition of the torpedo was made on the basis of the belief that the weapon was in-service at the time the weapon was selected (see paragraphs 2.12 to 2.17). This view was maintained for some time (see paragraphs 4.1 to 4.23) The report make a recommendation in relation to this issue at paragraph 4.22. The report also notes that documentation provided by Defence to the ANAO to indicate how the decision makers at the time formed the view that the weapon was in-service with other navies did not say that the torpedo was in-service with other navies (see footnotes 18 and 34). Thales Australia and EuroTorp GEIE comments on this issue are reflected in footnotes 45, 75, and 141. The audit reviewed Defence and DMO testing arrangements as set out in Chapter 1 and notes that there are a number of factors which will influence the acceptance into service of the MU90 by the Royal Australian Navy. Whether or not the MU90 is now in-service with other navies is matter that was beyond the scope of this audit and as such has not been verified by the ANAO.

<sup>226</sup> The report notes the linkages between Australian Industry Involvement and decision taken on Phase 3 in various places including paragraphs 2.21 to 2.23, 2.41 to 2.46, 3.49, 3.62 and footnote 79 and 146.



In addition, para 60 of the ANAO report is in error.<sup>227</sup> At the end of the TIAP (from Status 0 to Status 1) some limited design modifications were carried out but these were mainly linked to the improvement of the quality process.

The obsolescence study part of Phase 3 was due to the hiatus between Phases 2 and 3. As a consequence some electronic components of Status 1 torpedoes became obsolescent and it was not sensible to manufacture the Phase 3 torpedoes with obsolescent components.

The outcome of the obsolescence study led to the re-design of all future MU90s (although retaining the same functional characteristics in order to limit the qualification risks). As a result EuroTorp developed the MU90 Mk2. (New acoustic head and guidance unit with unchanged propulsion system and warheads).

Perhaps a footnote to the para following "significantly" could read "Most of the design modifications were carried out to improve the production quality processes."

### **Alliance Issues**

The Alliance and Management system was dictated to EuroTorp by the contract agency without a choice for an alternative arrangement. In an alliance contractual framework cultural difficulties will always arise particularly where government personnel are mixed with Industry. These differences were exacerbated in this case by the industry partners including companies from France and Italy as well as Australian industry. Nevertheless EuroTorp, Thales and WASS have fully supported the alliance contracting arrangement.

### **Conclusion**

EuroTorp acknowledges JP 2070 has experienced difficulties in project delivery. However, without doubt the MU90 is today in-service with many other Navies and operationally fully qualified for both shipborne and aircraft delivery. Further, Australian Industry is very much involved in the global production of the MU90.

EuroTorp remains committed to the Commonwealth's objectives for JP 2070 and the company will continue to support project progress to deliver a highly capable weapon to the Royal Australian Navy.

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<sup>227</sup> The EuroTorp comments in this area have been addressed in paragraphs 61 and 4.33, and footnote 144.

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